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 Schedule 4). Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges — both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a council Resource Consent representative to discuss this application prior to lodgement? ◯ **Yes** ✔ **No**

2. Type of Consent being applied for

(more than one circle can be ticked):

- ◯ **Land Use**
- ◯ **Fast Track Land Use***
- ✔ **Subdivision**
- ◯ **Consent under National Environmental Standard** (e.g. Assessing and Managing Contaminants in Soil)
- ◯ **Discharge**
- ◯ **Change of Consent Notice (s.221(3))**
- ◯ **Extension of time (s.125)**
- ◯ **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 Te Hono at Far North District Council tehonosupport@fndc.govt.nz

5. Applicant Details

Name/s: Natissa Kamlade

Email: [redacted]

Phone number: Work | Home

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

[redacted]

Postcode

6. Address for Correspondence

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

Name/s: Bay of Islands Planning

Email: [redacted]

Phone number: Work | Home

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

Postcode

**** 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: Natissa Kamlade

Property Address/ Location: [redacted]

Postcode

8. Application Site Details

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

Name/s:

Site Address/ Location: [redacted]

Postcode

Legal Description: [redacted] **Val Number:**

Certificate of title: [redacted]

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.

Please call Natissa [redacted] prior to site 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.

Subdivision to create 2 additional lots

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

10. Would you like to request Public Notification?

◯ **Yes** ✔ **No**

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

(more than one circle can be ticked):

- ◯ **Building Consent** Enter BC ref # here (if known)
- ◯ **Regional Council Consent (ref # if known)** Ref # here (if known)
- ◯ **National Environmental Standard consent** Consent here (if known)
- ◯ **Other (please specify)** Specify 'other' here

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

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

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

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

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

13. Assessment of Environmental Effects:

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

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

13. Draft Conditions:

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

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

10 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) NAtissa Kamlade

Email: [redacted]

Phone number:

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

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

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) Natissa Kamlade.

Signature: [redacted]
(signature of bill payer

MANDATORY

11 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.

15. Important information continued...

Declaration

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

Name: (please write in full) Andrew McPhee

Signature: [redacted] **Date** [redacted]

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

Checklist (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

10 September 2025

Dear Team Leaders

Re: Proposed subdivision at 78 Florance Avenue, Russell

Our client, Natissa Kamlade, seeks a land use consent for a three-lot subdivision at 78 Florance Avenue, Russell. The applicant seeks consent to subdivide a 3,624m^2 site creating three lots as a controlled activity in the Russell Township zone within the operative Far North District Plan (**ODP**). The site is zoned Kororāreka Russell Township zone under the Proposed Far North District Plan (**PDP**) with a Coastal Environment overlay.

Land use consent is also sought for a stormwater breach and building scale on Proposed Lot 1 resulting from the existing built development and driveway. There is also a breach for Vehicle Crossing Standards.

The application is supported by the following information:

- **Planning Report and Assessment of Environmental Effects**
- **Appendix A – Record of Title;**
- **Appendix B – Scheme Plan (BOI Survey);**
- **Appendix C – Civil Report (Wilton Joubert);**
- **Appendix D – Geotechnical report (Wilton Joubert);**
- **Appendix E – Top Energy and Chorus approvals**

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

Andrew McPhee
Consultant Planner

APPLICANT & PROPERTY DETAILS

Applicant	Natissa Kamlade
Address for Service	Bay of Islands Planning [2022] Limited PO Box 318 PAIHIA 0247 C/O – Andrew McPhee andrew@bayplan.co.nz 021-784-331
Legal Description	Lot 3 DP 113872
Certificate Of Title	NA64C/838
Physical Address	78 Florance Avenue, Russell, Northland
Site Area	3,624m^2
Owner of the Site	Natissa Karen Kamlade
Operative District Plan (ODP)	Russell Township Zone
Proposed District Plan (PDP)	Kororāreka Russell Township Zone Coastal Environment Overlay
Archaeology	Nil
NRC Overlays	Nil
Soils	Class 6
Protected Natural Area	Nil
HAIL	Nil

Schedule 1

SUMMARY OF PROPOSAL

Proposal	A three-lot subdivision in the Russell Township zone at 78 Florance Avenue, Russell.
Reason for Application	Subdivision in the Russell Township zone of lots 1,000m^2 or larger where sewage is available is a Controlled Activity. The proposed subdivision requires land use consent for a stormwater, building scale, and vehicle access breach on resulting from the existing built development and crossing. This matter is a Discretionary activity.
Appendices	Appendix A – Record of Title; Appendix B – Scheme Plan (BOI Survey); Appendix C – Civil Report (Wilton Joubert); Appendix D – Geotechnical Report (Wilton Joubert); Appendix E – Top Energy and Chorus approvals.
Consultation	No consultation undertaken.
Pre-Application Consultation	Not applicable.

1.0 INTRODUCTION

This report has been prepared for Natissa Kamlade in support of a three-lot subdivision at 78 Florance Avenue, Russell. The site is legally described as Lot 3 DP 113872, which comprises a total land area of 3,624m^2. A copy of the Record of Title is attached at **Appendix A**.

The application is supported by a Scheme Plan produced by BOI Survey, attached at **Appendix B**. A Civil Report and a Geotechnical Report prepared by Wilton Joubert are provided in **Appendix C & D**.

Appendix E contains subdivision approvals from Chorus and Top Energy.

2.0 SITE AND LOCALITY DESCRIPTION

Figure 1: Site (Source: Prover)

Figure 2: Site Aerial (Source: PDP Maps)

The subject site is located toward the southeastern extent of the Russell Township Zone, east of The Strand Heritage Precinct. The commercial area of Russell Township is ~1km away.

The immediate and surrounding environment is zoned Russell Township zone and is residential in nature.

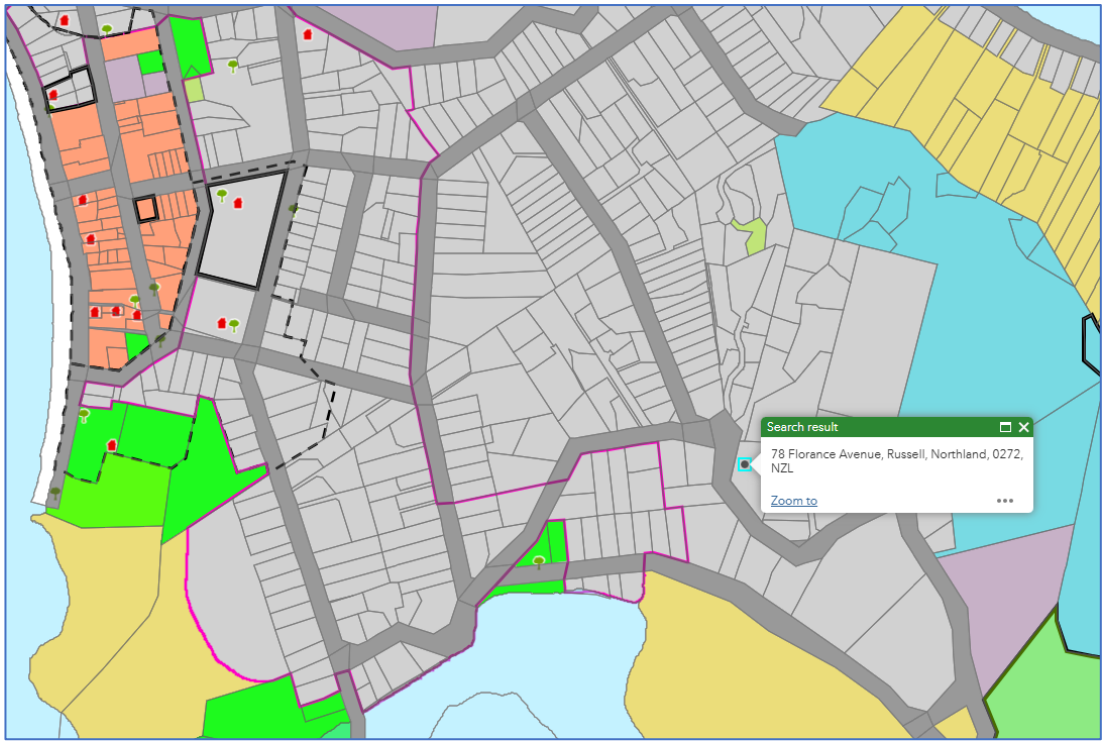


Figure 3: Zoning Map – Russell Township zone (Source: Far North Maps)

The site currently accommodates two dwellings that share an access off Florance Avenue.

Figure 4: Entrance to the site via the shared driveway

The site slopes towards Florance Avenue, generally from east to west.

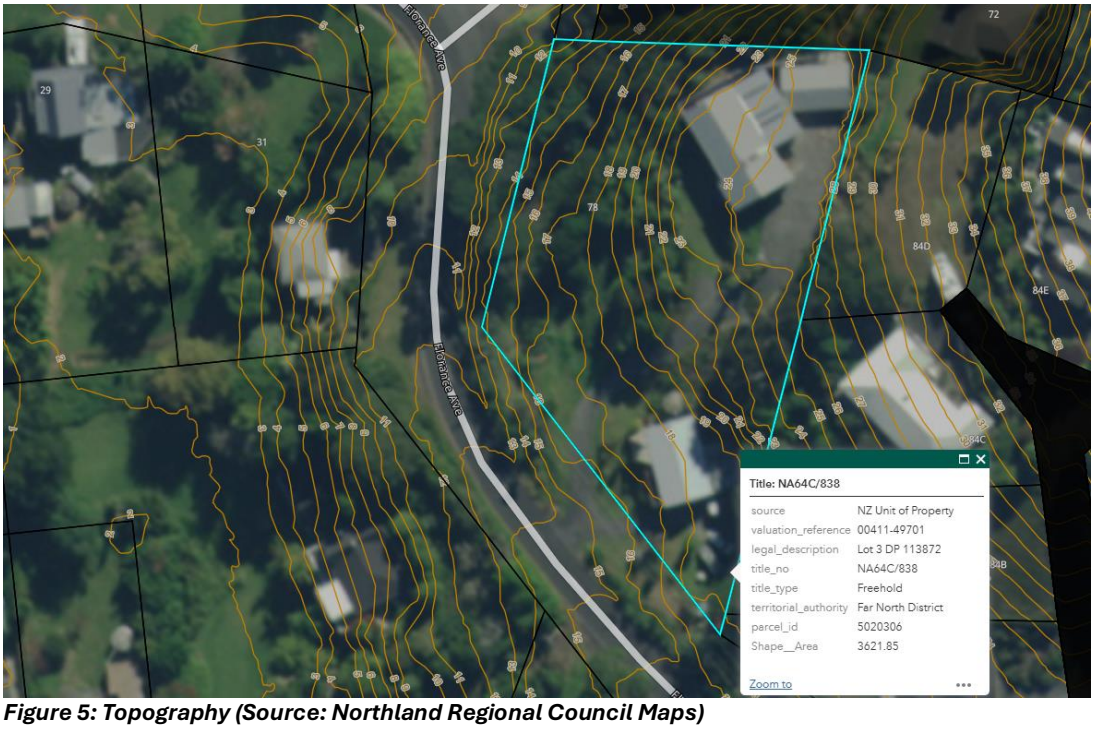


Figure 5: Topography (Source: Northland Regional Council Maps)

While much of the vegetation on the site has been removed to accommodate the existing dwellings, the area of Proposed Lot 2 contains a mix of native and exotic species.

Figure 6: Vegetation on Proposed Lot 2

The two lawfully established dwellings will accommodate Proposed Lots 1 and 3. Proposed Lot 2 will be a vacant site the can at a later juncture accommodate a dwelling. There is no development proposed at this time.

The existing dwellings are serviced by Council reticulated wastewater and have stormwater infrastructure in proximity. Potable water is by way of rainwater tanks.

Figure 7: Servicing (Source: FNDC Water Services Map)

The site is not subject to any known hazards.

The site is not considered HAIL as it has historically been classified as a 'built up area (settlement)'.

3.0 RECORD OF TITLE, CONSENT NOTICES AND LAND COVENANTS

The Record of Title is attached at **Appendix A**. There are no consent notices or covenants that apply.

4.0 DESCRIPTION OF THE PROPOSAL

The proposed subdivision seeks to subdivide a 3,624m^2 to create three lots as a controlled activity in the Russell Township zone within the ODP.

The proposed subdivision will create the following lots:

- Lot 1 – 1,624m^2
- Lot 2 – 1,000m^2
- Lot 3 – 1,000m^2

The proposal will be in accordance with the scheme plan provided in **Appendix B**.

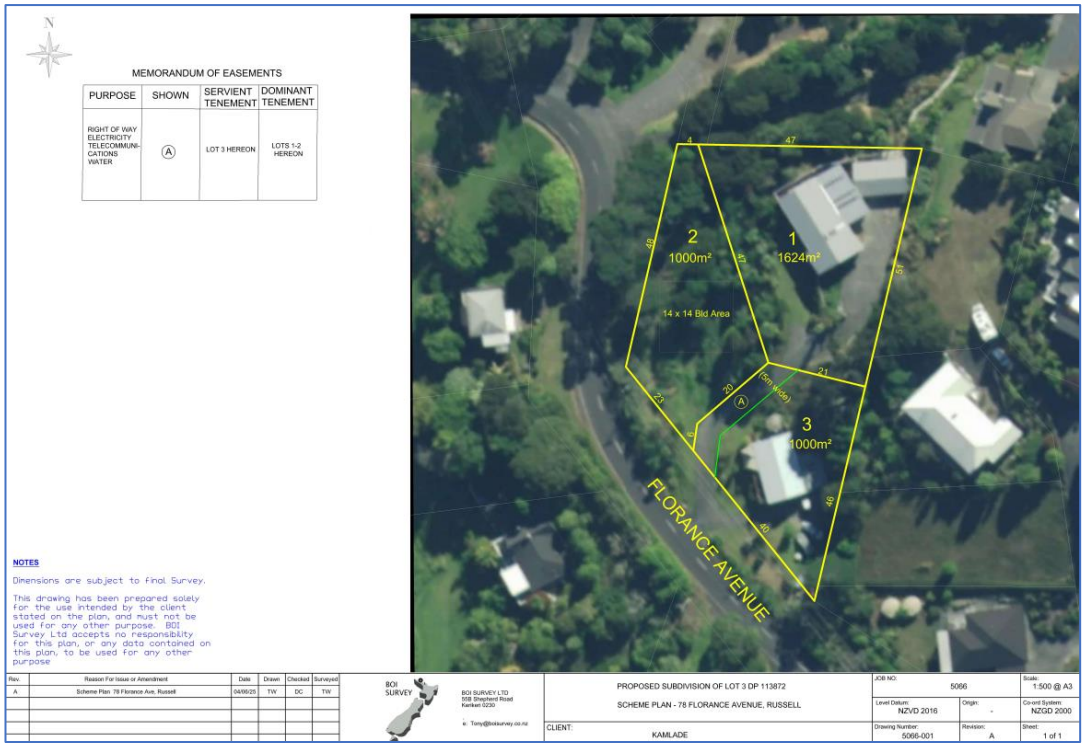


Figure 8: Proposed scheme plan (Prepared by BOI Survey)

Proposed Lot 1 contains an existing dwelling and garage as well as a large, paved area of driveway. Proposed Lot 2 is a vacant site, which at some juncture can accommodate a dwelling although no development is proposed at this time. Proposed Lot 3 contains an existing dwelling.

Access to all Lots will be by way of the existing access to the site. Easement A over Proposed Lot 3 will provide ROW, electricity and communications to Proposed Lots 1 and 2. The easement will also allow for drainage of stormwater overflow from Proposed Lots 1 and 2.

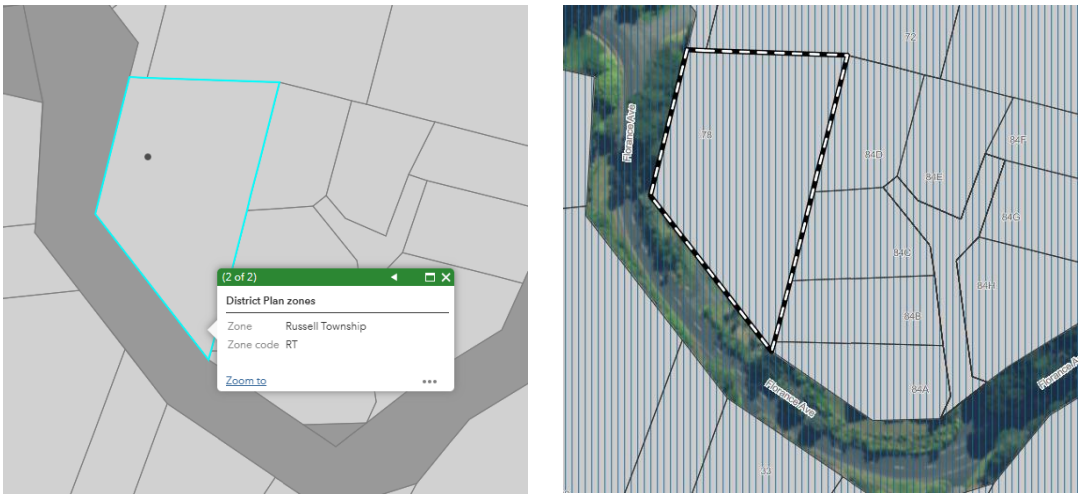
The two existing dwellings on Lots 1 and 3 are connected to Councils reticulated waster services and it is expected that the newly created vacant lot (Lot 2) will be able to connect at a time when development is proposed.

The site currently has access to power and telecommunications. Availability of these services has been confirmed by Chorus and Top Energy to accommodate the subdivision (see **Appendix E**).

Based on the assessment of environmental effects provided below, it is concluded than any potential adverse effects arising from the subdivision would be less than minor and can be mitigated through appropriate conditions of resource consent.

5.0 REASONS FOR CONSENT

The Far North District Council (**FNDC**) zones the site Russell Township Zone in the ODP and Kororāreka Russell Township in the PDP. There are no identified Resource features in the ODP. The PDP identifies the site as being within the Coastal Environment.



Figures 9 and 10: ODP and PDP zones (Source FNDC Maps)

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

Table 1 - Subdivision Performance Standards

Subdivision Performance Standard	**Comment**
Rule 13.6.1 Definition of Subdivision of Land	The application meets the definition of subdivision as defined in the Resource Management Act 1991 (**RMA**).
Rule 13.6.2 Relevant Sections of Act	These are applied to the application.
Rule 13.6.3 Relevant Sections of the District Plan	These are applied to the application.
Rule 13.6.4 Other Legislation	There are no other pieces of legislation which are triggered by the proposal.
Rule 13.6.5 Legal Road Frontage	The site is currently accessed on Florance Avenue.
Rule 13.6.6 Bonds	Not applicable
Rule 13.6.7 Consent Notices	There are no consent notices that currently apply to the site.
Rule 13.6.8 Subdivision consent before work commences	Minimal physical works will be required to complete the subdivision (if any).
Rule 13.6.9 Assessing Resource Consents	Due to exiting development and the proposed size of Lot 1 the application has a consequential stormwater management

Subdivision Performance Standard	Comment
	breach and building scale breach and is technically a discretionary activity, so conditions can be imposed relative to any associated effects.
Rule 13.6.10 Joint Applications	Not applicable
Rule 13.6.11 Joint Hearings	Not applicable
Rule 13.6.12 Suitability for Proposed Land Use	The application does not create significant risk form natural hazards and has made sufficient provision for legal and physical access to each of the allotments proposed.
Rule 13.7.2 Allotment Sizes, Dimensions and Other Standards	
Performance Standard	**Comment**
Rule 13.7.2.1 – Minimum Lot Sizes	The proposed three lot subdivision creates lots that meet the controlled activity minimum standard for sewered sites (1,000m^2). ***Controlled***
Rule 13.7.2.2 – Allotment dimensions	The new allotment can contain a 14m x 14m allotment dimension (see **Appendix B**).
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

Subdivision Performance Standard	Comment
Rule 13.7.2.9 – Proximity to National Grid	Not applicable
Rule 13.7.3 1– Property Access	Access to proposed Lots 1 and 3 is existing. While access is shared off Florence Avenue, access immediately branches off for Proposed Lot 3. Proposed Lots 1 and 2 share a 5m wide ROW access.
Rule 13.7.3.2 Natural and Other Hazards	No hazards identified.
Rule 13.7.3.3 Water Supply	Proposed Lots 1 and 3 contain existing dwellings and are serviced by rainwater tanks. No development is proposed on Lot 2 at this juncture. A consent notice can be applied at the time of development for an approved water supply method for proposed Lot 2.
Rule 13.7.3.4 Stormwater Disposal	A proposed easement will be applied over Proposed Lot 3 in favour of proposed Lots 1 and 2 for stormwater overflow from current and future water tanks. A consent notice can be applied at the time of development for an approved stormwater disposal method for proposed Lot 2.
Rule 13.7.3.5 Sanitary Sewage Disposal	Proposed Lots 1 and 3 are connected to Councils reticulated wastewater network. As the lot sizes are enabled as a controlled activity within the zone, it is expected that proposed Lot 2 will be allowed to connect to Councils reticulated wastewater network at the time of development. A consent notice can be applied at the time of development for proposed Lot 2 to install an appropriate connection.
Rule 13.7.3.6 Energy Supply	Proposed Lots 1 and 3 are connected. Proposed Lot 2 can be serviced (see **Appendix E**).
Rule 13.7.3.7 Telecommunications	Proposed Lots 1 and 3 are connected. Proposed Lot 2 can be serviced (see **Appendix E**).
Rule 13.7.3.8 Easements for any Purpose	An easement is provided over Lot 3 providing ROW, electricity, communications and water. (refer **Appendix B**).
Rule 13.7.3.9 Preservation of heritage resources, vegetation, Fauna and Landscape, and Land Set Aside for Conservation Purposes	The site does not contain any of these items. No vegetation clearance is proposed as part of the subdivision application.
Rule 13.7.3.10 Access to Reserves and Waterways	Not applicable
Rule 13.7.3.11 Land Use Compatibility	The application creates a residential site in a Russell Township zone

Subdivision Performance Standard	Comment
Rule 13.7.3.12 Proximity to Airports	Not applicable

Table 2 - Natural and Physical Resources - Performance Standards

Chapter 12 – Natural and Physical Resources	
12.1 Landscapes and Natural Features	Not applicable
12.2 Indigenous Flora and Fauna	The sites do not contain any significant areas of indigenous vegetation identified on the FNDC PNA maps. No vegetation clearance is proposed as part of the subdivision. The site does not contain any habitats of indigenous fauna.
12.3 Soils and Minerals	No earthworks are required.
12.4 Natural Hazards	Not applicable
12.5 Heritage	Not applicable
12.6 Air	Not applicable
12.7 Lakes, Rivers Wetlands and the Coastline	Not applicable
12.8 Hazardous Substances	Not applicable
12.9 Renewable Energy and Energy Efficiency	Not applicable

Table 3 - Transportation Performance Standards

Chapter 15 - Transportation	
15.1.6A.2 Traffic Intensity	The proposed subdivision will generate two additional lots. While no development is proposed at this juncture, standard residential units generate 10 one-way vehicle movements per unit in accordance with Appendix 3A – Traffic Intensity Factors. One dwelling can be reasonably expected per site and would be exempt. 60 traffic movements are permitted. **Complies**
15.1.6B.1 Parking	Proposed Lots 1 and 3 have sufficient space to accommodate two vehicles.

	No development is proposed on Lot 2 at this juncture however, it is of sufficient size to provide parking and manoeuvring for two vehicles. **Complies**
15.1.6C Access	As shown on the scheme plan, a ROW easement will be created providing access to Proposed Lots 1 and 2 and is formed to Councils engineering standards in accordance with Appendix 3B-1. Proposed Lot 3 will also gain access off Florance Avenue but branches off and does not require use of the ROW easement to access the site. While all other matters comply, the site distances attributed to the existing crossing servicing the two existing dwellings do not comply with Engineering Standards. ***Discretionary***
15.1.6C.1.8 Frontage to Existing Roads	Florance Avenue is a public road and it is assumed that it has been constructed to meet the standards in the District Plan. The proposed subdivision meets the controlled standard and is enabled by the ODP. **Complies**

Table 4 – Land Use performance Standards

Russell Township zone	
Rule 10.9.5.1.1 Relocated Buildings	No development on Lot 2 is proposed at this juncture, however it is anticipated that this site will accommodate a dwelling. This rule can be assessed, if necessary, at the time of development. **Compiles**
Rule 10.9.5.1.2 Residential Intensity	The proposed sites have been created to comply with minimum site area for sewered sites – 1,000m^2. **Compiles**
Rule 10.9.5.1.2 Scale of Activities	The existing dwellings are being used in a residential capacity. It is envisaged that the new vacant lot will be developed and used in a residential capacity. **Complies**
10.9.5.1.4 Building Height	There is no development proposed on Lot 2 at this juncture. Any proposed dwelling will need to comply with this rule.

	Complies
Rule 10.9.5.1.5 Building Scale	The existing dwelling on Proposed Lots 1 will marginally exceed a net ground floor area of 20% (estimated ~22%). No development is proposed on Lot 2 at this juncture. ***Restricted Discretionary***
10.9.5.1.6 Sunlight	No development is proposed at this juncture. The existing dwellings are legally established. **Complies**
10.9.5.1.7 Stormwater Management	Proposed Lot 1 will incur an impermeable surface of 648m^2. ***Restricted Discretionary***
10.9.5.1.8 Setback from Boundaries	No development on Lot 2 is proposed at this juncture, however it is anticipated that this site will accommodate a dwelling. The Site Suitability Report in **Appendix C** shows an indicative site plan demonstrating that all proposed lots can accommodate the setback requirements for the Russell Township zone. **Complies**
10.9.5.1.9 Outdoor Activities	No land use is proposed at this juncture **Complies**
10.9.5.1.10 Transportation	Refer to Table 3 above **Complies**
10.9.5.1.11 Hours of Operation – Non-Residential Activities	No land use is proposed at this juncture **Complies**
10.9.5.1.12 Keeping of Animals	Not proposed **Complies**
10.9.5.1.13 Noise	It is envisaged that the sites will be used in a residential capacity. **Complies**
10.9.5.1.14 Helicopter Landing Area	It is envisaged that the sites will be used in a residential capacity. **Complies**

Overall, this subdivision application falls to be considered as a **Discretionary activity** due to more than one breach.

In terms of the PDP, the following rules are assessed in Table 5 below.

Table 5 –Relevant Rules in the PDP

Proposed District Plan				
Matter	**Rule/Std Ref**	**Relevance**	**Compliance**	**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	N/A	Yes	Not proposed.
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)	N/A	Yes	Not indicated on Far North Proposed District Plan
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	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	N/A	Yes	Not indicated on Far North Proposed District Plan

historic item on the maps) This chapter applies to scheduled heritage resources – which are called heritage items 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	N/A	Yes	Not indicated on Far North Proposed District Plan
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	N/A	Yes	Not indicated on Far North Proposed District Plan
Ecosystems and Indigenous Biodiversity SNA are not mapped – will need to determine if indigenous vegetation on the site for example	All rules have immediate legal effect (IB-R1 to IB-R5)	N/A	Yes	Not indicated on Far North Proposed District Plan. No vegetation clearance proposed.

Activities on the Surface of Water	All rules have immediate legal effect (ASW-R1 to ASW-R4)	N/A	Yes	Not indicated on Far North Proposed District Plan
Earthworks all earthworks (refer to new definition) need to comply with this	The following rules have immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	Yes	Yes	No earthworks are proposed. Any future earthworks will be in accordance with the relevant standards including GD-05 and will have an ADP applied.
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	N/A	Yes	Not indicated on Far North Proposed District Plan
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	N/A	Yes	Not indicated on Far North Proposed District Plan

No consents are required under the PDP.

Having considered the proposal against the Proposed Regional Plan, no regional council consents are required.

Overall, consent is required as a **Discretionary Activity**.

6.0 STATUTORY CONSIDERATIONS

Section 104B 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.

With respect to Discretionary activities, a consent authority may grant or refuse the application, and may impose conditions under section 108 of the RMA.

Section 104 of the RMA sets out matters to be considered when assessing an application for a resource consent,

104 Consideration of applications

(1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2 and section 77M, 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 to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and

(b) 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

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

This application is principally a three-lot subdivision, promoted at a density supported as a controlled activity in the ODP. Two of the proposed lots currently accommodate a dwelling with one Lot vacant, being able to accommodate a dwelling at a later juncture. The geotechnical report in **Appendix D** concludes that it is satisfied that future Lot 2 should be generally suitable for future residential construction in terms of NZS3604:2011, subject to future site-specific development design being in accordance with our recommendations given in the report.

The application for subdivision has been assessed under the matters of control in Table 1 above. The subdivision can meet all the required standards and is therefore considered to incur less than minor effects on the environment. It is considered that a consent notice can be applied to Lot 2 to ensure that the appropriate services can be provided at the time of development. No further assessment needs to be applied to the subdivision component of this application.

The land use breaches resulting from the existing consented development on the site (building scale, stormwater management and Transportation) are addressed under s104 and discussed below and have been guided, where relevant, by the assessment criteria in section 13.10 of the ODP.

No Regional Plan matter is considered to be pertinent to the considerations as no consents are required in this respect.

Those relevant s104 considerations are addressed and followed by an assessment of Part II matters as they apply to the application.

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

Building Scale

The effects on adjacent properties are considered to be negligible. The dwelling on Proposed Lot 1 already exists in its current location and no alterations are proposed. The proposed subdivision is a change to the property boundaries and does not alter the physical building in any way. Therefore, there will be no new or additional effects on neighbouring properties in terms of visual domination, overshadowing, privacy, or access to light.

Mitigation is not required as no new adverse effects are being generated. The building's position is fixed, and its relationship with neighbouring properties will not change as a result of the subdivision. The breach is a technical consequence of the new lot configuration, not a result of new construction that would necessitate mitigation measures like landscaping or increased setbacks.

The scale of the existing building is compatible with the surrounding environment. The dwelling forms part of the existing residential character of the area. A minor 2% exceedance of the building scale standard is not considered to result in a building that is out of character or visually inconsistent with other residential developments in the Russell Township zone.

The spatial relationship between the dwelling on Proposed Lot 1 and adjacent units is already established and will not be altered by this proposal. The subdivision does not physically change the location or size of the building, nor does it affect the use or enjoyment of outdoor space on any adjacent properties.

The activity is residential use, which is an anticipated and permitted activity within the Russell Township Zone. The subdivision does not change the nature of this activity. The effects generated by the residential use are consistent with those expected in the zone and are not influenced by the minor building scale breach.

It is considered that any effects associated with Building scale will be less than minor.

Stormwater management

The impermeable surface on Proposed Lot 1 will be approximately 648m^2, or 39.9% of the net site area, which exceeds the 35% permitted activity threshold.

A comprehensive assessment against the District Plan criteria is provided within the Civils report in **Appendix C**. As such I will not repeat it here. The report proposes two specific engineering solutions to manage the excess runoff for proposed Lot 1. These are either retrofitting the existing rainwater tanks or installing a new ~3,000L detention tank.

The report concludes that with this mitigation in place, hydrological neutrality will be achieved, and stormwater runoff will be effectively mitigated to the Permitted Activity threshold. Therefore, any potential adverse effects from stormwater runoff will be less than minor.

Transportation

The Civil Report (**Appendix C**) confirms that the existing vehicle crossing onto Florance Avenue does not meet the minimum sight distance requirements of the FNDC Engineering Standards. The standards require a minimum of 60m, while the available distances are 30m (northbound) and 47m (southbound).

While this is a non-compliance, the Civil Report notes that the suitability of the access is at Council's discretion and provides the following mitigating factors in support of the application:

- The actual operating speed of vehicles on this section of Florance Avenue is likely lower than the posted 50km/h speed limit due to the winding nature of the road;
- There is no feasible alternative location for a vehicle crossing on the property's frontage that would provide better sight distances; and
- The potential risks can be further mitigated by trimming vegetation within the road berm to improve visibility and by implementing "concealed exit" signage on Florance Avenue if required by Council.

Given these factors, the existing access has operated for many years without known incident and serves two existing dwellings. The addition of one future dwelling is a minor increase in traffic intensity. It is therefore considered that the adverse effects associated with the non-compliant sight distances are acceptable and no more than minor.

Section 104 (1)(ab) Any measures to achieve positive effects

Positive effects arising from the subdivision include enabling the efficient use of land in the Russell Township zone. The density proposed through this subdivision is enabled as a controlled activity within the Russell Township zone.

Section 104 (b)(i) and (ii) National Environmental Standards & Other Regulations

The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS). A review of Council records has revealed no evidence to suggest that a HAIL activity has previously been undertaken on site and is described in the Landcover database as ‘Built-up Area (settlement)’.

The NES for Freshwater (NESFW). A review of aerial images, including NRC’s wetland maps, reveal no evidence to suggest that there are any wet areas that may be subject to the NESFW provisions. Therefore, no further assessment is required under the NESFW.

Section 104 (b)(iii) National Policy Statement(s)

There are not considered to be any relevant National Policy Statements applicable to this site or application.

Section 104 (b)(iv) New Zealand Coastal Policy Statement (NZCPS)

The site is identified within the coastal environment within the Regional Policy Statement for Northland (NPS). The proposed subdivision is a controlled activity within the ODP, as such the development is anticipated and enabled in this location and zone. The proposal is therefore considered to be consistent with the NZCPS.

Section 104 (b)(v) Regional Policy Statement or Proposed Regional Policy Statement

The Northland Regional Policy Statement is the applicable regional statutory document that applies to the Northland region. Jurisdiction for subdivision is governed by the FNDC and the policy framework for establishing an appropriate land use pattern across the district is set out in the ODP. This Plan is subject to the governing regional policy framework set out in the Northland Regional Policy Statement.

Table 6 – NRC Regional Policy Statement Review Assessment

Regional Policy Statement for Northland	
Objective / Policy	**Assessment**
Integrated Catchment Management	Not relevant.
Region Wide Water Quality	Not relevant.
Ecological Flows and Water Quality	Not relevant.
Enabling Economic Wellbeing	The proposal will increase economic wellbeing for the applicants, local building and construction suppliers at a later juncture when land use is undertaken.
Economic Activities – Reverse Sensitivity and Sterilisation.	The purpose of the subdivision is to provide establish residential sections commensurate with the surrounding land use pattern. There are no reverse sensitivity or sterilisation effects from the proposal as it is being development in accordance the zones intent.
Regionally Significant Infrastructure	Not relevant.
Efficient and Effective Infrastructure	Council reticulated wastewater is available at the boundary of the site, as is stormwater infrastructure. The subdivision has been designed so it can utilise these services, other infrastructure can be addressed and accommodated on site.
Security of Energy Supply	Top Energy have confirmed that the subdivision can be connected (see **Appendix E**).
Use and Allocation of Common Resources	Not relevant.
Regional Form	The proposal does not result in any reverse sensitivity or change in character. The subdivision will provide for residential lots at an intensity enabled by the zone.
Tangata Whenua Role in Decision Making	Not considered necessary as the subdivision itself is a controlled activity.

Natural Hazard Risk	Natural Hazards are not considered to be a factor for this application.
Natural Character, Outstanding Natural Features, Outstanding Natural Landscapes and Historic Heritage	While the site is located within the Coastal Environment, the scale of the proposed subdivision is anticipated and enabled by the ODP. It is therefore considered appropriate.

Section 104 (b)(vi) Plans or Proposed Plans

This subdivision application is subject to the provisions of the ODP and is subject to consideration (limited weight) of the PDP objectives and policies. The site is zoned Russell Township in the ODP and Kororāreka Russell Township in the PDP.

As the subdivision itself is a controlled activity in the ODP there is no need or requirement to undertake an assessment of the objectives and policies of the subdivision chapter as the effects are well understood and the activity of subdivision itself in this zone is anticipated and enabled.

Within the PDP the subdivision would also be considered as a controlled activity, and for the same reasons given for the ODP, the objectives and policies within the zone would support this application.

As the application incurs consequential breaches to building scale, stormwater management and Transportation, the application becomes a discretionary activity, and an assessment of objectives and policies are expected. As such, this assessment is proved below.

Table 7 – Coastal Environment - Objectives and Policies

Objective/Policy		**Assessment**
Objectives		
10.3.1	To manage coastal areas in a manner that avoids adverse effects from subdivision, use and development. Where it is not practicable to avoid adverse effects from subdivision use or development, but it is appropriate for the development to proceed, adverse effects of subdivision use or development should be remedied or mitigated.	The proposed subdivision provides for a residential density at a controlled activity status. Despite the rule consequential breaches associated with existing dwellings and access, it represents a land use pattern typical within the zone.
10.3.2	To preserve, and where appropriate in relation to other objectives, to restore, rehabilitate protect or enhance: • the natural character of the coastline and coastal environment;	The site is zoned Russell Township. Residential development and activity promoted through the subdivision application are anticipated and enabled in this zone.

	• areas of significant indigenous vegetation and significant habitats of indigenous fauna; • outstanding landscapes and natural features; • the open space and amenity values of the coastal environment; • water quality and soil conservation (insofar as it is within the jurisdiction of the Council).	It is considered that the existing consented dwellings on proposed Lots 1 and 3 are consistent with the matters set out in the Objective. Any future development on proposed Lot 2 will need to comply with the zone standards.
10.3.3	To engage effectively with Māori to ensure that their relationship with their culture and traditions and taonga is identified, recognised and provided for.	This is not considered necessary as the subdivision itself is a controlled activity and the effects of residential development at the proposed density in this zone is well understood. The dwellings on the property are existing, no further development is proposed at this juncture.
10.3.4	To maintain and enhance public access to and along the coast whilst ensuring that such access does not adversely affect the natural and physical resources of the coastal environment, including Māori cultural values and public health and safety.	The proposal will have no effect on public access to or along the coast. The proposed development site does not adjoin the CMA.
10.3.5	To secure future public access to and along the coast, lakes and rivers (including access for Māori) through the development process and specifically in accordance with the Esplanade Priority areas maps in the District Plan.	Refer to comments on 10.3.4 above.
10.3.6	To minimise adverse effects from activities in the coastal environment that cross the Coastal Marine Area boundary.	Not applicable.
10.3.7	To avoid, remedy or mitigate adverse effects on the environment through the provision of adequate land-based services for mooring areas, boat ramps and other marine facilities.	Not applicable.

10.3.8	To ensure provision of sufficient water storage to meet the needs of coastal communities all year round.	This is a general objective for coastal communities as a whole, it is not considered applicable to this application.
10.3.9	To facilitate the sustainable management of natural and physical resources in an integrated way to achieve superior outcomes to more traditional forms of subdivision, use and development through management plans and integrated development.	Not applicable.
Policies		
10.4.1	That the Council only allows appropriate subdivision, use and development in the coastal environment. Appropriate subdivision use and development is that where the activity generally: (a) recognises and provides for those features and elements that contribute to the natural character of an area that may require preservation, restoration or enhancement; and (b) is in a location and of a scale and design that minimises adverse effects on the natural character of the coastal environment; and (c) has adequate services provided in a manner that minimises adverse effects on the coastal environment and does not adversely affect the safety and efficiency of the roading network; and Continued…	Refer to comments on 10.3.1 above.
10.4.2	That sprawling or sporadic subdivision and development in the coastal environment be avoided through the consolidation of subdivision and development as far as practicable, within or adjoining built up areas, to the extent that this is consistent with the other objectives and policies of the Plan.	The subdivision is located within an urban environment at a density enabled within the zone as a controlled activity.
10.4.3	That the ecological values of significant coastal indigenous	Refer to comments on 10.4.2 above.

	vegetation and significant habitats are maintained in any subdivision, use or development in the coastal environment.	
10.4.4	That public access to and along the coast be provided, where it is compatible with the preservation of the natural character, and amenity, cultural, heritage and spiritual values of the coastal environment, and avoids adverse effects in erosion prone areas;	Not applicable.
10.4.5	That access by tangata whenua to ancestral lands, sites of significance to Maori, maahinga mataitai, taiapure and kaimoana areas in the coastal marine area be provided for in the development and ongoing management of subdivision and land use proposals and in the development and administration of the rules of the Plan and by non-regulatory methods. Refer Chapter 2, and in particular Section 2.5, and Council's Tangata Whenua Values and Perspectives (2004).	There are no identified historic heritage sites on this property. The proposal will not affect the ability of Māori to access or use the coastal waters in the vicinity.
10.4.6	That activities and innovative development including subdivision, which provide superior outcomes and which permanently protect, rehabilitate and/or enhance the natural character of the coastal environment, particularly through the establishment and ongoing management of indigenous vegetation and habitats, will be encouraged by the Council.	This policy is directed at larger scale development. The subdivision is located within an urban environment at a density enabled within the zone as a controlled activity.
10.4.7	To ensure the adverse effects of land-based activities associated with maritime facilities including mooring areas and boat ramps are avoided, remedied or mitigated through the provision of adequate services, including where appropriate: (a) parking (b) rubbish disposal (c) waste disposal	Not applicable.

	(d) dinghy racks	
10.4.8	That development avoids, remedies or mitigates adverse effects on the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, waahi tapu and other taonga.	Refer to 10.4.5 above.
10.4.9	That development avoids, where practicable, areas where natural hazards could adversely affect that development and/or could pose a risk to the health and safety of people.	There are no natural hazards identified on the property, nor is any development proposed.
10.4.10	To take into account the need for a year-round water supply, whether this involves reticulation or on-site storage, when considering applications for subdivision, use and development.	Sufficient water storage for both domestic consumption and fire-fighting will be provided on site.
10.4.11	To promote land use practices that minimise erosion and sediment run-off, and storm water and waste water from catchments that have the potential to enter the Coastal Marine Area.	This has been achieved by connecting to the Council infrastructure for wastewater disposal and stormwater.
10.4.12	That the adverse effects of development on the natural character and amenity values of the coastal environment will be minimised through: (a) the siting of buildings relative to the skyline, ridges, headlands and natural features; (b) the number of buildings and intensity of development; (c) the colour and reflectivity of buildings; (d) the landscaping (including planting) of the site; (e) the location and design of vehicle access, manoeuvring and parking areas.	These matters are addressed within the application.

Table 7 - Objectives and Policies for the Russell Township Zone

Objective/Policy		**Assessment**
Objectives		
10.9.3.1	To achieve the continued growth and development of Russell in a way which	The breaches are a consequence of a controlled activity subdivision. As such,

	maintains its special historic and amenity values and minimises adverse effects on the natural environment.	the density is anticipated and enabled by the Russell Township zone and is therefore assumed to maintain the special historic and amenity values of Russell.
Policies		
10.9.4.1	That opportunities be provided for activities to establish within the zone at a level of effect consistent with the existing development.	This controlled subdivision is consistent with existing development within this area.
10.9.4.2	That residential activities have sufficient land associated with each household unit to provide for outdoor space, and where a reticulated sewerage system is not provided, sufficient land for onsite effluent disposal.	The controlled subdivision design will ensure sufficient land can be utilised for outdoor space. The proposal has access to reticulated infrastructure services for wastewater and stormwater.
10.9.4.3	That the portion of a site or of a development that is covered in buildings and other impermeable surfaces be limited to allow for open space and landscaping around buildings and to reduce total impermeable area and its adverse hydrological, ecological and amenity effects.	The impermeable surfaces on the property are existing and will not be changed through this application for subdivision. The site currently contains two dwellings and a sealed driveway. To ensure that the subdivision complies with the controlled standard, proposed lot 1 (the largest lot) needs to assume the bulk of the impermeable surface. The site suitability report in **Appendix C** ensures that the effects form the impermeable surfaces can be mitigated.
10.9.4.4	That sites, and the buildings and activities which may locate on those sites, have adequate access to sunlight and daylight.	The proposal complies.
10.9.4.5	That activities with net effects that exceed those of a typical single residential unit, be required to avoid, remedy or mitigate those effects with respect to the ecological and the amenity values and general peaceful enjoyment of adjacent residential activities.	The proposal is consistent in terms of effects with a single residential unit on proposed Lots 1 and 3. No development is proposed at this juncture for proposed Lot 2.
10.9.4.6	That a reasonable level of privacy and peaceful enjoyment be provided for residents.	This is accommodated by the proposal.

10.9.4.7	That the significance of Russell is recognised and its intrinsic historic value is preserved by protecting its special character.	The property does not have any identified historic sites on it.
10.9.4.8	That the special character of Russell be protected by: (a) providing additional controls in areas of Russell where groups of buildings, places or objects have significant historical associations or characteristics and protecting those buildings which are most important as examples of period styles; (b) retaining the visual dominance of natural landforms in the Russell Township Basin and Gateway area (as defined on Maps 89 and HP4); (c) ensuring development in the Gateway Area of Matauwhi Bay (as defined on Maps 89 and HP4) reflects its role as an entrance to Russell and that activities are of a scale and size that is consistent with that of Russell itself and appropriate to the character of the Bay; (d) maintaining as far as practicable the informal blending of land uses that have evolved to contribute to the village atmosphere of Russell; (e) protecting and fostering the small size and pedestrian scale of Russell; and (f) ensuring public works and the provision of utility services are carried out in a manner consistent with the special character of Russell.	The proposal for a controlled subdivision is considered to be consistent with this policy. The existing development on the site has incurred consequential breaches resulting from the proposed subdivision, the effects of which are considered to be less than minor and can be mitigated.

An assessment has been undertaken looking at the Coastal Environment and the Kororāreka Russell Township zone in the PDP.

Table 9 - Objectives and Policies from PDP Coastal Environment

Objectives	Assessment
CE-O1 - The natural character of the coastal environment is identified and managed to ensure	The natural character of the coastal environment is not anticipated to be adversely affected by the proposal

its long-term preservation and protection for current and future generations.	given the proposed subdivision is proposed at a density commensurate with a controlled activity, which is enabled by the PDP.
CE-O2 - Land use and subdivision in the coastal environment: a. preserves the characteristics and qualities of the natural character of the coastal environment; b. is consistent with the surrounding land use; c. does not result in urban sprawl occurring outside of urban zones; d. promotes restoration and enhancement of the natural character of the coastal environment; and e. recognises tangata whenua needs for ancestral use of whenua Māori.	The proposal is anticipated to meet this objective for the reasons mentioned above (objective CE-O1).
CE-O3 - Land use and subdivision in the coastal environment within urban zones is of a scale that is consistent with existing built development.	The proposal can meet this objective as it is consistent with neighbouring properties in terms of built development.
Policies	
CE-P1 - Identify the extent of the coastal environment as well as areas of high and outstanding natural character using the assessment criteria in APP1- Mapping methods and criteria.	This policy is met by the Council's PDP mapping tools.
CE-P2 - Avoid adverse effects of land use and subdivision on the characteristics and qualities of the coastal environment identified as: a. outstanding natural character; b. ONL; c. ONF.	The site does not include any of these features on it.
CE-P3 - Avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of land use and subdivision on the characteristics and qualities of the coastal environment not identified as: a. outstanding natural character; b. ONL; c. ONF.	The proposal is not anticipated to create significant adverse effects on the characteristics and qualities of the coastal environment.
CE-P4 - Preserve the visual qualities, character and integrity of the coastal environment by: a. consolidating land use and subdivision around existing urban centres and rural settlements; and	The proposal is within a zoned residential area.

b. avoiding sprawl or sporadic patterns of development.	
CE-P5 - Enable land use and subdivision in urban zones within the coastal environment where: a. there is adequacy and capacity of available or programmed development infrastructure; and b. the use is consistent with, and does not compromise the characteristics and qualities.	The proposal is consistent with development on other sites within this area. Therefore, characteristics and qualities will be maintained. Existing infrastructure is also able to support the proposed dwelling.
CE-P6 – Enable farming activities within the coastal environment where: a. the use forms part of the values that established natural character of the coastal environment; or b. the use is consistent with, and does not compromise the characteristics and qualities.	Not applicable.
CE-P7 - Provide for the use of Māori Purpose zoned land and Treaty Settlement land in the coastal environment where: a. the use is consistent with the ancestral use of that land; and b. the use does not compromise any identified characteristics and qualities.	Not applicable.
CE-P8 - Encourage the restoration and enhancement of the natural character of the coastal environment.	No further development is proposed. The density proposed though the subdivision is enabled as a controlled activity, therefore it is considered to be consistent of the natural character anticipated in this location.
CE-P9 - Prohibit land use and subdivision that would result in any loss and/or destruction of the characteristics and qualities in outstanding natural character areas.	The property is not considered an outstanding natural character area.
CE-P10 - Manage land use and subdivision to preserve and protect the natural character of the coastal environment, and to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application: a. the presence or absence of buildings, structures or infrastructure; b. the temporary or permanent nature of any adverse effects;	The specified matters are considered to be adequately addressed within the application. Principally the application is for a controlled subdivision density and is consistent with the natural character anticipated in this location.

c. the location, scale and design of any proposed development; d. any means of integrating the building, structure or activity; e. the ability of the environment to absorb change; f. the need for and location of earthworks or vegetation clearance; g. the operational or functional need of any regionally significant infrastructure to be sited in the particular location; h. any viable alternative locations for the activity or development; i. any historical, spiritual or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6; j. the likelihood of the activity exacerbating natural hazards; k. the opportunity to enhance public access and recreation; l. the ability to improve the overall quality of coastal waters; and m. any positive contribution the development has on the characteristics and qualities.	

Table 10 - Objectives and Policies from PDP Kororāreka Russell Township zone

Objectives	Assessment
KRT-O1 - The Kororāreka Russell Township zone provides for residential and non-residential activities that: a. are compatible with the historic heritage values of the zone; b. maintain the character and amenity of the receiving environment; and c. recognise and protect any part of a site subject to the coastal environment, or High Natural Character.	The natural character of the coastal environment is not anticipated to be adversely affected by the proposal given the proposed subdivision is proposed at a density commensurate with a controlled activity, which is enabled by the PDP.
KRT-O2 - Land use and subdivision in the Kororāreka Russell Township zone recognises and protects the natural character, landscape, historic heritage, amenity and cultural values of the site and surrounding area.	The proposal is anticipated to meet this objective for the reasons mentioned above (objective KRT-O1).
KRT-O3 - Non-residential activities contribute to the function and well-being of the community while	Not applicable.

complementing the character, scale and amenity of the Kororāreka Russell Township zone.	
KRT-O4 - Land use and subdivision in the Kororāreka Russell Township zone is supported by appropriate infrastructure.	The site can be serviced by existing infrastructure that is available at the boundary.
KRT-O5 - Land use and subdivision in the Kororāreka Russell Township Zone provides communities with functional and high amenity living environments.	The proposal is anticipated to meet this objective for the reasons mentioned above (objective KRT-O1).
Policies	
KRT-P1 - Enable land use and subdivision in the Kororāreka Russell Township zone where: a. landscaping and areas of open space are maintained around buildings on the site; b. it is consistent with scale, character and design anticipated in the surrounding residential environment; c. there is appropriate infrastructure to support residential and non-residential development; d. heritage resources are protected; and e. values of coastal environment and High Natural Character are recognised and protected.	Refer KRT-O1
KRT-P2 - Require all subdivision in the Kororāreka Russell Township zone to provide the following reticulated services to the boundary of each lot: a. telecommunications; i. fibre where it is available; or ii. copper where fibre is not available; b. local electricity distribution network; and c. wastewater, portable water and stormwater where they are available.	Where available these services are provided at the boundary.
KRT-P3 - Provide for a variety of housing typologies within the Kororāreka Russell Township zone, where land is appropriately serviced by infrastructure and does not compromise historic heritage and amenity values.	Two consented dwellings already exist. While no development is proposed at this juncture, a dwelling will be able to be placed on proposed Lot 2 at a later time.
KRT-P4 - Enable non-residential activities that: a. are of a residential scale; b. support the social and economic well-being of the community; c. do not detract from the vitality and viability of the adjoining Mixed-Use zone; and	Not applicable.

d. avoid, remedy or mitigate adverse effects on the residential and, amenity, and function of the Kororāreka Russell Township zone.	
KRT-P5 - Provide for retirement villages where they: a. contribute to the diverse needs of the community; b. can be appropriately serviced by development infrastructure; c. compliment the character and amenity values of the surrounding area; and d. address road safety and efficiency.	Not applicable.
KRT-P6 – Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application: a. the public benefit of the proposed activity; b. the siting and design of buildings, structures, outdoor storage areas, parking, internal roading and vegetation; c. any adverse effects on the character and amenity of adjacent zones; d. the temporary or permanent nature of any adverse effects; e. the need for and location of earthworks and vegetation clearance; f. the provision of low impact design principles; and g. the likelihood of the activity creating or exacerbating a natural hazard. h. the protection of: i. historic heritage; ii. Indigenous biodiversity; iii. the natural character of the coastal environment and margins of wetlands, lakes and rivers; iv. landforms; v. sites and areas of significance to Māori and cultural values; and vi. identified and potential public access corridors and esplanade reserves; i. provision for areas of open space and outdoor living space; j. provision of landscaping, screening and planting;	The specified matters are considered to be adequately addressed within the application. Principally the application is for a controlled subdivision density and is consistent with development anticipated in this location.

k. consistency with the design, character, scale and amenity of the surrounding residential environment; l. level of privacy, visual dominance and shading effects on adjoining sites; m. protection of pedestrian scale, layout and development within Kororāreka Russell; n. sunlight and daylight access; o. the adequacy of available or programmed development infrastructure; p. level of integration with other activities within the zone; q. hours of operation; r. provision for car parking; s. integration and connectivity within the surrounding road network; t. the ability of the site to address waste water, stormwater, soakage, water supply including fire fighting; u. community well-being, health and safety; v. number of planned or potential people on site; w. any site constraints or natural hazard mitigation; and x. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.	

Overall, it is considered that the proposal is consistent with the PDP Kororareka Russell Township zone objective and policy framework.

Section 104 (c) Other Matters

There are no other matters that are considered relevant.

7.0 NOTIFICATION

S95A of the RMA determines circumstances when public or limited notification of an application may be appropriate. Section 95A sets out a series of steps for determining public notification. These include:

- Step 1 – Mandatory public notification in certain circumstances. In respect of this application, the applicant is not seeking public notification, nor is it subject to a mandatory notification requirement.

- Step 2 – Public notification precluded in certain circumstances. Overall the application is for a controlled subdivision, however consequential land use breaches occur as a result making the application discretionary. None of the circumstances in this step apply.

- Step 3 – Public notification required in certain circumstances. In respect of clause 8(a) the application is not subject to a rule or national environmental standard that requires public notification. In respect of clause 8(b), this assessment of effects on the environment concludes that any adverse effects would be less than minor. For these reasons, it is considered that the application can be processed without public notification.

- Step 4 – Public notification in special circumstances. 'Special circumstances' are those that are unusual or exceptional, but they may be less than extraordinary or unique. (Peninsula Watchdog Group Inc v Minister of Energy [1996] 2NZLR 5290). It is considered that there are no unusual or exceptional circumstances that would warrant notification of this application.

Section 95B sets out a series of steps for determining limited notification. These include:

- Step 1 – certain affected groups and affected persons must be notified. These include affected customary rights groups or marine title groups (of which there are none relating to this application). Affected groups and persons may also include owners of adjacent land subject to statutory acknowledgement if that person is affected in accordance with s95E. There are no groups or affected persons that must be notified with this application.

- Step 2 – limited notification precluded in certain circumstances. These include any rule or national environmental standard that precludes limited notification, or the activity is solely for a controlled activity or a prescribed activity. These circumstances do not apply to this application.

- Step 3 – certain other persons must be notified. An affected person is determined in accordance with s95E. A person is affected if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor). Adverse effects on a person may be disregarded if a rule or a national environmental standard permits an activity with that effect or is a controlled or RDA with an adverse effect that does not relate to a matter over which a rule or standard reserves control or discretion. Those circumstances do not apply to this application. S95E(3) states that a person is not affected if the person has given, and not withdrawn their written approval for a proposed activity or a consent authority is satisfied that it is unreasonable in the circumstances for an applicant to seek a person's written approval.

- Step 4 – Public notification in special circumstances. As above no special circumstances exist.

The assessment of effects above has concluded that the effects on the environment will be less then minor. The proposed subdivision density is enabled as a controlled activity in the ODP and is commensurate with surrounding environment.

It is therefore reasonable to conclude that the effects of the proposed three lot subdivision would incur less than minor effects on the adjacent landowners.

Section 95C relates to the public notification after a request for further information which does not apply to this application. Section 95D provides the basis for determining notification under Section 95A(8)(b) if adverse effects are likely to be more than minor.

This assessment concludes that potential adverse effects arising from this subdivision proposal would be less than minor, as such it can proceed on a non-notified basis.

8.0 PART II – RMA

Purpose of the RMA

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

It is considered that proposal represents a sustainable use of existing resources that allow people and the community to provide for its social and economic wellbeing in a manner that mitigates adverse effects on the environment.

Matters of National Importance

In achieving the purpose of the Act, a range of matters are required to be recognised and provided for. This includes:

a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:

b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:

c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:

d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:

e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:

f) the protection of historic heritage from inappropriate subdivision, use, and development:

g) the protection of protected customary rights:

h) the management of significant risks from natural hazards.

In context, the relevant items to the proposal and have been recognised and provided for in the design of the residential development.

Other Matters

In achieving the purpose of the Act, a range of matters are to be given particular regard. This includes:

(a) kaitiakitanga:

(aa) the ethic of stewardship:

(b) the efficient use and development of natural and physical resources:

(ba) the efficiency of the end use of energy:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic values of ecosystems:

(e) [Repealed]

(f) maintenance and enhancement of the quality of the environment:

(g) any finite characteristics of natural and physical resources:

(h) the protection of the habitat of trout and salmon:

(i) the effects of climate change:

(j) the benefits to be derived from the use and development of renewable energy.

These matters have been given particular regard through the design of the proposal.

9.0 CONCLUSION

This application is principally a controlled subdivision within the Russell Township Zone. The application falls to be a discretionary resource consent as a result of

consequential land use breaches resulting from existing consented development on the site.

The assessment of effects on the environment concludes that for the reasons outlined in the application, the effects of undertaking this proposal will be less than minor on the surrounding environment.

The proposal is not precluded from public notification and is considered to have less than minor effects on the wider environment. Through assessment, there are considered to be no affected persons.

The proposal is consistent with the objectives and policies of the ODP, PDP, the Regional Policy Statement for Northland, and achieves the purpose of the RMA.

Given the assessment carried out in this report, it is considered that this proposal can be determined non-notified under the RMA.

We would appreciate the review of draft conditions when available.

Kind regards

Andrew McPhee
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 **NA64C/838**

Land Registration District **North Auckland**

Date Issued 18 May 1988

Prior References
NA934/281

Estate Fee Simple

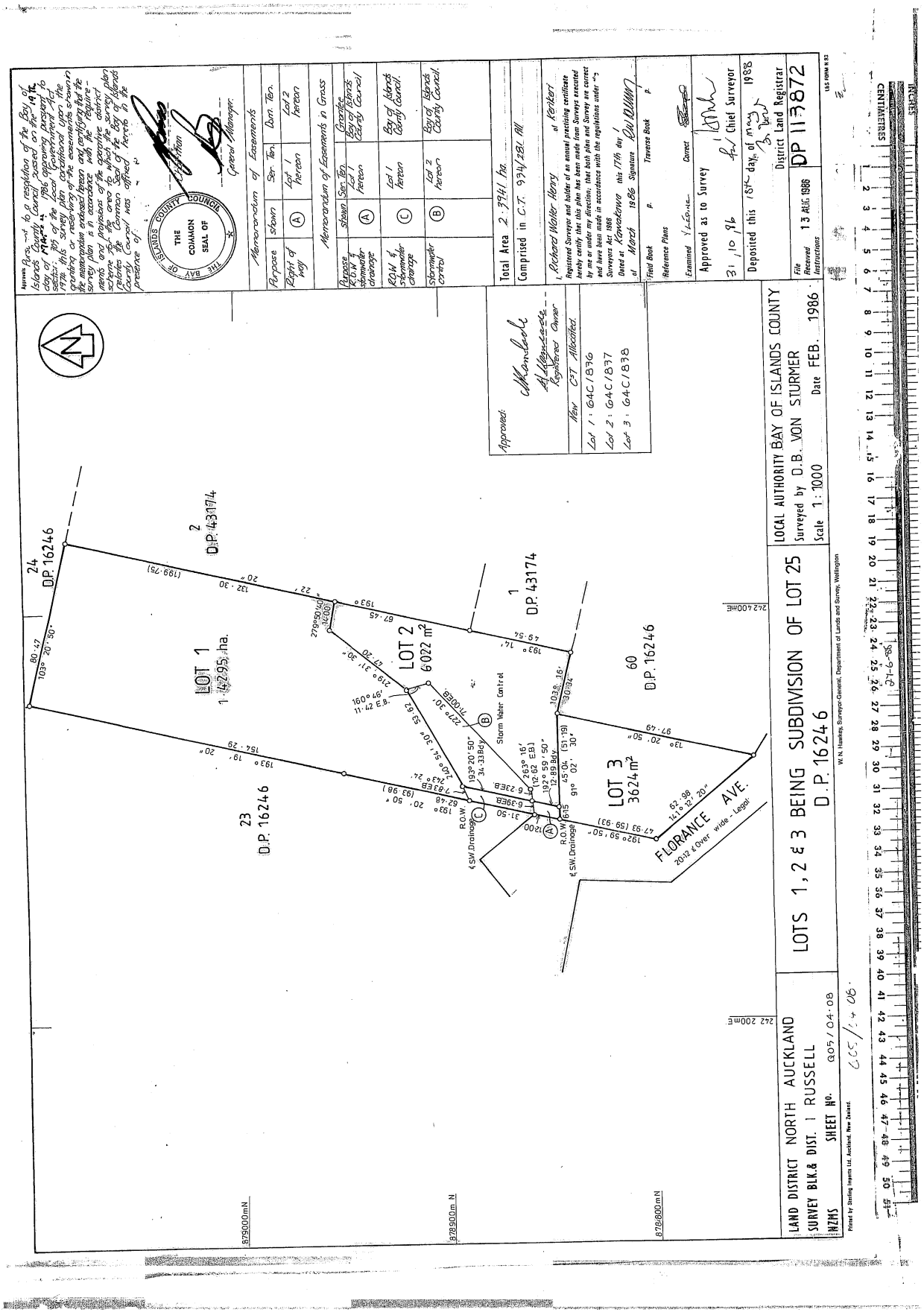
Area 3624 square metres more or less

Legal Description Lot 3 Deposited Plan 113872

Registered Owners
Natissa Karen Kamlade

Interests

Fencing Agreement in Transfer 458644


LOCAL AUTHORITY BAY OF ISLANDS COUNTY
Surveyed by D.B. VON STURMER
Scale 1:1000
Date FEB. 1986
LOTS 1, 2 & 3 BEING SUBDIVISION OF LOT 25
D.P. 16246
LAND DISTRICT NORTH AUCKLAND
SURVEY BLK. & DIST. I RUSSELL
SHEET No. 05/04-08
NZMS
Approved as to Survey
31/10/86
Chief Surveyor
Deposited this 18th day of May 1988
District Land Registrar
File Received 13 AUG 1986
DP 113872
Memorandum of Easements
Purpose
Shown
Servient Tenement
Dominant Tenement
Right of way
(A)
Lot 1 Hereon
Lot 2 Hereon
Memorandum of Easements in Gross
Purpose
Shown
Servient Tenement
Grantee
R.O.W & Stormwater drainage
(A)
Lot 1 Hereon
Bay of Islands County Council
R.O.W & Stormwater drainage
(C)
Lot 1 Hereon
Bay of Islands County Council
Stormwater control
(B)
Lot 2 Hereon
Bay of Islands County Council
Total Area 2.3741 ha.
Comprised in C.T. 934/281 All
I, Richard Walter Henry of Kerikeri
Registered Surveyor and holder of an annual practising certificate
Hereby certify that this plan has been made from Surveys executed by me or under my direction; that both plan and Survey are correct and have been made in accordance with the regulations under the Surveyors Act 1966
Dated at Kawakawa this 17th day of March 1986
Signature
Field Book p. Traverse Book p.
Reference Plans
Examined Correct
New C/T Allocated
Lot 1: 64C/836
Lot 2: 64C/837
Lot 3: 64C/838
Approved:
A Registered Owner
THE BAY OF ISLANDS COUNTY COUNCIL
THE COMMON SEAL OF
General Manager
LOT 1
1.4795 ha.
LOT 2
6022 m²
LOT 3
3624 m²
24 D.P. 16246
2 D.P. 43174
1 D.P. 43174
60 D.P. 16246
23 D.P. 16246
Storm Water Control
R.O.W & SW Drainage
FLORANCE AVE.
20.12 & Over wide - Legal
879000mN
878900mN
878800mN
242.400mE
242.200mE
W.N. Hawkes, Surveyor-General, Department of Lands and Survey, Wellington
Printed by Sterling Imrens Ltd. Auckland, New Zealand.

N

MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT OF WAY ELECTRICITY TELECOMMUNI- CATIONS WATER	(A)	LOT 3 HEREON	LOTS 1-2 HEREON

NOTES

Dimensions 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 78 Florance Ave, Russell	04/06/25	TW	DC	TW

BOI SURVEY

BOI SURVEY LTD
55B Shepherd Road
Kerikeri 0230

e: Tony@boisurvey.co.nz

PROPOSED SUBDIVISION OF LOT 3 DP 113872

SCHEME PLAN - 78 FLORANCE AVENUE, RUSSELL

CLIENT: KAMLADE

JOB NO:		Scale:
5066		1:500 @ A3
Level Datum: NZVD 2016	Origin: -	Co-ord System: NZGD 2000
Drawing Number: 5066-001	Revision: A	Sheet: 1 of 1

Top Energy Limited
Level 2, John Butler Centre
60 Kerikeri Road
P O Box 43
Kerikeri 0245
New Zealand
PH +64 (0)9 401 5440
FAX +64 (0)9 407 0611

30 July 2025

Andrew McPhee
Bay of Islands Planning (2022) Ltd

Email: andrew@bayplan.co.nz

To Whom It May Concern:

RE: PROPOSED SUBDIVISION
Tissa Kamlade – 78 Florance Avenue, Russell. Lot 3 DP 113872.

Thank you for your recent correspondence with attached proposed subdivision scheme plans.

Top Energy's requirement for this subdivision is that power be made available for the additional lot. Top Energy advises that there is an existing power supply to proposed lots 1 & 3. Design and costs to provide a power supply to lot 2 would be provided after application and an on-site survey have been completed.
Link to application: Top Energy | Top Energy

In order to get a letter from Top Energy upon completion of your subdivision, a copy of the resource consent decision must be provided.

Yours sincerely

Aaron Birt
Planning and Design
T: 09 407 0685
E: aaron.birt@topenergy.co.nz

Chorus New Zealand Limited

22 July 2025

Chorus reference: 11306206

Attention: Andrew McPhee

Quote: New Property Development

3 connections at 78 Florance Avenue , Russell, Far North District, 0272

Your project reference: 78 Florance Avenue

Thank you for your enquiry about having Chorus network provided for the above development.

Chorus is pleased to advise that, as at the date of this letter, we are able to provide reticulation for this property development based upon the information that has been provided:

Fibre network	$0.00

The total contribution we would require from you is **$0.00 (including GST)**. This fee is a contribution towards the overall cost that Chorus incurs to link your development to our network. This quote is valid for 90 days from 22 July 2025. This quote is conditional on you accepting a New Property Development Contract with us for the above development.

If you choose to have Chorus provide reticulation for your property development, please log back into your account and finalise your details. If there are any changes to the information you have supplied, please amend them online and a new quote will be generated. This quote is based on information given by you and any errors or omissions are your responsibility. We reserve the right to withdraw this quote and requote should we become aware of additional information that would impact the scope of this letter.

Once you would like to proceed with this quote and have confirmed all your details, we will provide you with the full New Property Development Contract, and upon confirmation you have accepted the terms and paid the required contribution, we will start on the design and then build.

For more information on what's involved in getting your development connected, visit our website www.chorus.co.nz/develop-with-chorus

Kind Regards

Chorus New Property Development Team

Wilton Joubert Limited
09 945 4188
185 Waipapa Road,
Kerikeri

SITE	**78 Florance Avenue, Russell**
LEGAL DESCRIPTION	**Lot 3 DP 113872**
PROJECT	**Proposed 3-Lot Subdivision (Future Lot 2 for Assessment)**
CLIENT	**Natissa Kamlade**
REFERENCE NO.	**141297**
DOCUMENT	**Site Assessment Report**
STATUS/REVISION NO.	**FINAL – Issued for Resource Consent**
DATE OF ISSUE	**15 July 2025**

Report Prepared For	Email
Natissa Kamlade	itiwai@windowslive.com

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

1. EXECUTIVE SUMMARY

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

Development Type:	3-Lot subdivision (Future Lot 2 for assessment).
District Plan Zone:	Russell Township.
Development Proposals Supplied:	Yes – Preliminary subdivision scheme plan. No architectural drawings.
Geology Encountered:	Waipapa Group
Surficial Topsoil, Non-Engineered Fill & Buried Topsoil Encountered:	Yes - 0.3m to 0.7m thick layers.
Overall Site Gradient in Proximity to Development:	The overall site topography (inferred original ground surface) is steeply sloping (in geotechnical terms) from the east to the west. Near level platforms have been formed by cut and fill earthworks in the past for an existing development at the northeastern corner of the site. The cut grounds are supported by existing retaining walls, however, very steeply sloping ground present below these areas before it turns into near level to gently sloping topography [location of a designated building platform (DBP)]. The ground drops (for a short distance) at the middle of the proposed building platform then slopes steeply, averaging 1V:3H (18°) across approximately 8.0m, before transitioning into a near vertical roadside cut of approximately 2.0m to 3.0m in height towards Florance Avenue.
Site Stability Risk:	Our slope stability assessment indicates low risk of deep-seated global instability. However, shallow ground movement locally (due to soil creep and unsupported cut ground) can pose a risk to any future development where ground steeper than 1V:3H (18°) are present. Local instability can be mitigated by appropriate foundation and retaining design and construction. Therefore, we recommend that the western perimeter of any future dwelling should be supported by leading-edge soil creep piles, designed to resist lateral loads to a minimum of 1.0m to 2.0m BEGL, depending on the final position of a future dwelling. We also recommend retaining walls to support the ground where the topography is steeper than 1V:3H (18°).
Liquefaction Risk:	Negligible risk of liquefaction susceptibility.
Suitable Foundation Type(s):	Shallow and/or piled foundations supplemented by leading-edge piles along the western downslope perimeter provided they are designed to accommodate vertical movement of soil associated with Soil Reactivity Class H – Highly Reactive and the minimum embedment depth achieved as detailed below.
Soil Bearing Capacity:	Yes – Competent Natural Ground & Engineered Hardfill Only. Geotechnical Ultimate Bearing Capacity= 300kPa.
NZBC B1 Expansive Soil Classification:	Class H – Highly Expansive (y_s = 78mm)

Conventional Footing Depths:	0.9m below finished ground levels and 0.3m into competent natural ground below an established Soil Regression Line (shown on our Cross Section), whichever is deeper.
NZS1170.5:2004 Site Subsoil Classification:	Class C – Shallow soil stratigraphy.
Retaining Walls:	In addition to the recommended retaining wall above, all cuts and fills associated with future development over 1.0m in height must be supported by specific engineered design (SED) retaining structures.
Consent Application Report Suitable for:	Resource Consent. This report is not intended to support any Building Consent application. Once future site-specific development proposals have been finalised, they should be referred to WJL for review prior to submission of a Building Consent application. As part of the review process, additional Geotechnical investigations and assessments may be necessary, depending on the proposed foundations and earthworks for the future structure.

2. INTRODUCTION

2.1. SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by **Natissa Kamlade** (the Client), to undertake a geotechnical assessment of ground conditions at the above site, where we understand, it is proposed to subdivide the existing residentially developed property into three individual allotments.

The subdivision essentially comprises creating individual legal titles for the two existing residential developments present on-site and the creation of a new vacant lot suitable for residential development.

The primary purpose of this report is to provide a geotechnical assessment and preliminary recommendations pertaining to future residential development within the vacant lot which is designated as Lot 2 in accordance with the Subdivision Scheme Plan supplied (Refer to Section 2.2 and 4 below).

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

Our scope does not include any environmental assessments of site subsoils, or civil assessments.

2.2. SUPPLIED INFORMATION

At the time of preparing this report, we were supplied with a preliminary Subdivision Scheme Plan (1 sheet), titled; '*Proposed Subdivision of Lot 3 DP 113872, Scheme Plan – 78 Florance Avenue,* Russell', dated 4 June 2025 (Ref: 5066), prepared by BOI Survey Limited. The scheme plan is appended to this report.

Any revision of the supplied preliminary Subdivision Scheme Plan with geotechnical implications should be referred to WJL for review. This report is not intended to support any Building Consent application. Once future site-specific development proposals have been finalised, they should be referred to WJL for review prior to submission for a Building Consent application.

3. SITE DESCRIPTION

The subject 3,624m² irregular shaped property is positioned in the southeastern outskirts of the Russell Township and is located off the eastern side of Florance Avenue, accessed 650m northwest of the Hope Avenue intersection.

The Lot is legally titled Lot 3 DP 113872 and is designated Russell Township zone in accordance with the Far North District Council (FNDC) on-line GIS Operative District Plan Map.

The property is accessed at the southwestern boundary via an existing concrete vehicle crossing and bitumen driveway. The driveway essentially splits into two at the crossing entrance, with one arm traversing east towards an existing residential development near the southern boundary and the other arm traversing northeast towards an additional existing residential development near the northeastern boundary.

Aside from the two noted residential developments and bitumen driveway, the site is covered in lawn, with bush generally covering the northwestern portion, as well as along the eastern boundary.

Topographically speaking, the property is positioned towards the toe of west facing, moderate to steeply inclined, spur flank feature that descends from a crest approximately 50m east of the site. Existing ground levels across the site range between approximately RL28m (northeast) and RL11m (northwest) New Zealand Vertical Datum (NZVD). The land immediately bounding the western boundary has been cut near vertically, generally between approximate heights of 2.0m and 3.0m, during the formation of Florance Avenue.

The property is depicted on our appended Site Plan (Drawing No. 141297-G600) and in Figure 1 below.

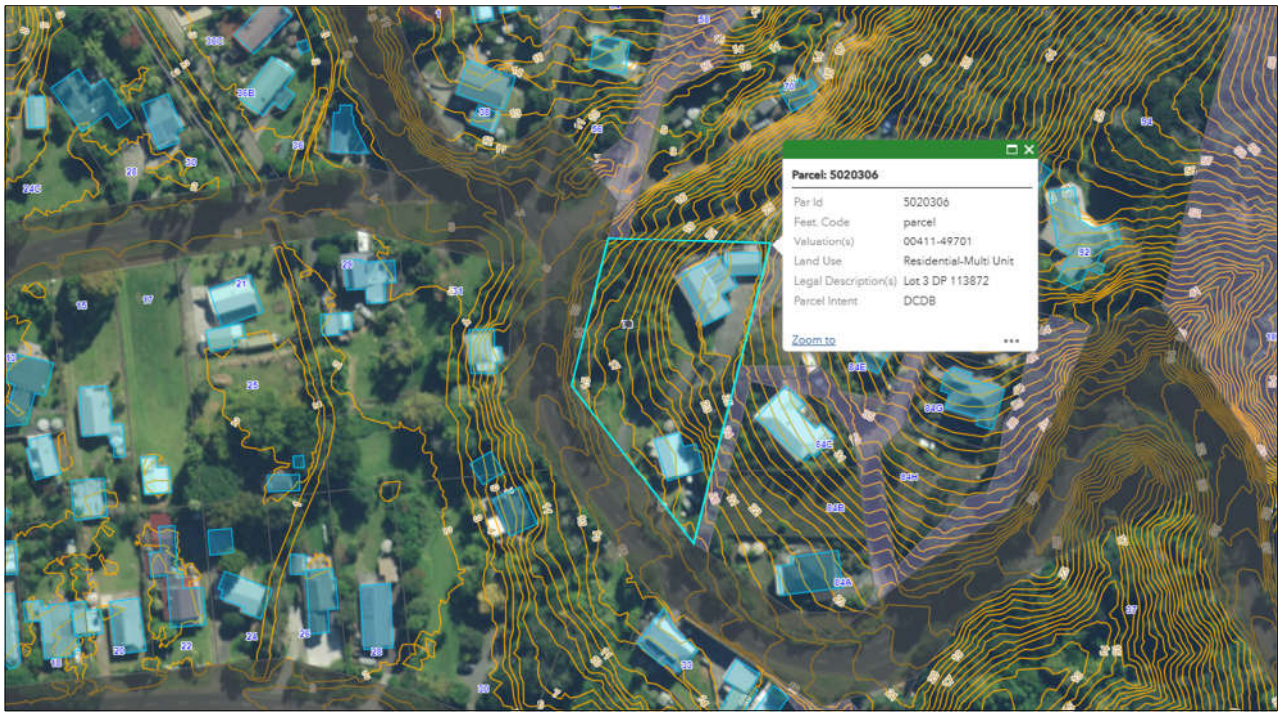


Figure 1: Screenshot aerial view from the FNDC on-line GIS Property and Land Map. Property boundary is highlighted in cyan. 1.0m LiDAR are overlaid.

At the time of preparing this report, we note that the FNDC on-line GIS Water Services Map indicates the following:

- Gravity main wastewater and stormwater culvert lines bound the southeastern boundary, slightly outside the property confinements, and
- A gravity main wastewater line traverses beneath Florance Avenue. A service connection to this line appears to be present along the southwestern boundary.

Figure 2: Screenshot aerial view from the FNDC on-line GIS Water Services Map. Property is highlighted in cyan. Red line is wastewater, green line is stormwater.

4. DEVELOPMENT PROPOSALS

In reviewing the Subdivision Scheme Plan, it is our understanding that the client intends to subdivide the existing property into three individual allotments as follows:

- Lot 1 will encompass an area of 1,624m² and will contain the existing residential development near the northeastern boundary,
- Lot 2 will encompass an area of 1,000m² and will cover the vacant area of land along the northwestern boundary, and
- Lot 3 will encompass an area of 1,000m² and will contain the existing residential development near the southern boundary.

Additionally, the existing driveway is to be upgraded to a right-of-way (ROW) formation in providing suitable legal access to all three Lots.

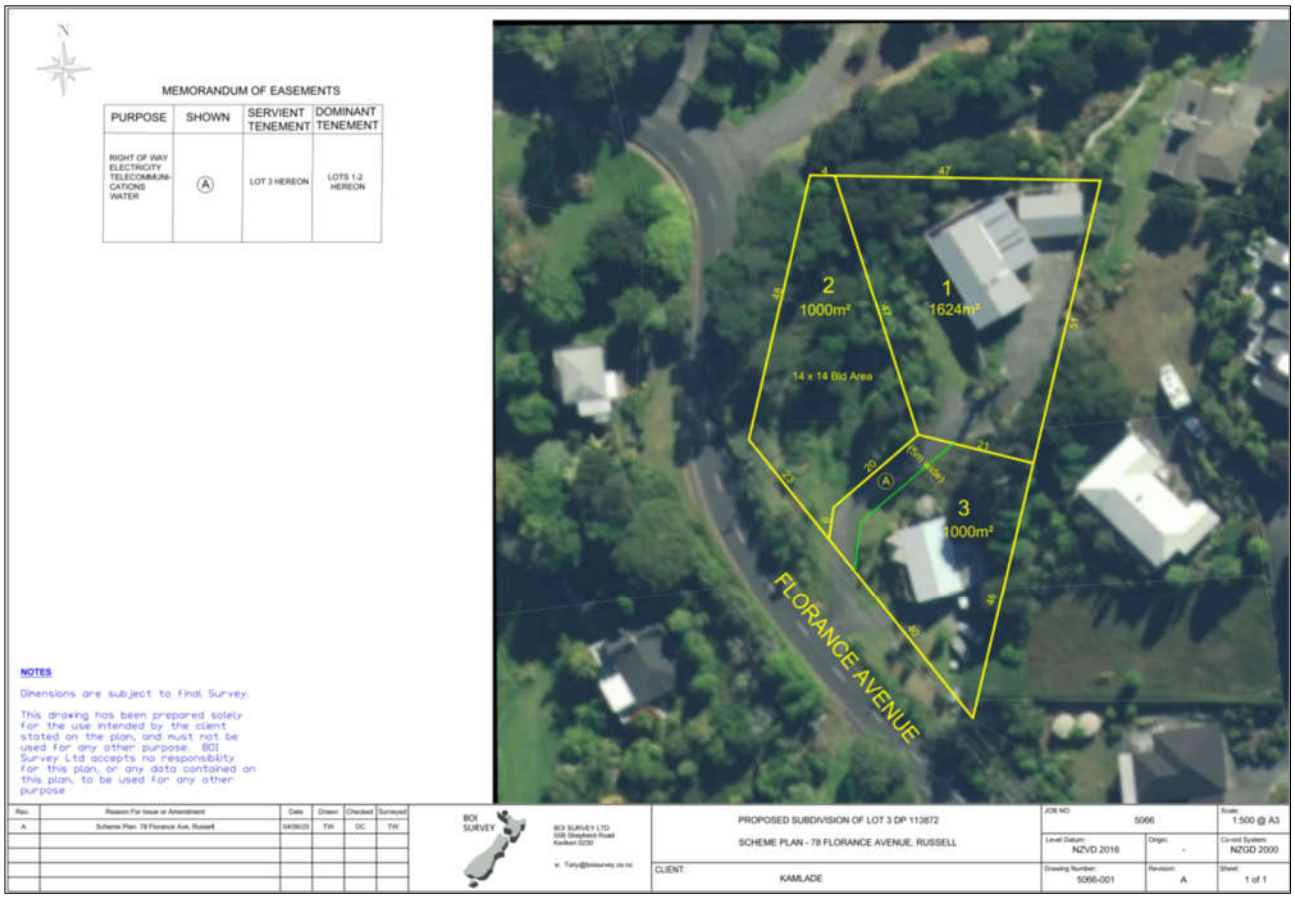


Figure 3: Screenshot of the Subdivision Scheme Plan (From Boi Survey Limited) .

Specifically, we have been engaged to provide a geotechnical assessment and preliminary recommendations pertaining to future residential development within future Lot 2. A 14m x 14m (196m²) designated building platform (DBP) has been identified by the Client for assessment and is depicted on our appended Site Plan (Drawing No. 141297-G600).

The DBP is positioned on a gently inclined, terraced platform, comprising of a central cut generally up to approximately 1.0m in height and steep batter grade of 1V:1H (45°), with “push over” fill placed to the west.

Both platform portions are gently inclined in nature however, the land above the platform rises to the east at steep inclinations and approximately 8.0m downslope to the west, a near vertical roadside cut up to approximately 2.5m in height bounds the common area.

Figure 4: Site photograph looking north towards the Lot 2 DBP. Orange cones depict the western and eastern DBP extents.

Figure 5: Site photograph looking south-westerly towards the Lot 2 DBP. Orange cones depict the western and eastern DBP extents.

Figure 6: Site photograph looking easterly towards the Lot 2 DBP.
Orange cone depicts our downslope hand auger borehole (HA03) location.

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

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

5. DESTOP STUDY

5.1. GEOLOGY

Local geology across the property and wider surrounding land to the north, east and south is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as; **Waipapa Group Sandstone and Siltstone (Waipapa Composite Terrane)**. These deposits are approximately 154 to 270 million years in age and described as; "*Massive to thin bedded, lithic volcaniclastic metasandstone and argillite, with tectonically enclosed basalt, chert and siliceous argillite*' (Ref: GNS Science Website).

The above mapping source indicates that a geological boundary trends through the western side of Florance Avenue, with deposits across the wider downslope land to the west identified as; **OIS6+ (Early Pleistocene to Middle Pleistocene) Estuary, River and Swamp Deposits**. These deposits are approximately 12,000 years to 1.8 million years in age and described as; "*Partly consolidated mud, sand, gravel and peat or lignite of alluvial, colluvial, lacustrine, swamp and estuarine origins.*'

Figure 7: Screenshot aerial view from the New Zealand Geology Web Map. Blue marker depicts property location.

5.2. HISTORICAL AERIAL PHOTOGRAPHY REVIEW

A review of historical aerial photography, sourced from the Retrolens website and Google Earth Pro, has been undertaken to identify any instability features or changes in landform across the property and surrounding influential land. Aerial images from 1951 have been reviewed and compared to the present-day conditions (refer Figures 8 to 13 below).

Aside from historical earthwork operations associated with the two existing residential developments present on-site and the recent terraced earthworks undertaken for future Lot 2 within the DBP, there were no visible significant geomorphological changes in the landscape, indicating a period of stable ground conditions between 1951 and July 2025.

In 1951, the property was essentially covered in bare, pastureland as indicated in Figure 8. By 1968, the site and surrounding land had been planted in bush which was still present in 1981 as shown in Figure 9 and 10 respectively.

At some point between 1981 and 2004, the existing southern dwelling was constructed as indicated in Figure 11, whilst the existing northeastern dwelling was constructed between January 2011 and June 2011 as shown in Figure 12.

The recent terraced earthworks across future Lot 2 within the DBP appeared to be undertaken between 2023 and 2024 as shown in Figure 13.

Figure 8: Historical aerial photograph form 1951 (sourced from Retrolens). Red ring depicts property location.

Figure 9: Historical aerial photograph form 1968 (sourced from Retrolens). Red ring depicts property location.

Figure 10: Historical aerial photograph form 1981(sourced from Retrolens). Red ring depicts property location.

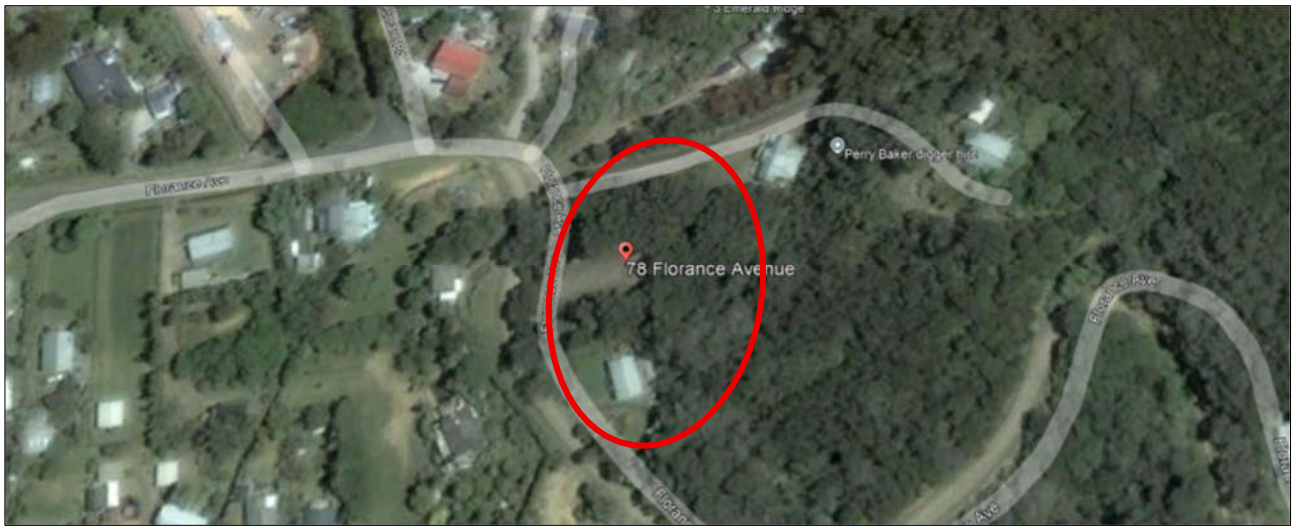


Figure 11: Historical aerial photograph form May 2004 (sourced from Google Earth Pro). Red ring depicts property location.

Figure 12: Historical aerial photograph form June 2011 (sourced from Google Earth Pro). Red ring depicts property location.

Figure 13: Historical aerial photograph form January 2024 (sourced from Google Earth Pro). Red ring depicts property location.

6. GEOTECHNICAL INVESTIGATION

WJL undertook a geotechnical investigation of the property and surrounding influential land on 7 July 2025, comprising of the following:

- A walkover inspection,
- Drilling three (no.) 50mm diameter hand auger boreholes (HA01 to HA03 inclusive) at the Lot 2 DBP to refusal depths ranging between 1.9m and 2.1m below existing ground level (BEGL),
- Dynamic Cone (Scala) Penetrometer tests (DCPs) were extended below the invert of each HA to refusal depths ranging between 2.8m and 3.9m BEGL, and
- A tape and electronic Zip-Level cross-section (A-A') was measured through future Lot 2 and surrounding influential slopes.

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

In-situ undrained Vane Shear Strengths were measured at the invert of each HA and then adjusted in accordance with the NZGS; Guidelines for Handheld Shear Vane Testing, August 2001, with strengths classified in accordance with the NZGS Field Classification Guidelines; Table 2.10, December 2005. The materials identified are described in detail on the appended records, together with the results of the various tests undertaken, plus the groundwater conditions as determined during time on site.

The HA and cross-section locations are depicted on our appended Site Plan (Drawing No. 141297-G600) and the HA logs and cross-section drawing (Drawing No. 141297-G610) are appended to this report.

7. GEOTECHNICAL FINDINGS

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

7.1. UNSUITABLE SURFICIAL SOILS

A surficial TOPSOIL layer of 0.25m thickness was overlying HA03.

A surficial NON-ENGINEERED FILL layer of 0.50m thickness was overlying HA02. The fill comprised of soft to firm, slightly clayey SILT intermixed with TOPSOIL. The fill was underlain by a 0.20m thick BURIED TOPSOIL layer, with the natural ground interface present at a depth of 0.70m BEGL.

No surficial topsoil or fill was overlying HA01.

7.2. NATURAL GROUND

The underlying natural deposits encountered across future Lot 2 DBP were consistent with our expectations of Waipapa Group Sandstone and Siltstone, comprising of a very stiff, clayey SILT cap to depths ranging between 0.70m and 1.6m BEGL, overlying less weathered, very stiff slightly clayey and gravelly SILT until termination on harder deposits.

Measured in-situ, BS1377 adjusted peak Shear Vane Strengths all exceeded 197kPa and/or 220kPa, where soil strength was in excess of the shear vane capacity, or the vane was Unable to Penetrate into the soil (UTP).

No peak to remould Shear Vane Strength ratios were able to be obtained. Based on experience, we generally assess the underlying subgrade as being 'Moderately Sensitive.'

DCPs undertaken at the invert each HA encountered blow counts per 0.10m ground penetration ranging between 6 and 19, before terminating on 20+ blows at depths ranging between 2.8m and 3.9m BEGL.

Figure 14: Site photograph of the HA01 soil arisings (0.0m to 1.9m).

Figure 15: Site photograph of the HA02 soil arisings (0.0m to 2.1m). Red ring depicts the surficial fill and buried topsoil stratum.

Figure 16: Site photograph of the HA03 soil arisings (0.0m to 2.0m).

7.3. GROUNDWATER

Groundwater was not encountered in any of the three HAs. Our fieldwork investigation was undertaken on a fine weather day during the winter period and followed a three-day period of similar conditions. Prior to these three days, approximately 70mm of rainfall fell between 3 and 4 July 2025.

7.4. SUMMARY TABLE

The following table summarises our inferred stratigraphic profiling:

Table 1: Stratigraphic Summary Table

Investigation Hole ID	Termination Depth (m)	Depth to Base of Surficial Topsoil, Non-Engineered Fill & Buried Topsoil (m)	Vane Shear Strength Range within Natural Ground (kPa)	DCP Blow Count Range Per 0.10m Ground Penetration (depth below HAs in metres)	Groundwater Depth (m)
HA01	1.9	NE	197+ / UTP	6 – 20+ (3.3)	NE
HA02	2.1	0.70	220+ / UTP	7 – 20+ (3.9	NE
HA03	2.0	0.25	197+ / UTP	8 – 20+ (2.8)	NE

Note: NE = Not Encountered, UTP = Unable to Penetrate

8. GEOTECHNICAL ASSESSMENTS

As appropriate to the site conditions, we have carried out the following geotechnical analyses for the Lot 2 DBP:

- Qualitative and quantitative slope stability, and
- Liquefaction susceptibility.

8.1. QUALITATIVE SLOPE STABILITY

The DBP is positioned on a gently inclined, terraced platform, comprising of a central cut generally up to approximately 1.0m in height and steep batter grade of 1V:1H (45°), with “push over” fill placed to the west. The western leading-edge of the DBP is bound by moderately steep land, averaging 1V:3H (18°) across approximately 8.0m, before transitioning into a near vertical roadside cut of approximately 2.0m to 3.0m in height.

Our assessment has also considered the following:

- Very stiff to hard (dense to very dense) weathered soils of the Waipapa Group encountered during our investigations.
- DCP – Scala penetrometer testing indicating dense to very dense material below the hand auger boreholes.
- There are no known active faults traverse through the property or wider surrounding land.
- The DBP is situated in an elevated location with good water shedding characteristics down to the west.
- No visual signs of ground instability were observed at the time of our investigation. Review of historic aerial photography confirms absence of any obvious slope instability.
- Lack of groundwater within our HAs on the day of our investigation.

8.2. QUANTITATIVE SLOPE STABILITY

Appended Cross Section A-A' (Drawing No. 141297-G6100) was developed using tape and Zip-level measurements to represent the topography through critical sections of the proposed development and surrounding influential slopes, as depicted in our appended Site Plan (Drawing No 141297-G600).

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

An assumed Uniformly Distributed Load (UDL) of 10kPa was applied to represent the surcharge load of a future dwelling within future Lot 2 DBP.

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

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

Effective shear stress (shear strength) parameters were used for our assessment, based on experience of geology and appended back analysis of an assumed failure under normal and extreme groundwater conditions. Undrained soil strength parameters (no friction angle) were used to model the extreme conditions of a seismic event.

Back Analysis:

We carried out sensitivity back analyses based on experience of the geology, measured soil within our test locations using the inferred original ground surface for Cross Section A – A' and assumed a groundwater level at ground surface (fully saturated ground conditions) to determine the minimum effective stress parameters to achieve a safety factor of ≈1.0.

Table 2: Stability Analysis Results – Back Analysis

Section	Design Conditions	Factor of Safety (FoS) along Cross Section A – A'		Pass / Fail
		Targeted	Calculated	
A-A'	Inferred original ground surface, groundwater at ground surface	~1.0	1.0	N/A

The following soil strength parameters were arrived at for forward stability assessments to assess their risk of ground instability.

Table 3: Effective Shear Stress (Shear Strength) Parameters

Soil Parameters	Non-Engineered Fill	Weathered Waipapa Group Soils	Less Weathered Waipapa Group Soils
Unit Weight, γ (kN/m3)	17	18	18
Effective Cohesion c' (kPa)	2	4	5
Friction Angle, ϕ' (°)	18	28	30
Undrained (no ϕ') Su	20	80	200

We have adopted the following groundwater scenarios:

1. **Moderate Groundwater Level:** Long-term stability when modelling the existing ground conditions and assuming a groundwater level at a depth of approximately 2.0m below the DBP.

   A factor of safety (FoS) >1.5 is required for this scenario.

2. **Elevated Groundwater Level:** Transient (short-term) stability when modelling the worst-case scenario and assuming a groundwater level within approximately 0.50m below the DBP.

   A FoS >1.3 is required for this scenario.

   Our assessment considered that elevated groundwater (if present) would be the results of rapid infiltration of rainfall (wetting occurs from top down) rather than gradual rise in groundwater levels from depth.

3. **Seismic Loading:** Instantaneous instability when modelling extreme ground conditions under a 500-year seismic event and assuming a groundwater level at a depth of approximately 2.0m below the DBP.

   A FoS >1.1 is required for this scenario.

The minimum calculated FoS for all three groundwater scenarios indicates that suitable FoS are currently present across the DBP and surrounding influential land. The outputs from our quantitative slope stability analysis are appended and Table 4 below summarises the results extracted:

Table 4: Stability Analysis Results – Post-Development

Section	Design Conditions	Factor of Safety (FoS) within the DBP		Pass / Fail
		Required	Calculated	
A-A'	Moderate Groundwater	≥1.5	>1.5	Pass
	Elevated Groundwater	≥1.3	>1.3	Pass
	Elevated Groundwater, plus Seismic Load	≥1.1	>1.1	Pass

However, due to the near vertical nature of the 2.0m to 3.0m high, roadside cut, which is offset only 8.0m downslope of the DBP, we have adopted a 1V:3H (18°) long-term regression line to our appended Cross Section A-A' (Drawing No. 141297-610). The regression line essentially dissects beneath the entire DBP.

In accounting for any future regression and instability of the roadside cut and bounding land downslope, we recommend the western perimeter of any future dwelling within the DBP is protected with leading-edge piles, designed to resist lateral loads to a minimum of 1.0m to 2.0m BEGL, depending on the final positioning of the future dwelling, and be embedded into the weathered Waipapa Group soils.

Additionally, we also recommend:

- We recommend retaining walls to support the ground where the topography is steeper than 1V:3H (18°) above the future dwelling.
- All proposed cuts and fills over 1.0m in height are supported by specific engineering design (SED) retaining structures. All additional fill placed beneath the future building site should be limited to a height of 0.60m without review and will also need to be accounted for during soil creep pile design which subsequently, will deepen the required creep depth, and
- All stormwater run-off is appropriately controlled on-site and disposed to a stable disposal point. At no stage should stormwater discharge directly to the western slopes below the DBP.

8.3. LIQUEFACTION ASSESSMENT

Liquefaction is a natural phenomenon whereby prolonged seismic shaking induces an increase in pore water pressure, which in turn decreases the effective stress of silt/fine sand-like soil deposits. Excess pore water pressure (EPWP) can build to such an extent that the effective stress of the underlying soil is reduced to near zero, whereby the soils no longer carry shear strength and behave as a semi solid/fluid. In such a scenario, excess pore water pressures will follow the path of least resistance to eventual dissipation, which can lead to the migration of liquefied soils towards the surface, or laterally towards a free-face (edge of slope, riverbank, etc.) or layers that have not yet undergone liquefaction.

At the time of preparing this report, we note that the FNDC on-line GIS Liquefaction Vulnerability Map indicates that the property and wider surrounding land to the east is within an '*Unlikely*' zone.

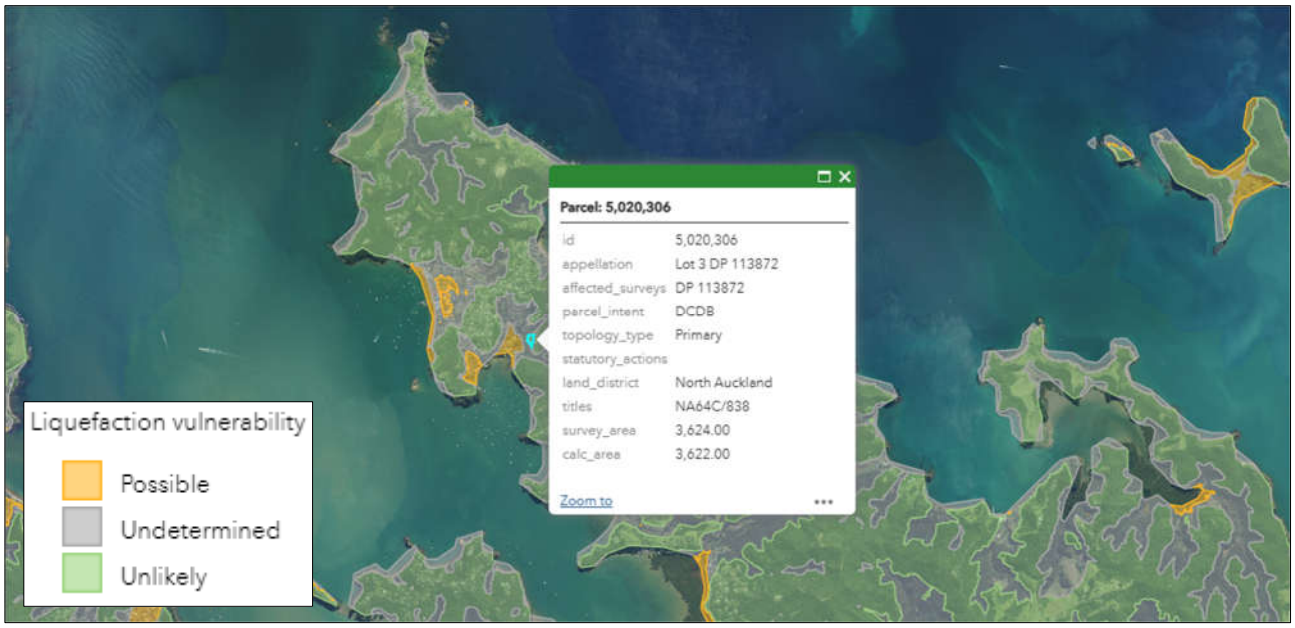


Figure 17: Screenshot from the FNDC on-line GIS Liquefaction Vulnerability Map. Property boundary is highlighted in cyan.

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

- There are no known active faults traversing through the property or wider surrounding land,
- There is no historical evidence of liquefaction at the property,
- Future Lot 2 DBP is situated in an elevated location with good water shedding characteristics down to the west,
- Very stiff in-situ measured Vane Shear Strengths and high DCP blow counts at depth recorded during our investigation, and
- Lack of groundwater within our HAs,
- The subsoils beneath the DBP comprise of cohesive soils that are not generally considered susceptible to liquefaction, and
- The subsoils beneath the DBP are underlain by Waipapa Group Sandstone and Siltstone deposits, being 154 to 270 million years in age, allowing for adequate consolidation in comparison to younger, Holocene age material (10,000 years).

Based on the above, we conclude that the subsoils beneath at the site have a negligible risk of liquefaction susceptibility and liquefaction damage is therefore considered to be unlikely.

9. CONCLUSIONS AND RECOMMENDATIONS

Based on our fieldwork investigation, subsoil testing results, walkover inspection and stability commentary as described above, we consider on reasonable grounds that this report can be submitted to the Territorial Authority in support of a Resource Consent application for subdividing the subject site, substantiating that in terms of section 106 of the Resource Management Act and its current amendments, either

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

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

unless the Territorial Authority is satisfied that sufficient provision has been made or will be made in accordance with section 106(2).

Under section 106(2), the Territorial Authority may grant a subdivision consent if it is satisfied that the effects described above will be avoided, remedied, or mitigated by one or more of the following:

c) Rules in the district plan:

d) Conditions of a resource consent, either generally or pursuant to section 220(1)(d):

e) Other matters, including proposed works.

Therefore, we are satisfied that future Lot 2 DBP should be generally suitable for future residential construction in terms of NZS3604:2011, subject to:

- Future site-specific development design being in accordance with our recommendations given in Sections 9.1 to 9.9 and 10 below, and
- Once future site-specific development proposals have been finalised, they should be referred to WJL for review prior to submission for a Building Consent application. As part of the review process, additional Geotechnical investigations and assessments may be necessary, depending on the proposed foundations and earthworks for the future structure.

9.1. PRELIMINARY FOUNDATION DESIGN

Shallow and/or piled foundations supplemented by leading-edge piles along the western downslope perimeter provided they are designed to accommodate vertical movement of soil associated with Soil Reactivity Class H – Highly Reactive and the minimum embedment depth achieved as detailed below.

Due to the requirement of soil creep piles beneath the western leading-edge of any future dwelling and the underlying subsoil deposits being assessed as expansive in nature, the building site does not lie within the definition of "*Good Ground*" in accordance with NZS3604:2011 and as such, the design of shallow foundations is no longer covered by NZS3604:2011. All foundations structures must be subject to SED by a suitably qualified structural engineer.

Additionally, all existing surficial non-engineered fill deposits are assessed as unsuitable to support building loads. Therefore:

- All such material should be removed and replaced with engineered, compacted hardfill, or
- All footings should bypass the in-situ fill materials and be embedded into competent natural ground.

9.1.1. LEADING-EDGE SOIL CREEP PILES

We recommend that soil creep piles are installed along the western leading-edge of the future dwelling. Such piles should be designed to resist a loss of lateral soil support to a minimum depth of 1.0m to 2.0m BEGL, depending on the final positioning of the dwelling. All additional fill placed beneath the future building site will also need to be accounted for during design and subsequently, will deepen the required creep depth.

Pile spacing should not exceed 3x pile diameters to take advantage of soil arching, which will then protect the remaining upslope foundations against soil creep. We also recommend returning at least one pile along each side of the foundation returns.

At-Rest (Ko) Earth Pressures should be calculated assuming ø' = 28° for weathered Waipapa Group soils and ø' = 30° for less weathered Waipapa Group soils, plus any upslope surcharges from applied surface loads to minimise pile/pole deflections.

The lateral creep forces loading foundations should be calculated from the "equivalent fluid pressure" of: Po =Ko x γ x Dc, plus distributed surcharge loads, (again for piles, applied over an equivalent width of 3 pile diameters), where:

- Ko = (1-sinø') x (1+sinß),
- ø'= soil angle of shearing resistance as given in Table 2 above,
- ß = up-slope angle,
- γ = soil/rock density as given in Table 2 above ,
- Dc = Soil creep depth = 1.0m to 2.0m, depending on the final positioning of the dwelling,
- Maximum Pile Spacing: 3D (where D is the diameter of the bored holes), and
- Lateral resistance should be calculated using Brom's theory, assuming an undrained shear strength (Su) value of no more than 80kPa for the Waipapa Group, subject to on-site confirmation by the inspecting engineer during construction.

9.1.2. SHALLOW FOUNDATION BEARING CAPACITY

The following bearing capacity values are considered to be appropriate for the design of shallow foundations, subject to founding directly within competent natural ground and/or compacted, engineered hardfill, for which careful Geo-Professional inspections of the subgrade should be undertaken to check that the underlying conditions are in keeping with our expectations:

Table 5: Shallow Bearing Capacity Values

Geotechnical Ultimate Bearing Capacity	300 kPa
ULS Dependable Bearing Capacity (Φ=0.5)	150 kPa

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

During inspections, it is important to exercise caution to verify that the natural ground meets the recommended bearing capacity mentioned in this report. This is crucial for preserving structural integrity.

9.1.3. POLE FOUNDATION BEARING CAPACITY

For any foundations that are to be deeper than 4 times the diameter of the drilled concrete collar to ensure cantilever embedment action, then the following bearing capacity values are considered to be appropriate for the design of pole foundations, subject to founding directly within competent natural ground, which careful Geo-Professional inspections of the subgrade should be undertaken to check that the underlying conditions are in keeping with our expectations:

Table 6: Pole Bearing Capacity Values

Geotechnical Ultimate End Bearing Capacity	900 kPa
Ultimate Skin Friction	30 kPa

Skin friction should be ignored for the upper 0.90m pile length to account any non-engineered fill deposits and the soil expansivity of the ground.

9.1.4. SHALLOW FOUNDATIONS ON EXPANSIVE SOILS

In the absence of site-specific expansive soil laboratory testing, we recommend a conservative primary classification of Class H (Highly) expansive soils, as defined in clause 7.5.13.1.2, and introduced to NZS3604 by Amendment 19 of NZBC Structure B1/AS1.

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

Given that the soils are not considered to lie within the definition of "good ground" as per NZS3604, the design of shallow foundations are no longer covered by NZS3604. Care must be taken to mitigate against the potential seasonal shrinkage and swelling effects of expansive foundation soils on both superstructures and floors. We therefore recommend specific engineering design should be undertaken by a qualified engineer for the design of the proposed foundations.

9.1.5. NZS1170.5:2004 SITE SUBSOIL CLASSIFICATION

We consider the DBP within future Lot 2 to be underlain with a Class C – Shallow Soil stratigraphy.

9.2. SITE EARTHWORKS

We are not aware of any earthworks plan for future Lot 2, however anticipate minimal earthworks will be undertaken associated with the foundation excavations of a future dwelling.

Generally, and as directed by a suitably experienced engineer, all earthworks should be undertaken in accordance with the following standards:

- NZS4431:2022 "Code of Practice for Earth Fill Residential Development",
- Section 2 "Earthworks & Geotechnical Requirements" of NZS4404:2010 "Land Development and Subdivision Infrastructure", and
- Chapter 2 "Site Development Suitability (Geotechnical and Natural Hazards" of the Far North District Council Engineering Standards, (Version 0.6 issued May 2023).

9.3. SITE PREPARATION

The competency of the exposed subgrade beneath any proposed concrete floor slab and at the invert of all bored footings should be confirmed by a Geo-Professional. In this regard, we recommend the stripping of all vegetation, topsoil, and all non-engineered fill deposits beneath any proposed concrete floor slab prior to requesting Geo-Professional inspection(s) of the stripped ground to confirm that the underlying natural subgrade conditions are in keeping with the expectations of this report.

Without such inspections being undertaken, a Chartered Professional Geotechnical Engineer is unable to issue a Producer Statement - PS4 – Design Review which could result in the failure to meet Building Consent requirements as set by Council as conditions of consent.

9.4. SUBGRADE PROTECTION

The subgrade beneath any proposed concrete floor slab should not be exposed for any prolonged period and should be covered with a 0.10m thick layer of granular fill, such as GAP40 basecourse, as soon as possible.

Likewise, all pile/pole inverts should be poured as soon as possible once inspected by a Geo-Professional or covered with a protective layer of site concrete.

If subgrade degradation occurs by:

- Excessive drying out resulting in desiccation shrinkage cracking, it will be necessary to either re-hydrate the subgrade or undercut the degraded material and replace with compacted hardfill, or
- Excessive subgrade softening after a period of wet weather resulting in weakened soils, it will be necessary to undercut the degraded material and replacement with compacted hardfill.

9.5. RETAINING WALL DESIGN

We are not aware of any retaining wall proposal; however, we recommend that any retaining system over 1.0m in height to be SED and consider surcharges (sloping ground, structures, and traffic load) applicable to the retaining walls.

We also recommend supporting the ground where the topography is steeper than 1V:3H (18°) by a SED retaining structure to mitigate local, shallow soil movement (soil creep).

For the design of cantilever and/or flexible retaining walls that can deform sufficiently to mobilize active pressures (i.e., timber pole retaining walls not supporting critical structures and/or long-term traffic loads), we recommend calculating coefficients of active lateral earth pressure (Ka).

For stiff, inflexible retaining walls, which are unable to deflect sufficiently to generate active earth pressures (i.e. concrete and/or masonry retaining walls supporting building loads and/or driveways/car-parking areas), we recommend calculating coefficients of at-rest lateral earth pressure (Ko).

We recommend assuming the following soils parameters for retaining wall design:

Table 7: Soil Parameters for Retaining Wall Design

Soil Parameters	Weathered Waipapa Group Soils
Unit Weight, γ (kN/m3)	18
Friction Angle, ϕ' (°)	28
Undrained Shear Strength, Su for Pole/Pile Embedment* (kPa)	80
Geotechnical Ultimate Bearing Capacity (kPa)	300
Ultimate Undrained Sliding Resistance of Shallow Foundations in Direct Contact with Soils (kPa)	20

**For the calculation of pole embedment depths, the Broms method as specified in B1/VM4 may be used provided that depths are not less than 4 pile diameters, for which the above stated undrained shear strength value may be assumed, provided an appropriate strength reduction factor is applied and is subject to confirmation by Engineering inspection during construction.*

To the above figures, please apply an appropriate strength reduction factor for satisfying Ultimate Limit State conditions.

Furthermore, the above figures make no allowances for any surcharges, be they ground slopes and/or applied loads, and hence, all retaining wall designs should also accommodate all anticipated upslope surcharges. Additionally, reduced toe support by existing or proposed excavations and/or slopes must be taken into consideration.

To avoid build-up of hydrostatic pressures, retaining walls must be constructed with appropriate behind-wall drainage comprising:

- A perforated drain coil wrapped in filtersock, located at the base of the walls, connected into an approved stormwater disposal system,

  Followed by backfilling behind all retaining walls lightly tamped, free draining granular backfill, such as scoria or 40/20 blue chip, extending up to within 0.30m of their full height with material.

9.6. TEMPORARY AND LONG-TERM EARTHWORKS

We recommend that earthworks only be undertaken during periods of fine weather conditions.

During times of inclement weather, earthworks should be shaped to assist in stormwater run-off. The toe of all batter excavations should be shaped to avoid ponding water, as saturating site soils could result in a reduction of bearing capacities.

Temporary stormwater diversion must be constructed around the upslope perimeter of bulk excavations to direct overland flows away from the area. This could take the form of a soil bund, or other measures as deemed appropriate by the supervising Geo-Professional.

All temporary cuts not exceeding 1.0m should be battered back at no steeper than 1V:0.5H.

All cut material must be removed from site.

Finally, all exposed soils should be re-grassed or planted as soon as practicable to aid in stabilization.

The structural designer and building contractor should ensure that satisfactory FoS's against ground instability are available at all stages of the development.

9.7. GENERAL SITE WORKS

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

Furthermore:

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

9.8. LONG-TERM FOUNDATION CARE & MAINTENANCE

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

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

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

To this end, care should be taken to avoid:

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

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

10. STORMWATER CONTROL

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

All stormwater runoff from new roof and paved areas should be collected in sealed pipes and be discharged to a stable disposal point. At no stage should stormwater discharge directly to the western slopes below the future building site.

Under no circumstances should concentrated overflows from any source be discharged into or onto the ground in an uncontrolled fashion.

11. UNDERGROUND SERVICES

Underground services, public or private, mapped, or unmapped, of any type may be present, hence we recommend staying on the side of caution during the commencement of any work within the proposed development area.

12. DRAWING REVIEW AND/OR FURTHER GEOTECHNICAL ASSESSMENT

Once future site-specific development proposals have been finalised, they should be referred to us for review prior to submission for a Building Consent application to verify that the recommendations contained in this report have been incorporated into the development proposal.

Depending on the future development proposals, the review could range from desktop assessment to further geotechnical investigation and reporting.

13. FUTURE CONSTRUCTION MONITORING

The foregoing statements are Professional Opinion, based on a limited collection of information, some of which is factual, and some of which is inferred. Because soils are not a homogeneous, manufactured building component, there always exists a level of risk that inferences about soil conditions across the greater site, which have been drawn from isolated "pin-prick" locations, may be subject to localized variations. Generally, any investigation is deemed less complete until the applicability of its inferences and the Professional Opinions arising out of those are checked and confirmed during the construction phase, to an appropriate level.

It is increasingly common for the Building Consent Authorities to require a Producer Statement – Construction (PS4) which is an important document. The purpose of the PS4 is to confirm the Engineers' Professional Opinion to the BCA that specific elements of construction, such as the verification of design assumptions and soil parameters (NZBC clause B1/VM4 2.0.8), are in accordance with the approved Building Consent and its related documents, which should include the subject Geotechnical Report. Where site works will involve the placement of fill, the PS4 should reference NZBC clause B1/VM1 10.1.

For WJL to issue a PS4 to meet the above clauses of the NZBC, we will need to carry out the site inspections as per the Building Consent and Council requirements.

We require at least 48 hours' notice for site inspections.

Site inspections should be undertaken by a Chartered Professional Geotechnical Engineer or their Agent, who is familiar with both this site and the contents of this Geotechnical Report.

Prior to works commencement, the above Engineer should be contacted to confirm the construction methodologies, inspection, and testing frequency.

The primary purpose of the site inspections is to check that the conditions encountered are consistent with those expected from the investigations and adopted for the design as discussed herein. If anomalies or uncertainties are identified, then further Professional advice should be sought from the Geo-Professional, which will allow the timely provision of solutions and recommendations should any engineering problems arise.

Upon satisfactory completion of the above work aspects, WJL would then be in a position to issue the PS4 as required by Council.

At this time, we anticipate that Geotechnical site inspections and testing should include, but not be limited to the following:

- Site cut (any proposed concrete floor slab),
- Pre-pour retaining wall footing excavations (if required),
- Hardfill compaction testing (any proposed concrete floor slab),
- Pre-pour soil creep pile excavations, and
- Pre-pour bored pile and strip (if required) footing excavations.

14. LIMITATIONS

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

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

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

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

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

Yours faithfully,

WILTON JOUBERT LIMITED

Appendices:

Preliminary Subdivision Scheme Plan (1 sheet)
WJL Site Plan (1 sheet)
WJL Cross-section A-A' (1 sheet)
Hand Auger Borehole Records (3 sheets)
Slope Stability Analyses Modelling Outputs (4 sheets)
'*Foundation Maintenance and Footing Performance*' homeowner's guide, published by CSIRO (4 sheets)
Construction Monitoring (1 sheet)

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MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT OF WAY ELECTRICITY TELECOMMUNI- CATIONS WATER	(A)	LOT 3 HEREON	LOTS 1-2 HEREON

NOTES

Dimensions 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 78 Florance Ave, Russell	04/06/25	TW	DC	TW

BOI SURVEY

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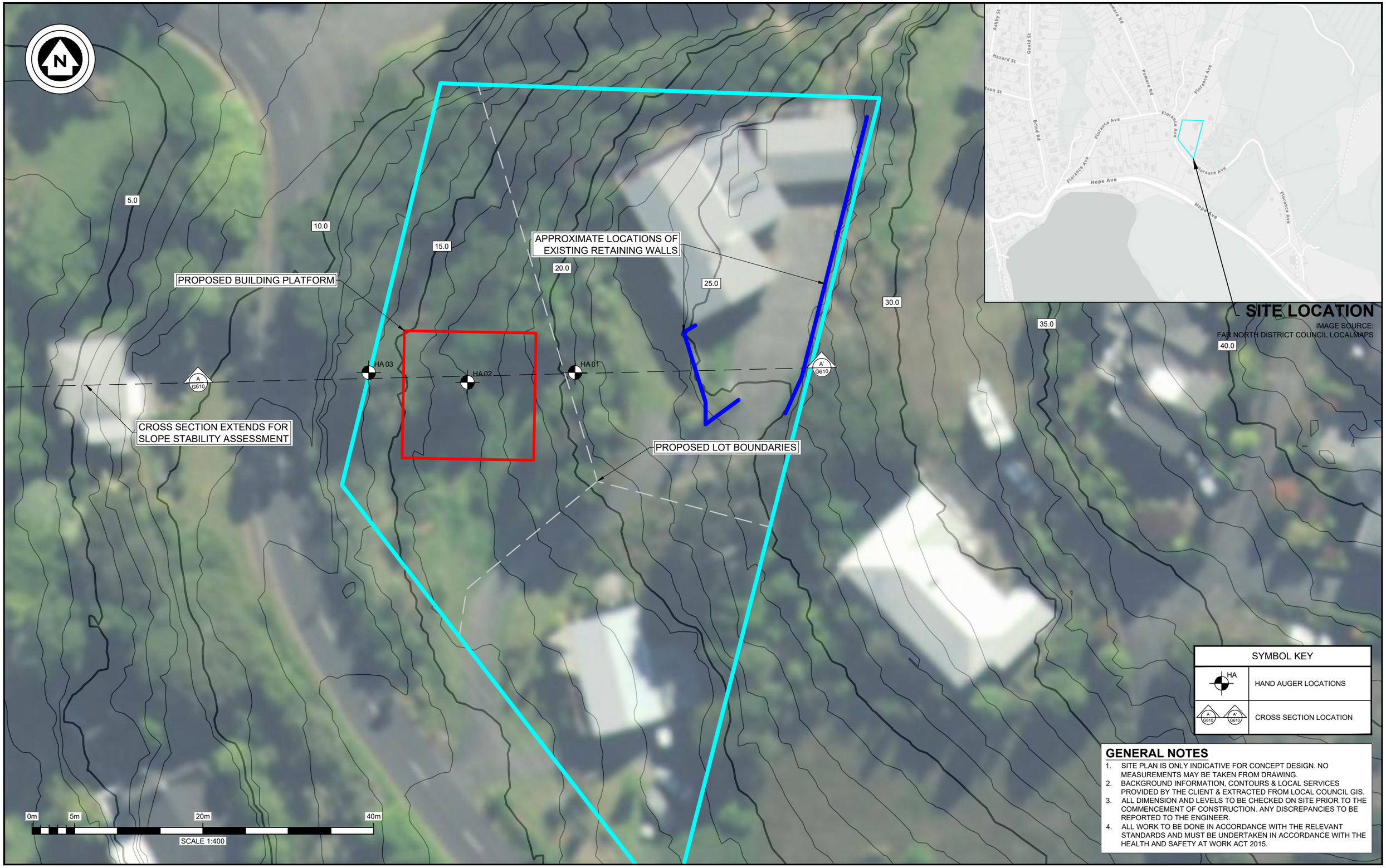
PROPOSED SUBDIVISION OF LOT 3 DP 113872

SCHEME PLAN - 78 FLORANCE AVENUE, RUSSELL

CLIENT: KAMLADE

JOB NO:		Scale:
5066		1:500 @ A3
Level Datum: NZVD 2016	Origin: -	Co-ord System: NZGD 2000
Drawing Number: 5066-001	Revision: A	Sheet: 1 of 1



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ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
A	JULY 2025	A.B	ISSUED WITH GEOTECHNICAL REPORT

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

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

GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

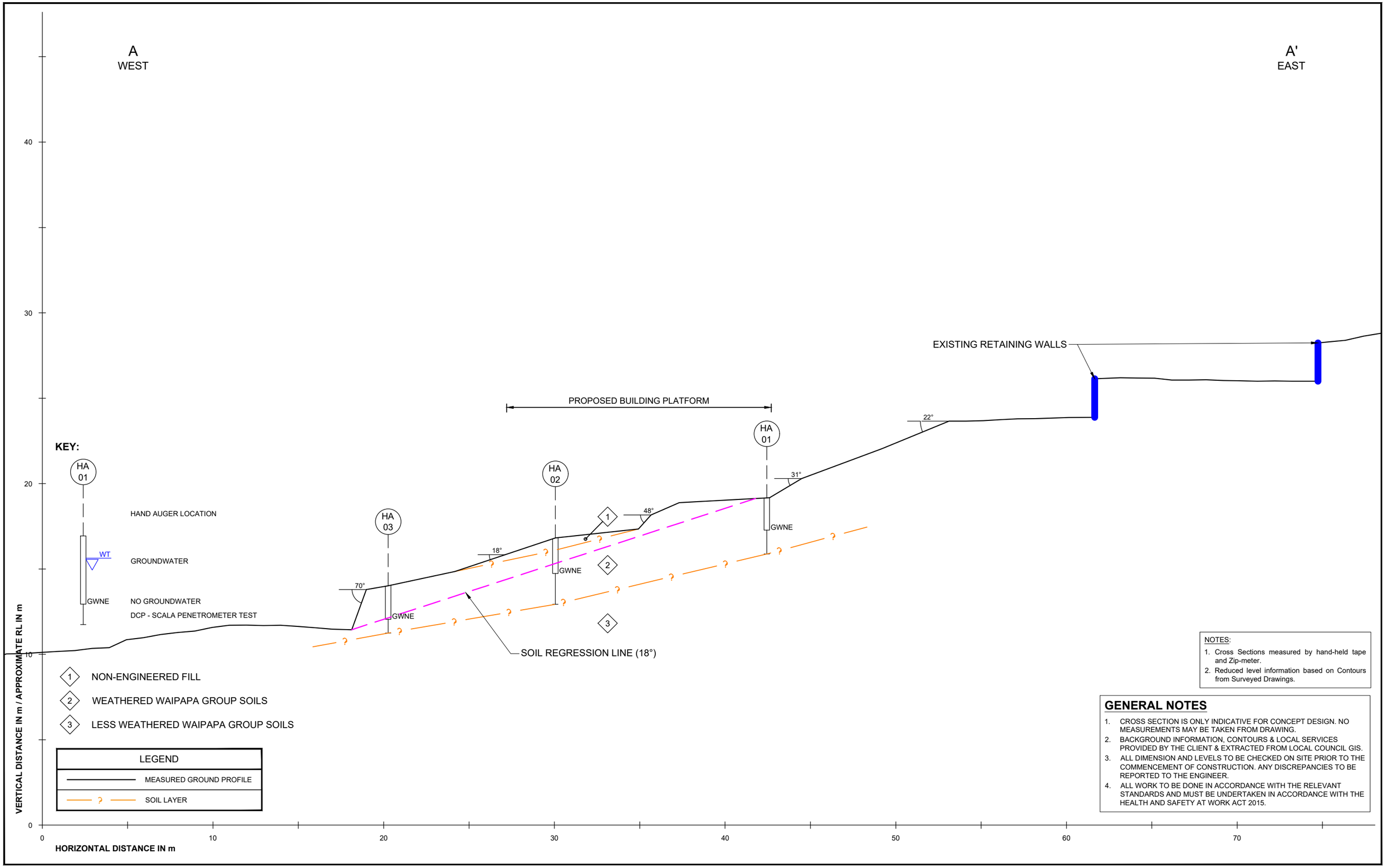
DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **PROPOSED SUBDIVISION**

PROJECT TITLE: **LOT 3 DP 113872
78 FLORANCE AVENUE
RUSSELL
NORTHLAND**

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

DRAWING NUMBER: **141297-G600**
ISSUE: **A**



NOTES:

1. Cross Sections measured by hand-held tape and Zip-meter.
2. Reduced level information based on Contours from Surveyed Drawings.

GENERAL NOTES

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

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ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	JULY 2025	A.B	ISSUED WITH GEOTECHNICAL REPORT

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

DRAWING TITLE: CROSS SECTION

PROJECT DESCRIPTION: PROPOSED SUBDIVISION

PROJECT TITLE:
LOT 3 DP 113872
78 FLORANCE AVENUE
RUSSELL
NORTHLAND

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE: 1:200	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 141297-G610	ISSUE: A

HAND AUGER : HA01

JOB NO.: 141297 **SHEET:** 1 OF 1

START DATE: 07/07/2025 **NORTHING:** **GRID:**

CLIENT: Natissa Kamlade **DIAMETER:** 50mm **EASTING:**

PROJECT: 3-Lot Subdivision (1-Lot for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 78 Florance Avenue, Russell **FACTOR:** 1.41 **DATUM:**

TOPSOIL CLAY SAND PEAT FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Waipapa Group	NATURAL: Clayey SILT, brownish yellow, very stiff, moist, low to moderate plasticity.		0.2	Groundwater Not Encountered					
			0.4		197+	-	-		
			0.6						
	Slightly Clayey SILT, brownish yellow with grey mottles, very stiff, moist, no plasticity (friable), frequent weakly and strongly cemented clast inclusions.		0.8		UTP	-	-		
			1.0						
			1.2		197+	-	-		
	Slightly Gravelly SILT, brownish orange, very stiff, moist, no plasticity (friable).		1.4						
	Slightly Clayey SILT, brownish yellow with grey mottles and occasional black staining, very stiff, moist, no plasticity (friable), frequent weakly and strongly cemented clast inclusions.		1.6		UTP	-	-		
			1.8						
	EOH: 1.90m - Too Hard To Auger		2.0		UTP	-	-	10	
			2.2					6	
			2.4					6	
			2.6					6	
			2.8					7	
			3.0					8	
			3.2					8	
			3.4					8	
			3.6					8	
			3.8					9	
								9	
								10	
								14	
								20+	

REMARKS

End of borehole @ 1.90m (Target Depth: 5.00m)

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

LOGGED BY: JEM

CHECKED BY: SJW

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA02

JOB NO.: 141297 **SHEET:** 1 OF 1

START DATE: 07/07/2025 **NORTHING:** **GRID:**

CLIENT: Natissa Kamlade **DIAMETER:** 50mm **EASTING:**

PROJECT: 3-Lot Subdivision (1-Lot for Assessment) **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: 78 Florance Avenue, Russell **FACTOR:** 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
FILL	NON-ENGINEERED FILL: Slightly Clayey SILT intermixed with TOPSOIL and ORGANIC inclusions, dark brown and brown with occasional brownish yellow mottles, soft to firm, moist, no plasticity.		0.2	Groundwater Not Encountered					
			0.4		13	-	-		
Topsoil	BURIED TOPSOIL, dark brown, firm to stiff, moist, low plasticity.	TS	0.6						
Waipapa Group	NATURAL: Clayey SILT, brownish yellow with light brownish grey streaks, very stiff, moist, low plasticity.		0.8		220+	-	-		
	0.9m: Becoming yellowish brown, low to moderate plasticity.		1.0						
	1.2m: Becoming light yellow with white mottles.		1.2		220+	-	-		
			1.4						
			1.6						
	Slightly Clayey SILT, brownish orange with white mottles, moist, no to low plasticity.				220+	-	-		
	Slightly Gravelly SILT, trace to minor clay, brownish orange and white, very stiff, moist, no plasticity (friable).		1.8						
			2.0		UTP	-	-		
	EOH: 2.10m - Too Hard To Auger		2.2		UTP	-	-	7	
								7	
			2.4					7	
								6	
			2.6					6	
								7	
			2.8					8	
								10	
			3.0					8	
								7	
			3.2					7	
								10	
			3.4					10	
								16	
			3.6					14	
								15	
			3.8					20+	

SOIL DESCRIPTION

TOPSOIL CLAY SAND PEAT

FILL SILT GRAVEL ROCK

REMARKS

End of borehole @ 2.10m (Target Depth: 5.00m)

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

LOGGED BY: SJP

CHECKED BY: SJW

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA03

JOB NO.: 141297 **SHEET:** 1 OF 1

START DATE: 07/07/2025 **NORTHING:** **GRID:**

CLIENT: Natissa Kamlade **DIAMETER:** 50mm **EASTING:**

PROJECT: 3-Lot Subdivision (1-Lot for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 78 Florance Avenue, Russell **FACTOR:** 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Waipapa Group	NATURAL: Clayey SILT, brownish yellow, very stiff, moist, low to moderate plasticity.		0.4		UTP	-	-		
			0.6						
			0.8		197+	-	-		
	1.0m: Occasional weakly and strongly cemented clast inclusions.		1.0						
	Slightly Clayey SILT, pink with grey mottles, very stiff, moist, no to low plasticity, occasional weakly and strongly cemented clast inclusions.		1.2		197+	-	-		
			1.4						
			1.6		197+	-	-		
	1.7m: Becoming dry to moist, no plasticity (friable).		1.8						
			2.0		UTP	-	-	8	
	EOH: 2.00m - Too Hard To Auger		2.2					9	
			2.4					9	
			2.6					9	
			2.8					13	
			3.0					19	
			3.2					20+	
			3.4						
			3.6						
			3.8						

SOIL DESCRIPTION

TOPSOIL CLAY SAND PEAT

FILL SILT GRAVEL ROCK

REMARKS

End of borehole @ 2.00m (Target Depth: 5.00m)

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

LOGGED BY: JEM

CHECKED BY: SJW

▼ Standing groundwater level

▽ GW while drilling

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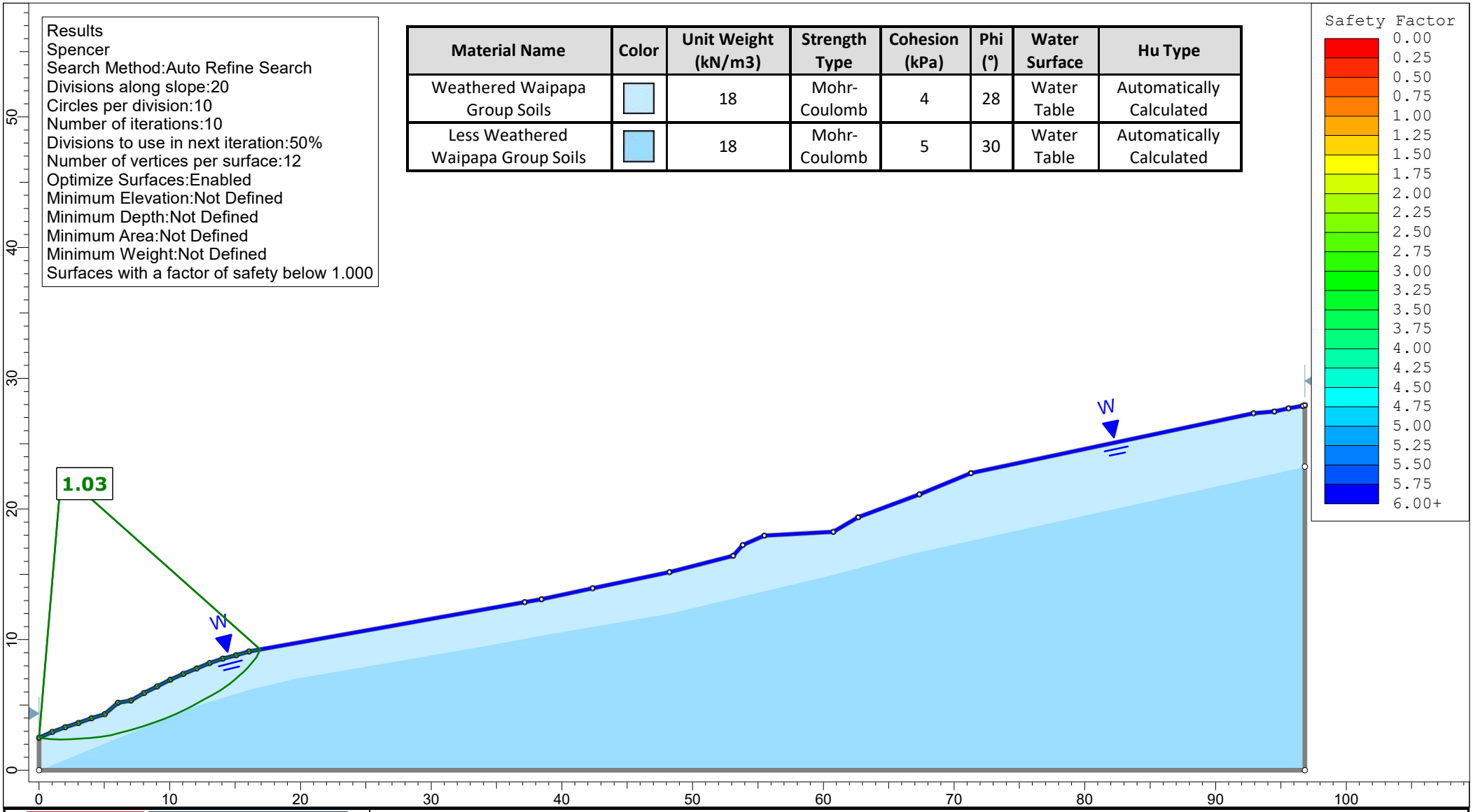
Results
Spencer
Search Method:Auto Refine Search
Divisions along slope:20
Circles per division:10
Number of iterations:10
Divisions to use in next iteration:50%
Number of vertices per surface:12
Optimize Surfaces:Enabled
Minimum Elevation:Not Defined
Minimum Depth:Not Defined
Minimum Area:Not Defined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

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Weathered Waipapa Group Soils		18	Mohr-Coulomb	4	28	Water Table	Automatically Calculated
Less Weathered Waipapa Group Soils		18	Mohr-Coulomb	5	30	Water Table	Automatically Calculated



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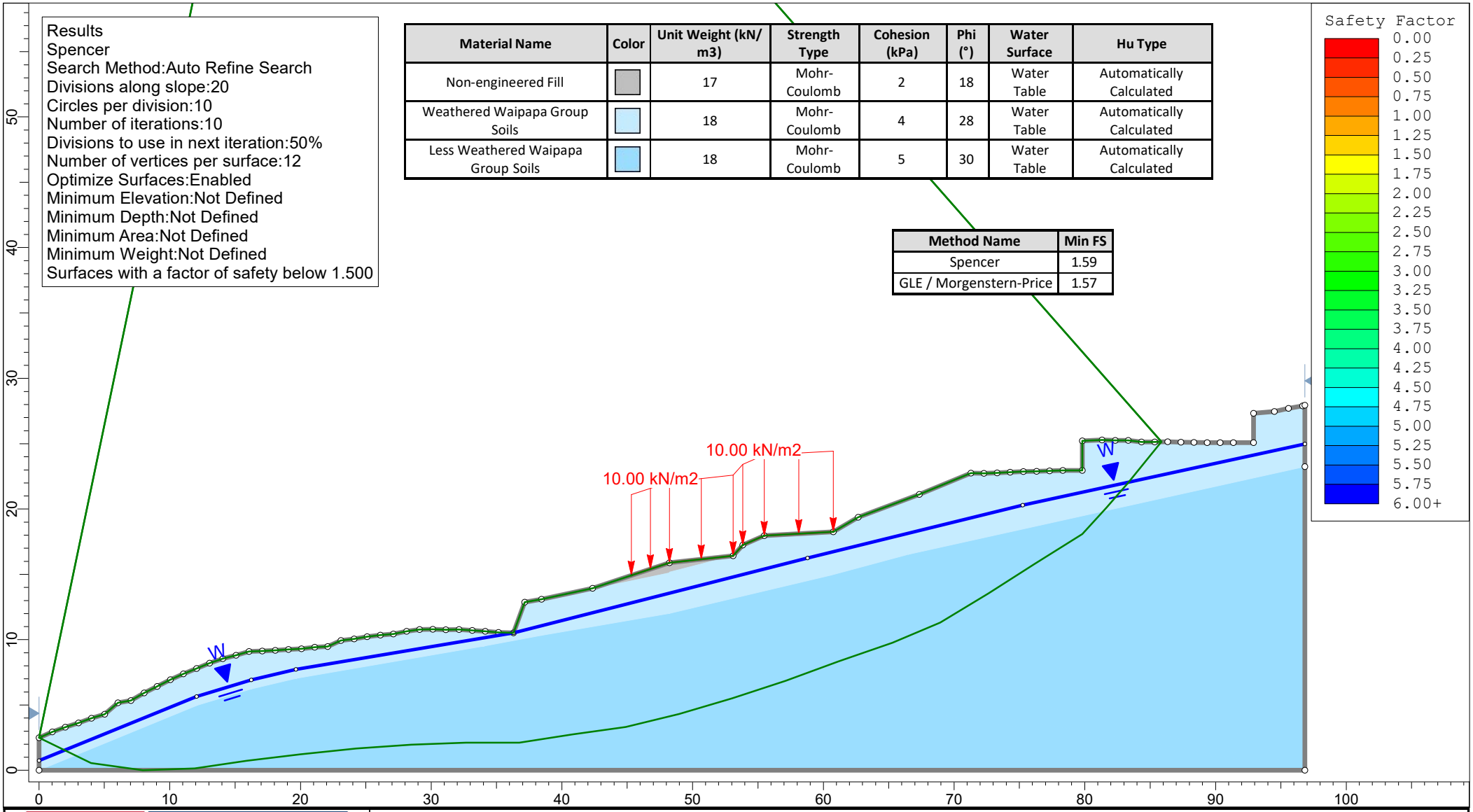
SLIDEINTERPRET 9.033

Project	141297 - 78 Florance Avenue, Russell		
Group	Cross Section A-A'	Scenario	Sensitivity Analysis
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/07/2025	File Name	141297 - Sensitivity Analysis.slmd

Results
Spencer
Search Method:Auto Refine Search
Divisions along slope:20
Circles per division:10
Number of iterations:10
Divisions to use in next iteration:50%
Number of vertices per surface:12
Optimize Surfaces:Enabled
Minimum Elevation:Not Defined
Minimum Depth:Not Defined
Minimum Area:Not Defined
Minimum Weight:Not Defined
Surfaces with a factor of safety below 1.500

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Non-engineered Fill		17	Mohr-Coulomb	2	18	Water Table	Automatically Calculated
Weathered Waipapa Group Soils		18	Mohr-Coulomb	4	28	Water Table	Automatically Calculated
Less Weathered Waipapa Group Soils		18	Mohr-Coulomb	5	30	Water Table	Automatically Calculated

Method Name	Min FS
Spencer	1.59
GLE / Morgenstern-Price	1.57



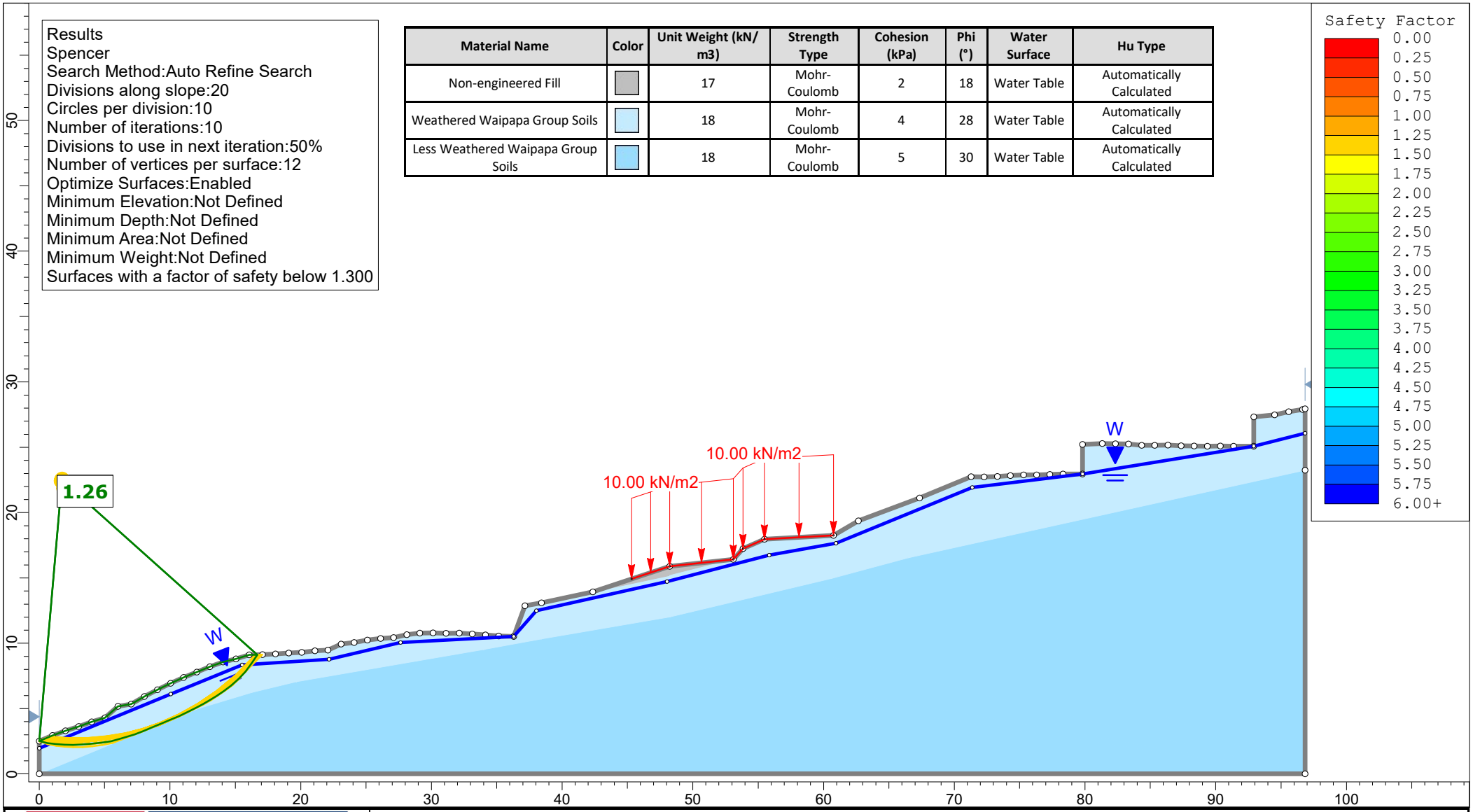
WILTON JOUBERT
Consulting Engineers

SLIDEINTERPRET 9.033

Project	141297 - 78 Florance Avenue, Russell		
Group	Cross Section A-A' - Post - Development	Scenario	Moderate Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/07/2025	File Name	141297 - AA Post Development.slmd

Results
Spencer
Search Method:Auto Refine Search
Divisions along slope:20
Circles per division:10
Number of iterations:10
Divisions to use in next iteration:50%
Number of vertices per surface:12
Optimize Surfaces:Enabled
Minimum Elevation:Not Defined
Minimum Depth:Not Defined
Minimum Area:Not Defined
Minimum Weight:Not Defined
Surfaces with a factor of safety below 1.300

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Water Surface	Hu Type
Non-engineered Fill		17	Mohr-Coulomb	2	18	Water Table	Automatically Calculated
Weathered Waipapa Group Soils		18	Mohr-Coulomb	4	28	Water Table	Automatically Calculated
Less Weathered Waipapa Group Soils		18	Mohr-Coulomb	5	30	Water Table	Automatically Calculated



WILTON JOUBERT
Consulting Engineers

SLIDEINTERPRET 9.033

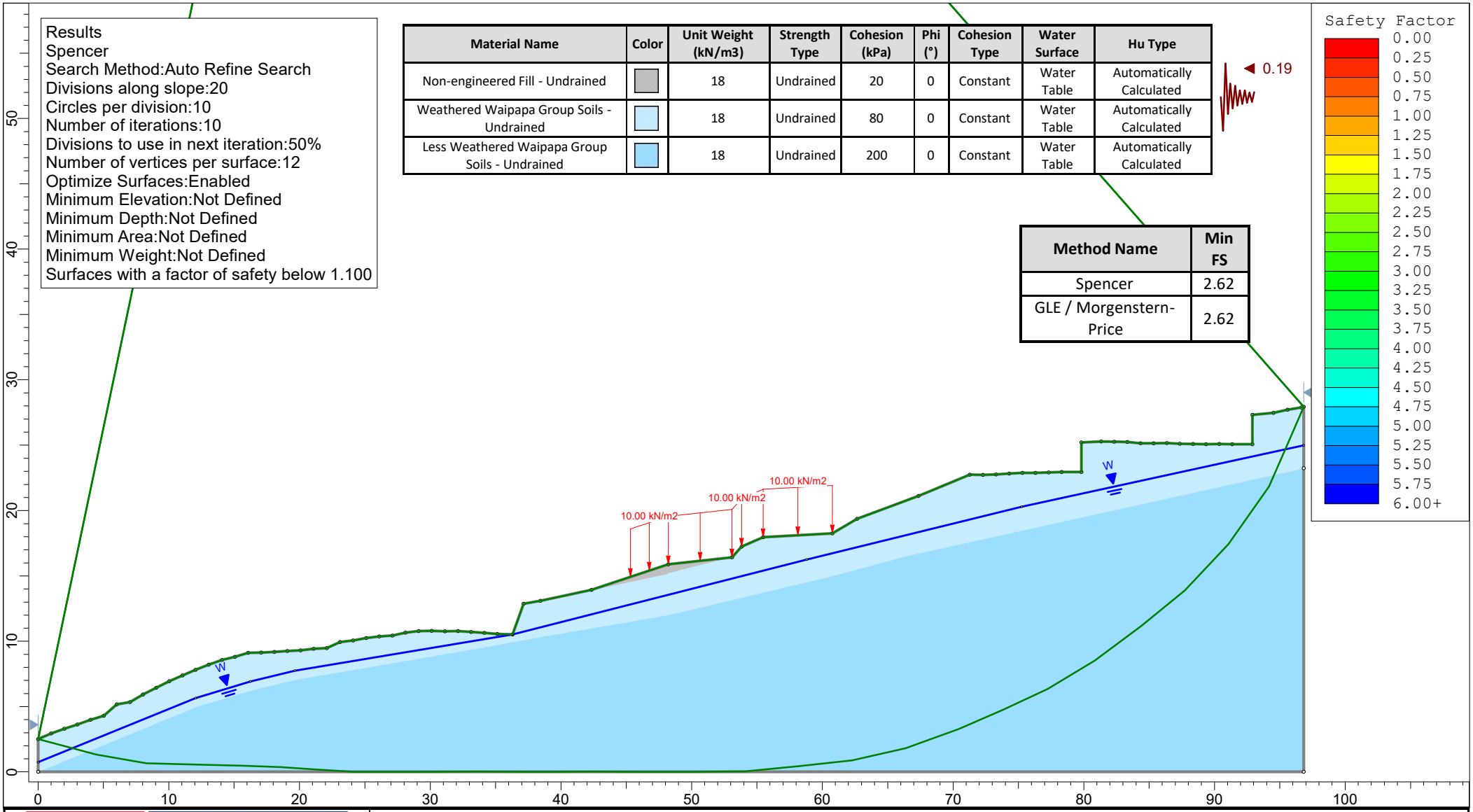
Project	141297 - 78 Florance Avenue, Russell		
Group	Cross Section A-A' - Post - Development	Scenario	Elevated Groundwater Level
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/07/2025	File Name	141297 - AA Post Development.slmd

Results
Spencer
Search Method:Auto Refine Search
Divisions along slope:20
Circles per division:10
Number of iterations:10
Divisions to use in next iteration:50%
Number of vertices per surface:12
Optimize Surfaces:Enabled
Minimum Elevation:Not Defined
Minimum Depth:Not Defined
Minimum Area:Not Defined
Minimum Weight:Not Defined
Surfaces with a factor of safety below 1.100

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (°)	Cohesion Type	Water Surface	Hu Type
Non-engineered Fill - Undrained		18	Undrained	20	0	Constant	Water Table	Automatically Calculated
Weathered Waipapa Group Soils - Undrained		18	Undrained	80	0	Constant	Water Table	Automatically Calculated
Less Weathered Waipapa Group Soils - Undrained		18	Undrained	200	0	Constant	Water Table	Automatically Calculated

0.19

Method Name	Min FS
Spencer	2.62
GLE / Morgenstern-Price	2.62



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SLIDEINTERPRET 9.033

Project	141297 - 78 Florance Avenue, Russell		
Group	Cross Section A-A' - Post - Development	Scenario	Moderate Groundwater Level - Seismic
Drawn By	A.B	Company	Wilton Joubert Limited
Date	9/07/2025	File Name	141297 - AA Post Development.slmd

FOUNDATION MAINTENANCE AND FOOTING PERFORMANCE

Preventing soil-related building movement

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

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

SOIL TYPES

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

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

CAUSES OF MOVEMENT

SETTLEMENT DUE TO CONSTRUCTION

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

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

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

EROSION

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

SATURATION

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

SEASONAL SWELLING AND SHRINKAGE OF SOIL

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

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

SHEAR FAILURE

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

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

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

TREE ROOT GROWTH

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

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

TABLE 1. GENERAL DEFINITIONS OF SITE CLASSES.

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

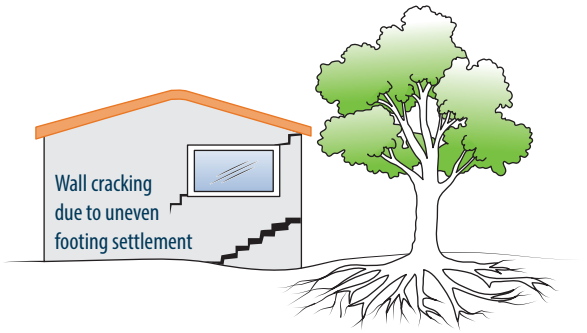

FIGURE 1 Trees can cause shrinkage and damage.

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

UNEVENNESS OF MOVEMENT

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

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

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

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

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

EFFECTS OF UNEVEN SOIL MOVEMENT ON STRUCTURES

EROSION AND SATURATION

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

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

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

SEASONAL SWELLING/SHRINKAGE IN CLAY

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

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

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

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

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

MOVEMENT CAUSED BY TREE ROOTS

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

COMPLICATIONS CAUSED BY THE STRUCTURE ITSELF

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

EFFECTS ON FULL MASONRY STRUCTURES

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

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

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

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

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

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

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

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

EFFECTS ON FRAMED STRUCTURES

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

EFFECTS ON BRICK VENEER STRUCTURES

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

WATER SERVICE AND DRAINAGE

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

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

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

SERIOUSNESS OF CRACKING

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

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

PREVENTION AND CURE

PLUMBING

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

GROUND DRAINAGE

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

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

PROTECTION OF THE BUILDING PERIMETER

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

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

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

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

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

CONDENSATION

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

TABLE 2. CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS.

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

Source: Reproduced with the permission of Standards Australia Limited © 2011. Copyright in AS 2870-2011 Residential slabs and footings vests in Standards Australia Limited.

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

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

THE GARDEN

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

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

EXISTING TREES

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

INFORMATION ON TREES, PLANTS AND SHRUBS

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

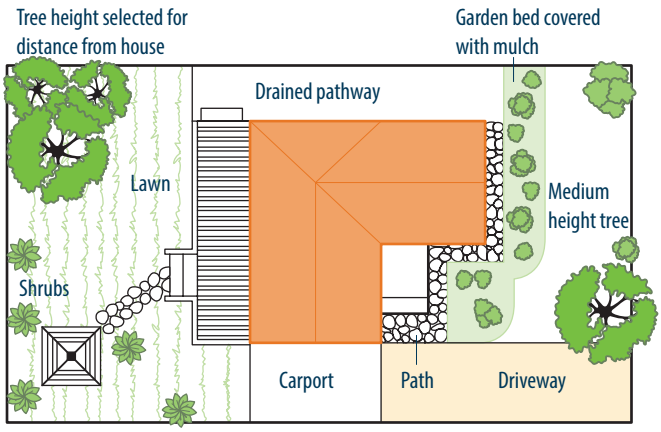

FIGURE 2 Gardens for a reactive site.

EXCAVATION

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

REMEDIATION

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

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

WILTON JOUBERT
Consulting Engineers

Construction Monitoring Services

Northland, Auckland-Waikato, Canterbury, Southern Lakes

Need a PS4?

- Please read the conditions of your Building Consent to determine which section of the works Council wants an engineer to sign off on.
- Book an inspection with Wilton Joubert Ltd or with a suitable qualified engineer.
- Have the Consent documents on site at the time of the inspection
- Be sure to verify both the grounding conditions (soil parameters) as well as the structural elements of works in question
- If in doubt what to get inspected please clarify with Council.

Producer Statements 4 - Construction Review Documents (PS4's) relates to Building Consents (BC) only, not Resource Consents (RC), unless there is an element of the RC which requires a BC, e.g. a retaining wall needed to develop a subdivision.
In soils, RC's are usually verified with a "Statement of Professional Opinion as to Suitability for Building Development", or variations on that title.

CONSTRUCTION MONITORING SERVICES

Construction monitoring refers to the physical inspection of selective components of the design or works as required by Council and as specified in the Consented documents. It is up to the Consent holder to read the special conditions set out by Council and arrange for the required inspections to be done. No PS4 can be issued without the physical inspection of works and sighting of Consented plans either by the design engineer, his representative, or another qualified engineer. (download PDF with more info via our website)

It is also important to note that, more often than not, there are two physical components that needs verification:

1. Geotechnical or grounding Conditions –referring to the strength or bearing capacity of the soil
2. Structural Components – verify that works are done as per design and in accordance with the consented plans.

To complicate matters there can be multiple engineers that might be engaged on the same site:

- Civil Engineer – To do storm water and wastewater designs
- Geotechnical Engineer – to do a Geotech report and specificity soil parameters as required
- Structural Engineer – to design structural components such as retaining walls, raft floors, beams and so on.

In cases where engineers from different companies are appointed it is important to make sure all the required boxes are ticked as not to complicate matters when it comes to the issuing of all the relevant PS4's.
Note: sites in the Auckland area might requires multiple PS4's for the same component (e.g. a raft floor requires a Geotechnical Engineer to verify the bearing capacity of the platform and a Structural engineer needs to verify the structural components are according to the design.
Not to mention a Council inspection is also required on the same floor to verify position, plumbing and so on.

In Summary:

- Read the conditions as laid out in the Consent documents to which elements of the design requires a PS4's from the design engineer.
- Have Consented plans on site during inspection time
- Book inspections ahead of time (a minimum of 48 hours in advanced)
- Ensure both grounding conditions as well as structural components are inspected. In some cases, this might mean two separate inspections if different engineers are involved.
- If you have any further questions, feel free to contact us at any time during business hours.

Construction Monitoring Enquiries
Email: *jobs@wjl.co.nz*
or scan QR code to visit our website

Wilton Joubert Limited
09 527 0196
PO BOX 11-381
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Auckland 1524

SITE	78 Florance Avenue, Russell
LEGAL DESCRIPTION	Lot 3 DP 113872
PROJECT	1-into-3 Lot Residential Subdivision
CLIENT	Natissa Kamlade
REFERENCE NO.	141298
DOCUMENT	Civil Site Suitability Report
STATUS/REVISION No.	00
DATE OF ISSUE	16 July 2025

Report Prepared For	Email
Natissa Kamlade	itiwai@windowslive.com

Reviewed by	**P. McSweeney** *(BE(Hons) Civil)*	Civil Engineer	Patrick@wjl.co.nz	
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1. EXECUTIVE SUMMARY

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

Existing/Proposed Site Area:	Parent Lot: 3,624m² Proposed Lot 1: 1,624m² Proposed Lot 2: 1,000m² Proposed Lot 3: 1,000m²
Development Proposals Supplied:	• Subdivision scheme plan by BoI Survey Ltd. Job No. 5066 dated 04.06.2025. • No future development proposals supplied for new vacant lot.
Associated Documents:	WJL Geotechnical Investigation Report Ref. 141297
Wastewater Services:	• Drainage easements to be established over private drainage as applicable. • Recommend to locate existing site connection and undertake CCTV investigation to determine size, condition and grade of connection. • Wastewater from future development at Proposed Lot 2 should be directed to the existing 100mm site connection. An inspection chamber should be installed on the end of the existing connection, with each lot draining to the chamber, **or** the additional Proposed Lot 2 future development flows may be directed to the existing connection via a wye-junction and a rodding-eye installed on the end of the connection for maintenance purposes.
Potable Water Supply	• The existing rainwater tanks on Proposed Lots 1 & 3 will be sufficient to continue to service their respective dwellings. • It is recommended that 2 x 25,000L rainwater tanks be installed for future development at Proposed Lot 2 to provide sufficient water supply.
District Plan Zone:	Russell Township
Impermeable Coverage Activity Status:	Proposed Lot 1: **Restricted Discretionary –** RC Required Proposed Lot 2: To be confirmed Proposed Lot 3: Permitted
Proposed Lot 1 Runoff Attenuation:	Attenuation is to be provided in accordance with the requirements outlined in Section 5 for the impermeable area exceeding the Permitted Activity threshold via a flow attenuated outlet in the existing dwelling's rainwater tanks (providing ~2,800L detention) or via a new ~3,000L detention tank.
Stormwater Discharge Point (Lot 2):	Piped connection to existing sump at top of vehicle crossing or on the sump's outlet pipe, from which the existing outlet will convey runoff to the eastern Florance Avenue roadside drain.
Firefighting:	A 45m³ firefighting supply should be provided on-site **or** this requirement can be waived/adjusted if a different specific agreement is made with the Fire & Emergency NZ for the subject site or subdivision.
Access:	• The existing vehicle crossing layout provides adequate entry/exit turning circle radius for passenger vehicles. Repairs may extend longevity of the crossing but are not necessary for function. • Existing private accessway widths are sufficient to serve an additional "Household Equivalent" per the District Plan Appendix 3B-1. • Sight distances from the existing vehicle crossing are non-compliant with the FNDC standards, and suitability of the crossing will be at council's discretion. Mitigating factors/recommendations include; operating speed may be lower than posted speed limit due to winding nature of road alignment, no feasible alternative crossing location will provide better sight distance, clearance/trimming of vegetation in the berm may improve visibility,

implementation of “concealed exit” signs in the Florance Avenue roadway may mitigate risk.

2. SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by the client to undertake a civil site suitability assessment (wastewater, stormwater, potable water & access assessment) to support a 1-into-3 lot subdivision of Lot 3 DP 113872, as depicted to us on the Subdivision Scheme Plan by BoI Survey Ltd. Job No. 5066 dated 04.06.2025. Refer Figure 1 below.

It is our understanding that the client intends to subdivide the existing Russell Township property into three individual allotments. Proposed Lots 1 & 3 are to contain the existing primary and minor dwellings respectively, with Proposed Lot 2 being vacant and earmarked for future development. At the time of report writing, no development plans have been supplied to WJL for the future development of Proposed Lot 2. A 14x14 development platform has been indicated in the supplied plans.

Any revision of the supplied drawings and/or development proposals with wastewater, stormwater and/or access implications should be referred back to us for review. This report is not intended to support Building Consent applications for the future Proposed Lots, and any revision of supplied drawings and/or development proposals including those for Building Consent, which might rely on wastewater, stormwater and/or access assessments herein, should be referred to us for review.

Figure 1: Subdivision Scheme Plan by BoI Survey Ltd Job No: 5066 dated 04.06.2025. Yellow lines indicate Proposed Lot boundaries.

3. SITE DESCRIPTION

The subject 3,624m² irregular shaped property is positioned in the south-eastern outskirts of the Russell Township and is located off the eastern side of Florance Avenue, accessed 650m northwest of the Hope Avenue intersection.

The Lot is legally titled Lot 3 DP 113872 and is designated Russell Township zone in accordance with the Far North District Council (FNDC) on-line GIS Operative District Plan Map.

The property is accessed at the southwestern boundary via an existing vehicle crossing and driveway. The driveway splits into two at the crossing entrance, with one arm traversing east towards an existing residential development near the southern boundary and the other arm traversing northeast towards an additional existing residential development near the north-eastern boundary.

Aside from the two noted residential developments and bitumen driveway, the site is covered in lawn, with bush generally covering the northwestern portion, as well as along the eastern boundary.

Topographically speaking, the property is positioned towards the toe of west facing, moderate to steeply inclined, spur flank feature that descends from a crest approximately 50m east of the site. Existing ground levels across the site range between approximately RL28m (northeast) and RL11m (northwest) New Zealand Vertical Datum (NZVD). The land immediately bounding the western boundary has been cut near vertically, generally between approximate heights of 2.0m and 3.0m, during the formation of Florance Avenue.

Figure 2: Screenshot aerial view from the FNDC on-line GIS Property and Land Map. Property boundary is highlighted in cyan. 1.0m LiDAR are overlaid.

Each existing dwelling is currently serviced by on-site rainwater tanks for potable water supply. We were advised during the geotechnical investigation fieldwork that there are two buried water tanks adjacent to the existing dwelling on Proposed Lot 1. The rainwater tanks servicing the existing dwelling on Proposed Lot 3 are situated on the northern side of the dwelling.

At the time of preparing this report, we note that the FNDC on-line GIS Water Services Map indicates the following:

- Public stormwater infrastructure bounds the eastern property boundary, generally draining into the roadside drains along Florance Avenue, but do not appear to service the subject site, and
- A gravity main wastewater line traverses beneath Florance Avenue. A service connection to this line appears to be present at the south-western boundary, just west of the vehicle crossing.

Figure 3: Screenshot aerial view from the FNDC on-line GIS Water Services Map. Property is highlighted in cyan. Red line indicates wastewater, green line indicates stormwater.

4. WASTEWATER

The existing wastewater site connection is located on the western side of the vehicle crossing, consisting of a 100mmØ connection into the site from a 150mmØ public gravity line in the Florance Avenue carriageway. The client has advised that the private drainage from both existing dwellings is currently directed to this connection.

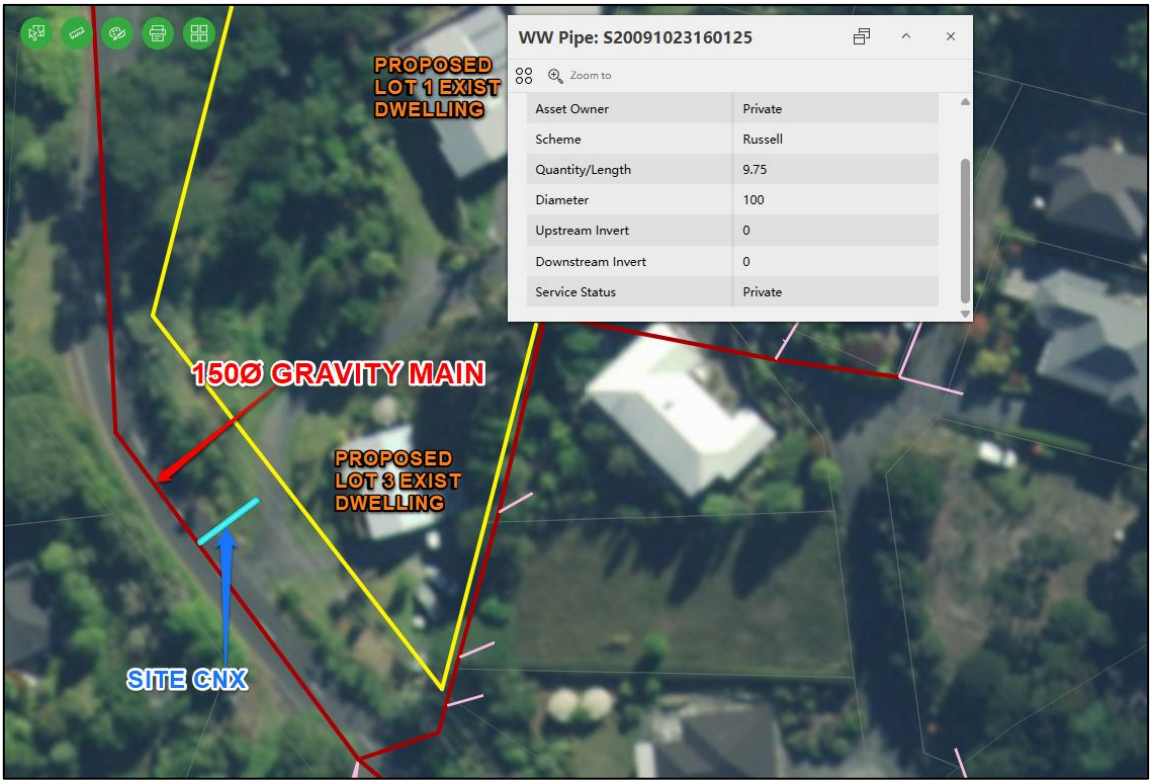


Figure 4: Snip of FNDC Assets Maps showing public sewer services.

The existing connection should be located and a CCTV investigation undertaken to determine the location, depth, condition, size, and approximate grade of the line.

The FNDC Engineering standards 2023 Table 5-8 notes that 100mm connections are acceptable to in-fill developments serving up to 3 household units if an inspection chamber is installed. An inspection chamber is defined as a 600Ø chamber at a maximum depth of 1.2m. We note that, due to the topography over the connection's alignment, it is expected that the line grade will be relatively steep and the construction of an inspection chamber on the end of the existing connection line - and subsequent reconnecting of the existing private drainage to the inspection chamber - to council's standard may not be feasible.

If this is the case, it is our opinion that the existing connection (provided the line condition is confirmed adequate as above) should be sufficient to serve the existing structures on Proposed Lots 1 & 3 as well as additional flows from a future development at Proposed Lot 2 via the installation of a wye-junction on the connection line without the need for installation of an inspection chamber, provided that a rodding-eye is installed on the end of the connection line to allow for maintenance.

Drainage easements will need to be established over private drainage lines as applicable.

5. POTABLE WATER

Based on on-site observations, it is our understanding that the existing dwelling on Proposed Lot 1 is serviced by two buried rainwater tanks (dimensions and capacity unknown) and the existing dwelling on Proposed Lot 3 is serviced by at least one above-ground rainwater tank, with one plumbed concrete tank being located on the dwelling's western side, a smaller plastic tank being located next to the concrete tank and a large plastic tank being located on the slope above these.

It is apparent that the existing tanks serving each dwelling are located within their respective Proposed Lot boundaries. We have been advised that the existing rainwater reuse systems in place for the dwellings in Proposed Lots 1 and 3 are currently operational with no issues. These will be sufficient to continue to service the dwellings post-subdivision without the addition of more reuse tanks.

For future development at Proposed Lot 2, potable rainwater tanks should be provided in accordance with the Countryside Living Toolbox requirements. It is recommended to provide at least 2 x 25,000L tanks for potable water usage. The type of tank and volume is for the client to confirm.

6. STORMWATER

6.1 ASSESSMENT CRITERIA

The site lies within the Far North District. The stormwater assessment has been completed in accordance with the recommendations and requirements contained within the Far North District Engineering Standards and the Far North District Council District Plan.

As below, the site resides in the Russell Township zone.

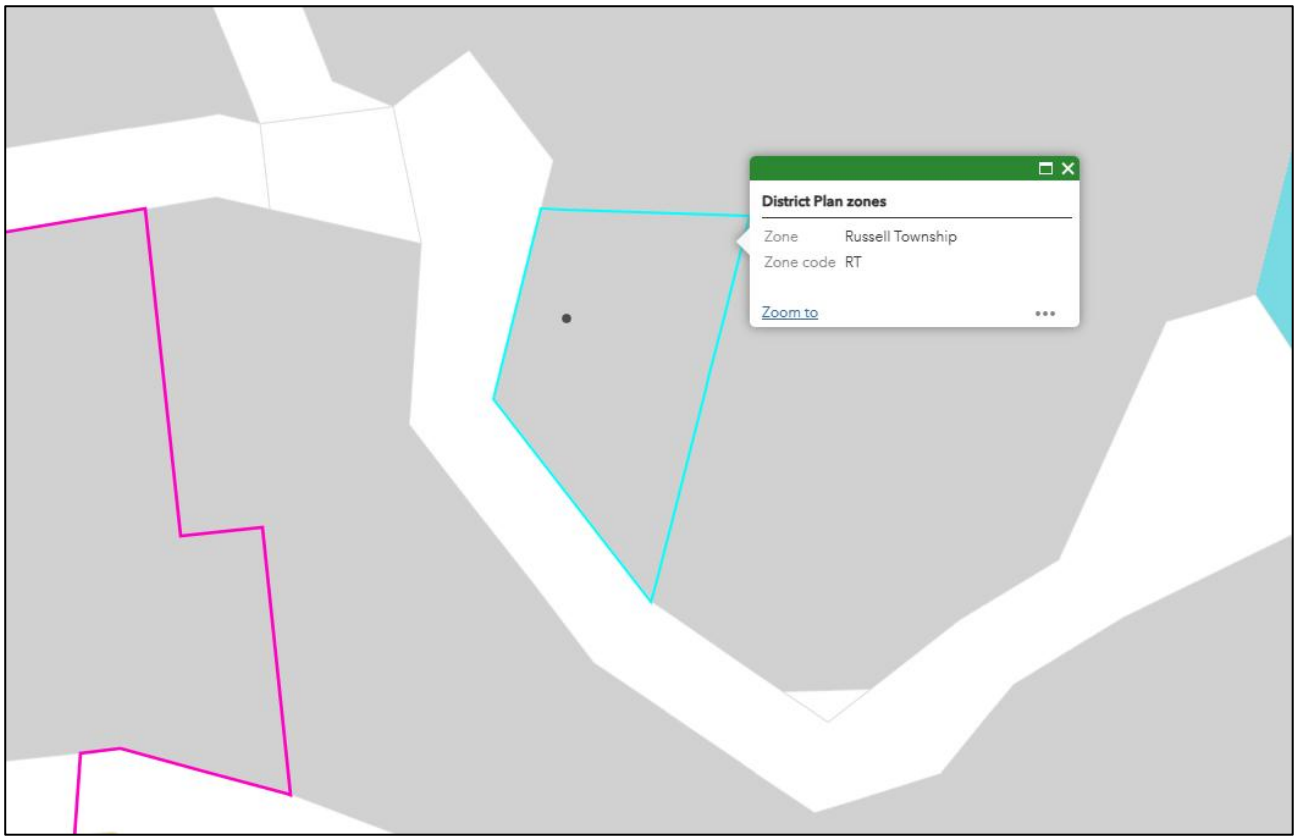


Figure 5: Snip of FNDC Maps Showing Site in Russell Township zone.

The following Stormwater Management Rules Apply:

Permitted Activity: 10.9.5.1.7 STORMWATER MANAGEMENT – The maximum proportion of the gross site area covered by buildings and other impermeable surfaces shall be 35%.
Restricted Discretionary Activity: 10.9.5.2.9 STORMWATER MANAGEMENT – The maximum proportion site area covered by buildings and other impermeable surfaces shall be 40%.

The maximum on-site impermeable coverage for each lot in compliance with the Permitted and Restricted Discretionary Activity rules is listed below. Impermeable coverage exceeding these limits would be considered a Discretionary Activity.

	Maximum Permitted Activity Impermeable Coverage	Maximum RD Activity Impermeable Coverage
Proposed Lot 1:	568m²	649m²
Proposed Lot 2:	350m²	400m²
Proposed Lot 3:	350m²	400m²

If the future development on Proposed Lot 2 does not comply with the Permitted Activity Rule (10.9.5.1.7) then this development will require a stormwater mitigation assessment, including a District Plan Assessment for items (a) through (l) under Restricted Discretionary (10.9.5.2.9) Activity status or items (a) through (m) of Cl 11.3 under Discretionary Activity status.

The total post-subdivision impermeable coverage and respective activity status based on the above criteria for Proposed Lots 1 & 3 is summarised below. All existing impermeable surfaces have been estimated via measurements from GIS data and aerial imagery.

	Post-Subdivision Impermeable Coverage	Activity Status
Proposed Lot 1	648m²	Restricted Discretionary
Proposed Lot 3	323m²	Permitted

Proposed Lot 1 will require additional stormwater management considerations for items (a) through (l) of 10.9.5.2.9. See Section 6.3 of this report for a District Plan Assessment.

Runoff from the site will be directed to a roadside drain along Florance Avenue and to a series of culverts before eventually draining to the Matauwhi Bay marine environment. To account for the flows directed to the public network resulting from Proposed Lot 1's permitted activity impermeable coverage exceedance, we recommend that on-site flow attenuation is implemented on Proposed Lot 1 for the 20% AEP and 1% AEP design storms. Refer to Section 6.2.4 below.

Additionally, we recommend utilising Low Impact Design Methods as a means of stormwater management. Design guidance should be taken from 'The Countryside Living Toolbox' design document, and where necessary, 'Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual' Auckland Regional Council (2003).

Stormwater management recommendations are provided below.

6.2 PRIMARY STORMWATER

6.2.1 Stormwater Runoff from Roof Areas

Proposed Lots 1 & 3

Based on on-site observations, it is our understanding that the existing dwelling on Proposed Lot 1 is serviced by two buried rainwater tanks (dimensions and capacity unknown) and the existing dwelling on Proposed Lot 3 is serviced by at least one above-ground rainwater tank, with one plumbed concrete tank being located on the dwelling's western side, a smaller plastic tank being located next to the concrete tank and a large plastic tank being located on the slope above these.

It is apparent that the existing tanks serving each dwelling are located within their respective Proposed Lot boundaries, although the layout of private drainage to/from these tanks cannot be confirmed. While it appears that tank overflows are directed to the existing sump on the northern side of the parent lot's vehicle crossing, this will need to be confirmed to ensure that the existing tank discharge points are suitable to remain as is. WJL should be contacted for a review of the drainage layout if necessary once this is confirmed.

Proposed Lot 2

Stormwater runoff from the roof of any future structures on Proposed Lot 2 must be captured by a gutter system and conveyed to rainwater tanks on the corresponding lot.

Discharge from the tank(s) should be directed to the existing sump on the northern side of the parent lot's vehicle crossing, or sump's outlet pipe, via sealed pipes. If this is not achievable, an alternative discharge point is to be established that conveys runoff to a suitable receiving environment, does not direct runoff to any structures, and does not present any adverse effects to slope stability or cause erosion.

Discharge onto the slopes west of the indicated building platform area is not permitted; therefore, a new connection to the roadside swale must be installed if the above recommendations are not achievable.

6.2.2 Stormwater Runoff from Hardstand Areas

Proposed Lots 1 & 3

The existing accessways on these lots drain to a formed dish channel which directs runoff to the existing catchpit on the northern side of the parent lot's vehicle crossing. No changes to the hardstand areas should be required to accommodate stormwater drainage.

Proposed Lot 2

Future development on Proposed Lot 2 will include an accessway. This should be designed such that runoff is collected via catchpits and directed to the discharge point via sealed pipes or to a suitable surface drainage channel.

6.2.3 Stormwater Runoff Discharge Point

Runoff generated over the existing developed areas at the site is currently directed to a catchpit chamber with a grated inlet cover and a 150mmØ outlet pipe to an outlet in the Florance Avenue eastern roadside drain. The outlet was observed on-site to be in working condition. As per the attached calculations, the existing outlet will have capacity to accommodate flows up to the 20% AEP design storm event for the existing developed areas on Proposed Lots 1 & 3 as well as up to 350m² of impermeable coverage (Permitted Activity coverage) on Proposed Lot 2. Therefore, we consider the continued use of this outlet to be adequate.

The stormwater management system for future development at Proposed Lot 2 may either direct runoff to the existing parent lot's discharge point, or to an alternative discharge point as determined by a site-specific stormwater assessment, in general accordance with the recommendations outlined in Section 6.2.1 above.

Figure 6: 07.07.2025 Site Photo – View of sump (background, at top of vehicle crossing) and existing outlet to roadside drain (foreground).

6.2.4 Proposed Lot 1 Flow Attenuation

To account for the flows directed to the public network resulting from Proposed Lot 1's permitted activity impermeable coverage exceedance, it is recommended that either;

1. The existing rainwater tanks serving Proposed Lot 1 be retrofitted with a flow attenuation outlet, or
2. A new detention tank is installed on Proposed Lot 1, in-line between the gutters and existing rainwater tanks or between the rainwater tanks' outlet and the discharge point.

As per the attached design calculations, the design elements for these options are as follows:

Option 1

Assumed Tank dimensions (TBC prior to works)	2 x 3000mmØ (or greater) x 2200mm high (or greater)
Outlet orifice (20% AEP Control)	**74mm diameter orifice**; located >220mm below the overflow outlet - 129mm water elevation - 1.8m³ storage
Outlet orifice (1% AEP Control)	**60mm diameter orifice**; located >130mm above the 20% AEP Control Orifice - 212mm water elevation - 3.0m³ storage
Overflow Outlet	**100mm diameter**; located at the top of the tank

Option 2

Proposed Tank	1 x 3,000L litre Tank (or similar)
Tank dimensions	1600mmØ (or greater) x 1700mm high (or greater)
Outlet orifice (20% AEP Control)	**44mm diameter orifice**; located 200mm above the tank base - 737mm water elevation - 1.5m³ storage
Outlet orifice (1% AEP Control)	**42mm diameter orifice**; located 740mm above the 20% AEP Control Orifice - 1144mm water elevation - 2.3m³ storage
Overflow Outlet	**100mm diameter**; located at the top of the tank

6.3 DISTRICT PLAN ASSESSMENT

This section has been prepared to demonstrate the likely effects of the activity on stormwater runoff and the means of mitigating runoff.

In assessing an application under this provision, the Council will exercise discretion to review the following matters below, (a) through (r). In respect of matters (a) through (r), we provide the following comments:

13.10.4 – Stormwater Disposal

(a) Whether the application complies with any regional rules relating to any water or discharge permits required under the Act, and with any resource consent issued to the District Council in relation to any urban drainage area stormwater management plan or similar plan.	No discharge permits are required. No resource consent issued documents stipulating specific requirements are known for the subject site or are anticipated to exist.
(b) Whether the application complies with the provisions of the Council's "Engineering Standards and Guidelines" (2004) - Revised March 2009 (to be used in conjunction with NZS 4404:2004).	The application is deemed compliant with the provisions of the Council's "Engineering Standards and Guidelines" (2004) - Revised March 2009
(c) Whether the application complies with the Far North District Council Strategic Plan - Drainage.	The application is deemed compliant with the Far North District Council Strategic Plan - Drainage
(d) The degree to which Low Impact Design principles have been used to reduce site impermeability and to retain natural permeable areas.	Stormwater management should be provided for the subject lot by utilising Low Impact Design Methods (and attenuation where necessary as outlined in previous sections). Guidance for design should be taken from 'The Countryside Living Toolbox' design document, and where necessary, *"Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual" Auckland Regional Council (2003).* All roof and hardstand runoff will be collected by stormwater management devices and directed to a suitable discharge point.
(e) The adequacy of the proposed means of disposing of collected stormwater from the roof of all potential or existing buildings and from all impervious surfaces.	As above. Runoff from any new roof and hardstand areas will be collected and discharged in a controlled manner to a discharge outlet.
(f) The adequacy of any proposed means for screening out litter, the capture of chemical spillages, the containment of contamination from roads and paved areas, and of siltation.	Runoff from roof areas is free of litter, chemical spillages, or contaminants from roads. Runoff from future proposed hardstand areas is to be collected via catchpits with suitable sumps for debris settlement prior to discharge to the outlet.
(g) The practicality of retaining open natural waterway systems for stormwater disposal in preference to piped or canal systems and adverse effects on existing waterways.	No alteration to waterways is proposed.
(h) Whether there is sufficient capacity available in the Council's outfall stormwater system to cater for increased run-off from the proposed allotments.	Attenuation will be provided for impermeable areas exceeding the Permitted Activity status threshold, thereby mitigating the effects of development on the capacity of the public stormwater network. No specific issues with downstream network capacity have been identified.

(i) Where an existing outfall is not capable of accepting increased run-off, the adequacy of proposals and solutions for disposing of run-off.	Not applicable.
(j) The necessity to provide on-site retention basins to contain surface run-off where the capacity of the outfall is incapable of accepting flows, and where the outfall has limited capacity, any need to restrict the rate of discharge from the subdivision to the same rate of discharge that existed on the land before the subdivision takes place.	As above, attenuation will be provided for impermeable areas exceeding the Permitted Activity status threshold, thereby mitigating the effects of development on the capacity of the public stormwater network. No specific issues with downstream network capacity have been identified.
(k) Any adverse effects of the proposed subdivision on drainage to, or from, adjoining properties and mitigation measures proposed to control any adverse effects.	No change to the site's existing drainage characteristics are proposed as part of the subdivision. For any future development, outlet locations are to be determined during detailed design and are to be located such that there are no adverse effects on adjacent properties.
(l) In accordance with sustainable management practices, the importance of disposing of stormwater by way of gravity pipe lines. However, where topography dictates that this is not possible, the adequacy of proposed pumping stations put forward as a satisfactory alternative.	Not applicable.
(m) The extent to which it is proposed to fill contrary to the natural fall of the country to obtain gravity outfall; the practicality of obtaining easements through adjoining owners' land to other outfall systems; and whether filling or pumping may constitute a satisfactory alternative.	Not applicable.
(n) For stormwater pipes and open waterway systems, the provision of appropriate easements in favour of either the registered user or in the case of the Council, easements in gross, to be shown on the survey plan for the subdivision, including private connections passing over other land protected by easements in favour of the user.	Not applicable.
(o) Where an easement is defined as a line, being the centre line of a pipe already laid, the effect of any alteration of its size and the need to create a new easement.	Not applicable.
(p) For any stormwater outfall pipeline through a reserve, the prior consent of the Council, and the need for an appropriate easement.	Not applicable.

(q) The need for and extent of any financial contributions to achieve the above matters.	Not applicable.
(r) The need for a local purpose reserve to be set aside and vested in the Council as a site for any public utility required to be provided.	Not applicable.

For any future development on Proposed Lot 2 that would be considered a Restricted Discretionary Activity, the Council will exercise its discretion to review matters (a) through (l) of the FNDC District Plan Cl 10.7.5.3.8. An assessment of the proposals with respect to these items should be provided at Building Consent if applicable.

The proposed subdivision will result in the existing impermeable coverage within Proposed Lot 1 falling within Restricted Discretionary status under 10.9.5.1.7. The Council will exercise its discretion to review the following matters (a) through (l) below.

In respect of matters (a) through (l), we provide the following comments:

(a) the extent to which building site coverage and Impermeable Surfaces contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment;	No additional impermeable surfaces will be constructed on Proposed Lot 1 as part of the subdivision. The subdivision results in Proposed Lot 1 exceeding Permitted Activity levels of impermeable coverage, which is addressed via the implementation of flow control attenuation as outlined above.
(b) the extent to which Low Impact Design principles have been used to reduce site impermeability;	Flow control attenuation is proposed to mitigate the effects of runoff resulting from impermeable surfaces.
(c) any cumulative effects on total catchment impermeability;	No additional impermeable surfaces are proposed to be constructed on Proposed Lot 1.
(d) the extent to which building site coverage and Impermeable Surfaces will alter the natural contour or drainage patterns of the site or disturb the ground and alter its ability to absorb water;	No additional impermeable surfaces are proposed to be constructed on Proposed Lot 1. Existing drainage patterns will be unaffected as a result of the subdivision.
(e) the physical qualities of the soil type;	Clayey silt. Moderate drainage.
(f) Any adverse effects on the life supporting capacity of the soils;	No additional impermeable surfaces are proposed to be constructed on Proposed Lot 1. The life supporting capacity of the soils will be unaffected as a result of the subdivision.
(g) the availability of land for the disposal of effluent and stormwater on the site without adverse effects on the water quantity and water quality of water bodies (including groundwater and aquifers) or on adjacent sites;	Stormwater and wastewater discharge outlets are already established for the existing structures on Proposed Lot 1.
(h) the extent to which paved, Impermeable Surfaces are necessary for the proposed activity;	The existing driveway provides access to the dwelling. We do not deem the proposed paved areas to be excessive for the site.

i) the extent to which land scaping and vegetation may reduce adverse effects of run-off;	Existing trees and plantings have already been established on-site. No specific planting regime is proposed as part of the subdivision.
(j) Any recognised standards promulgated by industry groups;	N/A
(k) the means and effectiveness of mitigating stormwater runoff to that expected by permitted activity threshold.	Runoff resulting from the impervious areas in excess of the permitted coverage threshold will be attenuated via a detention tank system, supplying attenuation for the 20% AEP & 1% AEP storm event to mitigate the effects of runoff on the receiving public stormwater network. Given this, hydrological neutrality will be achieved across the site for these areas, and stormwater runoff has effectively been mitigated to the Permitted Activity threshold.
(l) The extent to which the proposal has considered and provided for climate change;	Rainfall values utilised in all runoff calculations have been increased by 20% to account for climate change factors in accordance with the FNDC Engineering Standards.

7. FIREFIGHTING SUPPLY

As the Proposed Lots are not within a 90m distance of an open utilisable water body and all future dwellings are anticipated to be serviced by non-reticulated water supply, The New Zealand Fire Service Firefighting Water Supplies Code of Practice (SNZPAS 4509:2008) states that buildings require a minimum on-site firefighting water supply of 45m³.

The firefighting source should be provided for by on-site water tanks, installed/positioned in compliance with Appendix B of SNZPAS4509. The firefighting supply tank(s) must be installed separately to any potable rainwater tanks and must remain full. These tanks must be accessible to fire trucks in the scenario of a fire emergency.

The above requirement can be waived or adjusted if a different specific agreement is made with Fire & Emergency NZ for the subject site or subdivision.

8. ACCESS

8.1 GENERAL

It is our understanding that access for all Proposed Lots will be from the existing sealed vehicle crossing and associated driveway on the eastern side of Florance Avenue.

The existing vehicle crossing consists of a flexible pavement surface on the eastern side of Florance Avenue extending 2-3m towards the subject site. The surface condition shows signs of ageing, with minor cracking, edge raveling, and some differential settlement at the interface between the crossing and the private access.

The existing concrete driveways to the existing dwellings split from the end of the sealed vehicle crossing and up to the western corner and south-western midpoint boundaries of Proposed Lot 3. From here, the driveways continue up to the existing structures. The existing Lot 1 driveway is 3.5m wide and the existing Lot 3 driveway is 3.0m wide.

The existing ROW was observed during a site visit undertaken by WJL on 05.12.2024 as having the dimensions shown in Figure 7 below.

Figure 7: View of site access from Florance Ave, facing northeast.

The section of Florance Avenue along the parent lot's frontage is generally winding, with a posted speed limit of 50km/h. The proposed access point is located on the inside of a road corner.

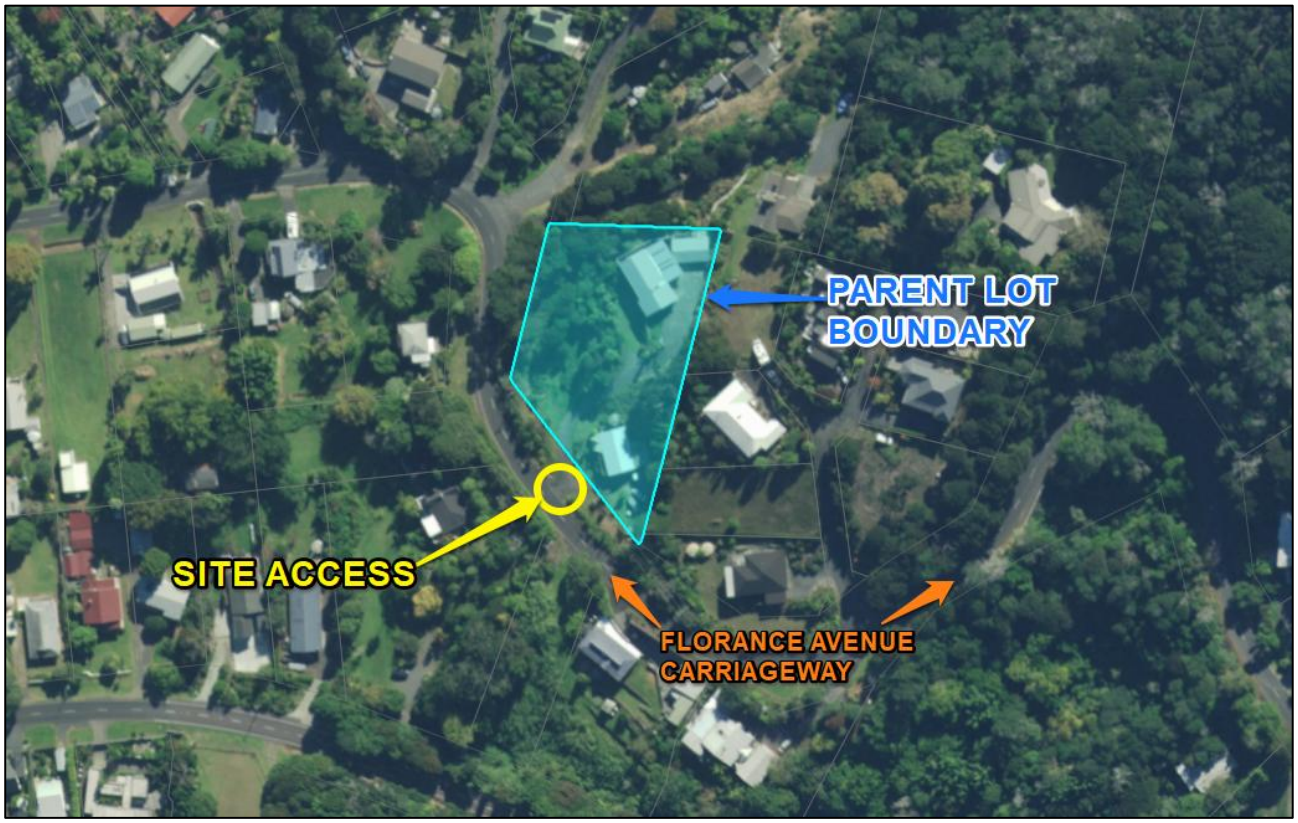


Figure 8: Aerial view of subject site and Florance Avenue carriageway.

Figure 9: Google Street View image – View of Florance Avenue from access point (right), facing northwest.

Figure 10: Google Street View image – View of Florance Avenue from access point (left), facing southeast.

8.2 VEHICLE CROSSING

As shown in Figure 7 above, the existing crossing is ~7.0m wide at the road edge and the two separated concrete accessway sections of the crossing to Proposed Lots 1 and 3 are 3.5m and 3.0m respectively.

As shown on the appended Access Site Plan C400, the existing crossing configuration provides an adequate turning circle radius for passenger vehicle entry/exit to the site.

An existing culvert traverses the crossing for the conveyance of flows through the roadside drain. No issues were identified with the culvert during WJL's site visit.

Given the above, we conclude that the existing crossing dimensions will be adequate to serve the existing lots and one additional future dwelling on Proposed Lot 2.

If repairs to the existing crossing are deemed necessary, we recommend that the asphalt is sawcut at an offset of at least 300mm from the concrete slab and resealed to the edge of the concrete, and sealed with bitumen sealant at the new/existing asphalt joint interface.

8.3 SIGHT DISTANCES

Florance Avenue has a posted speed limit of 50km/hr (NZTA National Speeds Limits Register). The Far North District Council Engineering Standards (2023) – Sheet 4 notes that the minimum required sight distance is 60m.

The available sight distances along the northbound and southbound lanes from the proposed crossing are 30m and 47m respectively (refer to Access Plan C400) - less than the minimum given in FNDC ES Sheet 4. The suitability of the access point will therefore be at council's discretion.

In support of the suitability of the proposed access point we note the following mitigating circumstances/recommendations:

- The operating speed of the road is likely to be lower than the posted speed limit due to the winding nature of the road section in proximity to the site, mitigating the effects of limited sight distance,
- There is no alternative crossing location along the property frontage that would provide better overall sight distances.
- Implementation of "concealed exit" signs along the Florance Avenue roadway may assist with mitigating risks pertaining to the limited available sight distance.
- Clearance or trimming of vegetation along the eastern Florance Avenue berm may assist with mitigating risks pertaining to the limited available sight distance.

8.4 VEHICLE ACCESS

Given the proposed subdivision scheme layout, the accessway for the existing dwelling on Proposed Lot 1 will be within the boundary of Proposed Lot 3. This will require an access easement to be formed on Proposed Lot 3. The easement and accessway should be adequate to serve 2 x Household Equivalents, accounting for the existing dwelling on Proposed Lot 1 and the future development on Proposed Lot 2. Therefore, in accordance with the operative District Plan Appendix 3B-1, the easement is to have a minimum width of 5.0m. The minimum carriageway width is 3.0m, which the existing accessway complies with.

APPENDIX 3B-1: STANDARDS FOR PRIVATE ACCESS

(Reference: ***Part 3 District Wide Provisions, Section 15.1 Traffic, Parking and Access*** and ***Zone Maps***)

Zone	No. of H.E.s	Legal Width	Carriageway Width	Maximum Gradient		Kerb	Foot-path	Storm-water Drain[1]
				Unsealed	Sealed			
Residential	1	-	3.0	1:6	1:4	-	-	Yes
Coastal Residential	2	5.0	3.0	-	1:4	-	-	Yes
Russell Township	3 - 4	7.5	3.0 with passing bays	-	1:4	-	-	Yes
Point Veronica	5 - 8	7.5	5.0	-	1:4	Yes	-	Yes
Commercial	1	-	3.0	1:8	1:5	-	-	Yes
Industrial	2 - 4	8.0	6.0	-	1:5	-	-	Yes
Orongo Bay Special Purpose	>5	8.0	6.0	-	1:5		-	Yes
Rural Production Rural Living	1	-	3.0	1:5	1:4	-	-	Yes
Waimate North Horticultural Processing Carrington Estate	2	5	3.0	1:5	1:4	-	-	Yes
General Coastal Coastal Living	3 – 4	7.5	3.0 with passing bays	1:5	1:4	-	-	Yes
South Kerikeri Inlet Recreational Activities	5 – 8	7.5	5.0	1:5	1:4	-	-	Yes

[1] All private access must have stormwater drainage measures such that adverse effects are not created on adjoining properties or the public road, in accordance with Council's "*Engineering Standards and Guidelines" (June 2004 – Revised 2009)*

Note 1: H.E. = Household Equivalent represented by 10 vehicle movements

Note 2: Refer to ***Rules 15.1.6B.1.1(c) and (d)***.

Note 3: Access for more than 8 Household Equivalents shall be by public road and constructed to a standard identified in ***Appendix 3B-2***.

Note 4: Access carriageways in urban zones that serve two or more users shall be sealed or concreted, refer ***Rule 15.1.6B.1.2(c)***.

Figure 11: FNDC Operative DP Table 3B-1: Standards for Private Accessways

9. LIMITATIONS

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

This report has been commissioned solely for the benefit of our client in relation to the project as described herein, and to the limits of our engagement, with the exception that the local Territorial Authority may rely on it to the extent of its appropriateness, conditions, and limitations, when issuing the subject consent.

No flooding / secondary flow assessment has been included in this report.

Any variations from the development proposals as described herein as forming the basis of our appraisal should be referred back to us for further evaluation. Copyright of Intellectual Property remains with Wilton Joubert Limited, and this report may NOT be used by any other entity, or for any other proposals, without our written consent. Therefore, no liability is accepted by this firm or any of its directors, servants, or agents, in respect of any other civil aspects of this site, nor for its use by any other person or entity, and any other person or entity who relies upon any information contained herein does so entirely at their own risk. Where other parties may wish to rely on it, whether for the same or different proposals, this permission may be extended, subject to our satisfactory review of their interpretation of the report.

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

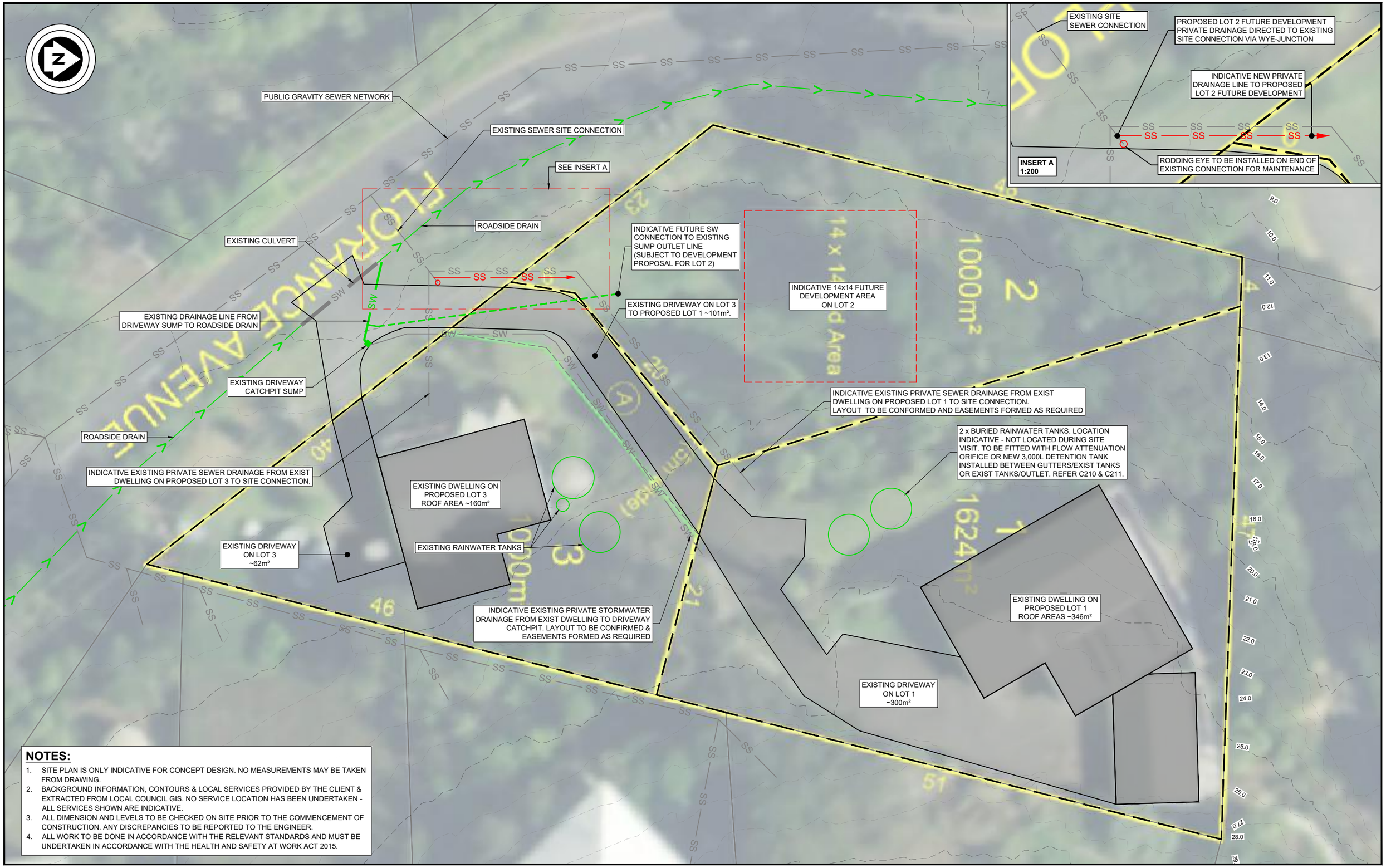
Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Wilton Joubert Ltd.

Patrick McSweeney
BE(Hons)

REPORT ATTACHMENTS

1. Services Site Plan – C001 (1 sheet)
2. Option 1 Tank Detail - C210 (1 sheet)
3. Option 2 Tank Detail - C211 (1 sheet)
4. Access Site Plan – C400 (1 sheet)
5. Calculation Set



NOTES:

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

WILTON JOUBERT
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Christchurch: 021 824 063
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www.wiltonjoubert.co.nz

ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
00	JUL '25	PM	SITE SUITABILITY REPORT

DESIGNED BY: PM
DRAWN BY: PM
CHECKED BY: BGS
SURVEYED BY: OTHER

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RESOURCE CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SERVICES SITE PLAN**

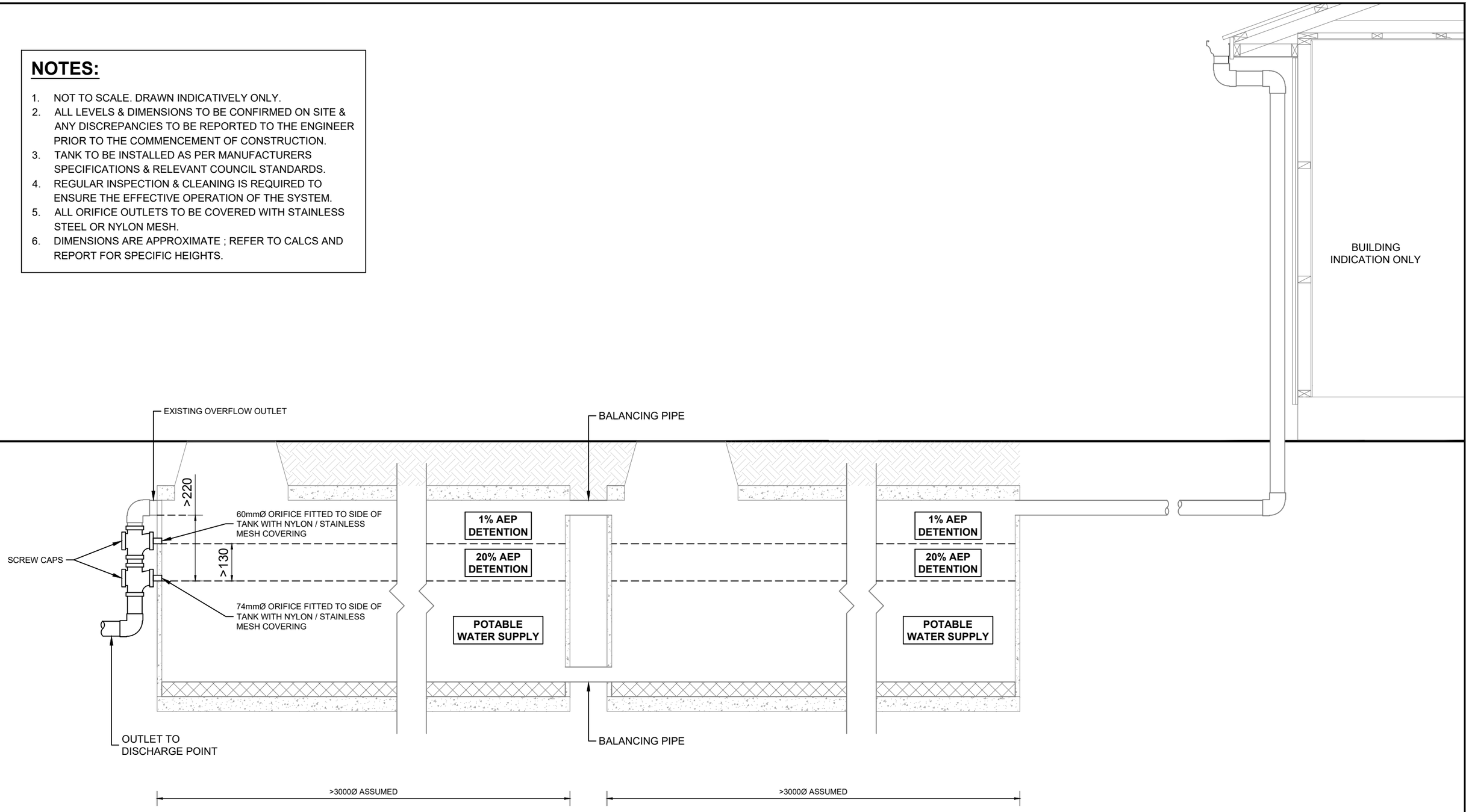
PROJECT DESCRIPTION: **SITE SUITABILITY REPORT**

PROJECT TITLE: **LOT 3 DP 113872 78 FLORANCE AVENUE RUSSELL**

ORIGINAL DRAWING SIZE: A3
OFFICE: **OREWA**
DRAWING SCALE: **1:300**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **141298-C001**
ISSUE: **00**

NOTES:

1. NOT TO SCALE. DRAWN INDICATIVELY ONLY.
2. ALL LEVELS & DIMENSIONS TO BE CONFIRMED ON SITE & ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. TANK TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS & RELEVANT COUNCIL STANDARDS.
4. REGULAR INSPECTION & CLEANING IS REQUIRED TO ENSURE THE EFFECTIVE OPERATION OF THE SYSTEM.
5. ALL ORIFICE OUTLETS TO BE COVERED WITH STAINLESS STEEL OR NYLON MESH.
6. DIMENSIONS ARE APPROXIMATE ; REFER TO CALCS AND REPORT FOR SPECIFIC HEIGHTS.



01 / C001 **OPTION 1 TANK DETAIL**
N.T.S

WILTON JOUBERT
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Auckland: 09 527 0196
Christchurch: 021 824 063
Wanaka: 03 443 6209
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00	JUL '25	PM	SITE SUITABILITY REPORT

DESIGNED BY: PM
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RESOURCE CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **OPTION 1 TANK DETAIL**

PROJECT DESCRIPTION: **SITE SUITABILITY REPORT**

PROJECT TITLE:
LOT 3 DP 113872
78 FLORANCE AVENUE
RUSSELL

ORIGINAL DRAWING SIZE: A3
OFFICE: **OREWA**
DRAWING SCALE: **N.T.S**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **141298-C210**
ISSUE: **00**

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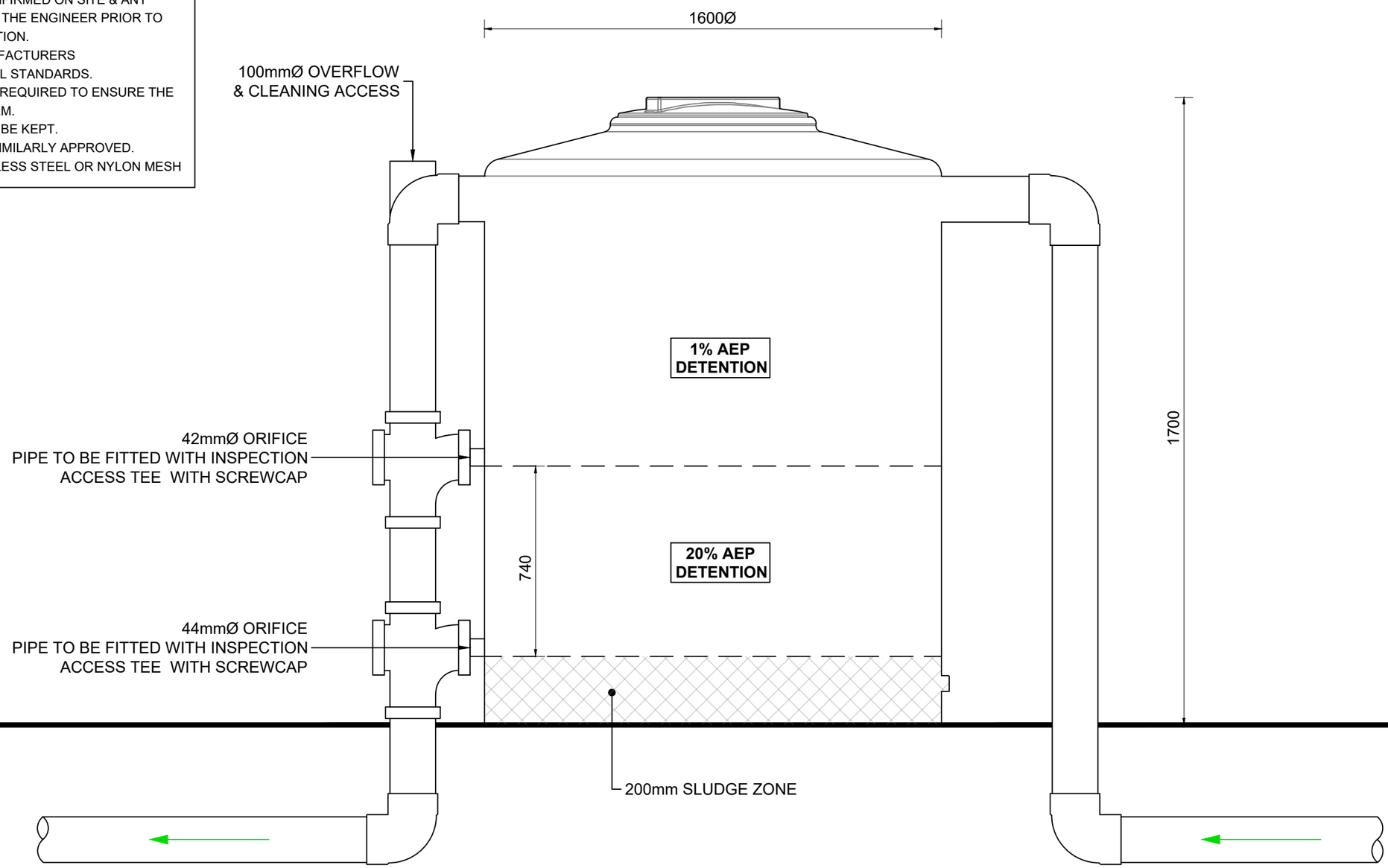
3. TANK TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS & RELEVANT COUNCIL STANDARDS.
4. REGULAR INSPECTION & CLEANING IS REQUIRED TO ENSURE THE EFFECTIVE OPERATION OF THE SYSTEM.
5. MINIMUM SLUDGE ZONE OF 150mm TO BE KEPT.
6. ASSUMED USE OF A 3,000L TANK OR SIMILARLY APPROVED.
7. ORIFICE TO BE COVERED WITH STAINLESS STEEL OR NYLON MESH



TANK INSTALLED IN-LINE BETWEEN;
EXIST PROPOSED LOT 1 DWELLING ROOF GUTTERS AND EXIST POTABLE SUPPLY TANKS
OR
BETWEEN EXIST POTABLE TANKS OUTLET AND DISCHARGE POINT

01 / C200 **TANK DETAIL**
N.T.S

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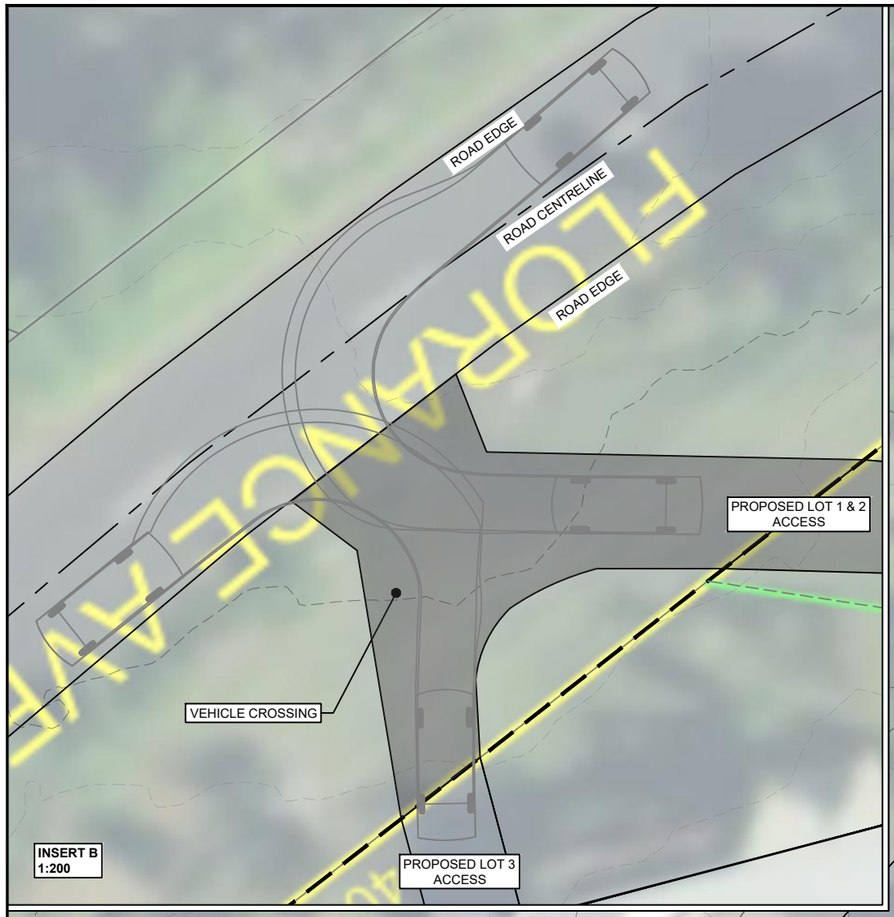
DRAWING TITLE: **OPTION 2 TANK DETAIL**

PROJECT DESCRIPTION: **SITE SUITABILITY REPORT**

PROJECT TITLE: **LOT 3 DP 113872**
78 FLORANCE AVENUE
RUSSELL

ORIGINAL DRAWING SIZE: A3
OFFICE: **OREWA**
DRAWING SCALE: **N.T.S**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **141298-C211**
ISSUE: **00**



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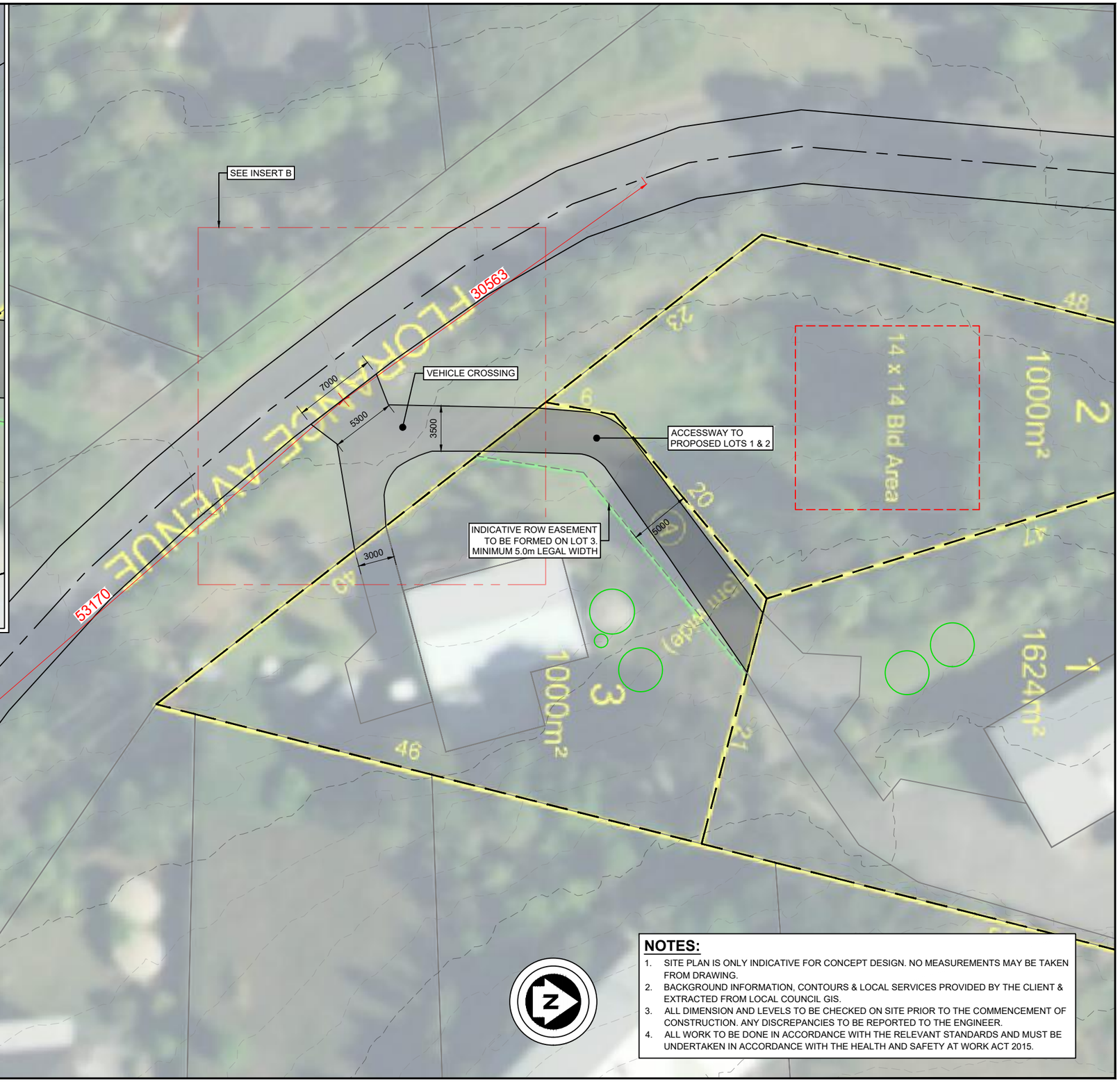

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RESOURCE CONSENT

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DRAWING TITLE:
ACCESS SITE PLAN

PROJECT DESCRIPTION:
SITE SUITABILITY REPORT

PROJECT TITLE:
LOT 3 DP 113872
78 FLORANCE AVENUE
RUSSELL

ORIGINAL DRAWING SIZE:	A3
OFFICE:	OREWA
DRAWING SCALE:	1:350
CO-ORDINATE SYSTEM:	NOT COORDINATED
DRAWING NUMBER:	141298-C400
ISSUE:	00

WASTEWATER PIPE SIZING

Project: Proposed Subdivision
Address: 78 Florance Avenue, Russell

Job No: 141298
Date: 14.07.2025
Cals By: PM

Calculations based on the FNDC Engineering Standards 2023

Occupants	12	*3 units with 4 Occupants each assumed*	Daily Flow per Unit	560	L/day
Design flow	140	l/d/p *Tank Water Supply*			
Peak Factor	5.0				

Peak Wet Weather Flow 0.10 l/s

Pipe Capacity Check - Private Connection

$v = K_1 * C * R^{0.63} * S^{0.54}$

Pipe Diameter (m)	0.100	Ap (Cross-sectional Area)	0.008 **m2**	% Void/Blocked	40.00	$A_{p(partial\ flow)}$	0.005
Gradient (%)	1.000	*Conservatively Assume Minimum Grade*					
Pipe material mannings (n)	0.011	R- Hydraulic Radius	0.025 **m**			$R_{partial\ flow}$	0.015
Velocity (m/sec)	0.768	OK				$V_{(partial\ flow)}$	0.545

$Q_{(full\ flow)}$ **0.0060** m^3/sec — $Q_{(partial\ flow)}$ **0.0026** m^3/sec

$Q_{(full\ flow)}$ **6.03** *l/sec* — PWWF= 0.10 L/s — **SUFFICIENT** — $Q_{(partial\ flow)}$ **2.6** *l/sec*

Proposed Lot 1

Total Site Area Developed to Permitted Levels

Subcat Reach Pond Link

Routing Diagram for 141298
Prepared by {enter your company name here}, Printed 16/07/2025

Summary for Subcatchment 41S: Total Site Area Developed to Permitted Levels

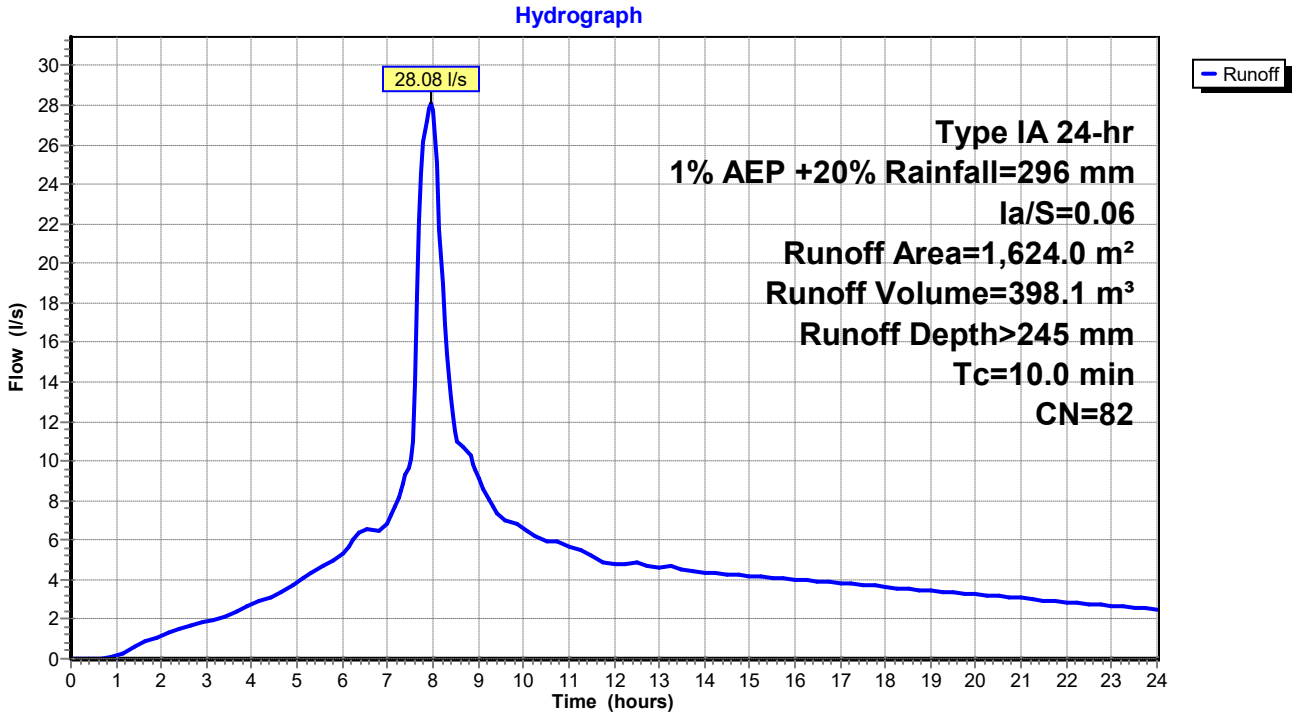
Runoff = 28.08 l/s @ 7.96 hrs, Volume= 398.1 m³, Depth> 245 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 1% AEP +20% Rainfall=296 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	1,056.0	74	Undeveloped Areas
*	568.0	98	Impermeable Surfaces
	1,624.0	82	Weighted Average
	1,056.0		65.02% Pervious Area
	568.0		34.98% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 41S: Total Site Area Developed to Permitted Levels



Summary for Subcatchment 41S: Total Site Area Developed to Permitted Levels

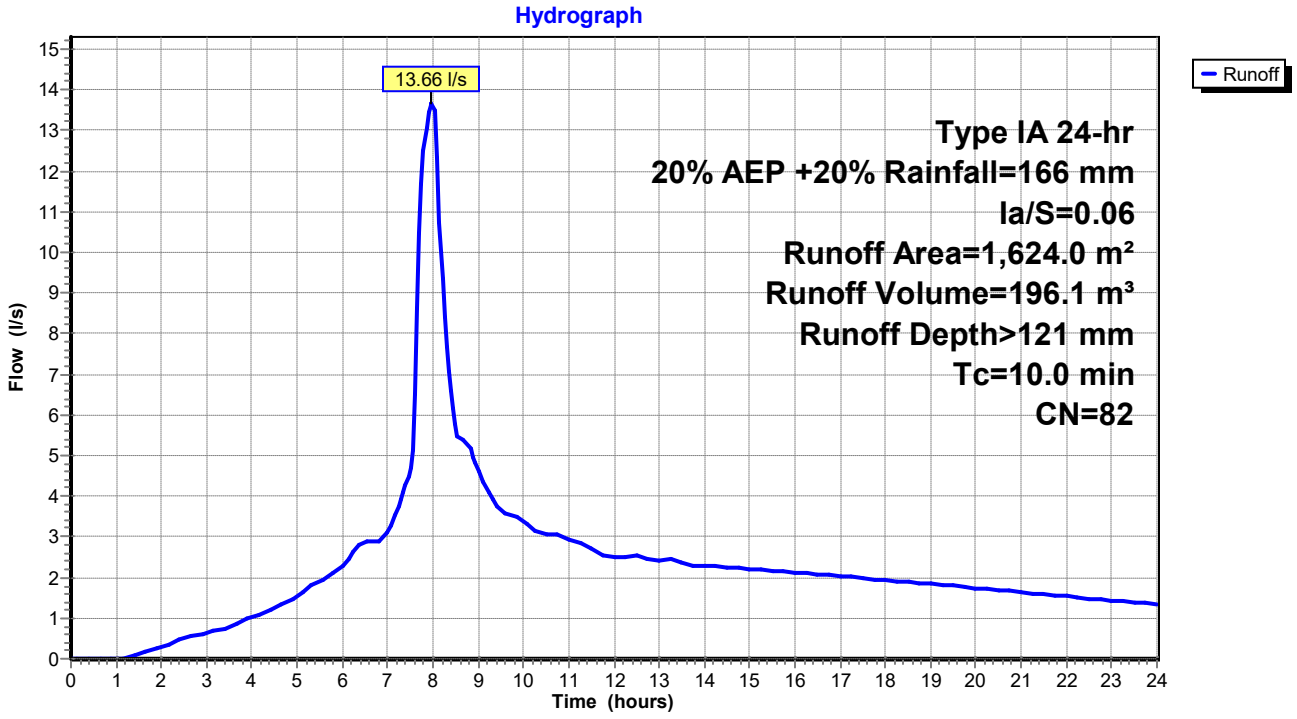
Runoff = 13.66 l/s @ 7.98 hrs, Volume= 196.1 m³, Depth> 121 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP +20% Rainfall=166 mm, Ia/S=0.06

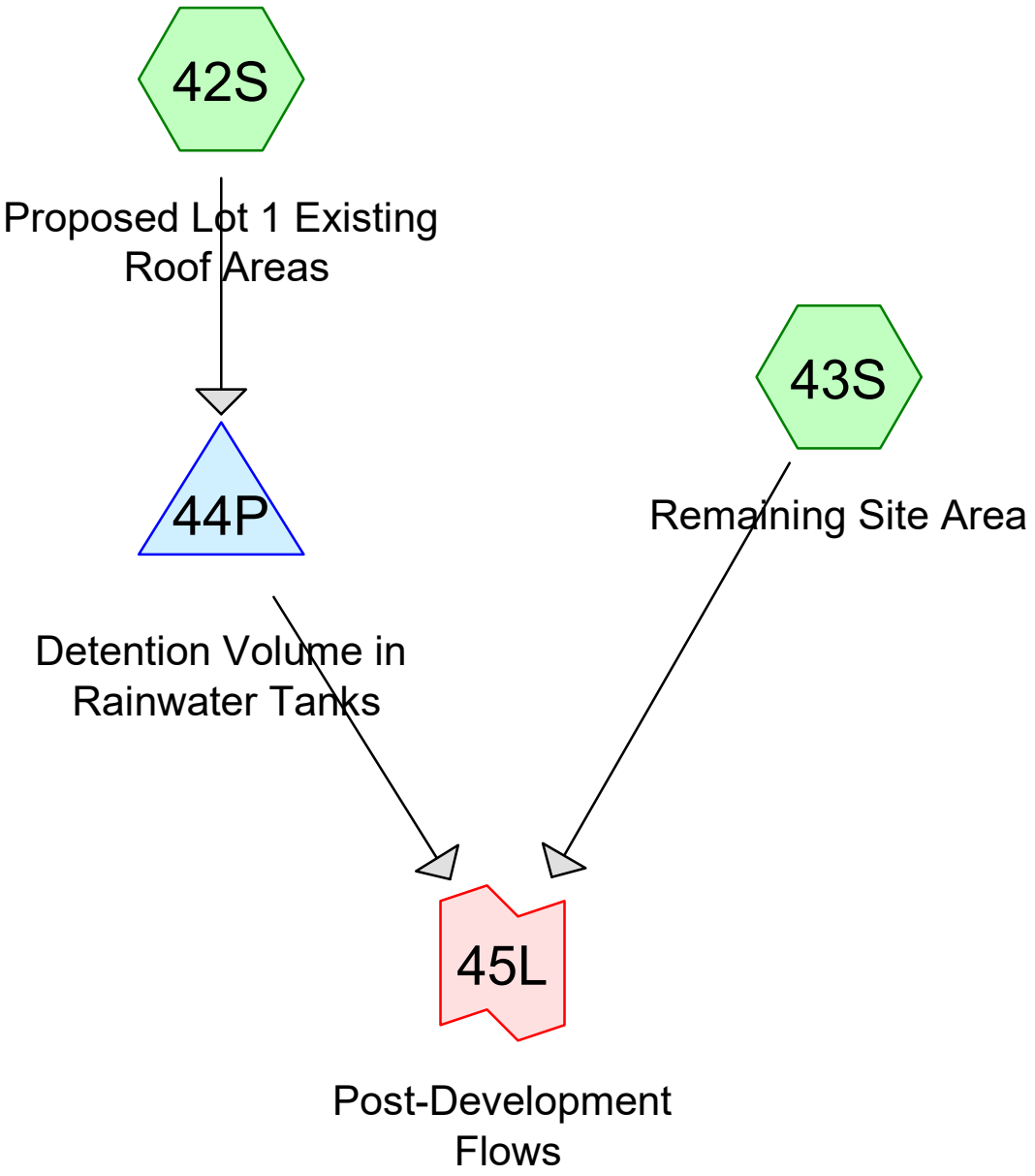
	Area (m²)	CN	Description
*	1,056.0	74	Undeveloped Areas
*	568.0	98	Impermeable Surfaces
	1,624.0	82	Weighted Average
	1,056.0		65.02% Pervious Area
	568.0		34.98% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 41S: Total Site Area Developed to Permitted Levels



Proposed Lot 1 - Option 1



Subcat Reach Pond Link

Routing Diagram for 141298
Prepared by {enter your company name here}, Printed 16/07/2025

Summary for Subcatchment 42S: Proposed Lot 1 Existing Roof Areas

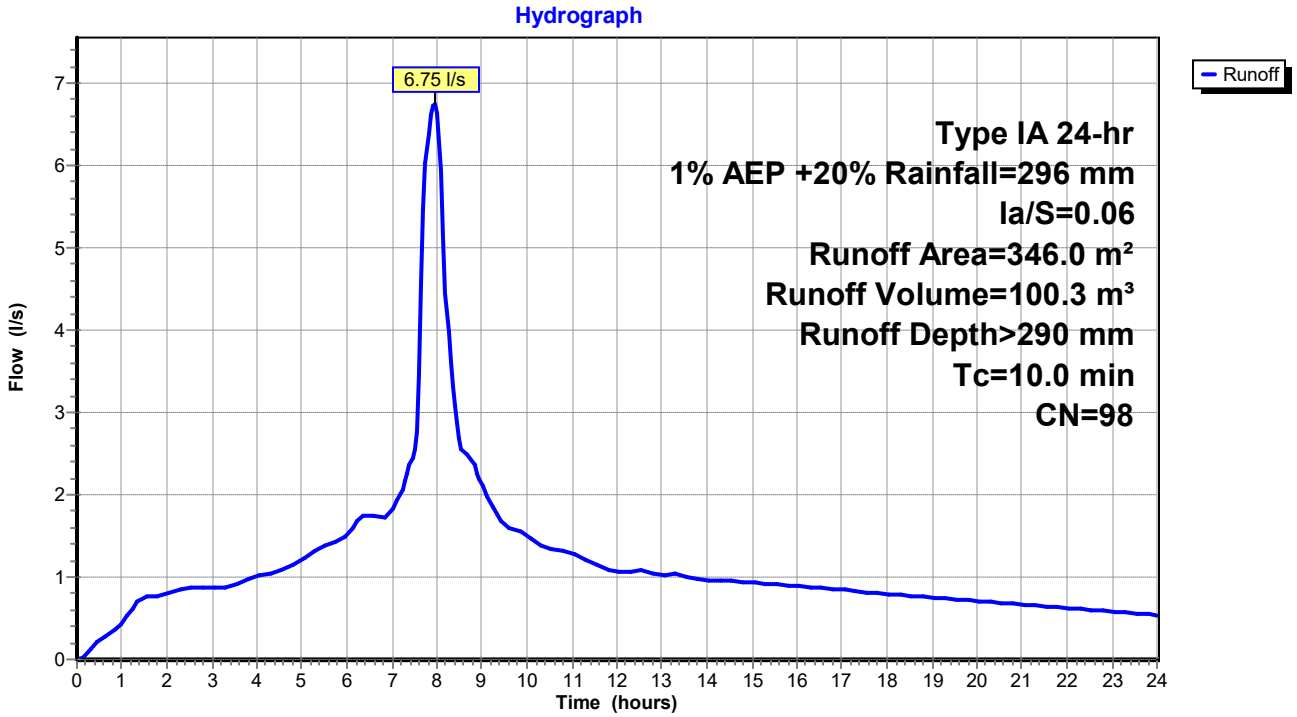
Runoff = 6.75 l/s @ 7.94 hrs, Volume= 100.3 m³, Depth> 290 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 1% AEP +20% Rainfall=296 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	346.0	98	Exist Dwelling Roof
	346.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 42S: Proposed Lot 1 Existing Roof Areas



Summary for Subcatchment 43S: Remaining Site Area

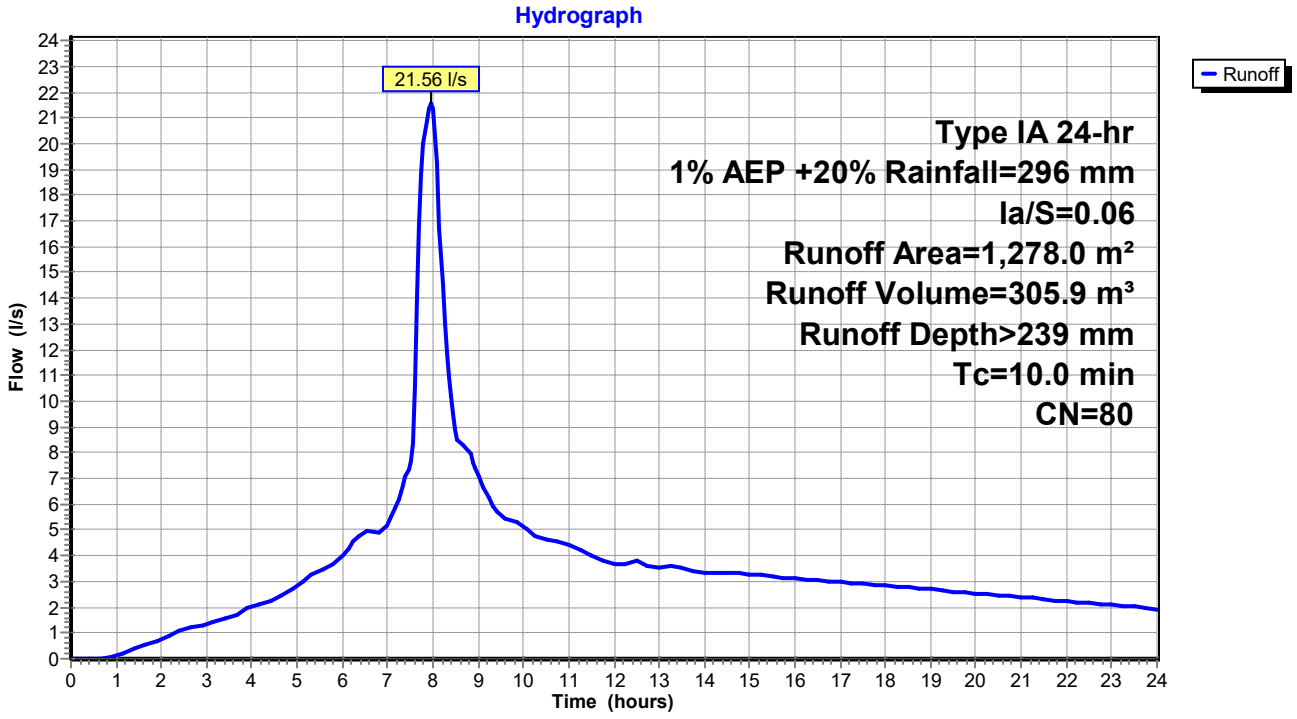
Runoff = 21.56 l/s @ 7.96 hrs, Volume= 305.9 m³, Depth> 239 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 1% AEP +20% Rainfall=296 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	302.0	98	Remaining Developed Areas
*	976.0	74	Undeveloped Areas
	1,278.0	80	Weighted Average
	976.0		76.37% Pervious Area
	302.0		23.63% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 43S: Remaining Site Area



Summary for Pond 44P: Detention Volume in Rainwater Tanks

Inflow Area = 346.0 m²,100.00% Impervious, Inflow Depth > 290 mm for 1% AEP +20% event
Inflow = 6.75 l/s @ 7.94 hrs, Volume= 100.3 m³
Outflow = 6.48 l/s @ 8.04 hrs, Volume= 99.9 m³, Atten= 4%, Lag= 6.4 min
Primary = 6.48 l/s @ 8.04 hrs, Volume= 99.9 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.212 m @ 8.04 hrs Surf.Area= 14.1 m² Storage= 3.0 m³

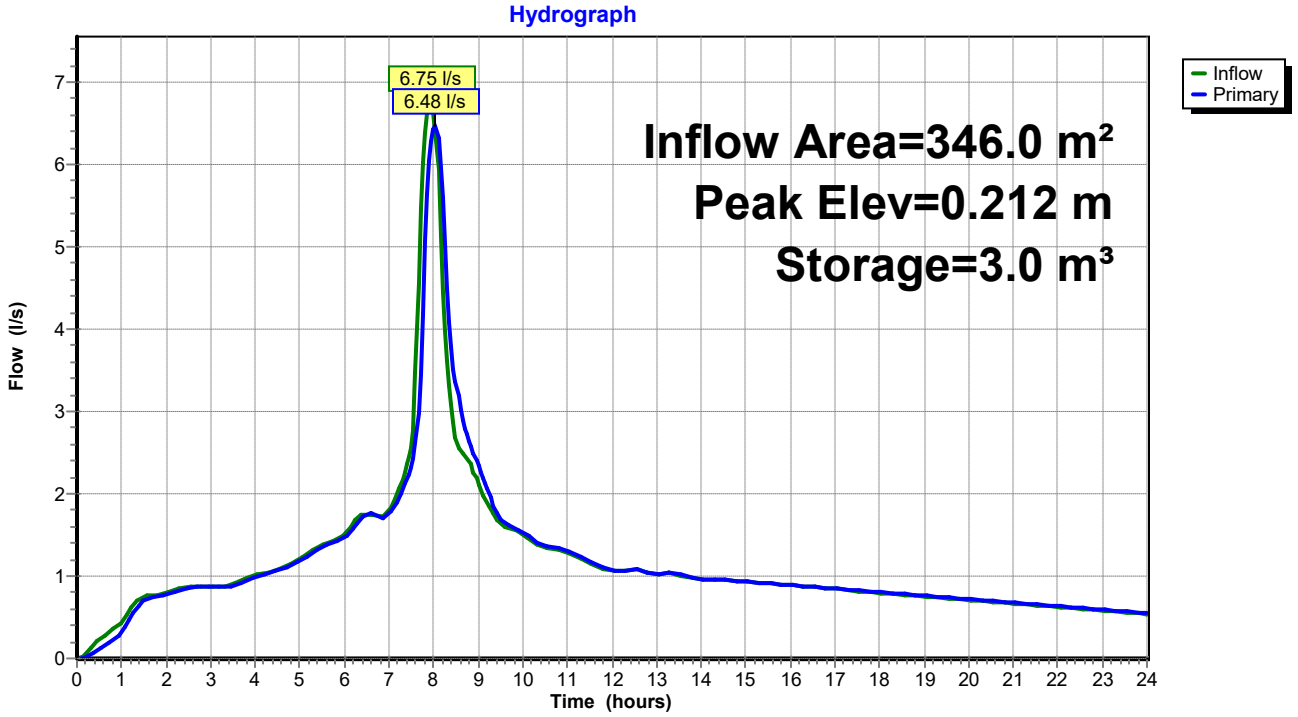
Plug-Flow detention time= 9.5 min calculated for 99.9 m³ (100% of inflow)
Center-of-Mass det. time= 6.2 min (649.1 - 642.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	31.1 m³	**3.00 mD x 2.20 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices	
#1	Primary	0.000 m	**74 mm Vert. Orifice/Grate**	C= 0.600
#2	Primary	0.130 m	**60 mm Vert. Orifice/Grate**	C= 0.600

Primary OutFlow Max=6.49 l/s @ 8.04 hrs HW=0.212 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 4.78 l/s @ 1.11 m/s)
└**2=Orifice/Grate** (Orifice Controls 1.71 l/s @ 0.60 m/s)

Pond 44P: Detention Volume in Rainwater Tanks

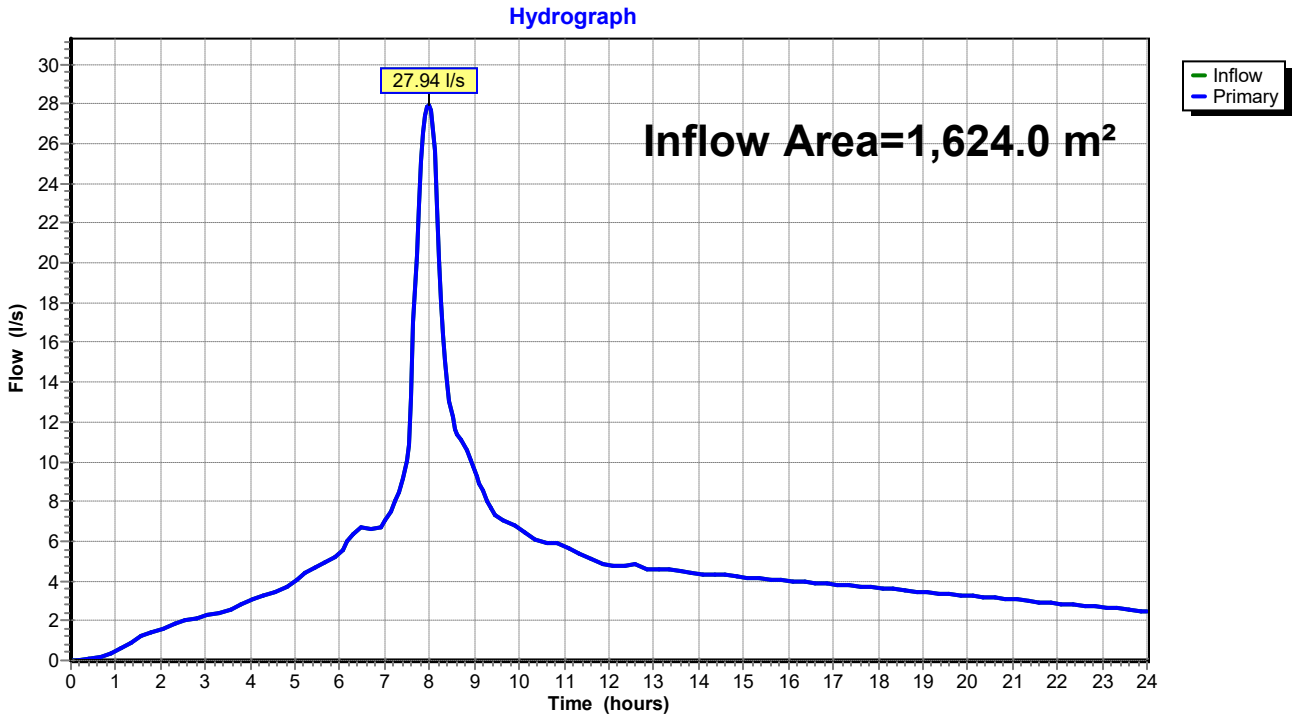


Summary for Link 45L: Post-Development Flows

Inflow Area = 1,624.0 m², 39.90% Impervious, Inflow Depth > 250 mm for 1% AEP +20% event
Inflow = 27.94 l/s @ 7.98 hrs, Volume= 405.7 m³
Primary = 27.94 l/s @ 7.98 hrs, Volume= 405.7 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 45L: Post-Development Flows



Summary for Subcatchment 42S: Proposed Lot 1 Existing Roof Areas

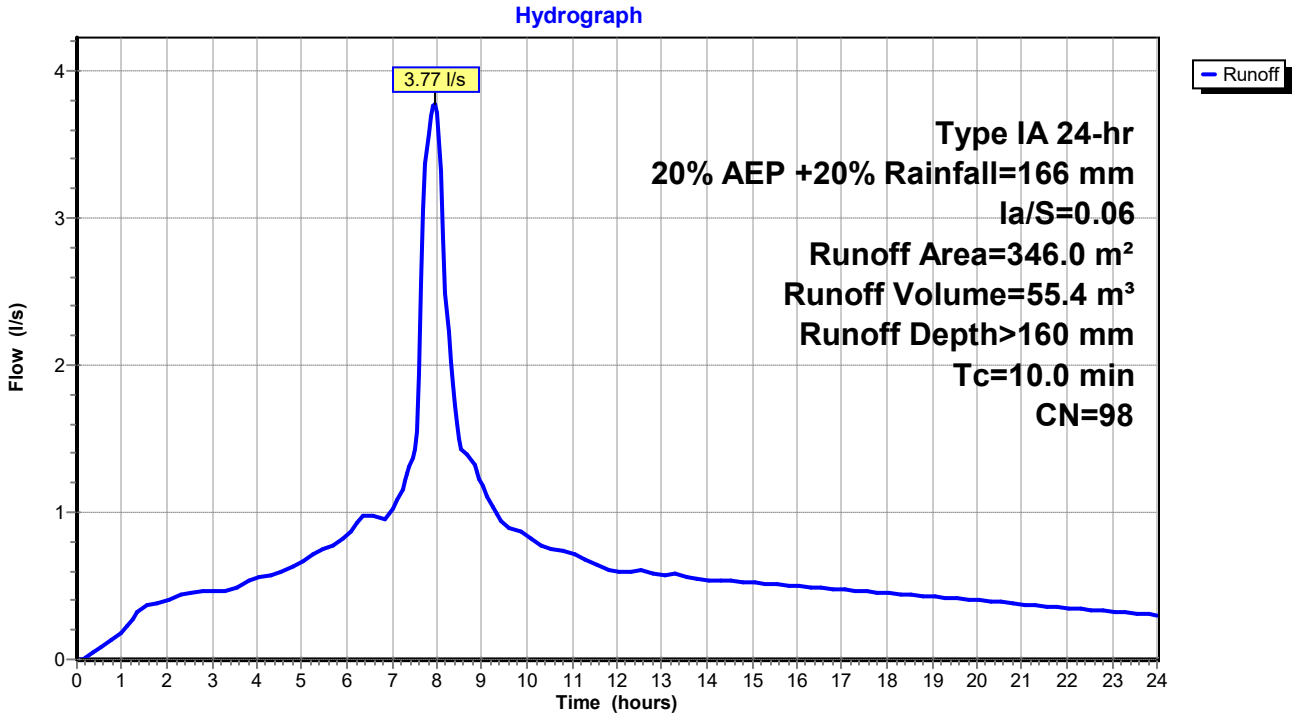
Runoff = 3.77 l/s @ 7.94 hrs, Volume= 55.4 m³, Depth> 160 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP +20% Rainfall=166 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	346.0	98	Exist Dwelling Roof
	346.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 42S: Proposed Lot 1 Existing Roof Areas



Summary for Subcatchment 43S: Remaining Site Area

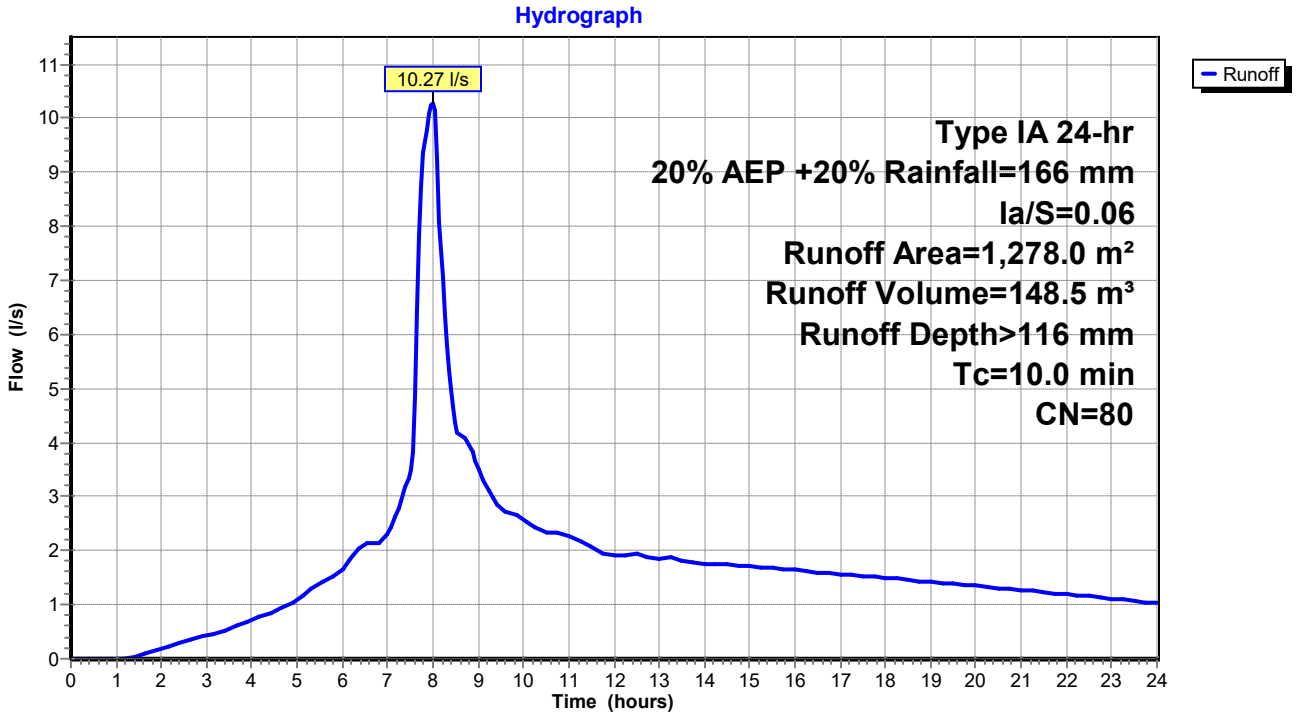
Runoff = 10.27 l/s @ 7.98 hrs, Volume= 148.5 m³, Depth> 116 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP +20% Rainfall=166 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	302.0	98	Remaining Developed Areas
*	976.0	74	Undeveloped Areas
	1,278.0	80	Weighted Average
	976.0		76.37% Pervious Area
	302.0		23.63% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 43S: Remaining Site Area



Summary for Pond 44P: Detention Volume in Rainwater Tanks

Inflow Area = 346.0 m²,100.00% Impervious, Inflow Depth > 160 mm for 20% AEP +20% event
Inflow = 3.77 l/s @ 7.94 hrs, Volume= 55.4 m³
Outflow = 3.47 l/s @ 8.08 hrs, Volume= 55.1 m³, Atten= 8%, Lag= 8.3 min
Primary = 3.47 l/s @ 8.08 hrs, Volume= 55.1 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.129 m @ 8.08 hrs Surf.Area= 14.1 m² Storage= 1.8 m³

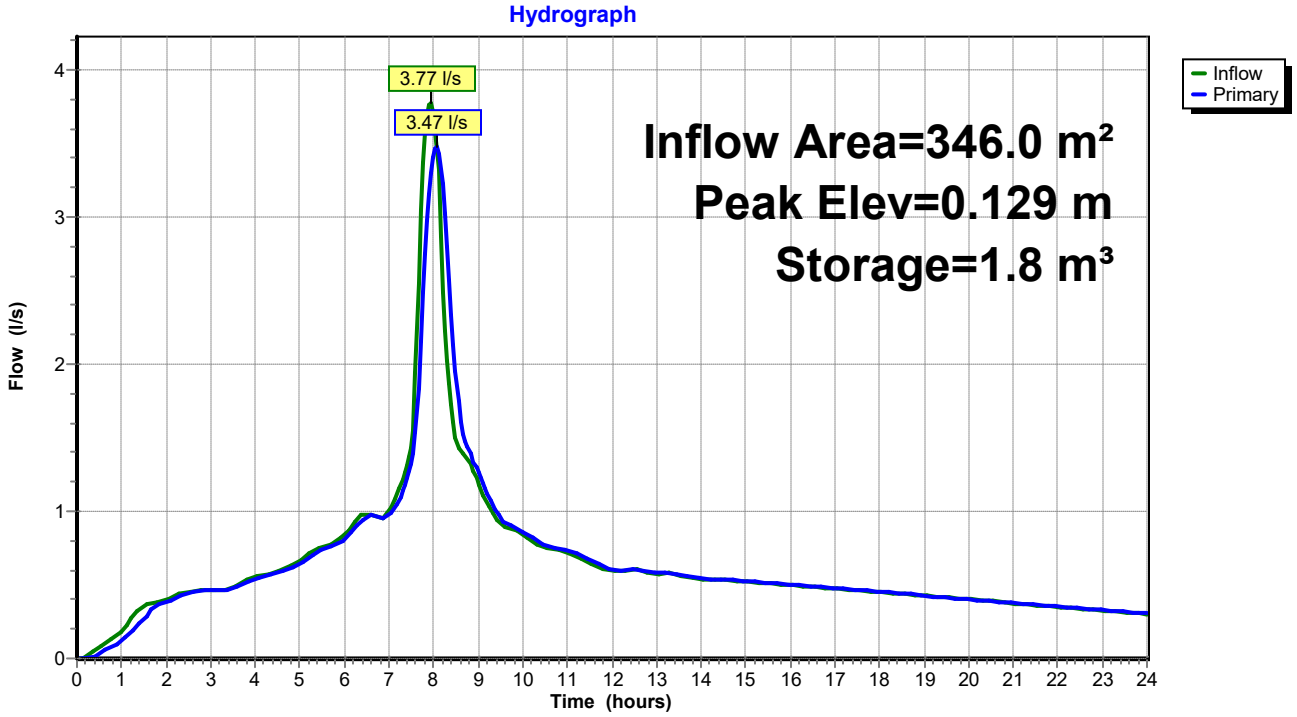
Plug-Flow detention time= 11.5 min calculated for 55.0 m³ (99% of inflow)
Center-of-Mass det. time= 7.1 min (656.4 - 649.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	31.1 m³	**3.00 mD x 2.20 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices	
#1	Primary	0.000 m	**74 mm Vert. Orifice/Grate**	C= 0.600
#2	Primary	0.130 m	**60 mm Vert. Orifice/Grate**	C= 0.600

Primary OutFlow Max=3.46 l/s @ 8.08 hrs HW=0.129 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 3.46 l/s @ 0.81 m/s)
└**2=Orifice/Grate** (Controls 0.00 l/s)

Pond 44P: Detention Volume in Rainwater Tanks

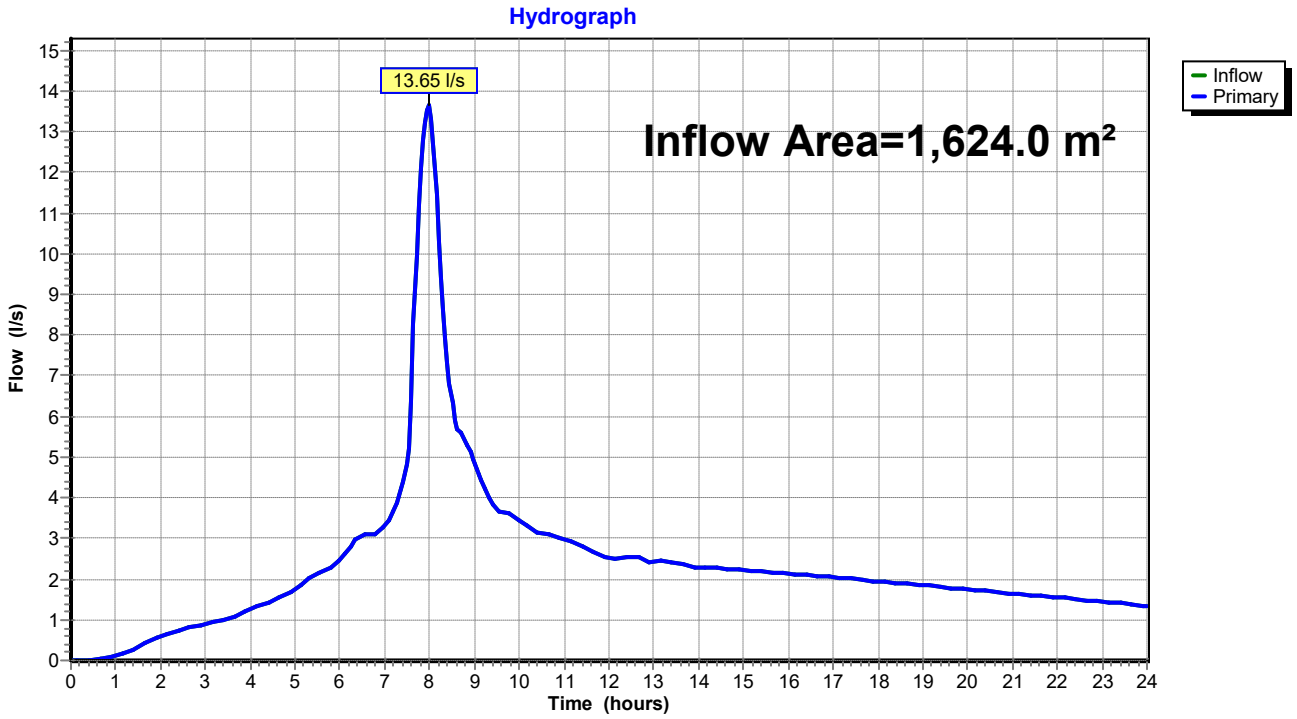


Summary for Link 45L: Post-Development Flows

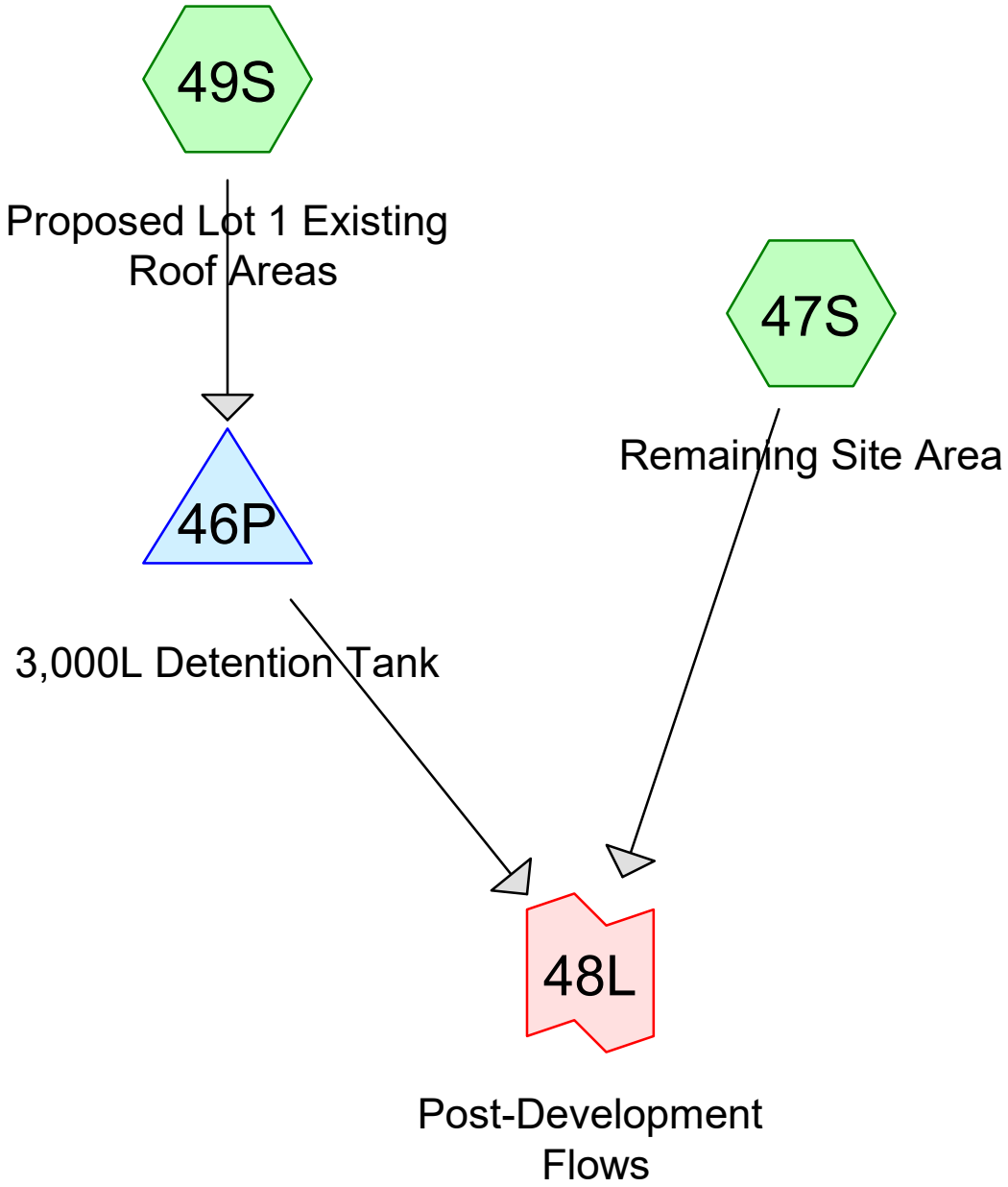
Inflow Area = 1,624.0 m², 39.90% Impervious, Inflow Depth > 125 mm for 20% AEP +20% event
Inflow = 13.65 l/s @ 8.00 hrs, Volume= 203.6 m³
Primary = 13.65 l/s @ 8.00 hrs, Volume= 203.6 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 45L: Post-Development Flows



Proposed Lot 1 - Option 2



Subcat Reach Pond Link

Routing Diagram for 141298
Prepared by {enter your company name here}, Printed 16/07/2025

Summary for Subcatchment 47S: Remaining Site Area

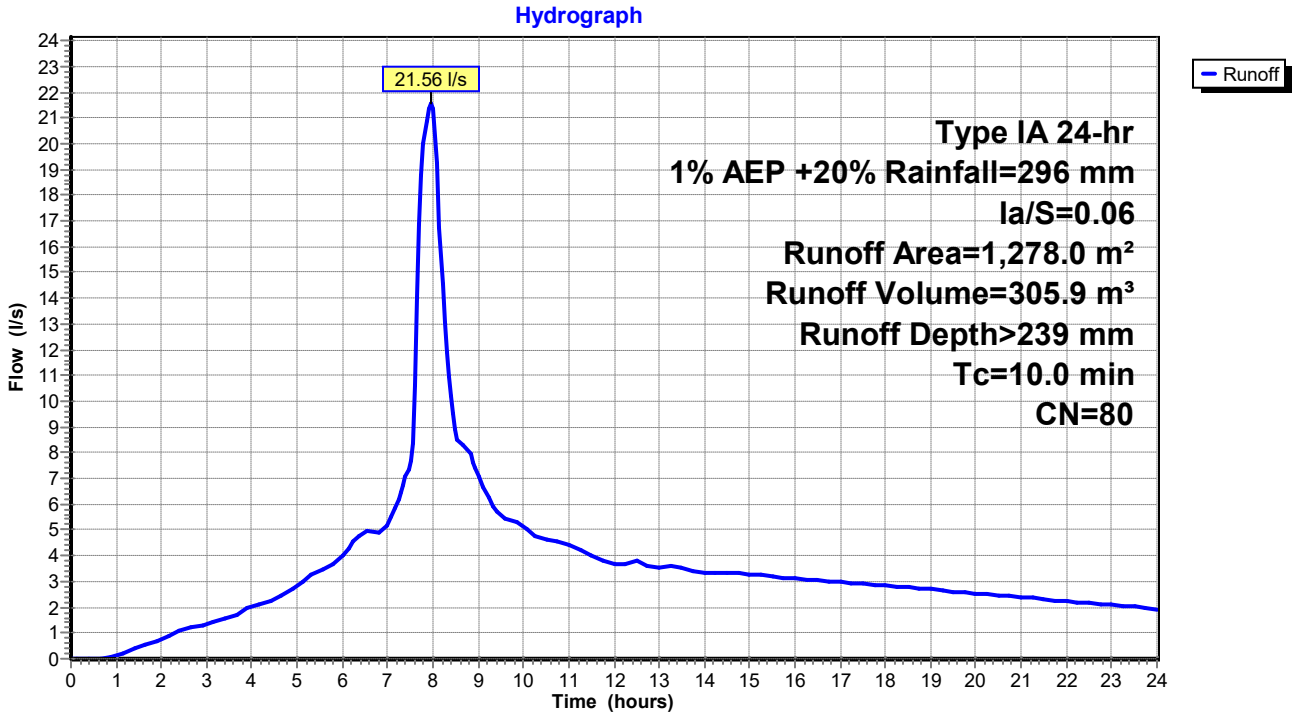
Runoff = 21.56 l/s @ 7.96 hrs, Volume= 305.9 m³, Depth> 239 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 1% AEP +20% Rainfall=296 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	302.0	98	Remaining Developed Areas
*	976.0	74	Undeveloped Areas
	1,278.0	80	Weighted Average
	976.0		76.37% Pervious Area
	302.0		23.63% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 47S: Remaining Site Area



Summary for Subcatchment 49S: Proposed Lot 1 Existing Roof Areas

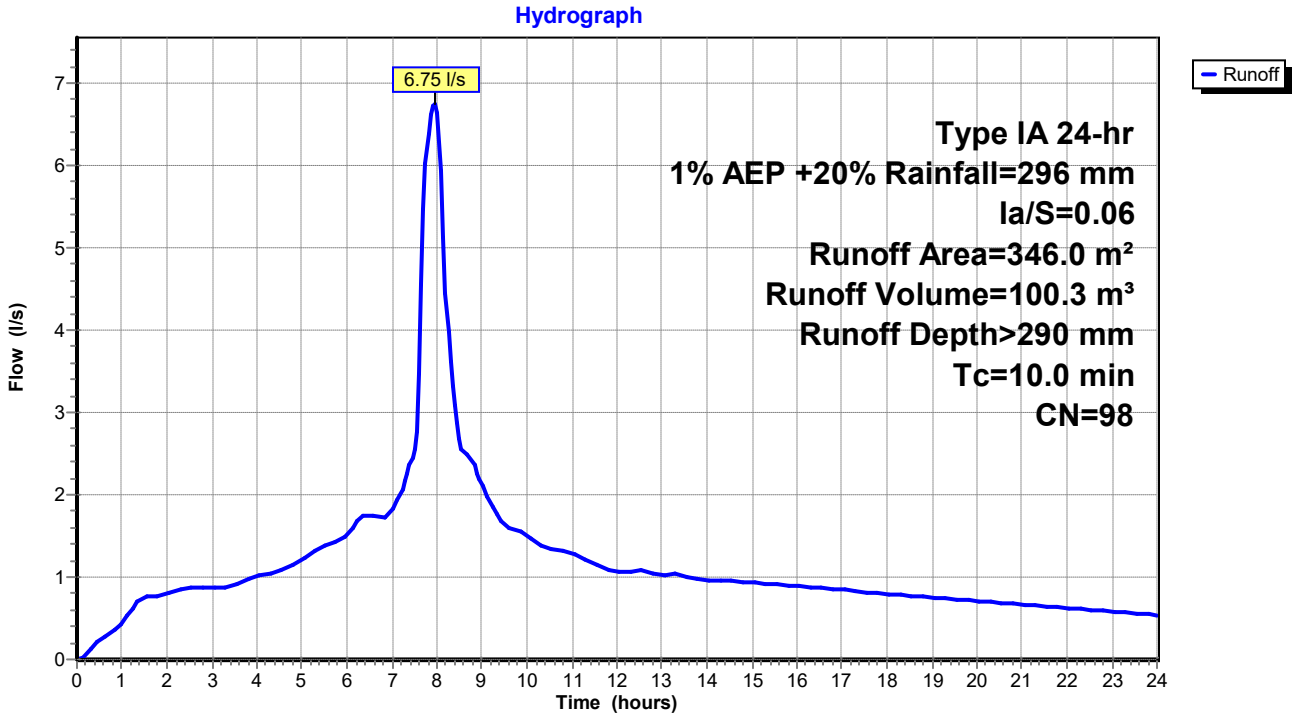
Runoff = 6.75 l/s @ 7.94 hrs, Volume= 100.3 m³, Depth> 290 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 1% AEP +20% Rainfall=296 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	346.0	98	Exist Dwelling Roof
	346.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 49S: Proposed Lot 1 Existing Roof Areas



Summary for Pond 46P: 3,000L Detention Tank

Inflow Area = 346.0 m²,100.00% Impervious, Inflow Depth > 290 mm for 1% AEP +20% event
Inflow = 6.75 l/s @ 7.94 hrs, Volume= 100.3 m³
Outflow = 6.56 l/s @ 8.03 hrs, Volume= 100.2 m³, Atten= 3%, Lag= 5.7 min
Primary = 6.56 l/s @ 8.03 hrs, Volume= 100.2 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 1.144 m @ 8.03 hrs Surf.Area= 2.0 m² Storage= 2.3 m³

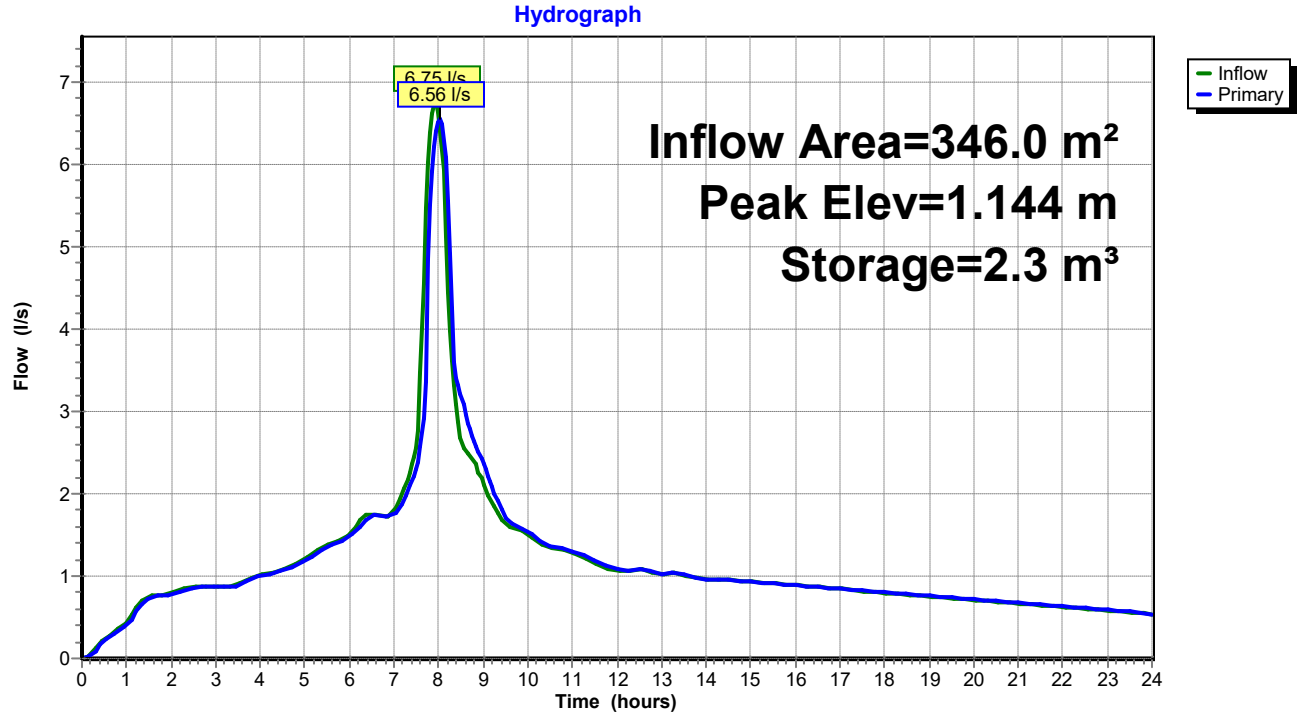
Plug-Flow detention time= 3.7 min calculated for 100.2 m³ (100% of inflow)
Center-of-Mass det. time= 3.1 min (645.9 - 642.9)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	3.4 m³	**1.60 mD x 1.70 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices	
#1	Primary	0.000 m	**44 mm Vert. Orifice/Grate**	C= 0.600
#2	Primary	0.740 m	**42 mm Vert. Orifice/Grate**	C= 0.600

Primary OutFlow Max=6.54 l/s @ 8.03 hrs HW=1.140 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 4.27 l/s @ 2.81 m/s)
└**2=Orifice/Grate** (Orifice Controls 2.27 l/s @ 1.64 m/s)

Pond 46P: 3,000L Detention Tank

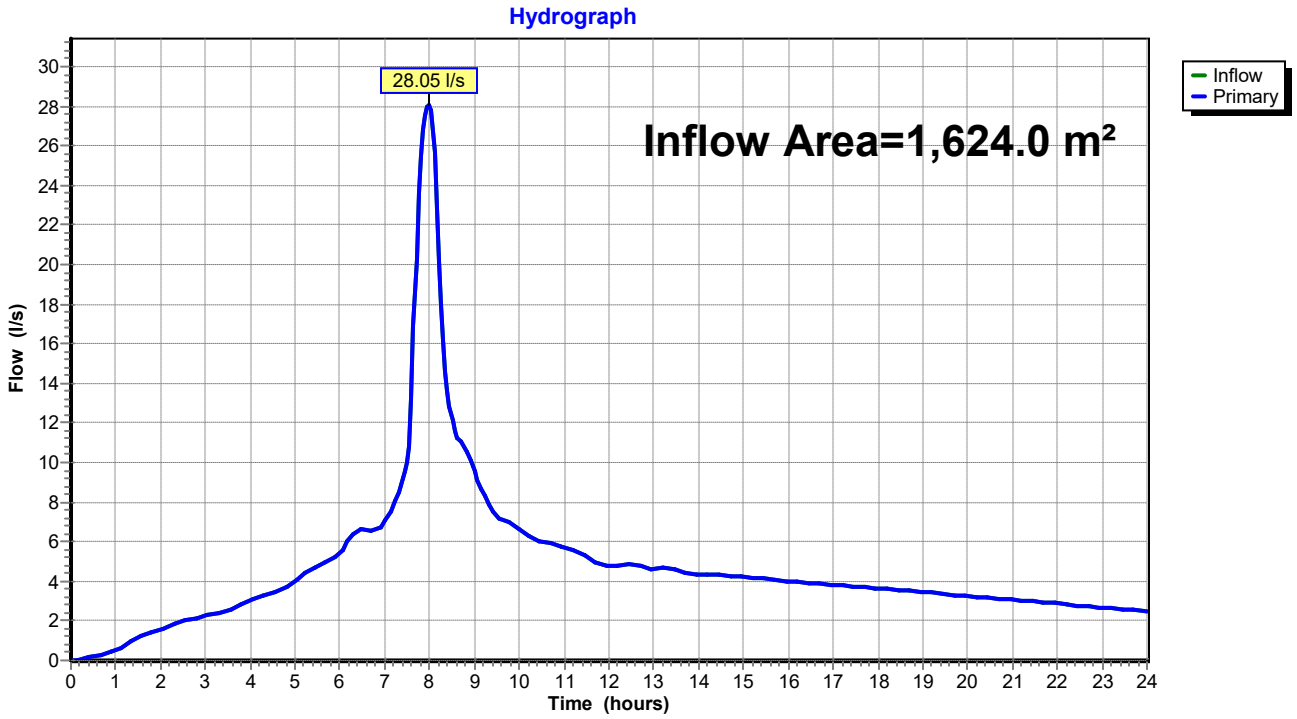


Summary for Link 48L: Post-Development Flows

Inflow Area = 1,624.0 m², 39.90% Impervious, Inflow Depth > 250 mm for 1% AEP +20% event
Inflow = 28.05 l/s @ 7.98 hrs, Volume= 406.1 m³
Primary = 28.05 l/s @ 7.98 hrs, Volume= 406.1 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 48L: Post-Development Flows



Summary for Subcatchment 47S: Remaining Site Area

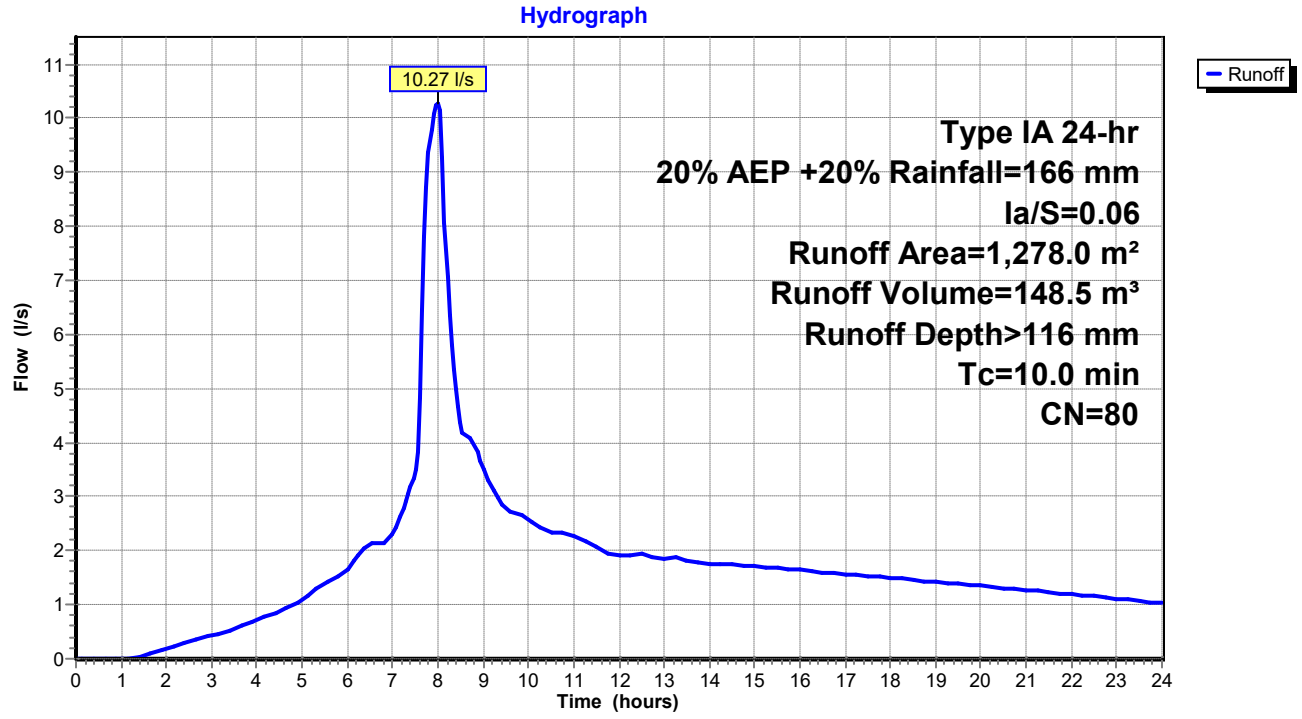
Runoff = 10.27 l/s @ 7.98 hrs, Volume= 148.5 m³, Depth> 116 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP +20% Rainfall=166 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	302.0	98	Remaining Developed Areas
*	976.0	74	Undeveloped Areas
	1,278.0	80	Weighted Average
	976.0		76.37% Pervious Area
	302.0		23.63% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 47S: Remaining Site Area



Summary for Subcatchment 49S: Proposed Lot 1 Existing Roof Areas

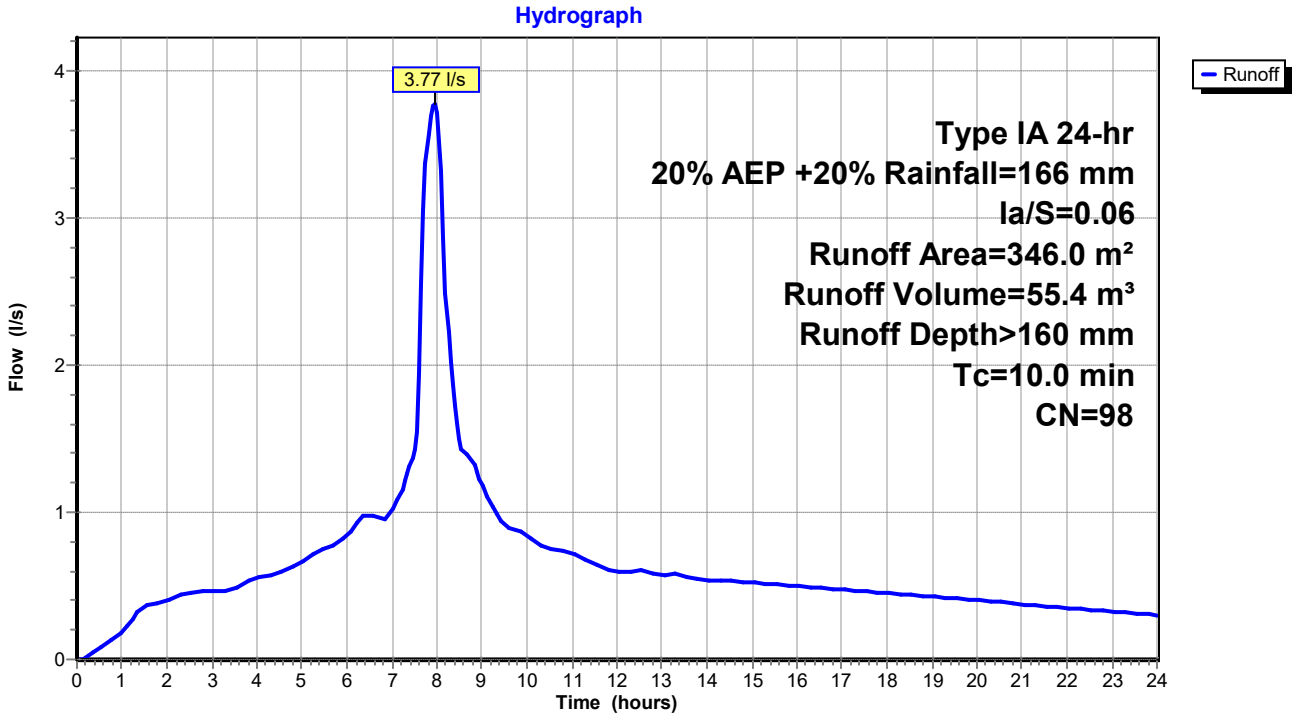
Runoff = 3.77 l/s @ 7.94 hrs, Volume= 55.4 m³, Depth> 160 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP +20% Rainfall=166 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	346.0	98	Exist Dwelling Roof
	346.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 49S: Proposed Lot 1 Existing Roof Areas



Summary for Pond 46P: 3,000L Detention Tank

Inflow Area = 346.0 m²,100.00% Impervious, Inflow Depth > 160 mm for 20% AEP +20% event
Inflow = 3.77 l/s @ 7.94 hrs, Volume= 55.4 m³
Outflow = 3.42 l/s @ 8.08 hrs, Volume= 55.4 m³, Atten= 9%, Lag= 8.8 min
Primary = 3.42 l/s @ 8.08 hrs, Volume= 55.4 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.737 m @ 8.08 hrs Surf.Area= 2.0 m² Storage= 1.5 m³

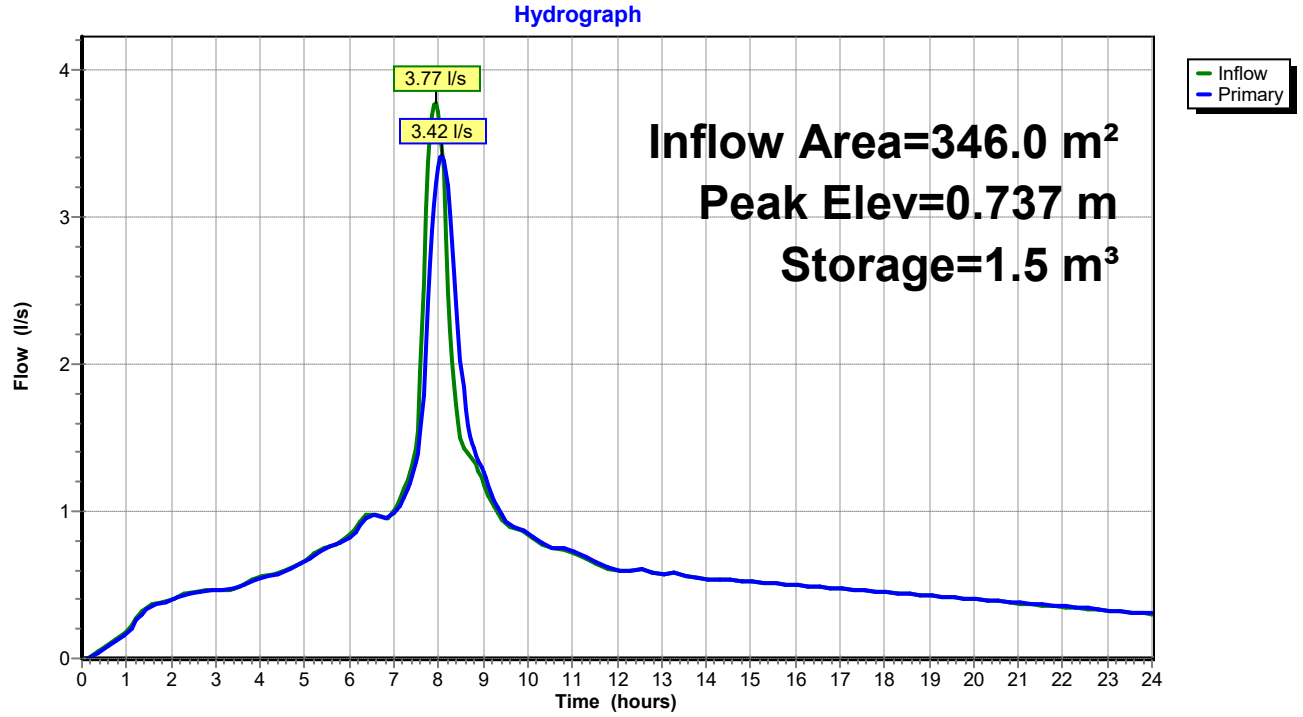
Plug-Flow detention time= 3.3 min calculated for 55.4 m³ (100% of inflow)
Center-of-Mass det. time= 2.5 min (651.8 - 649.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	3.4 m³	**1.60 mD x 1.70 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices	
#1	Primary	0.000 m	**44 mm Vert. Orifice/Grate**	C= 0.600
#2	Primary	0.740 m	**42 mm Vert. Orifice/Grate**	C= 0.600

Primary OutFlow Max=3.41 l/s @ 8.08 hrs HW=0.734 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 3.41 l/s @ 2.24 m/s)
└**2=Orifice/Grate** (Controls 0.00 l/s)

Pond 46P: 3,000L Detention Tank

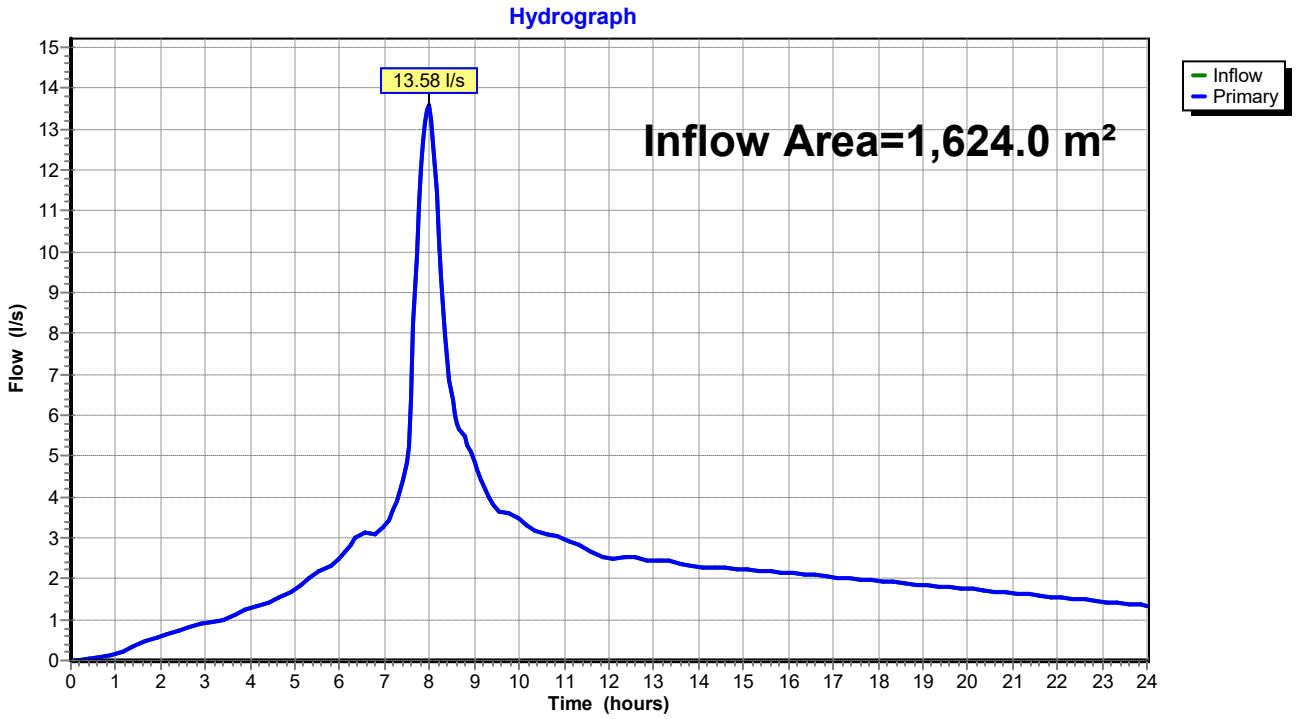


Summary for Link 48L: Post-Development Flows

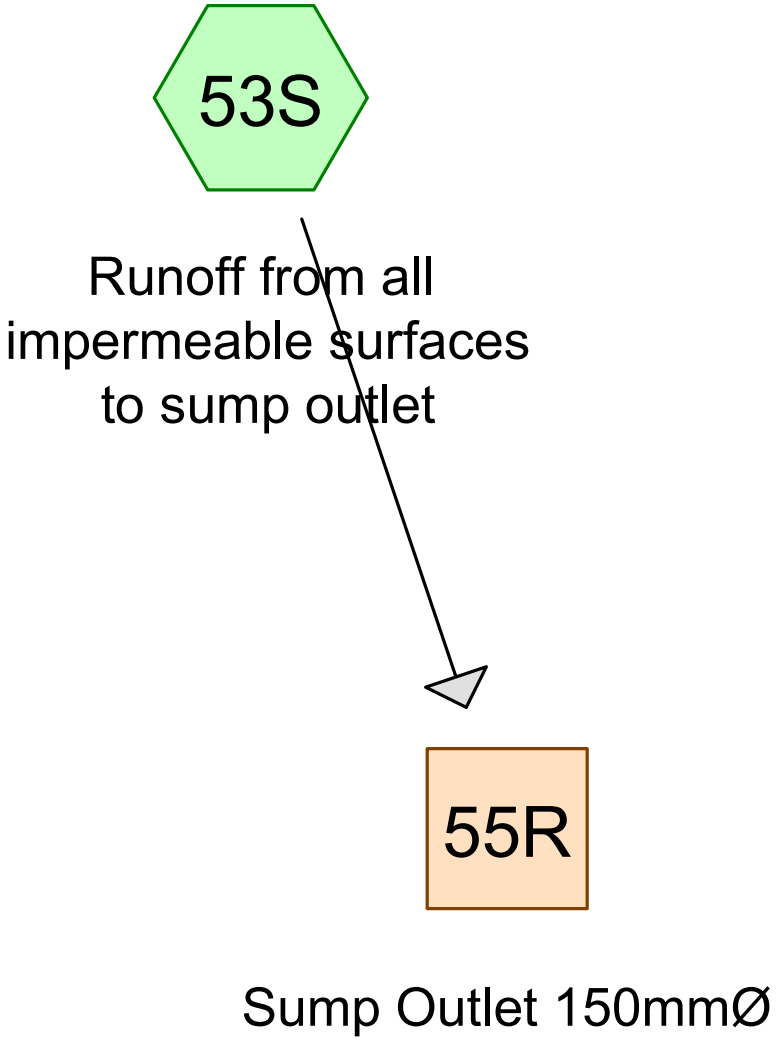
Inflow Area = 1,624.0 m², 39.90% Impervious, Inflow Depth > 126 mm for 20% AEP +20% event
Inflow = 13.58 l/s @ 8.00 hrs, Volume= 203.9 m³
Primary = 13.58 l/s @ 8.00 hrs, Volume= 203.9 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 48L: Post-Development Flows



All Lots



Subcat Reach Pond Link

Routing Diagram for 141298
Prepared by {enter your company name here}, Printed 15/07/2025
HydroCAD® 10.00-26 s/n 10413 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 53S: Runoff from all impermeable surfaces to sump outlet

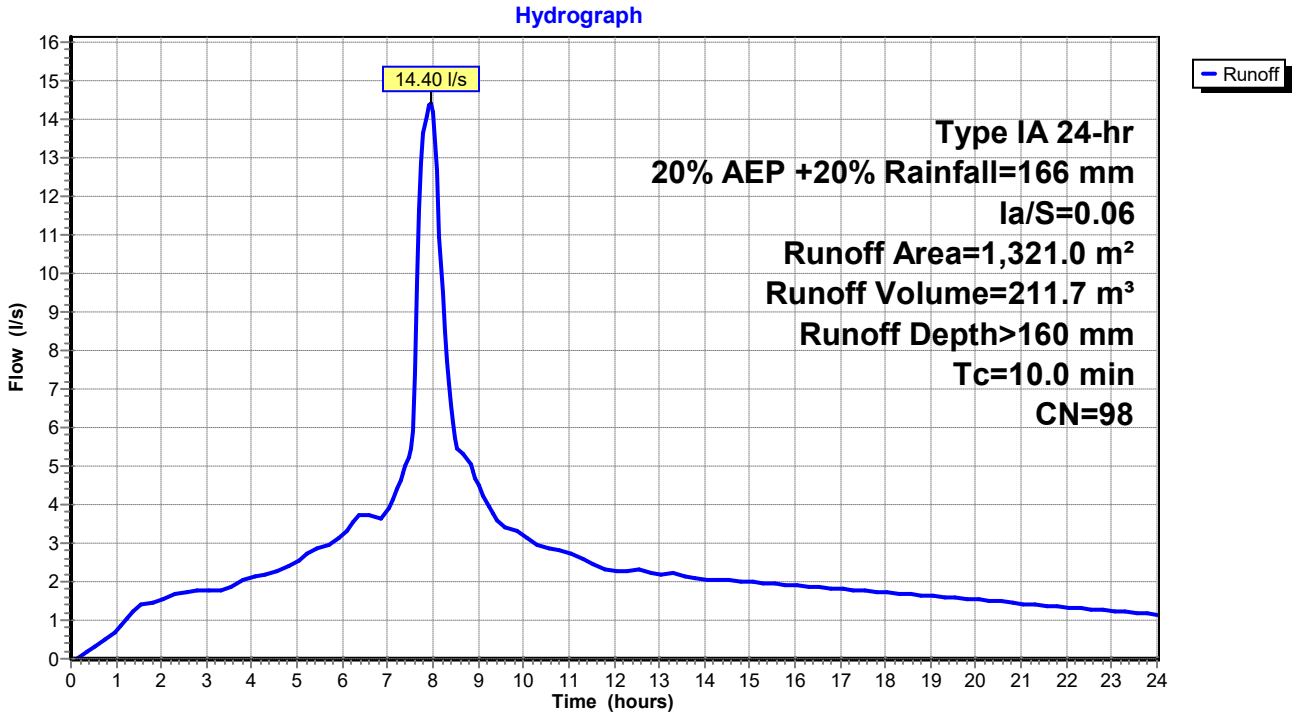
Runoff = 14.40 l/s @ 7.94 hrs, Volume= 211.7 m³, Depth> 160 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP +20% Rainfall=166 mm, Ia/S=0.06

	Area (m²)	CN	Description
*	648.0	98	Lot 1
*	350.0	98	Lot 2 (estimated)
*	323.0	98	Lot 3
	1,321.0	98	Weighted Average
	1,321.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 53S: Runoff from all impermeable surfaces to sump outlet



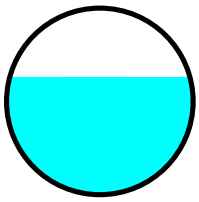
Summary for Reach 55R: Sump Outlet 150mmØ

Inflow Area = 1,321.0 m²,100.00% Impervious, Inflow Depth > 160 mm for 20% AEP +20% event
Inflow = 14.40 l/s @ 7.94 hrs, Volume= 211.7 m³
Outflow = 14.40 l/s @ 7.94 hrs, Volume= 211.7 m³, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.22 m/s, Min. Travel Time= 0.1 min
Avg. Velocity = 0.73 m/s, Avg. Travel Time= 0.2 min

Peak Storage= 0.1 m³ @ 7.94 hrs
Average Depth at Peak Storage= 0.09 m
Bank-Full Depth= 0.15 m Flow Area= 0.02 m², Capacity= 19.80 l/s

150 mm Round Pipe
n= 0.010
Length= 10.00 m Slope= 0.0100 m/m
Inlet Invert= 0.000 m, Outlet Invert= -0.100 m



Reach 55R: Sump Outlet 150mmØ