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: Waipapa Investment Trust

Email: [redacted]

Phone number: [redacted]

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

6. Address for Correspondence

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

Name/s: Lynley Newport

Email: [redacted]

Phone number: [redacted]

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

** 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: Waipapa Trustee Services Limited

Property Address/ Location: [redacted]

8. Application Site Details

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

Name/s: As above

Site Address/ Location: [redacted] ostcode

Legal Description: [redacted] nber:

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 contact the agent and/or applicant prior to any 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.

Application to subdivide by way of a two stage unit title subdivision; and for land use consent for breaches of excavation/filling rules and minor breach of access rules, on a site zoned Industrial.

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)** APP.046685.01.01
- ◯ **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**

14. Billing Details:

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

Name/s: (please write in full) Waipapa Investment Trust

Email: [redacted]

Phone number: [redacted]

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

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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) Matt Holton

Signature:
(signature of bill payer [redacted]

15. Important Information:

Note to applicant
You must include all information required by this form. The information must be specified in sufficient detail to satisfy the purpose for which it is required.
You may apply for 2 or more resource consents that are needed for the same activity on the same form.
You must pay the charge payable to the consent authority for the resource consent application under the Resource Management Act 1991.

Fast-track application
Under the fast-track resource consent process, notice of the decision must be given within 10 working days after the date the application was first lodged with the authority, unless the applicant opts out of that process at the time of lodgement.
A fast-track application may cease to be a fast-track application under section 87AAC(2) of the RMA.

Privacy Information:
Once this application is lodged with the Council it becomes public information. Please advise Council if there is sensitive information in the proposal. The information you have provided on this form is required so that your application for consent pursuant to the Resource Management Act 1991 can be processed under that Act. The information will be stored on a public register and held by the Far North District Council. The details of your application may also be made available to the public on the Council's website, www.fndc.govt.nz. 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) Matt Holton

Signature: [redacted]

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.

Waipapa Investment Trust

Proposed Commercial Development & Unit Title Subdivision

22 Kahikatearoa Lane, Waipapa

Planner's Report including an Assessment of Environmental Effects

Thomson Survey Ltd
Kerikeri

1.0 INTRODUCTION

1.1 The Proposal

The applicant is seeking to establish a unit title industrial warehousing complex, to be constructed in two stages on land at 22 Kahikatearoa Lane, Waipapa. The Unit Title plans attached in Appendix 3 show Stage 1, Stage 2 and Overall proposed Unit Title, with the latter creating Units A-I (total of nine) units each with AU's for carpark spaces, and shared Common Area to accommodate shared access and manouevring area, stormwater management infrastructure, water supply and an on-site package wastewater treatment and disposal system. It is proposed to identify/separate piped infrastructure sub-floor level for services, also as Common Area. All Common Areas will be subject to Body Corporate administration.

The concept / layout plans attached in Appendix 4 show nine warehouse units, in two separate buildings, with four in the Stage 1 building and 5 in the Stage 2 building. The units range in area from 135m^2 (Stage 2 Units 8 & 9) up to 200m^2 (Stage 1 Unit 1 and Stage 2 Unit 5). The latter two include 'showroom' space.

The unit buildings are single storey, with mono-pitch roof. The maximum height of the buildings is 6.5m.

The site currently has two formed entrance ways. The proposal is to close those and replace with a centrally located entrance, double width, to service the development. Parking and manouevring area is contained between the buildings, central to the site, with the wastewater disposal and reserve areas occupying the north western corner of the site.

Some earthworks has already been completed on the site when giving effect to the subdivision creating the site and when preparing the site for a previously consented land use consent – refer to Consent History below. Further earthworks will be required for this current proposal. Consent for this earthworks is required from the Northland Regional Council given that the works is within an identified flood hazard area. That consent has been obtained – refer to Consent History below. Consent is also required from the District Council for the volume of earthworks proposed. Estimated total volume is 1,365m^3, over the entire site. An Erosion and Sediment Control forms part of this application.

The on-site wastewater system has been designed to comply with the Regional Plan's permitted activity standards. Discharge and loading has been designed on the basis of a total of 27 staff once the entire development is implemented; 13 in Stage 1 and the balance in Stage 2.

The two front (larger) units contain showrooms with resulting customer visits, estimated at no more than 5 per day; and Units 8 & 9 are also proposed to have some limited customer interface, say up to 2 per day.

Parking requirements have been calculated on the basis of 1 space per 100m2 of GBA (Industrial Activities). On a per unit basis, this results in the following:

Unit 1	200m^2	2 required	3 provided, including 1 x accessible
Units 2-4	150m^2	2 required per unit	1 provided per unit
Unit 5	200m^2	2 required	4 provided, including 1 x accessible
Units 6 & 7	150m^2	2 required per unit	3 provided per unit
Units 8 & 9	135m^2	2 required per unit	2 provided

Total required over entire site for 1,420m2 = 14; number provided over entire site = 20.

Deemed traffic movements over entire site = 142.

The proposed building setback from Kahikatearoa Lane is between 5m and 6.5m. The setback from side boundaries is minimal, at 200mm.

Section 5.0 of this report contains a more detailed assessment for compliance with rules in the relevant planning instruments.

A copy of the Title and relevant instruments is attached in Appendix 1, and a location plan is attached in Appendix 2.

1.2 Scope of the Report

This assessment and report accompanies the Resource Consent Application made by our clients, and is provided in accordance with Section 88 and Schedule 4 of the Resource Management Act 1991. The application seeks land use consent as a discretionary activity, and unit title subdivision, also as a discretionary activity. The information provided in this assessment and report is considered commensurate with the scale and intensity of the

activity for which consent is being sought. The name and address of the owner of the property is contained in the Form 9 Application form.

2.0 PROPERTY DETAILS

Location:	22 Kahikatearoa Lane, Waipapa.
Legal description:	Lot 1 DP 567982 with area of 3265m^2.
Records of Title:	1019559.

3.0 SITE DESCRIPTION & HISTORY

3.1 Physical and mapped characteristics

The site is 3265m^2 in area and access off Kahikatearoa Lane, Waipapa. It is zoned Industrial under the Operative District Plan (ODP) and Light Industrial under the Proposed District Plan (PDP). It is bounded on its western boundary and part of its northern boundary by land zoned Rural Production. All other boundaries are with Industrial Zone land. The site is bare land, with existing formed access off Kahikatearoa Lane.

The site drains to stormwater network within Kahikatearoa Lane. It will be reliant on on-site water supply and onsite wastewater treatment and disposal.

The site is within a 100 year Flood Hazard area.

3.2 Legal Interests

Lot 1 DP 567982 is subject to a Consent Notice (12554072.4). This contains several provisions relevant to future use of the site. These are being complied with in regard to the proposed development.

The consent notice requires:

(i) foundations specifically designed by a suitably qualified charter professional engineer, with a minimum floor level set above the 1 in 100 year flood level – details to be submitted in conjunction with the Building Consent application;
(ii) in conjunction with the construction of any building, a wastewater treatment and effluent disposal system identifying a suitable method of wastewater treatment for the proposed development, along with a 100% reserve disposal area;
(iii) specifically designed stormwater management which addresses both stormwater quality and quantity such that the volume of stormwater discharged is attenuated to a 1 in 10 year rainfall;
(iv) in conjunction with the construction of any building, and in addition to a potable water supply, a water collection system with sufficient supply for fire fighting purposes is to be provided.

3.3 Consent History

The site is one of several industrial sites consented in RC 2160324 (subdivision and bulk earthworks), and subsequent variation RC 2160324-RMAVAR/A to stage the subdivision.

APP.046685.01.01 issued by the Northland Regional Council on 26th June 2025 for Earthworks in a Flood Hazard Area for site development; diversion of stormwater during earthworks activities and discharge of stormwater to land during earthworks activities. Copy attached in Appendix 10.

4.0 SCHEDULE 4 – INFORMATION REQUIRED IN AN APPLICATION

Clauses 2 & 3: Information required in all applications

(1) An application for a resource consent for an activity must include the following:	
(a) a description of the activity: .	Refer Sections 1 and 3 of this Planning Report.
(b) an assessment of the actual or potential effect on the environment of the activity:	Refer to Sections 6 & 7 of this Planning Report.
(b) a description of the site at which the activity is to occur:	Refer to Section 3 of this Planning Report.
(c) the full name and address of each owner or occupier of the site:	This information is contained in the Form 9 attached to the application.
(d) a description of any other activities that are part of the proposal to which the application relates:	The application is for land use and unit title subdivision pursuant to the FNDC's ODP.
(e) a description of any other resource consents required for the proposal to which the application relates:	Consent is also required pursuant to the Proposed Northland Regional Plan for earthworks in floor hazard area – obtained.
(f) an assessment of the activity against the matters set out in Part 2:	Refer to Section 7 of this Planning Report.
(g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b), including matters in Clause (2): (*a) any relevant objectives, policies, or rules in a document; and* *(b) any relevant requirements, conditions, or permissions in any rules in a document; and* *(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).*	Refer to Sections 6 & 7 of this Planning Report.
(3) *An application must also include any of the following that apply:*	
(a) if any permitted activity is part of the	Not applicable.

proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)):	
(b) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A)):	Not applicable.
(c) if the activity is to occur in an area within the scope of a planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana) Act 2011, an assessment of the activity against any resource management matters set out in that planning document (for the purposes of section 104(2B)).	The site is not within an area subject to a customary marine title group. Not applicable.
(4) An application for a subdivision consent must also include information that adequately defines the following:	
(a) the position of all new boundaries: *(b) the areas of all new allotments, unless the subdivision involves a cross lease, company lease, or unit plan:* *(c) the locations and areas of new reserves to be created, including any esplanade reserves and esplanade strips:* *(d) the locations and areas of any existing esplanade reserves, esplanade strips, and access strips:* *(e) the locations and areas of any part of the bed of a river or lake to be vested in a territorial authority under section 237A:* *(f) the locations and areas of any land within the coastal marine area (which is to become part of the common marine and coastal area under section 237A):* *(g) the locations and areas of land to be set aside as new roads.*	Refer to Scheme Plans in Appendix 3.

Clause 6: Information required in assessment of environmental effects

(1) An assessment of the activity's effects on the environment must include the following information:	
(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of	Refer to Sections 6 & 7 of this planning report. The activity will not result in any significant adverse effect on the environment.

any possible alternative locations or methods for undertaking the activity:	
(b) an assessment of the actual or potential effect on the environment of the activity:	Refer to Section 6 of this planning report.
(c) if the activity includes the use of hazardous installations, an assessment of any risks to the environment that are likely to arise from such use:	Not applicable as the application does not involve hazardous installations.
(d) if the activity includes the discharge of any contaminant, a description of— *(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and* *(ii) any possible alternative methods of discharge, including discharge into any other receiving environment:*	The proposal does not involve any discharge of contaminant.
(e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:	Refer to Section 6 of this planning report.
(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted:	Refer to Section 8 of this planning report. No affected persons have been identified.
g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved:	No monitoring is required as the scale and significance of the effects do not warrant it.
(h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).	No protected customary right is affected.

Clause 7: Matters that must be addressed by assessment of environmental effects (RMA)

(1) An assessment of the activity's effects on the environment must address the following matters:	
(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:	Refer to Sections 6 & 8 of this planning report and also to the assessment of objectives and policies in Section 7.

(b) any physical effect on the locality, including any landscape and visual effects:	Refer to Section 6. The development site has no high or outstanding landscape or natural character values.
(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:	Refer to Section 6.
(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:	Refer to Sections 6 & 7. The site has no aesthetic or scientific values that I am aware of, that will be adversely affected by the proposal. The proposed works are for recreational purposes, giving effect to an already issued development consent and management plan. No archaeological sites are affected.
(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:	The proposal will not result in the discharge of contaminants, nor any unreasonable emission of noise.
(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.	The development site is mapped as being within the 1 in 100 year flood hazard area. This is not a 'high risk' area. The title is subject to consent notice requirement in regard to flood levels and safe floor levels. The proposal does not involve hazardous installations.

5.0 ACTIVITY STATUS

5.1 Operative District Plan

The property is zoned Industrial. There are no Operative Far North District Plan resource overlays.

Land Use

INDUSTRIAL ZONE RULES:		
Permitted Standards	**Comment**	**Compliance Assessment**
7.8.5.1.1 SUNLIGHT No part of any building shall project beyond a 45 degree recession plane as measured inwards from any point 2m vertically above ground level on the nearest site boundary which adjoins a Residential, Coastal Residential, Russell Township, Rural Living or Coastal Living zones	The site shares boundaries with the Rural Production Zone and Industrial Zone only.	N/A
7.8.5.1.2 VISUAL AMENITY AND ENVIRONMENTAL PROTECTION (a) Along boundaries adjoining any zone other than the Commercial or Industrial Zone, outdoor areas providing for activities such as parking, loading, outdoor storage and other outdoor activities associated with non-residential	Part (a) is relevant as the entire western boundary of the site, and part of the northern boundary are with land zoned Rural Production. Only a portion (approx. 25%) of the western boundary contains an outdoor area, the remainder being buildings. The part of the northern boundary with RP zone	Complies / will comply

activities on the site shall be screened from adjoining sites by landscaping, wall/s, close boarded fence/s or trellis/es or a combination thereof. They shall be of a height sufficient to wholly or substantially separate these areas from the view of neighbouring properties. Structures shall be at least 1.8m in height, but no higher than 2.0m, along the length of the outdoor area. Where such screening is by way of landscaping it shall be a strip of vegetation which has or will attain a minimum height of 1.8m for a minimum depth of 2m. (b) At least 50% of that part of the site between the road boundary and a parallel line 6m therefrom, where it is not occupied by buildings, shall be landscaped. (c) Any landscaping required by these rules shall remain on the site for the duration of the activity and be maintained, and if such landscaping dies, or becomes diseased or damaged, shall be replaced.	is also an outdoor area. The areas are to accommodate tanks and the site's onsite wastewater disposal area and in-ground treatment system. Fencing and/or landscaping can be established on the western boundary to screen the tanks if the Council considers this necessary, however no fencing or screening is considered necessary in regard to the open area dedicated to on site wastewater. Plans have been drawn to show 50% of road frontage and parallel line 6m therefrom, excluding that occupied with the entrance, to be landscaped. Landscaping can include grass cover.	
7.8.5.1.3 NOISE MITIGATION FOR RESIDENTIAL ACTIVITIES	No residential activity envisaged.	N/A
7.8.5.1.5 KEEPING OF ANIMALS No site shall be used for factory farming, a boarding or breeding kennel or a cattery	No keeping of animals envisaged	N/A
7.8.5.1.6 NOISE (a) All activities within the zone shall be conducted so that noise measured at any point within any other site in the zone shall not exceed: 0700 to 2200 hours 65 dBA L10 2200 to 0700 hours 55 dBA L10 and 80 dBA Lmax (b) All activities within the zone shall be conducted so as to ensure that noise measured at any point within any site in the Residential, Coastal Residential or Russell Township Zone or at and within the notional boundary of any other dwelling in any other rural or coastal zone shall not exceed: 0700 to 2200 hours 55 dBA L10 2200 to 0700 hours 45 dBA L10 and 70 dBA Lmax	The activity is ware housing with a small component of customer interface (showroom), but not retail. No heavy industrial activities are proposed. Loading bays are internal to buildings. I do not believe such activities will breach the noise threshold within the zone (part (a)) nor with another zone (part (b)). There are no nearby dwellings within the adjacent land zoned rural.	Will comply.
7.8.5.1.7 SETBACK FROM BOUNDARIES	The site is not accessed via SH or arterial road. In any event, the	Complies.

The minimum building setback from State Highways and arterial roads shall be 2m.	buildings are set back more than 2m.	
7.8.5.1.8 BUILDING HEIGHT The maximum height of buildings in the Industrial Zone at Opua (refer Map 92) is 12m. This restriction does not apply elsewhere in the Industrial Zone	Not in Opua, no height restriction therefore applies.	Complies.
7.8.5.1.9 STORMWATER The disposal of collected stormwater from the roof of all new buildings and new impervious surfaces provided that the activity is within an existing consented urban stormwater management plan or discharge consent.	In the previous consenting process for activities on this site, it was considered that the site is not within an existing consented urban stormwater management plan or discharge consent area. However, since then stormwater infrastructure has been installed in the vested road, and as-builts provided to the Council. Stormwater is collected off the site before discharging to a Council drainage easement in gross. It is therefore considered that the site is within a 'consented' urban stormwater area.	Complies. Because of consent notice requirements, the application is supported by a specifically designed stormwater management system, refer to the AEE section of this report.
7.8.5.1.10 HELICOPTER LANDING AREA	No helicopter landing areas envisaged.	N/A
DISTRICT WIDE RULES:		
12.1 LANDSCAPE AND NATURAL FEATURES	None present	N/A
12.2 INDIGENOUS FLORA AND FAUNA	None present	N/A
12.3.6.1.3 EXCAVATION AND/OR FILLING, EXCLUDING MINING AND QUARRYING, IN THE RESIDENTIAL, INDUSTRIAL, HORTICULTURAL PROCESSING, COASTAL RESIDENTIAL AND RUSSELL TOWNSHIP ZONES Excavation and/or filling, excluding mining and quarrying, on any site in the Residential, Industrial, Horticultural Processing, Coastal Residential or Russell Township Zones is permitted, provided that: (a) it does not exceed 200m3 in any 12 month period per site; and (b) it does not involve a cut or filled face exceeding 1.5m in height i.e. the maximum permitted cut and fill height may be 3m	Total volume of earthworks required for site preparation exceeds 200m^3. No cut or fill race will exceed 1.5m in height.	Cannot apply with part (a). The equivalent restricted discretionary threshold (Rule 12.3.6.2.2) is 500m^3 and this cannot be complied with either given the estimated total volume of earthworks is 1,365m^3. Discretionary activity status results.
12.4 NATURAL HAZARDS	Site not in a Coastal Hazard area and no residential unit involved.	No applicable rules.
12.5 and 5A HERITAGE	No historic sites or heritage features	N/A

12.7 LAKES, RIVERS, WETLANDS and the COASTLINE	No lake, river, wetland or coastline within 30m.	N/A
12.8 HAZARDOUS SUBSTANCES	No known hazardous substances	N/A
12.9 RENEWABLE ENERGY & ENERGY EFFICIENCY	Activity does not involve any renewable energy or energy efficiency mechanisms	N/A
Traffic, Parking & Access		
15.1.6A.2.1 TRAFFIC INTENSITY The Traffic Intensity threshold value for a site shall be determined for each zone by Table 15.1.6A.1 above. The Traffic Intensity Factor for a proposed activity (subject to the exemptions identified below) shall be determined by reference to Appendix 3A in Part 4.	The permitted threshold for the zone is 200 daily one way traffic movements per 'site'. The deemed TIF for the proposed activities on the overall site is 142. The ODP defines a "site" for the purposes of this rule, to mean: *in the case of: (i) land subdivided under the Unit Titles Act 1972, or stratum subdivision, "site" shall be deemed to be* ***the whole of the land subject to the unit development*** *or stratum subdivision;*	Complies.
15.1.6B.1.1 ON-SITE CAR PARKING SPACES Where: (i) an activity establishes; or ii) the nature of an activity changes; or (ii) buildings are altered to increase the number of persons provided for on the site; the minimum number of on-site car parking spaces to be provided for the users of an activity shall be determined by reference to Appendix 3C,	Parking requirements for industrial units is 1 per 100m^2 GBA. This results in a carparking requirement of 14 spaces. The site plans show 20 spaces (including two accessible spaces).	Complies.
15.1.6B.1.4 – 1.6	The required number of accessible carparks can be provided (two), as well as loading spaces. Refer to site plans.	Complies.
15.1.6C Access rules 15.1.6C.1.1 Private accessway in all zones & 15.1.6C.1.2 Private accessways in Urban Zones 15.1.6C.1.3 Passing Bays on Private Accessways 15.1.6C.1.4 Access over Footpaths The following restrictions shall apply to vehicle access over	The accessway can be formed to the appropriate standard for the proposed activity. None required given double width entrance and manouevring spare within site. There is a footpath, and the crossing is double width, 6m. However, it is splayed to provide better access for larger vehicles	Cannot comply with 15.1.6C.1.4 part (b).

footpaths: (a) no more than two crossings per site; and (b) the maximum width of a crossing shall be 6m.	and technically, therefore, maybe marginally wider than 6m where it crosses the footpath. A minor breach of rule 15.1.6C.1.4 Access over Footpaths is therefore included in this application.	

In summary, the rule breaches have been identified:

12.3.6.1.3 and 12.3.6.2.2 Excavation and/or Filling, part (a) relating to volume; and

15.1.6C.1.4(b) – Access over Footpaths. This rule restricts the width of crossings over footpaths to 6m. Because of the nature of vehicles accessing and existing the site the double width crossing is splayed and will exceed the 6m width where it crosses the footpath.

The above rule breaches result in **discretionary** activity consent being required for the proposed land use.

Subdivision

Rule **13.7.2.1 Minimum area for vacant new lots and new lots which already accommodate structures, Table 13.7.2.1** as it applies to the Industrial Zone, specifies a controlled activity minimum lot size of 3,000m^2 for unsewered sites and 500m^2 for sewered sites. The discretionary activity minimum is 2,000m^2 for unsewered and no limit for sewered sites, provided that servicing of the lot can be achieved.

The ODP defines "sewered" as meaning:

"land which is either:
(a) able to connect to an existing lawfully established reticulated sewage disposal system, or
(b) able to be provided with, as part of the subdivision, a reticulated sewage disposal system, whether publicly or privately owned, for which all necessary approvals have been granted.

The proposal is to provide for a privately owned and operated reticulated sewage disposal system, on site, for which all necessary approvals have been granted, therefore meeting the definition of 'sewered' site. The design being proposed is considered to meet the Regional Plan's permitted standards and therefore no consent (approval) is required (necessary).

The unit titles are less than 500m^2 in area and there are nine of them. The site is capable of providing for all services and therefore the unit title subdivision meets the zone's discretionary activity minimum lot sizes.

A copy of the On-Site Wastewater Treatment and Disposal Design Report, by TrineKel, is attached in Appendix 7.

Overall, the activity is considered to be a **discretionary** activity.

5.2 Proposed District Plan (PDP)

The FNDC publicly notified its PDP on 27th July 2022. Decisions on submissions are not yet notified. There are some rules with legal effect as at date of public notification of the Plan. These include:

Rules HS-R2, R5, R6 and R9 in regard to hazardous substances on scheduled sites or areas of significance to Maori, significant natural areas or a scheduled heritage resource.

As the proposal does not involve hazardous substances, these rules are not relevant to the proposal. Neither is the site a scheduled site or area of significance to Maori, or a significant natural area, or a scheduled heritage resource.

Heritage Area Overlays – N/A as none apply to the application site.

Historic Heritage rules and Schedule 2 – N/A as the site does not have any identified (scheduled) historic heritage values.

Notable Trees – N/A – no notable trees on the site.

Sites and Areas of Significance to Maori – N/A – the site does not contain any site or area of significance to Maori.

Ecosystems and Indigenous Biodiversity - N/A as there are no areas of indigenous vegetation with the site.

Subdivision (specific parts) – None of the subdivision provisions with legal effect are relevant to the proposal.

Activities on the surface of water – N/A as no such activities are proposed.

Earthworks – Only some rules and standards have legal effect. These are Rules EW-R12 and R13 and related standards EW-S3 and ES-S5 respectively. EW-R12 and associated EW-S3 relate to the requirement to abide by Accidental Discovery Protocol if carrying out earthworks any artefacts are discovered. This requirement can be met and is a requirement under heritage legislation in any event. EW-13 and associated EW-S5 relate to ensuring Erosion and Sediment Control measures are in place during earthworks. They cite compliance with GD05. This can be a requirement of any consent issued. Both requirements are offered as conditions of consent.

Signs – N/A – signage does not form part of this application.

Orongo Bay Zone – N/A as the site is not in Oronga Bay Zone.

In summary, I have not identified any breaches of rules (having legal effect).

5.3 Proposed Regional Plan for Northland

Consent was required under the Regional Plan for earthworks within a flood hazard area. This has been obtained and a copy is attached in Appendix 10.

6.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

Discretionary activity subdivisions are subject to assessment pursuant to the matters in 13.10 of the ODP, along with s104 of the Act.

The application is accompanied by a comprehensive Site Suitability Report (SSR) from Trine Kel Civil Engineering Solutions – refer to Appendix 5. This covers natural hazard risk; on-site wastewater; water supply; stormwater management; and vehicle crossing and manouevring. It also puts forward draft conditions of consent. There is also a Stormwater Technical Memo written by Trine Kel in stormwater effects assessment associated with the proposed earthworks, refer to Appendix 6.

6.1 Allotment Sizes and Dimensions

It has previously determined that the proposed unit title area meets the ODP's discretionary minimum size requirements. The units are of sufficient area and dimension to accommodate their intended use. The Common Area and associated Body Corporate arrangement will ensure appropriate provision and maintenance of operational requirements. The overall development is consistent with the zone's character and with development on nearby sites.

6.2 Natural and Other Hazards

Refer to the SSR in Appendix 5, and specifically Section 5 of that report. The site is within a 1 in 100 year flood hazard area. There is an existing Consent Notice applying to the site to ensure ground the floor area is above the 1 in 100 year flood level. This will be complied with. Consent has already been obtained from the Regional Council for carrying out earthworks in the flood hazard area. No habitable structure is proposed, with the development being entirely 'industrial' in nature. The SSR states that the development's carpark areas will remain approx. 300mm above the 1% AEP flood level, while the buildings themselves will have a final freeboard of 500mm above the 1% AEP Flood level.

In regard to ground conditions, the application is also supported by a Geotechnical Report by Haigh Workman – refer to Appendix 8. Geotechnical risk has been evaluated and is considered minor, provided recommendations detailed within the report are followed. These are summarised in the report's Executive Summary.

The site is not subject to any other hazard that I am aware of. The Trine Kel SSR assesses the only other relevant risks as drought and fire, where the risk is moderate and low respectively. The former can be mitigated by ensuring adequate on-site water storage.

6.3 Water Supply

Refer to the SSR in Appendix 5 and particularly its Section 7. Whilst Waipapa does have a Council reticulated water supply system, and this does run down the road frontage to the site, the proposal is to primarily source potable water from rainwater harvesting to rainwater tanks.

Fire fighting supply will be provided via tanks, positioned for safe accessibility. The applicant has spoken with Fire and Emergency NZ (FENZ) and proposed fire fighting water supply arrangements will be guided by the NZ Fire Fighting Water Supply Code of Practice SNZ PAS 4509:2008, and will be agreed by FENZ. Water supply internal to the site will be managed by the unit title's Body Corporate.

6.4 Stormwater Disposal

Refer to the SSR in Appendix 5 and particularly its Section 8 and Stormwater Technical Memo in Appendix 6. Resource consent 2160324-RMAVAR/B imposed a consent notice applying to all allotments in the subdivision. The wording of the clause relating to stormwater management is provided earlier in this planning report under Legal Interests.

Trine Kel has designed a system that meets the consent notice requirements and is in accordance with the Subdivision Stormwater Report prepared by Haigh Workman for the original subdivision. It designs on the basis of all but 618m^2 of the site being impermeable and the attenuation design demonstrates that the proposed system will effectively limit post development runoff from the site to within the allowable discharge rate as required under the original subdivision consent.

6.5 Sanitary Sewage Disposal

Refer to the SSR in Appendix 5 and particularly its Section 6, and additionally to the On-Site Wastewater Treatment and Disposal Design, also prepared by Trine Kel and attached in Appendix 7. Given the level of detail provided in both the above referenced reports, I will not repeat the details in this planning report/AEE. The overall conclusion in regard to the design being put forward, is that the proposed system is technically and environmentally appropriate. It complies with both NRC and FNDC requirements and reflects best practice under AS/NZS1547. No adverse environmental effects are anticipated. The system is a permitted activity under the proposed Regional Plan for Northland.

Native, hydrophilic and low-maintenance plant species will be established over the disposal area to enhance treatment efficacy and site amenity. This open space area, with a boundary with Rural Production zoned land, does not, in my opinion, require screening from that adjoining land.

The SSR contains a full AEE in its Section 6.10.

As with other shared infrastructure, the wastewater reticulated network system for the site will be under the management of a Body Corporate.

6.6 Energy Supply

The site has connections available for electricity and for telecommunications. The developer/landowner will liaise directly with providers in regard to individual connections.

6.7 Access

Refer to the SSR in Appendix 5 and particularly its Sections 9 & 10. A new vehicle crossing will be formed to provide access to proposed warehouses, from Kahikatearoa Lane. This will be constructed in general accordance with Drawing Sheet No. 19 (vehicle crossing – commercial/industrial) of the FNDC Engineering Standards. There is only one minor breach of access rule where the double width entrance is to be splayed and in doing so may exceed the 6m width restriction for crossings over footpaths. This is considered a minor breach. Visibility for pedestrians and for turning vehicles is excellent. Footpath usage in an industrial zone is minimal. The crossing itself will be formed to the appropriate standard to support activities of the nature proposed.

Internal to the site there are parking spaces outside each unit, with the total number provided complying with the permitted activity requirements (21 provided). The parking spaces are designed to be in accordance with the ODP, specifically adhering to the dimensional standards outlined in Appendix 3D. Vehicle tracking analysis has been undertaken, using 8m long heavy rigid vehicle type, to confirm that safe and efficient manouevring can be achieved within the site. Tracking curves demonstrate compliance with relevant access and circulation requirements. The loading spaces for each unit are internal to the units themselves, with appropriate turning arcs accommodated on site.

6.8 The effects of earthworks and utilities

Utilities will be in-ground and managed/administered by the Body Corporate. Earthworks requires land use consent and are assessed later in this AEE in regard to land use effects – refer to 6.14 below.

6.9 Building Locations

The proposal sees two separate blocks of units, to be constructed in stages. They will have finished floor levels at or above the required height above the 1 in 100yr flood level. They are set back from the road boundary, and from the rear (northern) boundary. Given that the site is required to enable safe floor levels, and this work will be done (earthworks already consented by NRC), there is no other restraint as to where buildings are located. Unit Titles are subject to s224(f) of the RMA. This requires confirmation that any buildings within the Unit Title boundaries, are compliant with the Building Code.

6.10 Preservation and Enhancement of Heritage Resources, Vegetation, Fauna and Landscape, and Land set Aside for Conservation Purposes.

The site does not contain any heritage resources, indigenous vegetation, fauna or outstanding. There is no land set aside for conservation purposes either within the site or nearby. The site is zoned Industrial and is intended for industrial use.

6.11 Soil

The site is urban and zoned for industrial use. There is no requirement, therefore to protect soils for any productive use. The zone provides for total coverage of a site in impermeable surfaces.

6.12 Access to Waterbodies

There are no nearby waterbodies to which access is required.

6.13 Land Use Incompatibility

The site is zoned Industrial and the activity proposed is in keeping with that zoning. There are light industrial uses established on north and east boundaries, as well as across the road on the southern boundary. Whilst there is Rural Production zoning on the west boundary, that land is currently vacant and any future use of that land will automatically take into account the likelihood of industrial land use on adjacent sites. The proposal does not create any additional land use incompatibility effects than would normally occur at a zone interface.

6.14 Effects of Excavation/Filling

The principal reason for requiring land use consent for the proposal, is the breach of the excavation/filling volume threshold applying to the zone. The application is supported by an Erosion and Sediment Control Plan, attached in Appendix 9; and calculation of volumes and site plan of earthworks, also attached in Appendix 9. Both have been prepared by Haigh Workman.

Consent was sought, and been granted, for Earthworks in a Flood Hazard Area and associated stormwater diversion and discharge, a copy of the NRC consent is attached in Appendix 10. The application for that NRC consent contained an AEE for earthworks, re-attached in this application as part of Appendix 9. The consent, as issued, contains several conditions around timing of works, erosion and sediment control measures, cut-off drains and diversion of stormwater and treatment of the soil after works are completed. I do not believe the FNDC need impose duplicate conditions given those already imposed by NRC and could instead limit conditions of consent to a construction management plan at time of 224c and before works commence, and a requirement to re-instate / repair any damage to public road at the conclusion of earthworks/ construction works.

6.15 Other Potential Effects

6.15.1 Visual Effects, Character and Amenity

Rule 7.8.5.1.2 Visual Amenity & Environmental Protection parts (a), (b) and (c) are believed to be able to be complied with. Should the Council consider it necessary to screen outdoor areas on boundaries with the Rural Production Zone, this can be achieved via conditions of consent, albeit such open areas only accommodate disposal/reserve disposal areas and water tanks.

The proposed activity is warehousing, and this is totally in keeping with the purpose of the zone and existing activities already established in the area.

I believe any effects on visual amenity or character arising from the proposed activity to be less than minor.

6.15.2 Positive Effects

The town of Waipapa is now largely regarded as the centre for big box retail; commercial and light industrial activity. The proposed use of the site is very much in keeping with the character of Waipapa. The opportunity now presents itself for the right type of development in the right location to occur. I believe the proposal provides for social and economic well being.

6.15.9 Precedent & Cumulative Effects

The granting of this consent will not create a precedent that threatens the integrity of the ODP. The proposal represents activities consistent with other already established or consented for the Waipapa Industrial area.

I do not believe any adverse cumulative effects will result from this proposal. Visually the site will support buildings not dissimilar in size and dimension from those already in the immediate vicinity, or likely to establish. In an area zoned for light industrial use, this is the expected character of the area.

7.0 STATUTORY ASSESSMENT

7.1 Operative District Plan Objectives and Policies

Objectives and policies relevant to this proposal are those in Chapter 7 Urban Environment and 7.8 Industrial Zone, along with those in Chapters 12.3 (Excavation/Filling); 13 (Subdivision); and 15.1 Traffic, Parking and Access. Relevant objectives and policies are addressed below.

Urban Environment Objectives
7.3.1 To ensure that urban activities do not cause adverse environmental effects on the natural and physical resources of the District.
7.3.3 To avoid, remedy or mitigate the adverse effects of activities on the amenity values of existing urban environments.
7.3.4 To enable urban activities to establish in areas where their potential effects will not adversely affect the character and amenity of those areas.

Urban Environment Policies
7.4.1 That amenity values of existing and newly developed areas be maintained or enhanced.
7.4.3 That adverse effects on publicly-provided facilities and services be avoided or remedied by new development, through the provision of additional services.
7.4.4 That stormwater systems for urban development be designed to minimise adverse effects on the environment.
7.4.5 That new urban development avoid: (a) adversely affecting the natural character of the coastal environment, lakes, rivers, wetlands or their margins; (b) adversely affecting areas of significant indigenous vegetation or significant habitats of indigenous fauna; (c) adversely affecting outstanding natural features, landscapes and heritage resources; (d) adversely affecting the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga; (e) areas where natural hazards could adversely affect the physical resources of urban development or pose risk to people's health and safety; (f) areas containing finite resources which can reasonably be expected to be valuable for future generations, where urban development would adversely affect their availability; (g) adversely affecting the safety and efficiency of the roading network; (h) the loss or permanent removal of highly productive and versatile soils from primary production due to subdivision and development for urban purposes.

7.4.8 That infrastructure for urban areas be designed and operated in a way which: (a) avoids remedies or mitigates adverse effects on the environment; (b) provides adequately for the reasonably foreseeable needs of future generations; and (c) safeguards the life-supporting capacity of air, water, soil and ecosystems.

The AEE and supporting report confirm that the proposed activity can occur without causing adverse environmental effects on natural and physical resources (objective 7.3.1); or adversely affecting character and amenity values (objectives 7.3.3 and 7.3.4 & Policy 7.4.1).

The stormwater design will minimise adverse effects on the environment and on publicly provided facilities or services (Policies 7.4.3 and 7.4.4).

The proposed development is on a site that does not display any of the attributes listed in Policy 7.4.5 (a) through (d) inclusive. In regard to natural hazard the subdivision creating the site takes this into account and floor levels will be set accordingly (part (e)). Part (g) of Policy 7.4.5 refers to the roading network and I believe that the network can readily accommodate the proposed activity.

<u>Industrial Zone Objectives</u>
7.8.3.1 To avoid, remedy or mitigate adverse effects of new industrial activities on existing activities in the Industrial zone, and on activities on adjoining land, and on the natural and physical resources of the District.

<u>Industrial Zone Policies</u>
7.8.4.2 That the range of activities provided for in the Industrial zone be limited only by the acceptability of the effects generated by the particular activity in relation to other activities in the zone.
7.8.4.3 That standards be applied that protect visual and environmental amenity within the Industrial zone, and the amenity of adjacent zones.
7.8.4.4 All activities should provide for a stormwater disposal system incorporating Low Impact Design principles, particularly for car park and landscaped areas.
7.8.4.5 That stormwater disposal systems do not result in suspended solids, industrial by-products, oil, or other contaminated substance or waste entering the stormwater collection system in concentrations that are likely to pose an immediate or long term hazard to human health or the environment.

I believe adverse effects can be appropriately avoided, remedied or mitigated (Objective 7.8.3.1 and Policy 7.8.4.2). The road frontage will be grassed and side boundaries appropriately fenced/landscaped, where needed (Policy 7.8.4.3). Stormwater disposal design will ensure that no suspended solids, industrial by-products, oil, or other contaminated substance or waste enter the stormwater collection system in concentrations likely to pose any hazard to human health or the environment (Policies 7.8.4.4 & 7.8.4.5).

12.3 SOILS AND MINERALS

12.3.3 OBJECTIVES

12.3.3.1 To achieve an integrated approach to the responsibilities of the Northland Regional Council and Far North District Council in respect to the management of adverse effects arising from soil excavation and filling, and minerals extraction.
12.3.3.2 To maintain the life supporting capacity of the soils of the District.
12.3.3.3 To avoid, remedy or mitigate adverse effects associated with soil excavation or filling.
12.3.3.4 To enable the efficient extraction of minerals whilst avoiding, remedying or mitigating any

adverse environmental effects that may arise from this activity.

12.3.4 POLICIES

12.3.4.1 That the adverse effects of soil erosion are avoided, remedied or mitigated.
12.3.4.2 That the development of buildings or impermeable surfaces in rural areas be managed so as to minimise adverse effects on the life supporting capacity of the soil.
12.3.4.3 That where practicable, activities associated with soil and mineral extraction be located away from areas where that activity would pose a significant risk of adverse effects to the environment and/or to human health. Such areas may include those where:
(a) there are people living in close proximity to the site or land in the vicinity of the site is zoned Residential, Rural Living, Coastal Residential or Coastal Living;
(b) there are significant ecological, landscape, cultural, spiritual or heritage values;
(c) there is a potential for adverse effects on lakes, rivers, wetlands and the coastline;
(d) natural hazards may pose unacceptable risks.
12.3.4.4 That soil excavation and filling, and mineral extraction activities be designed, constructed and operated to avoid, remedy or mitigate adverse effects on people and the environment.
12.3.4.5 That soil conservation be promoted.
12.3.4.6 That mining tailings that contain toxic or bio-accumulative chemicals are contained in such a way that adverse effects on the environment are avoided.
12.3.4.7 That applications for discretionary activity consent involving mining and quarrying be accompanied by a Development Plan.
12.3.4.8 That as part of a Development Plan rehabilitation programmes for areas no longer capable of being actively mined or quarried may be required.
12.3.4.9 That soil excavation and filling in the National Grid Yard are managed to ensure the stability of National Grid support structures and the minimum ground to conductor clearances are maintained.
12.3.4.10 To ensure that soil excavation and filling are managed appropriately, normal rural practices as defined in Chapter 3 will not be exempt when determining compliance with rules relating to earthworks, except if the permitted standards in the National Grid Yard specify that activity is exempt.

Consent has been obtained from the NRC for earthworks in a flood hazard area (12.3.3.1). The site is zoned for industrial use and 100% impermeable coverage is expected. The proposal leaves permeable surfaces for on-site wastewater and, in this regard, the life supporting capacity of soils is maintained (12.3.3.2 & 12.3.4.2). The proposal will avoid, remedy or mitigate adverse effects (12.3.3.3 & 12.3.4.4).

The proposal will ensure no soil erosion (12.3.4.1). There is no National Grid network in proximity to the site (12.3.4.9).

<u>Chapter 15.1 Traffic, Parking and Access Objectives</u>
15.1.3.1 To minimise the adverse effects of traffic on the natural and physical environment.
15.1.3.3 To ensure that appropriate provision is made for on-site car parking for all activities, while considering safe cycling and pedestrian access and use of the site.
15.1.3.4 To ensure that appropriate and efficient provision is made for loading and access for activities.
15.1.3.5 To promote safe and efficient movement and circulation of vehicular, cycle and pedestrian traffic, including for those with disabilities.

<u>Chapter 15.1 Traffic, Parking and Access Policies</u>
15.1.4.1 That the traffic effects of activities be evaluated in making decisions on resource consent applications.
15.1.4.2 That the need to protect features of the natural and built environment be recognised in the provision of parking spaces.
15.1.4.3 That parking spaces be provided at a location and scale which enables the efficient use of parking spaces and handling of traffic generation by the adjacent roading network.
15.1.4.4 That existing parking spaces are retained or replaced with equal or better capacity where appropriate, so as to ensure the orderly movement and control of traffic.
15.1.4.5 That appropriate loading spaces be provided for commercial and industrial activities to assist

with the pick-up and delivery of goods.
15.1.4.6 That the number, size, gradient and placement of vehicle access points be regulated to assist traffic safety and control, taking into consideration the requirements of both the New Zealand Transport Agency and the Far North District Council.
15.1.4.7 That the needs and effects of cycle and pedestrian traffic be taken into account in assessing development proposals.
15.1.4.8 That alternative options be considered to meeting parking requirements where this is deemed appropriate by the Far North District Council.

The breach of access rule is minor. On site parking and loading spaces are adequate (Objective 15.1.3.3 & Policies 15.1.4.3 & 15.1.4.4 & 15.1.4.8). Appropriate provision is made for loading and access and the safe and efficient movement and circulation of traffic and pedestrians within the site (Objectives 15.1.3.4 and 15.1.3.5; Policy 15.1.4.5). The site will have one crossing in a safe location. This will be formed to the required standard in all aspects other than width over a footpath (Policy 15.1.4.6). The needs of pedestrian traffic have been taken into account (Policy 15.1.4.7).

The proposal also includes a Unit Title subdivision and therefore the ODP's objectives and policies in regard to subdivision are relevant.

Subdivision Objectives & Policies

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

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

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

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

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

13.3.7 To ensure the relationship between Maori and their ancestral lands, water, sites, wahi tapu and other taonga is recognised and provided for.
And related Policy
13.4.11 That subdivision recognises and provides for the relationship of Maori and their culture and traditions, with their ancestral lands, water, sites, waahi tapu and other taonga and shall take into account the principles of the Treaty of Waitangi.

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

13.3.9 To ensure, to the greatest extent possible, that all new subdivision supports energy efficient design through appropriate site layout and orientation in order to maximise the ability to provide light, heating, ventilation and cooling through passive design strategies for any buildings developed on the site(s).
13.3.10 To ensure that the design of all new subdivision promotes efficient provision of infrastructure, including access to alternative transport options, communications and local services.

Policies

13.4.1 That the sizes, dimensions and distribution of allotments created through the subdivision process be determined with regard to the potential effects including cumulative effects, of the use of those allotments on:
(a) natural character, particularly of the coastal environment;
(b) ecological values;
(c) landscape values;
(d) amenity values;
(e) cultural values;
(f) heritage values; and
(g) existing land uses

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

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

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

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

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

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

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

13.4.13 Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the applicable zone in regards to ***s6 matters****. In addition subdivision, use and development shall avoid adverse effects as far as practicable by using techniques including:*
(a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns;
(b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as seen from public land and the coastal marine area;
(c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas;
(d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Maori with their culture, traditions and taonga including

concepts of mauri, tapu, mana, wehi and karakia and the important contribution Maori culture makes to the character of the District (refer Chapter 2 and in particular Section 2.5 and Council's "Tangata Whenua Values and Perspectives" (2004);
(e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests;
(f) protecting historic heritage through the siting of buildings and development and design of subdivisions.
(g) achieving hydraulic neutrality and ensuring that natural hazards will not be exacerbated or induced through the siting and design of buildings and development.

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

13.4.15 That conditions be imposed upon the design of subdivision of land to require that the layout and orientation of all new lots and building platforms created include, as appropriate, provisions for achieving the following: (a) development of energy efficient buildings and structures; (b) reduced travel distances and private car usage; (c) encouragement of pedestrian and cycle use; (d) access to alternative transport facilities; (e) domestic or community renewable electricity generation and renewable energy use

The Industrial Zone covers the existing industrial and light industrial areas of the District, with the intention of retaining existing style and atmosphere of those areas. The proposal is consistent with the purpose of the zone (13.3.1).

This Planning Report and Assessment of Environmental Effects, supported by the various technical reports, show that the proposed subdivision is appropriate for the site and that any actual or potential adverse effects can be avoided, remedied or mitigated. I do not believe that the proposal will compromise the life-supporting capacity of air, water, soil or ecosystems (13.3.2).

The site does not contain any outstanding landscape or natural features, and is not in the coastal environment (13.3.3).

The site is to be serviced by on-site water collection and storage. The stormwater management design will ensure no off-site effects (13.3.5).

Objective 13.3.6 is likely intended to encourage Management Plan applications, and does not have a lot of relevance to this proposal.

The site is not known to contain any sites of cultural significance to Maori, or wahi tapu. There are no known areas of ancestral land near the application site. The unit title lots will be serviced by on-site water, stormwater and wastewater systems. I do not believe that the proposal adversely impacts on the ability of Maori to maintain their relationship with ancestral lands, water, sites, wahi tapu and other taonga (13.3.7 & 13.4.11).

Electricity supply is available to the site (13.3.8).

Energy efficiency has not been a consideration in designing the unit title. The site is zoned industrial and has access to Council road (13.3.9 & 13.3.10).

The site is not in the coastal environment and exhibits none of the values outlined in Policy 13.4.1.

Access to the site is able to be formed safely. Site works will be carried out in such a way so as to avoid, remedy or mitigate any adverse effects. No vegetation removal is required (13.4.2 & 13.4.5).

The site is within a 100 year flood hazard area. This has been taken into account in the design of the proposed development (13.4.3).

It is envisaged that internal to the site, utility services will be underground (13.4.4).

The site is not known to contain any of the features listed in Policy 13.4.6.

This is discussed earlier. The site is to be serviced by onsite water collection and storage (13.4.8).

The application is not lodged as a Management Plan application (13.4.12).

In regard to Policy 13.4.13, s6 matters (National Importance) are addressed later in this report.

In addition:

(a) The proposal is for a land use of a type envisaged for the zone and the unit title subdivision will create units of a size provided for in the District Plan as a discretionary activity;
(b) The proposal is in an area not displaying high or outstanding natural values;
(c) the site is not adjacent the coastal marine area;
(d) no additional public access is required;
(e) The site does not contain any significant indigenous vegetation;
(f) The proposal is not believed to negatively impact on the relationship of Maori with their culture;
(g) There are no identified heritage values; and
(h) The potential for flood hazard has been taken into account.

I consider the proposal to be consistent with Policy 13.4.13.

The subdivision has had regard to the underlying zone's objectives and policies (13.4.14).

7.2 Proposed District Plan Objectives and Policies

The site is zoned Light Industrial under the PDP.

Objectives

LIZ-O1
The Light Industrial zone is utilised for the efficient operation of light industrial activities and is managed to ensure its long-term protection, including from:
a. land fragmentation;
b. land sterilisation; and
c. reverse sensitivity effects.

LIZ-O2
The Light Industrial zone accommodates a range of light industrial activities that:
a. efficiently use the physical resources of the zone;
b. are characterised largely by light manufacturing, contractor depots, automotive and marine repair and service industries;
c. are not unreasonably constrained by surrounding activities, and
d. avoid compromising the operation of future light industrial activities within the zone.

LIZ-O3
Enable land use and subdivision in the Light Industrial zone where there is adequacy and capacity of available or programmed development infrastructure to support it.

LIZ-O4
The adverse environmental effects generated by light industrial activities are managed, in particular at zone boundaries.

LIZ-O5
The Light Industrial zone accommodates a limited range of commercial activities which either support light industrial activities or are not anticipated in the Mixed Use zone.

Policies

LIZ-P1
Enable development and operation of light industrial activities in the Light Industrial zone.

LIZ-P2
Require all subdivision in the Light Industrial zone to provide the following reticulated services to the boundary of each lot:
a. telecommunications:
i. fibre where it is available;
ii. copper where fibre is not available;
iii. copper where the area is identified for future fibre deployment.
b. local electricity distribution network; and
c. wastewater, potable water supply and stormwater where they are available

LIZ-P3
Avoid the establishment of activities that do not support the function of the Light Industrial zone, including:
a. heavy industrial activities;
b. residential activities;
c. community facilities;
d. retirement villages;
e. education facilities; and
f. sport and recreation facilities.

LIZ-P4
Allow commercial activities in the Light Industrial zone that:
a. are complementary to and support light industrial activities; or
b. require larger sites and may not accommodate amenity values anticipated in the Mixed Use zone.

LIZ-P5
Ensure that built form is of a scale and design that is:
a. consistent with the amenity of the Light Industrial zone; and
b. complementary to the character and amenity of adjoining zones.

LIZ-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. consistency with the scale, density, design and character of the light industrial environment and purpose of the zone;
b. the location, scale and design of buildings or structures, outdoor storage areas, parking and internal roading;

c. for non-industrial activities:
i. scale and compatibility with industrial activities;
ii. potential reverse sensitivity effects on industrial activities.
d. at zone interfaces:
i. any setbacks, fencing, screening or landscaping required to address potential conflicts;
ii. any adverse effects on the character and amenity of adjacent zones.
e. the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity; including:
i. opportunities for low impact design principles;
ii. management of three waters infrastructure and trade waste such as industrial by-products.
f. managing natural hazards;
g. the adequacy of roading infrastructure to service the proposed activity;
h. any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity; and
i. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

The proposed use is consistent with the intent and purpose of LIZ-O1. It is an example of efficient use of physical resources. Warehousing is an activity envisaged in the zone (LIZ-O2). The site is in an existing industrial zone, with good road network (LIZ-O3). Effects will be managed, including on zone boundaries (LIZ-O4).

The proposed activity is a light industrial activity (LIZ-P1). Telecommunications and power connections will be the responsibility of the consent holder to provide and body corporate to manage. The site will be self sufficient in terms of three waters (LIZ-P2). None of the activities listed in LIZ-P3 are proposed. The proposed built form, scale and design is consistent with the amenity of the zone and complementary to the character and amenity of adjoining zones (LIZ-P5). No consent is required under the PDP, therefore LIZ-P6 is not relevant.

The PDP's Subdivision objectives and policies are also relevant.

SUB-O1
Subdivision results in the efficient use of land, which:
a. achieves the objectives of each relevant zone, overlays and district wide provisions;
b. contributes to the local character and sense of place;
c. avoids reverse sensitivity issues that would prevent or adversely affect activities already established on land from continuing to operate;
d. avoids land use patterns which would prevent land from achieving the objectives and policies of the zone in which it is located;
e. does not increase risk from natural hazards or risks are mitigates and existing risks reduced; and
f. manages adverse effects on the environment.

SUB-O2
Subdivision provides for the:
a. Protection of highly productive land; and
b. Protection, restoration or enhancement of Outstanding Natural Features, Outstanding Natural Landscapes, Natural Character of the Coastal Environment, Areas of High Natural Character, Outstanding Natural Character, wetland, lake and river margins, Significant Natural Areas, Sites and Areas of Significance to Māori, and Historic Heritage.

SUB-O3
Infrastructure is planned to service the proposed subdivision and development where:
a. there is existing infrastructure connection, infrastructure should provided in an integrated, efficient, coordinated and future-proofed manner at the time of subdivision; and

b. where no existing connection is available infrastructure should be planned and consideration be given to connections with the wider infrastructure network.

SUB-O4
Subdivision is accessible, connected, and integrated with the surrounding environment and provides for:
a. public open spaces;
b. esplanade where land adjoins the coastal marine area; and
c. esplanade where land adjoins other qualifying waterbodies.

SUB-P1
Enable boundary adjustments that: …

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

SUB-P3
Provide for subdivision where it results in allotments that:
- *a. are consistent with the purpose, characteristics and qualities of the zone;*
- *b. comply with the minimum allotment sizes for each zone;*
- *c. have an adequate size and appropriate shape to contain a building platform; and*
- *d. have legal and physical access.*

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

SUB-P5
Manage subdivision design and layout in the General Residential, Mixed Use and Settlement zone to .....

SUB-P6
Require infrastructure to be provided in an integrated and comprehensive manner by:
- *a. demonstrating that the subdivision will be appropriately serviced and integrated with existing and planned infrastructure if available; and*
- *b. ensuring that the infrastructure is provided is in accordance the purpose, characteristics and qualities of the zone.*

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

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

SUB-P9
Avoid subdivision rural lifestyle subdivision in the Rural Production zone and Rural residential subdivision in the Rural Lifestyle zone ….

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

SUB-P11
Manage subdivision to address the effects of the activity requiring resource consent including (but not limited to) consideration of the following matters where relevant to the application:
- *a. consistency with the scale, density, design and character of the environment and purpose of the zone;*

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

I believe that the proposed unit title subdivision will achieve the efficient use of land and contribute to local character. I do not foresee reverse sensitivity becoming an issue and the proposal will not prevent the continued use of adjacent land for its current purpose. Risk from natural hazards has been taken into account, and adverse effects can be adequately managed.

The site contains no highly productive land. The development site contains no Outstanding Natural Features, Outstanding Natural Landscapes, Areas of High Natural Character, Outstanding Natural Character, Significant Natural Areas, Sites and Areas of Significance to Māori, or Historic Heritage. The property is not within the Coastal Environment.

On-site infrastructure can be utilised for wastewater, stormwater and potable water supply.

The proposal involves no public open spaces, and no esplanade areas. Neither is it required to.

SUB-P1 and P2 are not relevant. Neither are SUB-P5, P8, P9 or P10 given the site's zoning and absence of minor residential units.

The lots are consistent with the PDP's discretionary minimum lot sizes; are of an adequate size and appropriate shape to contain a building platform; and the site has legal and physical access (SUB-P3).

I consider the proposal to be consistent with SUB-P4. The site can be appropriately serviced (SUB-P6). There is no requirement for esplanade (SUB-P7).

The proposal does not require consent under the PDP so the above policy is of limited relevance. Notwithstanding this, relevant matters in SUB-P11 have been considered.

7.3 Part 2 Matters

5 Purpose

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

I consider the proposal to be a sustainable use of the site.

6 Matters of national importance
In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:
(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.

The application site is not within the coastal environment and does not contain or affect any wetlands, lakes or rivers (part (a)); the application site does not contain any areas identified as outstanding natural features or landscapes, and no areas of significant indigenous vegetation or habitat (parts (b) and (c)). There is no requirement for public access (part (d). I do not believe the proposed development adversely affects the relationship of Maori and their culture and traditions (part (e). There are no known heritage sites within the application sites and no customary rights (parts (f) and (g)). Although within an area shown as potentially being subject to a 1 in 100 year flood event, I do not consider this to be a 'significant risk'. In any event the design of the development has taken flood hazard into account (part (h)). In summary I believe the proposal gives effect to s6 of the Act.

7 Other matters
In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—
(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.

Regard has been had to any relevant parts of Section 7 of the RMA, "Other Matters". I consider the proposal to represent the efficient use and development of natural and physical resources (part (b). The land is zoned Industrial and as such amenity and character values are not as 'sensitive' or crucial to maintain as in a residential or coastal area (part (c)). In any event, the layout and the built environment will be in keeping with the existing character of the area. The development will not create any additional impact on natural and physical resources (part (g)).

8 Treaty of Waitangi
In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

The principles of the Treaty of Waitangi have been considered and it is believed that this proposal does not offend any of those principles.

In summary, it is considered that all matters under s5-8 inclusive have been adequately taken into account.

7.4 National Policy Statements

There are no national policy statements relevant to this proposal.

7.5 National Environmental Standards

I am not aware of any HAIL activity or industry having taken place on the site that would render the proposal subject to the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. It is not shown on the NRC's Selected Land Site database as a contaminated site. There are no areas of natural wetland within 100m of the site and therefore the National Environmental Standard for Freshwater Management is not relevant.

7.6 Regional Policy Statement for Northland

In preparing this application, the Regional Policy Statement for Northland has been considered, in particular those Objectives and Policies relevant to urban environments and infrastructure. The site is devoid of any resources or features notated as significant vegetation or habitat; outstanding landscape or natural value; heritage value or cultural values. Relevant aspects of the Regional Policy Statement for Northland are addressed below.

3.5 Enabling economic wellbeing

Northland's natural and physical resources are sustainably managed in a way that is attractive for business and investment that will improve the economic wellbeing of Northland and its communities.

The proposal is considered to promote sustainable management. It provides for an appropriate use of land zoned Industrial in an area dominated by light industrial, big box retail and other commercial type activities.

3.6 Economic activities – reverse sensitivity and sterilisation

The viability of land and activities important for Northland's economy is protected from the negative impacts of new subdivision, use and development, ...

The proposal is considered appropriate for the location and does not jeopardise the viability of land important to Northland's economy.

3.8 Efficient and effective infrastructure

Manage resource use to: (a) Optimise the use of existing infrastructure; (b) Ensure new infrastructure is flexible, adaptable, and resilient, and meets the reasonably foreseeable needs of the community; and (c) Strategically enable infrastructure to lead or support regional economic development and community wellbeing.

The application site is within an urban environment, zoned for industrial type activities. The proposal optimises existing infrastructure where this is available, however will be reliant on on-site servicing in terms of stormwater, wastewater and water.

3.11 Regional form

Northland has sustainable built environments that effectively integrate infrastructure with subdivision, use and development, and have a sense of place, identity and a range of lifestyle, employment and transport choices.

The proposal is consistent with the above objective.

Relevant policies include:

Policy 5.1.1 – Planned and coordinated development.

Subdivision, use and development should be located, designed and built in a planned and co-ordinated manner which:

(a) Is guided by the 'Regional Form and Development Guidelines' in Appendix 2;

(b) Is guided by the 'Regional Urban Design Guidelines' in Appendix 2 when it is urban in nature;

(c) Recognises and addresses potential cumulative effects of subdivision, use, and development, and is based on sufficient information to allow assessment of the potential long-term effects;

(d) Is integrated with the development, funding, implementation, and operation of transport, energy, water, waste, and other infrastructure;

(e) Should not result in incompatible land uses in close proximity and avoids the potential for reverse sensitivity;

(f) – relates to highly versatile soils and is not relevant in an industrial zone.

(g) Maintains or enhances the sense of place and character of the surrounding environment except where changes are anticipated by approved regional or district council growth strategies and / or district or regional plan provisions.

(h) Is or will be serviced by necessary infrastructure.

The proposal is for a light industrial use within an urban area already supporting such activities. The proposal is consistent with Policy 5.1.1 above.

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

Avoid the adverse effects, including reverse sensitivity effects of new subdivision, use and development, particularly residential development on the following: (a) Primary production activities in primary production zones (including within the coastal marine area); (b) Commercial and industrial activities in commercial and industrial zones; (c) The operation, maintenance or upgrading of existing or planned13 regionally significant infrastructure; and (d) The use and development of regionally significant mineral resources1

I believe that, subject to conditions of consent (based on supporting reports), any adverse effects, including reverse sensitivity effects, can be appropriately avoided, remedied or mitigated.

Objective 3.13 Natural hazard risk

The risks and impacts of natural hazard events (including the influence of climate change) on people, communities, property, natural systems, infrastructure and our regional economy are minimised by:
.....
(c) Avoiding inappropriate new development in 10 and 100 year flood hazard areas and coastal hazard areas;
.....
Part (c) of Objective 3.13 is the only clause of particular relevance to the proposal. The site is identified as being within a 100 year flood hazard area. I consider the proposed development (not residential in nature) to be appropriate development for the site and that appropriate mitigation measures have already been, and will be, implemented.

Policy 7.1.1 – General risk management approach

Subdivision, use and development of land will be managed to minimise the risks from natural hazards by:
.....
(d) Ensuring that natural hazard risk to vehicular access routes and building platforms for proposed new lots is considered when assessing subdivision proposals;
.....

Part (d) of Policy 7.1.1 is partially relevant to the proposal. The design and site works associated with the proposal has taken into account the natural hazard risk. Safe floor levels can be established.

7.1.2 Policy – New subdivision and land use within 10-year and 100- year flood hazard areas

New subdivision, built development (including wastewater treatment and disposal systems), and land use change may be appropriate within 10-year and 100-year flood hazard areas provided all of the following are met:
(a) Hazardous substances will not be inundated during a 100-year flood event.
(b) Earthworks (other than earthworks associated with flood control works) do not divert flood flow onto neighbouring properties, and within 10-year flood hazard areas do not deplete flood plain storage capacity;

(c) A minimum freeboard above a 100-year flood event of at least 500mm is provided for residential buildings.
(d) Commercial and industrial buildings are constructed so as to not be subject to material damage in a 100 year flood event.
(e) New subdivision plans are able to identify that building platforms will not be subject to inundation and / or material damage (including erosion) in a 100-year flood event;
(f) Within 10-year flood hazard areas, land use or built development is of a type that will not be subject to material damage in a 100-year flood event; and
(g) Flood hazard risk to vehicular access routes for proposed new lots is assessed.

No hazardous substances are involved in the proposal; earthworks will not divert flood flow onto neighbouring properties; buildings will be constructed so as to not be subject to material damage in a 100 year flood event; and flood hazard risk to vehicular access has been taken into account.

In summary, I consider the proposal to be consistent with the relevant objectives and policies in the Regional Policy Statement for Northland.

7.7 Proposed Regional Plan (Appeals Version)

The property is not erosion prone. It is, however, mapped as being subject to a 1 in 100 year flood event. Earthworks to establish safe ground levels have already been carried out in accordance with the subdivision conditions of consent and associated regional consent. In addition, new NRC consent has been obtained for site specific earthworks associated with this development.

8.0 s95A-E ASSESSMENT

8.1 S95A Public Notification Assessment

A consent authority must follow the steps set out in s95A to determine whether to publicly notify an application for a resource consent. Step 1 specifies when public notification is mandatory in certain circumstances. No such circumstances exist. Step 2 of s95A specifies the circumstances that preclude public notification. No such circumstance exists and Step 3 of s95A must be considered. This specifies that public notification is required in certain circumstances. The application is not subject to a rule or national environmental standard that requires public notification. This report and AEE concludes that the activity will not have, nor is it likely to have, adverse effects on the environment that are more than minor. In summary public notification is not required pursuant to Step 3 of s95A.

8.2 S95B Limited Notification Assessment

A consent authority must follow the steps set out in s95B to determine whether to give limited notification of an application for a resource consent, if the application is not publicly notified pursuant to s95A. Step 1 identifies certain affected groups and affected persons that must be notified. None exist in this instance. Step 2 of s95B specifies the circumstances that preclude limited notification. No such circumstance exists and Step 3 of s95B must be considered. This specifies that certain other affected persons must be notified. The application is not for a

boundary activity. The s95E assessment below concludes that there are no affected persons to be notified. There is no requirement to limited notify the application pursuant to Step 3.

8.3 S95D Level of Adverse Effects

The AEE in this report assesses effects on the environment and concludes that these will be no more than minor.

8.4 S95E Affected Persons

A person is an 'affected person' 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). A person is not an affected person if they have provided written approval for the proposed activity. No written approvals have been sought in this instance.

The activity is a discretionary activity and within the expected outcomes of activities on land zoned Industrial. The proposal is in keeping with the character and amenity of the surrounding area. Traffic movements generated by the activity are well within permitted activity thresholds. The proposal is considered to not generate any off site effects of a minor or more than minor nature. I have not identified any affected persons in regard to adjacent properties.

The site is not adjacent to any land administered by the Department of Conservation and contains no habitat or vegetation. The site is not known to contain any heritage or cultural values. The site does not gain access via state highway. I do not believe that pre lodgement consultation is required with tangata whenua, Heritage NZ, Department of Conservation or NZTA.

9.0 CONCLUSION

The proposed development is a discretionary activity in the Industrial Zone. I consider there to be no adverse effects on the wider environment that are more than minor. No special circumstances exist. I therefore do not consider that public notification is warranted or necessary. I consider the proposal to be consistent with the objectives and policies of both the Operative and Proposed District Plans, any relevant regional plans and statements, and any relevant national standards. The proposal is consistent with Part 2 of the Act.

It is considered that the proposal is an appropriate use of the site and that any adverse effects. It is requested that the Council grant consent to this application.

Signed Dated 17th July 2025
Lynley Newport
Senior Planner, Thomson Survey Ltd

Waipapa Investment Trust

Proposed Commercial Development & Unit Title Subdivision

22 Kahikatearoa Lane, Waipapa

Planner's Report including an Assessment of Environmental Effects

Thomson Survey Ltd
Kerikeri

1.0 INTRODUCTION

1.1 The Proposal

The applicant is seeking to establish a unit title industrial warehousing complex, to be constructed in two stages on land at 22 Kahikatearoa Lane, Waipapa. The Unit Title plans attached in Appendix 3 show Stage 1, Stage 2 and Overall proposed Unit Title, with the latter creating Units A-I (total of nine) units each with AU's for carpark spaces, and shared Common Area to accommodate shared access and manouevring area, stormwater management infrastructure, water supply and an on-site package wastewater treatment and disposal system. It is proposed to identify/separate piped infrastructure sub-floor level for services, also as Common Area. All Common Areas will be subject to Body Corporate administration.

The concept / layout plans attached in Appendix 4 show nine warehouse units, in two separate buildings, with four in the Stage 1 building and 5 in the Stage 2 building. The units range in area from 135m^2 (Stage 2 Units 8 & 9) up to 200m^2 (Stage 1 Unit 1 and Stage 2 Unit 5). The latter two include 'showroom' space.

The unit buildings are single storey, with mono-pitch roof. The maximum height of the buildings is 6.5m.

The site currently has two formed entrance ways. The proposal is to close those and replace with a centrally located entrance, double width, to service the development. Parking and manouevring area is contained between the buildings, central to the site, with the wastewater disposal and reserve areas occupying the north western corner of the site.

10.0 LIST OF APPENDICES

Appendix 1 Record of Title and relevant Instruments

Appendix 2 Location Map

Appendix 3 Scheme Plan(s)

Appendix 4 Concept/layout Plans

Appendix 5 Site Suitability Report

Appendix 6 Stormwater Technical Memo

Appendix 7 On-Site Wastewater Treatment and Disposal Design Report

Appendix 8 Geotechnical Report

Appendix 9 Earthworks Plans/volume calculations/AEE

Appendix 10 APP.046685.01.01

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

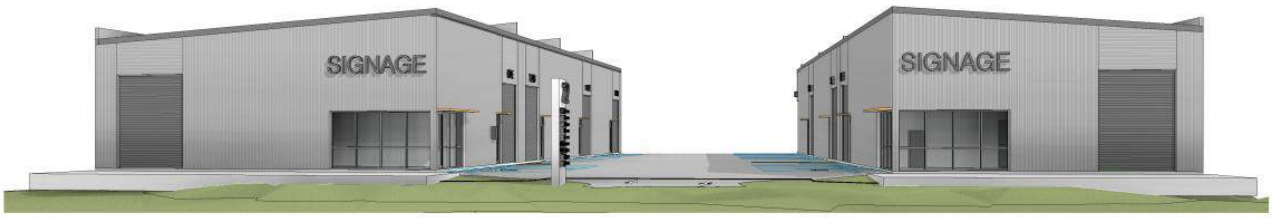
Suite 1, 88 Kerikeri Road
Kerikeri
0230

WINDERMERE HOLDINGS LTD
ON-SITE WASTEWATER TREATMENT AND DISPOSAL DESIGN
22 Kahikatearoa Lane, Waipapa

DOCUMENT NO: 062_FDR_0WC_C_Rev00

Unit Title Subdivision Development

FINAL FOR NRC CONSENT



REV	DATE	DISCRIPTION	ORIG	CHK'D	APP'D	CLIENT
P0	16/05/2025	FINAL WASTEWATER REPORT FOR NRC CONSENT	KM	KK	KK	WHL

DOCUMENT CONTROL

TITLE:	ONSITE WASTEWATER TREATMENT AND DISPOSAL REPORT
SUB-TILE:	FINAL FOR NRC CONSENT
REPORT STATUS:	FINAL
REPORT NUMBER:	062-FDR-0WC-C-REV00
REVISION NUMBER:	REV00
CLIENT:	WINDERMERE HOLDINGS LTD.
PREPARED BY:	TRINE KEL LIMITED
	88 KERIKERI ROAD
	KERIKERI 0230
DATE:	16 May 2025
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1. EXECUTIVE SUMMARY

Element	Summary
General	
Site Address	22 Kahikatearoa Lane, Lot 1 DP 567982, Waipapa
Client	Windermere Holdings Ltd
Development Type	9-unit warehouse-style commercial/light industrial subdivision (Unit Title)
District Plan Zone	Industrial Zone (Far North District Plan)
Site Area (Gross)	3,272 m²
Lots Proposed	9 individually titled units across 2 buildings, shared infrastructure via body corporate
Geology	Clay loam (AS/NZS 1547 Category 4), imperfectly drained; compacted GAP40/65 hardfill layer
On-Site Wastewater Treatment and Disposal	
On-site Wastewater	1,020 L/day peak daily flow (conservative estimate)
Treatment System	Duracrete Cleanstream TXR (Advanced Secondary Treatment + UV Disinfection)
Disposal Area	100m² raised, multilayered evapotranspiration garden bed with dripper line network
Buffer Tank	4,500 L concrete holding tank with recirculation to TXR system
100% Reserve Area	Yes – identified and retained for full future capacity
Conclusion	
Overall Recommendation	The proposed system is technically and environmentally appropriate. It complies with both NRC and FNDC requirements and reflects best practice under AS/NZS1547. No adverse environmental effects anticipated. System is Permitted Activity under PRPN.

2. INTRODUCTION

Trine Kel Limited has been engaged by Windermere Holdings Ltd to undertake the detailed design of an on-site wastewater treatment and land application system to service the proposed unit title subdivision at Lot 1 DP 567982, 22 Kahikatea Lane, Waipapa. ***Figure 1*** presents an aerial view of the site location, while ***Figure 2*** outlines the proposed development layout.

This report sets out the detailed design of the wastewater treatment system and associated land application area to demonstrate the suitability of the proposed development. Specifically, the report includes:

- A full assessment of environmental effects associated with the wastewater discharge;
- An assessment against relevant Northland Regional Council (NRC) and Far North District Council (FNDC) rules and requirements;
- The provision of all necessary supporting documentation to accompany the application to NRC;
- A general site layout plan for wastewater infrastructure;
- Confirmation of system feasibility to support subdivision consent, with detailed design components to be submitted at the building consent stage.

Figure 1: Aerial of Subject Site (outlined in blue) depicting 1.0m contours (Source: NRC Maps)

3. PROPOSED DEVELOPMENT

The client proposes to construct two separate warehouse buildings within the subject site. The development will be completed under a unit title subdivision framework.

- Stage 1 – Western Building:
  This building will contain four (4) warehouse units with an approximate total floor area of 670 m² and will commence construction first.
- Stage 2 – Eastern Building:
  This building will contain five (5) warehouse units, totalling approximately 800 m² of floor area.

The development is intended to support a range of commercial or light industrial uses, anticipated at this stage as being

dependant on consenting outcomes. While the units will be individually titled, key infrastructure and services will be shared between all lots, including:

- A shared on-site wastewater treatment and disposal system;
- A common stormwater attenuation and disposal network;
- Joint potable and firefighting water supply infrastructure;
- A unified vehicle access and internal circulation layout.

These shared systems will be managed through the body corporate established under the unit title structure. Refer to ***Figure 2*** for the proposed development layout.

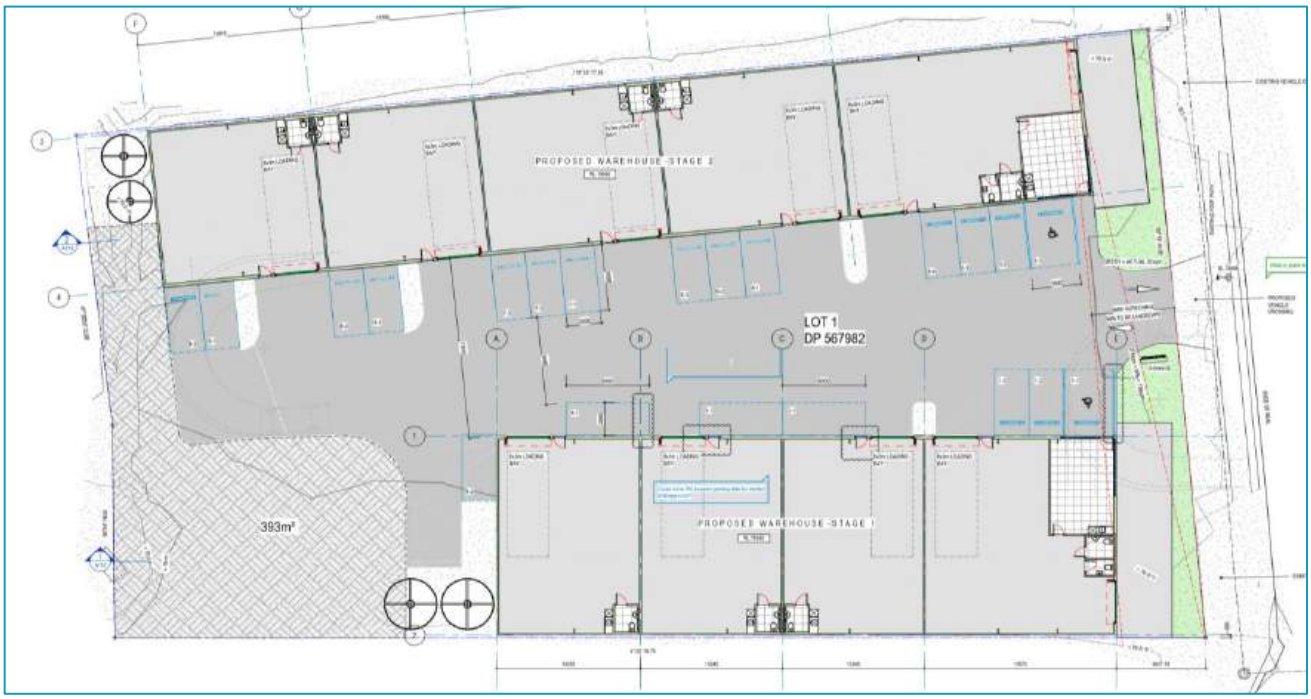

Figure 2: Proposed Development Plans

3.1 EXISTING DEVELOPMENT AND APPROVED CONSENTS

Previous engineering reports and plans for the subject site and surrounding subdivision—approved by both FNDC and NRC—are available under the following Consent Numbers:

Regarding RC 2160324 – FNDC Subdivision (see Consent Notice 12554072.4)

Regarding RC 2220747 – FNDC Land Use Consent

- AUT.044046.01.01 (NRC Discharge tertiary treated wastewater to land)
- AUT.044046.02.01 (NRC Discharge contaminants (odour) to air)

The development layout has since changed significantly from the consented drawings. This report has been prepared to outline and support the revised proposals, as submitted to Trine Kel Ltd in full on 12 May 2025.

4. SITE DISCRIPTION

4.1 GENERAL

The subject site is located at Lot 1 DP 567982, 22 Kahikatea Lane, Waipapa, and comprises an area of 3,272 m². The site is situated within a recently developed light industrial subdivision. The site is zoned Industrial under the Far North District

Plan and is subject to Consent Notice 12554072.4. Bordering the site to the north and west is undeveloped land and farmland, with more commercial and industrial lots to the south and east.

The site has previously been used for pasture and is currently vacant. Recent development activities have included earthworks and infrastructure installation to support industrial lot development. Services for water, stormwater, and wastewater have been coordinated through shared infrastructure and easements within the subdivision, however connections to this infrastructure is unable to commence due to larger network capacity issues in the area.

4.2 TOPOGRAPHY

The site is relatively flat with a gentle slope generally falling from the northwest to the southeast. Natural site levels range from approximately RL 78.3 m to RL 78.9 m. Minor localised depressions were observed during earlier site walkovers, consistent with stormwater sheet flow patterns. Earthworks have been undertaken to build up platform levels and achieve adequate freeboard above the 1% AEP flood level, and are subject to further refinements based on the final development proposals. Spot levels and design RLs from the previous subdivision civil plans (Haigh Workman DWG No. 22 084) confirm the building platform and driveway levels are generally around RL 78.90–79.10 m, with preload aggregates placed and later refined to support the future building platform.

4.1 GEOLOGY

At the Greenfields ground level, the site is underlain by natural alluvial soils comprising clay loam with sandy inclusions, consistent with the wider nature of recent Alluvium geology in the Waipapa Basin. Mapping and field investigations undertaken for the broader subdivision indicate the presence of:

- Topsoil to a depth of approximately 0.1 m, underlain by
- Greyish-brown clay loam, moist, with minor orange mottling, transitioning to wetter material from 0.4 m depth
- Groundwater table encountered at approximately 0.7 m below natural ground level

Based on these observations and testing, the soil has been previously classified as AS/NZS1547:2012 Category 4 (*Clay Loam – Imperfectly Drained*) and TP58 Category 5 (*Sandy Clay Loam – Moderate to Slow Drainage*). Constant head permeability testing on adjacent properties yielded an indicative soakage rate of 0.26 m/day, consistent with weakly structured clay loams.

The site has since been elevated to its finished development level using GAP40/65 compacted hardfill, which forms a granular preload raft. This fill remains in place and will support the building platforms, accessways, and services. The wastewater treatment plant and land application area are proposed to be installed above this granular fill, and the fill layer has been explicitly accounted for in the detailed system design, including its influence on soakage potential, construction methodology, and hydraulic performance.

Due to the naturally high groundwater table and limited permeability of the underlying soils, the disposal system has been designed with raised, deep, multi layer garden beds and will incorporate an advanced secondary treatment wastewater system. Subsurface drainage infrastructure—including subsoil drains beneath the kerb and channel—is expected to assist in maintaining lowered groundwater conditions around the disposal area.

5. SUBSOIL INFORMATION

A geotechnical and site-specific wastewater investigation has been carried out at the subject site and surrounding properties as part of the wider Windermere Business Park development. Investigations for the original resource consent included machine-dug test pits, hand-augered boreholes, and permeability testing, supplemented by site walkovers and local soil mapping.

- Soil Profile: Topsoil (~0.1 m) over greyish-brown moist clay loam with some sandy inclusions. Soils are typical alluvial floodplain deposits.
- Groundwater: Encountered at approximately 0.7 m below natural ground level.
- Soil Classification:
    - AS/NZS 1547:2012 – Category 4 (Clay Loam – Imperfectly Drained)
    - ARC TP58 – Category 5 (Sandy Clay Loam – Moderate to Slow Drainage)
- Soakage Testing: Constant head permeability testing on adjacent sites yielded an indicative Ksat of 0.26 m/day

6. WASTEWATER GENERATION

6.1 SIZING

We have based our design off the following information:

Site Area: 3,272 m²

Number of Units: 9 units across two separate warehouse-style buildings

- Western Building (Units 1–4): ~670 m² GFA
- Eastern Building (Units 5–9): ~800 m² GFA

The design wastewater flow has been calculated based on light commercial/industrial activities with limited plumbing fixtures (toilets and hand basins) and allowance for potential kitchenette use in the two front-facing tenancies. No showers are proposed. A conservative per-person wastewater allowance of 30 L/day has been applied to account for toilet flushing and minimal kitchen/coffee area use. All water fixtures within the units must be standard water reduction items (aerated faucets, 6/3l flush cisterns etc.)

Table 1: Wastewater Generation

Unit	Use Type	Size (m²)	Staff Estimate (30l pp/day)	Visitors/Customers (15l pp/day)	Flow (L/day)
Unit 1	**Commercial tenancy (front)	200	4 staff	5/day	195
Unit 2	Trade/warehouse	100–120	3 staff	-	90
Unit 3	Trade/warehouse	100–120	3 staff	-	90
Unit 4	Trade/warehouse	100–120	3 staff	-	90
Unit 5	**Commercial tenancy (front)	200	4 staff	5/day	195
Unit 6	Warehouse/light industrial	135	3 staff	-	90
Unit 7	Warehouse/light industrial	135	3 staff	-	90
Unit 8	**Light commercial office/workshop	135	2 staff	2/day	90
Unit 9	**Light commercial office/workshop	135	2 staff	2/day	90

***All items specified above are preliminary and based off the allowance of commercial activity at the subject site. If commercial premises are unable to be granted due to consenting constraints, the daily wastewater production at the site will be drastically less than given above, ensuring the design presented for consent represents the worst-case scenario.*

- Total Daily Max Peak Flow: 1,020 L/day

7. ON-SITE WASTEWATER TREATMENT SYSTEM

The system has been tailored to meet the specific site constraints, including a high groundwater table, compacted fill, limited available disposal area, and shared tenancy arrangements. A combination of advanced secondary treatment and engineered disposal has been selected to ensure long-term performance, resilience, and compliance with regional regulatory requirements.

7.1 TREATMENT PLANT – DURACRETE CLEANSTREAM TXR WITH UV DISINFECTION

A Duracrete Cleanstream TXR treatment system (or similarly preforming secondary advanced unit) will be installed, including primary sedimentation, aerobic biological treatment, clarification, and discharge to a layered plant medium evapotranspiration bed that incorporates a soakage sand filter layer and underlying subsoil drainage re-circulation pathway. The unit includes alarms an emergency storage tank, and may incorporate flow monitoring as required.

The Cleanstream TXR system includes the following treatment stages:

- Primary Sedimentation: For initial separation of solids and floatables.
- Aerobic Biological Treatment: Oxygen is introduced to promote microbial breakdown of organic matter (BOD and TSS reduction).
- Clarification Chamber: Secondary settlement and sludge return to the primary chamber.
- UV Disinfection Module: Treated effluent will pass through an in-line UV chamber to achieve tertiary disinfection prior to discharge.
- Control and Alarm System: Visual and audible high-level alarms with emergency storage equivalent to 24 hours peak design flow (min. 1,020).

The Cleanstream TXR system will be located within a secure and accessible area for maintenance, with pipework and electrical connections designed in accordance with AS/NZS 1547:2012 and the manufacturer's specifications.

7.2 LAND DISPOSAL DETAILS

Secondary level treated effluent will be discharged to a retained multilayered multi-functional evapotranspiration disposal bed. The bed includes plant medium, a large sand filter layer with geotextile discharge control to slow effluent percolation into the gravel platform below, with a subsurface soakage trench that can re-direct any overrun back to a buffer tank in times of unexpected peak loading, or during long periods of inclement weather.

Treated effluent will be discharged to a purpose-built disposal garden, located within a retained, raised landscape bed at the rear of the site. The system will function as both a disposal field and an aesthetic, planted feature. The disposal field incorporates the following components:

- 20–40 mm drainage aggregate soakage bed, encapsulated in plant medium & overlaying sand filtration layers (PAP7 or similar and finer clean builders mix at base)
- Dripperline distribution system, with lines spaced at 0.5 m intervals and emitters at 0.5 m spacing
- Hydrophilic vegetation, planted above the disposal field in accordance with TP58 and AS/NZS1547:2012 to enhance evapotranspiration and nutrient uptake
- Timber or concrete retaining structures, retaining the rear and sides of the field to form a stable garden platform
- 26° surface grade, directing treated effluent flow and minimising surface saturation risk
- Flow-balancing (e.g. timed dosing or demand dosing) via time-controlled or demand-initiated submersible pump to ensure even application to the disposal field and avoid surges.

The design provides a high-performance multi-treatment approach that utilised biological uptake and evapotranspiration, while maintaining required vertical and horizontal separation to groundwater, structures, and boundary.

7.3 DESIGN ADVANTAGES

The selected treatment and disposal configuration offers several benefits specific to the project context:

- High Treatment Efficacy: Secondary Advanced treatment with further biological decomposition ensures environmental and public health protection.
- Optimised Land Use: Raise garden bed configuration makes efficient use of limited disposal area by combining treatment and landscaping.
- Enhanced Resilience: Subsoil drainage with recirculation and emergency holding provides redundancy and future-proofing, along with increased evaporation potential as time progresses due to garden growth.
- Low Visual and Amenity Impact: The raised bed will be integrated into site landscaping, with no visible effluent discharge or ponding.
- Regulatory Compliance: The system well exceeds the minimum performance requirements for a Permitted Activity Level Activity under NRC requirements.

7.4 EMERGENCY STORAGE AND RECIRCULATION

To manage potential overloading due to change in use or system anomalies, the following additional measures can be incorporated:

- Emergency Holding Tank: A dedicated 4,500-liter concrete emergency holding tank (i.e a standard concrete septic tank system) to accommodate excess effluent, providing storage equivalent to ~400% (4 days) of the peak daily flow (1,020 L/day). Can serve as a buffer during high inflow periods, inclement weather or maintenance events.
- Recirculation System: The emergency tank is fitted with a pump system to recirculate stored effluent back to the Cleanstream TXR treatment unit, ensuring continuous treatment and preventing environmental discharge.

7.5 PLANTING REGIME

A carefully curated selection of native, hydrophilic, and low-maintenance plant species will be established over the disposal area to enhance treatment efficacy and site amenity. The planting regime aligns with recommendations from TP58 Appendix D and includes:

- Phormium tenax (Harakeke/New Zealand Flax): Robust, drought-tolerant, and effective in nutrient uptake.
- Carex secta (Sedge): Thrives in moist conditions, aiding in water absorption and providing habitat for native fauna.
- Libertia ixioides (Mikoikoi): Offers attractive foliage and flowers, contributing to site aesthetics while tolerating wet soils.
- Hebe species: Compact shrubs with seasonal blooms, enhancing visual appeal and supporting pollinators.
- Austroderia richardii (Toetoe): Tall grasses that assist in evapotranspiration and add structural diversity to the planting scheme.

The selected species are known for their resilience, minimal maintenance requirements, and ability to deter unauthorized access due to their dense growth habits.

7.6 DISPOSAL FIELD LAYOUT

The primary disposal field will consist of pressure compensating drip irrigation lines, distributed across the rear of the site within a retained and landscaped raised garden. The available disposal area is L-shaped, with one arm running along the rear northern boundary and the other extending along the eastern side boundary. To accommodate the shape and maximise efficiency:

- PCDI lines at 0.5m c/c, oriented to follow the gardens contours and slope.
- Buried 100-200mm into the plant medium
- Garden will be raised and behind bollard protection

The garden bed will contain

- A base layer of graded sand (PAP7) for filtration
- 20–40 mm drainage aggregate bedding
- Selective garden medium
- Subsurface dripperline laterals laid within garden medium, with emitters at 0.5 m spacing
- Inspection ports and flushing valves at the end of each line for maintenance access

A 100% reserve field area is also allocated in front of the primary disposal area and will be kept undisturbed. The reserve area is shown in Annexure A – layout-100.

8. ASSESSMENT OF ENVIRONMENTAL EFFECTS, REGULATORY COMPLIANCE, AND COMPARATIVE RISK

8.1 GENERAL

The proposed on-site wastewater treatment and disposal system at 22 Kahikatea Lane has been designed to achieve high environmental performance and full regulatory compliance. Advanced secondary treatment will be applied to all effluent, which will then be dispersed subsurface via a raised and densely vegetated multilayered disposal bed. This field incorporates multiple layers of filtration and treatment media, including sand, gravel, and structured planting, ensuring extensive nutrient uptake, microbial polishing, and evaporation to deter any potential interaction with groundwater.

This engineered approach offers multiple layers of environmental protection, including:

- Effluent treatment through a Duracrete Cleanstream TXR system, incorporating primary sedimentation, aerobic biological processing, clarification, and UV disinfection.
- Subsurface discharge within a multilayer raised field, maximising soil-plant filtration and evapotranspiration.
- Emergency storage and recirculation, with a 4,500 L holding tank and pump return system, providing containment and treatment redundancy during peak loading or adverse weather.
- A fully protected 100% reserve disposal field and complete required compliant separation from surface water, groundwater, and site boundaries.

The environmental risk posed by this system is considered negligible. Treated effluent is applied subsurface and entirely contained within the engineered field, preventing any overland flow or discharge to waterways. The site's high groundwater conditions and compacted subgrade have been explicitly accounted for in the design.

When compared to the surrounding environment, the proposed system offers a substantially lower contaminant pathway. Untreated stormwater runoff from adjacent industrial or agricultural sites typically carries higher concentrations of hydrocarbons, heavy metals, faecal coliforms, sediment, and nutrients, often discharging directly to surface water with little to no treatment. In contrast, the proposed on-site system provides robust and multi-barrier treatment and containment, consistent with best practice and well below regional contaminant thresholds.

8.2 REGULATORY ASSESSMENT

Northland Regional Council – PRPN Rule C.6.1.3 (Permitted Activity)

The proposed wastewater discharge of 1,020 L/day is below the 2 m^3/day threshold and falls within the permitted activity framework of C.6.1.3 – Other on-site treated domestic wastewater discharges under the Proposed Regional Plan for Northland (PRPN).

The design demonstrates strong alignment with the intent and performance expectations of Section C.6.1.3 'Other on-site treated domestic wastewater discharge' Permitted activity (refer to Appendix B)

The only minor technical non-compliance relates to retaining structures associated with the raised disposal bed. However, as the retaining walls form an integral part of the disposal system and are specifically engineered for structural containment (not passive site infrastructure), this is considered functionally compliant with the intent of the rule and not likely to result in adverse effects.

Overall, the system reflects best practice design under AS/NZS 1547:2012, aligns with the performance-based framework of C.6.1.3, and avoids triggering any discretionary thresholds. The discharge is expected to operate with negligible risk to environmental or human health values and is appropriate as a permitted activity under the PRPN.

9. ANNEXURES

ANNEXURE A – PRELIMINARY SITE LAYOUT & TREATMENT PLANT DETAILS

LOT 1 DP 567982
22 KAHIKATEAROA LANE
3,272m²

CONSTRUCTION STAGE 2

UNIT 9
UNIT 8
UNIT 7
UNIT 6
UNIT 5

FUTURE WATER TANK
DESIGN TBC

DURACRETE 4,500L BUFFER TANK. UNIT FITTED WITH DAVEY PUMP FOR RETURN TO TXR UNIT

TIMBER POST BOLLARDS TO DETER ENTRY

KAHIKATEAROA LANE

01 C300

DURACRETE
CLEAN STREAM TXR

01 C302

RESERVE AREA
(100%)

1.5m BOUNDARY SET BACK

DISPOSAL AREA
(100m²)

1.5m BOUNDARY SET BACK

UNIT 4
UNIT 3
UNIT 2
UNIT 1

CONSTRUCTION STAGE 1

INDICATIVE LAYOUT FOR
FUTURE DISPOSAL AREA

100m² RAISED GARDEN BED
WITH PERIMETER RETAINING.

PCDI LINES SPACED AT 0.5m
C/C LAID ON ENGINEERED
GARDEN BED

MANUAL FLUSH VALVES
HOUSED IN INSPECTION BOXES

FUTURE WATER
TANKS. DESIGN TBC

N

ISSUE FOR
INFORMATION ONLY

REVISIONS

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DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 16/05/25
LOCATION: KERIKERI
REFERENCE: 063-0WC-100

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT:
UNIT TITLE SUBDIVISION
TITLE: EFFLUENT DISPOSAL LAYOUT

SCALE: 1:250 @A3
0m 5m 15m 20m
A3

PROJECT #			AREADISC			SEQUENCE			REVISION	
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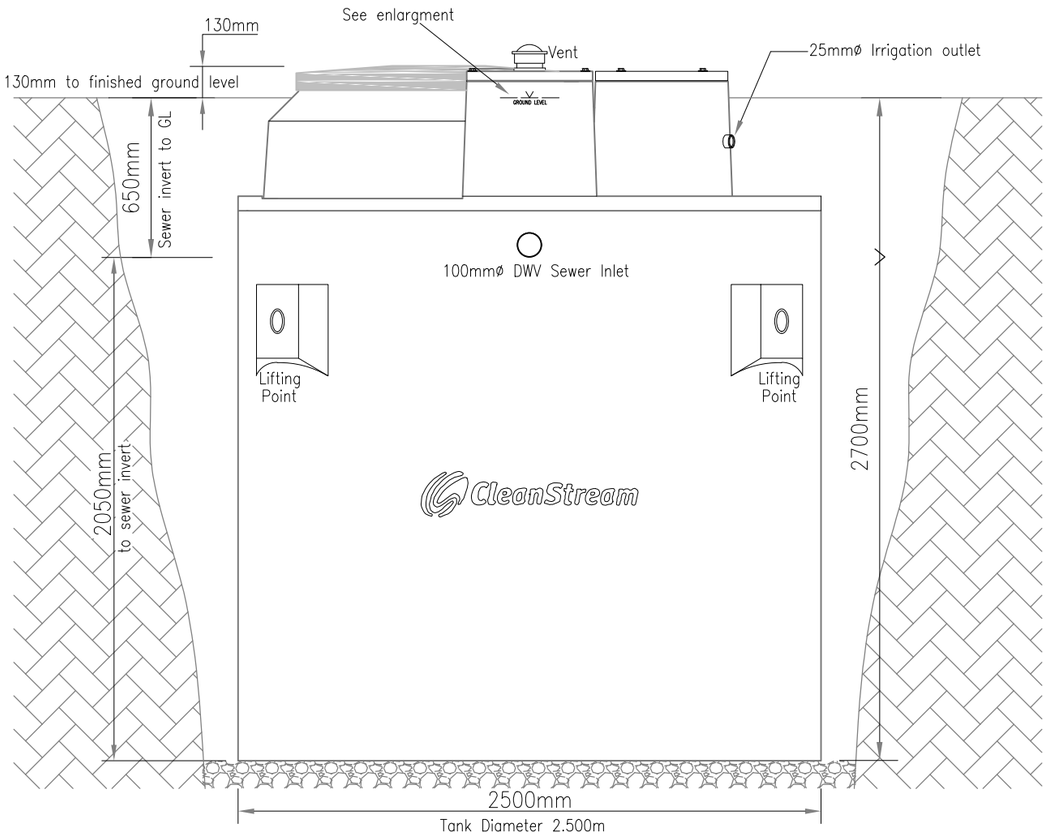
GROUND LEVEL

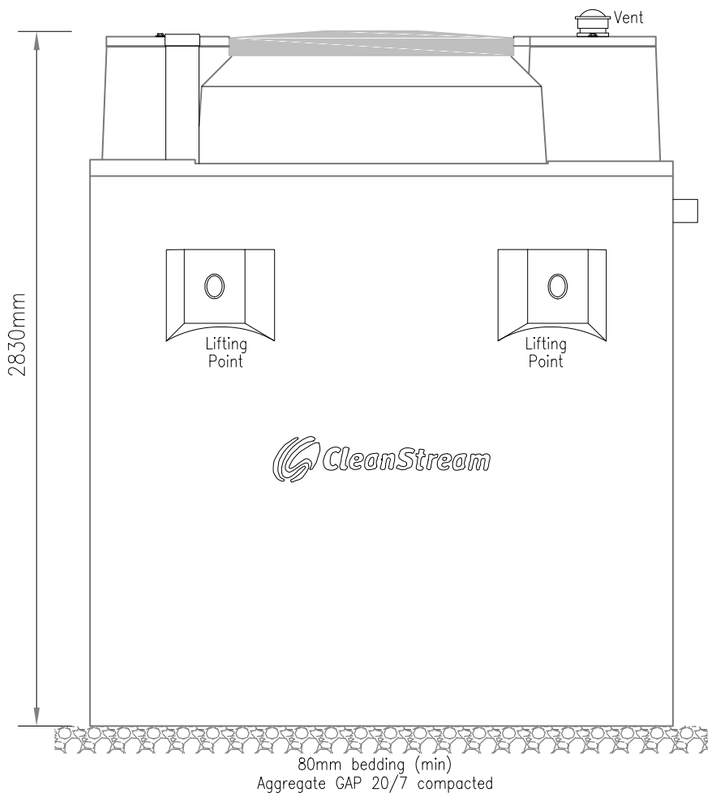
Enlargement
CleanStream must not be installed below this level.

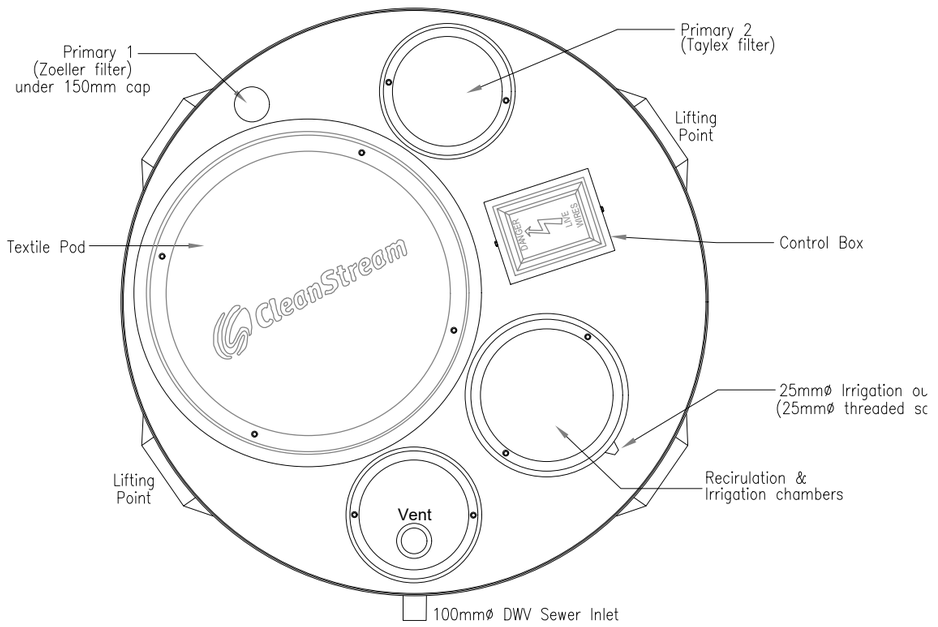
Installation Instructions
Refer to "Installation Manual CleanStream TXR Biofiltration Textile System"

Water filling of chambers
Primary 1 – 3000L
Primary 1 – 3000L
Recirculation – 1500L
Irrigation – 500L

Electrical Instructions
Refer to "Electrical Wiring Instructions for CleanStream TXR Sewage System Controller" located under the control box.







DO NOT SCALE
CONTRACTOR MUST VERIFY
ALL DIMENSIONS ON SITE
BEFORE COMMENCING WORK

DURACRETE PRECAST TO LAST
T: 0800 387 227
M: 021 951 054
E: gerald@duracrete.co.nz
W: www.duracrete.co.nz

PROJECT:
CleanStream
TXR-1

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LOCATION: KERIKERI
REFERENCE: 063-0WC-300

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: DURACRETE TXR UNIT

SCALE: NOT TO SCALE
A3

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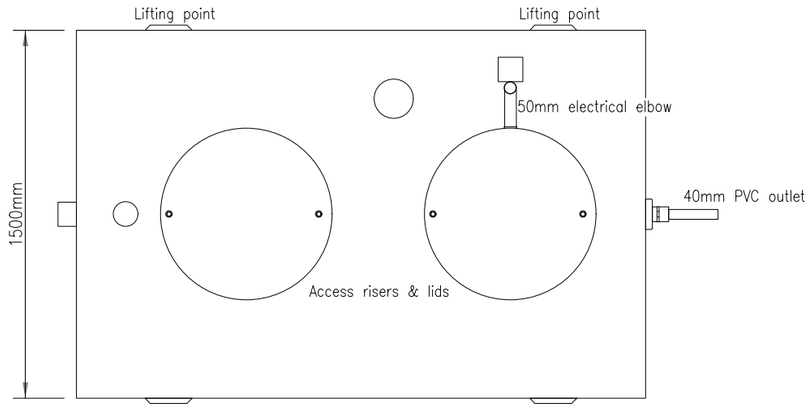
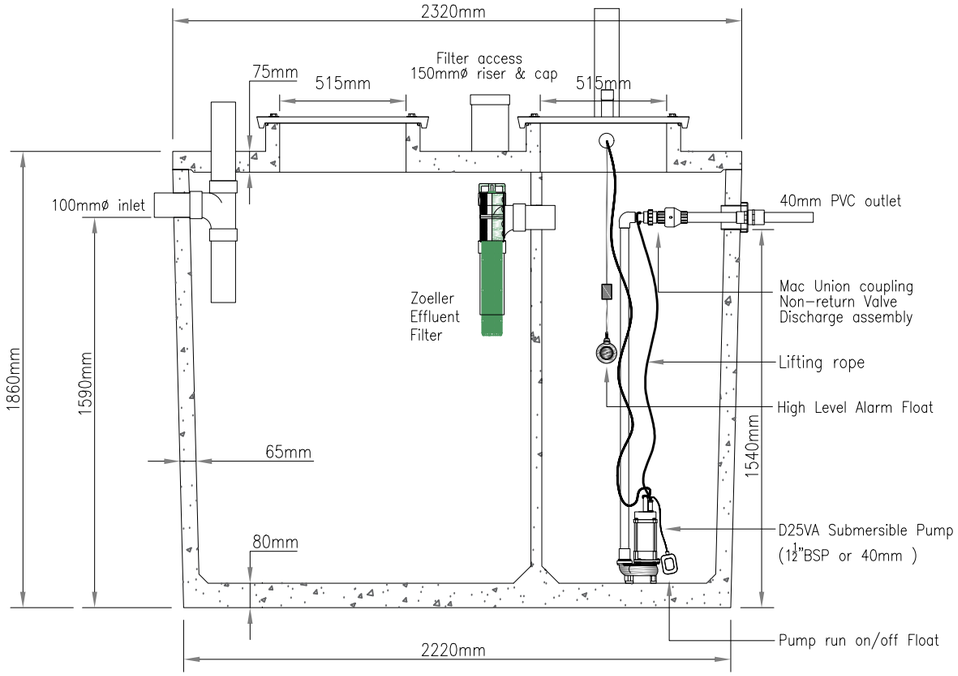
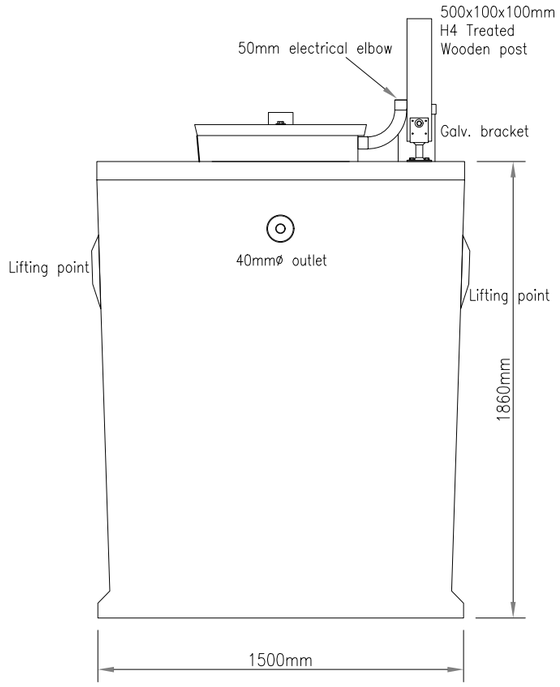


DURACRETE
PRECAST TO LAST

4,500L Dual Chamber Pumped Septic Tank





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LOCATION: KERIKERI
REFERENCE: 063-0WC-301

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: 4,500L DURACRETE SEPTIC TANK

SCALE: NOT TO SCALE
A3

PROJECT #			AREADISC			SEQUENCE			REVISION	
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ANNEXURE C– NRC REGULATORY ASSESSMENT

Table 2: Section C.6.1.3 'Other on-site treated domestic wastewater discharge' Permitted activity requirements and explanations

Item	Rule	Complies? Yes/No	Comments
1	The on-site system is designed and constructed in accordance with the Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012), and	Yes	The on-site system has been designed in accordance (AS/NZS 1547:2012)
2	The volume of wastewater discharged does not exceed two cubic metres per day, and	Yes	1,020l per day proposed
3	The discharge is not via a spray irrigation system or deep soakage system, and	Yes	sub-surface drip lines
4	The slope of the disposal area is not greater than 25 degrees, and	Yes	Slope of the disposal area Flat – on specifically designed garden bed
5	For wastewater that has received secondary treatment or tertiary treatment, it is discharged via: a) a trench or bed system in soil categories 3 to 5 that is designed in accordance with Appendix L of Australian/New Zealand Standard On-Site Domestic Wastewater Management (AS/NZS 1547:2012); or b) an irrigation line system that is dose loaded and covered by a minimum of 50 millimetres of topsoil, mulch, or bark, and	Yes	Secondary Advanced/ Tertiary
6	for the discharge of wastewater onto the surface of slopes greater than 10 degrees: c) the wastewater, excluding greywater, has received at least secondary treatment, and d) the irrigation lines are firmly attached to the disposal area, and e) where there is an up-slope catchment that generates stormwater runoff, a diversion system is installed and maintained to divert surface water runoff from the up-slope catchment away from the disposal area, and f) a minimum 10 metre buffer area down-slope of the lowest irrigation line is included as part of the disposal area, and g) the disposal area is located within existing established vegetation that has at least 80 percent canopy cover, or	N/A	

	h) the irrigation lines are covered by a minimum of 100 millimetres of topsoil, mulch, or bark, and		
7	The disposal area and reserve disposal area are situated outside the relevant exclusion areas and setbacks in Table 9: Exclusion areas and setback distances for on-site domestic wastewater systems, and	Yes	See Table 4 for details
8	for septic tank treatment systems, a filter that retains solids greater than 3.5 millimetres in size is fitted on the outlet, and	n.a	
9	the following reserve disposal areas are available at all times: a) one hundred percent of the existing effluent disposal area where the wastewater has received primary treatment or is only comprised of greywater, or b) thirty percent of the existing effluent disposal area where the wastewater has received secondary treatment or tertiary treatment, and	Yes	100% Reserve Area Proposed
10	The on-site system is maintained so that it operates effectively at all times and maintenance is undertaken in accordance with the manufacturer's specifications, and	Yes	Will comply given provided Maintenance recommendations
11	the discharge does not contaminate any groundwater water supply or surface water, and	Yes	Will comply given provided design parameters
12	there is no surface runoff or ponding of wastewater, and	Yes	Will comply given provided design parameters
13	there is no offensive or objectionable odour beyond the property boundary.	Yes	Will comply given provided design parameters

Further to the above, the disposal area and reserve disposal area must be situated outside of the relevant exclusion areas and setbacks in the PRPNs ***Table 9***: Exclusion areas and setback distances for on-site domestic wastewater systems, provided for below in ***Table 4***.

Table 3: Exclusion areas and setback distances for on-site domestic wastewater systems based on Table 9 of the PRPN

Feature	Offset Requirements (metres)			Subject Site
	Primary	Secondary	Greywater	
Exclusion Areas				
Floodplain	5% annual exceedance probability	5% annual exceedance probability	5% annual exceedance probability	**5% annual exceedance probability**
Horizontal Set Back Distances				
Identified **stormwater** flow path (including a formed road with kerb and channel, and water-table drain) that is down-slope of the disposal area	5	5	5	**>5m**
River, lake, stream, pond, dam or natural wetland	20	15	15	**>20m**
Coastal marine area	20	15	15	**Not applicable**
Existing water supply bore	20	20	20	**>20m**
Property boundary	1.5	1.5	1.5	**>1.5m**
Retaining Walls	3	3	3	**n.a**
Residential Dwelling	3	3	3	**n.a**
Vertical setback distances				
Winter groundwater table	1.2	0.6	0.6	**>1.2m**

Given the above, the system to be installed on-site is a Permitted Activity under the PRPN and the FNDC District Plan.

ANNEXURE D– NRC AEE DOCUMENTATION

We shouldnt need this now as its a permitted activity design?

Appendix 1

Record of Title and relevant Instruments

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**1019559**
Land Registration District	**North Auckland**
Date Issued	04 October 2022

Prior References
342036

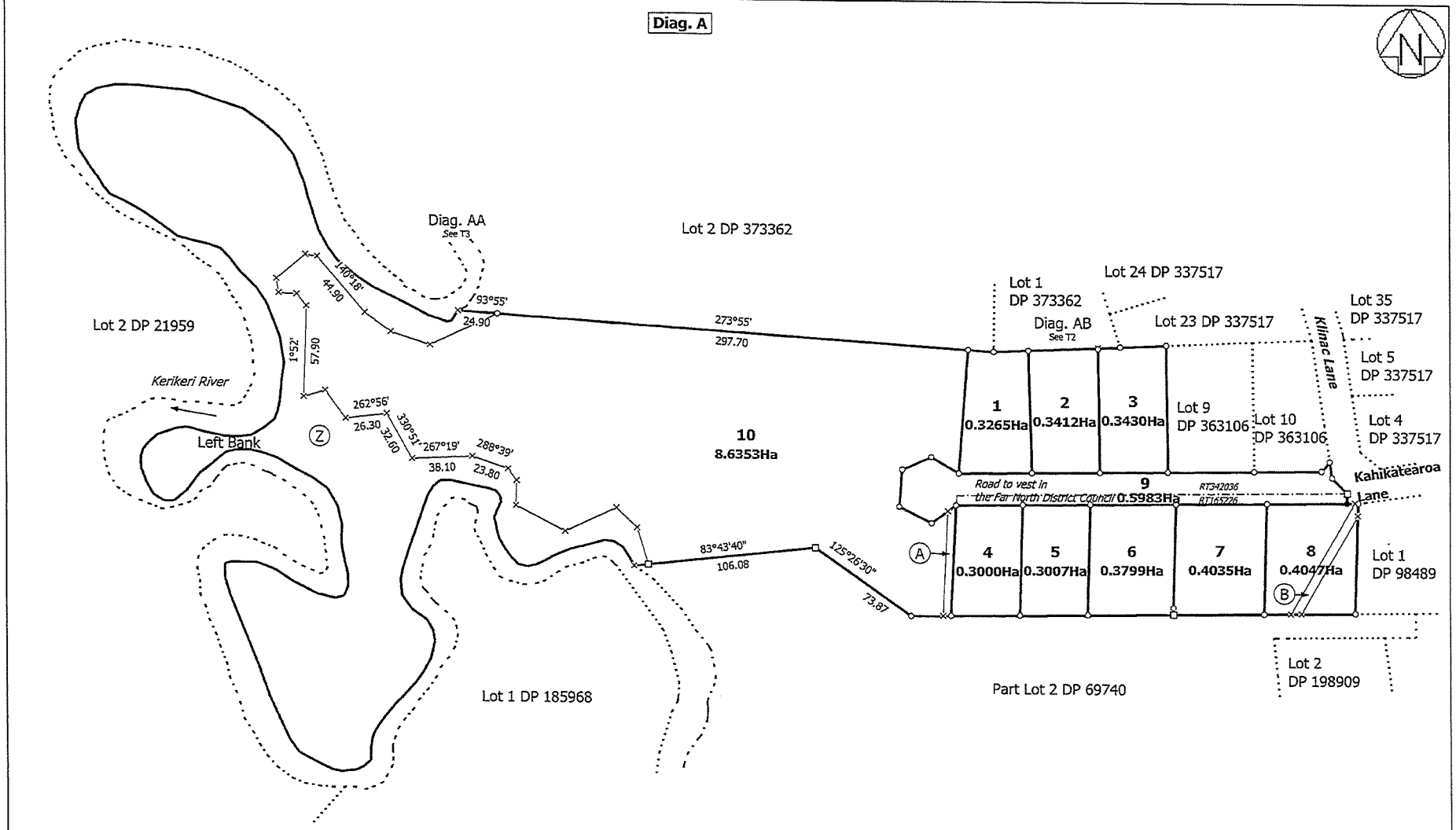
Estate	Fee Simple
Area	3265 square metres more or less
Legal Description	Lot 1 Deposited Plan 567982

Registered Owners
Waipapa Trustee Services Limited

Interests

12554072.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 4.10.2022 at 8:57 am

Diag. A



Surveyors Ref: 10044 Windemere

T 1/3

Land District: North Auckland Digitally Generated Plan Generated on: 02/11/2022 1:03pm Page 3 of 5	Lots 1 to 10 being a Subdivision of Lot 13 DP 363106 and Lot 1 DP 178287.	Surveyor: Denis McGregor Thomson Firm: Thomson Survey Limited	Title Plan LT 567982

View Instrument Details

Instrument No.	12554072.4
Status	Registered
Date & Time Lodged	04 Oct 2022 08:57
Lodged By	Thompson, Emma Jane
Instrument Type	Consent Notice under s221(4)(a) Resource Management Act 1991

Affected Records of Title	Land District
1019559	North Auckland
1019560	North Auckland
1019561	North Auckland
1019562	North Auckland
1019563	North Auckland
1019564	North Auckland
1019565	North Auckland
1019566	North Auckland
1019567	North Auckland

Annexure Schedule Contains 2 Pages.

Signature

Signed by Emma Jane Thompson as Territorial Authority Representative on 28/09/2022 02:09 PM

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

Far North District Council

[illegible]

THE RESOURCE MANAGEMENT ACT 1991

SECTION 221: CONSENT NOTICE

REGARDING **RC 2160324 RMAVAR/B**
Being the Subdivision of Lot 13 DP 363106 and Lot 1 DP 178287
North Auckland Registry

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

SCHEDULE

Lots 1 to 8 – DP 567982

i. Any building erected on the lot shall have foundations specifically designed by a suitably qualified chartered professional engineer. The minimum floor level for which will be set above the 1 in 100 year flood level and in accordance with the recommendations contained in the Engineers Report prepared by Haigh Workman Civil and Structural Engineers Ltd and submitted with Resource Consent 2160324. The details of design shall be submitted in conjunction with the Building Consent application.

ii. In conjunction with the construction of any building which includes a wastewater treatment & effluent disposal system the applicant shall submit for Council approval a TP58 Report prepared by a Chartered Professional Engineer or an approved TP58 Report Writer. The report shall be prepared generally in accordance with the recommendations in the Engineers Report prepared by Haigh Workman Civil and Structural Engineers Ltd and submitted with Resource Consent 2160324. It shall identify a suitable method of wastewater treatment for the proposed development along with an identified effluent disposal area plus a 100% reserve disposal area. The report shall confirm that all of the treatment & disposal system can be fully contained within the lot boundary and comply with the Regional Water & Soil Plan Permitted Activity Standards.

iii. Provide, at the time of lodging a building consent application for Lots 1 - 8, a specific design for stormwater management, prepared by a suitably qualified Chartered Professional Engineer, which addresses both stormwater quality and quantity such that the volume of stormwater discharged is attenuated to a 1 in 10 year rainfall,

Far North District Council

(being the design capacity of the stormwater reticulation) for rainfall event up to those with a 2% AEP. The stormwater quality standard shall comply with section 4.4.2 of the Councils Engineering Standards (2009) or for a lower level of contaminant where required by an NRC Stormwater Discharge Consent.

Any stormwater discharged into the Council's stormwater system is to comply with the requirements and conditions of the Far North District Council's stormwater discharge consent.

Lot 10 – DP 567982

iv. The owner shall preserve the indigenous trees and bush contained within the Protected Natural Area by Bush Covenant, and shall not without the prior written consent of the Council and then only in strict compliance with any conditions imposed by the Council, cut down, damage or destroy any of such trees or bush. The owner shall maintain and upgrade where necessary a stock fence, which excludes the intrusion of grazing stock into the Covenanted area. The owner shall be deemed to be not in breach of this prohibition if any of such trees or bush shall die from natural causes not attributable to any act or default by or on behalf of the owner or for which the owner is responsible.

All Lots – DP 567982

v. In conjunction with the construction of any building, and in addition to a potable water supply, a water collection system with sufficient supply for fire fighting purposes is to be provided by way of tank or other approved means and to be positioned so that it is safely accessible for this purpose. These provisions will be in accordance with the New Zealand Fire Fighting Water Supply Code of Practice SNZ PAS 4509.

vi.

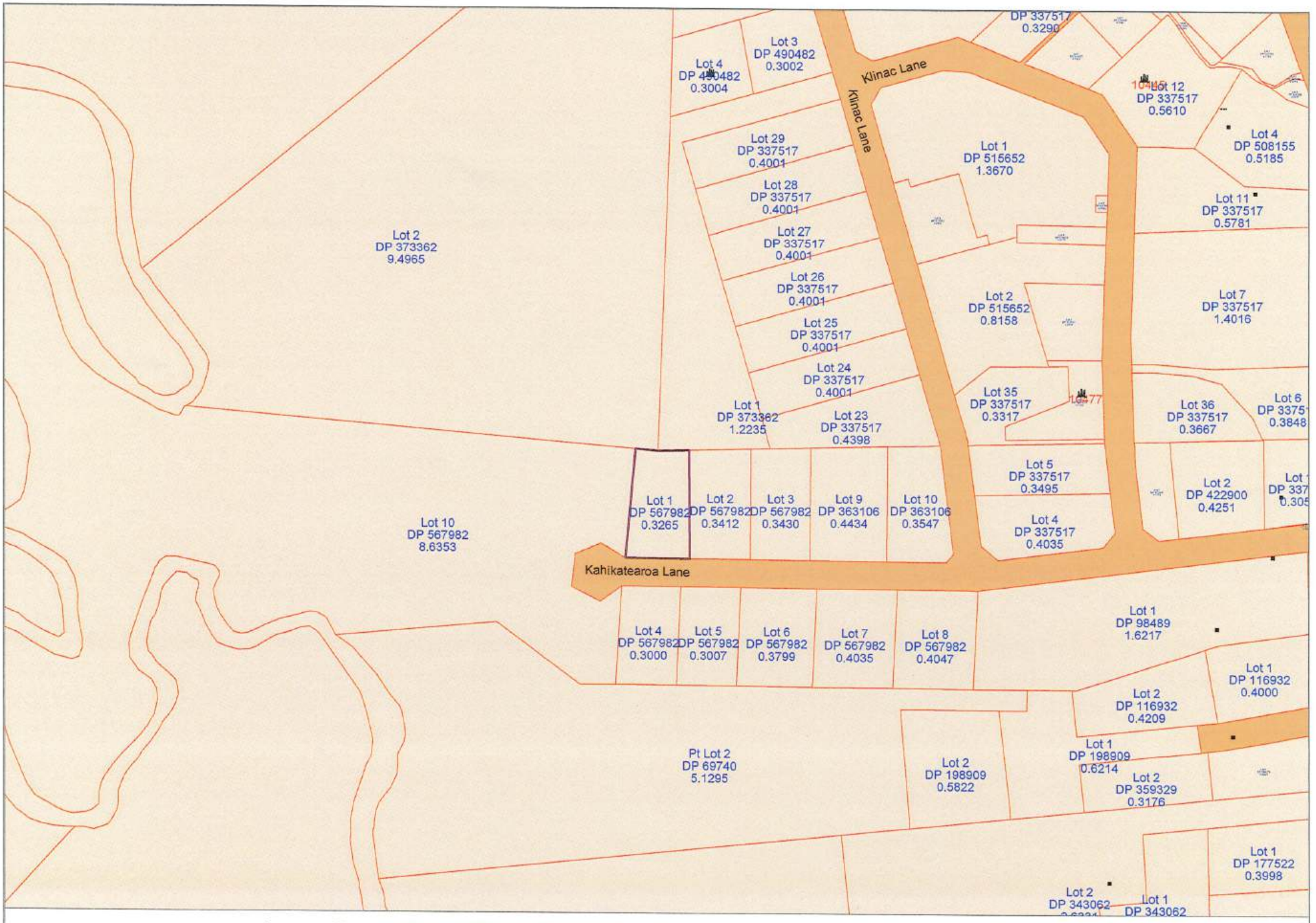
SIGNED: PJ Killalea

Mr Patrick John Killalea - Authorised Officer
By the FAR NORTH DISTRICT COUNCIL
Under delegated authority:
PRINCIPAL PLANNER – RESOURCE MANAGEMENT

DATED at **KERIKERI** this 23rd day of September 2022

Appendix 2

Location Map



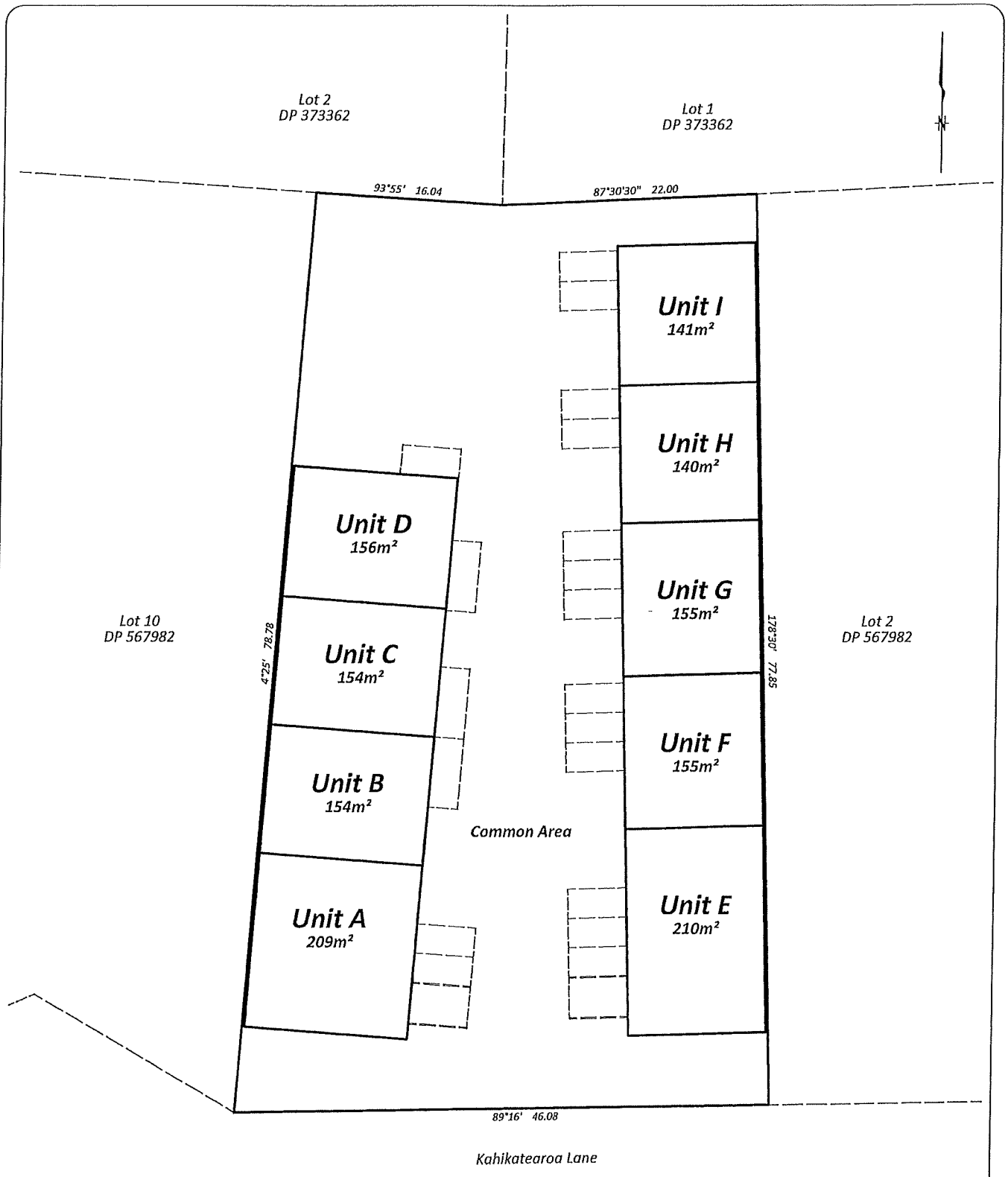
QuickMap
Custom Software Ltd

Any person wishing to rely on the information shown on this map must independently verify the information

Scale 1:3500 Topographical and Cadastral map derived from LINZ data. Printed: 16-Jul-2025 01:46.

Appendix 3

Scheme Plan(s)



NOTE: UNIT BOUNDARIES ARE THE EXTERNAL WALLS AND THE CENTRE OF THE INTERNAL WALLS

Local Authority: Far North District Council
Comprised in: 1019559
Total Area: 3265m²
Zoning: Industrial
Resource features: NIL

AREAS AND MEASUREMENTS ARE SUBJECT TO FINAL SURVEY

TOPOGRAPHICAL DETAIL IS APPROXIMATE ONLY AND SCALED FROM AERIAL PHOTOGRAPHY

OVERALL PLAN

0 3 15 30m

Bar Scale 1:300 @ A3

THOMSON SURVEY LIMITED
315 Kerikeri Rd
P.O. Box 372 Kerikeri
Email: kerikeri@tsurvey.co.nz
Ph: (09) 4077360
www.tsurvey.co.nz
Registered Land Surveyors, Planners & Land Development Consultants

UNIT DEVELOPMENT ON LOT 1 DP 567982

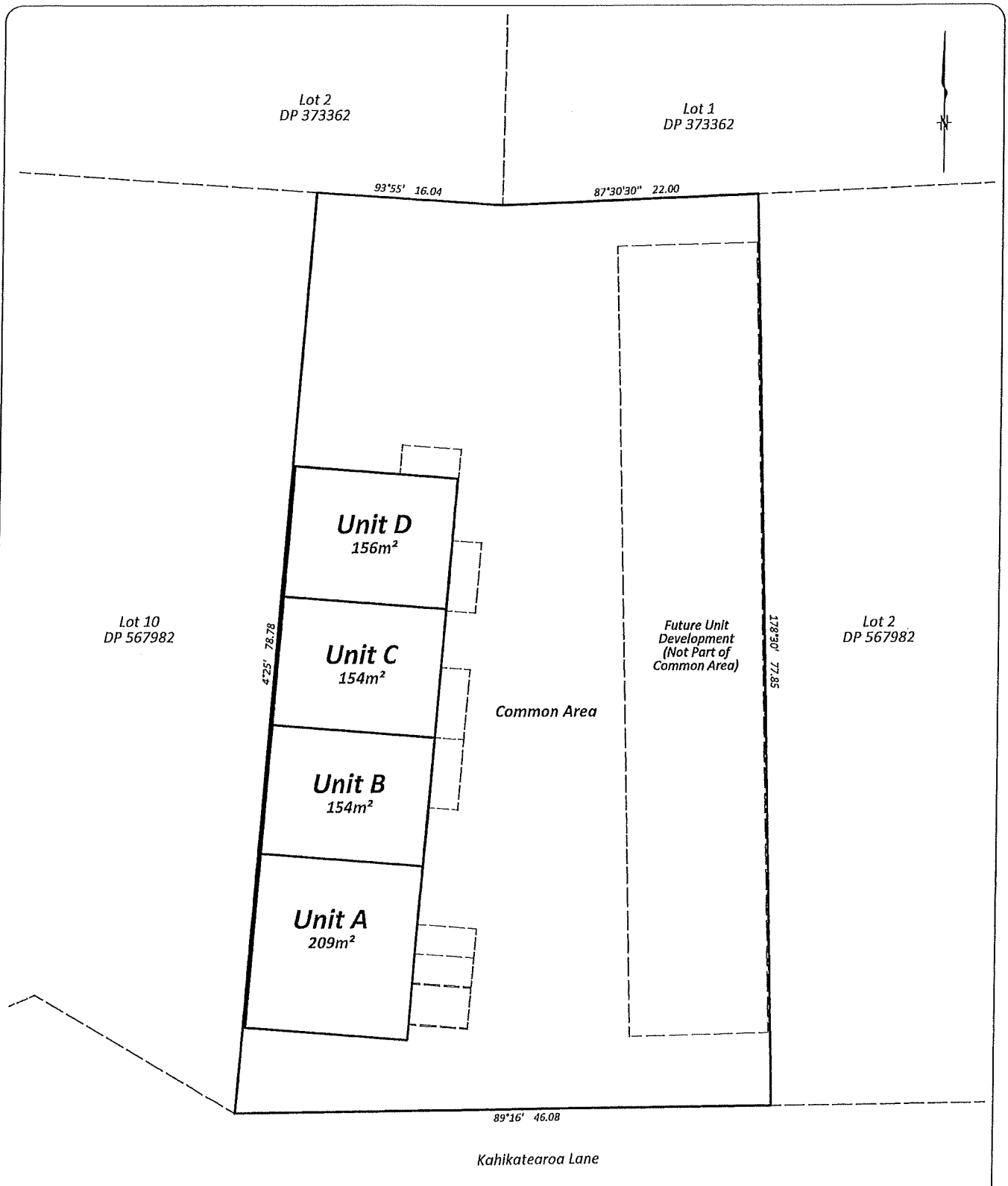
22 KAHIKATEAROA LANE, WAIPAPA

PREPARED FOR: WAIPAPA INVESTMENT TRUST

	Name	Date	ORIGINAL	
Survey			SCALE	SHEET SIZE
Design				
Drawn	KY	29.04.25	1:300	A3
Approved				
Rev				

10762 Unit Title Scheme

Surveyors Ref. No: 10762



NOTE: UNIT BOUNDARIES ARE THE EXTERNAL WALLS AND THE CENTRE OF THE INTERNAL WALLS

Local Authority: Far North District Council
Comprised In: 1019559
Total Area: 3265m²
Zoning: Industrial
Resource features: NIL

AREAS AND MEASUREMENTS ARE SUBJECT TO FINAL SURVEY

TOPOGRAPHICAL DETAIL IS APPROXIMATE ONLY AND SCALED FROM AERIAL PHOTOGRAPHY

STAGE 1

0 3 15 30m

Bar Scale 1:300 @ A3

THOMSON SURVEY LIMITED
315 Kerikeri Rd
P.O. Box 372 Kerikeri
Email: kerikeri@tsurvey.co.nz
Ph: (09) 4077360
www.tsurvey.co.nz
Registered Land Surveyors, Planners & Land Development Consultants

UNIT DEVELOPMENT ON LOT 1 DP 567982

22 KAHIKATEAROA LANE, WAIPAPA

PREPARED FOR: WAIPAPA INVESTMENT TRUST

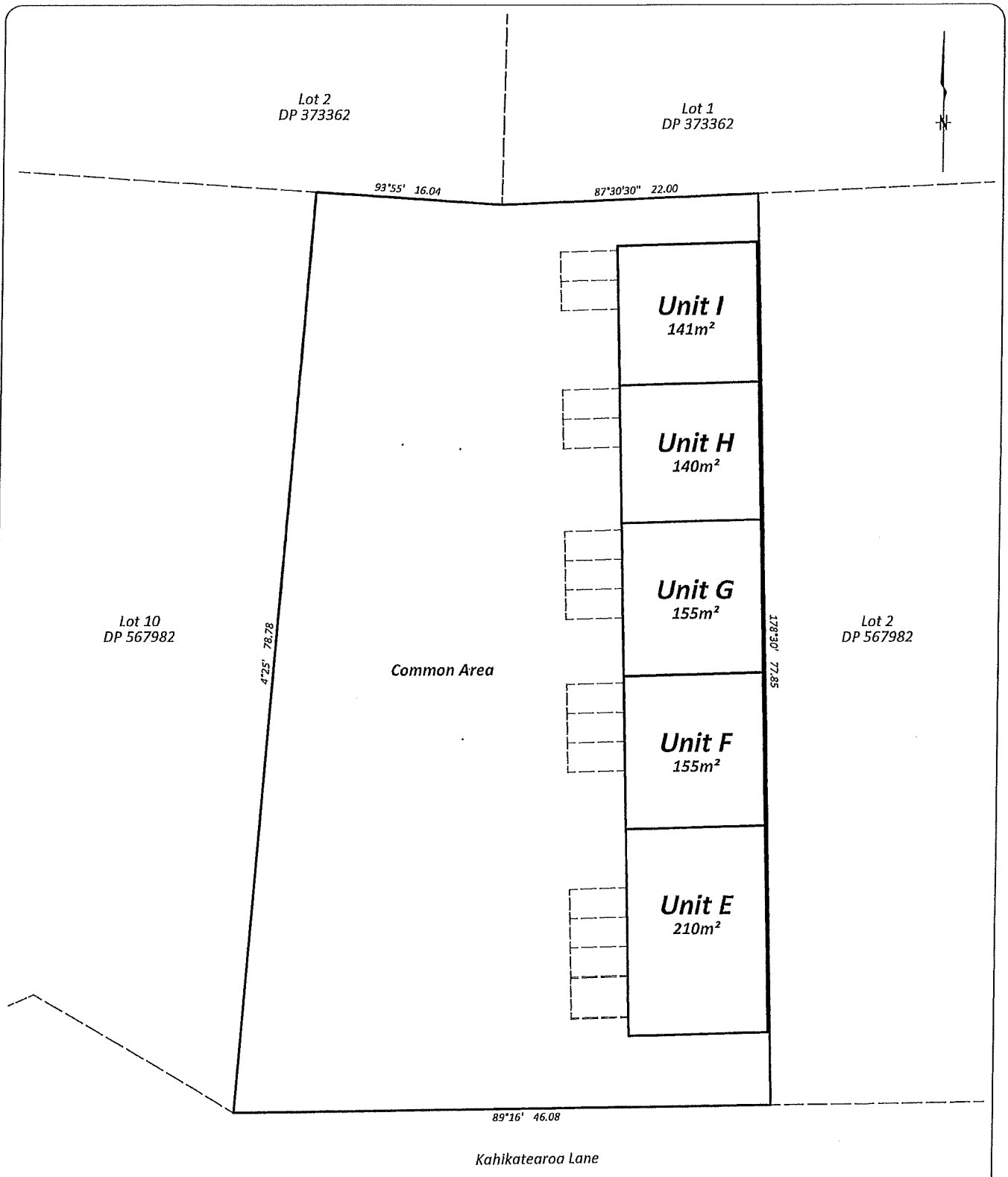
	Name	Date
Survey		
Design		
Drawn	KY	29.04.25
Approved		
Rev		

ORIGINAL

SCALE 1:300 SHEET SIZE A3

10762 Unit Title Scheme

Surveyors Ref. No: 10762



NOTE: UNIT BOUNDARIES ARE THE EXTERNAL WALLS AND THE CENTRE OF THE INTERNAL WALLS

Local Authority: Far North District Council Comprised in: 1019559 Total Area: 3265m² Zoning: Industrial Resource features: NIL	THIS DRAWING AND DESIGN REMAINS THE PROPERTY OF THOMSON SURVEY LTD AND MAY NOT BE REPRODUCED WITHOUT THE WRITTEN PERMISSION OF THOMSON SURVEY LTD AREAS AND MEASUREMENTS ARE SUBJECT TO FINAL SURVEY TOPOGRAPHICAL DETAIL IS APPROXIMATE ONLY AND SCALED FROM AERIAL PHOTOGRAPHY

STAGE 2

This plan and accompanying report(s) have been prepared for the purpose of obtaining a Resource Consent only and for no other purpose. Use of this plan and/or information on it for any other purpose is at the user's risk.

0 3 15 30m

Bar Scale 1:300 @ A3

THOMSON SURVEY LIMITED
315 Kerikeri Rd
P.O. Box 372 Kerikeri
Email: kerikeri@tsurvey.co.nz
Ph: (09) 4077360
www.tsurvey.co.nz
Registered Land Surveyors, Planners & Land Development Consultants

UNIT DEVELOPMENT ON LOT 1 DP 567982

22 KAHIKATEAROA LANE, WAIPAPA

PREPARED FOR: WAIPAPA INVESTMENT TRUST

	Name	Date
Survey		
Design		
Drawn	KY	29.04.25
Approved		
Rev		

ORIGINAL
SCALE 1:300
SHEET SIZE A3

10762 Unit Title Scheme

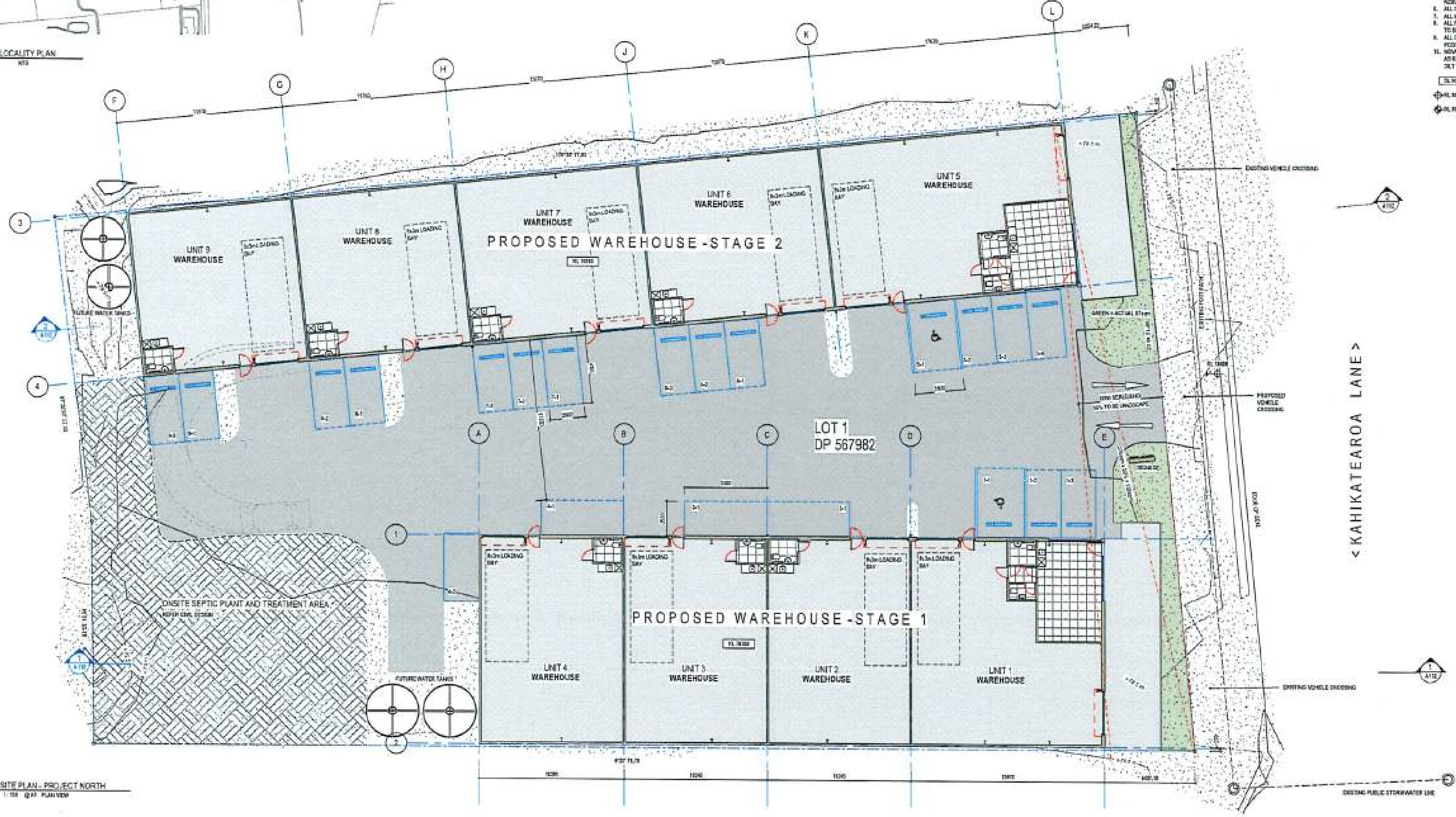
Surveyors Ref. No: 10762

Sheet 3 of 3

Appendix 4

Concept/layout Plans

2 LOCALITY PLAN
NTS



1 SITE PLAN - PROJECT NORTH
1:100 @A1 PLAN VIEW

LEGEND SITE

PARCEL
APPELLATION LOT 1 DP567982
ADDRESS 22 KAHIKATEAROA LANE, WAIPAPA
SITE AREA 3,272 m²
TA INDUSTRIAL ZONE (FAR NORTH DISTRICT PLAN)

EQ ZONE ZONE 1
EXPOSURE ZONE C
CLIMATE 1
WIND REG A
LEE ZONE NO
WINDZONE HIGH (SPANZ)
RAINFALL

1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. REGISTERED SURVEYOR TO CHECK ALL BOUNDARIES ARE ACCURATE & ESTABLISH GRIDS+LEVELS PRIOR TO CONSTRUCTION. ANY AMBIGUITIES TO BE REFERRED TO THE ARCHITECT.
3. SITE IS REGARDED AS 'SEA SPRAY ZONE' THEREFORE ALL MATERIAL AND BUILDING ELEMENTS DURABILITY SHOULD PERFORM ADEQUATELY TO COMPLY WITH NZBC B2/AS1 AND NZS 3604:2011 SECTION 4.
4. ALL NEW PRIVATE DRAINAGE WITHIN OUR BOUNDARY HAVE BEEN LOCATED ACCORDING TO AS-BUILTS. ALL PUBLIC DRAINAGE HAVE BEEN POSITIONED ACCORDING TO COUNCIL INFORMATION. ALL NEW AND EXISTING SERVICE ROUTES AND DRAINS ARE SHOWN INDICATIVELY ONLY. DRAINAGE CONTRACTOR TO LOCATE EXACT POSITION PRIOR TO CONSTRUCTION.
5. ALL PLUMBING AND DRAINAGE WORK SHALL COMPLY WITH NZBC G13 AS3 - AS/NZS 3500.2:2021.
6. ALL STORMWATER P&D TO COMPLY WITH NZBC E1/AS1.
7. ALL WATER SUPPLY P&D TO COMPLY WITH NZBC G12/AS1.
8. ALL P&D ROUTES ARE SHOWN INDICATIVELY. CONTRACTOR TO DETERMINE EXACT ROUTES ON SITE.
9. ALL CESSPITS TO BE LOCATED AT LOW POINTS WITH POSITIVE FALLS TOWARDS THEM.
10. NOVAFLO COIL TO ALL RETAINING WALLS & FOUNDATIONS AS REQUIRED. ALL SUBSOIL DRAINS TO DISCHARGE VIA A SILT TRAP TO STORMWATER DRAINAGE SYSTEM.

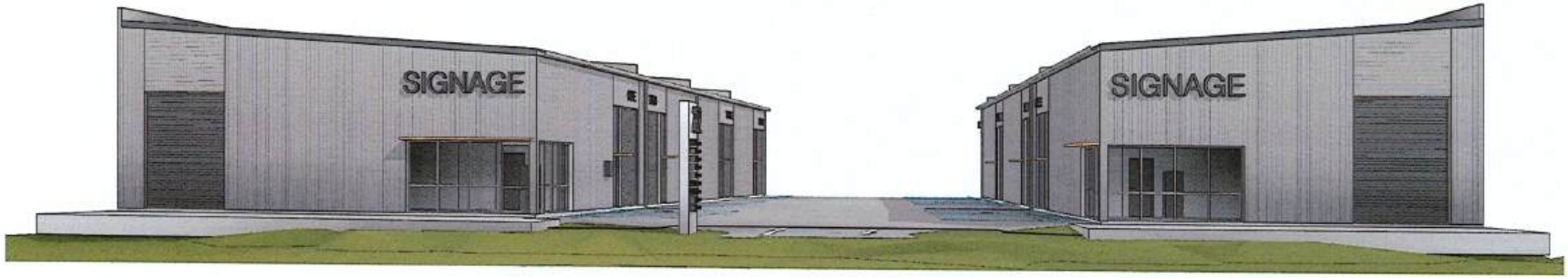
SSL XXXX SUBSTRUCTURAL SUBSTRATE LEVEL
RL XXXX EXISTING SPOT LEVEL
RL XXXX NEW SPOT LEVEL

assemble™

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SITE PLAN

A RESOURCE CONSENT
REVISION DATE
RESOURCE CONSENT
25063 A003 (A)



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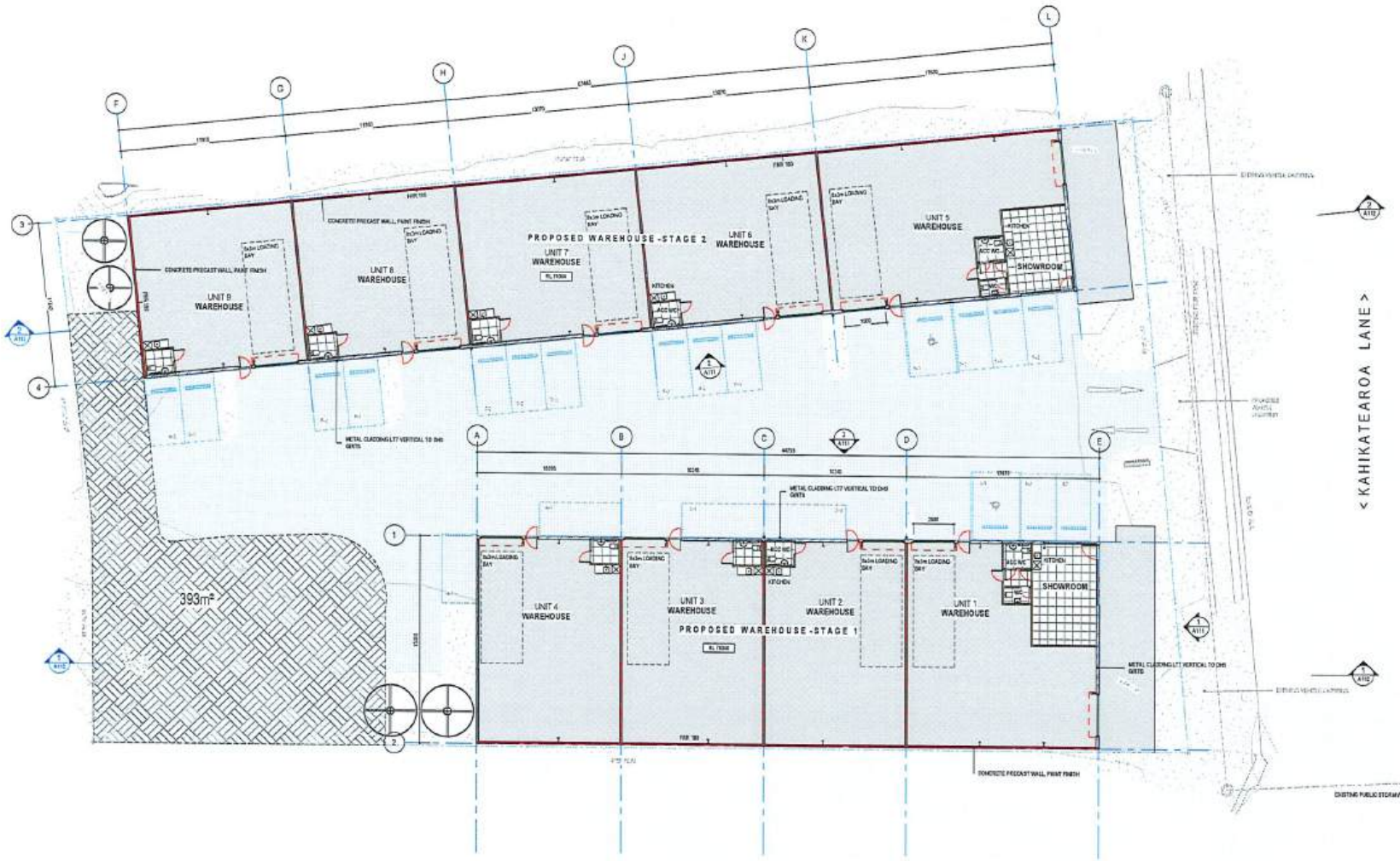
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

3D VIEWS

A RESOURCE CONSENT 2025-05-23
REVISION DATE

RESOURCE CONSENT

25063 A005 (A)



LEGEND FLOOR PLANS

1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. READ DRAWINGS IN CONJUNCTION WITH ALL RELEVANT CONSULTANT'S DRAWINGS AND SPECIFICATIONS.
3. ALL DOWNPIPE & GUTTER SIZES TO COMPLY WITH NZBC E1 AS1.

WT	KEYNOTE / WALL TYPE
D1-01	DOOR REFERENCE, REFER TO INTERNAL DOOR SCHEDULE
P1-01	GLAZED PARTITION, REFER TO INTERNAL JOINERY SCHEDULE
W1-01	WINDOW REFERENCE, REFER TO EXTERNAL JOINERY SCHEDULE
RL 0000	EXISTING SPOT LEVEL
RL 0000	NEW SPOT LEVEL
SL 0000	SLAB / SUBSTRATE LEVEL
FFL +00	FINISHED FLOOR LEVEL (ABOVE SLAB)
	BOUNDARY LINE
EXIT	EXIT SIGNAGE
CD	CHANNEL DRAIN
COL	STRUCTURAL COLUMN
DP	DOWNPIPE
DRY	DRYER
DW	DISHWASHER
HWC	HOT WATER CYLINDER
SH	SHOWER
SK	SINK
SP	STRUCTURAL POST
TH	TERMINAL HOUR
WC	TOILET
WHB	WASH HAND BASIN
WM	WASHING MACHINE

assemble

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

REVISION		DATE
A	RESOURCE CONSENT	25.05.01

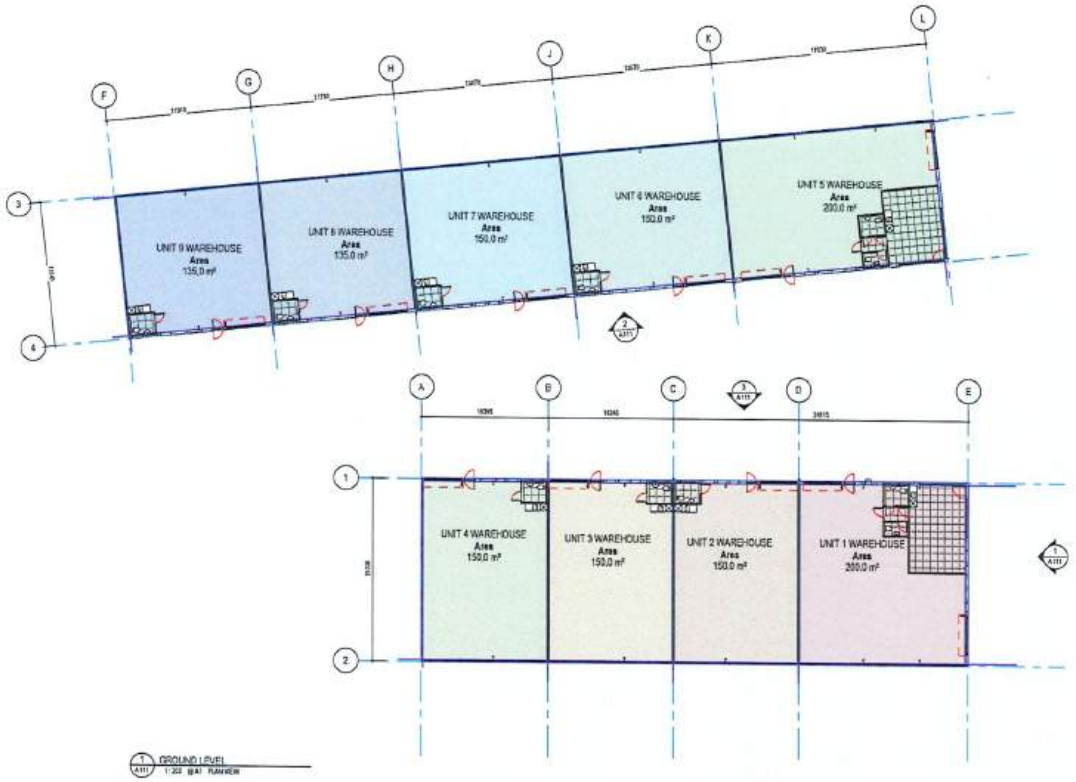
OVERALL FLOOR REFERENCE AND GRID PLAN

STATUS: RESOURCE CONSENT

PROJECT: 25063 | SHEET: A101 | REV: (A)

LEGEND AREA PLANS

1. AREA CALCULATIONS ARE ADVISORY ONLY AND RELATE TO AN ARCHITECTURAL PRELIMINARY DESIGN STAGE. ALL AREA FIGURES MAY VARY SUBJECT TO FURTHER COORDINATION OF BUILDING STRUCTURE, SERVICES AND FACADE, AND SHOULD NOT BE RELIED UPON.
2. FIGURES ARE FOR REFERENCE ONLY, AND SHOULD BE CHECKED AND VERIFIED BY A LICENSED SURVEYOR.



1 A111 GROUND LEVEL
1:200 @A1 PLANNER

AREAS - BY AREA TYPE

- UNIT 1 WAREHOUSE
- UNIT 2 WAREHOUSE
- UNIT 3 WAREHOUSE
- UNIT 4 WAREHOUSE
- UNIT 5 WAREHOUSE
- UNIT 6 WAREHOUSE
- UNIT 7 WAREHOUSE
- UNIT 8 WAREHOUSE
- UNIT 9 WAREHOUSE

ROOM NAME	AREA
	No Of Areas
UNIT 1 WAREHOUSE	200.0 m²
UNIT 2 WAREHOUSE	150.0 m²
UNIT 3 WAREHOUSE	150.0 m²
UNIT 4 WAREHOUSE	150.0 m²
UNIT 5 WAREHOUSE	200.0 m²
UNIT 6 WAREHOUSE	150.0 m²
UNIT 7 WAREHOUSE	150.0 m²
UNIT 8 WAREHOUSE	135.0 m²
UNIT 9 WAREHOUSE	135.0 m²

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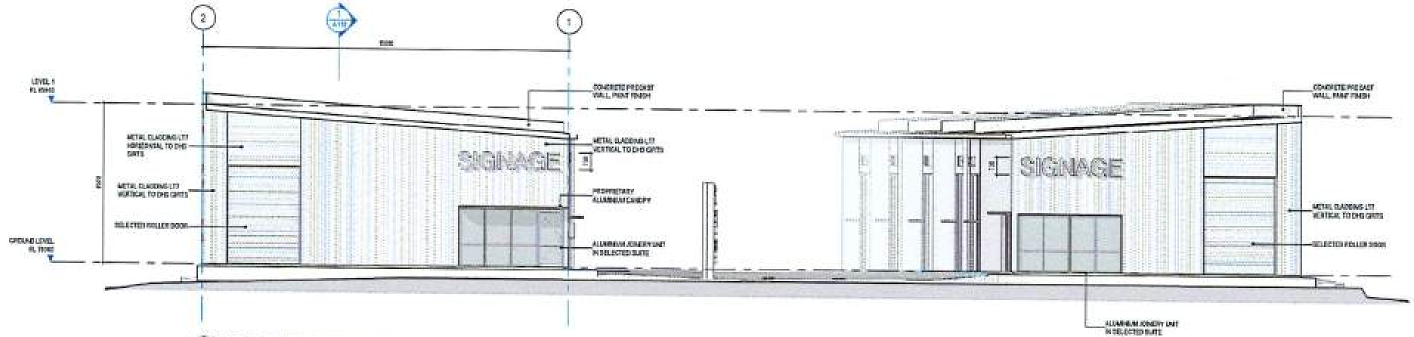
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

REVISION	DATE
A RESOURCE CONSENT	21/04/25

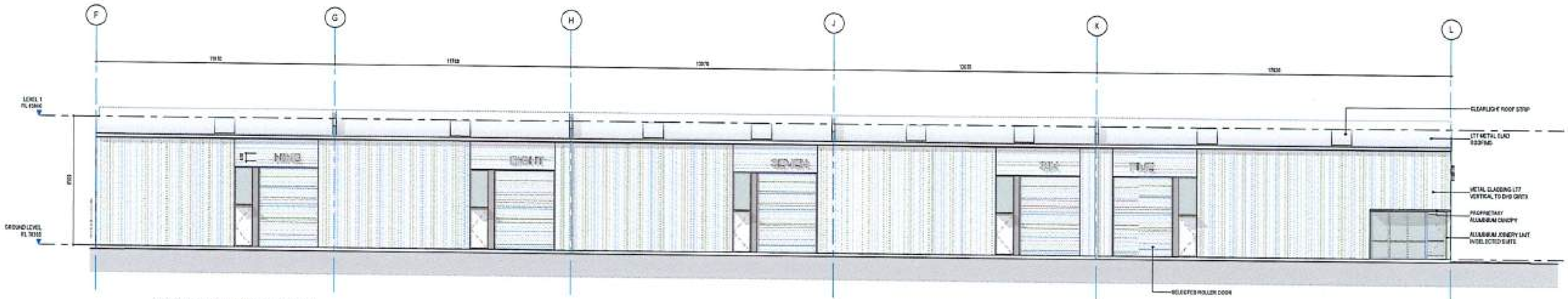
COMMON AREA PLAN

STATUS: RESOURCE CONSENT

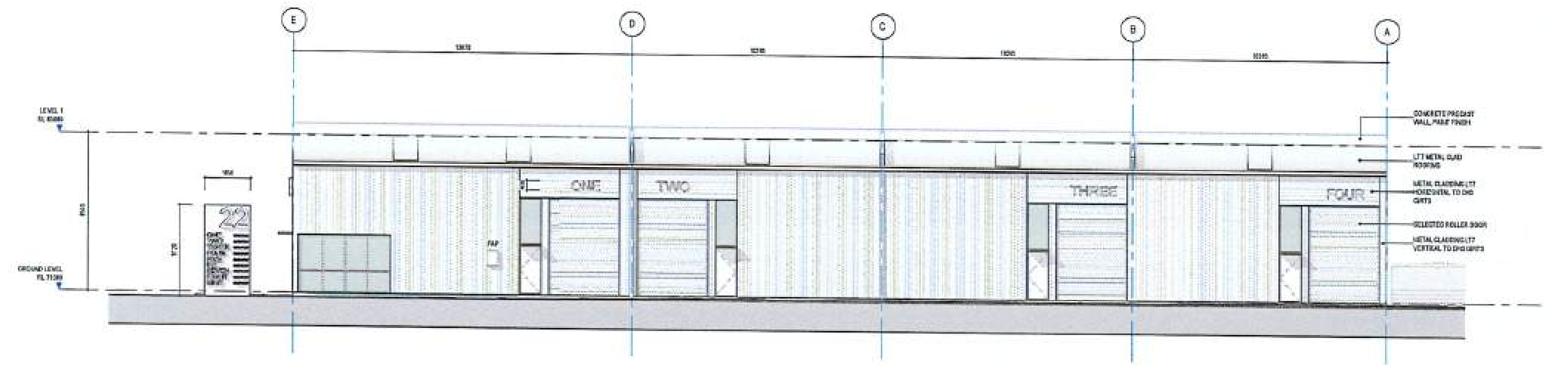
PROJECT: 25063 SHEET NO: A103 REV: (A)



1 STAGE 1 BUILDING - SOUTH ELEVATION
1 : 100 @A1 ELEVATION VIEW



2 STAGE 2 BUILDING - WEST ELEVATION
1 : 100 @A1 ELEVATION VIEW



3 STAGE 1 BUILDING - EAST ELEVATION
1 : 100 @A1 ELEVATION VIEW

LEGEND ELEVATIONS

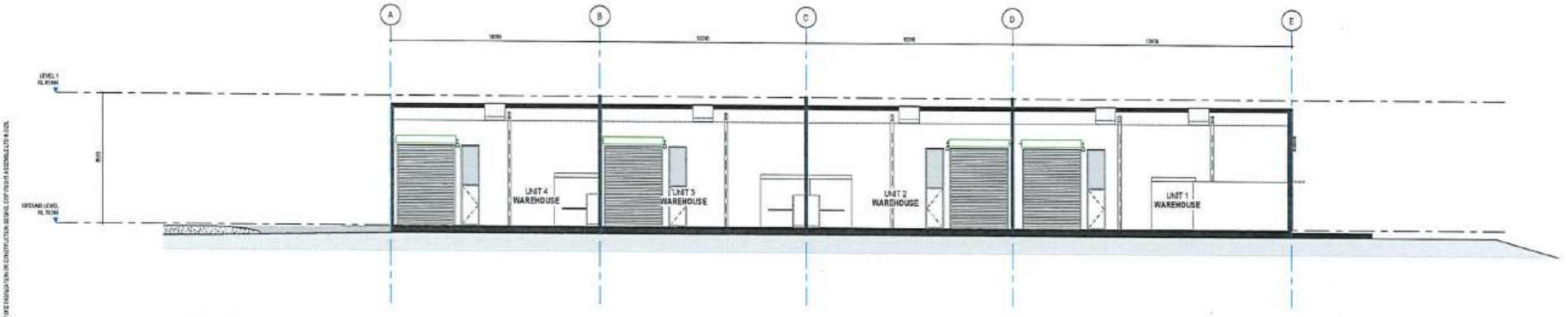
1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. READ DRAWINGS IN CONJUNCTION WITH ALL RELEVANT CONSULTANT'S DRAWINGS AND SPECIFICATIONS.
3. ALL MATERIALS DETAILED ARE TO COMPLY WITH THEIR CURRENT MANUFACTURERS SPECIFICATION AND ARE TO BE INSTALLED BY NOMINATED INSTALLER IF REQUIRED.
4. ENSURE PARTICULAR CARE IS TAKEN WITH COMPATIBILITY AND SEPARATION OF ALL MATERIALS AND FIXINGS.
5. ENSURE ALL FLASHINGS AND FIXINGS ARE COMPATIBLE WITH CLADDING AND ROOFING.
6. READ IN CONJUNCTION WITH NZMRM CODE OF PRACTICE.
7. READ IN CONJUNCTION WITH NZS 3604:2011, SECTION 4 DURABILITY.

assemble™

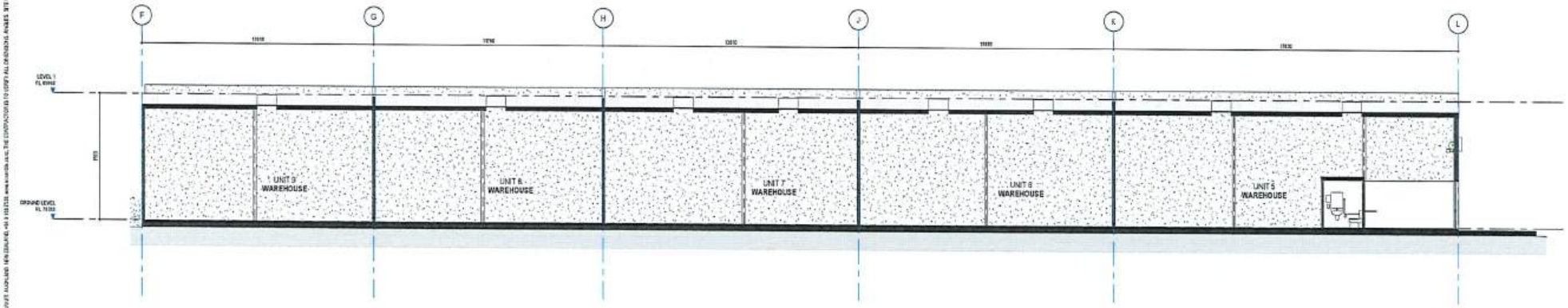
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

OVERALL SITE ELEVATIONS

A	RESOURCE CONSENT	2025-05-23
REVISION		DATE
RESOURCE CONSENT		
25063	A111	(A)



1 STAGE 1 BUILDING - SITE SECTION
1 : 100 @ A1 SECTION VIEW



2 STAGE 2 BUILDING - SITE SECTION
1 : 100 @ A1 SECTION VIEW

assemble

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

OVERALL SITE SECTIONS

A RESOURCE CONSENT 2023-01-23
REVISION DATE
STATUS
RESOURCE CONSENT
PROJECT NUMBER 25063
DRAWING NUMBER A112
REVISION (A)

Appendix 5

Site Suitability Report

Appendix 9

Earthworks Plans/volume calculations/AEE

HAIGH WORKMAN LTD
Civil & Structural Engineers

25 086

21st May 2025

Windermere Holdings Limited
P.O. Box 2721019,
Papakura,
Auckland, 2244

By email: matt@whltd.co.nz

Attention Matt Holton

Dear Matt,

New commercial development at 22 Kahikatearoa Lane, Waipapa 0230

District Plan Rule 12.3.6.1.3 Excavation and/or filling in the Industrial Zone.
The estimated volume of earthworks is given in the table below. The site was considered as five areas as noted. Refer sketch plan attached. Earthworks are defined/measured differently under the District and Regional Plans.

District Plan
We interpret earthworks to include roading metal/basecourse and count cut and fill separately. Drainage, trenching and building foundations are not included. Total volume is **1,365m³**.

The volume exceeds the 500m3 in any 12-month period per site allowed under RESTRICTED DISCRETIONARY Rule 12.3.6.2.2. Hence DISCRETIONARY under Rule 12.3.6.3.

Component	Area (m^2)	Existing GL range (m)	Proposed FGL range (m)	Conc/agg fill (m3)	Additional cut to achieve levels (m3)	Additional fill to achieve levels (m3)
Driveway and parking	1072.0	79.6 to 78.8	79.06	268.0	171.6	132.3
Building floor area - Stage 1 (slab & aggregate foundations not counted)	736.0	79.4 to 78.4	79.06	0.0	41.6	224.6
Building floor area - Stage 2 (slab & aggregate foundations not counted)	860.8	79.4 to 78.5	79.06	0.0	56.7	268.7
Metalled Areas (water tanks)	106.6	79.6 to 78.7	79.06	16.0	20.0	31.6
Grass - 150mm of topsoil	489.6	78.6	78.75	0.0	0.0	73.4
Indicative Wastewater disposal field - 300mm of topsoil	200.0	78.75	79.05	0.0	0.0	60.0
Totals	3465.0			284.0	289.9	790.6
Total cut + fill						1364.5

Assumptions
- Building slab 150mm thick concrete on 150mm aggregate (but building foundation so not counted)
- Concrete driving/parking 150mm concrete on 100mm basecourse
- Gravel yard 150mm thick basecourse
- Topsoil strip 150mm deep
- Volumes have been calculated from topographical survey undertaken by Thomson Survey on 15/04/2025 and finished levels from Assemble site plan A003 dated 07/05/2025.

HAIGH WORKMAN Ltd
Civil & Structural Engineers

Proposed Regional Plan for Northland

We interpret earthworks not to include roading metal/basecourse. Cut and fill is not counted separately. Drainage/ trenching is included. Total volume is 290 + 791 = **1,081m³**.

The earthworks are within a mapped flood area as mapped under Priority Rivers 100-yr. + Climate Change.

C.8.3.3 Earthworks in a flood hazard area – CONTROLLED ACTIVITY

Earthworks in a **high-risk flood hazard area (1 in 10yr flooding)** that involve more than 50m3 or Earthworks in a **flood hazard area** that involve more than 100m3, **but not more than 1,000m3**, of earth being moved or placed in any 12-month period.

The volume exceeds 1,000m3 so is a DISCRETIONARY ACTIVITY under Rule C.8.3.4

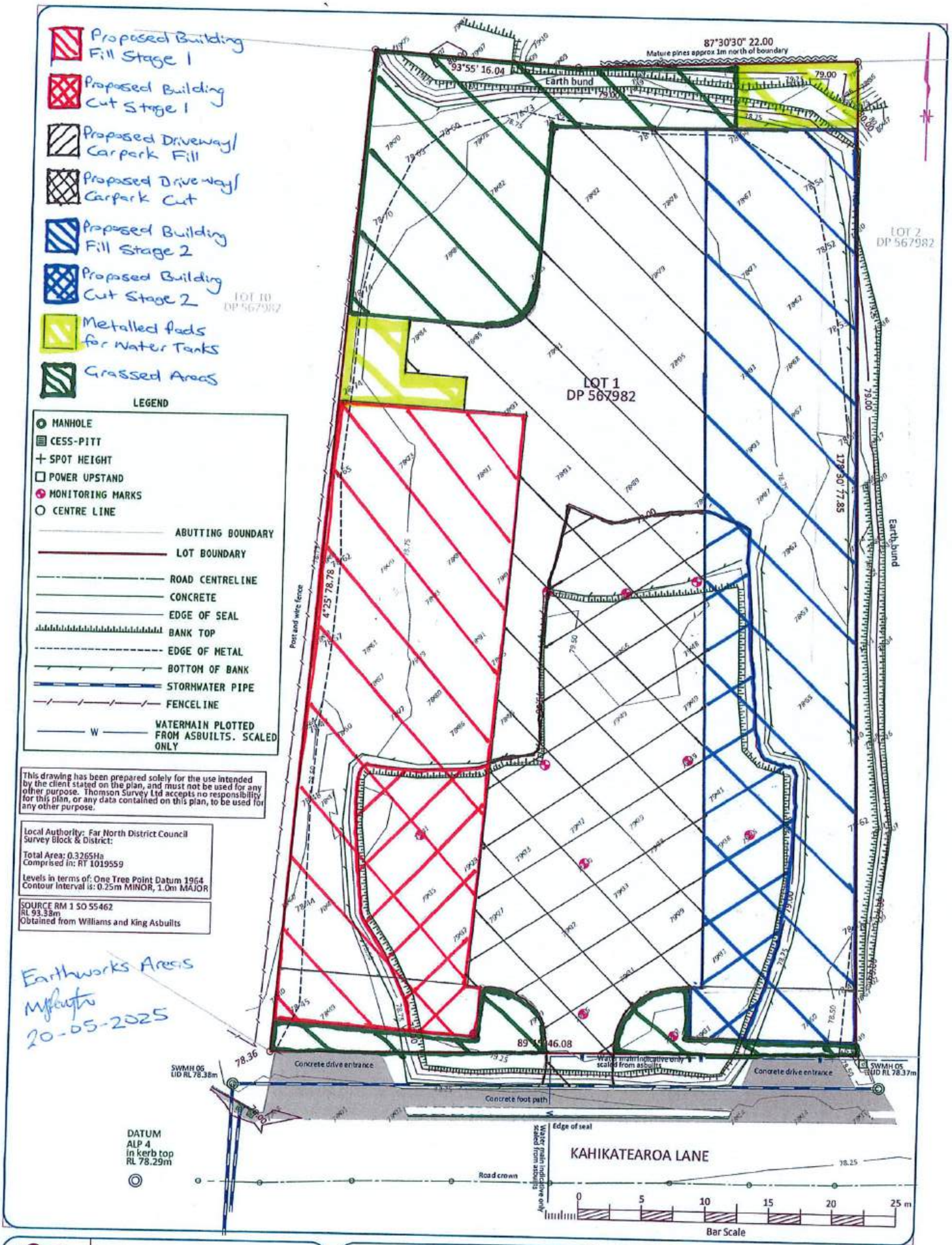
Disclaimer

This report has been prepared for the sole use of our Client Windermere Holdings Limited with respect to the particular brief outlined to us. It may not be used or relied on (in whole or part) by anyone else, or for any other purpose or in any other contexts, without our prior written agreement. This report may not be read or reproduced except in its entirety.

Prepared & issued by:

Matt Payton
Civil engineer
NZDE Civil

Encl.: Haigh Workman Sketch plan dated 20 May 2025



THOMSON SURVEY LIMITED
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Ph: (09) 4077360 Fax (09) 4077322
Registered Land Surveyors, Planners & Land Development Consultants

TOPOGRAPHICAL SURVEY OF LOT 1 DP 567982

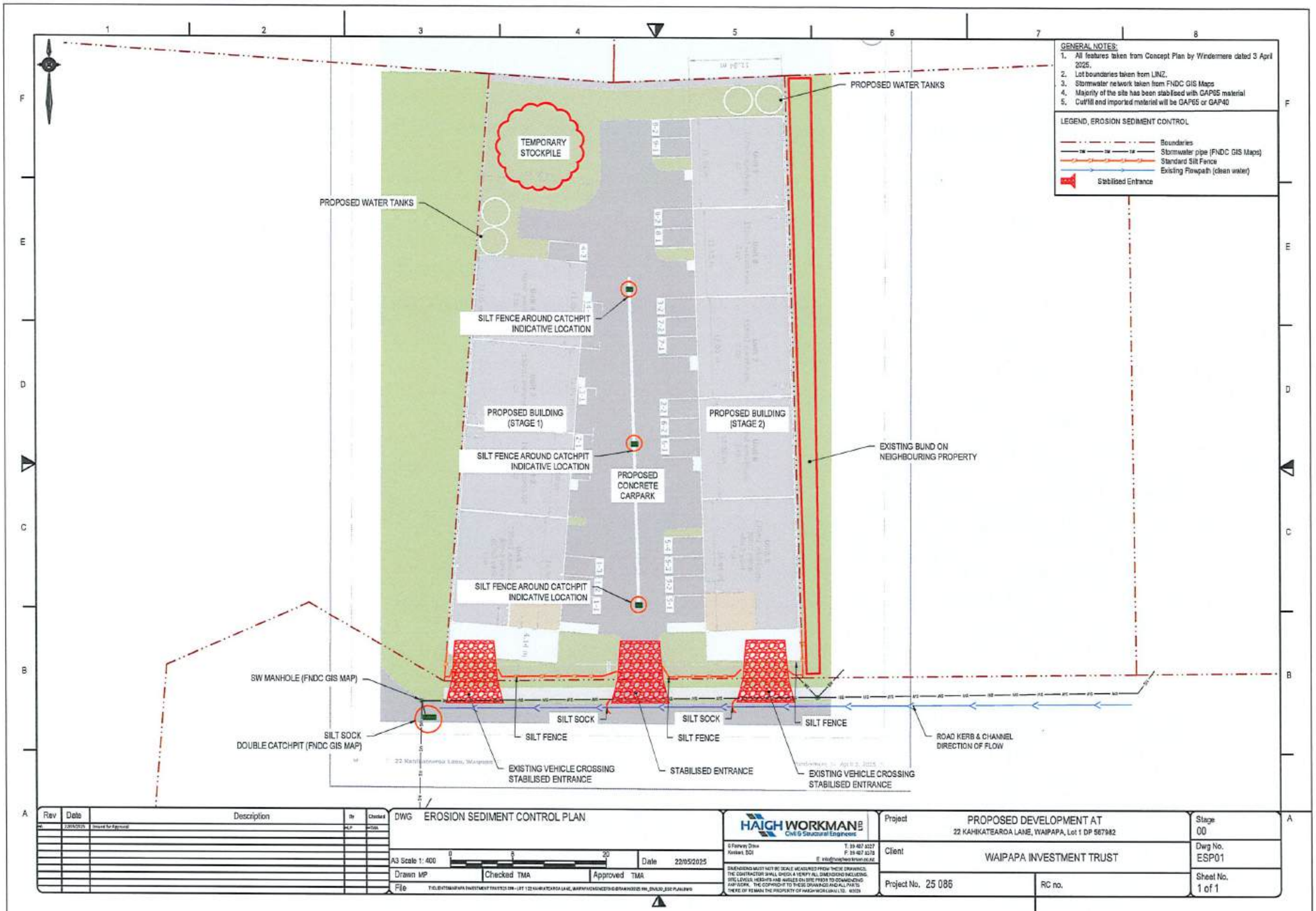
22 KAHIKATEAROA LANE

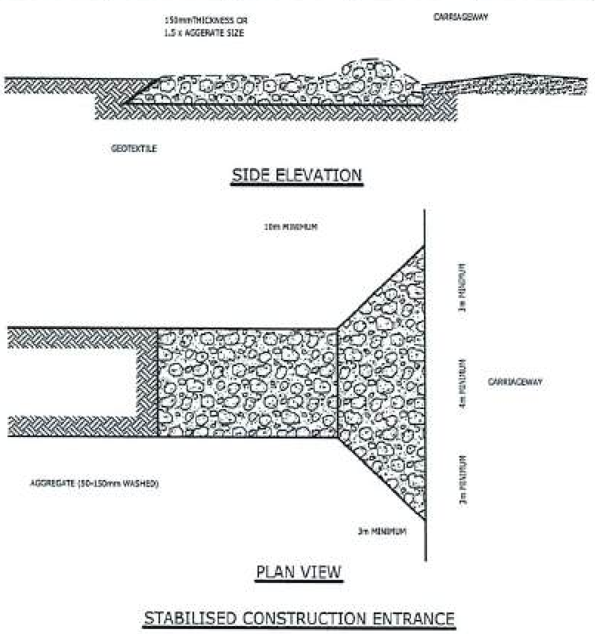
PREPARED FOR: WINDEMERE

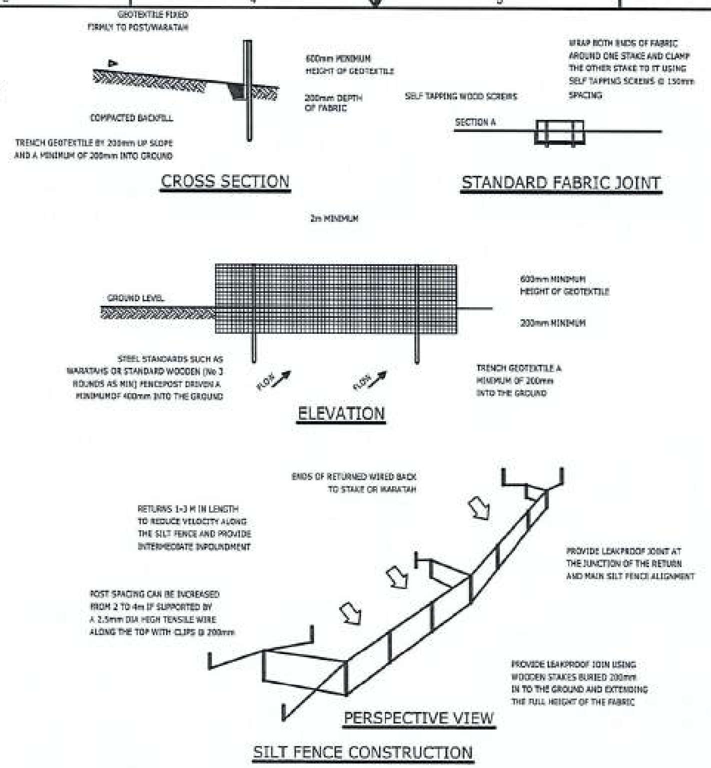
	Name	Date
Survey	PJH	15-04-25
Design		
Drawn	PJH	15-04-25
Approved		
Rev		

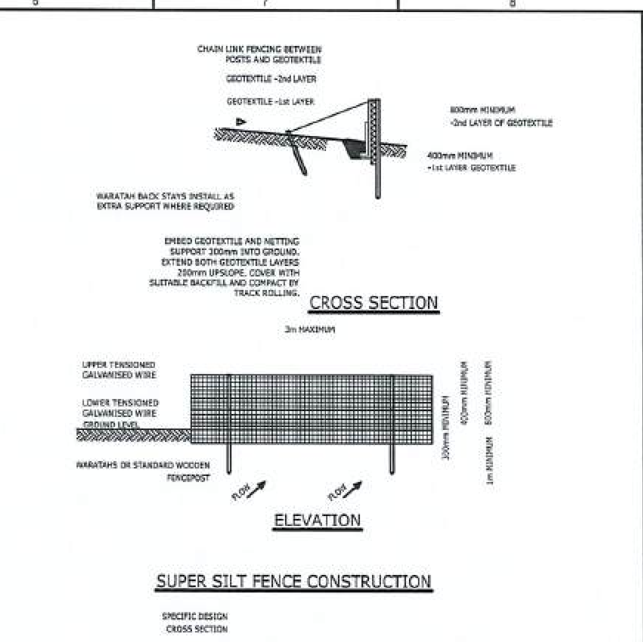
ORIGINAL
SCALE 1:250
SHEET SIZE A3
10762 Topo 20250415.lcd

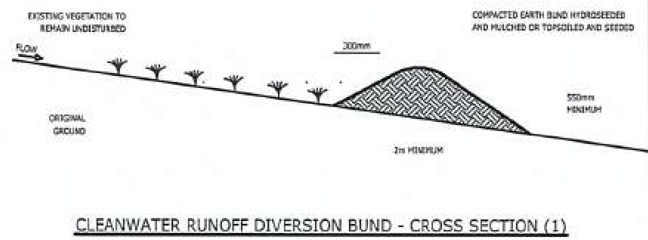
Surveyors Ref. No: 10762
Series
Sheet 1 of 1


GENERAL NOTES:
1. All features taken from Concept Plan by Windermere dated 3 April 2025.
2. Lot boundaries taken from LINZ.
3. Stormwater network taken from FNDC GIS Maps
4. Majority of the site has been stabilised with GAP65 material
5. Cut/fill and imported material will be GAP65 or GAP40
LEGEND, EROSION SEDIMENT CONTROL
Boundaries
Stormwater pipe (FNDC GIS Maps)
Standard Silt Fence
Existing Flowpath (clean water)
Stabilised Entrance
PROPOSED WATER TANKS
TEMPORARY STOCKPILE
PROPOSED WATER TANKS
SILT FENCE AROUND CATCHPIT INDICATIVE LOCATION
PROPOSED BUILDING (STAGE 1)
PROPOSED BUILDING (STAGE 2)
SILT FENCE AROUND CATCHPIT INDICATIVE LOCATION
PROPOSED CONCRETE CARPARK
EXISTING BUND ON NEIGHBOURING PROPERTY
SILT FENCE AROUND CATCHPIT INDICATIVE LOCATION
SW MANHOLE (FNDC GIS MAP)
SILT SOCK
SILT SOCK
SILT FENCE
SILT SOCK DOUBLE CATCHPIT (FNDC GIS MAP)
SILT FENCE
SILT FENCE
ROAD KERB & CHANNEL DIRECTION OF FLOW
EXISTING VEHICLE CROSSING STABILISED ENTRANCE
STABILISED ENTRANCE
EXISTING VEHICLE CROSSING STABILISED ENTRANCE
Rev
Date
Description
Dr
Checked
DWG EROSION SEDIMENT CONTROL PLAN
A3 Scale 1: 400
0
5
20
Date 22/05/2025
Drawn MP
Checked TMA
Approved TMA
File
HAIGH WORKMAN Civil & Structural Engineers
6 Fairway Drive
Kerikeri, 0230
T: 09 407 3027
F: 09 407 3278
E: info@haighworkman.co.nz
DIMENSIONS MUST NOT BE SCALE MEASURED FROM THESE DRAWINGS. THE CONTRACTOR SHALL CHECK & VERIFY ALL DIMENSIONS INCLUDING SITE LEVELS, HEIGHTS AND ANGLES ON SITE PRIOR TO COMMENCING ANY WORK. THE COPYRIGHT TO THESE DRAWINGS AND ALL PARTS THEREOF REMAIN THE PROPERTY OF HAIGH WORKMAN LTD. ©2025
Project PROPOSED DEVELOPMENT AT
22 KAHIKATEAROA LANE, WAIPAPA, Lot 1 DP 567982
Client WAIPAPA INVESTMENT TRUST
Project No. 25 086
RC no.
Stage 00
Dwg No. ESP01
Sheet No. 1 of 1









STABILISED CONSTRUCTION ENTRANCE - SPECIFICATIONS:

APPLICATION

USE A STABILISED CONSTRUCTION ENTRANCE AT ALL POINTS OF CONSTRUCTION SITE INGRESS AND EGRESS WITH A CONSTRUCTION PLAN LIMITING TRAFFIC TO THESE ENTRANCES ONLY.

DESIGN:

1. CLEAR THE ENTRANCE AND EXIT AREA OF ALL VEGETATION, ROOTS AND OTHER UNSUITABLE MATERIAL AND PROPERLY GRADE IT.
2. LAY WOVEN GEOTEXTILE; PIN DOWN EDGES AND OVERLAP JOINS;
3. PROVIDE DRAINAGE TO CARRY RUNOFF FROM THE STABILISED CONSTRUCTION ENTRANCE TO A SEDIMENT CONTROL MEASURE.
4. PLACE AGGREGATE TO THE SPECIFICATIONS BELOW AND SMOOTH IT.

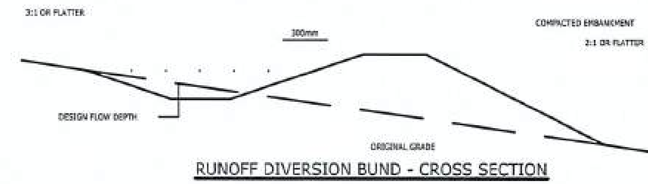
STABILISED CONSTRUCTION ENTRANCE AGGREGATE SPECIFICATIONS:

AGGREGATE SIZE	50-150mm WASHED AGGREGATE
THICKNESS	150mm MINIMUM OR 1.5 x AGGREGATE SIZE
LENGTH	10m MINIMUM LENGTH RECOMMENDED
WIDTH	4m MINIMUM

MAINTENANCE

1. MAINTAIN THE STABILISED CONSTRUCTION ENTRANCE IN A CONDITION TO PREVENT SEDIMENT FROM LEAVING THE CONSTRUCTION SITE. AFTER EACH RAINFALL INSPECT ANY STRUCTURE USED TO TRAP SEDIMENT FROM THE STABILISED CONSTRUCTION ENTRANCE AND CLEAN OUT AS NECESSARY.
2. WHEN WHEEL WASHING IS ALSO REQUIRED, ENSURE THIS IS DONE ON AN AREA STABILISED WITH AGGREGATE WHICH DRAINS TO AN APPROVED SEDIMENT RETENTION FACILITY.

SILT FENCE AROUND CATCHPIT - DETAIL



Rev	Date	Description	By	Checked
A	22/05/2025	Issued for Approval	MP	TMA

DWG: EROSION SEDIMENT CONTROL DETAILS SHEET 1 OF 1

A3 Scale 1: 100 | Date 22/05/2025

Drawn MP | Checked TMA | Approved TMA

HAIGH WORKMAN Ltd
Civil & Structural Engineers
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Kerikeri, BOI
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E: info@haighworkman.co.nz

Project: PROPOSED DEVELOPMENT AT 22 KAHIKATEAROA LANE, WAIPAPA, Lot 1 DP 587982

Client: WAIPAPA INVESTMENT TRUST

Project No. 25 086 | RC no.

Stage 00 | Dwg No. ESD01 | Sheet No. 1 of 1

Part B Assessment of Environmental Effects – Earthworks

(Minor Effects)

Northland REGIONAL COUNCIL

Whangārei Office	Phone:	09 470 1200
	Fax:	09 470 1202
Kaitāia Office	Phone:	09 408 6600
Waipapa Office	Phone:	09 470 1200
Ōpua Office	Phone:	09 402 7516
Dargaville Office	Phone:	09 439 3300
Free Phone		0800 002 004
Email		mailroom@nrc.govt.nz
Website		www.nrc.govt.nz

This application is made under section 88/section 127 of the Resource Management Act 1991

To: Consents Department
Northland Regional Council
Private Bag 9021
Whangārei Mail Centre
Whangārei 0148

PART B – ASSESSMENT OF ENVIRONMENTAL EFFECTS

Your application must include an Assessment of Effects on the Environment. This form is a guide to help you prepare it.

An assessment of effects is required so that you and others can understand what happens to the environment when you undertake earthworks (i.e. building site works, roading and tracking, quarrying and mining). This will help you to propose ways to minimise those effects to the council's satisfaction.

The degree of detail required is in proportion to the scale of the environmental effects of your proposal. If the size of your proposed activity or the scale of its potential effects is significant, a report by a professional advisor in support of your application may be required.

Please note that the word *"environment"* includes the surrounding coastal water, adjoining land, any surrounding resource users, and local iwi.

The diversion and discharge of stormwater runoff from earthworks activities may also require permits from the council.

It is advised that you make an appointment with an appropriate council officer to discuss your application prior to lodging it. This will help you supply all the required information at the onset and ensure the efficient processing of your application.

A. Description of the Proposed Activity

A.1 Describe the type of earthworks you propose to carry out. *(use an additional sheet if required)*

Cut and fill of existing site where preloading was placed for previous site layout. Additional importing of GAP65 or GAP40 material to build site up to proposed building floor levels.

Earthworks (Minor Effects) – AEE 6

A.2 **How will the work be carried out (i.e. what machinery will be used)?**

Digger upto 15T, Roller upto 12T, grader and trucks carting in metal.

A.3 **Who will be undertaking the work?**

To be confirmed

A.4 **What date do you propose to start the earthworks?** June 2025

A.5 **When do you expect to complete the earthworks?** November 2025

A.6 **Will the work be carried out in stages?**

☒ No

☐ Yes, describe each stage and indicate the number of weeks required for the completion of each stage.

A.7 **What is the approximate volume of the proposed earthworks?** 1365 cubic metres

A.8 **What is the approximate area that the earthworks will affect?** 3268 square metres

A.9 **Describe any cut or fill batters, or both (include height of batter, depth of excavation or fill, slope of batter and extent)**

Gravel bags or concrete blocks to be used on boundary, 35 degree batter for fill with granular material.

A.10 **Will you be stockpiling any material?**

☐ No

☒ Yes, describe the dimension, location and duration of stockpiles.

Temporary stockpiling of material will be undertaken as per area detailed on Erosion and Sediment Control Plan - 25 086_20250522_ESC Plan_For Consent.

If your proposed earthworks are associated with a minor quarrying or mining operation, provide the following details in ***A.11 to A.14****, otherwise go to* ***Section B – Site Details****.*

A.11 **What is the volume of overburden to be removed annually?** _____ m³/year

A.12 **How much of this material is to be retained within the quarry area?** _____ m³

A.13 **If overburden is to be removed from the site, please provide details of the likely placement of this material (e.g. sold offsite or spread on paddocks etc).**

A.14 **What is the estimated maximum volume of rock to be extracted per year?** _____ m³/year

B. Site Details

B.1 You **must** attach a map that shows the following:

- ☒ the location of the proposed earthworks showing any face heights and bench widths, access roads and tracks
- ☒ the legal boundaries of the property and the proposed separation distance from the proposed activity
- ☒ the location of any springs, wetlands and surface water resources (including coastal water) within 500 metres of the proposed earthworks

B.2 You **must** attach a detailed plan of the proposed earthworks which shows the:

- ☒ location and dimensions of any cut and fill areas
- ☒ location and dimensions of any proposed overburden dump site(s)
- ☒ location and dimensions of proposed sediment detention ponds, plus any other sediment control works (e.g. diversion drains)
- ☒ an indication of the proposed overland flow pathways of any surface runoff from all working areas
- ☒ areas of instability and areas affected by flooding

B.3 **What is the topography of the area (e.g. flat, rolling or steep)?**

The site is generally flat with a minor slope towards the road.

B.4 What is the soil/rock type?

Soil directly underlying the site are considered to comprise Tauranga Group alluvial soils, underlain by Kerikeri Volcanic Group.

B.5 What type of vegetation currently covers the site?

Site has very minor grass vegetation over bund towards the northern side of the site, as the majority of the site has previouslyhad topsoil stripped off and removed from site, the site has then been covered with compacted metal to stabilise the site prior to building.

B.6 Is the proposed site of the earthworks located in an area that is likely to flood (i.e. within a floodplain)?

☒ Yes ☐ No

B.7 What is the approximate catchment area draining onto or through the proposed earthworks site?

Approx. 22,255,000 m²

B.8 Is there a watercourse or wetland within 200 metres of the site?

☒ No, go to **Section C – Assessment of Effects.**

☐ Yes, provide details on the following.

What is the approximate distance of the watercourse(s) or wetlands from the site of the earthworks activity? _____ metres

What is the name of the watercourse(s), or the name of the stream into which it flows?

_____

Does this watercourse flow for most of the year? ☐ Yes ☐ No

C. Assessment of Effects on the Environment

An assessment of effects should be proportional to the scale and significance of the proposed activity. Where the proposed earthworks could have an adverse effect on the environment, a detailed environmental assessment is required.

C.1 Affected Parties

Will the proposed earthworks have an effect on any other people in the surrounding area e.g. land movements on adjacent properties, silt affecting downstream water users, or dust blowing onto other properties?

☒ No, why not?

The site for the majority is currently stabilised with GAP65 metal and imported material to fill the site up to proposed levels will be GAP65 or GAP40 metal will have minimal dust or runoff, any runoff will be captured by silt controls as laid out in the attached ESCP plan.

☐ Yes, provide details of the affected people/parties and how the proposed activity may affect them.

If written approvals are obtained from all parties that may be affected by the earthworks, and the effects of your proposed earthworks are minor, then the council is likely to process your application without public notification.

If written approval cannot be obtained, suggest ways to reduce the effect on neighbours (mitigation measures).

Installing concrete blocks or gravel bags along boundaries to control water runoff to not exit the site along the side boundaries and direct to the council drainage system with sediment control along the roadside boundries and around road sumps.

C.2 Consultation

If written approvals are obtained from all parties that may be affected by the earthworks and the effects of the proposed works are minor, then the council is likely to process your application without public notification.

Written approvals regarding your proposal are normally required from the adjoining land owners/occupiers and others who may be affected by your works.

Please see attached explanatory notes for details of who needs to be consulted.

The council can supply you with written approval forms to aid you with the consultation.

Have you consulted with any of the following potentially affected parties:

	Yes	No
Neighbours	☐	☒
Other nearby people who may be affected	☐	☒
Department of Conservation *(if relevant)*	☐	☒
Fish and Game Council *(if relevant)*	☐	☒
Local iwi *(specify)*: _____	☐	☒
Other *(specify)*: _____	☐	☐

Any letters of concern/support or comment from persons consulted should be attached to this application form.

C.3 Effects on Nearby Waterways

Please ensure that all waterbodies (springs, streams, lakes and rivers) and/or wetlands within 200 metres of your proposed earthworks are shown on the location map. Measure accurately the distance between your proposed earthworks site and any waterbodies and show the distances on the map.

Are there any of the following in the waterbodies in the vicinity of the proposed earthworks activity?

	Present	
	Yes	No
Obvious signs or known aquatic biota (e.g. eels, other fish, insects, aquatic plants)?	☐	☒
Areas where food is gathered (e.g. watercress, eels, wildfowl)	☐	☒
Waste discharges (e.g. dairy sheds, industrial, treatment plants)	☐	☒
Recreational activities (e.g. swimming, fishing, canoeing)	☐	☒
Areas of special aesthetic value (e.g. waterfalls)	☐	☒
Areas of significance to iwi	☐	☒

If you have answered **Yes** to any of the above, describe what effect the proposed earthworks may have and the steps you propose to take to minimise (i.e. mitigate) these effects (attach a separate sheet if necessary).

C.4 Effects on Land

Are there any of the following in the vicinity of the proposed earthworks?

	Present	
	Yes	No
Areas of indigenous vegetation or habitats of indigenous fauna	☐	☒
Areas of significance to iwi	☐	☒
Areas of slope instability	☐	☒

If you have answered **Yes** to any of the above, describe what effect your proposed earthworks may have and the steps you propose to take to minimise (i.e. mitigate) these effects (attach a separate sheet if necessary):

C.5 Are you proposing to topsoil and revegetate bare areas of land at the completion of earthworks?

☐ No

☒ Yes, propose details of the revegetation and time frames

Topsoil will be placed in the north-eastern corner of the site, shown as temporary stockpile on ESCP plan. This will be grassed on completion of building construction works onsite.

C.6 Are you proposing any sediment retention or sediment control methods?

☐ No

☒ Yes, provide details of proposed control methods including dimensions

Silt fence along property boundary to road and silt sock around existing and proposed stormwater catchpits.

C.7 Other Adverse Effects

Will your earthworks have any other adverse effects on the environment (i.e. noise and dust generation)?

☐ No, why not?

☒ Yes, how will these effects be mitigated?

Noise - machinery will be fitted with appropriate mufflers and exhaust systems.
Dust - wetting of material to lower any dust onsite.

C.8 Positive Effects

What positive effects will the proposed earthworks have?

The proposed earthworks will raise the floor levels of the buildings above the flood plain and provide a solid base for the foundations of building and driveway/parking areas.

C.9 Alternative Earthworks

Have you considered any alternative method or sites for the proposed earthworks?

☒ No

☐ Yes, provide details

C.10 Monitoring

What, if any, monitoring do you propose to carry out to ensure that the proposed earthworks does not have any adverse effect on the environment?

Fill placement will be monitored by an Engineer (CPEng - Geotechnical)

Please ensure that all of the relevant questions on this form have been answered fully.

If you have any queries relating to information requirements or wish to meet with a council consents officer, please contact the Northland Regional Council.

Northland Regional Council offices:				
Whangārei Office 36 Water Street Whangārei 0110 Phone: 09 470 1200 or 0800 002 004 Fax: 09 470 1202 mailroom@nrc.govt.nz www.nrc.govt.nz	**Dargaville Office** 42 Hokianga Road Dargaville 0310 Phone: 09 439 3300	**Kaitāia Office** 192 Commerce Street Kaitāia 0410 Phone: 09 408 6600	**Waipapa Office** Shop 9 12 Klinac Lane Waipapa 0295 Phone: 09 470 1200 or 0800 002 004 Fax: 09 470 1202	**Ōpua Office** Unit 10 Industrial Marine Park Ōpua 0200 Phone: 09 402 7516

Appendix 10

APP.046685.01.01

FILE: 46685
(01 - 03)
New

Resource Consent

Document Date: 26.06.2025

Pursuant to the Resource Management Act 1991, the Northland Regional Council (hereinafter called "the council") does hereby grant a Resource Consent to:

WAIPAPA INVESTMENT TRUST

To undertake the following activities on Lot 1 DP 567982 (22 Kahikatearoa Lane, Waipapa), at or about location co-ordinates 1683278E 6103057N:

Note: All location co-ordinates in this document refer to Geodetic Datum 2000, New Zealand Transverse Mercator Projection.

AUT.046685.01.01 **Earthworks in flood hazard area for site development.**

AUT.046685.02.01 **Divert stormwater during earthworks activities.**

AUT.046685.03.01 **Discharge stormwater to land during earthworks activities.**

Subject to the following conditions:

1 At least two weeks prior to the commencement of any works authorised by these consents on-site, the Consent Holder must notify the council's assigned monitoring officer in writing of the date that the works are intended to commence. The Consent Holder must arrange for a site meeting between the Consent Holder's principal earthworks contractor and the council's assigned monitoring officer, which must be held on site prior to any earthworks commencing unless otherwise agreed to in writing by the council's assigned monitoring officer.

Advice Note: *Notification to the council may be made by email to info@nrc.govt.nz.*

2 The exercise of these consents must be undertaken in general accordance with the attached drawings referenced as Northland Regional Council plan number(s) **5560/1**, **5560/2** and **5560/3**. However, if there are any differences or apparent conflict between these documents and any conditions of these consents, then the conditions of consent must prevail.

3 A copy of these consents must be provided to every person who is to carry out the works authorised by these consents, prior to any work commencing.

4 Erosion and sediment control measures must be constructed and maintained in accordance with the principles and practices contained within the Auckland Council document titled *"2016/005: Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region"* (GD05). Where there are inconsistencies between any part of GD05 and the conditions of these consents, then the conditions of these consents must prevail.

Northland REGIONAL COUNCIL
Te Kaunihera ā rohe o Te Taitokerau

5 Prior to the commencement of earthworks on-site, a stabilised construction entrance to the site must be installed to minimise the tracking of spoil or debris onto off-site public road surfaces. All material tracked onto off-site surfaces as a result of the exercise of these consents must be removed as soon as possible, but at least daily. The stabilised construction entrance must be maintained throughout the duration of earthworks operations.

6 Erosion and sediment controls must be installed prior to the commencement of earthworks (other than those required for the erosion and sediment controls) within an area of works.

7 The installation of all erosion and sediment controls must be supervised by an appropriately qualified and experienced person. The Consent Holder must provide to the council's assigned monitoring officer a written statement or certification from the appropriately qualified and experienced person who supervised the installation of the erosion and sediment controls that they have been installed in accordance with the requirements of GD05.

8 Drains and cut-offs constructed to divert stormwater must:

(a) Be capable of conveying stormwater during not less than the estimated 1 in 20 year rainfall event;

(b) On grades greater than 2%, be protected to avoid erosion occurring; and

(c) Not be constructed, or permitted to flow, over fill areas in a manner that creates erosion of the fill material.

9 All offsite stormwater must be directed away from earthworks areas.

10 Slash, soil, debris and detritus associated with the exercise of these consents must not be placed in a position where it may be washed into any water body.

11 All bare areas of land and fill must be either sealed, covered with aggregate or topsoiled and established with a suitable grass/legume mixture to achieve an 80% groundcover within one month of the completion of earthworks. Temporary mulching or other suitable groundcover material must be applied to achieve total groundcover of any areas that are topsoiled and unable to achieve the above requirements.

12 The exercise of these consents must not give rise to any discharge of contaminants, including dust, which in the opinion of a monitoring officer of the council is noxious, dangerous, offensive or objectionable at or beyond the property boundary.

13 The exercise of these consents must not cause any of the following effects on the water quality of the Kerikeri River, as measured approximately 20 metres downstream of a discharge point into the watercourse, when compared to a site upstream of all earthworks activities during the same sampling event:

(a) The production of any conspicuous oil or grease films, scums or foams, floatable or suspended materials;

(b) A conspicuous change in colour or visual clarity;

(c) An emission of objectionable odour; and

(d) An increase in suspended solids concentration greater than 100 grams per cubic metre.

14 In the event of any discharge that is associated with site operations but not authorised by these consents, or permitted by a rule in the Regional Plan, the Consent Holder must:

(a) Immediately take such action, or execute such work as may be necessary, to stop and/or contain the discharge; and

(b) Immediately notify the council by telephone of the discharge; and

(c) Take all reasonable steps to remedy or mitigate any adverse effects on the environment resulting from the discharge; and

(d) Report to the council's assigned monitoring officer in writing within one week on the cause of the discharge and the steps taken, or being taken, to effectively control or prevent the discharge.

For telephone notification during the council's opening hours, the council's assigned monitoring officer for these consents shall be contacted. If that person cannot be spoken to directly, or it is outside of the council's opening hours, then the Environmental Hotline shall be contacted.

Advice Note: *The Environmental Hotline is a 24-hour, seven day a week, service that is free to call on 0800 504 639.*

15 The council may, in accordance with Section 128 of the Resource Management Act 1991, serve notice on the Consent Holder of its intention to review the conditions annually during the month of July for any one or more of the following purposes:

(a) To deal with any adverse effects on the environment that may arise from the exercise of the consent and which it is appropriate to deal with at a later stage; or

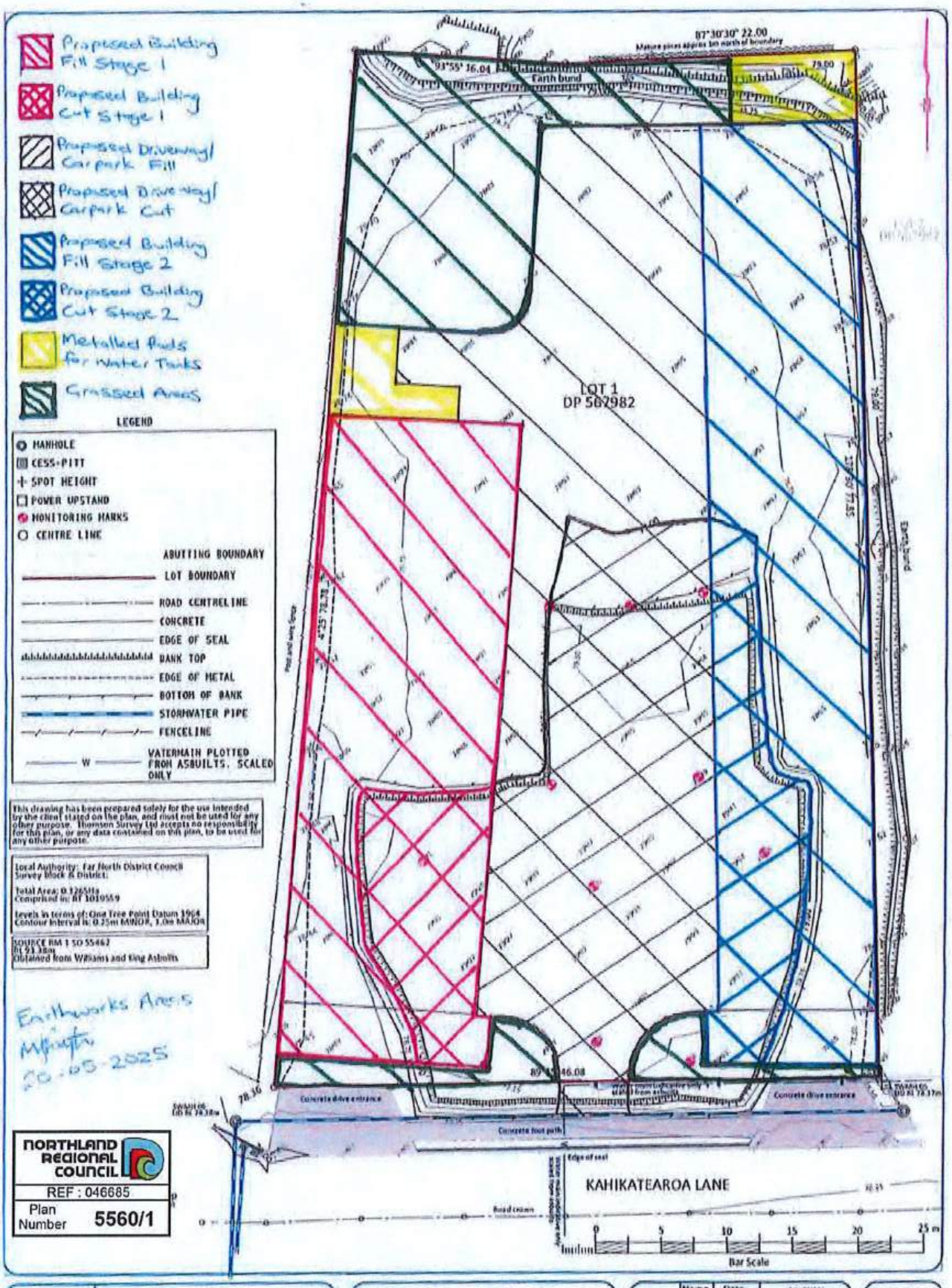
(b) To require the adoption of the best practicable option to remove or reduce any adverse effect on the environment.

EXPIRY DATE: **31 MAY 2030**

These consents are granted this Twenty-sixth day of June 2025 under delegated authority from the council by:

..... Paul Maxwell
Coastal & Works Consents Manager

Advice Note: *The Heritage New Zealand Pouhere Taonga Act 2014 makes it unlawful for any person to destroy, damage or modify the whole or any part of an archaeological site without the prior authority of Heritage New Zealand Pouhere Taonga.*



THOMSON SURVEY

315 Kerikeri Rd
P.O. Box 372 Kerikeri
Email: kerikeri@tsurvey.co.nz
Ph: (09) 4077360 Fax (09) 4077322

Registered Land Surveyors, Planners & Land Development Consultants

TOPOGRAPHICAL SURVEY OF LOT 1 DP 567982

22 KAHIKATEAROA LANE

PREPARED FOR: WINDEMERE

	Name	Date
Survey	PJH	15-04-25
Design		
Drawn	PJH	15-04-25
Approved		
Rev		

ORIGINAL SCALE 1:250 SHEET SIZE A3

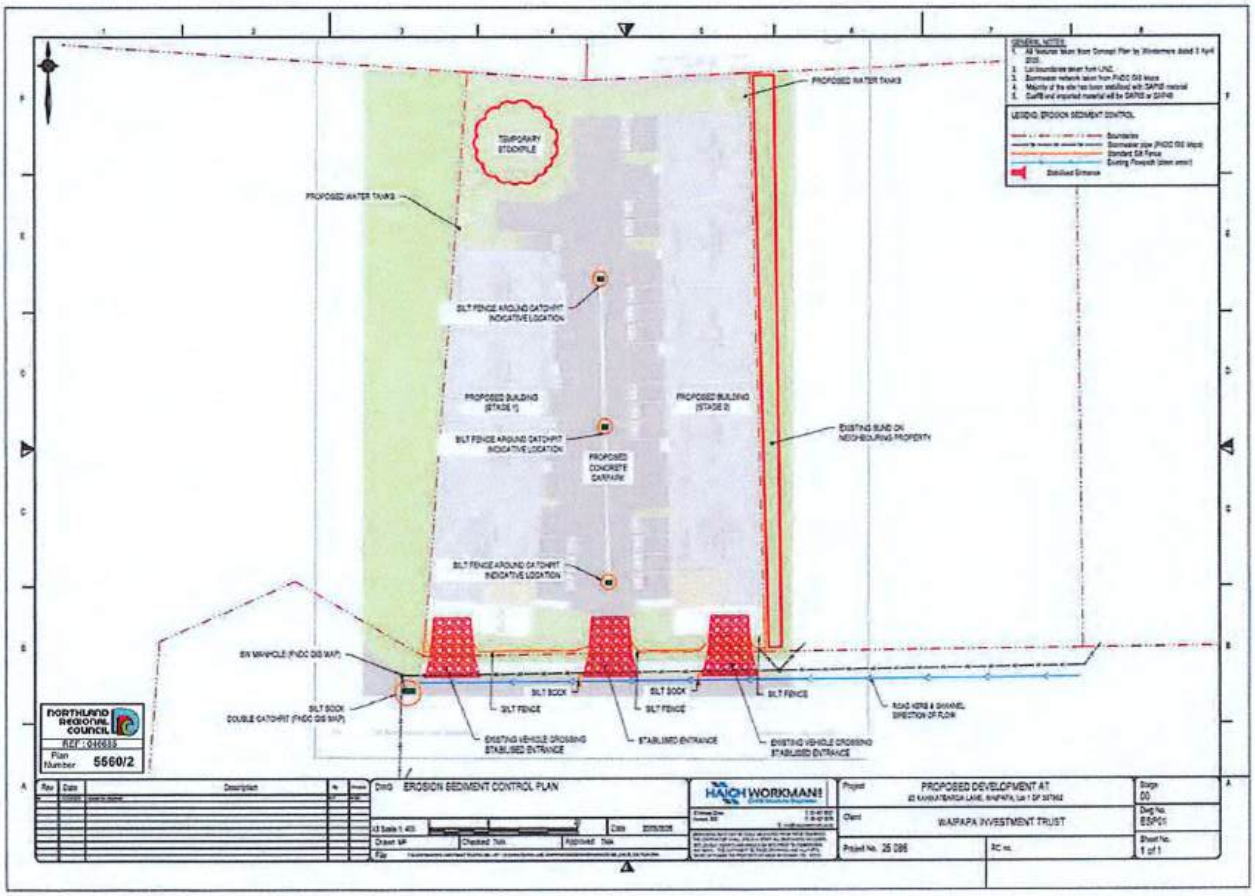
10762 Topo 20250415.Kd

Surveyors Ref. No: 10762

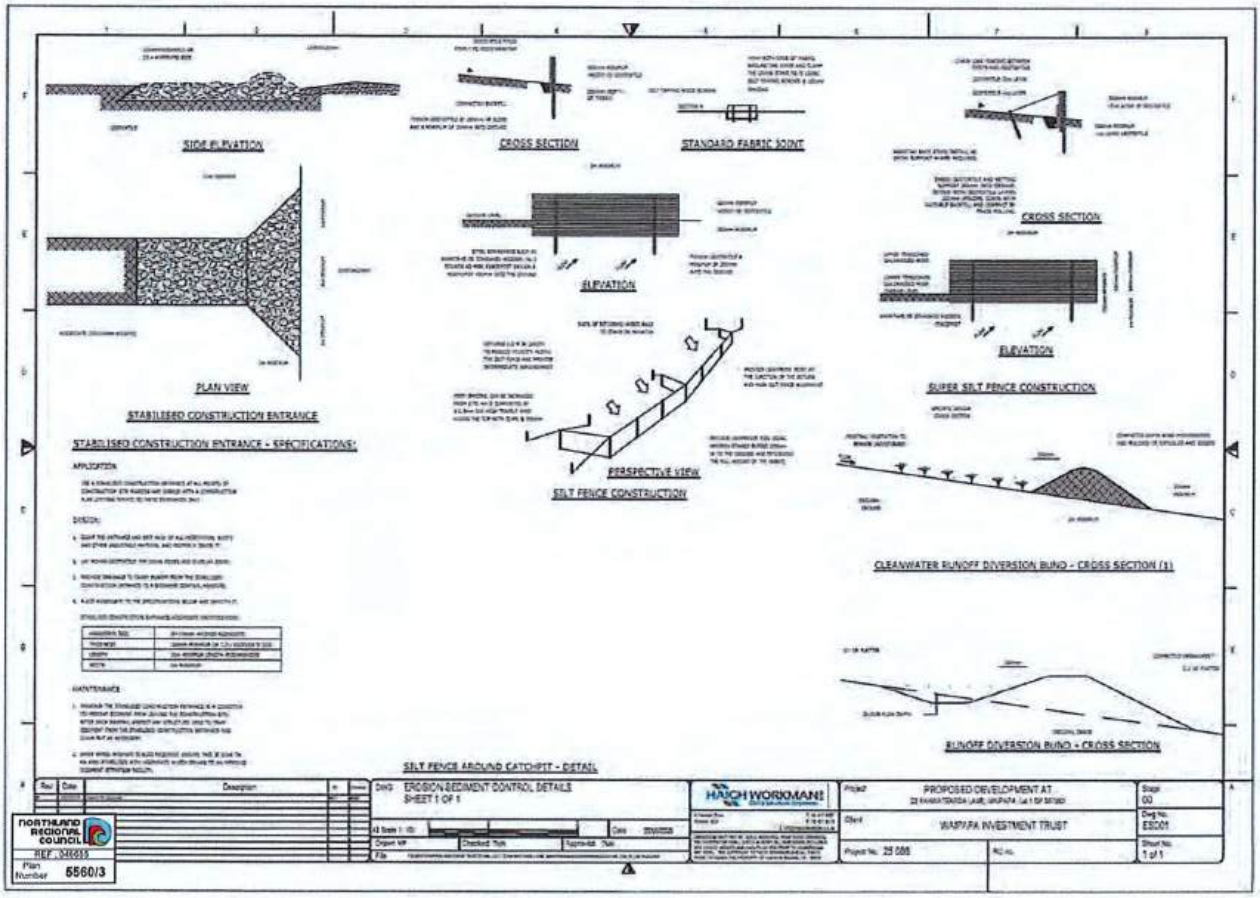
Series

Sheet 1 of 1

RC MAY 2025 (REVISION 19)



RC MAY 2025 (REVISION 19)



RC MAY 2025 (REVISION 19)

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

88 Kerikeri Road
Kerikeri
0230

WINDERMERE HOLDINGS LTD
SITE SUITABILITY REPORT FOR PROPOSED DEVELOPMENT
22 Kahikatearoa Lane, Waipapa

DOCUMENT NO:

062-SSR-CNG-01-Rev00

FINAL SITE SUITABILITY REPORT

REV	DATE	DESCRIPTION	ORIG	CHK'D	APP'D	CLIENT
P1	30/05/2025	DRAFT SITE SUITABILITY REPORT	KM	KK	KK	WHL
Rev00	12/06/2025	FINAL SITE SUITABILITY REPORT	KM	KK	KK	WHL

DOCUMENT CONTROL

TITLE:	SITE SUITABILITY REPORT FOR PROPOSED DEVELOPMENT AT 22 KAHIKATEAROA LANE, WAIPAPA, FOR WINDERMERE HOLDINGS LTD
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1. EXECUTIVE SUMMARY

This report addresses various aspects, including land suitability, effluent disposal, water supply for firefighting, stormwater management, and access. The proposed development entails a proposed development at 22 Kahikatearoa Lane, Waipapa, alongside necessary infrastructure, vegetation clearance for the new allotments.

Element	Summary
General – Section 1 to 4	
Site Address	22 Kahikatearoa Lane, Lot 1 DP 567982, Waipapa
Client	Windermere Holdings Ltd
Development Type	9-unit warehouse-style commercial/light industrial subdivision (Unit Title)
District Plan Zone	Industrial Zone (Far North District Plan)
Site Area (Gross)	3,272 m²
Lots Proposed	9 individually titled units across 2 buildings, shared infrastructure via body corporate
Geology	Alluvium
Natural Hazard Risk – Section 5	
Natural Hazard Risk	See Section 5
On-Site Wastewater Treatment and Disposal - Section 6	
On-site Wastewater	Permitted activity – system complies with PRPN C.6.1.3 and setback requirements; designed for 1020L/day
Treatment System	Duracrete Cleanstream TXR (Advanced Secondary Treatment + UV Disinfection)
Disposal Area	100m² raised, multilayered evapotranspiration garden bed with dripper line network
Buffer Tank	4,500 L concrete holding tank with recirculation to TXR system
100% Reserve Area	Yes – identified and retained for full future capacity
Water Supply – Section 7	
Water Supply	Rainwater harvesting from roof surfaces ~60,000l of potable water supply recommended
Firefighting	Supply from on-site tanks
Stormwater - Section 8	
Stormwater Attenuation	• Two 30,000 ℓ tanks proposed for stormwater detention. • Peak site runoff limited to ~65 ℓ/s, complying with subdivision consent. • 30 mm orifice controls outflow, providing attenuation for 10% and 2% AEP events. • Design meets Condition 4(h)(iv) of Consent Notice 12554072.4. • Aligns with Haigh Workman's stormwater network capacity and design parameters.
NRC Consent Required?	No – meets permitted activity criteria under the PRPN
FNDC Compliance	Yes – complies with impervious thresholds subject to stormwater management and consent notices
Vehicle - Section 9 & 10	
FNDC Compliance	Yes – will comply with FNDC ES at BC
Conclusion - Section 11	
Overall Recommendation	The site is suitable for subdivision and future development subject to final BC-stage design review and mitigation implementation

2. INTRODUCTION

Trine Kel Limited have been engaged by Windermere Holdings Ltd. to prepare a Site Suitability Report in support of a proposed [No.] 9 x unit title subdivision development at 22 Kahikatearoa Lane, Waipapa.

This report provides a summary of the development proposals and associated technical assessments required to support the proposed development.

The scope of this assessment includes the confirmation of site suitability and supply of concept designs for:

1. **Natural Hazard Risk Evaluation** – High level identification of natural hazards present across the site and recommendations for mitigation where required;
2. **On-site Effluent Disposal** – Assessment of on-site effluent treatment and disposal capacity for the proposed units, including land application suitability and design recommendations based on anticipated occupancy;
3. **Potable Water Supply** – Confirmation that the proposed development can source and store sufficient on-site rainwater volumes for potable water supply to the proposed units;
4. **Firefighting Water Supply and Access** – Confirmation that the proposed development can comply with SNZ PAS 4509:2008 for firefighting water supply and vehicle access;
5. **Stormwater Management** – Assessment of stormwater runoff from the post-development layout and provision of mitigation items to ensure compliance with the existing resource consent documentation for the wider Kahikatearoa Lane Subdivision.
6. **Vehicle Access and Driveway Compliance** – Review of the proposed access and driveway layouts for both lots, ensuring alignment with District Plan and Council engineering standards, with recommendations for design improvements where necessary.

Geotechnical compliance items are not considered in this report and will be supplied by others, under separate engagement.

3. PROPOSED DEVELOPMENTS

The client proposes to construct two separate warehouse buildings within the subject site. The development will be completed under a unit title subdivision framework.

- **Stage 1 – Western Building:**
  This building will contain four (4) warehouse units with an approximate total floor area of 670m² and will commence construction first.
- **State 2 – Eastern Building:**
  This building will contain five (5) warehouse units, totalling approximately 800m² of floor area.

The development is intended to support a range of commercial or light industrial uses, anticipated at this stage as being dependant on consenting outcomes. While the units will be individually titled, key infrastructure and services will be shared between all lots, including:

- A shared on-site wastewater treatment and disposal system
- A common stormwater attenuation and disposal network
- Joint potable and firefighting water supply infrastructure
- A unified vehicle access and internal circulation layout

These shared systems will be managed through the body corporate established under the unit title structure. Refer to *Figure 1 & 2* below for the proposed development layout.

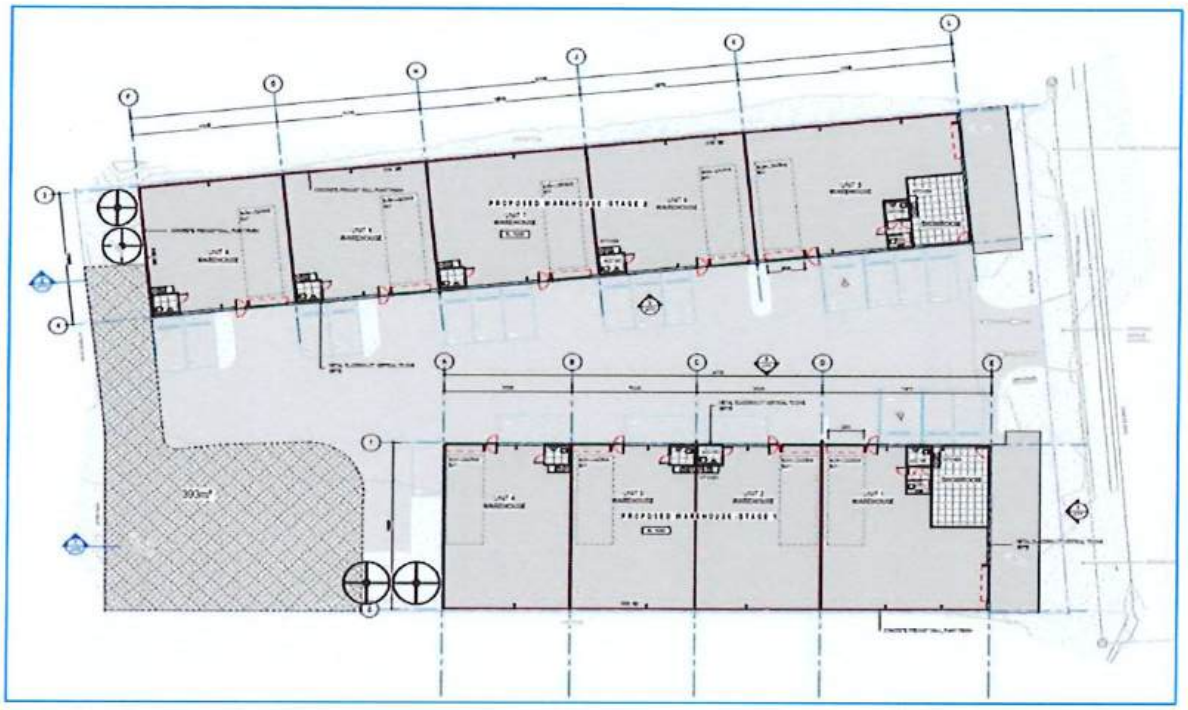


Figure 1: Proposed Development Plans

Figure 2: Proposed Development 3D Views

Previous engineering reports and plans for the subject site and surrounding subdivision—approved by both FNDC and NRC—are available under the following Consent Numbers:

- Regarding RC 2160324 – FNDC Subdivision (see Consent Notice 12554072.4)
- Regarding RC 2220747 – FNDC Land Use Consent
- AUT.044046.01.01 (NRC Discharge tertiary treated wastewater to land)
- AUT.044046.02.01 (NRC Discharge contaminants (odour) to air)

4. SITE DESCRIPTION

4.1 GENERAL

The subject site is located at Lot 1 DP 567982, 22 Kahikatearoa Lane, Waipapa, and comprises an area of 3,272 m². Refer to ***Figure 3*** for the site location, North is up the page. The site is situated within a recently developed light industrial subdivision. The site is zoned Industrial under the Far North District Plan and is subject to Consent Notice 12554072.4.

Bordering the site to the north and west is undeveloped land and farmland, with more commercial and industrial lots to the south and east. The site has previously been used for pasture and is currently vacant. Recent development activities have included earthworks and infrastructure installation to support industrial lot development. Services for water, stormwater, and wastewater have been coordinated through shared infrastructure and easements within the subdivision, however connections to this infrastructure are unable to commence due to larger network capacity issues in the area.

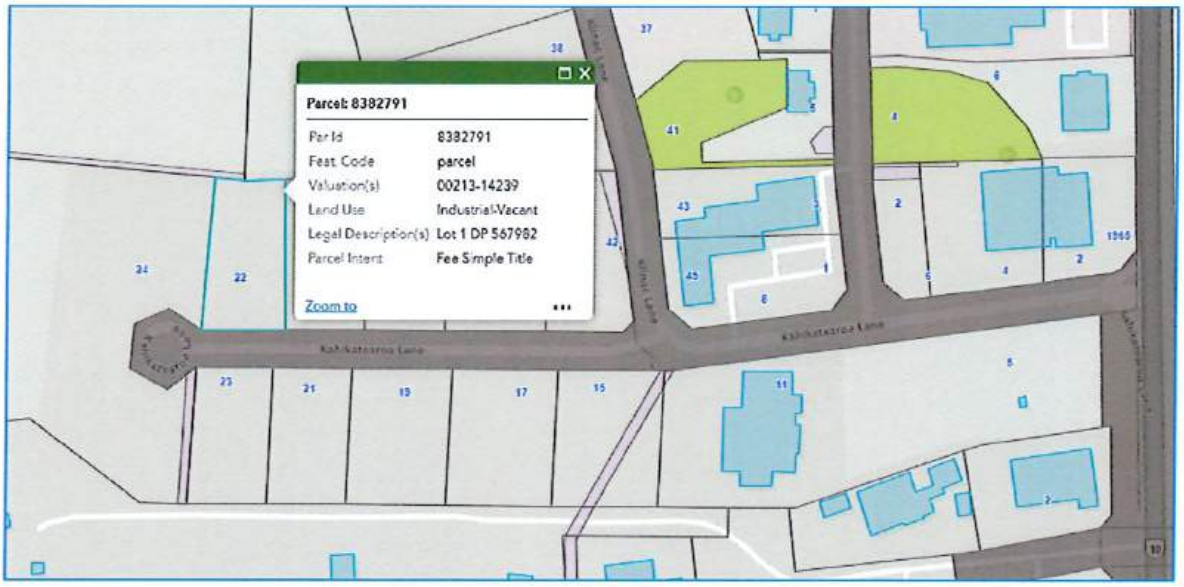


Figure 3: Site Location (FNDC Property Maps)

4.2 TOPOGRAPHY

The site is relatively flat with a gentle slope generally falling northwest to the southeast. Natural site levels range from approximately RL 78.3 m to RL 78.9 m. Minor localised depressions were observed during earlier site walkovers, consistent with stormwater sheet flow patterns. Earthworks have been undertaken to build up platform levels and achieve adequate freeboard above the 1% AEP flood level, and are subject to further refinements based on the final development proposals. Spot levels and design RLs from the previous subdivision civil plans (Haigh Workman DWG No. 22 084) confirm the building platform and driveway levels are generally around RL 78.90–79.10 m, with preload aggregates placed and to be later refined to support the future building platform. Refer to ***Figure 4 & 5*** below

Figure 4: 3D View from Google Earth Pro with annotations

Figure 5: Topographical map depicted by 0.1m contours from survey

4.1 GEOLOGY & SUBSOILS

The site is within the bounds of the GNS Geological Map 1:250,000 scale and is shown to be underlain by Kerikeri Volcanic Group geology. However, from our local knowledge, confirmed from a review of the subdivisions original engineering

reports, we understand that the site is actually underlain by Pleistocene River deposits, as shown present slightly south of the subject site. At the Greenfields ground level, the site is underlain by the natural alluvial soils comprising clay loam with sandy inclusions, consistent with the wider nature of the geology in the Waipapa Basin. See ***Figure 6*** below.

Figure 6: Underlying Geology from GNS Maps

Mapping and field investigations undertaken for the broader subdivision indicate the presence of:

- Topsoil to a depth of approximately 0.1 m, underlain by
- Greyish-brown clay loam, moist, with minor orange mottling, transitioning to wetter material from 0.4 m depth
- Groundwater table encountered at approximately 0.7 m below natural ground level

Based on these observations and testing, the soil has been previously classified as AS/NZS1547:2012 Category 4 (Clay Loam – Imperfectly Drained) and TP58 Category 5 (Sandy Clay Loam – Moderate to Slow Drainage). Constant head permeability testing on adjacent properties yielded an indicative soakage rate of 0.26 m/day, consistent with weakly structured clay loams.

The site has since been elevated to its finished development level using GAP40/65 compacted hardfill, which forms a granular preload raft. This fill remains in place and will support the building platforms, accessways, and services. The wastewater treatment plant and land application area are proposed to be installed above this granular fill. The specific ground conditions at this site have been explicitly accounted for in the detailed system design, including its influence on soakage potential, construction methodology, and hydraulic performance.

4.2 DISTRICT PLAN ZONE

Per *Figure 7*, the site is zoned Industrial with respect to the Far North District Councils (FNDC) **Operative** District Plan, and Light Industrial with respect to the FNDC ***Proposed*** District Plan.

Figure 7: FNDC Operative and Proposed District Plan Zones

5. NATURAL HAZARD RISK

5.1 GENERAL

Under Section 106 of the Resource Management Act 1991 (RMA), a consent authority may refuse a subdivision consent application, or grant it subject to conditions, if the land is considered to be at significant risk from natural hazards. In accordance with these provisions, an assessment of potential natural hazards relevant to our engagement the subject site has been undertaken to help inform FNDCs decision-making process. This assessment is presented in **Table 1**, below.

Table 1: Natural Hazard Assessment Table

No.	Natural Hazard	Risk	Explanation
6	Drought	Moderate	Northland can be subject to drought during summer months. Drought induced risk applicable to the proposed future development at the site will be mitigated through an adequate supply of potable water, held on-site in rainwater tanks.
7	Fire	Low	The proposed development will have an adequate firefighting water supply provided on-site. Firefighting infrastructure, linked to potable mains water supply lines are also available in the roadway, which can be utilised by FENZ in the case on an emergency.
8	Flooding	High	Flooding hazard risk at the site is high without specific mitigation strategies. The developments carpark areas will remain approximately 300mm above the 1% AEP flood level, while the warehouse units themselves, will have a final freeboard of 500mm above the 1% AEP Flood level. In large flooding events, these measures will ensure that economical loss at the property is mitigated, however access through the Kahikatearoa Lane roadway, including roads leading into and out of the Waipapa area, will likely become inundated.

5.2 FLOODING

The NRC Natural Hazard maps indicate that the site is subject to flooding during the 50 and 100 year+ climate change ARI events. A full copy of the NRC Flood Report for the site is in Annexure E. The site is not mapped as being subject to flooding in the 10 year ARI event. The 100 year ARI event is modelled as having a maximum depth of 78.86m NZVD at the northern boundary of the site.

As outlined in section 4.2, earthworks have already been undertaken to raise the site above the 1% AEP flood level, under separate previous accepted consents, by others. The building finished floor levels will have a minimum freeboard of 500mm during the 1% AEP flood event. The proposed 500mm freeboard exceeds the minimum 300mm freeboard for commercial/industrial buildings stipulated by the FNDC Engineering Standards 2009 clause 4.3.2.5.2 and NZS 4404:2010., due to the economic significance of the development. Building platform design will be finalised at building consent stage.

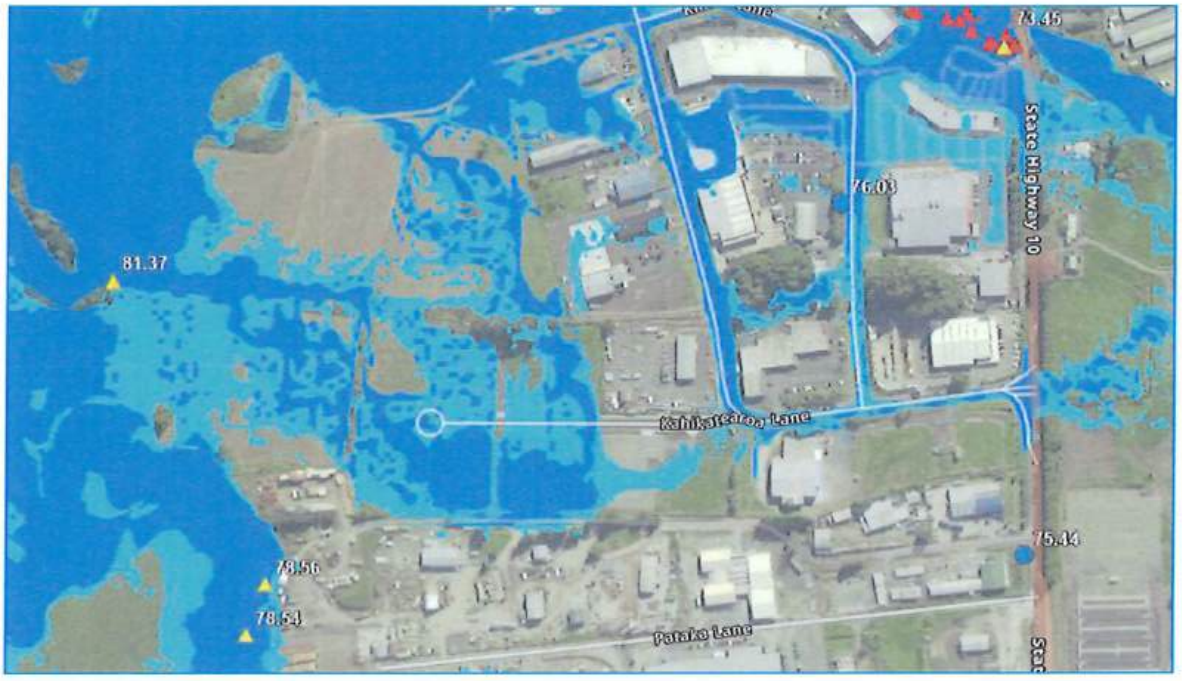


Figure 8: NRC Flood Hazard Map

6. ON-SITE WASTEWATER

6.1 SUBSOIL INFORMATION

A geotechnical investigation has been carried out by others. A site-specific wastewater report was prepared by Haigh Workman as part of a previous consent application at the subject site. Investigations for the original resource consent included machine-dug test pits, hand-augered boreholes, and permeability testing, supplemented by site walkovers and local soil mapping.

- Soil Profile: Topsoil (~0.1 m) over greyish-brown moist clay loam with some sandy inclusions. Soils are typical alluvial floodplain deposits.
- Groundwater: Encountered at approximately 0.7 m below natural ground level.
- Previous Soil Classification:
  - AS/NZS 1547:2012 – Category 4 (Clay Loam – Imperfectly Drained)
- Soakage Testing: Constant head permeability testing on adjacent sites yielded an indicative Ksat of 0.26 m/day

6.2 WASTEWATER GENERATION

We have based our design off the following information:

- Site Area: 3,272 m²
- Number of Units: 9 units across two separate warehouse-style buildings
- Western Building (Units 1–4): ~670 m² GFA
- Eastern Building (Units 5–9): ~800 m² GFA

The design wastewater flow has been calculated based on light commercial/industrial activities with limited plumbing fixtures (toilets and hand basins) and allowance for potential kitchenette use in the two front-facing tenancies. No showers are proposed. A conservative per-person wastewater allowance of 30 L/day has been applied to account for toilet flushing and minimal kitchen/coffee area use. All water fixtures within the units must be standard water reduction items (aerated faucets, 6/3l flush cisterns etc.)

Table 2: Wastewater Generation

Unit	Use Type	Size (m²)	Staff Estimate (30l pp/day)	Visitors/Customers (15l pp/day)	Flow (L/day)
Unit 1	**Commercial tenancy (front)	200	4 staff	5/day	195
Unit 2	Trade/warehouse	100–120	3 staff	-	90
Unit 3	Trade/warehouse	100–120	3 staff	-	90
Unit 4	Trade/warehouse	100–120	3 staff	-	90
Unit 5	**Commercial tenancy (front)	200	4 staff	5/day	195
Unit 6	Warehouse/light industrial	135	3 staff	-	90
Unit 7	Warehouse/light industrial	135	3 staff	-	90
Unit 8	**Light commercial office/workshop	135	2 staff	2/day	90
Unit 9	**Light commercial office/workshop	135	2 staff	2/day	90

***All items specified above are preliminary and based off the allowance of commercial activity at the subject site. If commercial premises are unable to be granted due to consenting constraints, the daily wastewater production at the site will be drastically less than given above, ensuring the design presented for consent represents the worst-case scenario.*

Total Daily Max Peak Flow: 1,020 L/day

6.3 ON-SITE WASTEWATER TREATMENT SYSTEM

The system has been tailored to meet the specific site constraints, including a high groundwater table, compacted fill, limited available disposal area, and shared tenancy arrangements. A combination of advanced secondary treatment and engineered disposal has been selected to ensure long-term performance, resilience, and compliance with regional regulatory requirements.

6.4 TREATMENT PLANT - DURACERETE CLEANSTREAM TXR WITH UV DISINFECTION

A Duracrete Cleanstream TXR treatment system (or similarly preforming secondary advanced unit) will be installed, including primary sedimentation, aerobic biological treatment, clarification, and discharge to a layered plant medium evapotranspiration bed that incorporates a soakage sand filter layer and underlying subsoil drainage re-circulation pathway. The unit includes alarms an emergency storage tank, and may incorporate flow monitoring as required.

The Cleanstream TXR system includes the following treatment stages:

- Primary Sedimentation: For initial separation of solids and floatables.
- Aerobic Biological Treatment: Oxygen is introduced to promote microbial breakdown of organic matter (BOD and TSS reduction).
- Clarification Chamber: Secondary settlement and sludge return to the primary chamber.
- UV Disinfection Module: Treated effluent will pass through an in-line UV chamber to achieve tertiary disinfection prior to discharge.
- Control and Alarm System: Visual and audible high-level alarms with emergency storage equivalent to 24 hours peak design flow (min. 1,020).

The Cleanstream TXR system will be located within a secure and accessible area for maintenance, with pipework and electrical connections designed in accordance with AS/NZS 1547:2012 and the manufacturer's specifications.

6.5 LAND DISPOSAL DETAILS

Advanced Secondary level treated effluent will be discharged to a retained multilayered multi-functional evapotranspiration disposal bed at an approximate rate of 10mm/m²/day, a total primary disposal area of 100m² is therefore required. Higher effluent discharge rates are acceptable due to the specific design of the receiving bed. The area includes plant medium, a large sand filter layer with geotextile discharge control to slow effluent percolation into the gravel platform below, and a subsurface soakage trench that can re-direct any overrun back to a buffer tank in times of unexpected peak loading, or during long periods of inclement weather.

Treated effluent will be discharged to the purpose-built disposal garden, located within a retained, raised landscape bed at the rear of the site. The system will function as both a disposal field and an aesthetic, planted feature. The disposal field incorporates the following components:

- 20–40 mm drainage aggregate soakage bed, encapsulated in plant medium & overlaying sand filtration layers (PAP7 or similar and finer clean builders mix at base)
- Dripperline distribution system, with lines spaced at 0.5 m intervals and emitters at 0.5 m spacing
- Hydrophilic vegetation, planted above the disposal field in accordance with TP58 and AS/NZS1547:2012 to enhance evapotranspiration and nutrient uptake
- Timber or concrete retaining structures, retaining the rear and sides of the field to form a stable garden platform
- 26° surface grade, directing treated effluent flow and minimising surface saturation risk
- Flow-balancing (e.g. timed dosing or demand dosing) via time-controlled or demand-initiated submersible pump to ensure even application to the disposal field and avoid surges.

The design provides a high-performance multi-treatment approach that utilised biological uptake and evapotranspiration, while maintaining required vertical and horizontal separation to groundwater, structures, and boundary.

6.6 DESIGN ADVANTAGES

The selected treatment and disposal configuration offers several benefits specific to the project context:

- High Treatment Efficacy: Secondary Advanced treatment with further biological decomposition ensures environmental and public health protection.
- Optimised Land Use: Raise garden bed configuration makes efficient use of limited disposal area by combining treatment and landscaping.
- Enhanced Resilience: Subsoil drainage with recirculation and emergency holding provides redundancy and

future-proofing, along with increased evaporation potential as time progresses due to garden growth.

- Low Visual and Amenity Impact: The raised bed will be integrated into site landscaping, with no visible effluent discharge or ponding.
- Regulatory Compliance: The system well exceeds the minimum performance requirements for a Permitted Activity Level Activity under NRC requirements.

6.7 EMERGENCY STORAGE AND RECIRULATION

To allow for future use change at the site, and manage potential overloading due to change in use or system anomalies, the following additional measures can be incorporated:

- Emergency Holding Tank: A dedicated 4,500-litre concrete emergency holding tank (i.e a standard concrete septic tank system) to accommodate excess effluent, providing storage equivalent to ~400% (4 days) of the peak daily flow (1,020 L/day). Can serve as a buffer during high inflow periods, inclement weather or maintenance events.
- Recirculation System: The emergency tank is fitted with a pump system to recirculate stored effluent back to the Cleanstream TXR treatment unit, ensuring continuous treatment and preventing environmental discharge.

6.8 PLANTING REGIME

A carefully curated selection of native, hydrophilic, and low-maintenance plant species will be established over the disposal area to enhance treatment efficacy and site amenity. The planting regime aligns with recommendations from TP58 Appendix D and includes:

- Phormium tenax (Harakeke/New Zealand Flax): Robust, drought-tolerant, and effective in nutrient uptake.
- Carex secta (Sedge): Thrives in moist conditions, aiding in water absorption and providing habitat for native fauna.
- Libertia ixioides (Mikoikoi): Offers attractive foliage and flowers, contributing to site aesthetics while tolerating wet soils.
- Hebe species: Compact shrubs with seasonal blooms, enhancing visual appeal and supporting pollinators.
- Austroderia richardii (Toetoe): Tall grasses that assist in evapotranspiration and add structural diversity to the planting scheme.

The selected species are known for their resilience, minimal maintenance requirements, and ability to deter unauthorised access due to their dense growth habits.

6.9 DISPOSAL FIELD LAYOUT

The primary disposal field will consist of pressure compensating drip irrigation lines, distributed across the rear of the site within a retained and landscaped raised garden. The available disposal area is L-shaped, with one arm running along the rear northern boundary and the other extending along the eastern side boundary. To accommodate the shape and maximise efficiency:

- PCDI lines at 0.5m c/c, oriented to follow the gardens contours and slope.
- Buried 100-200mm into the plant medium
- Garden will be raised and behind bollard protection
- The garden bed will contain:
- A base layer of graded sand (PAP7) for filtration
- 20–40 mm drainage aggregate bedding

- Selective garden medium
- Subsurface dripperline laterals laid within garden medium, with emitters at 0.5 m spacing
- Inspection ports and flushing valves at the end of each line for maintenance access

A 100% reserve field area is also allocated in front of the primary disposal area and will be kept undisturbed. The reserve area is shown in ***Annexure A.***

6.10 ASSESSMENT OF ENVIRONMENTAL EFFECTS, REGULATORY COMPLIANCE, AND COMPARATIVE RISK

6.10.1 GENERAL

The proposed on-site wastewater treatment and disposal system at 22 Kahikatearoa Lane has been designed to achieve high environmental performance and full regulatory compliance.

Advanced secondary treatment will be applied to all effluent, which will then be dispersed subsurface via a raised and densely vegetated multilayered disposal bed. This field incorporates multiple layers of filtration and treatment media, including sand, gravel, and structured planting, ensuring extensive nutrient uptake, microbial polishing, and evaporation to deter any potential interaction with groundwater.

This engineered approach offers multiple layers of environmental protection, including:

- Effluent treatment through a Duracrete Cleanstream TXR system, incorporating primary sedimentation, aerobic biological processing, clarification, and UV disinfection.
- Subsurface discharge within a multilayer raised field, maximising soil-plant filtration and evapotranspiration.
- Emergency storage and recirculation, with a 4,500ℓ holding tank and pump return system, providing containment and treatment redundancy during peak loading or adverse weather.
- A fully protected 100% reserve disposal field and complete required compliant separation from surface water, groundwater, and site boundaries.

The environmental risk posed by this system is considered negligible. Treated effluent is applied subsurface and entirely contained within the engineered field, preventing any overland flow or discharge to waterways. The site's high groundwater conditions and compacted subgrade have been explicitly accounted for in the design.

When compared to the surrounding environment, the proposed system offers a substantially lower contaminant pathway. Untreated stormwater runoff from adjacent industrial or agricultural sites typically carries higher concentrations of hydrocarbons, heavy metals, faecal coliforms, sediment, and nutrients, often discharging directly to surface water with little to no treatment. In contrast, the proposed on-site system provides robust and multi-barrier treatment and containment, consistent with best practice and well below regional contaminant thresholds.

6.10.2 REGULATORY ASSESSMENT

Northland Regional Council – PRPN Rule C.6.1.3 (Permitted Activity)

The proposed wastewater discharge of 1,020 ℓ /day is below the 2 m³/day threshold and falls within the permitted activity framework of C.6.1.3 – Other on-site treated domestic wastewater discharges under the Proposed Regional Plan for Northland (PRPN).

The design demonstrates strong alignment with the intent and performance expectations of Section C.6.1.3 'Other on-site treated domestic wastewater discharge' Permitted activity (refer to **Annexure C**)

The only minor technical non-compliance relates to retaining structures associated with the raised disposal bed. However, as the retaining walls form an integral part of the disposal system and are specifically engineered for structural

containment (not passive site infrastructure), this is considered functionally compliant with the intent of the rule and not likely to result in adverse effects.

Overall, the system reflects best practice design under AS/NZS 1547:2012, aligns with the performance-based framework of C.6.1.3, and avoids triggering any discretionary thresholds. The discharge is expected to operate with negligible risk to environmental or human health values and is appropriate as a permitted activity under the PRPN.

7. WATER SUPPLY

7.1 POTABLE WATER

Although a reticulated water supply is available within the road reserve, the proposed development will primarily source its potable water from rainwater harvesting. Roof runoff will be collected in rainwater tanks, reducing site discharge and providing a sustainable, low-impact water supply. This approach is particularly suitable given the large, proposed roof area and the current capacity constraints of the Kerikeri Town Water Supply system.

Preliminary calculations for the proposed 1,480 m^2 roof area estimate an annual collection potential ranging from 66m^3 to in excess of 190m^3 per month. Estimated water usage (refer to ***Table 1***) is 1,020 l/day, equating to a rough usage of 30.6 m^3 per month. Based on our calculations in ***Table 3***, rainfall is not an issue at the site. Adequate potable water supply will be solely based on the available tank storage on-site.

We recommend a minimum storage of 60m^3–to provide approximately two months of supply following the end of peak rainfall—helping ensure resilience during Northland's dry summer periods.

Table 3: Monthly Rainwater Volumes (in litres)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly Harvest	121360	139120	148000	145040	180560	207200	247160	198320	176120	136160	121360	145040
Monthly Consumption	54750	54750	54750	54750	54750	54750	54750	54750	54750	54750	54750	54750
Monthly Surplus or Shortage	66610	84370	93250	90290	125810	152450	192410	143570	121370	81410	66610	90290

7.2 FIRE FIGHTING

Adequate supply for firefighting purposes must be provided via tanks or other water sources (i.e pools) positioned for safe accessibility. These arrangements will align with the New Zealand Fire Fighting Water Supply Code of Practice SNZ PAS 4509:2008. Any alternative firefighting water supply volume figures are also acceptable if based on receiving specific approval from an authorized representative of Fire and Emergency NZ.

8. STORMWATER MANAGEMENT

8.1 DESIGN BASIS

Pursuant to Rule 7.8.5.1.9 of the FNDC Operative District Plan, the disposal of collected stormwater from the roof of all new buildings and new impervious surfaces, is a Permitted Activity, provided that the activity is within an existing consented urban stormwater management plan or discharge consent.

Resource consent 2160324-RMAVAR/B includes a Consent Notice applying to all allotments in the Kahikatearoa Lane subdivision (DP Number: 567982)

Condition 4(h)(iv):

> *"Provide, at the time of lodging a building consent application for Lots 1 - 8, a specific design for stormwater management, prepared by a suitably qualified Chartered Professional Engineer, which addresses both stormwater quality and quantity such that the volume of stormwater discharged is attenuated to a 1 in 10 year rainfall, (being the design capacity of the stormwater reticulation) for rainfall event up to those with a 2% AEP. The stormwater quality standard shall comply with section 4.4.2 of the Councils Engineering Standards (2009) or for a lower level of contaminant where required by an NRC Stormwater Discharge Consent."*

In accordance with the Kahikatearoa Lane Subdivision stormwater report, prepared by Haigh Workman:

> *"The stormwater reticulation system within the Road to Vest has been designed for an average runoff coefficient of 0.6 from the Lots for a 10% AEP rainfall event. Attenuating to the equivalent of an average runoff coefficient of 0.6 from the Lots for a 10% AEP rainfall event ensures that there is no increase in downstream flooding.*
>
> *Stormwater attenuation for the site should be designed to provide for the following:*
>
> - Attenuate 10% AEP runoff to no more than runoff based on C = 0.60
> - Attenuate 2% AEP runoff to no more than 10% AEP runoff."

In accordance with the above, we have calculated a 10% AEP runoff value for the titled site area using a simplified Rational Method calculation:

Rational Method Peak Flow Calculation

$$Q = C \times I \times A \times \frac{1}{3600}$$

Where:

- Q = Peak flow (L/s)
- C = Runoff coefficient = 0.6
- I = Rainfall intensity = 118.9 mm/hr
- A = Catchment area = 3272 m²

$$Q = 0.6 \times 118.9 \times 3272 \div 3600$$

$$Q = \frac{233,379.12}{3600} = \boxed{64.83\,\text{L/s}}$$

The maximum allowed runoff from the site, will not exceed 64.8l/s, which is inclusive of runoff from all surfaces on site. The attenuation volumes provided for in the future stormwater attenuation system provides a large enough storage volume to ensure that runoff from the site can be captured and released to the network, for *a rainfall event up to a 2% AEP event.*

8.2 SITE COVER

Table 6 below, outlines the plan view area measurements taken from the proposed concept development plans. These values form the basis of the conceptual stormwater management assessment presented.

Table 6: Post-Development Impermeable Cover per Development Plan Set

Site Area	Roof	Hardstand	Pervious	Total
3,272m²	1,480m²	1,090m²	618m²	3272m²

The stormwater attenuation design has been provided below to future proof each development.

8.3 ATTENUATION DESIGN AND STORMWATER TANK CONFIGURATION

Based on a system comprising [No.] 2 x 30,000L tanks plumbed together to function as a single unit, the following attenuation and tank configuration parameters have been calculated:

Lot 1	
Attenuated Stormwater	
Allowable max. post-development runoff (Q):	~65 ℓ/s
Orifice:	30mm Ø
Outflow:	~3.0 ℓ/s
Peak Storage Elevation:	~1.5m
Storage Volume:	~33 m³
Unattenuated Stormwater	
Hardstand & Pervious	~62 ℓ/s
Total post-development (Q)	
< 65 ℓ/s	

8.4 SUMMARY

This conceptual stormwater attenuation design demonstrates that the proposed system will effectively limit post-development runoff from the site to within the allowable discharge rate of ~65 ℓ/s, as required under the Kahikatearoa Lane subdivision consent. The proposed twin 30,000 ℓ tanks provide sufficient storage volume and controlled discharge through a 30 mm orifice to attenuate runoff from both 10% and 2% AEP storm events. This ensures compliance with Condition 4(h)(iv) of the consent notice and maintains consistency with the Haigh Workman subdivision stormwater design parameters.

The details of the final stormwater system design will be confirmed and submitted at the time of EPA/ building consent, including detailed sizing, configuration, and outlet control devices to ensure stormwater quantity and quality management standards are met.

9. VEHICLE CROSSING

A new vehicle crossing will be formed to provide access to proposed warehouses from Kahikarearoa Lane, and will be constructed in general accordance with Drawing Sheet No. 19 (vehicle crossing – commercial/industrial) of the FNDC Engineering Standards. The crossing location has been selected to ensure safe entry and exit movements, with adequate visibility for both approaching traffic and vehicles exiting the site.

It is likely that the proposed crossing will breach rule 15.6.6C.1.4 which limits the maximum crossing width to 6m where it crosses a footpath. This rule breach is common on this side of Kahikatearoa Lane due to the industrial nature of the lots. Detailed design of the proposed crossing will be provided at EPA stage.

10. VEHICLE MANOEUVRING

The proposed warehouse development provides a total of 21 on-site carparks, including 2 accessible parking spaces. All parking bays and associated manoeuvring areas have been designed in accordance with the Far North District Plan, specifically adhering to the dimensional standards outlined in Appendix 3D: Manoeuvring & Parking Space Dimensions.

Vehicle tracking analysis has been undertaken using a B85 vehicle type (8m long heavy rigid vehicle) to confirm that safe and efficient manoeuvring can be achieved within the site. The tracking results, provided in ***Annexure A,*** demonstrate compliance with relevant access and circulation requirements, supporting the suitability of the site for the intended use.

As with the other sections of this report, detailed design of the internal carpark's geometry, vehicle movements and council requirements will be provided in full at the time of EPA/ building consent.

11. PROPOSED CONDITIONS OF CONSENT

11.1 PRIOR TO ISSUE OF A SECTION 223(C) CERTIFICATE

(1) The consent holder must submit a detailed set of engineering plans prepared in accordance with Council's Engineering Standards 2022 Edition prior to construction works commencing. The engineering plans are to be submitted to the Resource Consent Engineer for approval (Engineering Plan Approval). Engineering plans submitted to Council for approval shall be accompanied by a Design Statement and Engineering Producer Statement (PS1) signed by a Chartered Professional Engineer (EES-PS1 or similar). The PS1 shall include details of the level of construction monitoring (CM1-CM5) and inspections required to certify a PS4.

Plans are to include but are not limited to:

- Minimum pipe gradients, alignments, long sections, material specifications and calculations for the water, wastewater and stormwater systems to service the development in accordance with the requirements of the FNDC Engineering Standards and Guidelines 2023.
- Detailed design of the stormwater system including attenuation and outfalls.
- Evidence that FENZ approval has been obtained for firefighting water supplies for the development, or any applicable deductions from standards, if any.
- Design details of the construction of a new vehicle crossing onto Kahikatearoa Lane in accordance with Sheet 19 Commercial/Industrial Width Crossing also in accordance with Sheets 22 & 23 of Council's Engineering Standards 2023 Edition.
- Detailed designs of the internal accessway, parking and maneuvering areas including surfacing type and linemarkings (as applicable).

11.2 PRIOR TO ISSUE OF A SECTION 224(C) CERTIFICATE

(2) The consent holder shall notify Council, in writing, of their intention to begin works, a minimum of seven days prior to commencing works. Such notification shall be sent to the Resource Consent Engineer and include a Construction Management Plan with the following details:

- Name and telephone number of the project manager.
- Site address to which the consent relates.
- Activities to which the consent relates.
- Expected duration of works.
- A traffic management plan including details of the transportation of plant and materials from and to the site.
- Confirmation of erosion and sediment control measures to be in place for the duration of the works.
- Publicity measures and safety measures, including signage, to inform adjacent landowners and occupiers, pedestrians and other road users.
- Provide evidence that a private maintenance agreement has been entered into with a contractor that shall be responsible for ongoing maintenance of the wastewater treatment plant.
- Provide evidence that each lot has a connection to the shared potable water supply network.
- Provide evidence that each lot has a connection to the shared onsite wastewater system in accordance with the Approved Plans submitted for Engineering Plan approval under condition xxxxx

(3) All work on the approved engineering plans in Condition 1(a) is to be carried out to the approval of the Resource Consent Engineer. Compliance with this condition shall be determined by;

- Site inspections undertaken as agreed in Council's engineering plan approval letter/ Inspection and Test Plan.
- Results of all testing, video inspection records of all wastewater and stormwater reticulation, PE pipeline pressure testing and weld data logging results.
- PS4 and approval of supporting documentation provided by the developer's representative/s including evidence of inspections by those persons, and all other test certificates and statements required to confirm compliance of the works as required by Council's QA/QC Manual and the Council's Engineering Standards 2023.
- "Certificate of Completion of Resource Consent Works" from the Contractor.

(4) The consent holder must submit a certified and dated 'As built' plan and asset data sheets of completed works and services in accordance with Council's Engineering Standards 2023 Edition. This condition shall be deemed satisfied once the as builts have been approved by Councils' Resource Consent Engineer or delegated representative.

12. CONCLUSIONS

This Site Suitability Report has assessed the key development components for the proposed 9-unit light industrial subdivision at 22 Kahikatearoa Lane, Waipapa (Lot 1 DP 567982), including geotechnical suitability, stormwater management, on-site wastewater disposal, potable and firefighting water supply, and site access.

Based on the findings and recommendations detailed in this report, it is concluded that the site is suitable for the proposed development, subject to compliance with the consent conditions and the following key provisions:

- On-site Wastewater Disposal: The wastewater system has been specifically designed for site constraints, incorporating advanced secondary/tertiary treatment and a raised evapotranspiration garden bed disposal system. The system achieves regulatory compliance under NRC Rule C.6.1.3 and meets the required setbacks, discharge limits, and environmental performance expectations.

- Potable Water Supply: The proposed rainwater harvesting system is capable of supplying the total estimated demand from the development. With appropriately sized tank storage (minimum 60,000 L recommended), the system will offer long-term resilience and independence from the reticulated network, which is currently constrained.

- Firefighting Supply: Firefighting water can be supplied via tanks in accordance with SNZ PAS 4509:2008, with nearby hydrants within 135 m of all allotments ensuring dual coverage. This satisfies both operational and emergency requirements.

- Stormwater Management: The site-specific stormwater design generally complies with the FNDC Engineering Standards and Consent Notice 12554072.4, by attenuating 2% AEP rainfall runoff to match the allowable 10% AEP design threshold using dual 30,000 L tanks and controlled orifice discharge.

- Access and Parking: A compliant vehicle crossing and concept internal circulation layout have been proposed, including 21 car parks and provision for B85 tracking. Final driveway and parking bay construction will align with FNDC standards and be confirmed during detailed design.

In summary, the development:

- Meets the relevant provisions of the Far North District Plan (Operative and Proposed), or provides mitigatory measures to address potential compliance issues
- Complies with regional and district-level permitted activity thresholds for stormwater and wastewater discharges,
- Provides for adequate on-site servicing (water, wastewater, stormwater) without additional burden on council infrastructure, and
- Aligns with best practice engineering and planning standards for light industrial development.

The site is therefore considered suitable for the proposed unit title subdivision and associated civil infrastructure works, subject to implementation of the design elements outlined herein, and detailed confirmation at the building consent stage.

Refer to Section 1 – Executive Summary for a consolidated overview of the findings.

13. ANNEXURES

ANNEXURE A – CONCEPT SCHEME PLANS

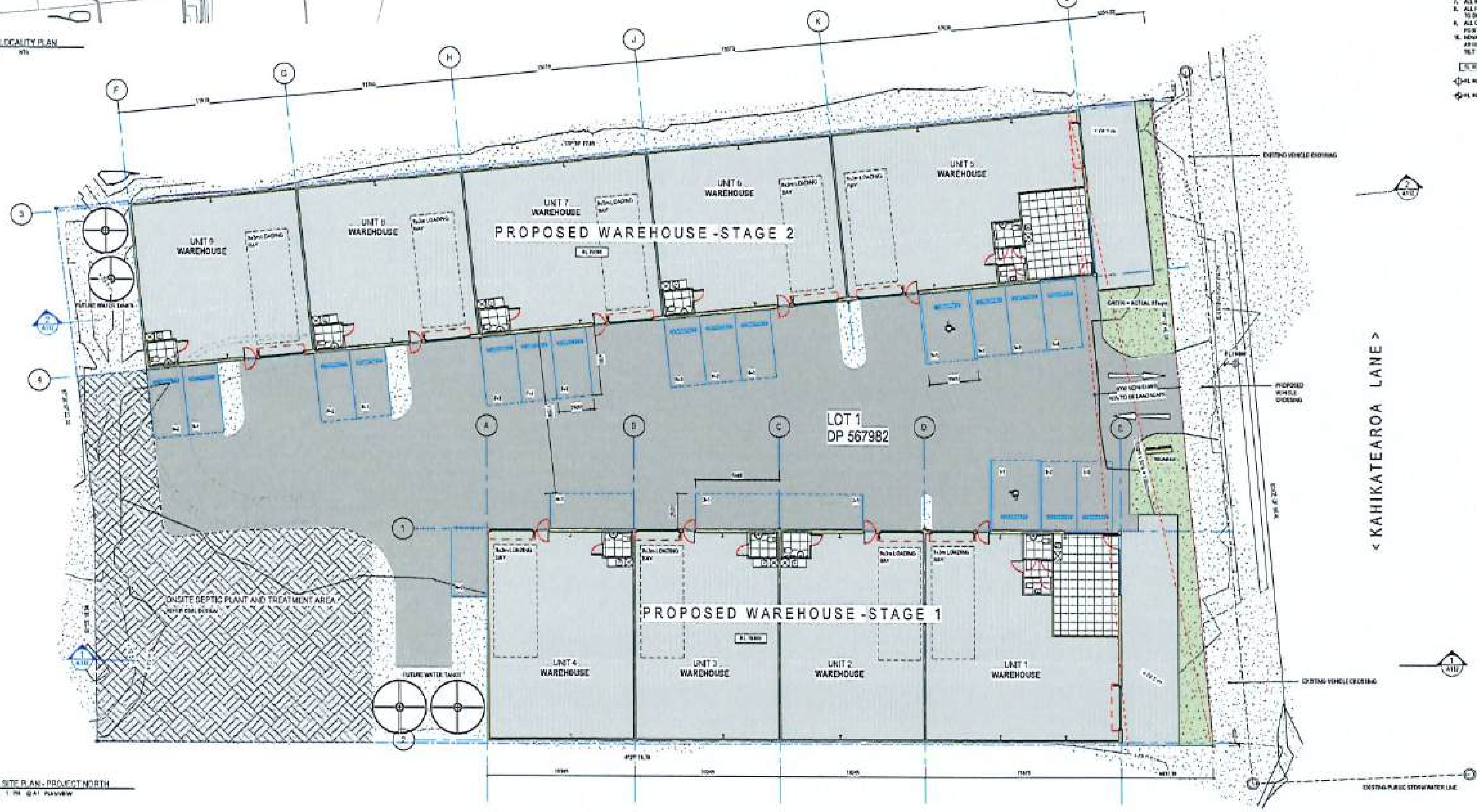
LEGEND SITE

APPELLATION: LOT 1 DP 567982
ADDRESS: 22 KAHIKATEAROA LANE, WAIPAPA
TA: INDUSTRIAL ZONE (FAR NORTH DISTRICT PLAN)

EQ ZONE: ZONE 1
EXPOSURE: ZONE C
WIND REG: A
LEE ZONE: NO
WINDZONE: HIGH (BRANZ)

SUBSTRUCTURAL SUBSTRATE LEVEL
EXISTING SPOT LEVEL
NEW SPOT LEVEL

2 LOCALITY PLAN



1 SITE PLAN - PROJECT NORTH

assemble

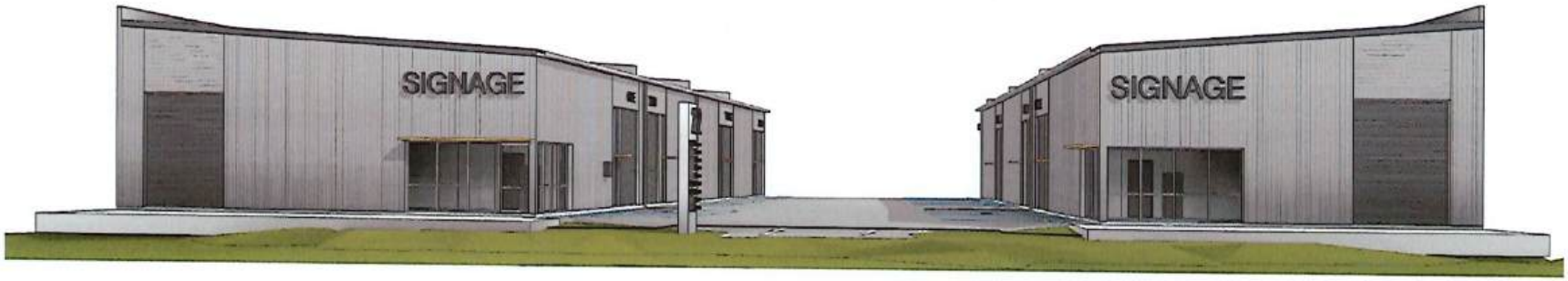
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SITE PLAN

A RESOURCE CONSENT

RESOURCE CONSENT

25063 A003 (A)



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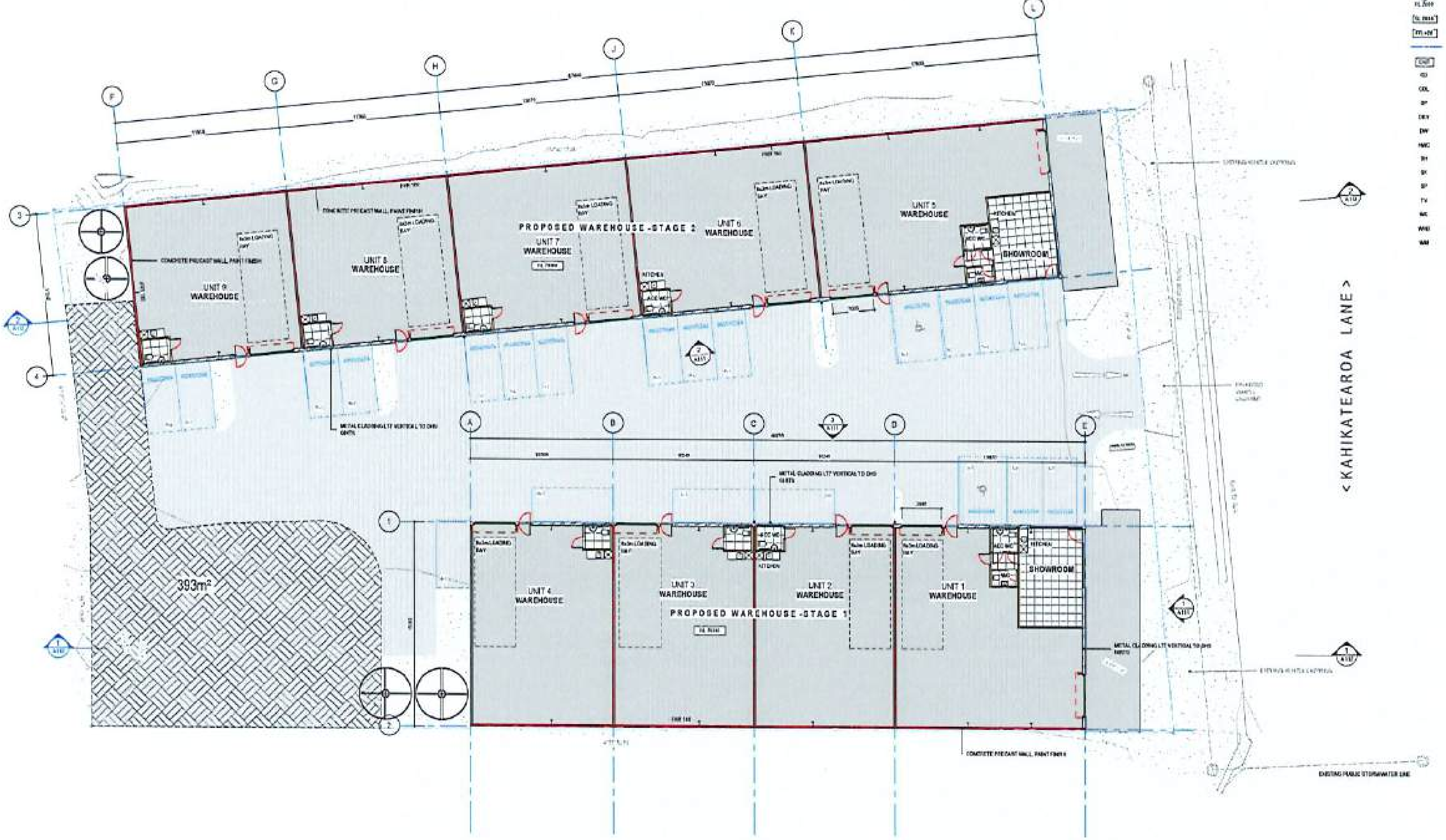
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

3D VIEWS

A RESOURCE CONSENT
REVISION

RESOURCE CONSENT

25063 A005 (A)



LEGEND FLOOR PLANS

1. ALL WORK TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. READ DRAWINGS IN CONJUNCTION WITH ALL RELEVANT CONSULTANTS DRAWINGS AND SPECIFICATIONS.
3. ALL DOWNPIPE & GUTTER SIZES TO COMPLY WITH NZHC E1/AS1.

	KEYNOTE / WALL TYPE
	DOOR REFERENCE, REFER TO INTERNAL DOOR SCHEDULE
	GLAZED PARTITION, REFER TO INTERNAL JOINERY SCHEDULE
	WINDOW REFERENCE, REFER TO EXTERNAL JOINERY SCHEDULE
	EXISTING SPOT LEVEL
	NEW SPOT LEVEL
	SLAB / SUBSTRATE LEVEL
	FINISHED FLOOR LEVEL (ABOVE SLAB)
	BOUNDARY LINE
	EXIT SIGNAGE
CD	CHANNEL DRAIN
COL	STRUCTURAL COLUMN
DP	DOWNPIPE
DRY	DRYER
DW	DISHWASHER
HWC	HOT WATER CYLINDER
SH	SHOWER
SK	SINK
SP	STRUCTURAL POST
TV	TERMINAL VENT
WC	TOILET
WHB	WASH HAND BASIN
WM	WASHING MACHINE

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22 KAHIKATEAROA LANE, WAIPAPA

OVERALL FLOOR REFERENCE AND GRID PLAN

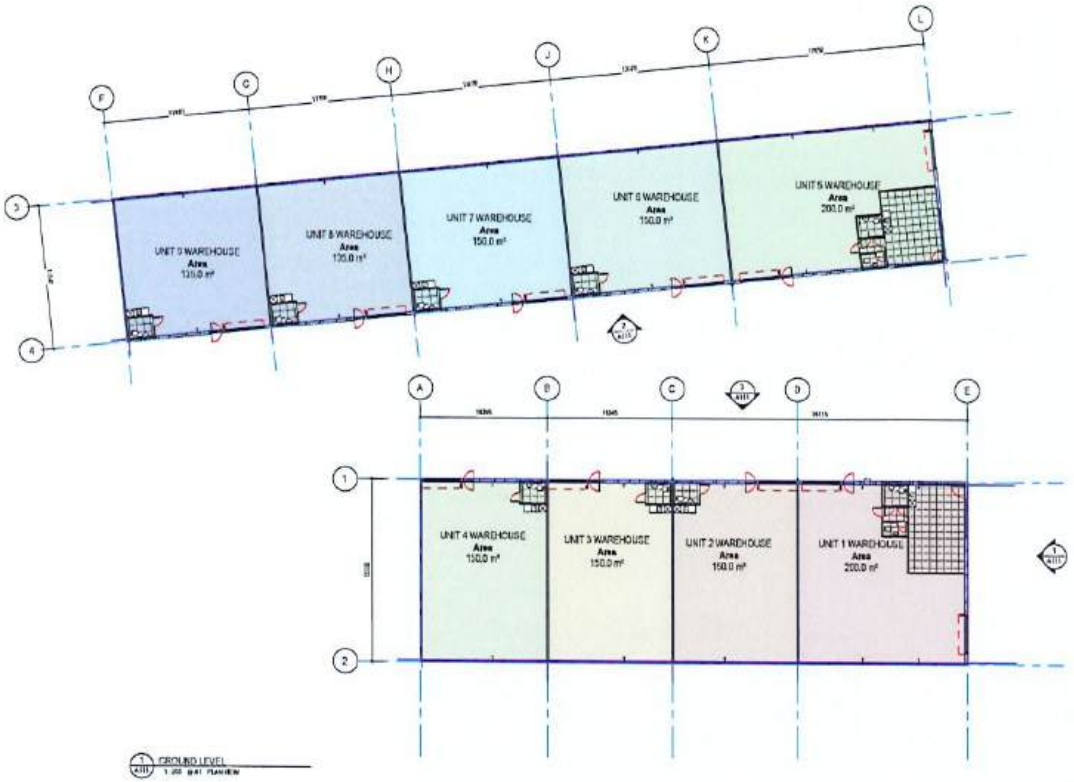
A RESOURCE CONSENT

RESOURCE CONSENT

25063 A101 (A)

LEGEND AREA PLANS

1. AREA CALCULATIONS ARE ADVISORY ONLY AND RELATE TO AN ARCHITECTURAL PRELIMINARY DESIGN STAGE. ALL AREA FIGURES MAY VARY SUBJECT TO FURTHER DEVELOPMENT OF BUILDING STRUCTURE, SERVICES AND FACADE, AND SHOULD NOT BE RELIED UPON.
2. FIGURES ARE FOR REFERENCE ONLY, AND SHOULD BE CHECKED AND VERIFIED BY A LICENSED SURVEYOR.



1 GROUND LEVEL
1 : 200 @ A1 PLAN VIEW

AREAS - BY AREA TYPE

ROOM NAME	AREA
UNIT 1 WAREHOUSE	200.0 m²
UNIT 2 WAREHOUSE	150.0 m²
UNIT 3 WAREHOUSE	150.0 m²
UNIT 4 WAREHOUSE	150.0 m²
UNIT 5 WAREHOUSE	200.0 m²
UNIT 6 WAREHOUSE	150.0 m²
UNIT 7 WAREHOUSE	150.0 m²
UNIT 8 WAREHOUSE	135.0 m²
UNIT 9 WAREHOUSE	135.0 m²

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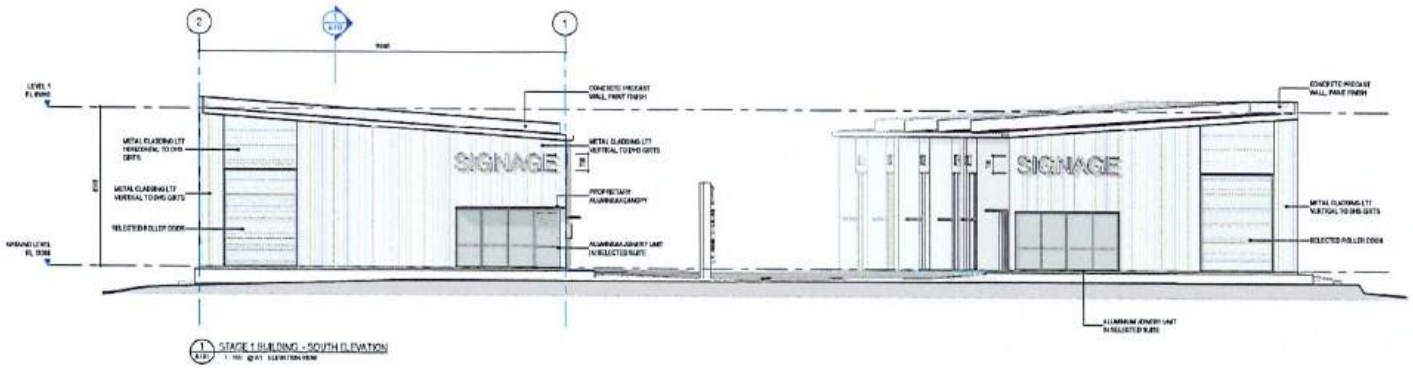
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

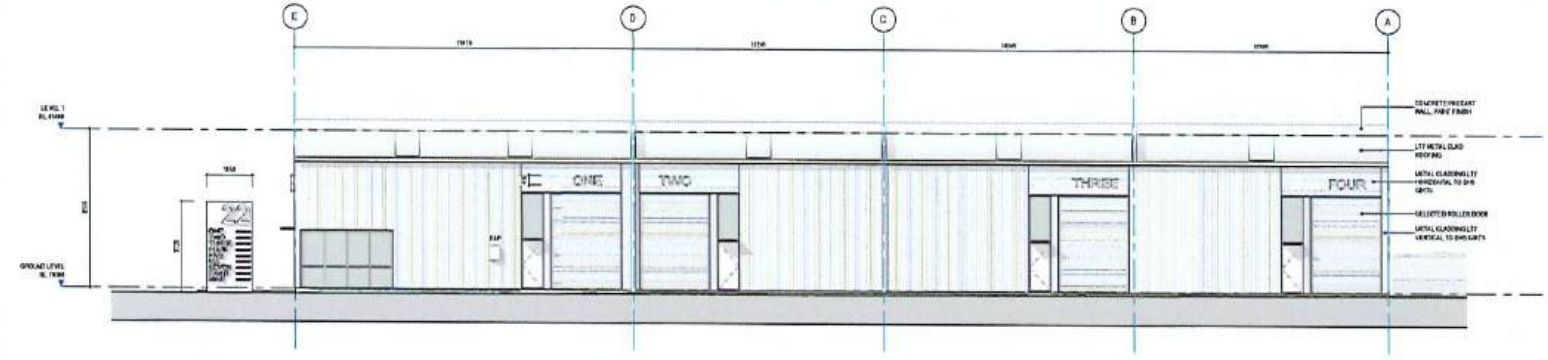
COMMON AREA PLAN

A RESOURCE CONSENT
REVISION
RESOURCE CONSENT
25063 A103 (A)



1 STAGE 1 BUILDING - SOUTH ELEVATION

2 STAGE 2 BUILDING - WEST ELEVATION



3 STAGE 1 BUILDING - EAST ELEVATION

LEGEND ELEVATIONS

1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. READ DRAWINGS IN CONJUNCTION WITH ALL RELEVANT CONSULTANT'S DRAWINGS AND SPECIFICATIONS.
3. ALL MATERIALS DETAILED ARE TO COMPLY WITH THEIR CURRENT MANUFACTURERS SPECIFICATIONS AND ARE TO BE INSTALLED BY APPROVED INSTALLERS IF REQUIRED.
4. ENSURE PARTICULAR CARE IS TAKEN WITH COMPATIBILITY AND SEPARATION OF ALL MATERIALS AND FIXINGS.
5. ENSURE ALL FLASHINGS AND TRIMS ARE COMPATIBLE WITH CLADDING AND ROOFING.
6. READ IN CONJUNCTION WITH ACOUSTICIAN'S CERTIFICATE.
7. READ IN CONJUNCTION WITH NZS 1170.2011, SECTION 4 DURABILITY.

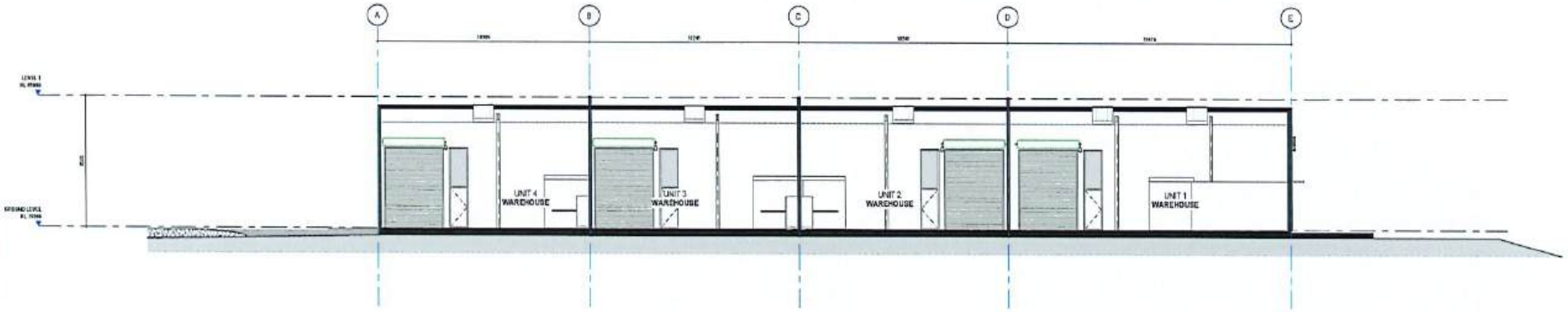
assemble

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

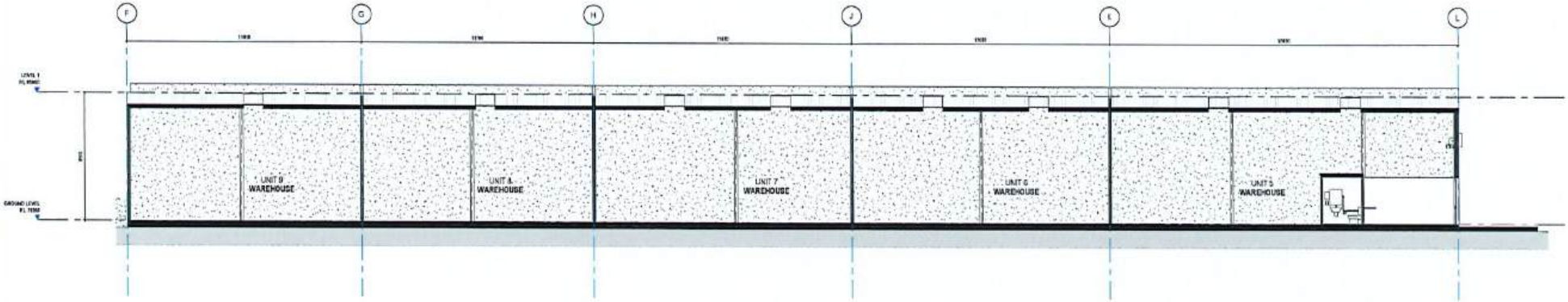
OVERALL SITE ELEVATIONS

A RESOURCE CONSENT 2024-09-23
REVISION DATE
RESOURCE CONSENT

25063 A111 (A)



1 STAGE 1 BUILDING - SITE SECTION
1 : 100 @ A1 SECTION VIEW



2 STAGE 2 BUILDING - SITE SECTION
1 : 100 @ A1 SECTION VIEW

assemble

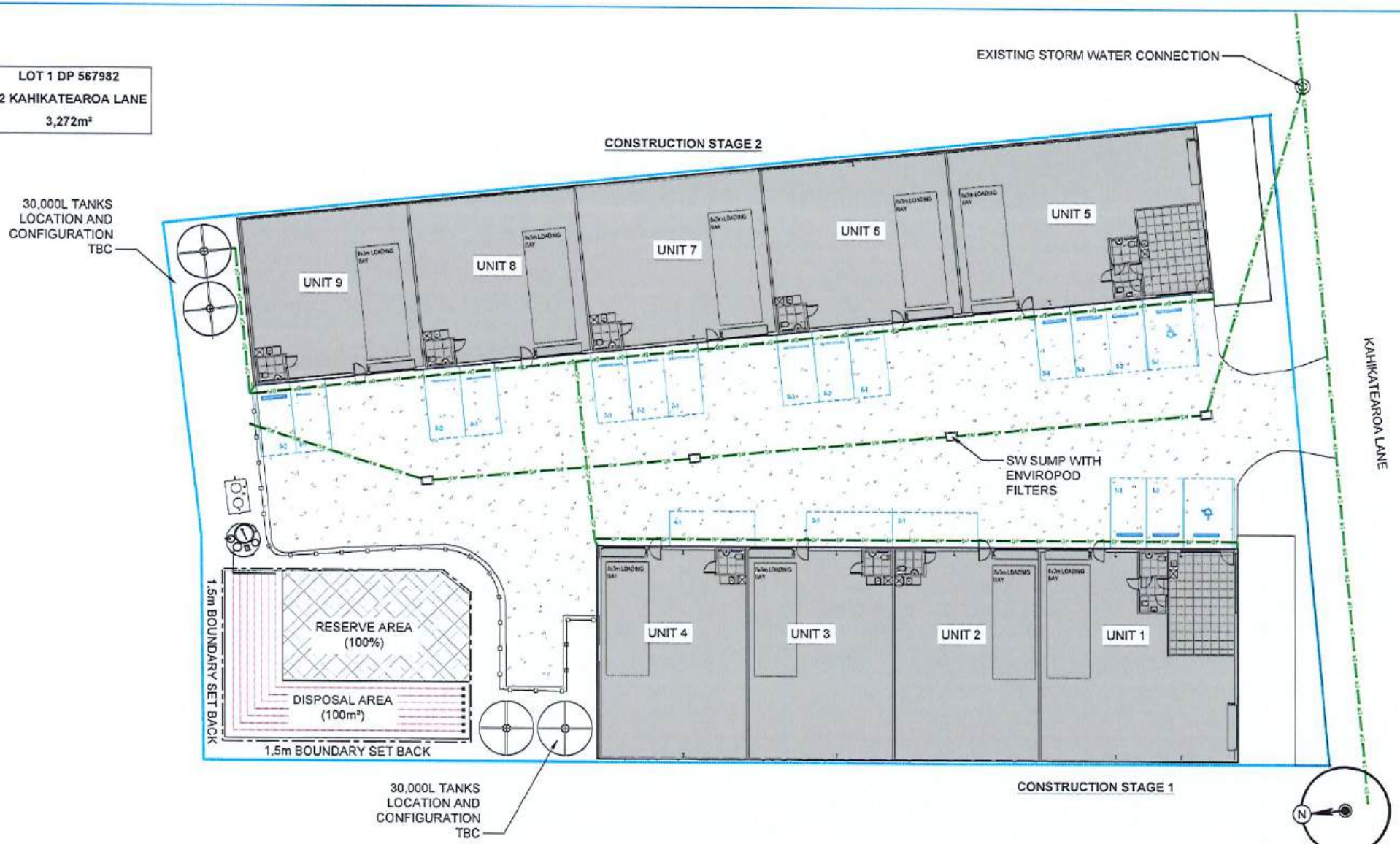
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEARDA LANE, WAIPAPA

OVERALL SITE SECTIONS

A RESOURCE CONSENT
REVISION DATE
RESOURCE CONSENT
25063 A112 (A)

ANNEXURE B – TRINE KEL LTD. CONCEPT DESIGN LAYOUTS AND DETAILS

LOT 1 DP 567982
22 KAHIKATEAROA LANE
3,272m²



ISSUE FOR INFORMATION ONLY

REVISIONS

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00	12/06/25	FINAL DESIGN FOR RC	KM	KK
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.		.	.	.

DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 12/06/25
LOCATION: KERIKERI
REFERENCE: 062

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: CONCEPT SW LAYOUT

SCALE: 1:250 @A3
0m 5m 15m 20m
A3

PROJECT #			AREADISC			SEQUENCE			REVISION	
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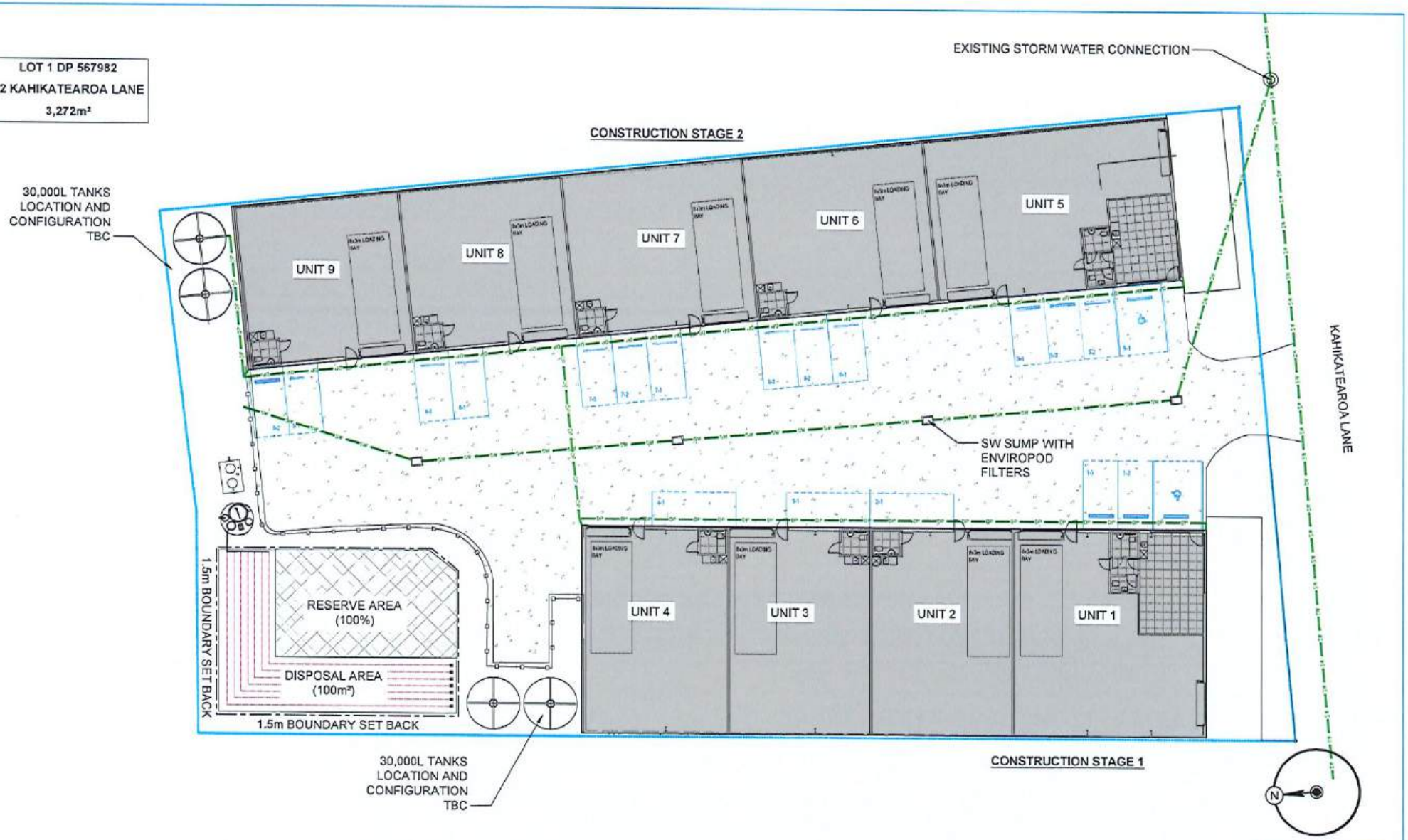
LOT 1 DP 567982
22 KAHIKATEAROA LANE
3,272m²



ISSUE FOR INFORMATION ONLY

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DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 12/05/25
LOCATION: KERIKERI
REFERENCE: 062

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

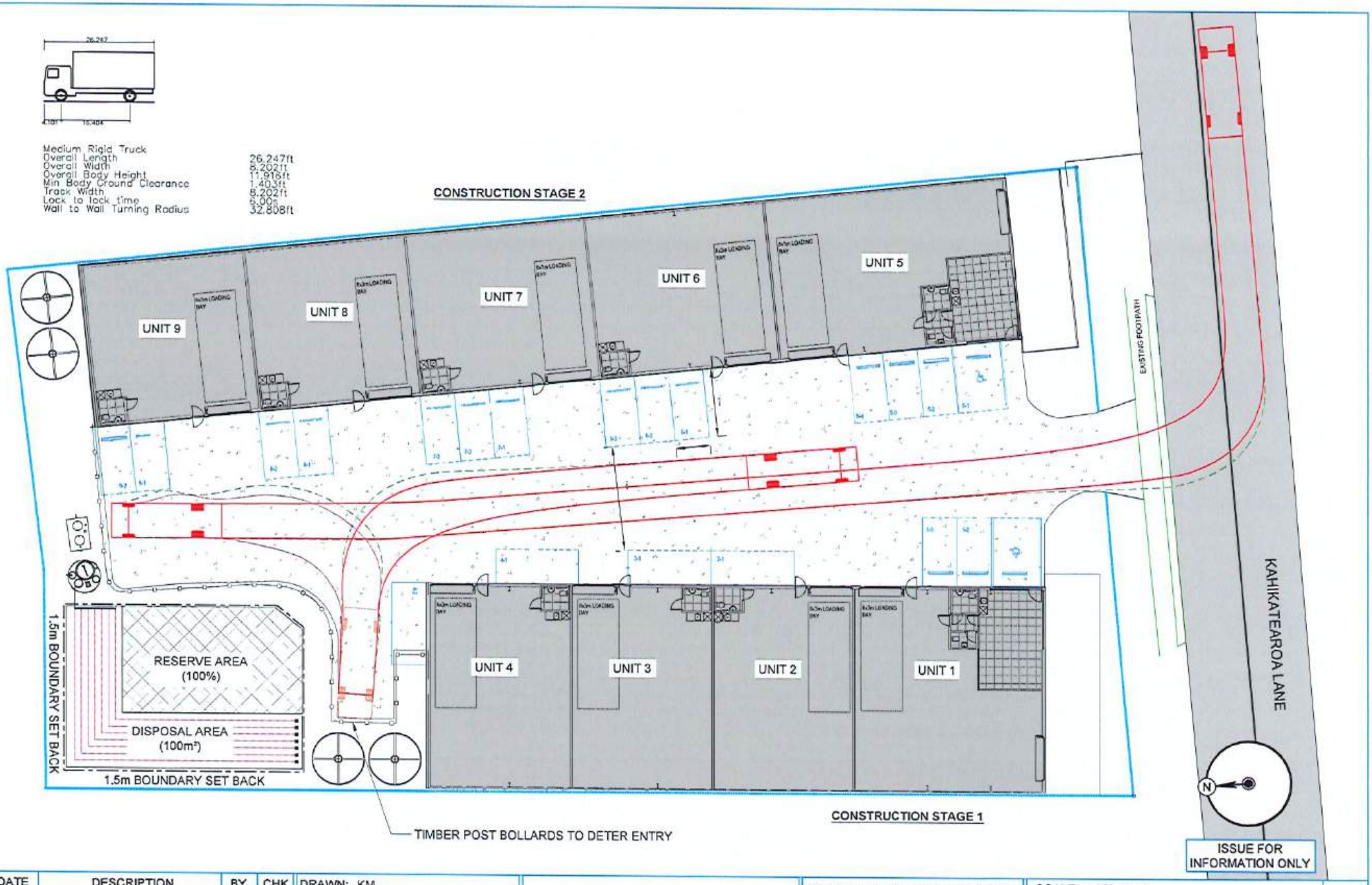
CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: CONCEPT WW LAYOUT

SCALE: 1:250 @A3
0m 5m 15m 20m
A3

PROJECT #			AREADISC			SEQUENCE			REVISION	
0	6	2	0	W	C	1	0	1	0	0

Medium Rigid Truck

Overall Length	26.247ft
Overall Width	8.202ft
Overall Body Height	11.915ft
Min Body Ground Clearance	1.403ft
Track Width	8.202ft
Lock to lock time	6.00s
Wall to Wall Turning Radius	32.808ft



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DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 12/05/25
LOCATION: KERIKERI
REFERENCE: 062

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: VEHICLE TRACKING

SCALE: 1:250 @A3
0m 5m 15m 20m
A3

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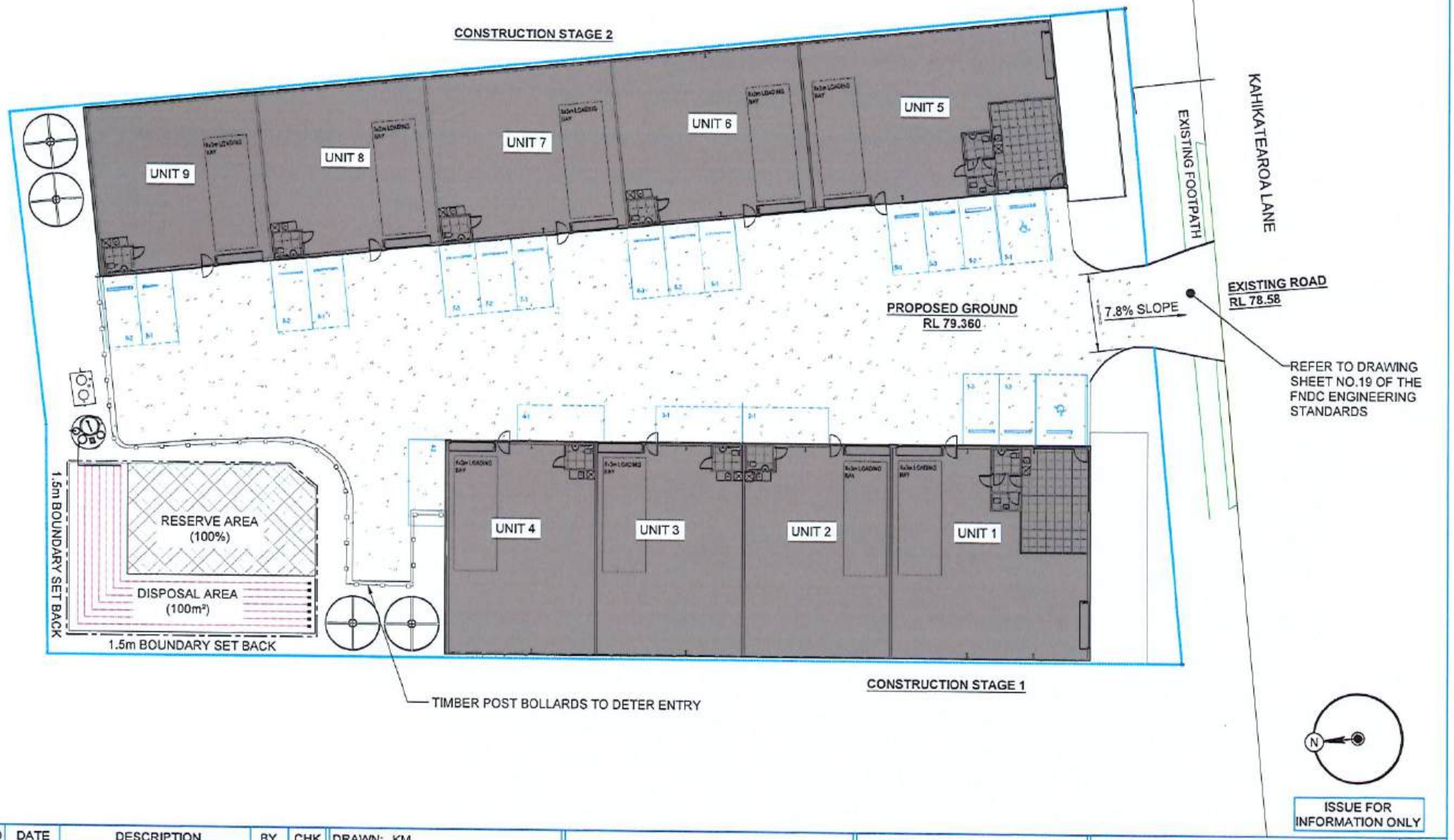

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DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 12/05/25
LOCATION: KERIKERI
REFERENCE: 062

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: VEHICLE CROSSING

SCALE: 1:250 @A3
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A3

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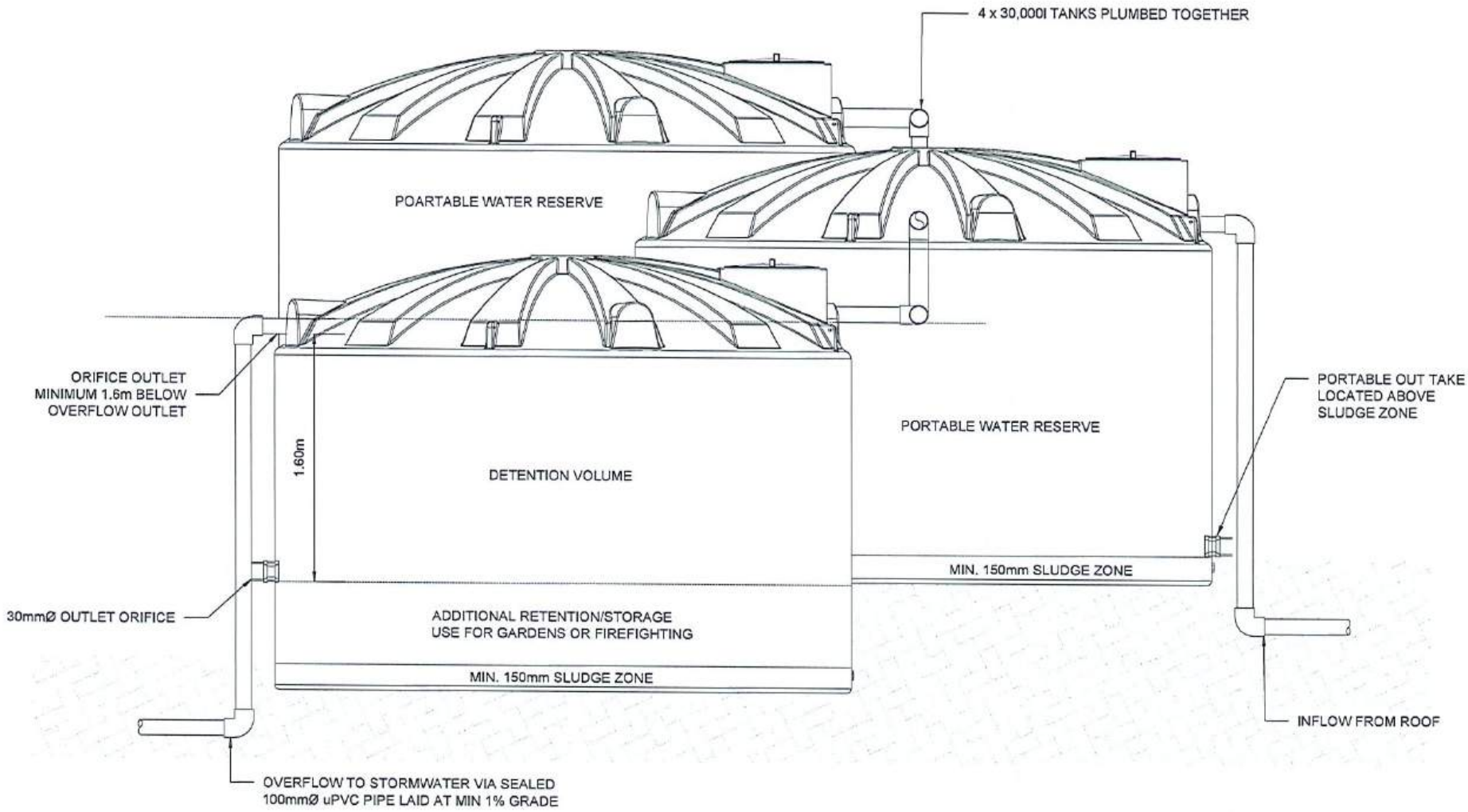

ISSUE FOR INFORMATION ONLY

REVISIONS	NO	DATE	DESCRIPTION	BY	CHK
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DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 12/06/205
LOCATION: KERIKERI
REFERENCE: 062

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: CONCEPT TANK CONFIG.

SCALE: NOT TO SCALE
A3

PROJECT #			AREADISC			SEQUENCE			REVISION	
0	6	2	S	W	C	3	0	0	0	0

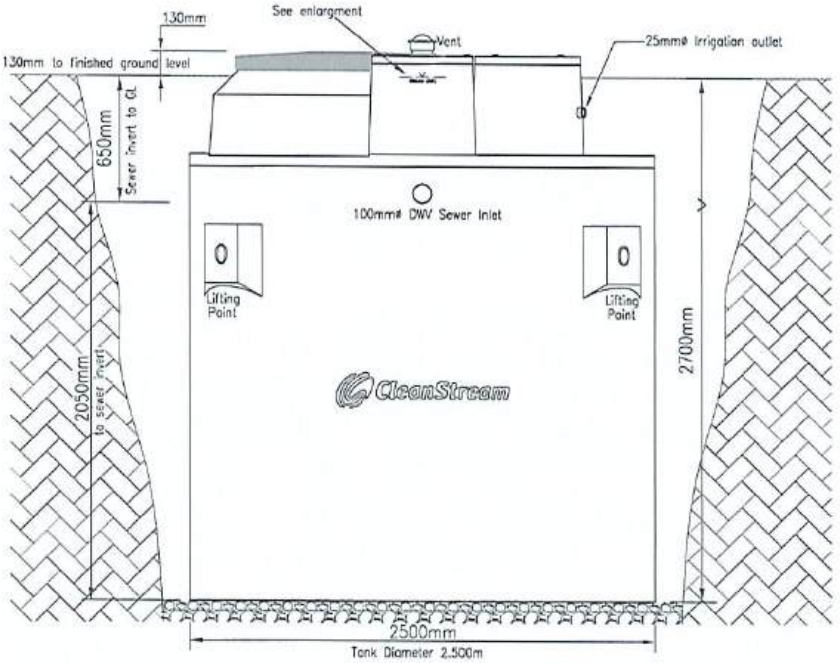
GROUND LEVEL

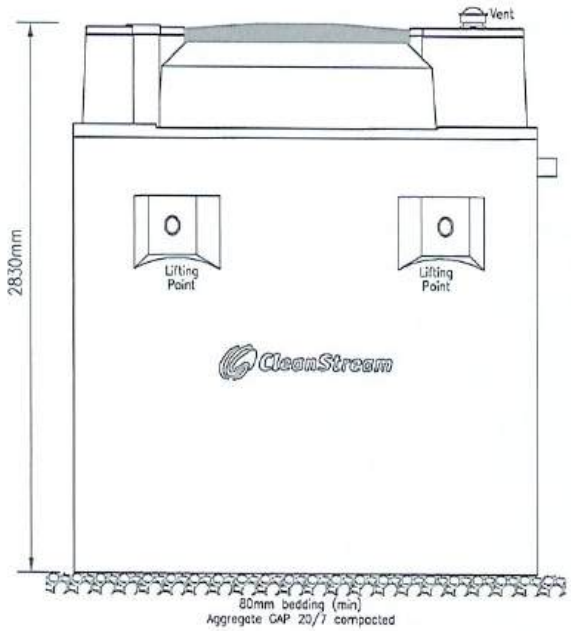
Enlargement
CleanStream must not be installed below this level.

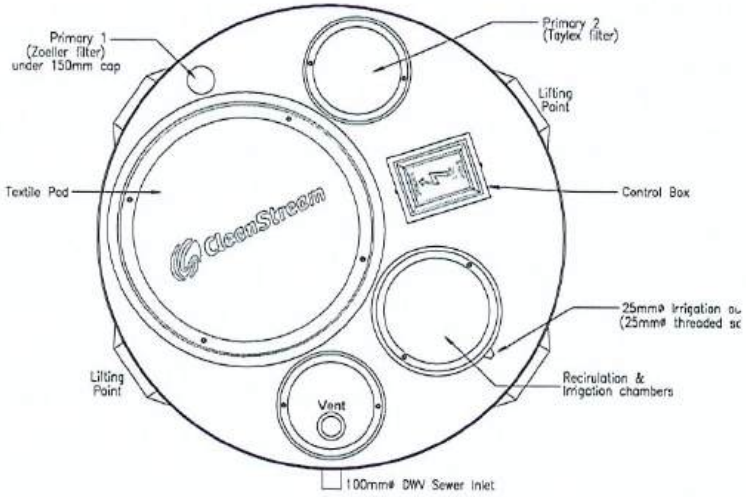
Installation Instructions
Refer to "Installation Manual CleanStream TXR Biofiltration Textile System"

Water filling of chambers
Primary 1 – 3000L
Primary 1 – 3000L
Recirculation – 1500L
Irrigation – 500L

Electrical Instructions
Refer to "Electrical Wiring Instructions for CleanStream TXR Sewage System Controller" located under the control box.







DO NOT SCALE
CONTRACTOR MUST VERIFY
ALL DIMENSIONS ON SITE
BEFORE COMMENCING WORK

DURACRETE
PRECAST TO LAST
T: 0800 387 227
M: 021 951 054
E: gerald@duracrete.co.nz
W: www.duracrete.co.nz

PROJECT:
CleanStream
TXR-1

ISSUE FOR INFORMATION ONLY

REVISIONS	NO	DATE	DESCRIPTION	BY	CHK
	P1	16/05/25	PRELIM DESIGN FOR RC	KM	KK
	00	12/06/25	FINAL DESIGN FOR RC	KM	KK
	.		.	.	.
	.		.	.	.
	.		.	.	.

DRAWN: KM
DESIGNED: KM
CPENG: KK
DATE ISSUED: 12/06/25
LOCATION: KERIKERI
REFERENCE: 062

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

CLIENT: WINDERMERE HOLDINGS LTD
PROJECT: UNIT TITLE SUBDIVISION
TITLE: SEPTIC TANK DETAILS

SCALE: NOT TO SCALE
A3

PROJECT #			AREADISC			SEQUENCE			REVISION	
0	6	2	0	W	C	3	0	1	0	0

ANNEXURE C – ON-SITE EFFLUENT TREATMENT AND DISPOSAL SUPPORTING DOCUMENTS

TERRITORIAL AUTHORITY REQUIREMENTS

In accordance with the FNDC Engineering Standards 2023, all private wastewater systems shall comply with the NRC Regional Plans (or any amendments as applicable) either as permitted activity or by resource consent. An assessment of the proposed Lot 1 system against the PRPN rules has been provided below in ***Table 5***. A detailed design report will be required at Building Consent Stage, once final development proposals are confirmed.

Table 4: Section C.6.1.3 'Other on-site treated domestic wastewater discharge' Permitted activity requirements and explanations

Item	Rule	Complies? Yes/No	Comments
1	The on-site system is designed and constructed in accordance with the Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012), and	Yes	The on-site system has been designed in general accordance (AS/NZS 1547:2012)
2	The volume of wastewater discharged does not exceed two cubic metres per day, and	Yes	1020l per day proposed
3	The discharge is not via a spray irrigation system or deep soakage system, and	Yes	Buried drip line sin raised deep specifically designed garden bed
4	The slope of the disposal area is not greater than 25 degrees, and	Yes	Natural slope of the disposal area = ≤ 3°
5	For wastewater that has received secondary treatment or tertiary treatment, it is discharged via: **a)** a trench or bed system in soil categories 3 to 5 that is designed in accordance with Appendix L of Australian/New Zealand Standard On-Site Domestic Wastewater Management (AS/NZS 1547:2012); or **b)** an irrigation line system that is dose loaded and covered by a minimum of 50 millimetres of topsoil, mulch, or bark, and	Yes	Secondary advanced/tertiary proposed
6	for the discharge of wastewater onto the surface of slopes greater than 10 degrees: **c)** the wastewater, excluding greywater, has received at least secondary treatment, and **d)** the irrigation lines are firmly attached to the disposal area, and **e)** where there is an up-slope catchment that generates stormwater runoff, a diversion system is installed and maintained to divert surface water runoff from the up-slope catchment away from the disposal area, and **f)** a minimum 10 metre buffer area down-slope of the lowest irrigation line is included as part of the disposal area, and	N/A	Natural slope of the disposal area = ≤ 3°

	g) the disposal area is located within existing established vegetation that has at least 80 percent canopy cover, or h) the irrigation lines are covered by a minimum of 100 millimetres of topsoil, mulch, or bark, and		
7	The disposal area and reserve disposal area are situated outside the relevant exclusion areas and setbacks in Table 9: Exclusion areas and setback distances for on-site domestic wastewater systems, and	Yes	See Table 6 for details
8	for septic tank treatment systems, a filter that retains solids greater than 3.5 millimetres in size is fitted on the outlet, and	N/A	N/A
9	the following reserve disposal areas are available at all times: a) one hundred percent of the existing effluent disposal area where the wastewater has received primary treatment or is only comprised of greywater, or b) thirty percent of the existing effluent disposal area where the wastewater has received secondary treatment or tertiary treatment, and	Yes	100% Reserve Area Proposed
10	The on-site system is maintained so that it operates effectively at all times and maintenance is undertaken in accordance with the manufacturer's specifications, and	Yes	Will comply given provided Maintenance recommendations
11	the discharge does not contaminate any groundwater water supply or surface water, and	Yes	Will comply given provided design parameters
12	there is no surface runoff or ponding of wastewater, and	Yes	Will comply given provided design parameters
13	there is no offensive or objectionable odour beyond the property boundary.	Yes	Will comply given provided design parameters

Further to the above, the disposal area and reserve disposal area must be situated outside of the relevant exclusion areas and setbacks in the PRPNs ***Table 9***: Exclusion areas and setback distances for on-site domestic wastewater systems, provided for below in *Table 6*.

Table 5: Exclusion areas and setback distances for on-site domestic wastewater systems based on Table 9 of the PRPN

Feature	Offset Requirements (metres)			Subject Site
	Primary	Secondary	Greywater	
Exclusion Areas				
Floodplain	5% annual exceedance probability	5% annual exceedance probability	5% annual exceedance probability	5% annual exceedance probability
Horizontal Set Back Distances				
Identified **stormwater** flow path (including a formed road with kerb and channel, and water-table drain) that is down-slope of the disposal area	5	5	5	12m
River, lake, stream, pond, dam or natural wetland	20	15	15	>20m
Coastal marine area	20	15	15	Not applicable
Existing water supply bore	20	20	20	>20m
Property boundary	1.5	1.5	1.5	1.5m
Retaining Walls	3	3	3	N.A
Residential Dwelling	3	3	3	N.A
Vertical setback distances				
Winter groundwater table	1.2	0.6	0.6	~2.0m

Given the above, the system to be installed on-site is a Permitted Activity under the PRPN and the FNDC District Plan.

Site specific assessment for resource consent

A site-specific Assessment (SSA) to determine the suitability of wastewater disposal to land has also been carried out by this office using Appendix B ES-SEW1, in accordance with the Site-and-Soil Evaluation Procedures of AS/NZS 1547:2012 (or any amendments as applicable) as stipulated in the FNDCES 2023.

Please refer to *Table 7* below. The SSA provided demonstrates compliance with the permitted activity rules of the NRC Regional Plans for Lot 1, and demonstrates that:

- The site is suitable for the disposal system proposed
- Adequate disposal and reserve area is available

Table 6:FNDC Appendix ES-SEW1

Appendix B ES-SEW1

On-site Wastewater Disposal Investigation

This form is to be read in conjunction with AS/NZS 1547:2012 (or any amendments as applicable), and, in particular with Part 4: Means of Compliance

Part A – Contact Details

1- Applicant

Name: Windermere Holdings Ltd

Property Address: 22 Kahikatearoa Lane, Waipapa

Lot & DP Number: Lot 1 DP 567982

2 – Consultant & Site Evaluator(s)

Name: Keavy Mitchell

Company: Trine Kel Ltd.

Address: Suite 1, 88 Kerikeri Road, Kerikeri

Business Phone: +64 27 275 3457

Mobile of Evaluator: +64 27 275 3457

Email: keavy@trinekel.co.nz

Qualifications: BSc | PGDip | MEngGeol | MEngNZ

SQEP Registered: ☑ Yes ☐ No

Name: Kelvin Kapp

Company: Trine Kel Ltd.

Address: Suit 1, 88 Kerikeri Road, Kerikeri

Business Phone: +64 21 107 0619

Mobile of Evaluator: +64 21 107 0619

Email: kelvin@trinekel.co.nz

Qualifications: CPEng | CMEngNZ | IntPE(NZ)

	FNDC Requirement	Applies to	Comments
1	**Hazard maps/GIS Hazard Layer – Stability**		
☑	Low Instability	all	Assessed as low in Geotechnical Assessment by others.
	Medium Instability		
	High Instability		

2	**GIS hazard layer – effluent on slope stability**		
	Low disposal potential		
	Moderate disposal potential		
☑	High disposal potential	all	Specific design provided to ensure high disposal potential

3	**GIS hazard layer – effluent suitability**		
	Medium unsuitability	n.a	n.a
	High unsuitability	n.a	n.a

4	**GIS hazard layer – flood susceptibility**		
n.a	Is flood susceptible	all	Site has been raised above 1% AEP Flood levels.
n.a	Is partially flood susceptible	all	Site has been raised above 1% AEP Flood levels.

5	**GIS land resources layer - stream**			
Are there streams on or adjacent to land under investigation?	all	Yes	☑	Waipapa River

		No		
6	**GIS land resources layer – aquifers at risk**			
Is land situated over or adjacent to aquifer?		Yes		
		No		unknown
7	**Annual Rainfall**	Average:	1501mm	

Soil category		Structure	Applies to Site(s)	Comments
[1] Gravels and Sands		Structureless (massive)		
[2] Sandy Loams		Weakly Structured		
		Massive		
[3] Loams		High/Moderate structured		
		Weakly structured or massive		
[4] Clay Loams		High/moderate structured	All	Per Subdivision Report/Assessment
	☑	Weakly structured		
		Massive		
[5] Light Clays		Strongly structured		
		Moderately structured		
		Weakly structured or massive		
[6] Medium to Heavy Clays		Strongly structured		
		Moderately structured		
		Weakly structured or massive		

On-Site Evaluation Continued:

	Details:	Applies to site(s)
1	**Flooding potential to proposed field and reserve field**	
☑	Fields will not flood, or	All
	Fields will flood in	
	20% AEP event	

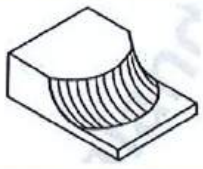
	5% AEP event	
	1% AEP even	
2	**Surface water separation to proposed field and reserve field**	
☑	Main/reserve disposal field comply with NRC rules	All
	Main/reserve disposal field do not comply with NRC rules	
3	**Surface water separation to proposed field and reserve field**	
☑	Main/reserve disposal field comply with NRC rules	All
	Main/reserve disposal field do not comply with NRC rules	
4	**Winter ground water separation to proposed field and reserve field**	
☑	Main and reserve disposal field comply with NRC rules	All
	Main and reserve disposal field do NOT comply with NRC rules	
5	**Slope of ground of proposed field and reserve field**	

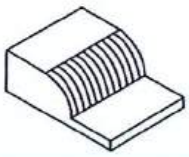
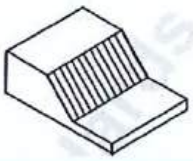
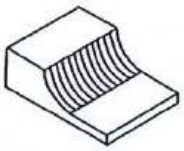
Description:

The site is relatively flat with a gentle slope generally falling northwest to the southeast. Natural site levels range from approximately RL 78.3 m to RL 78.9 m. Minor localised depressions were observed during earlier site walkovers, consistent with stormwater sheet flow patterns. Earthworks have been undertaken to build up platform levels and achieve adequate freeboard above the 1% AEP flood level, and are subject to further refinements based on the final development proposals.

Spot levels and design RLs from the previous subdivision civil plans (Haigh Workman DWG No. 22 084) confirm the building platform and driveway levels are generally around RL 78.90–79.10 m, with preload aggregates placed and to be later refined to support the future building platform.

6	**Shape of ground of proposed field and reserve field: Linear Planar**

		
Waxing Divergent	**Linear Divergent**	**Waning Divergent**
Best water shedding surface, accelerates and spread run-off	Good water shedding surface, spreads run-off, but no acceleration	Waning slope slows run-off but divergence aids in spreading run-off out

		
Waxing Planar	**Linear Planar**	**Waning Planar**
Increasing slope angle aids run-off, but no spreading; good drainage	Natural drainage less effective with distance from crest; no spreading or acceleration; access site	Becomes progressively less well drained down slope, slows run-off; poor
		
Waxing Convergent	**Linear Convergent**	**Waning Convergent**
Good drainage, but may concentrate run-on; run-off is accelerated; use bunds	Relatively poor drainable expected; improve by cut-off drains and bunds	Most prone to waterlogging; avoid if possible; otherwise improve drainage

Comments	The site is flat.

7	Details	Applies to site(s)
	Intended water supply source:	
	Public Supply	
☑	Rainwater	All
	Bore	

8 Proposed method of disposal and recommended Daily Loading rate (DLR)

Description:

Advanced Secondary level treated effluent will be discharged to a retained multilayered multi-functional evapotranspiration disposal bed. The bed includes plant medium, a large sand filter layer with geotextile discharge control to slow effluent percolation into the gravel platform below, with a subsurface soakage trench that can re-direct any overrun back to a buffer tank in times of unexpected peak loading, or during long periods of inclement weather.

Treated effluent will be discharged to a purpose-built disposal garden, located within a retained, raised landscape bed at the rear of the site. The system will function as both a disposal field and an aesthetic, planted feature. The disposal field incorporates the following components:

- 20–40 mm drainage aggregate soakage bed, encapsulated in plant medium & overlaying sand filtration layers (PAP7 or similar and finer clean builders mix at base)

- Dripperline distribution system, with lines spaced at 0.5 m intervals and emitters at 0.5 m spacing
- Hydrophilic vegetation, planted above the disposal field in accordance with TP58 and AS/NZS1547:2012 to enhance evapotranspiration and nutrient uptake
- Timber or concrete retaining structures, retaining the rear and sides of the field to form a stable garden platform
- 26° surface grade, directing treated effluent flow and minimising surface saturation risk
- Flow-balancing (e.g. timed dosing or demand dosing) via time-controlled or demand-initiated submersible pump to ensure even application to the disposal field and avoid surges.

The design provides a high-performance multi-treatment approach that utilised biological uptake and evapotranspiration, while maintaining required vertical and horizontal separation to groundwater, structures, and boundary.

The design DLR will be approximately 10mm/m²/day but the receiving bed is capable of up to double that loading.

Peak loading factored in:

Unit	Use Type	Size (m²)	Staff Estimate (30l pp/day)	Visitors/Customers (15l pp/day)	Flow (L/day)
Unit 1	**Commercial tenancy (front)	200	4 staff	5/day	195
Unit 2	Trade/warehouse	100–120	3 staff	-	90
Unit 3	Trade/warehouse	100–120	3 staff	-	90
Unit 4	Trade/warehouse	100–120	3 staff	-	90
Unit 5	**Commercial tenancy (front)	200	4 staff	5/day	195
Unit 6	Warehouse/light industrial	135	3 staff	-	90
Unit 7	Warehouse/light industrial	135	3 staff	-	90
Unit 8	**Light commercial office/workshop	135	2 staff	2/day	90
Unit 9	**Light commercial office/workshop	135	2 staff	2/day	90

***All items specified above are preliminary and based off the allowance of commercial activity at the subject site. If commercial premises are unable to be granted due to consenting constraints, the daily wastewater production at the site will be drastically less than given above, ensuring the design presented for consent represents the worst-case scenario.*

- Total Daily Max Peak Flow: 1,020 L/day

Comments	See above

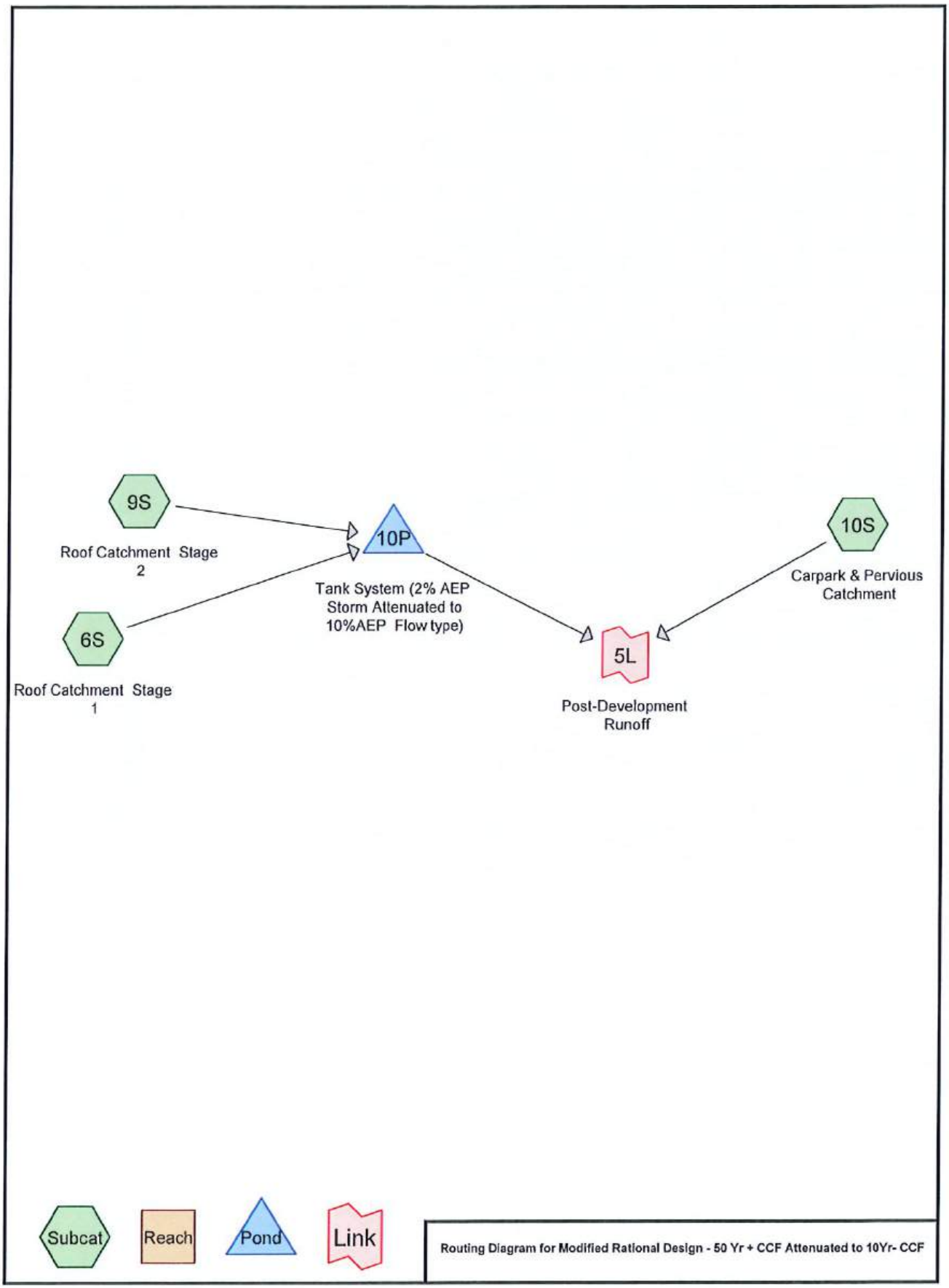
9	Site exposure (refer note 7 below)	Description	Applies to Site(s)
Site(s) aspect		North	All
Pre-dominant wind direction		North	All
Presence of shelter belts		-	-
Presence of topographical features or structures		-	-

10	**Proximity of water bores (include adjacent to properties)**
Not within 20m	
11	**Visible evidence of slips / instability**
None	
12	**Total suitable area available for type of effluent disposal proposed (including reserve area)**
100%	
13	**Setback areas proposed (if any)**
All Setbacks are met on both allotments per PRPN Requirements	

Notes:

1. If the FNDC hazard maps/GIS indicate a flooding susceptibility on the site being evaluated, an on -site evaluation is to be carried out to determine the effects from 20%, 5% and 1% AEP storm events. This evaluation is to include all calculations to substantiate conclusions drawn. If necessary, include a detailed contour plan and photos.
2. NRC Water & Soil plan defines surface water as 'All water, flowing or not, above the ground. It includes water in continually or intermittently flowing rivers, artificial watercourses, lakes and wetlands, and water impounded by structures such as dams or weirs but does not include water while in pipes, tanks, cisterns, nor water within the Coastal Marine Area'. By this definition, separation (complying with NRC rules) is to be maintained by both the proposed disposal and reserve areas from any overland flow paths and/or swale drains etc. or R/C will be required from NRC. Surface water is to be clearly marked on each site plan, showing the extent of a 1% AEP storm event, and detailing separation distances to main/reserve disposal areas.
3. Positions of test borehole/s to be shown and bore logs to be provided. Separation (complying with NRC rules) is to be maintained by both the proposed disposal and reserve areas from winter ground water level or R/C will be required from NRC. If the investigation is done outside of the winter period, allowance is to be made in determining the likely winter level.
4. Slopes of ground are to be compared with those recommended maximums for type of system proposed (refer Appendix 4.2B AS/NZS 1547:2012). Designs exceeding those maximums will require specific design to justify the proposal and may also need Resource Consent from NRC.
5. Shape of ground is important as it will determine whether there is potential for concentrated overland flows from the upper slopes and also if effluent might be concentrated at base of slope if leeching occurs. Refer Figure 4.1B2 AS/NZS 1547:2012.
6. The proposed system (for residential developments) should be sized to accommodate an average 3-bedroom house with 5 people. Sites in holiday areas need to take peak loading into effect in determining daily volumes. The design must state what DLR was used to determine area necessary (including reserve area). If ground conditions are marginal for type of disposal proposed, then a soil permeability test utilising the constant head method is to be carried out across the proposed disposal area. Refer Appendix 4.1F AS/NZS 1547:2012.
7. The site aspect is important as a north-facing site that is not sheltered from wind and sun by shelterbelts or other topographical features or structures will perform far better than a south-facing site on the lee of a hill that is shaded from wind and sun etc.
8. If any effluent disposal area (including any reserve area) proposed has or is adjacent to areas that show signs of instability, then a full report from a CPEng (Geotech) will be required to justify the viability of the area for effluent disposal.
9. If there are any water bores on the subject property or adjacent properties, then a site plan will be required showing bore positions in relation to any proposed effluent field(s).
10. If setback areas are proposed to mitigate effects, the extent and position/s need to be shown on a site plan

ANNEXURE D – CONCEPT STORMWATER CALCULATIONS


9S
Roof Catchment Stage 2
6S
Roof Catchment Stage 1
10P
Tank System (2% AEP Storm Attenuated to 10%AEP Flow type)
10S
Carpark & Pervious Catchment
5L
Post-Development Runoff
Subcat
Reach
Pond
Link
Routing Diagram for Modified Rational Design - 50 Yr + CCF Attenuated to 10Yr- CCF

Modified Rational Design - 50 Yr + CCF Attenuated to 10Yr- CCF

Area Listing (selected nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
1,070.0	0.90	Paved parking, HSG D (10S)
612.0	0.60	Pervious >75% Grass cover, Good, HSG D (10S)
1,480.0	0.90	Roof Area (6S, 9S)
110.0	0.90	Unit 1 & 2 Outdoor Paved Areas (10S)
3,272.0	**0.84**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-meters)	Soil Group	Subcatchment Numbers
0.0	HSG A	
0.0	HSG B	
0.0	HSG C	
1,682.0	HSG D	10S
1,590.0	Other	6S, 9S, 10S
3,272.0		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-meters)	HSG-B (sq-meters)	HSG-C (sq-meters)	HSG-D (sq-meters)	Other (sq-meters)	Total (sq-meters)	Ground Cover
0.0	0.0	0.0	1,070.0	0.0	1,070.0	Paved parking
0.0	0.0	0.0	612.0	0.0	612.0	Pervious >75% Grass cover, Good
0.0	0.0	0.0	0.0	1,480.0	1,480.0	Roof Area
0.0	0.0	0.0	0.0	110.0	110.0	Unit 1 & 2 Outdoor Paved Areas
0.0	**0.0**	**0.0**	**1,682.0**	**1,590.0**	**3,272.0**	**TOTAL AREA**

Time span=0.00-6.00 hrs, dt=0.01 hrs, 601 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 6S: Roof Catchment Runoff Area=0.0680 ha 0.00% Impervious Runoff Depth=24 mm
Tc=10.0 min C=0.90 Runoff=26.66 l/s 16.3 m³

Subcatchment 9S: Roof Catchment Runoff Area=0.0800 ha 0.00% Impervious Runoff Depth=24 mm
Tc=10.0 min C=0.90 Runoff=31.36 l/s 19.1 m³

Subcatchment 10S: Carpark & Pervious Runoff Area=0.1792 ha 0.00% Impervious Runoff Depth=21 mm
Tc=10.0 min C=0.80 Runoff=62.44 l/s 38.1 m³

Pond 10P: Tank System (2% AEP Storm Peak Elev=1.543 m Storage=33.2 m³ Inflow=58.02 l/s 35.4 m³
Outflow=2.96 l/s 35.1 m³

Link 5L: Post-Development Runoff Inflow=64.58 l/s 73.3 m³
Primary=64.58 l/s 73.3 m³

Total Runoff Area = 3,272.0 m² Runoff Volume = 73.5 m³ Average Runoff Depth = 22 mm
100.00% Pervious = 3,272.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 9S: Roof Catchment Stage 2

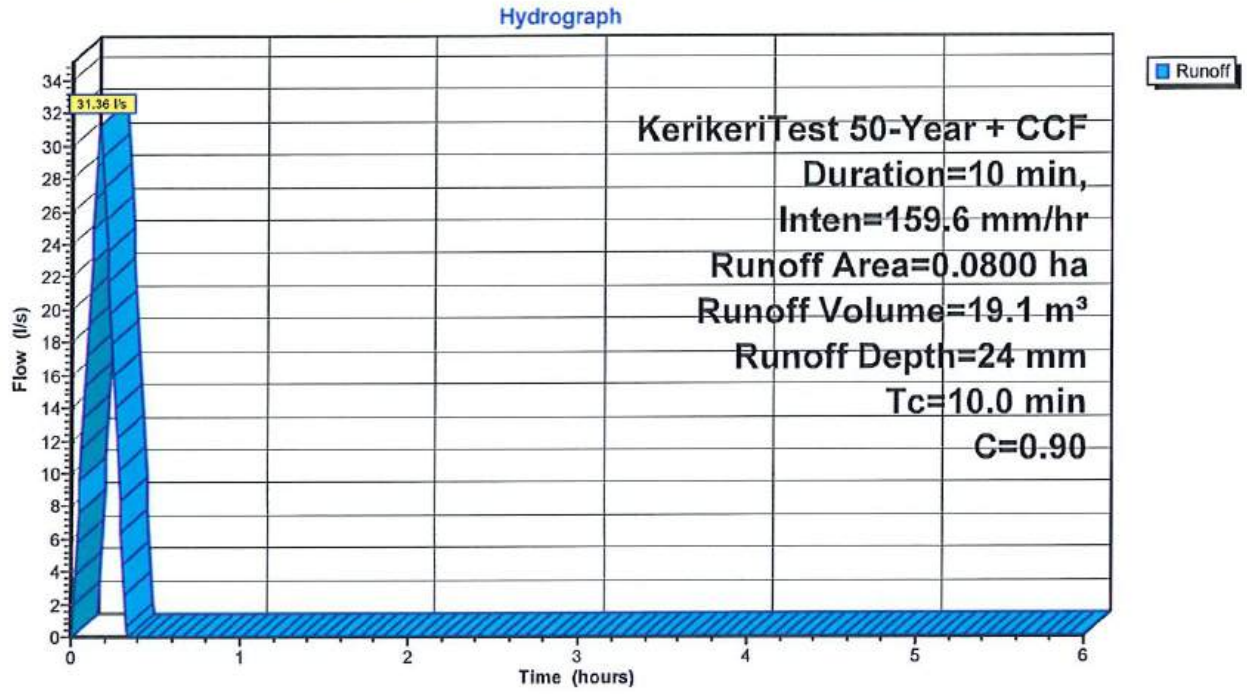
Runoff = 31.36 l/s @ 0.17 hrs, Volume= 19.1 m³, Depth= 24 mm
Routed to Pond 10P : Tank System (2% AEP Storm Attenuated to 10%AEP Flow type)

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
KerikeriTest 50-Year + CCF Duration=10 min, Inten=159.6 mm/hr

Area (ha)	C	Description
0.0800	0.90	Roof Area
0.0800		100.00% Pervious Area

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

Subcatchment 9S: Roof Catchment Stage 2



Summary for Subcatchment 10S: Carpark & Pervious Catchment

Unattenuated Areas

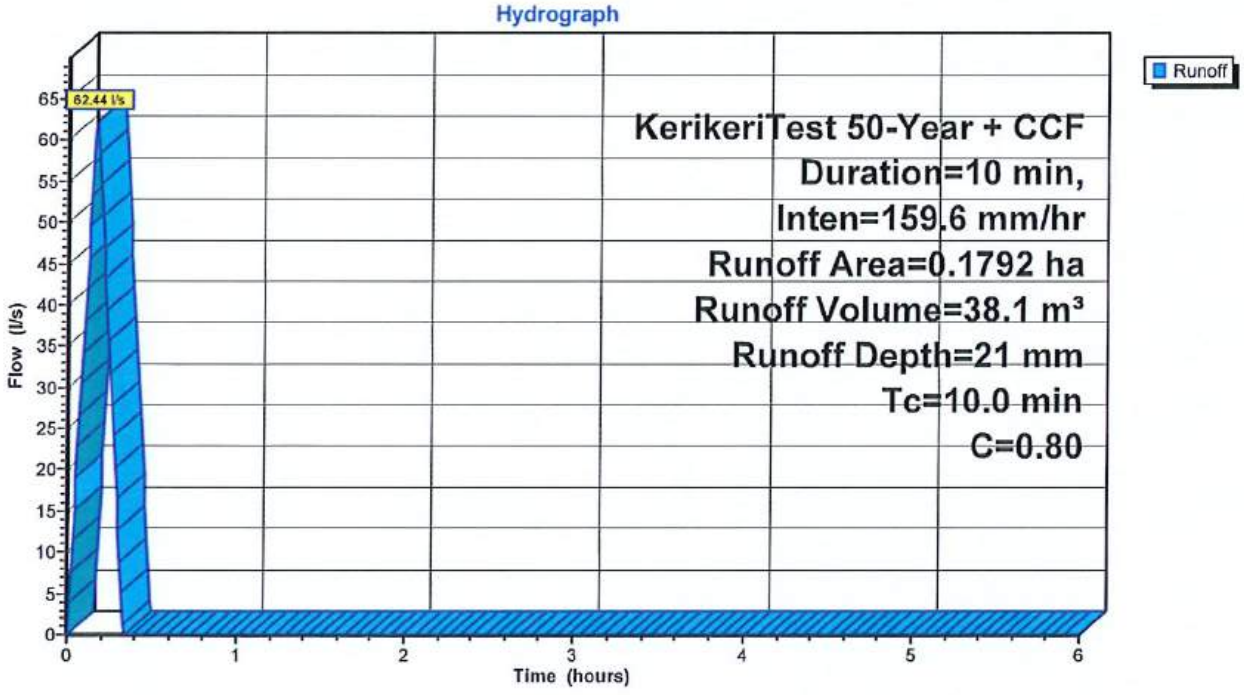
Runoff = 62.44 l/s @ 0.17 hrs, Volume= 38.1 m³, Depth= 21 mm
Routed to Link 5L : Post-Development Runoff

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
KerikeriTest 50-Year + CCF Duration=10 min, Inten=159.6 mm/hr

Area (ha)	C	Description
0.1070	0.90	Paved parking, HSG D
0.0110	0.90	Unit 1 & 2 Outdoor Paved Areas
0.0612	0.60	Pervious >75% Grass cover, Good, HSG D
0.1792	0.80	Weighted Average
0.1792		100.00% Pervious Area

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

Subcatchment 10S: Carpark & Pervious Catchment



Summary for Pond 10P: Tank System (2% AEP Storm Attenuated to 10%AEP Flow type)

Inflow Area = 1,480.0 m², 0.00% Impervious, Inflow Depth = 24 mm for 50-Year + CCF event
Inflow = 58.02 l/s @ 0.17 hrs, Volume= 35.4 m³
Outflow = 2.96 l/s @ 0.32 hrs, Volume= 35.1 m³, Atten= 95%, Lag= 9.4 min
Primary = 2.96 l/s @ 0.32 hrs, Volume= 35.1 m³
Routed to Link 5L : Post-Development Runoff

Routing by Dyn-Stor-Ind method, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs
Peak Elev= 1.543 m @ 0.32 hrs Surf.Area= 21.5 m² Storage= 33.2 m³

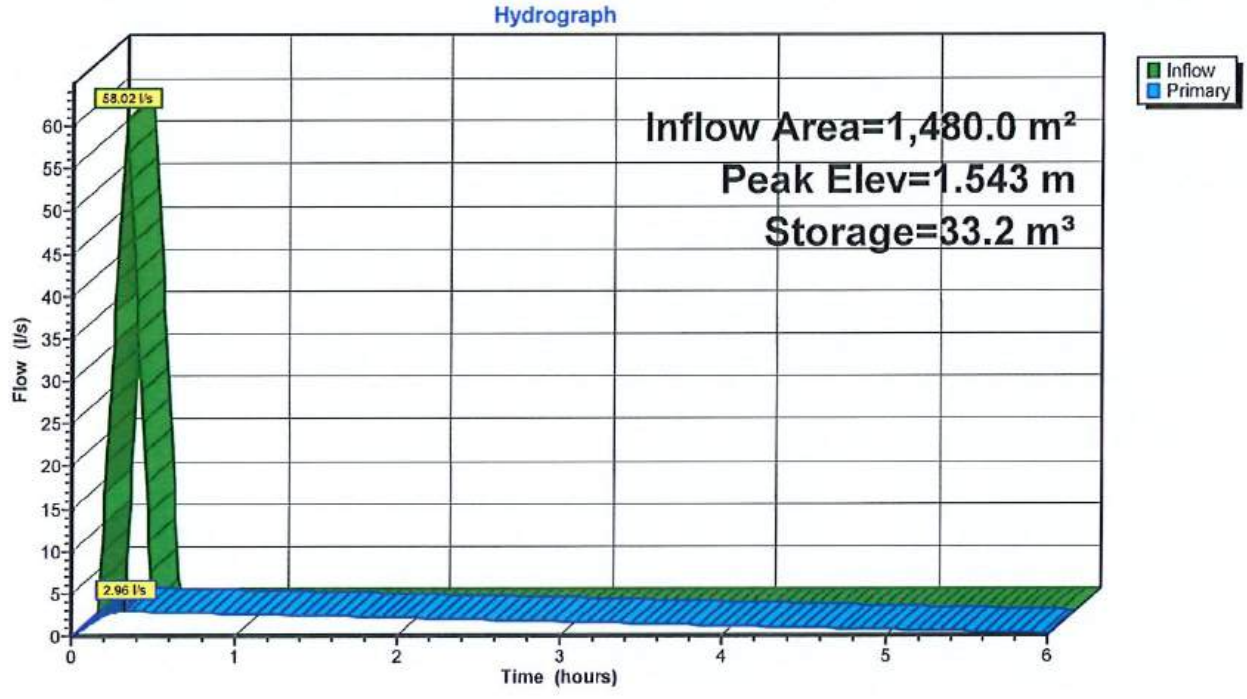
Plug-Flow detention time= 124.5 min calculated for 35.1 m³ (99% of inflow)
Center-of-Mass det. time= 124.5 min (134.5 - 10.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	75.3 m³	**3.70 mD x 3.50 mH Vertical Cone/Cylinder** x 2

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**30 mm Horiz. Orifice/Grate** C= 0.760

Primary OutFlow Max=2.96 l/s @ 0.32 hrs HW=1.543 m TW=0.000 m (Dynamic Tailwater)
↑**1=Orifice/Grate** (Orifice Controls 2.96 l/s @ 4.18 m/s)

Pond 10P: Tank System (2% AEP Storm Attenuated to 10%AEP Flow type)

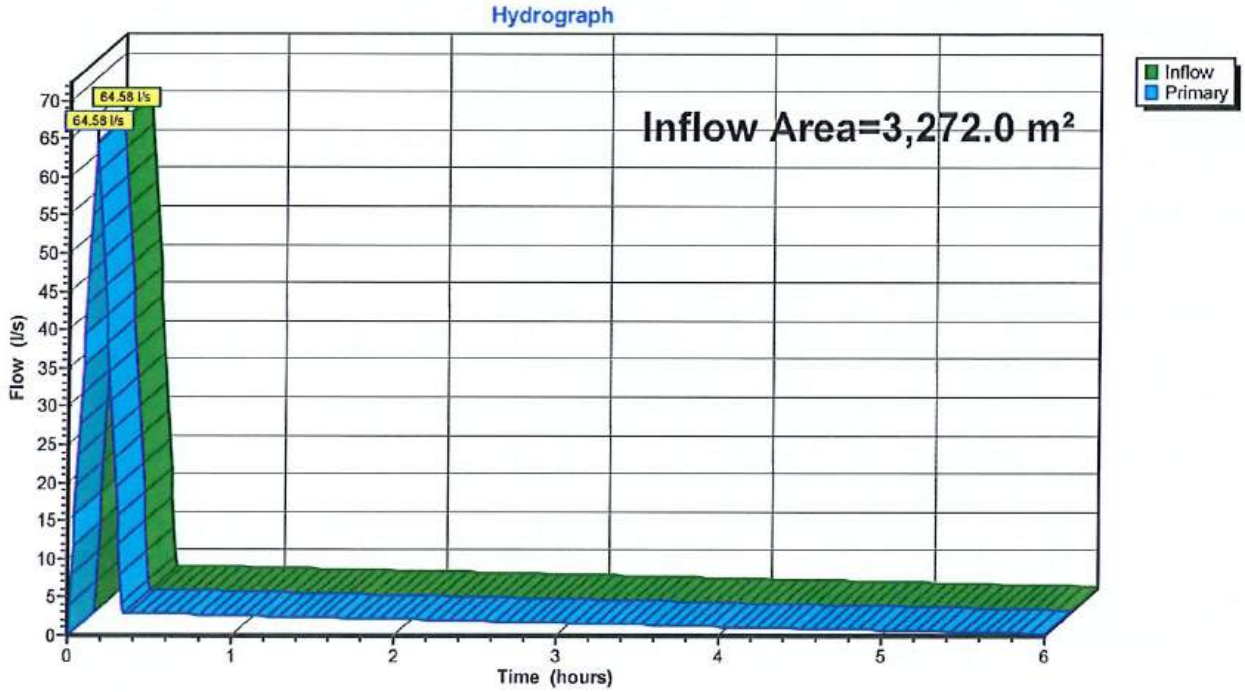


Summary for Link 5L: Post-Development Runoff

Inflow Area = 3,272.0 m², 0.00% Impervious, Inflow Depth > 22 mm for 50-Year + CCF event
Inflow = 64.58 l/s @ 0.17 hrs, Volume= 73.3 m³
Primary = 64.58 l/s @ 0.17 hrs, Volume= 73.3 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-6.00 hrs, dt= 0.01 hrs

Link 5L: Post-Development Runoff



ANNEXURE E – NRC FLOOD REPORT

Flood Level Report

Northland REGIONAL COUNCIL
Te Kaunihera ā rohe o Te Taitokerau

Parcel ID: 8382791

Title: 1019559

Appellation: Lot 1 DP 567982

Survey Area: 3,265 m²

Catchment Name(s)

Kerikeri & Waipapa

Date Exported: 1/05/2025

Report Reference: 20250430_080817

Useful Flood Information Definitions

Annual Exceedance Probability (AEP) - The probability of a flood event of a given size occurring in any one year, usually expressed as a percentage annual chance.

1% AEP - A flood of this size or larger has a 1 in 100 chance or a 1% probability of occurring in any year.
2% AEP - A flood of this size or larger has a 1 in 50 chance or a 2% probability of occurring in any year.
5% AEP - A flood of this size or larger has a 1 in 20 chance or a 5% probability of occurring in any year.
10% AEP - A flood of this size or larger has a 1 in 10 chance or a 10% probability of occurring in any year.

NZVD2016 - New Zealand Vertical Datum - The reference level used in our flood models to define ground level.
Flood Levels - Flood levels are used from our modelled flood level rasters. The flood levels are calculated above NZVD 2016 Datum.
Climate Change (CC) - NZCPS (2010) requires that the identification of coastal hazards includes consideration of sea level rise over at least a 100-year planning period. Climate change impacts, such as increased rain intensity, have been included in the flood scenarios. You can read more about the Climate Change forecasts included in each flood model in the technical reports on the NRC website.
Mean high water spring (MHWS) - describes the highest level that spring tides reach, on average.

Coastal Flood Hazard Zones (CFHZ)

Coastal flood hazard zones are derived using a range of data including tide gauge analysis, wind and wave data and models, and use empirical calculations to estimate extreme water levels around the coastline. The calculations include projected sea level rise scenarios based on the latest Ministry for the Environment guidance.

CFHZ 0 Coastal Flood Hazard Zone 0 - area currently susceptible to coastal inundation (flooding by the sea) in a 1-in-100 year storm event
CFHZ 1 Coastal Flood Hazard Zone 1 - an area susceptible to coastal inundation (flooding by the sea) in a 1-in-50 year storm event, taking into account a projected sea-level rise of 0.6m over the next 50 years
CFHZ 2 Coastal Flood Hazard Zone 2 - an area susceptible to coastal inundation (flooding by the sea) in a 1-in-100 year storm event, taking into account a projected sea-level rise of 1.2m over the next 100 years
CFHZ 3 Coastal Flood Hazard Zone 3 - an area susceptible to coastal inundation (flooding by the sea) in a 1-in-100 year storm event, taking into account a projected sea-level rise of 1.5m over the next 100 years (rapid sea level rise scenario)

REGIONWIDE and PRIORITY - RIVER FLOOD HAZARD ZONES (RFHZ)

River flood hazard zones are created to raise awareness of where flood hazard areas are identified, inform decision-making and to support the minimisation of the impacts of flooding in our region. The river flood hazard zones have been created using an assessment of best current available information, engaging national and international experts in the field, using national standards and guidelines and has been peer reviewed. This will provide a good indication of the areas at potential risk of flooding from a regional perspective. However, flood mapping is a complex process which involves some approximation of the natural features and processes associated with flooding.

River Flood Hazard Zone 1 – 10% AEP flood extent: an area with a 10% chance of flooding annually
River Flood Hazard Zone 2 – 2% AEP flood extent: an area with a 2% chance of flooding annually
River Flood Hazard Zone 3 – 1% AEP flood extent: an area with a 1% chance of flooding annually with the inclusion of potential Climate Change (CC) impact

River Flooding

50 Year

Maximum	Minimum
78.77 m	78.5 m

Max Min flood levels are for raster extent shown on the map

50 Year

m NZVD

78.5 - 78.699

78.7 - 78.899

Parcel

N

0 10 20 40 60 m

Report Reference: 20250501_105010

River Flooding

100 Year + CC

Maximum	Minimum
78.86 m	78.6 m

Max Min flood levels are for raster extent shown on the map

100 Year + CC

m NZVD

78.601 - 78.8

78.801 - 79

Parcel

N

0 12.5 25 50 75 m

Report Reference: 20250501_105010

Disclaimers

Our modelling disclaimers are linked below:
https://www.nrc.govt.nz/media/ko2dkgxn/coastal-hazard-maps-disclaimer-june-2017.pdf
https://www.nrc.govt.nz/media/cqnnw12y/flood-map-disclaimer-2021.pdf

Our regionwide modelling reports are linked below:
https://www.nrc.govt.nz/environment/river-flooding-and-coastal-hazards/river-flooding/river-flood-hazard-maps/regionwide-river-catchments-analysis-technical-reports

ARE YOU FLOOD READY?

01

Know your risk

Check what potential flood risks and other hazards that may impact your property.

The Natural Hazards Portal is a great place to start. It's a 'one-stop-shop' of information related to natural hazards within our region: www.nrc.govt.nz/environment/natural-hazards-portal

The Environmental Data Hub provides river level and flow data, as well as warning levels, rainfall data, water quality, and more: www.nrc.govt.nz/environment/environmental-data/environmental-data-hub

02

Have a plan

Make sure you have an evacuation plan, emergency kit and important phone numbers ready. Check out: https://getready.govt.nz/en/prepared/ for tips on how to get ready.

03

Stay up to date

In a civil defence emergency situation, follow the updates on the Northland CDEM Group's Facebook page: www.facebook.com/civildefencenorthland

Or follow updates from the embedded feed on the regional council website: www.nrc.govt.nz/civildefence

04

In an emergency

Remember, if life is threatened dial 111 to contact emergency services.

GET READY GET THRU

Northland REGIONAL COUNCIL
Te Kaunihera ā rohe o Te Taitokerau

NORTHLAND EMERGENCY MANAGEMENT

Appendix 6

Stormwater Technical Memo

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

Suite 1, 88 Kerikeri Road
Kerikeri
0230

TECHNICAL MEMO

To:	Matt Holton	**Organisation:**	Windermere Holdings Ltd.
From:	Keavy Mitchell	**Organisation:**	Trine Kel Limited
Reference:	062-TM-0SW-C-Rev01 - Stormwater Effects Assessment		
Date:	29 May 2025		
Subject:	22 Kahikatearoa Lane, Waipapa (Lot 1 DP 567982)		

1. BACKGROUND

The subject site, located at Lot 1 DP 567982 (22 Kahikatearoa Lane, Waipapa), comprises approximately 3,272 m^2 within a recently developed light industrial subdivision. It is zoned Industrial under the Far North District Plan and is subject to Consent Notice 12554072.4.

Previous engineering assessments and subdivision works were authorised under the following consents:

- RC 2160324 – FNDC Subdivision Consent
- RC 2220747 – FNDC Land Use Consent
- AUT.044046.01.01 – NRC Discharge of Tertiary-Treated Wastewater to Land
- AUT.044046.02.01 – NRC Discharge of Contaminants (Odour) to Air

Initial site development included bulk earthworks, infrastructure installation, and engineered fill placement approved under the above consents.

The current proposal seeks to modify the site and platform layout, including a marginal increase in fill height to suit updated building platform requirements. This memorandum specifically addresses potential stormwater effects associated with the proposed changes and does not assess geotechnical stability or compliance with earthworks consent conditions.

2. FLOOD HAZARD

The site is situated within the low-lying Waipapa Basin and falls within an NRC-identified River Flood Hazard Zone 3 (1% AEP inclusive of climate change effects).

According to NRC's modelling outputs (Report Ref: 20250430_080817), predicted flood levels across the site range between RL 78.6 m and RL 78.86 m NZVD2016. Previous assessments of flood-related hazards were undertaken as part of the original subdivision process, with relevant details available under Resource Consent RC 2160324.

3. STORMWATER EFFECTS ASSESSMENT – UPDATED DEVELOPMENT LAYOUT

- ***Drainage Pathways:*** The site has previously been raised under earlier approved consents. The proposed additional fill—approximately 200 mm in thickness —to suit the revised development layout represents only a minor increase in finished levels and is not expected to result in any adverse effects.
- ***Neighbouring Properties:*** Adjacent industrial lots are also being raised using similar methods. The current fill platform is already positioned approximately 200 mm – 300mm above the modelled flood levels. Increasing the platform height by a further 200 mm will improve freeboard without altering existing overland flow paths
- ***Status Quo:*** The revised development layout is consistent with the stormwater management intent of the original subdivision consent. No significant changes to catchment dynamics or stormwater behaviour are anticipated.
- ***Stormwater Containment:*** The site will remain internally graded. Stormwater runoff from ***all*** impervious areas on site will be captured via appropriately designed infrastructure (e.g. gutters, tanks, and catchpits) and discharged in a controlled manner to the existing reticulated stormwater network at rates consistent with the approved design. The future stormwater report will be provided by Trine Kel Ltd. under Project ID: 062. The revised development layout ensures no concentrated runoff is directed toward neighbouring properties.

4. CONCLUSION

Flood risk information presented in this report is based on flood model data provided directly by the Northland Regional Council (NRC) and has not been independently verified or modelled by this office.

In our professional opinion, the proposed additional filling works associated with the revised development layout at 22 Kahikatearoa Lane will not result in any adverse stormwater effects, not already considered. The additional fill will be placed above the modelled 1% AEP flood level and will not further modify existing overland flow paths. Furthermore, the site's previously consented status under both NRC and FNDC consents establishes a clear precedent for earthworks and occupation within the floodplain, supporting the appropriateness of the revised layout and associated works within the context of the broader development.

Should council require further input regarding detailed stormwater infrastructure or discharge design, we would be happy to assist.

Authored:

Keavy Mitchell BSc (Geol) | PGDipSci (Env Mgt) | MEngGeol | MEngNZ

Senior Engineering Geologist | Trine Kel Limited

Appendix 7

On-Site Wastewater Treatment and Disposal Design Report

Appendix 8

Geotechnical Report

Geotechnical Investigation Report
Proposed Commercial Development
Lot 1, Kahikatearoa Lane, Waipapa

Waipapa Investment Trust

Haigh Workman reference 25 086

May 2025

Phone: +64 9 407 8327 • Fax: +64 9 407 8378 • info@haighworkman.co.nz • www.haighworkman.co.nz

PO Box 89 • 6 Fairway Drive • Kerikeri 0245 • New Zealand

Revision History

Revision №	Issued By	Description	Date
A	Wayne Thorburn	First Issue	20 May 2025

Reviewed By

Wayne Thorburn

Senior Geotechnical Engineer
CPEng, CMEngNZ

Approved By

John Papesch

Senior Civil / Geotechnical Engineer Director
CPEng, CMEngNZ

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Executive Summary

Haigh Workman Ltd. (Haigh Workman) has been commissioned by Waipapa Investment Trust (the Client) to undertake a geotechnical investigation for a proposed commercial development at Lot 1 Kahikatearoa Lane, Waipapa.

Subsoil ground investigations were conducted and supervised by Haigh Workman, comprising six hand auger boreholes and eight cone penetration tests (CPTs). Based on the results of the geotechnical investigation and review of published geological maps, it is considered that the surface soils directly underlying the site comprise Tauranga Group alluvial soils, underlain by the Kerikeri Volcanic Group. An old farm drain along the Lot 1 and Lot 2 boundary has been filled with granular fill, supervised by Haigh Workman in April 2022.

CPT soundings and vane shear testing within the hand augers indicate the alluvial soils to be consistent in undrained shear strength, with stiff (50 to 100kPa) material encountered in the upper 0.5m across the site, with frequent firm lenses encountered. The soil strength becomes softer with depth, typically between 25 kPa to 50 kPa to 3.0 mbgl. Based on the soil profile, we consider the site seismic class to be 'Class C' in accordance with NZS1170 for liquefaction assessment purposes, and Site Class 'D' for structural design purposes.

The site is subject to a flood hazard according to the Northland Regional Council (NRC), with a river flood hazard existing for 50-year return period event. A flood hazard assessment has been undertaken by others, with a proposed finished floor level (FFL) of 79.36 mRL provided. The existing ground level is approximately 78.5 mRL across the site, with minor variations. An existing fill embankment trial was undertaken in 2022, with results indicating settlement occurred rapidly, e.g., during construction of the preload embankment. The updated concept will require further filling across the site due the extent of the development area and should be done at least 3 months in advance of preparing the building platform. The fill should be left for a minimum 3 months and be monitored using settlement plates and survey. The fill preload trial is subject to specific design once the final structural loads are provided, and final building locations known. Based on the results of the earlier fill embankment trial, surcharging the fill embankment to accommodate the future building load is not required and estimated settlements will be within building tolerance levels.

Geotechnical risk has been evaluated and is considered minor, provided the recommendations detailed within this report are followed. A summary of the geotechnical risks are as follows:

- Undercuts across the site may be required to remove unsuitable material. This includes the possibility of old field drains and non-certified filling.
- Groundwater level across the site is shallow. We recommend excavations be kept to a minimum and should not go any deeper than the groundwater level to reduce the risk of any groundwater drawdown induced settlements.
- Bearing capacity has been assessed in accordance with the methods presented in the New Zealand Building Code (B1/VM4). Recommended ultimate bearing capacity is 150 kPa. The bearing capacity is limited to 1.0 x 1.0 m pad foundations and 0.5 m strip footings. The bearing capacity value is

appropriate for vertical loads only, and do not allow for any imposed horizontal shear or moment actions and will require confirmation during specific design. A geotechnical strength reduction factor of 0.5 can be adopted for limit state design.

- Settlement – the foundation dimensions and final ground levels are not known at this stage of reporting. Section 4 presents the settlement estimates based on assumed loads and spread foundations. To limit consolidation settlement to 25mm, 0.50m wide strip footings should be adopted in design and maximum pad foundations of 1.0m x 1.0m, adopting a design bearing pressure of 75 kPa for limit state design (150 kPa x 0.5 = 75 kPa). Deflections have been estimated for floor slab loadings of 20 kPa and 600 mm of fill placed (total 32 kPa), deflection and associated angular distortions have bene provided in Section 4.5.
- Liquefaction – the material encountered is considered too plastic to liquefy. The low seismic activity and the age of the deposits also reduce the liquefaction risk and any associated effects, e.g., lateral spreading and ejecta. A liquefaction assessment was undertaken, indicating liquefaction damage is unlikely. Based on our assessment we consider liquefaction induced ground damage is less than minor and liquefaction damage is unlikely.
- Expansivity – The subsoils at this site are considered moderately expansive. Foundations should be designed under AS 2870 expansive site class of M (moderately) and adopting the recent Building Code revisions (B1/AS1) for surface movement. Strip and pad foundations shall be embedded a minimum 600 mm below finished ground level.
- Floor Slab design – Modulus of Subgrade Reaction values for floor slab design and spread footing design are provided in Section 4 of this report.
- For piled foundations, all concentrated loads can be supported on piles founded directly onto the basalt, subject to proof drilling to ensure the Kerikeri Volcanic Group layer can support concentrated loads, i.e., machine drilled boreholes, either fully cored or percussion drilled to prove the thickness and to determine if any voids are within the basalt flows. Section 5 provides preliminary design values. Settlement beneath the slab is still expected and should be pre-loaded or fully suspended.
- All earthworks to be supervised by a CPEng (Geotechnical) familiar with the contents of this report and the ground conditions, including preload filling and monitoring.
- Concentrated stormwater flows – Must be collected and carried in sealed pipes to an approved outfall or other means of disposal and must not be allowed to saturate the subgrade soils to ensure the stability of the foundations is maintained.
- A design CBR of 2.0% should be adopted for pavement design purposes. Localised soft zones are expected and will need to be undercut and removed during construction. A minimum undrained shear strength of 40 kPa in the upper 1.0 m is required for pavement design. We recommend a geotextile

and geogrid is installed between subgrade and pavement to minimise the ingress of fines into the pavement from dynamic loading.

1 Introduction

1.1 Project Brief and Scope

Haigh Workman Ltd. (Haigh Workman) has been commissioned by Waipapa Investment Trust (the Client) to undertake a geotechnical investigation for a proposed commercial development at Lot 1, Kahikatearoa Lane, Waipapa. This report presents the information gathered during the site investigation, interpretation of data obtained and site-specific geotechnical recommendations relevant to the site.

The scope of this report encompasses the geotechnical suitability in the context of the proposed development as defined in the Short Form Agreement dated 23 April 2025. This appraisal has been designed to assess the subsoil conditions for foundation design and identify geotechnical constraints for the proposed development.

This report provides the following:

- A summary of the published geology with reference to the geotechnical investigations undertaken.
- Analysis of the data obtained from site investigations and a geological ground model.
- Foundation recommendations.
- Identification of any additional geotechnical risks and/or hazards.

1.2 Proposed Development

We understand that the Client intends to develop the with the construction of two commercial blocks, with individual unit titles. Concrete and/or paved areas around to form carparking and vehicle access will be formed in front of the buildings. Wastewater treatment and disposal field will be located near the northern property boundary.

Should the proposed development vary from the proposals described above and/or be relocated outside of the investigated area, further investigation and/or amendments to the recommendations made in this report may be required.

1.3 Site Description

The property is legally described as Lot 1, DP 567982 and has a total land area of approximately 3265 m^2. Lot 1 is located on the northern side of Kahikatearoa Lane and is currently vacant. A settlement trial was undertaken in August 2022 comprising a trial embankment, which is partially still in place.

An old farm drain extends adjacent the eastern property boundary, draining to the south, beyond the subject Lots. The farm drain was originally infilled with site-won material during the construction of Kahikatearoa Lane, the site-won fill has since been mucked out and replaced with granular hardfill, compacted to an engineered standard. The approximate proposed building development locations are shown in Figure 1.

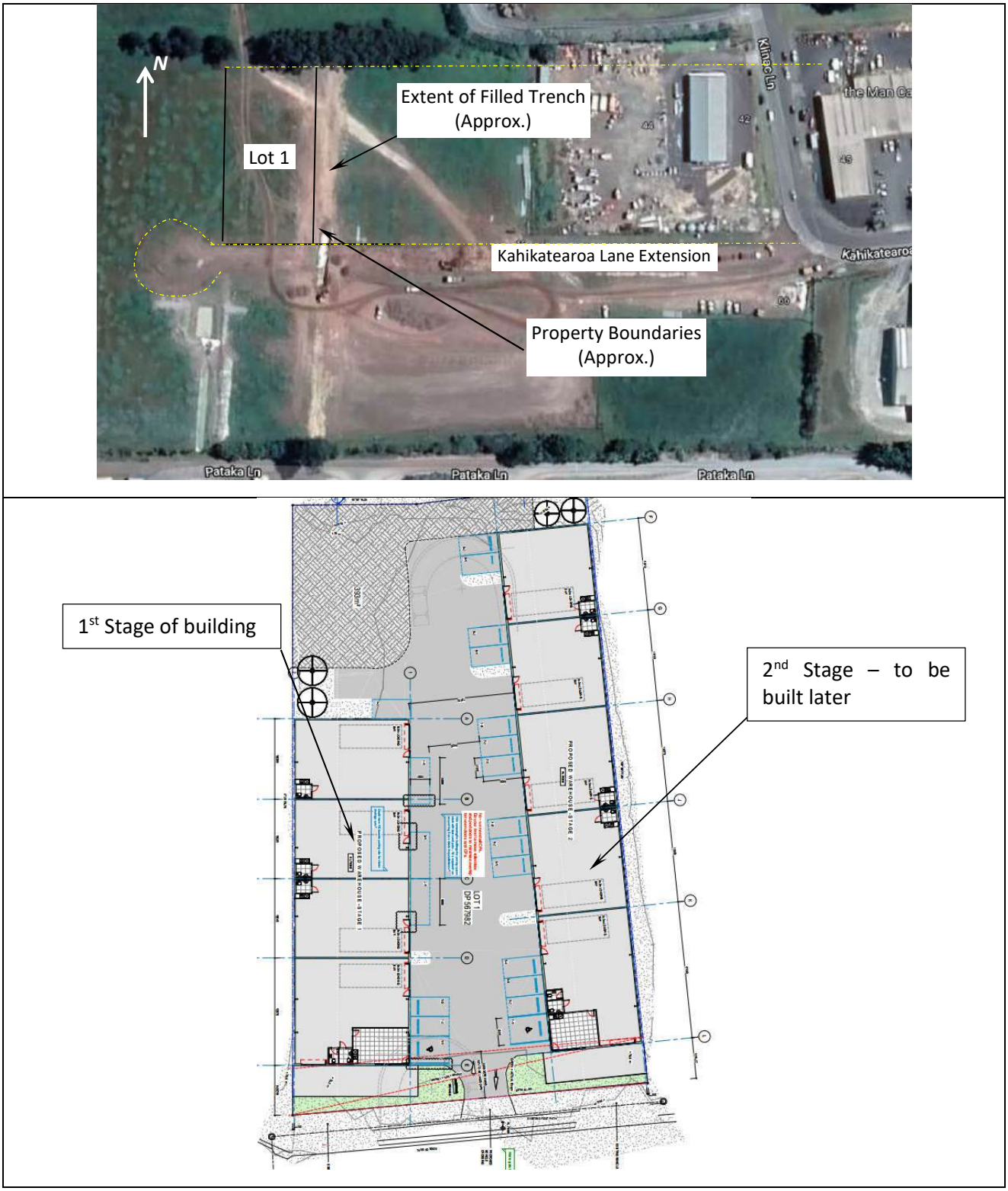


Figure 1 - Site Location

2 Geology

2.1 Published Geology

Sources of Information:

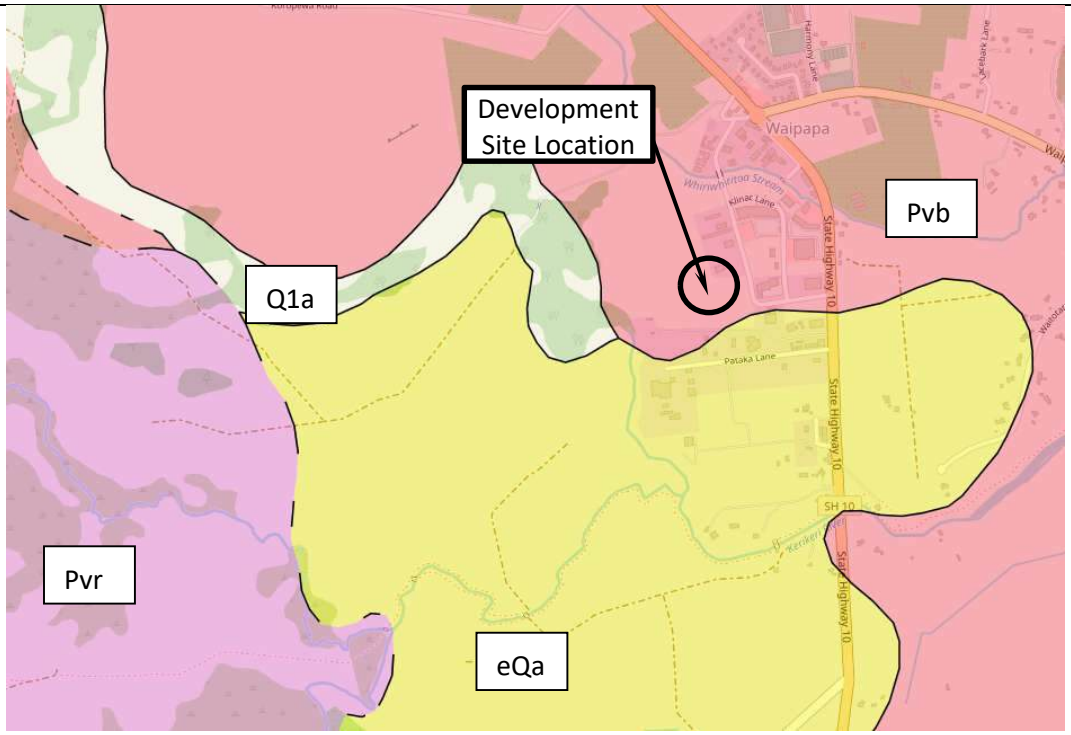
- Institute of Geological & Nuclear Sciences 1:250,000 Geological Map 2, 2009: "*Geology of the Whangarei area*"
- NZMS 290 Sheet P04/05, 1: 100,000 scale, 1982: *"Rock types map of the Whangaroa - Kaikohe area"*
- NZMS 290 Sheet P04/05, 1: 100,000 scale, 1980: *"Soil map of the Whangaroa - Kaikohe area"*

The site is within the bounds of the GNS Geological Map 2 "Geology of the Whangarei area", 1:250,000 scale[*]. The published geology shows the site to be located near a geological boundary of Kerikeri Volcanic Group and Tauranga Group alluvial soils. The Waipapa area, although mapped as Kerikeri Volcanic Group, typically is overlain by recent alluvial soils exhibiting variable strength. Further reference to the published New Zealand land inventory maps (Whangaroa-Kaikohe 1980) also indicates the site is underlain by alluvium ($A1_2$), forming riverbed and flood plain deposits, in places forming a thin veneer (1-3m) over rugged surfaces of lava flows.

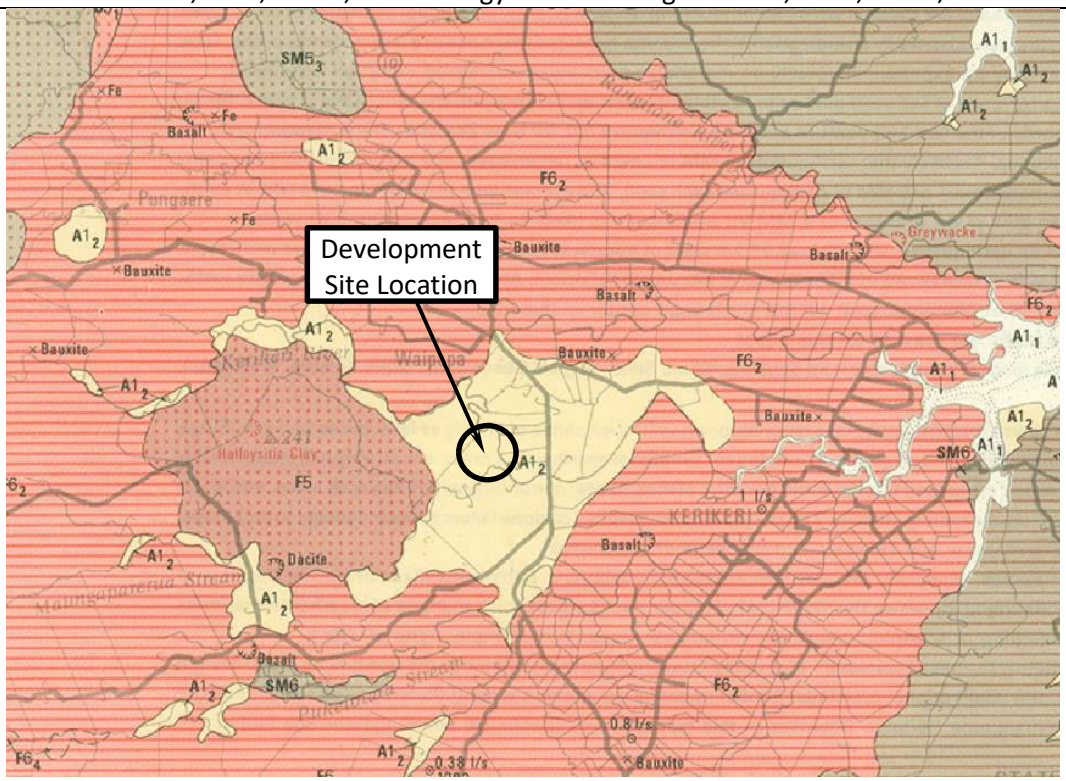
Table 1 - Geological Legend

Symbol	Unit Name	Description
Q1a / $A1_2$	Tauranga Group (Holocene)	Unconsolidated to poorly consolidated mud, sand, gravel and peat or lignite of alluvial, colluvial, lacustrine, swamp and estuarine origins. Holocene river deposits.
eQa	Tauranga Group (Early to middle Pleistocene)	Partly consolidated mud, sand, gravel and peat or lignite of alluvial, colluvial, lacustrine, swamp and estuarine origins. Early Pleistocene – Middle Pleistocene estuary, river, and swamp deposits.
Pvb / $F6_2$	Kerikeri Volcanic Group (Late Miocene to early Pliocene)	Basalt lava, volcanic plugs, and minor tuff. Kerikeri Volcanic Group Late Miocene basalt of Kaikohe – Bay of Islands Volcanic Field.
Pvr / F5	Kerikeri Volcanic Group (Late Miocene to early Pliocene)	Alkaline and peralkaline rhyolite domes with some obsidian.

[*] Edbrooke, S.W; Brook, F.J. (compilers) 2009. Geology of the Whangarei area.



Edbrooke, S.W.; Brook, F.J. Geology of the Whangarei Area, IGNS, 1:250,000



Kermode, L.O. 1982: Whangaroa – Kaikohe, NZMS 290, Sheet P04/05, 1:100,000

Figure 2 – Published geological maps

3 Ground Investigations

3.1 Subsurface Investigations

Haigh Workman undertook geotechnical investigations on 07 April and 11 April 2022. The investigations comprised eight (8) cone penetration tests (CPT01 to CPT08) undertaken by Underground Investigation Ltd, and six (6) hand auger boreholes completed by Haigh Workman Ltd. Hand auger boreholes were drilled to a maximum depth of 2.2m below ground level (mbgl). Cone penetration testing was undertaken till refusal, anchor pull-out, or excessive tilt. A maximum depth of 3.97 m was achieved at CPT08 location. Underground Investigation Ltd provided a cone penetration rig attached to a rubber tracked machine to test and record ground information. CPT soundings are presented in Appendix B.

3.2 Ground Conditions

Based on the results of the geotechnical investigation conducted by Haigh Workman and review of published geological maps, it is considered that the surface soils directly underlying the site comprise Tauranga Group alluvial soils, underlain by the Kerikeri Volcanic Group.

Subsoil conditions on the site have been interpolated between the boreholes, therefore some variation between test positions is likely. Table 2 below summarises the materials encountered, with depth to base of each unit provided.

Table 2 - Summary of Borehole Results

Test I.D.	Fill (mbgl)	Tauranga Group alluvial soils (mbgl)	Kerikeri Volcanic Group – (mbgl)	Groundwater level (mbgl)*
BH01	NE	>2.20	NE	0.4
BH02	NE	>2.00	NE	0.6
BH03	NE	>2.20	NE	0.4
BH04	NE	>2.00	NE	0.6
BH05	NE	>2.20	NE	0.6
BH06	NE	>2.00	NE	0.6
CPT01	NT	2.60	>2.71	0.4
CPT02	NT	2.65	>2.70	1.9
CPT03	NT	2.15	>2.21	0.7
CPT04	NT	2.25	>2.31	0.3
CPT05	NT	2.30	>2.33	0.6
CPT06	NT	3.60	>3.77	0.7
CPT07	NT	2.85	>2.87	*Hole collapsed*
CPT08	NT	3.85	>3.97	0.7

NE Not Encountered
NT Not Tested
* Groundwater level measured from within test hole.

3.2.1 *Tauranga Group Alluvium*

Alluvial soils were encountered at all test locations. Within the hand auger boreholes, the Tauranga Group soils were typically described as soft to stiff clayey silt and silt with variable granular content (sand and fine gravel) and being variable in colour from brown to light grey to bluish grey, orangish brown mottled, and streaked grey, bluish grey and orange. The soils are further described as being moist to wet, becoming saturated with increasing depth and of having no or low plasticity. Variable amounts of fibrous and amorphous organics were encountered within the top 1.0m of samples taken.

CPT soundings and vane shear testing within the hand augers indicate the alluvial soils to be consistent in undrained shear strength, with stiff (50 to 100kPa) material encountered in the upper 0.5m across the site, with frequent firm lenses encountered. The soil strength becomes softer with depth, typically between 25 kPa to 50 kPa to 3.0 mbgl. The variable strength Tauranga Group soils are underlain by a dense horizon which is inferred to represent the top of the Kerikeri Volcanic Group that is known to underlie the area.

3.2.2 *Kerikeri Volcanic Group*

Kerikeri Volcanic Group basalt has been inferred based on the CPT soundings and results of nearby geotechnical investigations. The basalt thickness is expected to be variable across the site.

3.2.3 *Groundwater*

Groundwater level also measured within the test holes at the completion of testing, which typically indicated groundwater to be between 0.40m and 0.60 m below the existing ground surface. No further groundwater monitoring has been undertaken. Groundwater levels can and do fluctuate and higher groundwater levels may be encountered following periods of prolonged or heavy rainfall.

4 Geotechnical Assessment

4.1 General

Based on our site observations, geological appraisal, and the findings of our recent field investigations, we consider that the subject site is suitable for the proposed development, subject to the recommendations outlined within this report. The site is subject to a flood hazard according to the Northland Regional Council (NRC), with a river flood hazard existing for 50-year return period event. The Far North District Council (FNDC) require floor levels to be a minimum 300 mm above the flood hazard level for a non-habitable building.

Based on the information provided at the time of preparing this report, the finished floor level (FFL) for the proposed building will be 79.36 mRL to account for the flood hazard levels. The existing ground level is approximately 78.5 mRL across the site, with minor variations.

Due to the required levels, the site will need to be raised by importing granular fill, which will induce consolidation settlement due to changes in vertical effective stress. We recommend consideration is given to the early placement of granular hardfill to allow as much settlement to occur as possible before preparing the building platform for construction. Settlement preload and surcharge is subject to specific design.

4.2 Geotechnical Design Parameters

Geotechnical design parameters recommended in this report are based on in-situ test results, empirical relationships, and local experience. Refer Table 3 for recommended design parameters.

Table 3 – Geotechnical Design Parameters

Soil Unit	Depth (m)	Bulk Unit Weight γ (kN/m^3)	Undrained Shear Strength S_u (kPa)	Effective Cohesion c' (kPa)	Effective Friction Angle φ'(degrees)	Coefficient of Volume Compressibility m_v (m^2/MN)
Tauranga Group (Firm to Stiff)	0.0 to 3.0	15	25-50	1	26	0.30
Kerikeri Volcanic Group (Basalt)	>3.0	24	N/A	50	35	N/A

4.3 CPT Undrained Shear Strength

The undrained shear strength has been assessed using the in-situ CPT data and vane shear strength, corrected using a Bjerrum correction factor of 0.7-0.8. Data plots are presented in Figure 3.

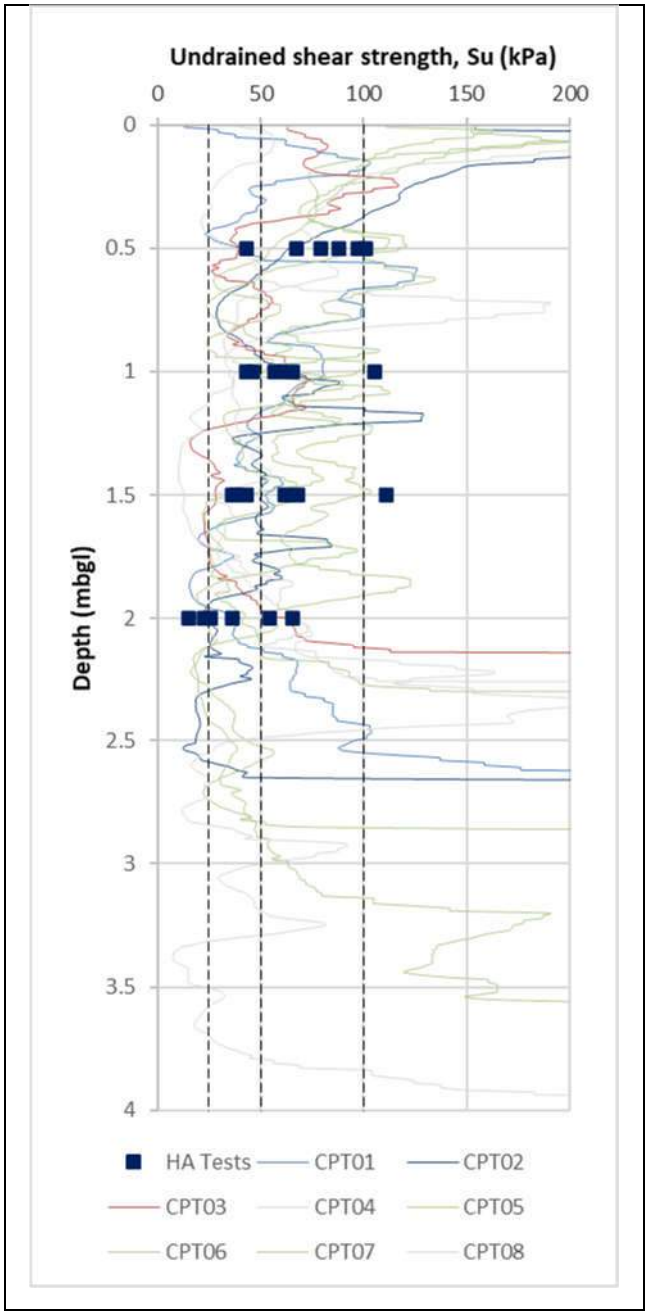


Figure 3 – Estimated CPT Plots (undrained shear strength)

4.4 Settlement Analysis

The natural ground conditions across the site were consistent across the site, with refusal typically encountered at between 2.5m and 3.0mbgl, CPT06 and CPT08 pushed to near 4.0 mbgl, which indicates some variability across the site. Refusal have been inferred as encountering top of Kerikeri Volcanic Group and have been included within the ground model to represent an incompressible layer. The proposed development is to

comprise commercial warehouse buildings located along the eastern and western boundaries, with a central hardstand area for parking and vehicle manoeuvring to the units. Concept drawings indicate a total of nine individual units, ranging in size from 135 m^2 to 200 m^2.

The existing site is near level, with a change in elevation across the site in the order of 300 mm. The proposed FFL for will be 79.36 mRL. Based on the existing levels, we have assumed the ground level will be raised approximately 710 mm to 79.21 mRL, assuming a 150 mmm thick concrete slab.

Topsoil and unsuitable material, e.g., fill shall be stripped from the site prior importing granular hardfill to raise the ground level. All filling across the building platform and canopy area shall comprise granular hardfill (GAP40-65), compacted to an engineered standard and under supervision by a CPEng, refer Section 6 for further details.

For the purposes of analysis, we have assumed variable loading conditions for the proposed warehouse slab, with settlement predictions provided at the centre of the slab, edge, and corners. Loads on the slab are treated A 20 kPa uniformly distributed load (UDL) has been adopted.

Modulus of subgrade reaction values are also given based on a flexible foundation system, i.e., the rotation of principal planes will result in pressure being attracted to the centre of the slab where the load on the soil is not influenced the by edges, therefore resulting in greater settlement. The results are in alignment with the estimated spring values increasing on the corner in edges, i.e., the spring values are not uniform across the slab (edge spring is typically double centre springs, and corner springs three to four times middle springs). The modulus of subgrade reaction is highly variable with geometry and load, the values are based on a flexible foundation system and will be subject to change based on the final design and loading across the slab, i.e., if the slab is stiffened and becomes more rigid then settlements will become more even across the slab.

Our preliminary calculations are based on a uniformly applied surcharge of 32 kPa, i.e., building UDL of 20 kPa plus 14.2 kPa for a proposed fill height of 0.71 m), indicates a maximum total consolidation of up to 40 mm.

Table 4 - Settlement prediction results

Existing ground level (mRL)	FFL (mRL)	Loading Condition	Settlement at Centre of slab (mm)	Settlement at Edge of slab (mm)^	Settlement at Corner of slab (mm)^
78.5	79.36	Raise ground level with fill to base of slab ~ 79.21 (14.2 kPa) UDL Floor Loading – 20 kPa	40	30 (1:1350)	25 (1:750)

^ - values in bracket represent angular distortion across the slab.

Of greater importance to the overall performance to the slab is the differential settlement and angular distortion across the slab. The results indicate differential settlement from the centre to the edge in the order of 10 to 15 mm (depending on final load arrangement). A maximum UDL of 20 kPa is recommended for the slab

design (including weight of slab and racking loads), if the load exceeds this amount, then ground stabilisation may be required or the building and slab supported on piled foundations.

We have assumed a fully flexible slab foundation system; if detailed structural design adopts a non-linear spring response model, then the load distributions on the slab should be provided to the geotechnical engineer for further analysis if necessary. Based on the estimated settlement and pressures, we recommend the following spring values are adopted for the initial analysis for a stiffened slab foundation system, on the assumption that the floor loads will be distributed evenly across the slab through detailed design, i.e., the slab will be stiffened to spread load more evenly:

- Centre of slab = 850 kN/m^2/m
- Edge of slab = 1300 kN/m^2/m
- Corner of slab = 1000 kN/m^2/m

A separate analysis has been undertaken with the building loads supported on individual pad foundations, with a design bearing capacity of 75 kPa available for a maximum pad foundation size of 1.0 m x 1.0 m (size chosen to keep settlements below 25 mm for conventional foundation elements), and strip footings are limited to 0.50 m width. A modulus of subgrade reaction for pad and strip footings (based on the above dimensions) is 3000 kN/m^2/m.

We recommend that filling across the site be undertaken in advance of the building to remove the predicted settlement from filling. Based on the completed embankment trial in August 2022, settlement occurred immediately, i.e., during construction of the embankment. The fill preload trial is subject to specific design once the final structural loads are provided.

Settlement markers should be installed prior to the placement of any fill within the building platform. Baseline readings of the settlement markers must be undertaken prior to the placement of the fil. Survey measurement of the markers should initially be taken on a weekly basis for the first month, reducing to two-weekly thereafter, or as directed by Haigh Workman.

4.4.1 *Settlement Trial (2022)*

Haigh Workman undertook detailed design for a settlement trial in June 2022. The settlement trial commenced in August 2022. The preload comprised construction of an embankment across the proposed building platform to a preload level of approximately 79.3 mRL. The purpose of the trial was to monitor the fill and determine the rate of settlement. Following completion of the embankment construction, the settlement trial commenced and involved surveying 14 settlement plates, labelled 1 to 14. Following installation, the plates were initially surveyed on 19 August 2022 with surveying conducted on a regular basis by Williams and King until 29 September 2022. Measurements were taken using level and staff to get accuracy to within +/- 1 mm. The following table presents level and staff readings.

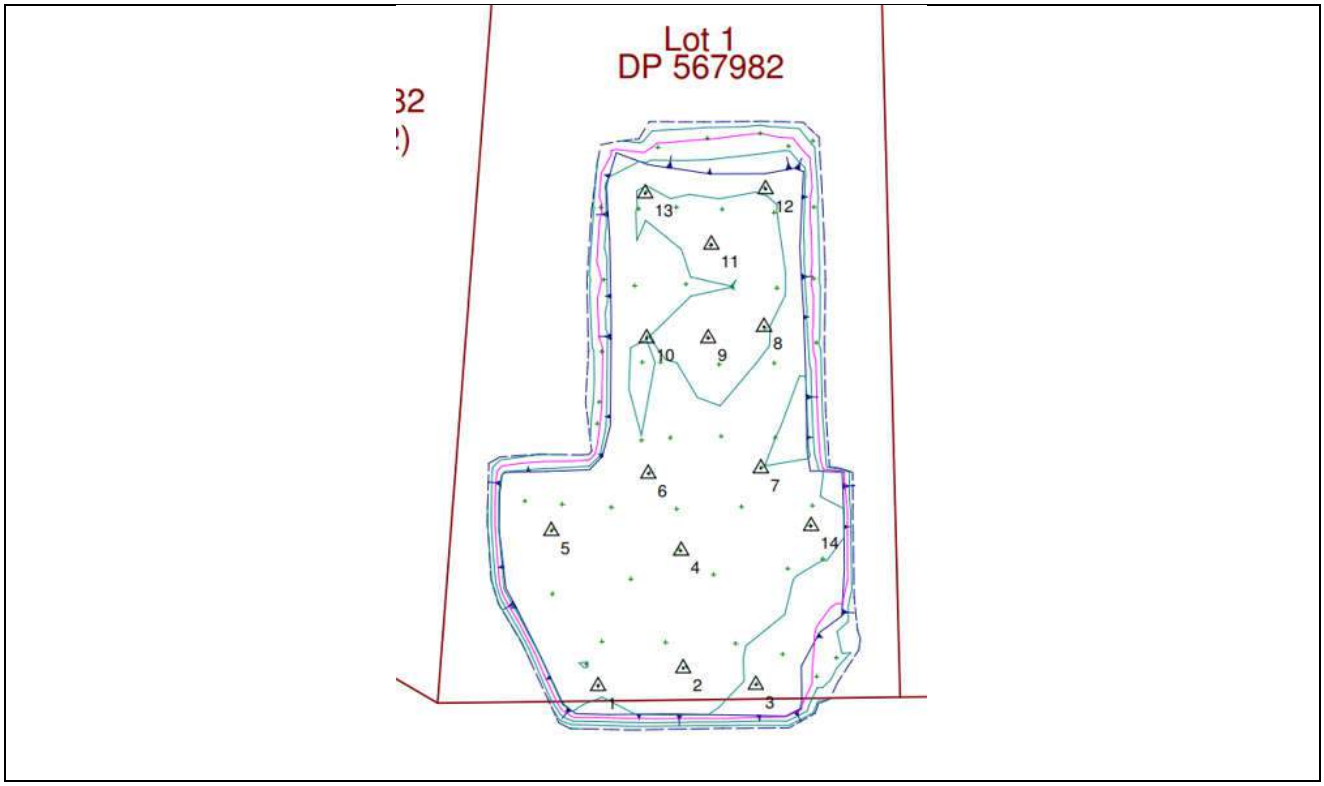


Figure 4 - Settlement trial - monitoring points

Table 5 - Settlement monitoring results

	Baseline	Visit 2	Visit 3	Visit 4	Visit 5
Mark	19-Aug-22	29-Aug	5-Sep	12-Sep	29-Sep
1	78.555	78.555	78.554	78.555	78.556
2	78.623	78.622	78.622	78.62	78.623
3	78.601	78.601	78.6	78.599	78.602
4	78.755	78.755	78.753	78.753	78.756
5	78.566	78.566	78.564	78.565	78.567
6	78.788	78.789	78.787	78.786	78.789
7	78.796	78.797	78.795	78.795	78.797
8	78.76	78.76	78.759	78.759	78.762
9	78.796	78.796	78.796	78.795	78.797
10	78.823	78.825	78.823	78.823	78.825
11	78.795	78.798	78.795	78.796	78.798
12	78.742	78.744	78.743	78.742	78.745
13	78.798	78.799	78.798	78.799	78.799
14	78.736	78.736	78.735	78.735	78.736

4.4.2 *Trial Discussion*

Based on the settlement monitoring results, we consider most of the estimated settlement occurred during preloading of the site and any residual settlement will be negligible. Settlement occurred quickly and is likely due to the shallow depth to basalt, i.e., the water flow paths are short and excess pore pressure can drain rapidly.

4.5 Bearing Capacity

Undrained shear strength has been assessed using the investigation data. Based on the available data we recommended an undrained shear strength (Su) of 30 kPa is adopted for bearing capacity calculations. An ultimate bearing capacity of 150 kPa can be adopted for preliminary design purposes of shallow spread foundations with a maximum 1.0 m x 1.0 m pad foundation and 0.5 m wide strip footings, and is for vertical loads only, i.e., horizontal shear or moment actions have not been assessed and will require specific analyses. A geotechnical strength reduction factor of 0.5 shall be applied for limit state design.

4.6 Shrink Swell Soil Characteristics

The natural soils of the Tauranga Group are considered susceptible to swelling and shrinkage under seasonal variations of water content. Based on testing undertaken within the wider subdivision, the site may be designed as moderately reactive (Class M) with foundations designed taking into consideration the updated return periods given in B1/AS1[†].

4.7 Seismic Hazard

The site conditions have been assessed to be consistent with seismic subsoil Class D (Deep or soft soil) in accordance with NZS1170.5:2004. For geotechnical design purposes, Site Class C (shallow soil) has been adopted as it provides a more conservative assessment for peak ground acceleration estimates (PGA).

4.8 Liquefaction Potential

The site geology is considered susceptible to liquefaction due the recent alluvial deposits and high groundwater level. The fine-grained clayey soils are not considered susceptible to liquefaction as they are too plastic to liquefy, laboratory testing of the surface soils completed during the 2021 investigation indicates a plasticity index of 32 in the upper soil column, which is considered not susceptible to liquefaction. However, the sandy lenses are potentially susceptible to liquefy which may result in liquefaction induced settlement.

[†] Ministry of Business Innovation & Employment. Acceptable Solutions and Verification Methods for New Zealand Building Code Clause B1 Structure.

The seismic coefficients for design are based on the NZTA Bridge Manual (NZBM), calculated based on the following formula:

$$PGA = C0.1000 * \frac{Ru}{1.3} * f * g$$

Un-weighted PGA coefficient for Class A/B	Return Period Factor (Ru = 1/500	Site subsoil class factor*
$C_{0,1000}$ = 0.13	R_u = 1.0	f = 1.33

* Adopted Class C subsoil factor as it is geotechnically conservative for estimating peak ground acceleration.

Peak ground acceleration (PGA) for the site is as follows:

- ULS – 0.13 g, Mw 5.8 earthquake.
- Lower bound ULS – 0.19 g, Mw 6.5 earthquake [used in analysis based on Module 1, NZGS & MBIE].

Based on the low seismic hazard of the Northland region, only the ULS condition has been analysed. Results are summarised in Table 6, with detailed results presented in Appendix C. The liquefaction severity number has been used to indicate the potential for surface manifestation, with all tests recording a LSN less than 10 (little to no expression of liquefaction, i.e., negligible risk).

Table 6 - Summary of results

Test data	Liquefiable Zone (mbgl)	Estimated total vertical free field settlement (mm) - ULS	Liquefaction Severity Number (LSN) – ULS	Liquefaction Potential Index (LPI)
CPT01	0.9-1.0	<5	3	<1 (low risk)
CPT02	1.1-1.2	<5	1.5	<1 (low risk)
CPT03	0.95-1.05	<5	2.5	<1 (low risk)
CPT04	1.95-2.05	<5	2	<1 (low risk)
CPT05	2.2-2.3	<5	2.7	<1 (low risk)
CPT06	3.4-3.5	<5	1	<1 (low risk)
CPT07	N/A	<5	<1	<1 (low risk)
CPT08	2.3-2.4	<5	1.5	<1 (low risk)

Based on our assessment we consider liquefaction induced ground damage is less than minor and liquefaction damage is unlikely based on 'Planning and engineering guidance for potentially liquefaction-prone land, MBIE, September 2017). Based on the assessment, we consider the effects from excess pore pressure and liquefaction to be between insignificant (L0) to mild (L1) in accordance with Table 5.1 (Module 3), with negligible deformation of the ground due to limited excess pore water pressures.

5 Foundation Recommendations

5.1 General

Concept drawings indicate two buildings, with individual unit titles. Concrete and/or paved areas for carparking and vehicle access will be formed in front of the buildings. A total of 9 warehouse units are proposed ranging in size from 135 m^2 to 200 m^2, approximately 1420 m^2 in total. Wastewater treatment and disposal field will be located near the northern property boundary.

5.2 Shallow Foundations

The subsoils comprised fine-grained alluvial soils, moderately susceptible to seasonal shrink-swell behaviour. The site is located within/near a flood hazard zone and minor earthworks are required to raise to provide an FFL of 79.36 mRL. Consolidation settlement has been analysed based on raising the site where necessary, and slab on grade construction with a uniformly distributed load of 20 kPa and filling load of 14.2 kPa. Based on the ground conditions, we consider concrete slab on grade foundations will be appropriate and will be subject to specific structural design to ensure the estimated deflections are within tolerance. Foundation design will need to consider the moderately expansive soils (Class M), in accordance with AS2870:2011, with conventional spread footings founded a minimum 600 mm below finished ground level.

For conventional spread foundation design, we recommend embedment for spread footings be 600mm below finished ground level. The soils are variable across the site and adopting conventional spread foundations may encounter unsuitable ground conditions and high groundwater level. We recommend the following maximum dimensions to support concentrated loads, with an ultimate bearing capacity of 150 kPa (a geotechnical strength reduction factor of 0.5 can be adopted for limit state design):

- Pad Foundations = 1000 x 1000 mm
- Continuous strip footing width = 500 mm

Larger foundation area can be adopted to spread the load, however this will result in the pressure bulb deepening, reducing the ultimate bearing capacity and will require a detailed settlement and bearing capacity analyses to predict settlement under the given loading scenario. The parameters given in Table 3 and Figure 3 can be adopted for settlement analyses.

Confirmation of the stripped subgrade is recommended prior to preparing foundations to ensure all unsuitable material, e.g., non-certified fill and or buried topsoil has been removed. Where filling is required, compaction testing will be required to confirm the hardfill has been compacted to an engineered standard.

- Ultimate bearing capacity of 150kPa (based on the limiting foundation sizes as detailed within Section 5.2).
- Geotechnical strength reduction factor – 0.5.

- Soil expansivity class – Site Class M (moderately reactive soils).
- Seismic class – Site Class D (deep or soft soil site).

Bearing capacity values included in this report are for vertical loads only and do not consider horizontal shear or moment and will require confirmation during detailed design of the foundations. Where foundation excavations expose soft/weak or otherwise unsuitable ground these materials should be undercut and replaced with GAP40 compacted to an engineered standard.

5.3 Piled Foundations

Subsoil investigations indicate a dense layer at approximately 3.0 mbgl to 4.0 mbgl. Based on our experience on nearby sites, the soil profile is variable with lenses of volcanic rock and boulders varying over comparatively small distances, i.e., over the width of the site.

If there are concentrated loads that exceed the values given for shallow spread foundations, or the angular distortion values are considered unacceptable for the proposed construction type, then piled foundations can be considered. Should pile foundations be considered, then further investigations, e.g., proof drilling at the pile locations, to confirm the soil profile and foundation depth will be required.

Piles should be designed as end bearing only, founded onto the basalt rock, a proof drilling regime is recommended due the variability in depth to basalt and to ensure the obstructions are not just isolated boulders.

Table 7 – Pile Design Values

Unit	Depth (m)	Ultimate Skin Friction (kPa)	End Bearing (MPa)
Tauranga Group Alluvial Soils	0.0 to 4.0	N/A	N/A
Kerikeri Volcanic Group (Basalt Rock)	>4.0 m*	N/A	1

* Inferred depth to rock.

The following foundation recommendations are listed below:

- Bored piles may require casing to avoid collapse and to reduce water ingress into the hole. Tremie concrete pouring or pumping prior to concrete placement is recommended.
- Due to the natural variability of soil strengths and depths to a suitable founding stratum, the actual founding depth across the building platform is likely to vary and will be subject to further investigations and proof drilled at every pile location.
- Slab area will need to be preloaded due to the fill required to raise the ground level. Alternatively, the slab can be fully suspended on piles.

6 Construction

6.1 Earthworks Operation and Compaction Control

All filling across the site should be done at the same time, including the future warehouses along the southern boundary of the Lot. We recommend the construction sequence is as follows:

- Strip the site of topsoil – [Subgrade check by Geotechnical Engineer]
- Settlement monitoring pins to be added across the building platform.
- Geotextile – BIDIM A29 or A39 across the subgrade prior to filling.
- Import fill and start running in layers (200 mm loose for granular fill). Building platforms to be overfilled a minimum 2.0 m from all edges of building. Fill up to base of slab level (approximately 79.21 mRL, to be confirmed).
- Once approved by the Engineer, preparation for the foundations can commence.

6.2 Earthworks

6.2.1 *Subgrade Preparation*

Site concrete or gravel surface protection is recommended under all perimeter or pad footings to provide a suitable working base when preparing foundations, this is particularly important if preparing foundations in wet weather or during winter, or during summer where exposure to the sun and heat will result in the soils becoming desiccated. Slab preparation should also be protected by granular fill as soon as possible to prevent the subgrade degrading due to exposure.

6.2.2 *Filling*

The site can be raised with granular fill, subject to approval by the Engineer and settlement monitoring. Our recommended control criteria are as follows:

Table 8 - Maximum dry density for granular fill

	Dy Density Percentage of N.Z. Standard Compaction Test	Water Content Allow variations from Optimum
GAP65/GAP40	95%	6% to 8%

Table 9 - Clegg Impact Value (CIV) testing on granular fill

Clegg Impact Value – 4.5kg Clegg	
Average value	25
Maximum single value	20

Note: Average value shall be determined over ten consecutive tests.

Table 10 - Proof roll testing on granular hardfill

Proof rolling observations	
Target elastic settlement beneath a fully loaded six-wheel truck or 10 tonne smooth drum roller	<5 mm

All filling shall be compacted in thin layers, approximately 200 mm loose, with compaction testing completed at every second layer by a CPEng (Geotechnical).

6.2.3 *Groundwater Control*

Groundwater level across the site is shallow and service installation will need to be aware of this during construction. The site will need to be built up as part of the site preparation and should be done well in advance of preparing the site for service installation. Where possible, all services should be installed during summer.

6.3 Subgrade Protection

We recommend that trafficking of the building platform and carparking areas are minimised and that subgrades are only trimmed to final levels immediately prior to covering with granular hardfill. The site should be shaped to avoid water ponding during rain, thereby limiting the need for additional undercutting and hard filling. Areas of trimmed subgrade shall not be left exposed to allow the ingress of water, nor should subgrade areas be trafficked prior to drying out after rain.

6.4 Stormwater Disposal

Stormwater from paved areas, roofs, driveways, and water storage tanks should be collected in sealed, flexible pipes and discharged in such a manner to not cause any instability or erosion. It is essential for the long-term stability of this site, that all storm water be piped away from any proposed building platform to avoid over saturation of the underlying natural soils.

Stormwater shall be piped away from any proposed building platform and away from any steep slopes to avoid over saturation of the subsoils and to maintain stability across the site. All stormwater overflow drainages should be channelled away from the development platform and discharged in a controlled manner.

6.5 Services

At the time of writing, no known underground services cross beneath the proposed development area. Where it is intended for the installation of underground services, we recommend that all services are installed prior to foundation excavations and construction and that all services are designed to be outside the influence of foundation excavations. We recommend that any new services are accurately located on site and the depth to invert be determined prior to the commencement of foundation excavations.

6.6 Pavement Design

A design CBR of 2.0% should be adopted for pavement design purposes. Localised soft zones are expected and will need to be undercut and removed during construction. A minimum undrained shear strength of 40kPa in the upper 1.0 m is required for pavement design. We recommend that any proposed carpark pavement is reinforced with geogrid to confine the subbase material. A geotextile (BIDIM A29 or equivalent) should be installed between subgrade and pavement to minimise the ingress of fines into the pavement during dynamic loading.

6.7 Geotechnical Review

Haigh Workman Limited have only been provided with concept design drawings for the site. We therefore would like to be given the opportunity of reviewing the final civil and structural drawings for this development prior to Building Consent application to ensure the recommendations relating to site works and foundation design have been interpreted as intended. Our involvement in the detailed design process is recommended.

6.8 Construction Observations

We consider the following specific items will need to be observed at the time of construction to ensure the foundation soils are consistent with the assumptions made in this geotechnical report:

1. Observe subgrade exposure prior to covering with hardfill protection.
2. Observe fill placement and confirmation fill has been placed to an engineered standard.
3. Review settlement monitoring results. Engineer to confirm removal of surcharge.
4. Observe all foundation excavations and exposure of foundation soils.
5. Observe pavement construction and testing at regular intervals.

Provision should be allowed for modifying the foundation solution at this time should unforeseen ground conditions be encountered.

7 Limitations

This report has been prepared for the use of Waipapa Investment Trust with respect to the brief outlined to us. This report is to be used by our Client and their Consultants and may be relied upon when considering geotechnical advice. Furthermore, this report may be utilised in the preparation of building and/or resource consent applications with local authorities. The information and opinions contained within this report shall not be used in other context for any other purpose without prior review and agreement by Haigh Workman Ltd.

The recommendations given in this report are based on site data from discrete locations. Inferences about the subsoil conditions away from the test locations have been made but cannot be guaranteed. We have inferred an appropriate geotechnical model that can be applied for our analyses. However, variations in ground conditions from those described in this report could exist across the site. Should conditions encountered differ to those outlined in this report we ask that we be given the opportunity to review the continued applicability of our recommendations.

Appendix A – Drawings

Drawing No.	Title
25 086/G01	Site Location Plan
25 086/G02	Site Investigation Plan
25 086/G03	Geological Section A-A & B-B

NOTES:

1. LOT BOUNDARIES AND AERIAL PHOTO INFORMATION TAKEN FROM LAND INFORMATION NEW ZEALAND (LINZ).

Issue	Date	Revision
A	19/05/2025	FIRST ISSUE

DWG: SITE LOCATION PLAN

Scale 1:1000 @A3 | Date MAY 2025

Drawn WT | Checked JP | Approved JP

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Project: PROPOSED COMMERICAL BUILDINGS
LOT 1, KAHIKATEAOA LANE

Client: WAIPAPA INVESTMENT TRUST

Project No. 25 086 | RC no. N/A

DWG No. **G01**

Sheet No. **1** of **3**

Plotted By Wayne Thorburn at 19/05/2025 3:38:52 pm

1. THIS PLAN IS BASED ON A SITE PLAN PROVIDED BY THE
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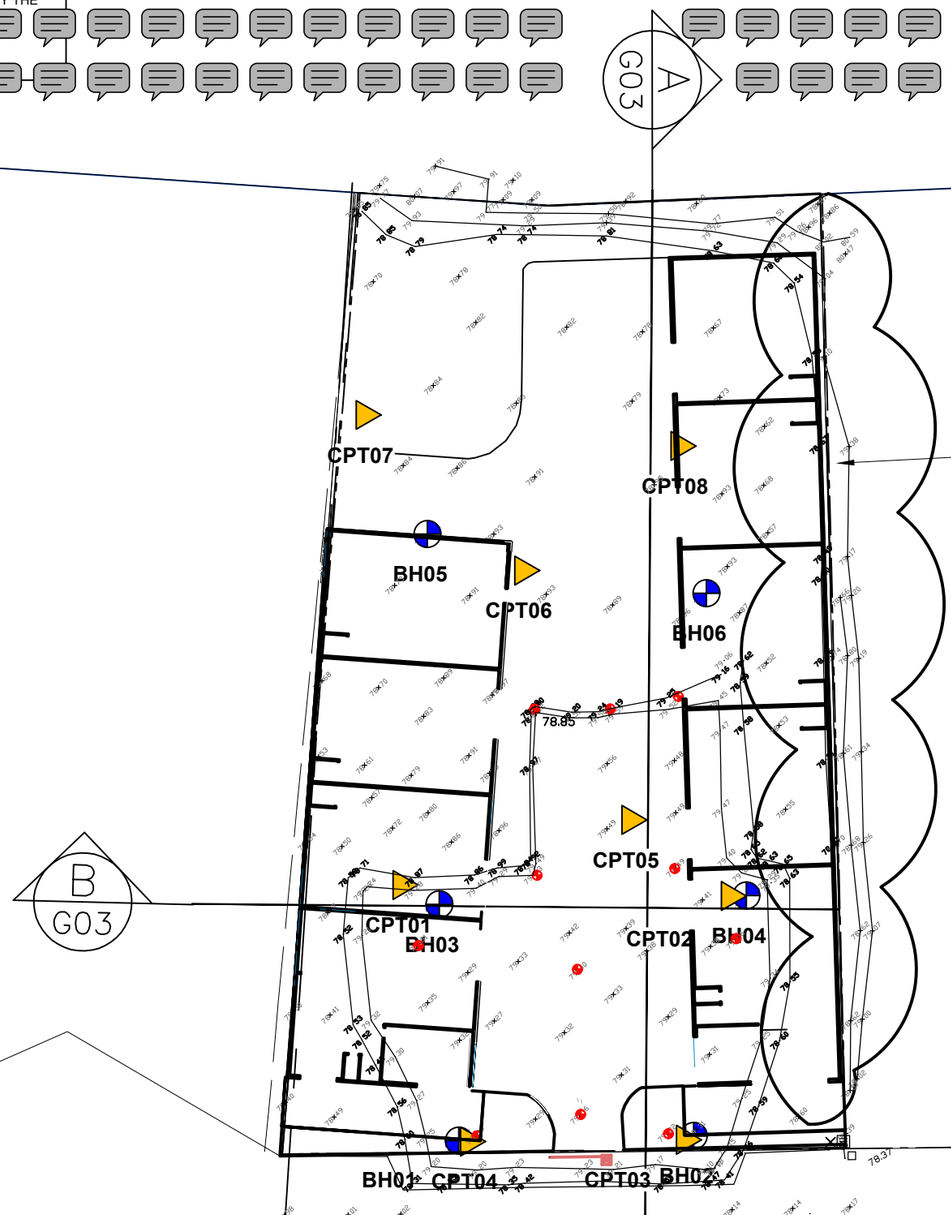
   INDICATIVE ONLY.



OLD FILLED DRAIN FILLED IN DURING CONSTRUCTION
APRIL 2022, OBSERVED BY HAIGH WORKMAN

LOT 2

LOT 3

KAHIKATEAROA LANE EXTENSION

Issue	Date	Revision
A	19/05/2025	FIRST ISSUE

DWG: SITE INVESTIGATION PLAN

Scale 1:500 @A3 | Date MAY 2025

Drawn WT | Checked JP | Approved JP

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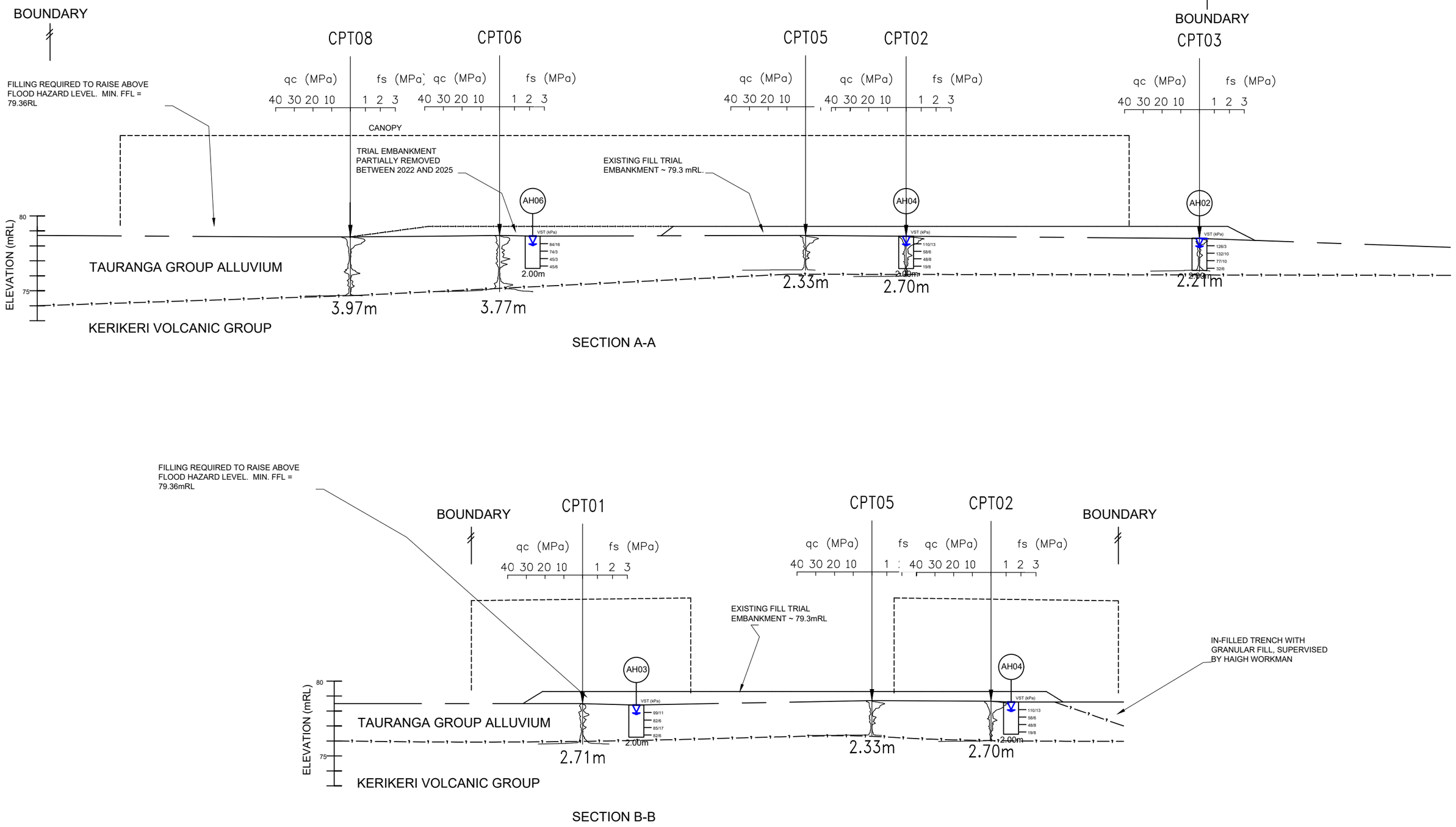
Project No. 25 086 | RC no. N/A

DWG No. **G02**

Sheet No. **2** of **3**

Plotted By Wayne Thorburn at 19/05/2025 3:52:22 pm



SECTION A-A

SECTION B-B

Issue	Date	Revision
A	19/05/2025	FIRST ISSUE

DWG: GEOLOGICAL SECTIONS A-A & B-B

Scale 1:250 @A3 | Date MAY 2025

Drawn WT | Checked JP | Approved JP

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Client: WAIPAPA INVESTMENT TRUST

Project No. 25 086 | RC no. N/A

DWG No. G03

Sheet No. 3 of 3

Plotted By Wayne Thorburn at 19/05/2025 3:53:19 pm

Appendix B – Site Investigation Records

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Borehole Log - BH01

Hole Location: Refer to Site Plan

JOB No. 22 084

CLIENT:	Windermere Energy Ltd	**SITE:**	Lot 1, Klinac Lane & Kahikatearoa Lane, Waipapa		
Date Started:	07/04/2022	**DRILLING METHOD:**	Hand Auger	**LOGGED BY:**	CN
Date Completed:	07/04/2022	**HOLE DIAMETER (mm)**	50mm	**CHECKED BY:**	WT

Soil Description (Based on NZGS Logging Guidelines 2005)	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
SILT, some clay; brown. Stiff, moist, low plasticity. [Tauranga Group]	0.0	TAURANGA GROUP		Groundwater Encountered at 0.4mbgl ▽	1 9	54 / 3	0 5 10 15 20
SILT, some medium to coarse sand; brown. Stiff, moist, no to low plasticity. From 0.3m: Becomes wet. From 0.4m: Minor medium to coarse sand.	0.5						
From 0.6m: Becomes light brown. **SILT**, some medium sand to fine gravel, minor clay; light brownish grey. Stiff, wet, low plasticity. From 0.8m: Some amorphous organics. Saturated.					1 3	71 / 6	
SILT, minor clay, trace fine sand and amorphous organics; grey to brownish grey, mottled light orange. Stiff, saturated, no to low plasticity. From 1.3m: Becomes grey, mottled orange.	1.0						
SILT; bluish grey. Stiff, saturated, no plasticity.	1.5				1 0	54 / 6	
	2.0				1 2	68 / 6	
End of hole at 2.2m (Target Depth)	2.5						
	3.0						
	3.5						
	4.0						
	4.5						

LEGEND

TOPSOIL | CLAY | SILT | SAND | GRAVEL | FILL

Corrected shear vane reading
Remoulded shear vane reading
Scala Penetrometer

Note: UTP = Unable to penetrate. T.S. = Topsoil. Groundwater encountered at 0.4mbgl.
Hand Held Shear Vane S/N: 2220
Scala penetrometer testing not undertaken.

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Borehole Log - BH02

Hole Location: Refer to Site Plan

JOB No. 22 084

CLIENT:	Windermere Energy Ltd	**SITE:**	Lot 1, Klinac Lane & Kahikatearoa Lane, Waipapa		
Date Started:	07/04/2022	**DRILLING METHOD:**	Hand Auger	**LOGGED BY:**	JC
Date Completed:	07/04/2022	**HOLE DIAMETER (mm)**	50mm	**CHECKED BY:**	WT

Soil Description (Based on NZGS Logging Guidelines 2005)	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
SILT, trace clay; brownish grey. Stiff, moist, low plasticity. [Topsoil]	0.0	T.S.					
Clayey **SILT**; greyish brown. Stiff, moist, low plasticity. [Tauranga Group]		TAURANGA GROUP		Groundwater Encountered at 0.6mbgl	3 9	126 / 3	
At 0.5m: Some amorphous organics.	0.5						
SILT, some amorphous organics, trace fine to medium sand; light greyish brown. Firm, saturated, no plasticity.							
SILT, some amorphous organics, minor clay; light greyish brown. Stiff,saturated, low plasticity.					1 4	132 / 10	
From 1.2m: Becomes grey, speckled orangish brown.	1.0						
From 1.5m: Becomes soft to firm. Poor sample recovery.	1.5				8	77 / 10	
						32 / 6	
End of hole at 2.0m (Target Depth)	2.0				5		
	2.5						
	3.0						
	3.5						
	4.0						
	4.5						

Scala Penetrometer (blows/100mm): 0 5 10 15 20

LEGEND

TOPSOIL | CLAY | SILT | SAND | GRAVEL | FILL

Corrected shear vane reading
Remoulded shear vane reading
Scala Penetrometer

Note: UTP = Unable to penetrate. T.S. = Topsoil. Groundwater encountered at 0.6mbgl.
Hand Held Shear Vane S/N: 2278
Scala penetrometer testing not undertaken.

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Borehole Log - BH03

Hole Location: Refer to Site Plan

JOB No. 22 084

CLIENT:	Windermere Energy Ltd	**SITE:**	Lot 1, Klinac Lane & Kahikatearoa Lane, Waipapa		
Date Started:	07/04/2022	**DRILLING METHOD:**	Hand Auger	**LOGGED BY:**	CN
Date Completed:	07/04/2022	**HOLE DIAMETER (mm)**	50mm	**CHECKED BY:**	WT

Soil Description

Based on NZGS Logging Guidelines 2005

Depth (m)	Soil Description
0.0	**SILT**, some clay; brown. Stiff, moist, low plasticity. [Tauranga Group]
	From 0.4m: Becomes moist to wet.
0.5	**SILT**, some medium to coarse sand; brown. Stiff, wet, no to low plasticity.
	Medium to coarse sandy **SILT**; brown to light brown. Stiff, saturated, no plasticity.
	SILT, minor medium to coarse; brownish grey, mottled light yellowish grey. Stiff, saturated, low plasticity.
1.0	**SILT**, some clay, minor amorphous organics, trace medium sand; grey, mottled light yellowish grey.
	From 1.1m: Becomes grey, mottled brown and greenish grey.
1.5	**SILT**, trace fine sand; bluish grey. Stiff, saturated, no to low plasticity.
	From 1.7m: Some fine to medium sand.
	Trace fine sand; greyish blue, mottled grey.
2.0	**End of hole at 2.2m (Target Depth)**
2.5	
3.0	
3.5	
4.0	
4.5	

Geology: TAURANGA GROUP

Water Level: Groundwater Encountered at 0.4mbgl

Depth (m)	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
0.0			
0.5	9	99 / 11	
1.0	1 5	82 / 6	
1.5	5	85 / 17	
2.0	1 5	82 / 6	

Scala Penetrometer scale: 0 5 10 15 20

LEGEND

TOPSOIL | CLAY | SILT | SAND | GRAVEL | FILL

Corrected shear vane reading
Remoulded shear vane reading
Scala Penetrometer

Note: UTP = Unable to penetrate. T.S. = Topsoil. Groundwater encountered at 0.4mbgl.
Hand Held Shear Vane S/N: 2220
Scala penetrometer testing not undertaken.

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Borehole Log - BH04

Hole Location: Refer to Site Plan

JOB No. 22 084

CLIENT:	Windermere Energy Ltd	**SITE:**	Lot 1, Klinac Lane & Kahikatearoa Lane, Waipapa		
Date Started:	07/04/2022	**DRILLING METHOD:**	Hand Auger	**LOGGED BY:**	JC
Date Completed:	07/04/2022	**HOLE DIAMETER (mm)**	50mm	**CHECKED BY:**	WT

Soil Description (Based on NZGS Logging Guidelines 2005)	Depth (m)	Geology	Graphic Log	Water Level	Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
SILT; brown. Stiff, dry, no plasticity. Friable.	0.0	T.S.					
Clayey **SILT**; greyish brown. Stiff, moist, low plasticity. [Tauranga Group]		TAURANGA GROUP		Groundwater Encountered at 0.6mbgl	9	110 / 13	
	0.5						
SILT, some medium to coarse sand; greyish brown. Firm, saturated, no plasticity.					9	58 / 6	
SILT, minor clay; light greyish brown, streaked minor orangish brown. Firm, saturated, low plasticity.							
	1.0						
From 1.2m: becomes light greyish brown, streaked light grey and orangish brown.					6	48 / 8	
From 1.5m: No clay. Poor sample recovery.	1.5						
					2	19 / 8	
End of hole at 2.0m (Target Depth)	2.0						
	2.5						
	3.0						
	3.5						
	4.0						
	4.5						

Scala Penetrometer: 0 5 10 15 20

LEGEND

TOPSOIL | CLAY | SILT | SAND | GRAVEL | FILL

Corrected shear vane reading
Remoulded shear vane reading
Scala Penetrometer

Note: UTP = Unable to penetrate. T.S. = Topsoil. Groundwater encountered at 0.6mbgl.
Hand Held Shear Vane S/N: 2278
Scala penetrometer testing not undertaken.

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Borehole Log - BH05

Hole Location: Refer to Site Plan

JOB No. 22 084

CLIENT:	Windermere Energy Ltd	**SITE:**	Lot 1, Klinac Lane & Kahikatearoa Lane, Waipapa		
Date Started:	07/04/2022	**DRILLING METHOD:**	Hand Auger	**LOGGED BY:**	CN
Date Completed:	07/04/2022	**HOLE DIAMETER (mm)**	50mm	**CHECKED BY:**	WT

Soil Description

Based on NZGS Logging Guidelines 2005

Depth (m)	Soil Description
0.0	**SILT**, some clay; greyish brown. Stiff, moist, low plasticity. [Topsoil]
	SILT, some clay; greyish brown. Stiff, moist, low to medium plasticity. [Tauranga Group]
	SILT, minor clay, minor medium to coarse sand; greyish brown, mottled orange, Very stiff, moist to wet, no to low plasticity.
0.5	From 0.5m: Becomes wet.
	SILT, trace fine sand; light greyish brown. Stiff, wet, no to low plasticity.
	From 0.8m: Trace fine to medium sand.
	SILT, minor clay, trace fine to medium sand; light greyish brown, mottled light yellow. Stiff, saturated, low plasticity.
1.0	**SILT**, trace fine sand; grey, Firm, saurated, low plasticity.
	From 1.3m: Becomes orange, mottled grey, Stiff to very stiff.
1.5	From 1.6m: Becomes grey, mottled orange.
	SILT, grey, mottled bluish grey. Firm, saturated, no plasticity.
2.0	
	End of hole at 2.2m (Target Depth)
2.5	
3.0	
3.5	
4.0	
4.5	

Geology: TS; TAURANGA GROUP

Graphic Log

Water Level: Groundwater Encountered at 0.6mbgl

Sensitivity	Vane Shear and Remoulded Vane Shear Strengths (kPa)	Scala Penetrometer (blows/100mm)
1 1	122 / 11	0 5 10 15 20
1 9	54 / 3	
8	139 / 17	
6	31 / 6	
1 0	28 / 3	

LEGEND

TOPSOIL | CLAY | SILT | SAND | GRAVEL | FILL

Corrected shear vane reading
Remoulded shear vane reading
Scala Penetrometer

Note: UTP = Unable to penetrate. TS = Topsoil. Groundwater encountered at 0.6mbgl.
Hand Held Shear Vane S/N: 2220
Scala penetrometer testing not undertaken.

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Borehole Log - BH06

Hole Location: Refer to Site Plan

JOB No. 22 084

CLIENT:	Windermere Energy Ltd	**SITE:**	Lot 1, Klinac Lane & Kahikatearoa Lane, Waipapa		
Date Started:	07/04/2022	**DRILLING METHOD:**	Hand Auger	**LOGGED BY:**	JC
Date Completed:	07/04/2022	**HOLE DIAMETER (mm)**	50mm	**CHECKED BY:**	WT

Soil Description

Based on NZGS Logging Guidelines 2005

SILT, trace clay; brownish grey. Stiff, moist, low plasticity. [Topsoil]

SILT, some clay; brownish grey. Stiff, moist, low plasticity. [Tauranga Group]

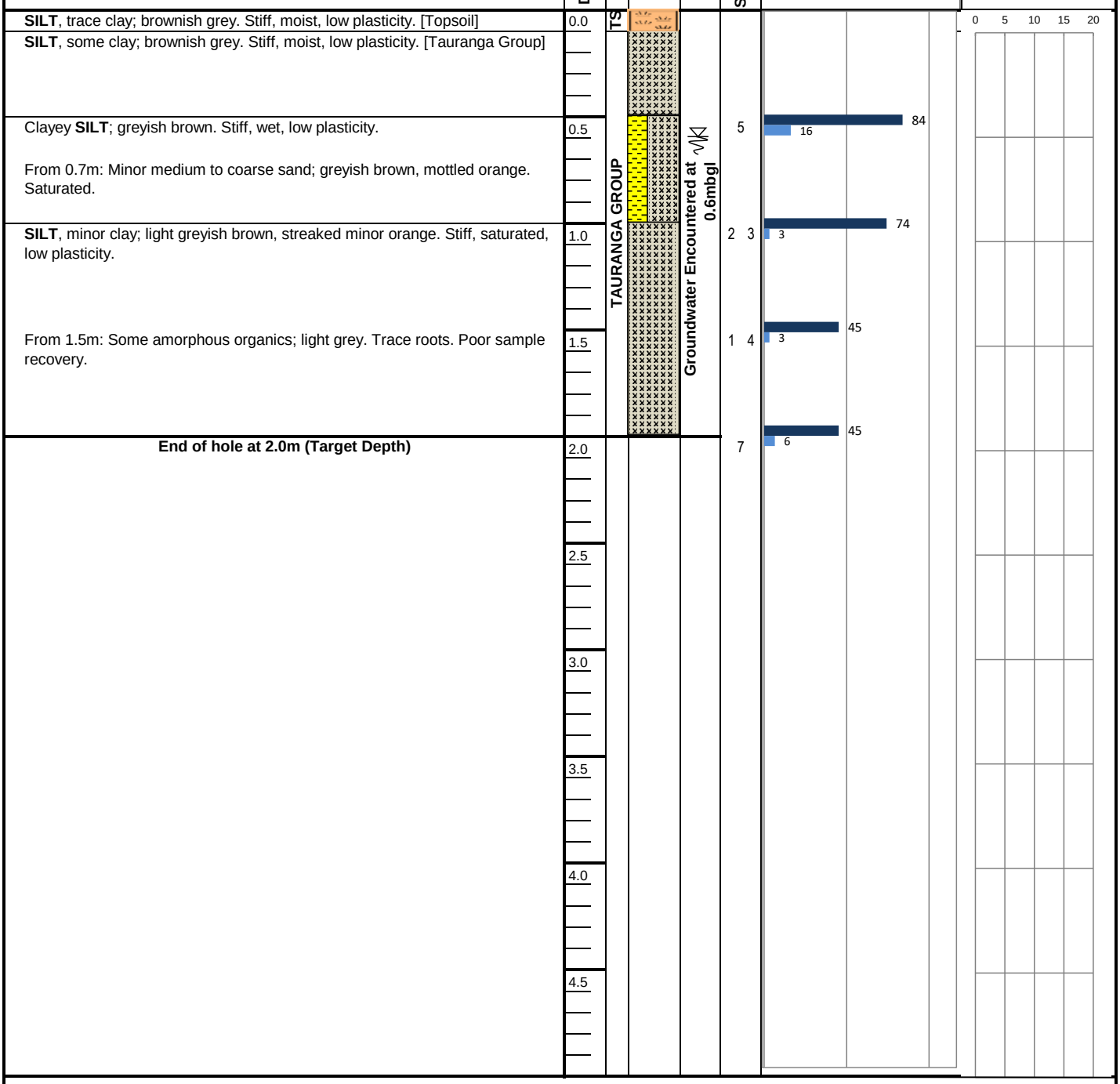
Clayey **SILT**; greyish brown. Stiff, wet, low plasticity.

From 0.7m: Minor medium to coarse sand; greyish brown, mottled orange. Saturated.

SILT, minor clay; light greyish brown, streaked minor orange. Stiff, saturated, low plasticity.

From 1.5m: Some amorphous organics; light grey. Trace roots. Poor sample recovery.

End of hole at 2.0m (Target Depth)



LEGEND

TOPSOIL | CLAY | SILT | SAND | GRAVEL | FILL

Corrected shear vane reading
Remoulded shear vane reading
Scala Penetrometer

Note: UTP = Unable to penetrate. TS = Topsoil. Groundwater encountered at 0.6mbgl.
Hand Held Shear Vane S/N: 2278
Scala penetrometer testing not undertaken.

CPT Client Engagement / Quote Request

Project Details		Date	11/04/2022
Project Name	Proposed Development	Job Identifier	HW Lot 1 Kahikatearoa Lane
Project Address	Lot 1 Kahikatearoa Lane, Waipapa		
Engineering Consultant Company Name	HW	Engineering Project Manager	Josh Cureen
Email		Mobile	
Client Name		Client Contact Details	

Test Requirements - CPT		Preferred Job Completion Date	
Target No of CPT Tests Required	8	Maximum Test Depth Required	refusal
No of CPT Tests Required Through Pavement or Other Hard Surface		Type and Thickness of Hard Surface	
Other Requirements Outside Standard Greenfield Testing			

Please note: Service clearance is to be provided by the client or their agents and details are to be provided to the CPT operator prior to Underground Investigation Ltd commencing work. Any delays due to service clearance or H&S approvals will be at the clients expense and may reduce the amount of testing being able to be completed in the working day.

Test Requirements - Dissipation Testing		Please List Test No and Approximate Target Depth of Dissipation	
Test No	Depth	Test No	Depth

Please note: In order to provide useful dissipation data, UIL recommends carrying out at least one CPT prior to carrying out dissipation in order to select appropriate depths for testing. It is preferred if the Geotechnical Engineer for the project discusses this with the CPT operator after completion of the initial testing.

Any Other Site Requirements

UNDERGROUND INVESTIGATION

CPT Equipment Information

CPT Rig Type	Geotech AB - Georig 220	Maximum Push Capacity	200kN
Any Deviations From Common Setup		Reaction Restraint	Screw Anchors
Cone Penetrometer	Nova Cone 100MPa With Memory	Cone Penetrometer Type	TE2
Manufacturer	Geotech AB	Load Cell Configuration	Compresion
Tip Area	10cm	Pore Pressure Type	U_2
Full Scale Output of Sensors	q_c : 100 MPa	f_s : 1 MPa	u_2 : 2 MPa
Calibration Test Class	ISO 1	Saturation Method	Pump Saturation With Secondary Vacuum
Temprature Sensor	No	Data Interval	10mm
Temprature Conditioning	Cone Warmer set to 20^o C	Typical Cone Temprature at Start of Test	16-20^o C
Any Deviations From Above			

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT01	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5446	Battery Voltage Start	6.23
Cone Area Ratio	0.854	Start Recording	1:41:00 PM
Probe Radius	0.0179	Finish Recording	1:51:00 PM
Date of First Push Current Calibration	10/01/2022	Measured Ground Water Depth	0.4
Metres To Next Calibration	829	Total Penetration Depth (m)	2.732
Depth of Predrill	0	Test ended due to:	☑ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	-0.5		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Since Last Calibration	0.02%	0.00%	0.32%
End of test with tip loosened	0.03%	0.04%	0.06%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT02	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5325	Battery Voltage Start	6.2
Cone Area Ratio	0.856	Start Recording	2:09:00 PM
Probe Radius	0.0179	Finish Recording	2:18:00 PM
Date of First Push Current Calibration	24/01/2022	Measured Ground Water Depth	1.9
Metres To Next Calibration	1047	Total Penetration Depth (m)	2.71
Depth of Predrill	0	Test ended due to:	☑ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	0		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.00%	0.05%	0.34%
End of test with tip loosened	0.07%	0.00%	0.36%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT03	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	6.17
Cone Area Ratio	0.821	Start Recording	2:35:00 PM
Probe Radius	0.018	Finish Recording	2:44:00 PM
Date of First Push Current Calibration	16/03/2022	Measured Ground Water Depth	0.7
Metres To Next Calibration	1315	Total Penetration Depth (m)	2.21
Depth of Predrill	0	Test ended due to:	☑ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	-0.4		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.74%	0.10%	0.20%
End of test with tip loosened	0.04%	0.03%	0.52%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT04	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5654	Battery Voltage Start	6.15
Cone Area Ratio	0.852	Start Recording	3:22:00 PM
Probe Radius	0.018	Finish Recording	3:31:00 PM
Date of First Push Current Calibration	11/04/2022	Measured Ground Water Depth	0.3
Metres To Next Calibration	1498	Total Penetration Depth (m)	2.31
Depth of Predrill	0	Test ended due to:	☑ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	-0.3		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.04%	0.00%	0.00%
End of test with tip loosened	0.02%	0.04%	0.02%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT05	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5708	Battery Voltage Start	6.13
Cone Area Ratio	0.834	Start Recording	3:52:00 PM
Probe Radius	0.018	Finish Recording	4:00:00 PM
Date of First Push Current Calibration	2/12/2021	Measured Ground Water Depth	0.6
Metres To Next Calibration	492	Total Penetration Depth (m)	2.35
Depth of Predrill	0	Test ended due to:	☐ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	0		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.02%	0.07%	0.26%
End of test with tip loosened	0.06%	0.01%	0.38%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT06	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5446	Battery Voltage Start	6.11
Cone Area Ratio	0.854	Start Recording	4:21:00 PM
Probe Radius	0.0179	Finish Recording	4:31:00 PM
Date of First Push Current Calibration	10/01/2022	Measured Ground Water Depth	0.7
Metres To Next Calibration	826	Total Penetration Depth (m)	3.77
Depth of Predrill	0	Test ended due to:	☐ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	0		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.04%	0.02%	0.10%
End of test with tip loosened	0.06%	0.02%	0.38%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT07	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5325	Battery Voltage Start	6.09
Cone Area Ratio	0.856	Start Recording	4:45:00 PM
Probe Radius	0.0179	Finish Recording	4:53:00 PM
Date of First Push Current Calibration	24/01/2022	Measured Ground Water Depth	collapsed
Metres To Next Calibration	1044	Total Penetration Depth (m)	2.927
Depth of Predrill	0	Test ended due to:	☐ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	0		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.05%	0.04%	0.72%
End of test with tip loosened	0.02%	0.00%	0.04%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

UNDERGROUND INVESTIGATION

CPT Test Information

Test Hole Number	CPT08	Job Identifier	HW Lot 1 Kahikatearoa Lane
Test Date	11/04/2022	Operator	Craig Greenfield
Cone Serial Number	5681	Battery Voltage Start	6.08
Cone Area Ratio	0.821	Start Recording	5:12:00 PM
Probe Radius	0.018	Finish Recording	5:23:00 PM
Date of First Push Current Calibration	16/03/2022	Measured Ground Water Depth	0.7
Metres To Next Calibration	1313	Total Penetration Depth (m)	3.972
Depth of Predrill	0	Test ended due to:	☐ High Tilt ☑ High Tip Pressure ☐ High Friction ☐ High Pore Pressure ☐ High Total load ☐ Danger of Rods Buckling ☐ Target Depth ☑ Anchor Failure
Depth at Start of Test	0		
Anchor Depth (Left)	1.5		
Anchor Depth (Right)	1.5		

Zero Value Change % FSO

	Point Resistance	Pore Pressure	Sleeve Friction
Zero Shift Since First Push Current Calibration	0.73%	0.14%	0.32%
End of test with tip loosened	0.06%	0.00%	0.48%

Dissipation Testing

Test No	Depth (m)	Duration (secs)	Comments

Notes and Comments

Data loss (typically at rod change points). Either deleted or averaged	qc	fs	u

Underground Investigation Ltd
Cone Penetration Testing
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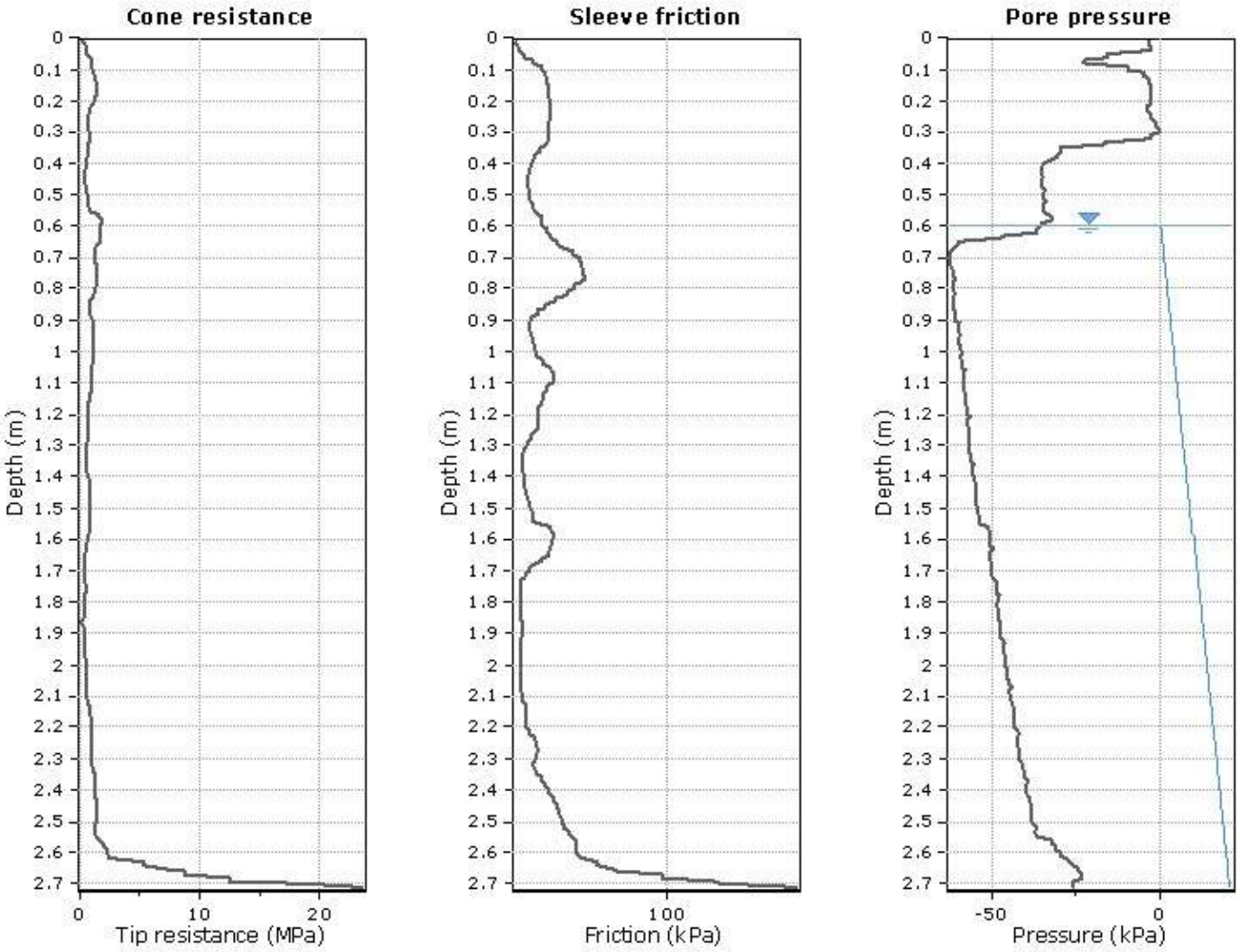
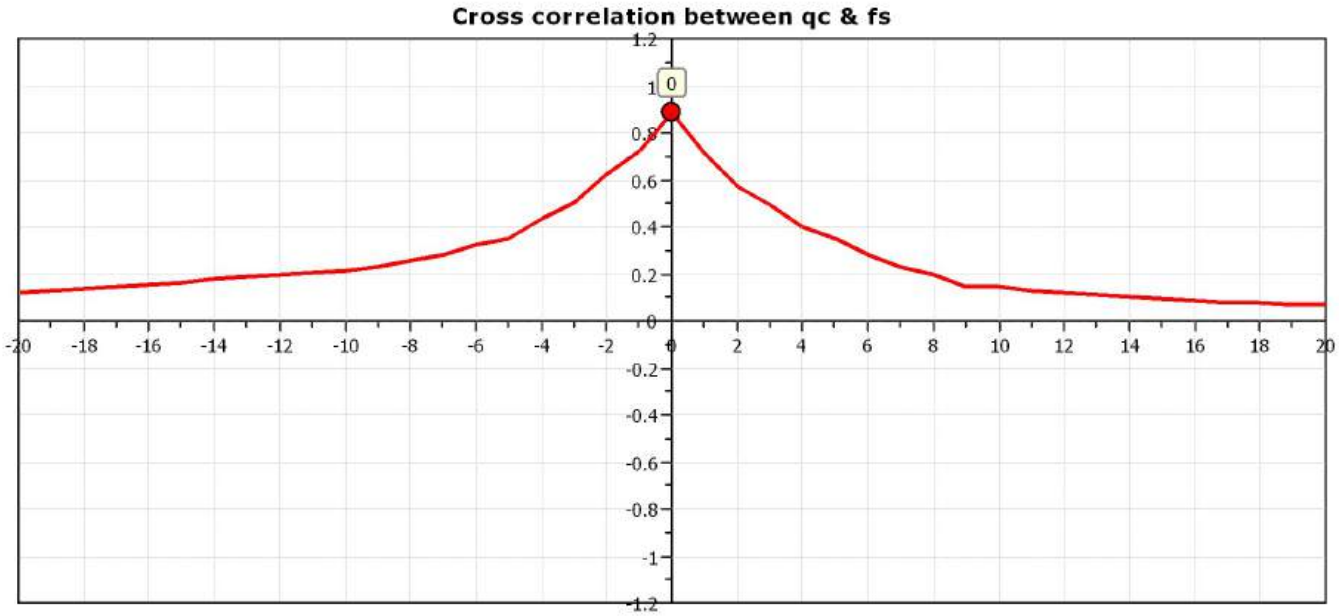
CPT: CPT01
Total depth: 2.71 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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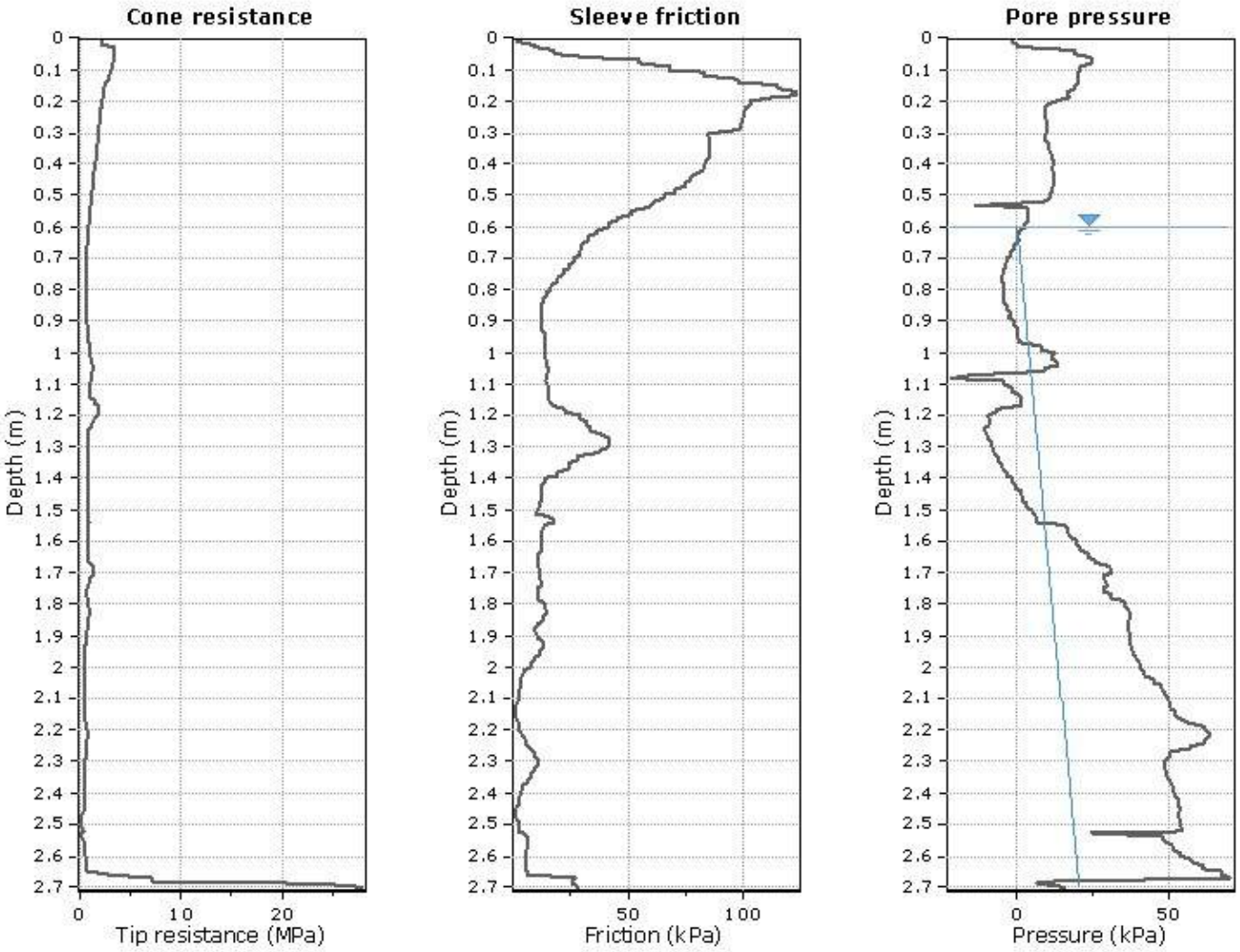
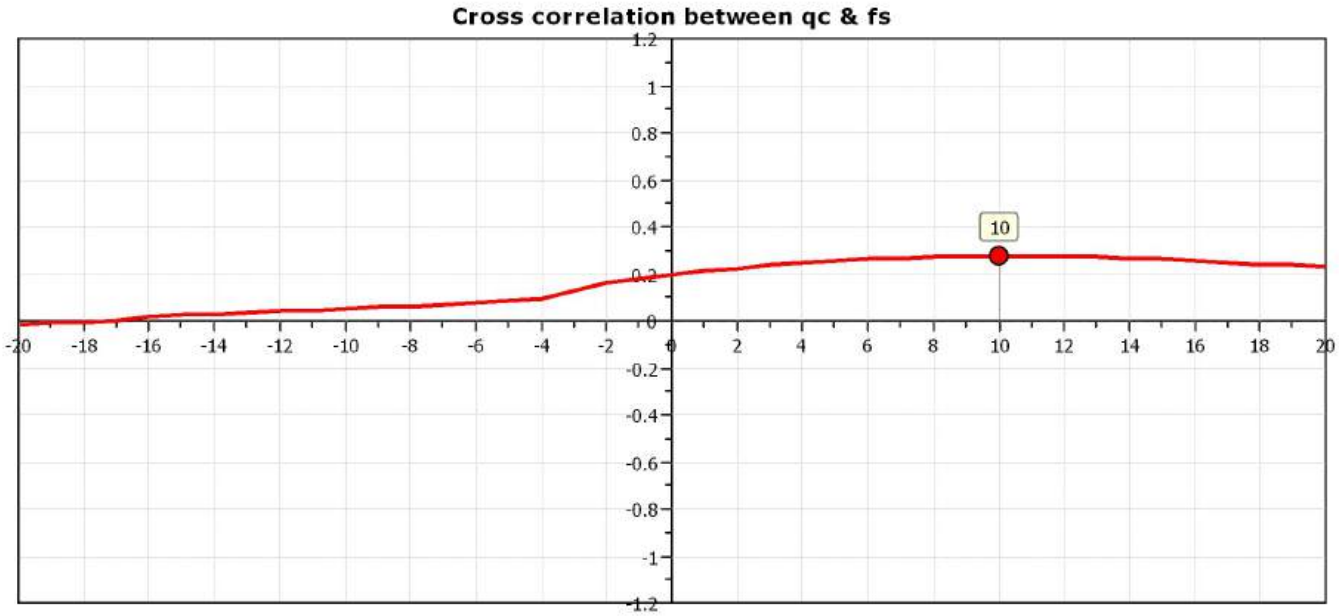
CPT: CPT02
Total depth: 2.70 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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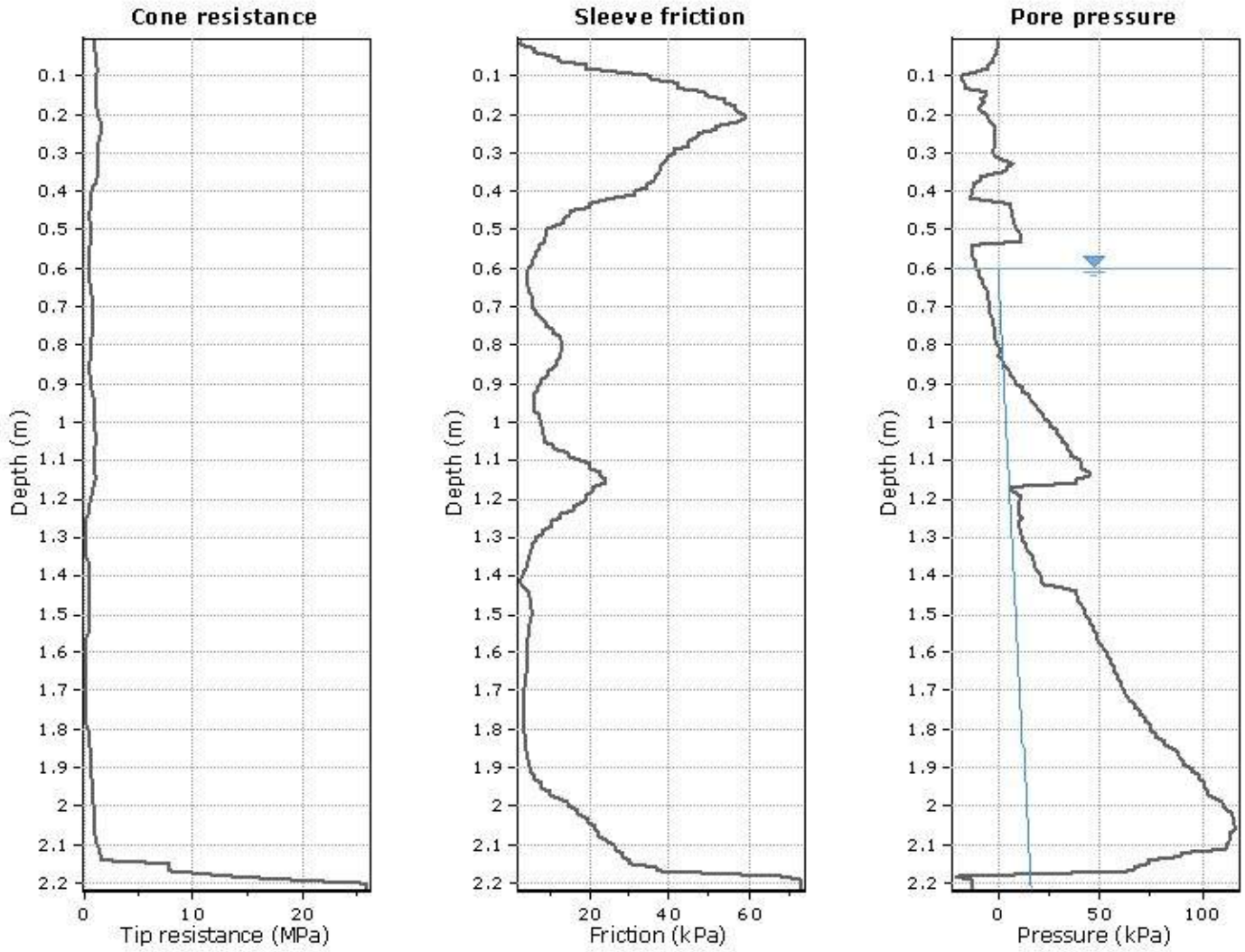
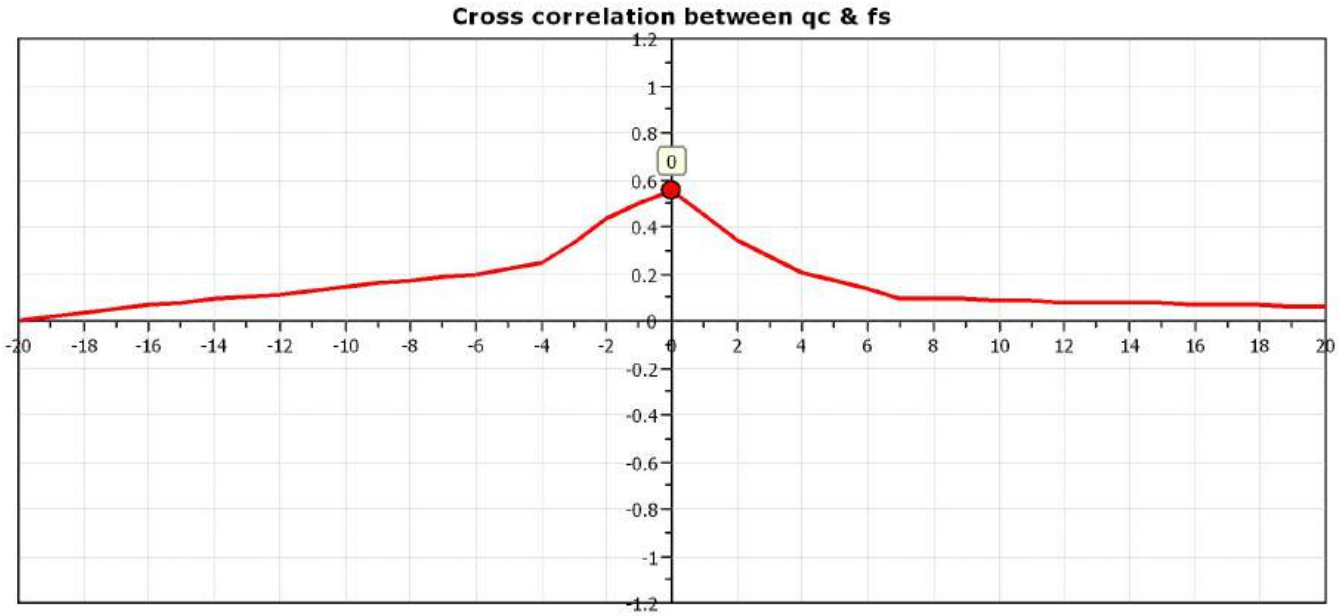
CPT: CPT03
Total depth: 2.21 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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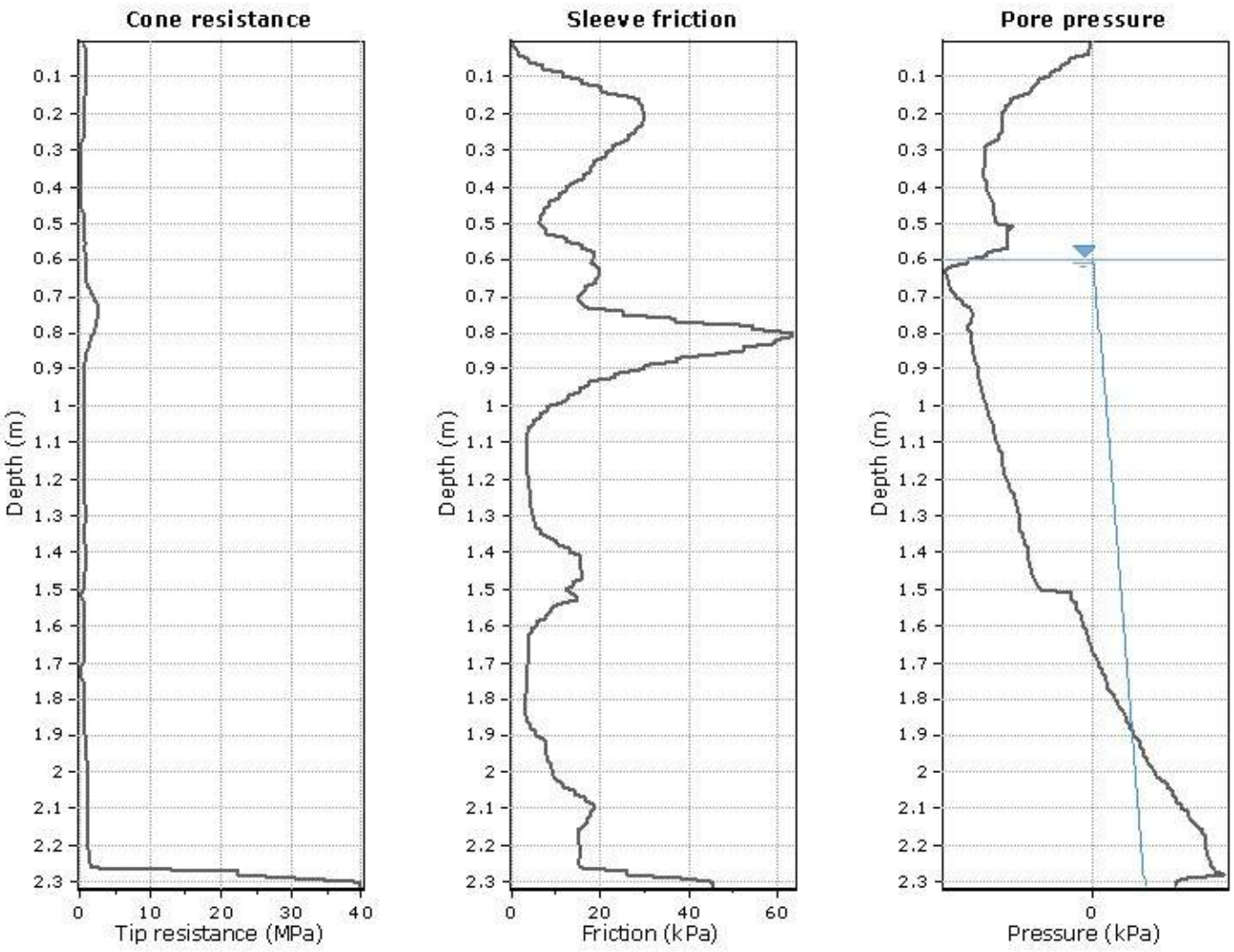
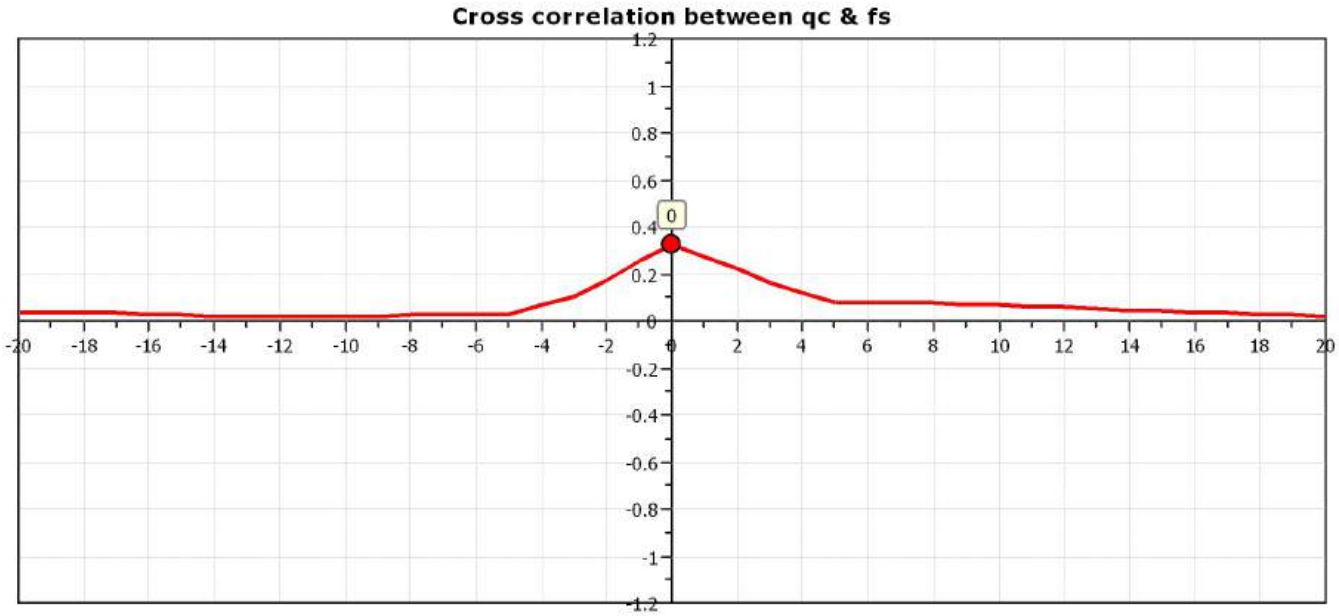
CPT: CPT04
Total depth: 2.31 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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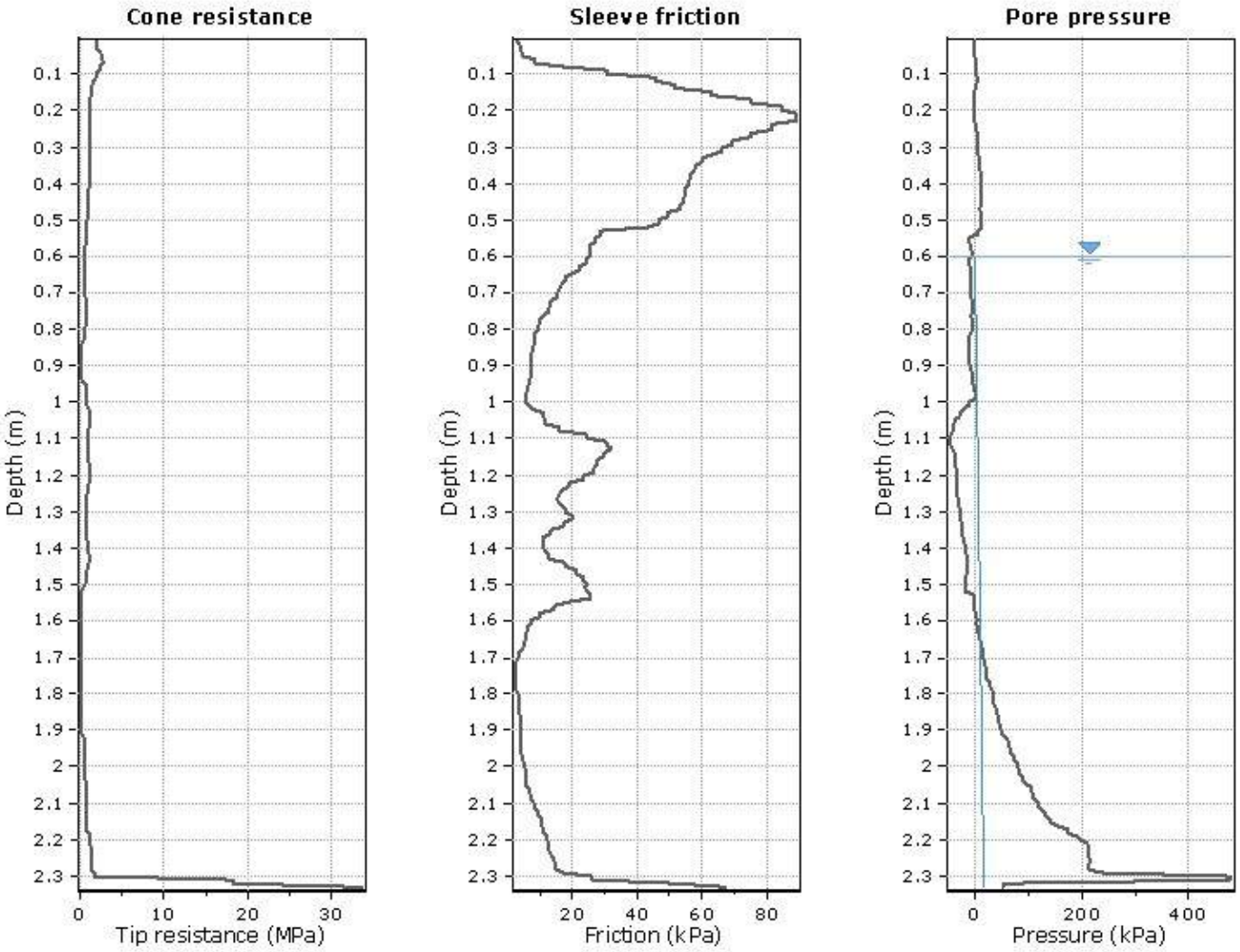
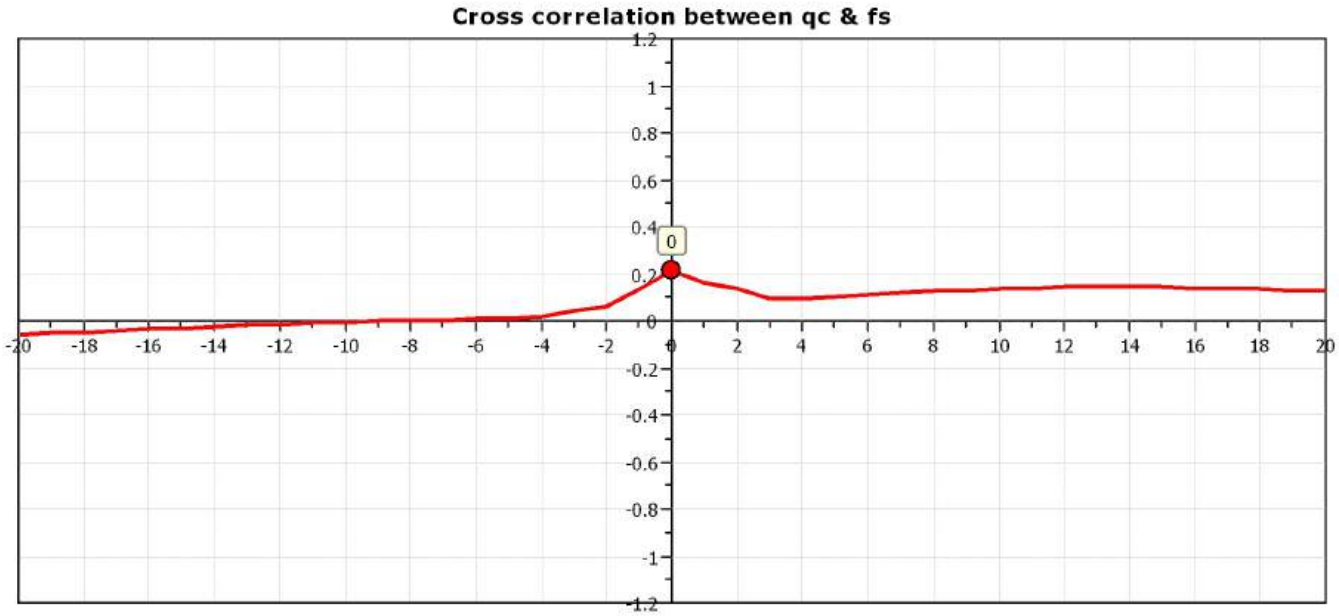
CPT: CPT05
Total depth: 2.33 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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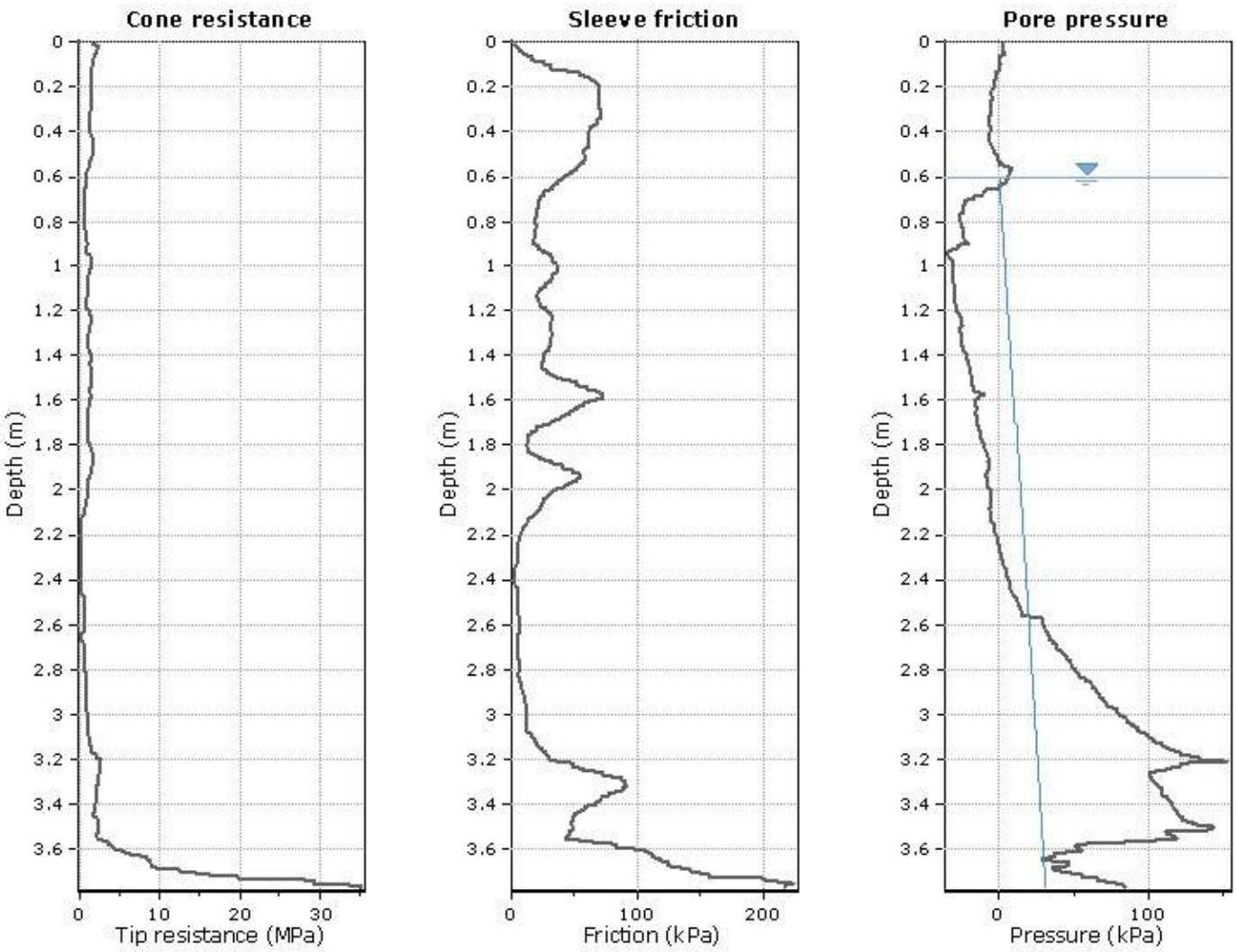
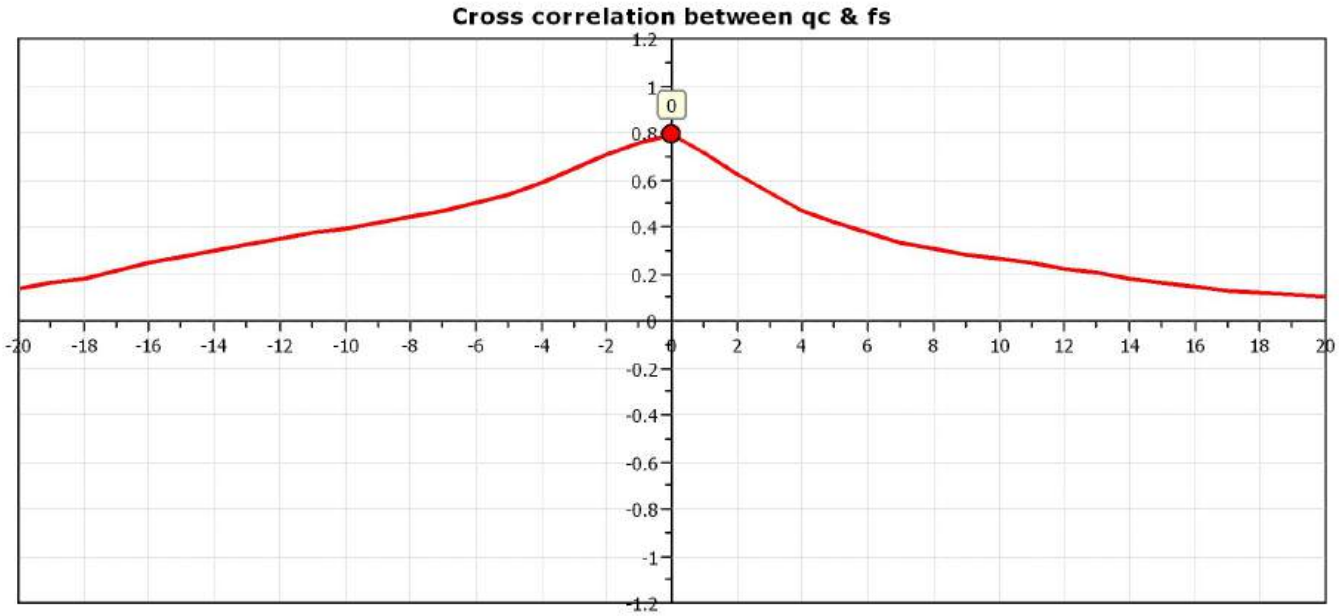
CPT: CPT06
Total depth: 3.77 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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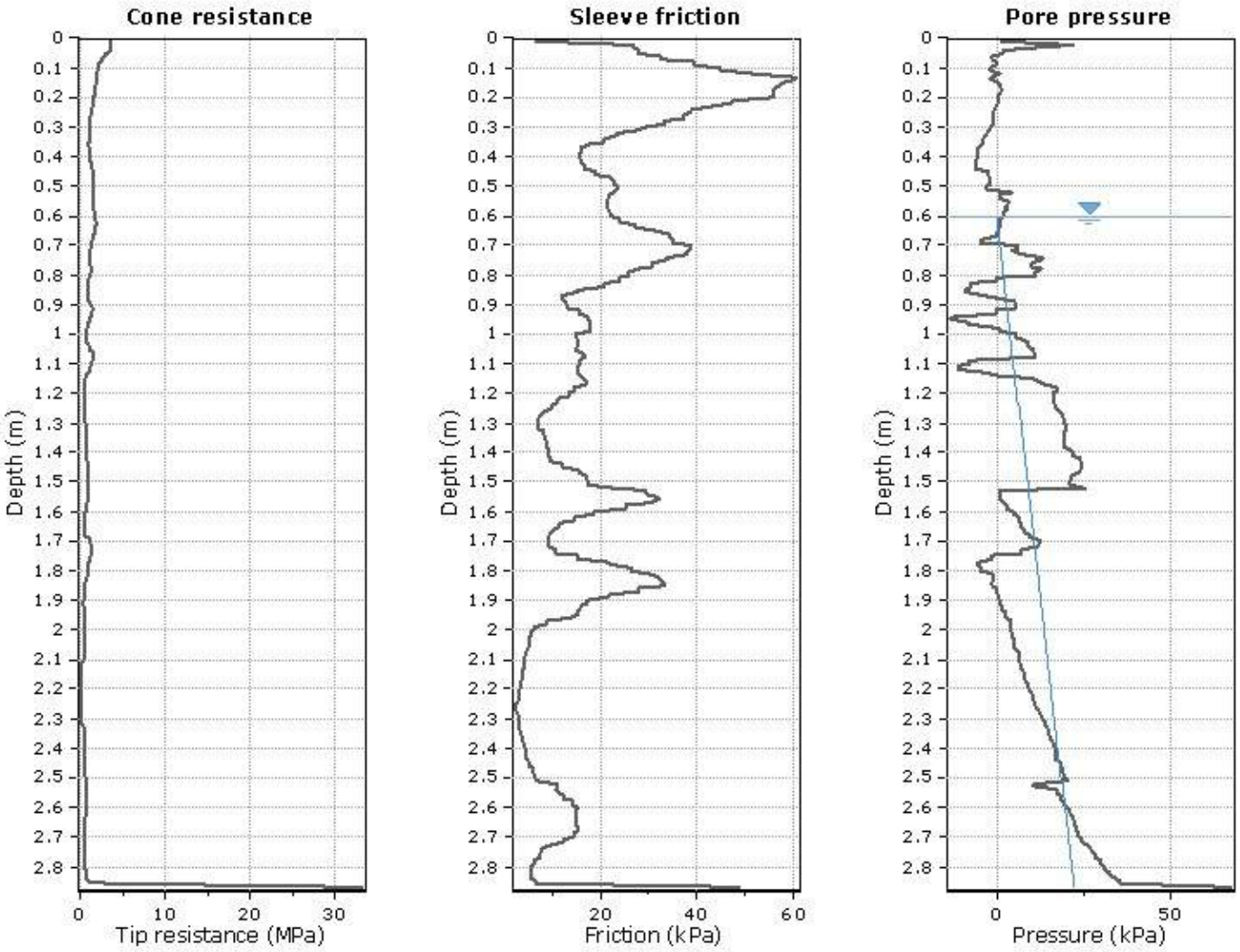
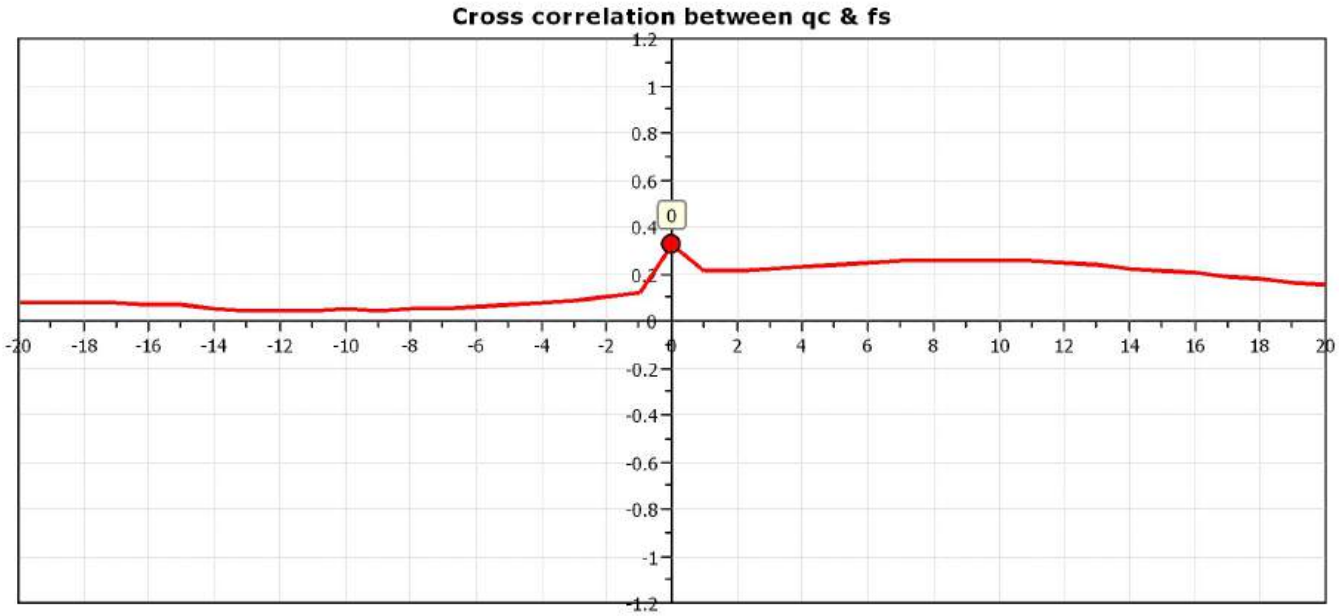
CPT: CPT07
Total depth: 2.87 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



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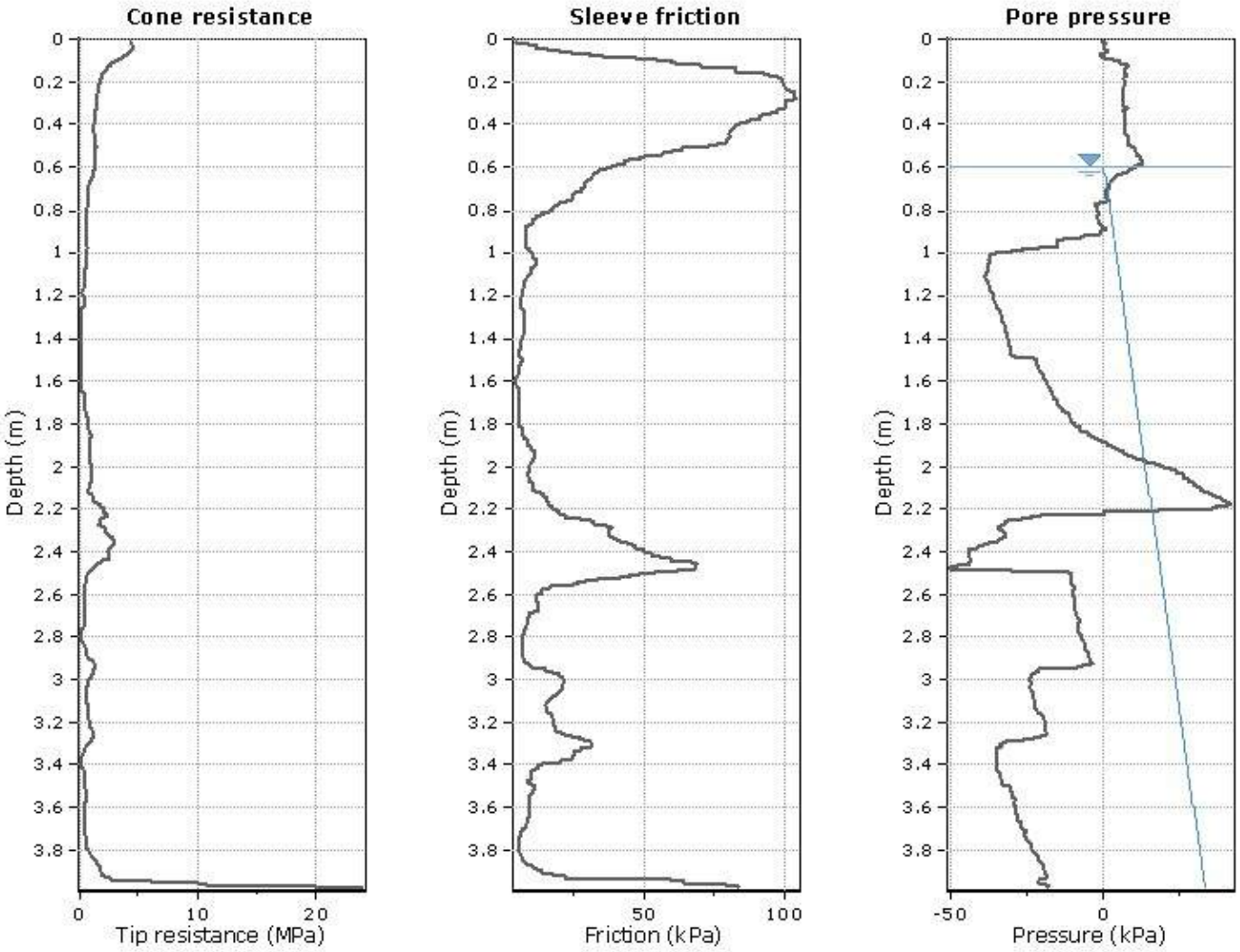
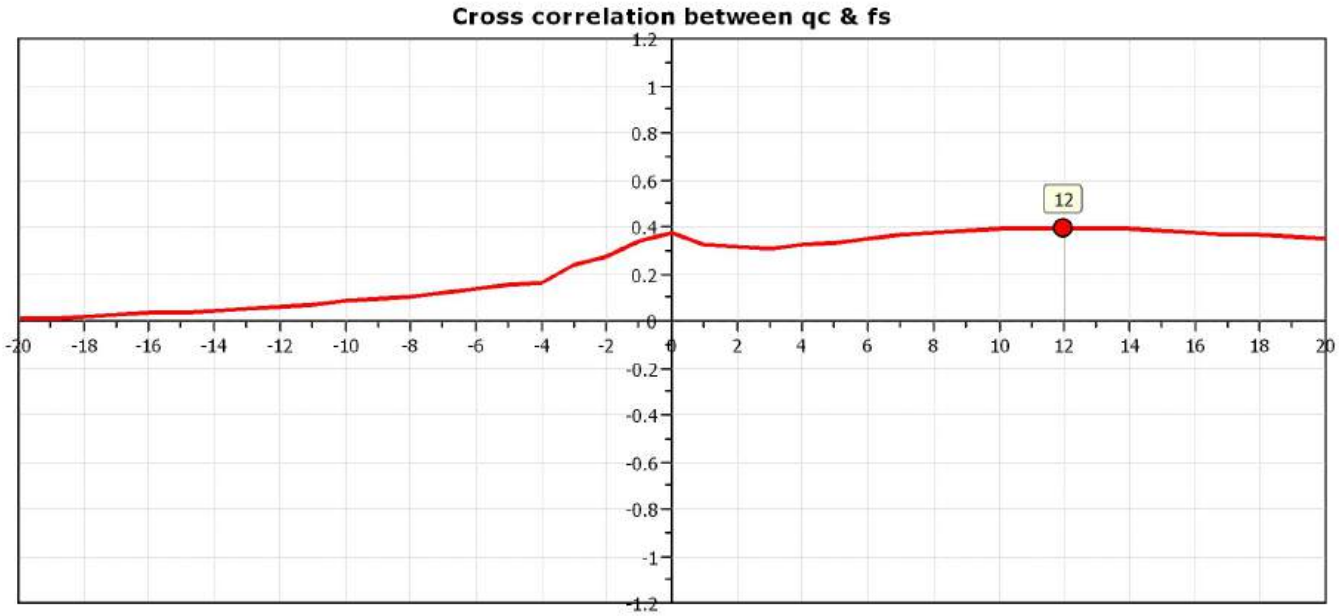
CPT: CPT08
Total depth: 3.97 m, Date: 12/04/2022
Surface Elevation: 0.00 m
Coords: X:0.00, Y:0.00
Cone Type: Compression
Cone Operator: Underground Investigation Ltd

Project: **Lot 1 - Windermere**
Location: **Waipapa**



The plot below presents the cross correlation coeficient between the raw qc and fs values (as measured on the field). X axes presents the lag distance (one lag is the distance between two sucessive CPT measurements).



Appendix C – Settle 3D Analysis and Liquefaction Assessment

Loads

1. Rectangular Load: "Rectangular Load 1"

Length	1 m
Width	1 m
Rotation angle	0 degrees
Load Type	Flexible
Area of Load	1 m2
Load	75 kPa
Elevation	0 m
Installation Stage	Stage 3 = 0.55 y

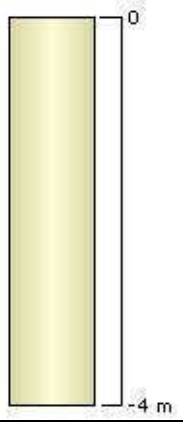
Coordinates

X [m]	Y [m]
12.583	12.669
13.583	12.669
13.583	13.669
12.583	13.669

Soil Layers

Ground Surface Drained: Yes

Layer #	Type	Thickness [m]	Elevation [m]	Drained at Bottom
1	alluvium	4	0	Yes



Soil Properties

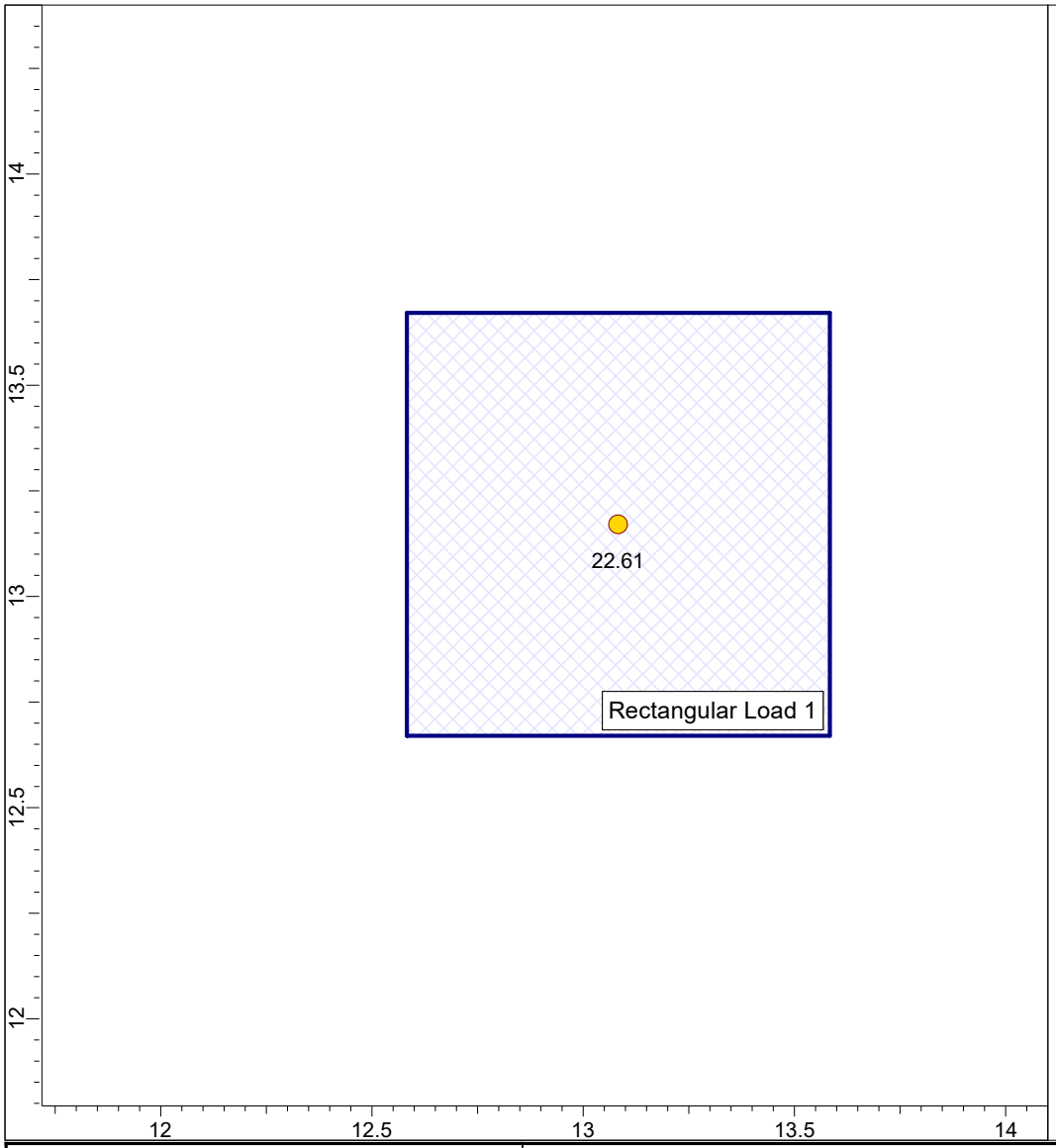
Property	alluvium
Color	
Unit Weight [kN/m3]	15
Saturated Unit Weight [kN/m3]	15
K0	0.6
Primary Consolidation	Enabled
Material Type	Linear
mv [m2/kN]	0.0003
mvur [m2/kN]	0.0003
Cv [m2/y]	22
Cvr [m2/y]	-
B-bar	1
Undrained Su A [kN/m2]	0
Undrained Su S	0.2
Undrained Su m	0.8
Piezo Line ID	1

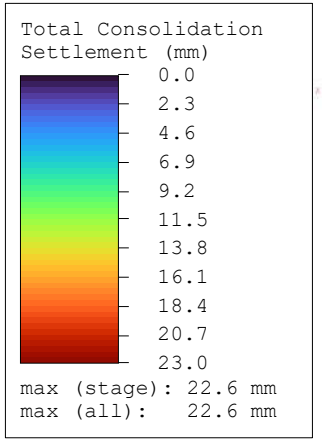
Groundwater

Groundwater method	Piezometric Lines
Water Unit Weight	9.81 kN/m3

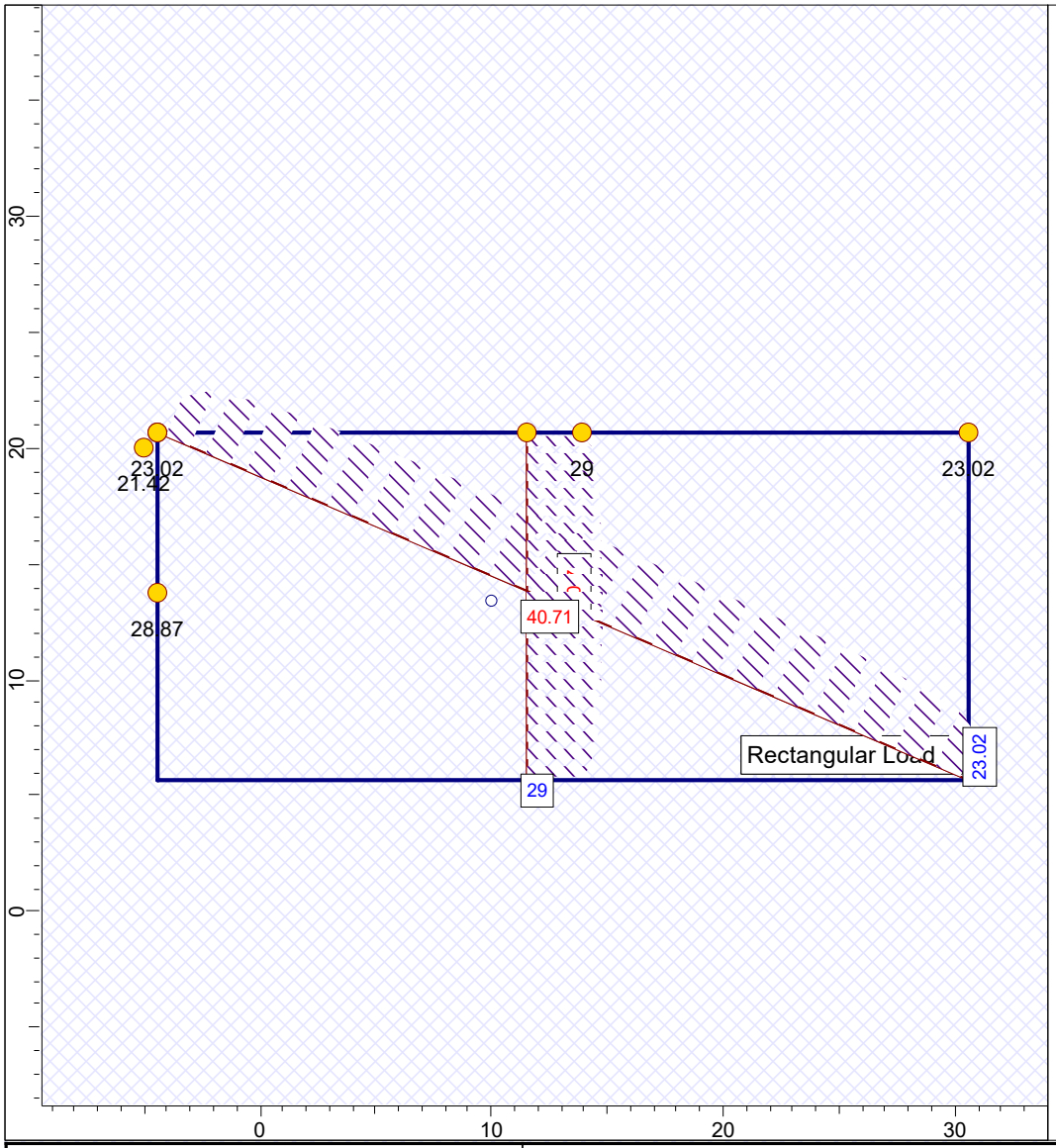
Piezometric Line Entities

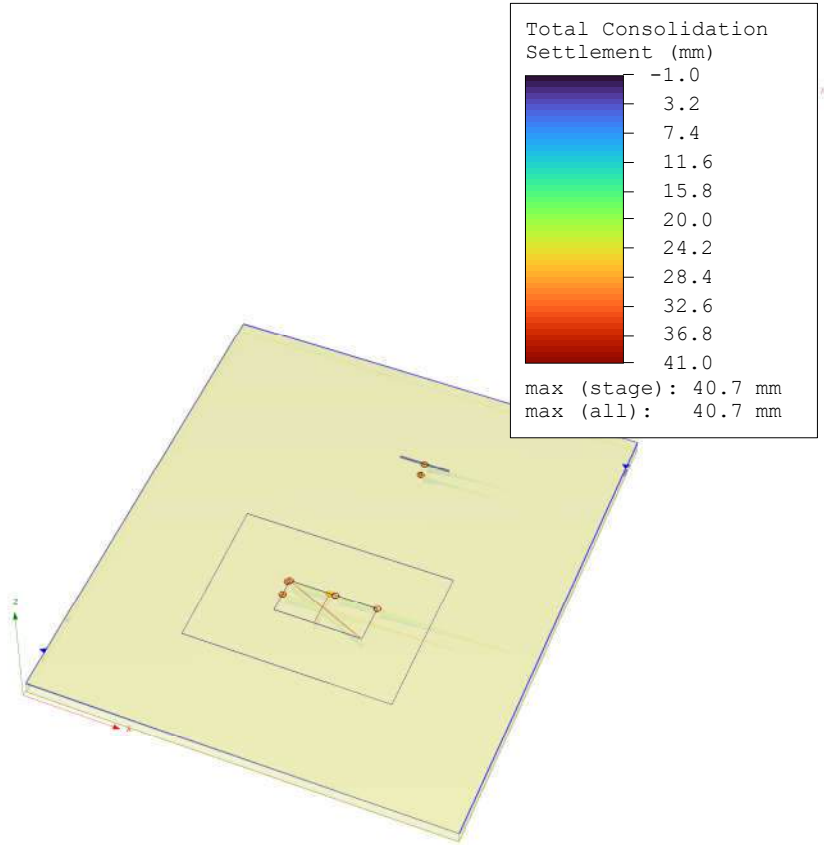
ID	Elevation (m)
1	0 m





rocscience	*Project*		
	Analysis Description		
	Drawn By W. Thorburn	*Company*	Haigh Workman Ltd
SETTLE3 5.025	*Date* 8/06/2022, 12:53:34 PM	*File Name*	pads.s3z





rocscience

SETTLE3 5.025

Project			
Analysis Description			
Drawn By	W. Thorburn	*Company*	Haigh Workman Ltd
Date	8/06/2022, 12:53:34 PM	*File Name*	Project 1.s3z

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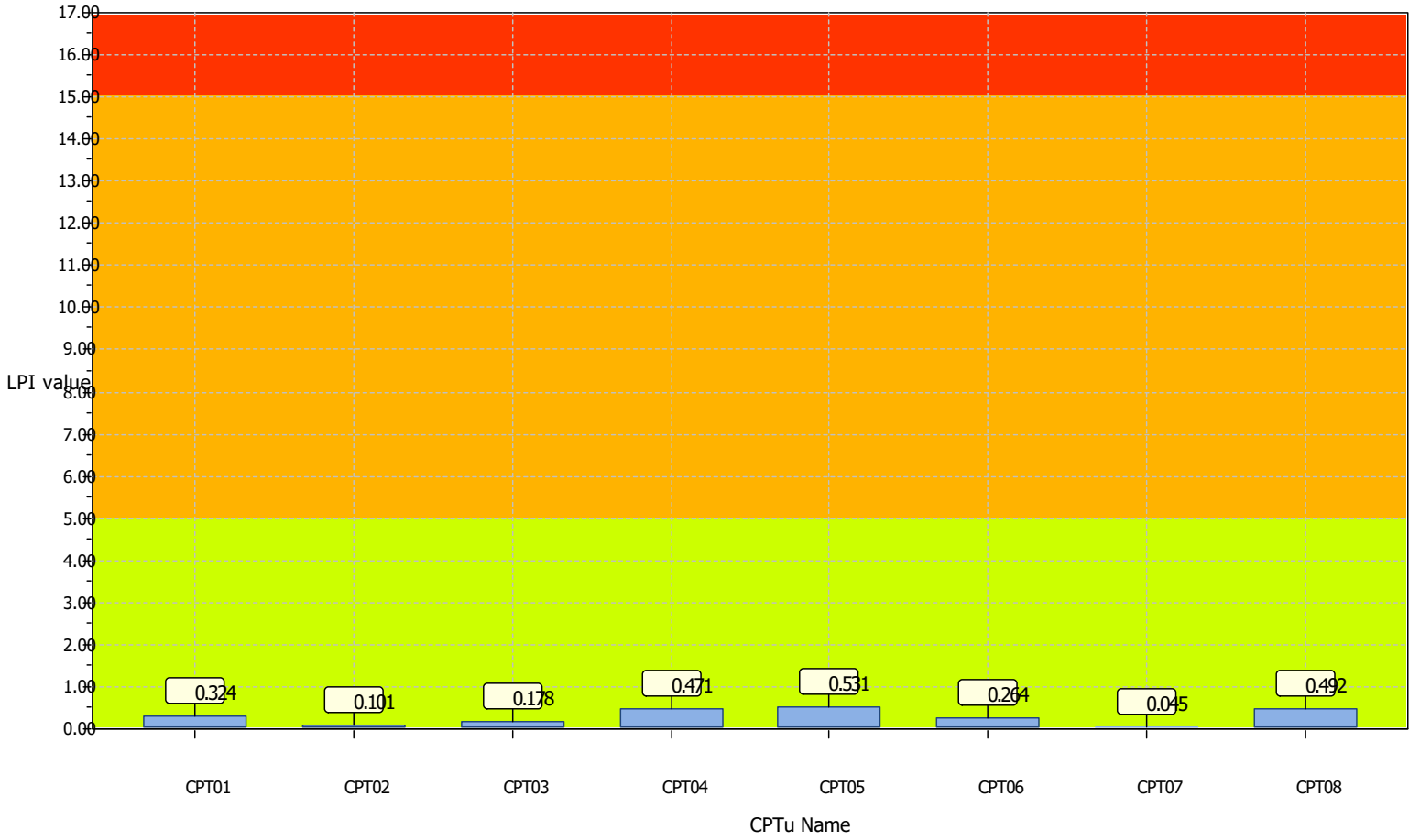
Project title : Lot 1, Kahikatearoa Lane

Location : Waipapa

Overall Liquefaction Potential Index report



LPI color scheme

- Very high risk
- High risk
- Low risk

Basic statistics

Total CPT number: 8
100.00% low risk
0.00% high risk
0.00% very high risk

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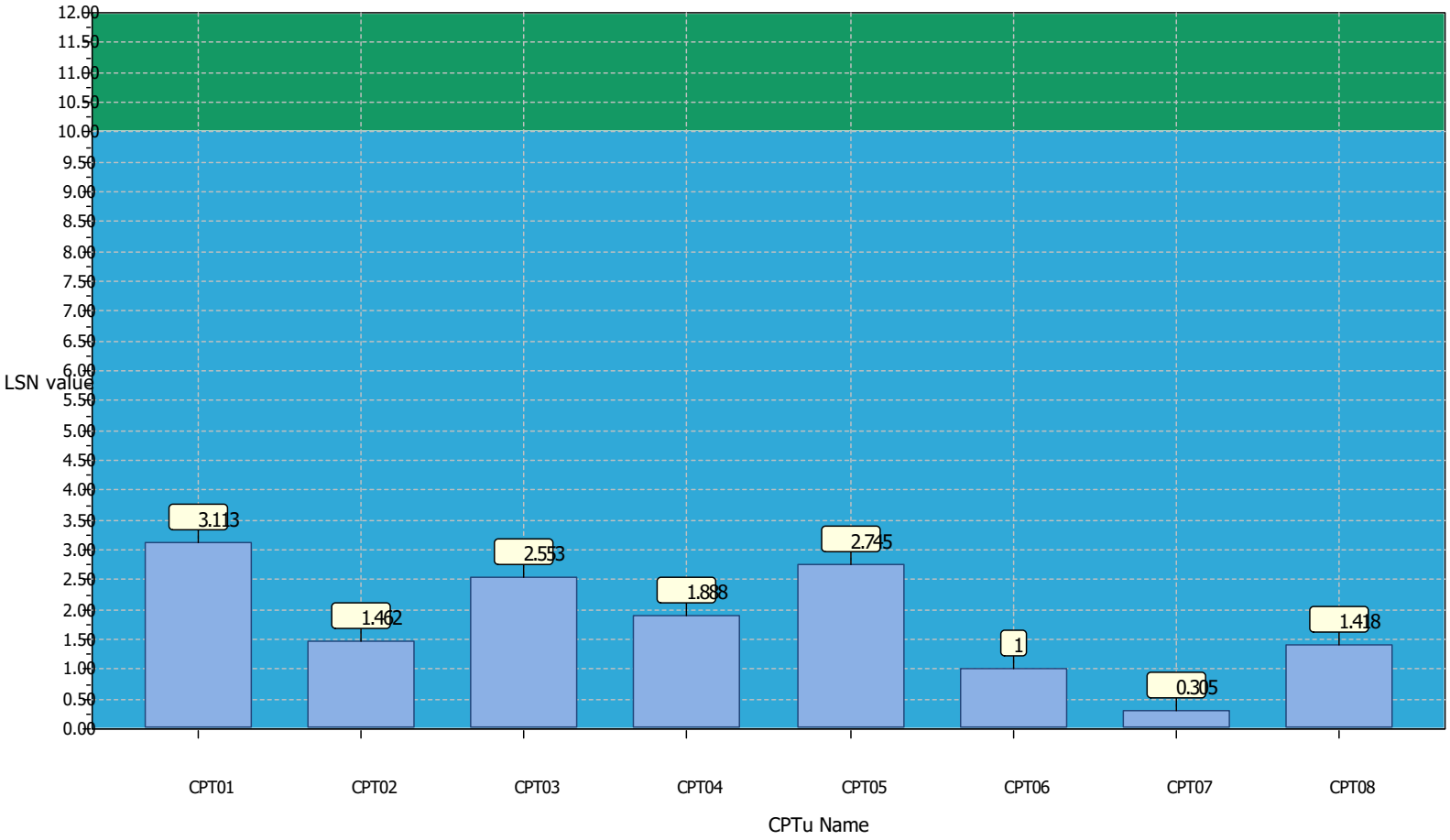
Project title : Lot 1, Kahikatearoa Lane

Location : Waipapa

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

Total CPT number: 8

100.00% little liquefaction

0.00% minnor liquefaction

0.00% moderate liquefaction

0.00% moderate to major liquefaction

0.00% major liquefaction

0.00% severe liquefaction

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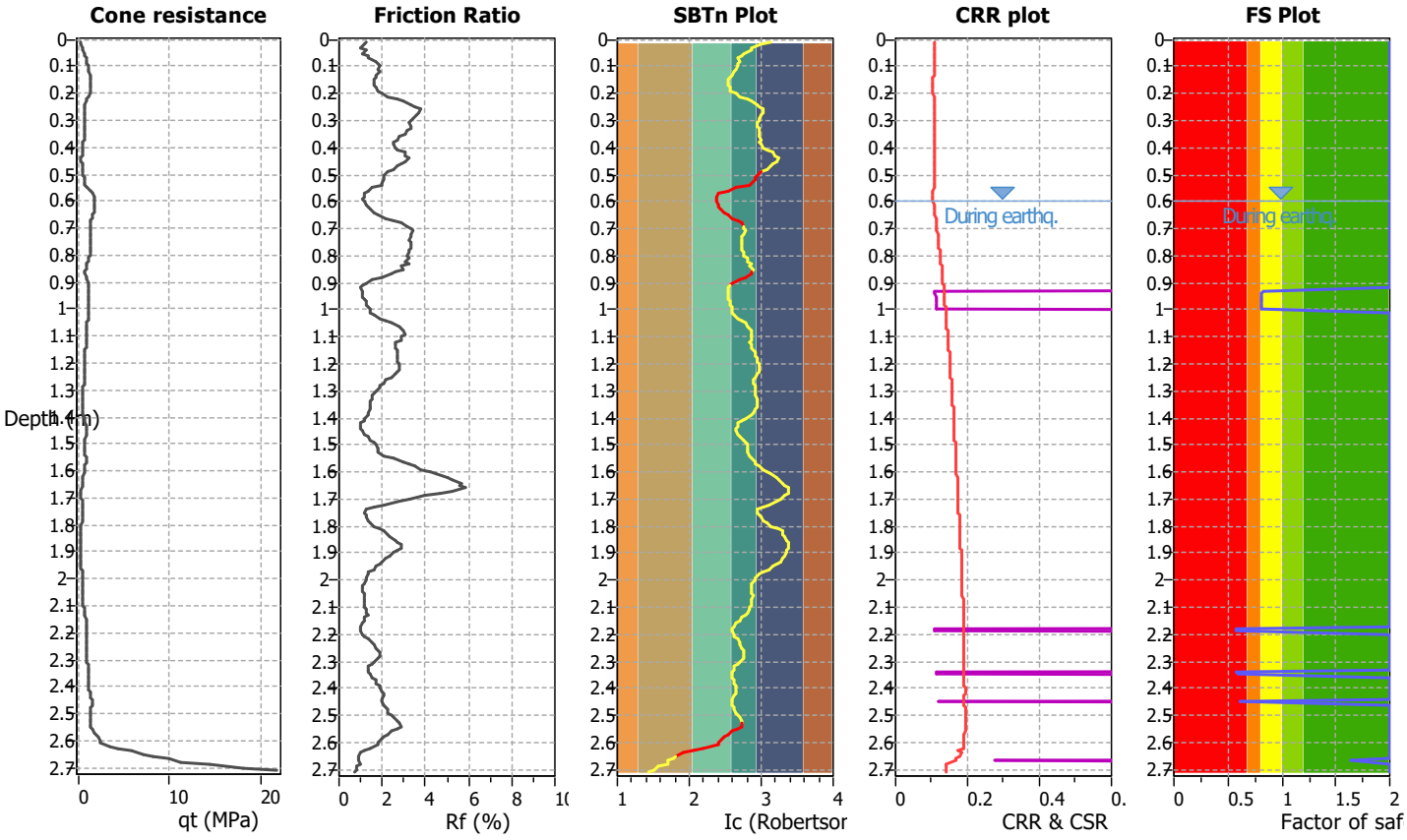
LIQUEFACTION ANALYSIS REPORT

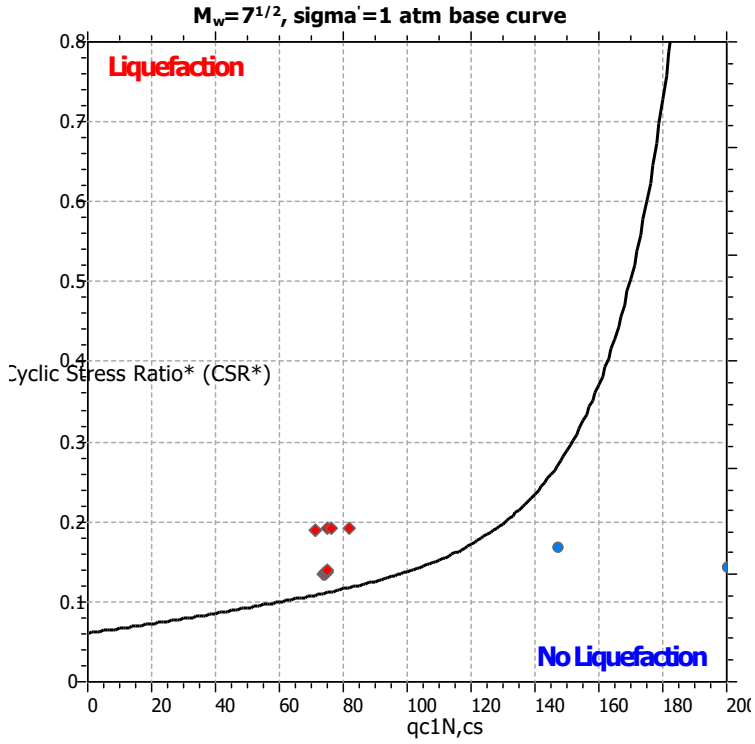
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

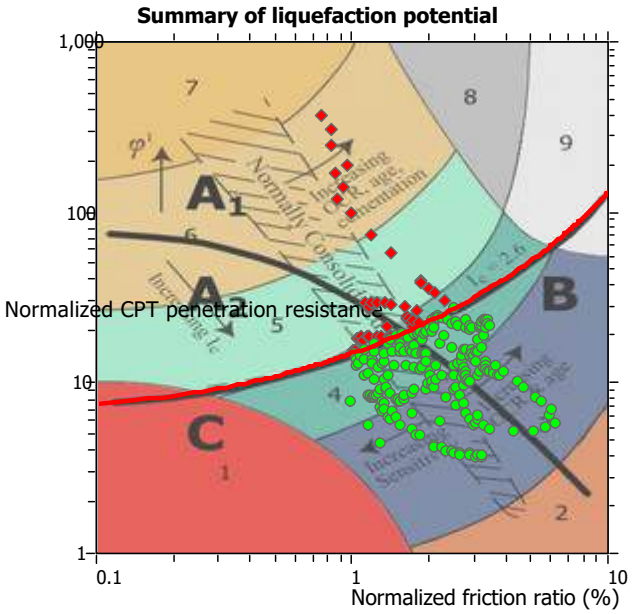
CPT file : CPT01

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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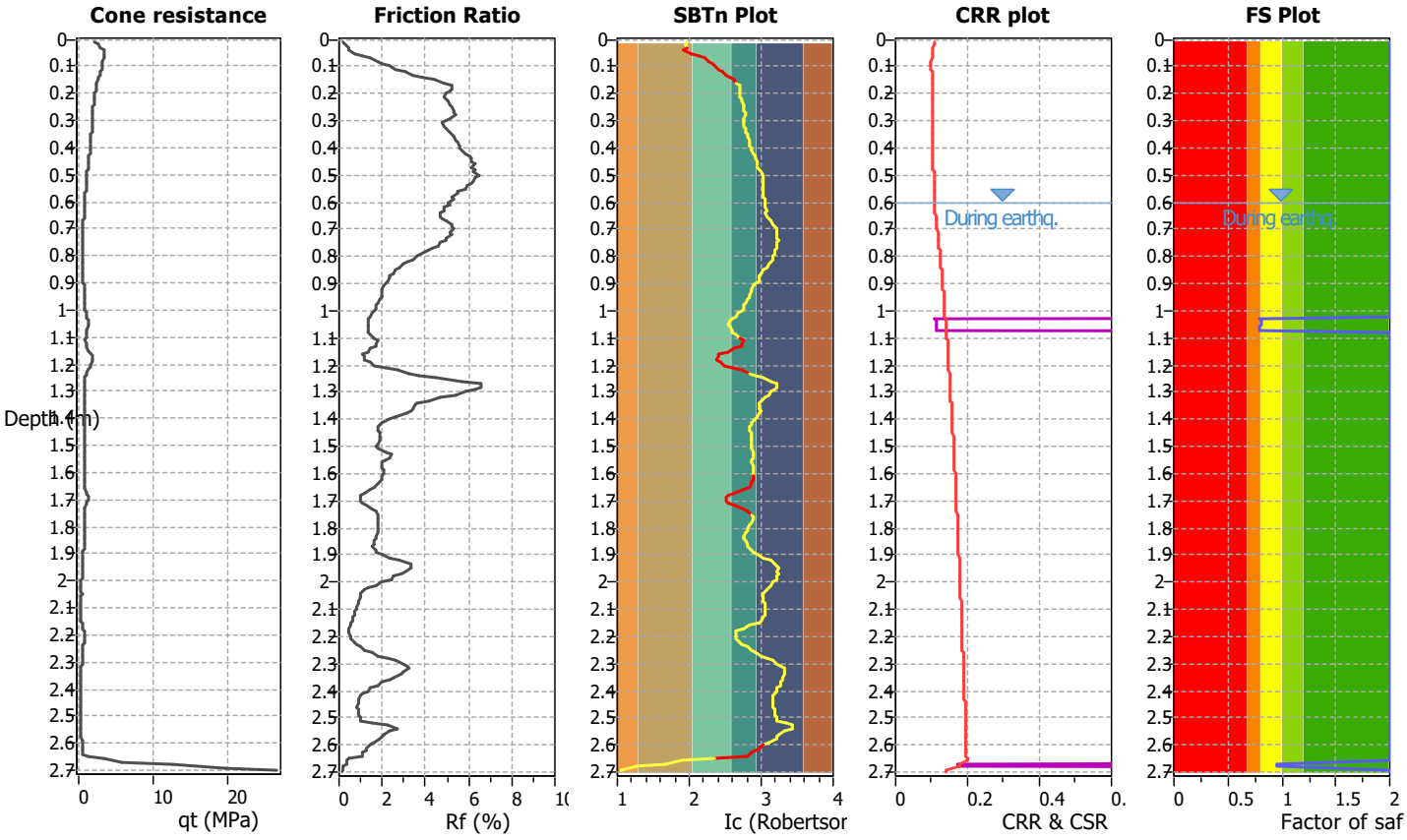
LIQUEFACTION ANALYSIS REPORT

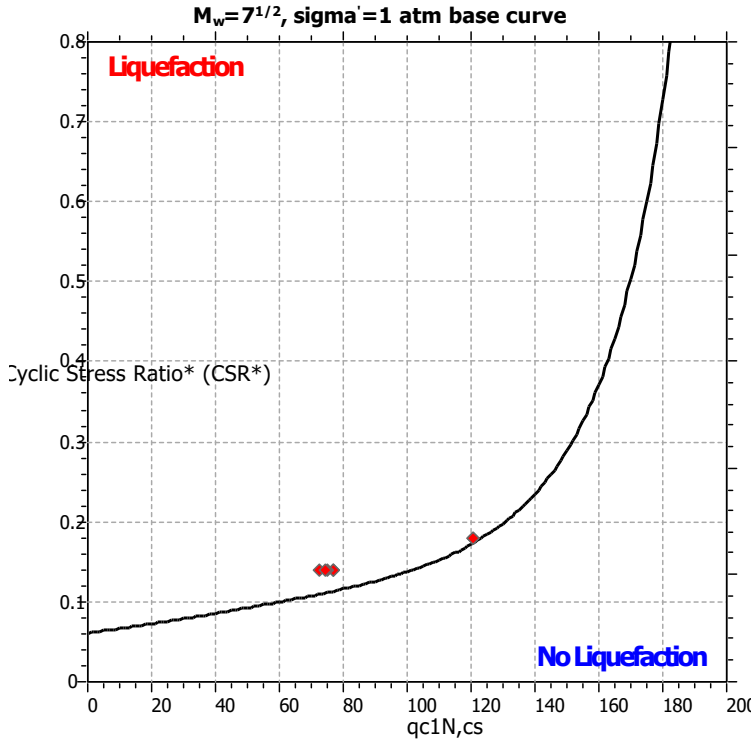
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

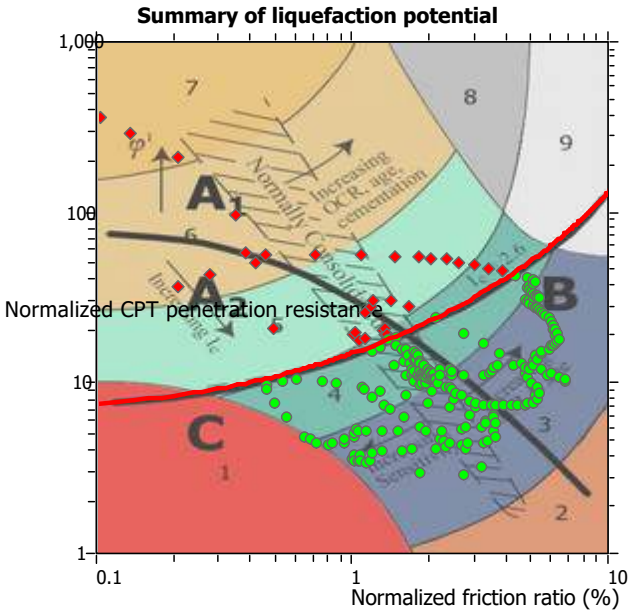
CPT file : CPT02

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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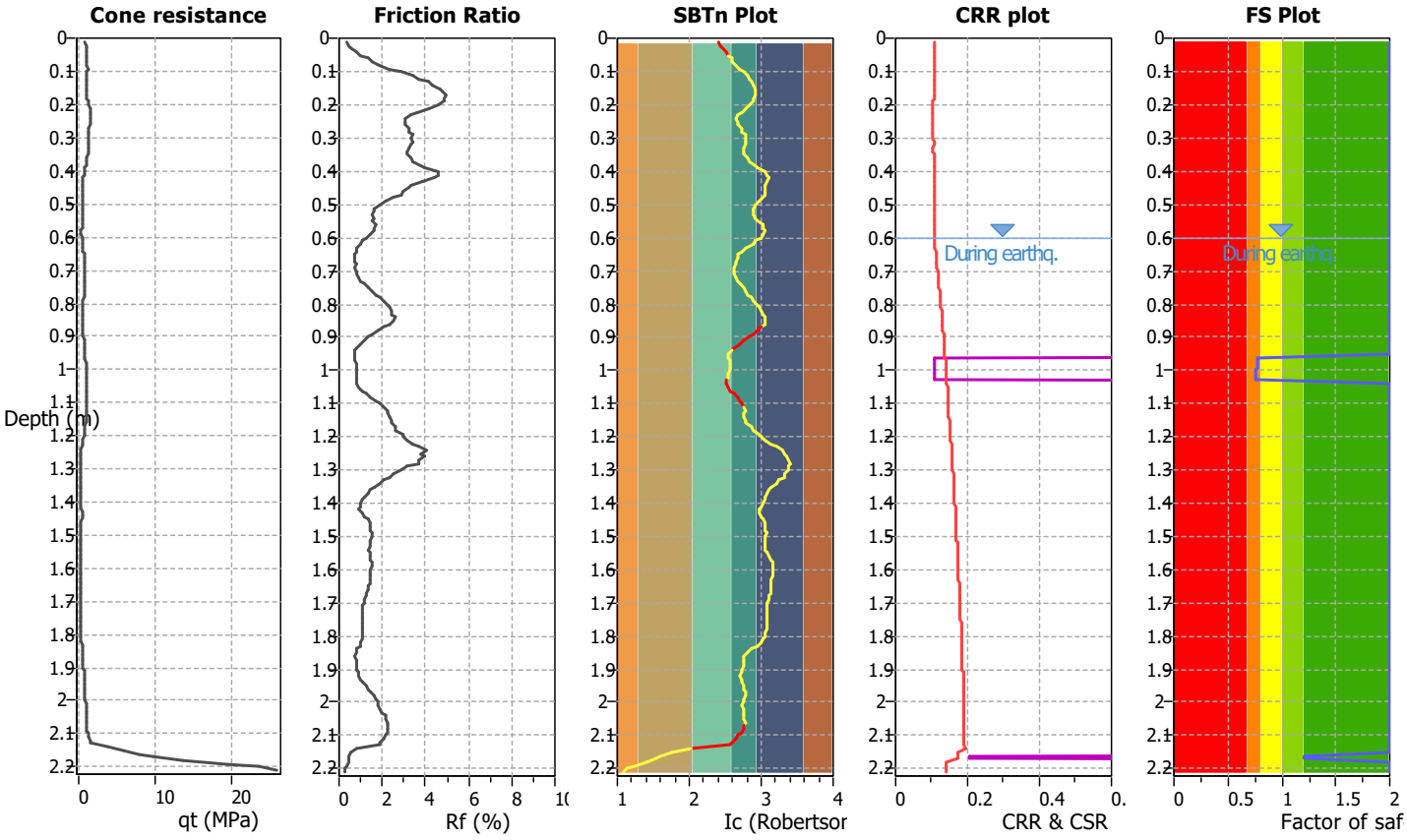
LIQUEFACTION ANALYSIS REPORT

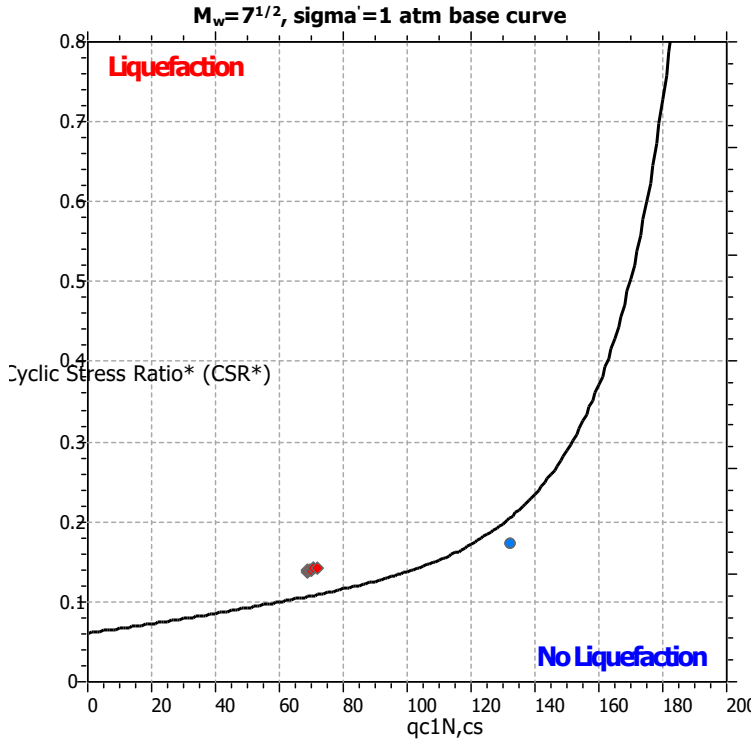
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

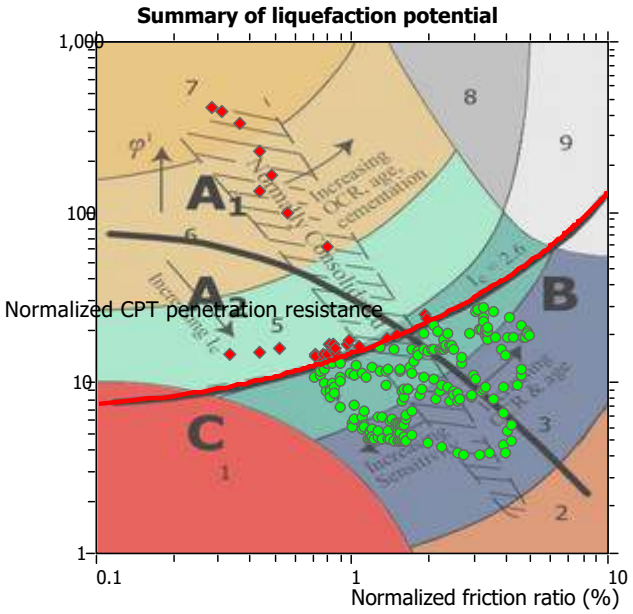
CPT file : CPT03

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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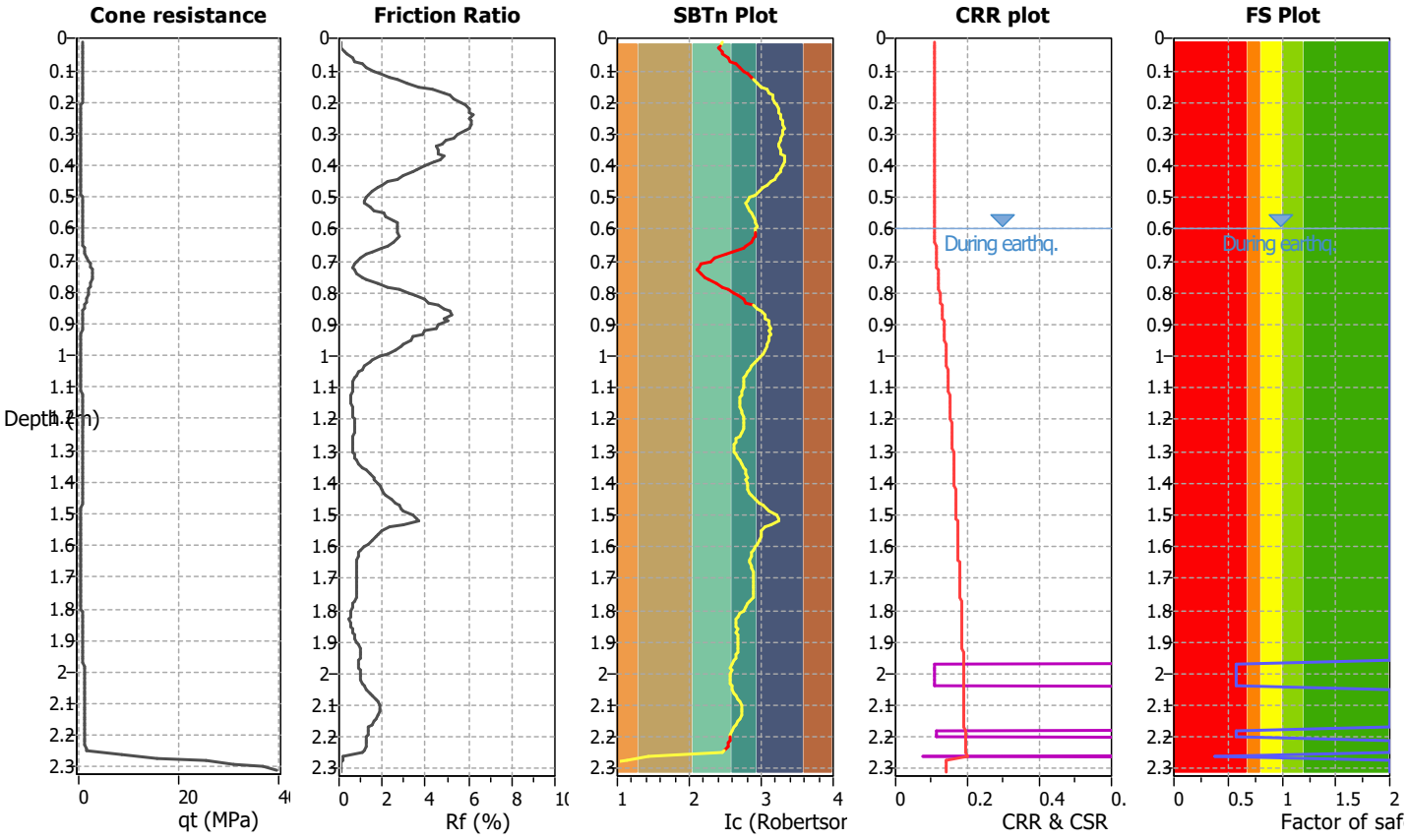
LIQUEFACTION ANALYSIS REPORT

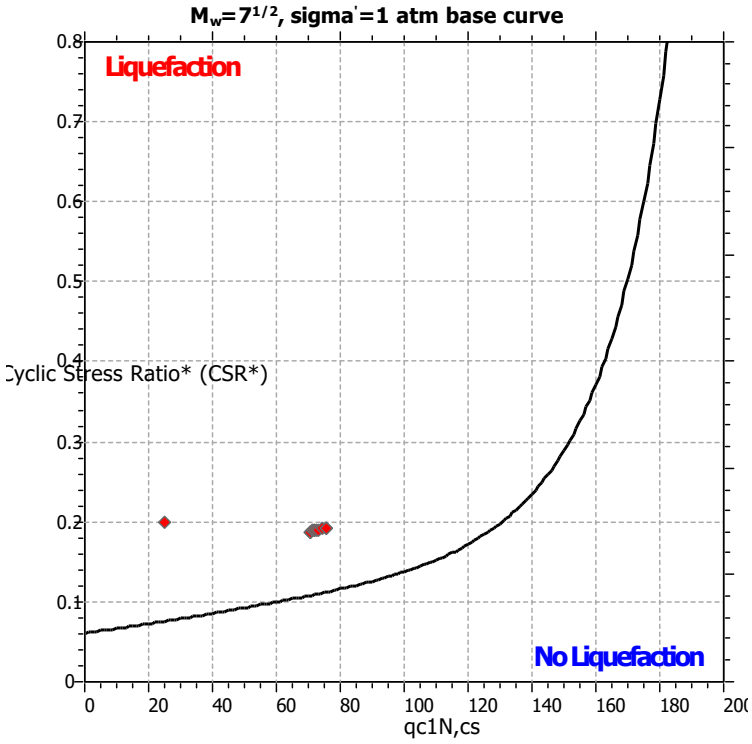
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

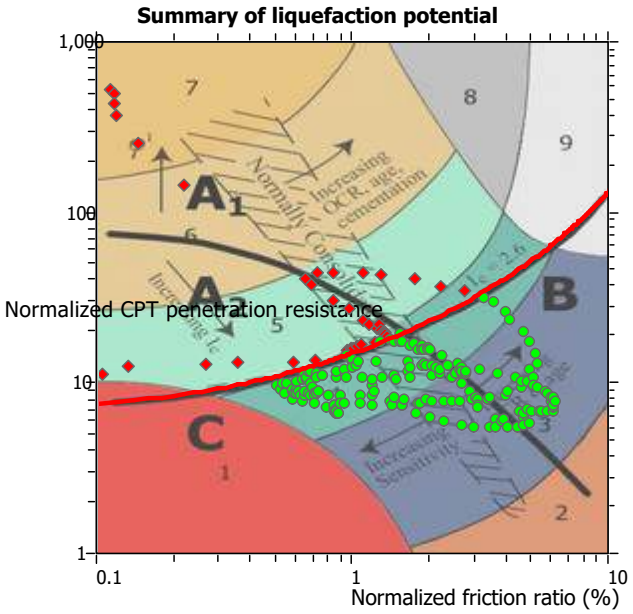
CPT file : CPT04

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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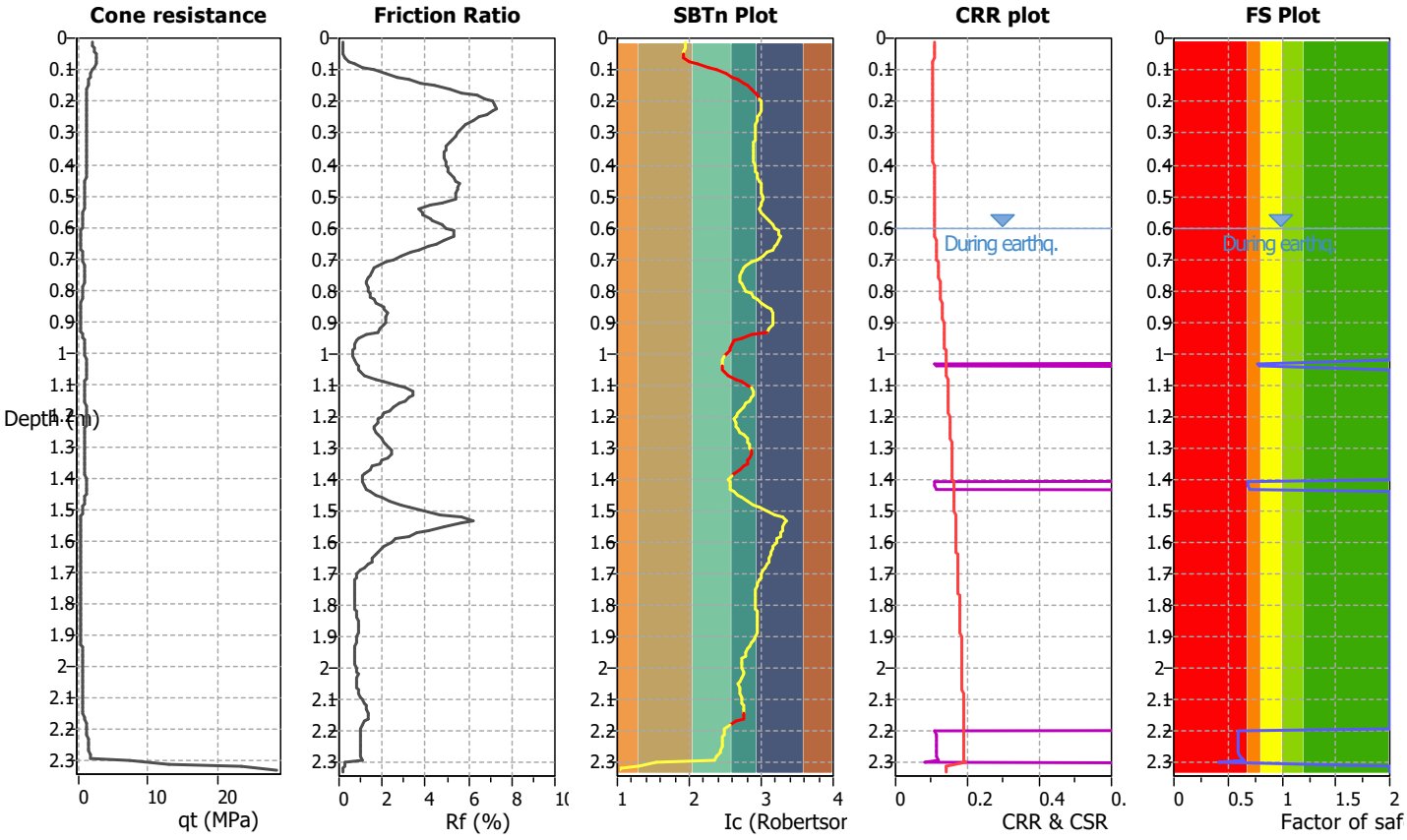
LIQUEFACTION ANALYSIS REPORT

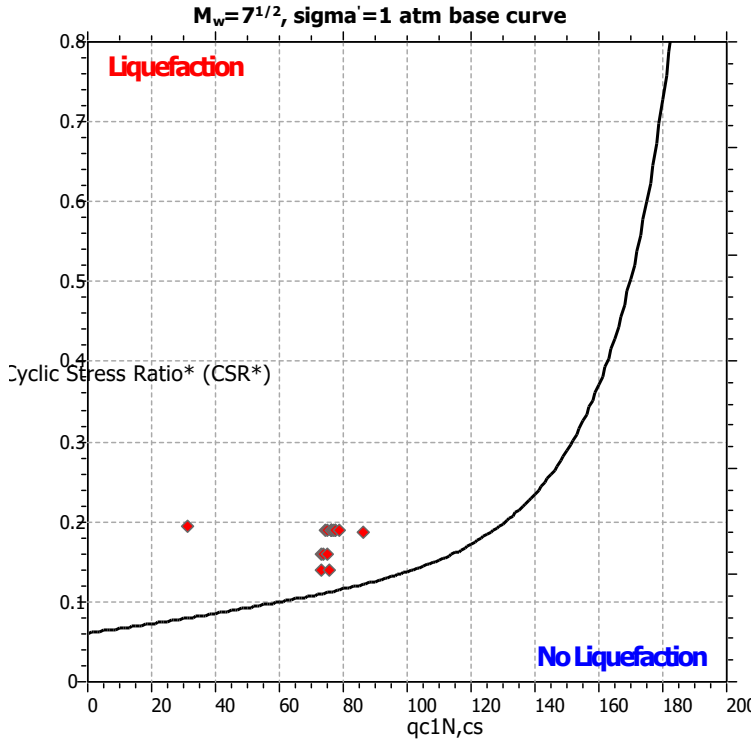
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

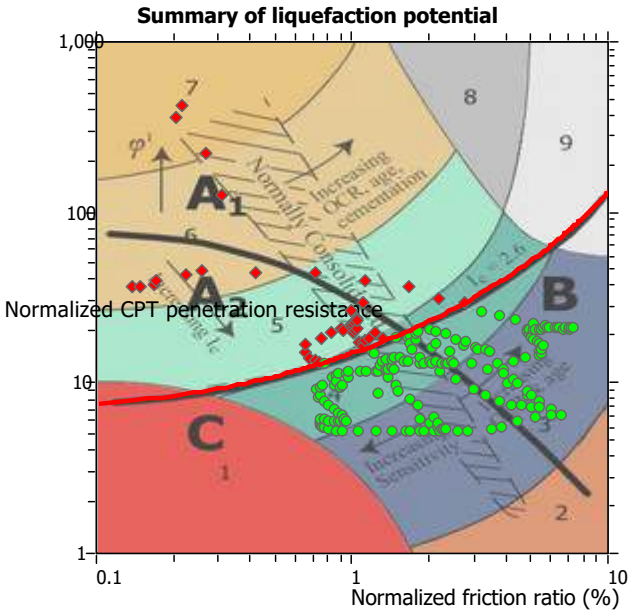
CPT file : CPT05

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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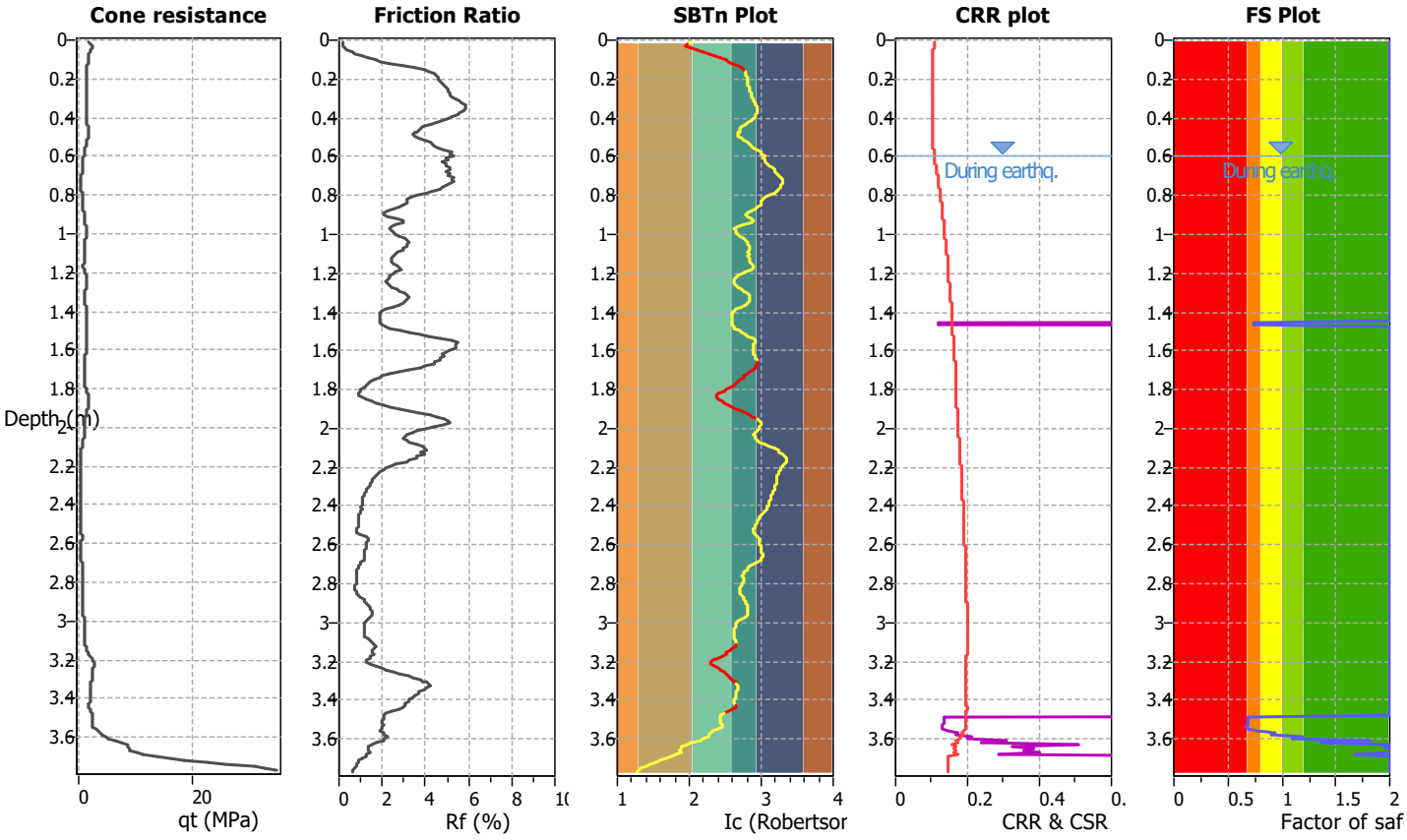
LIQUEFACTION ANALYSIS REPORT

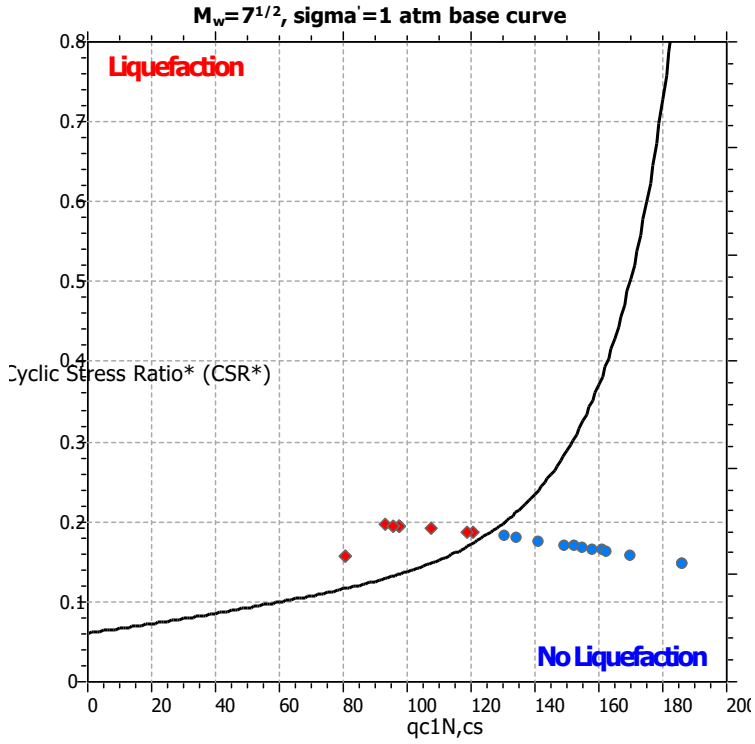
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

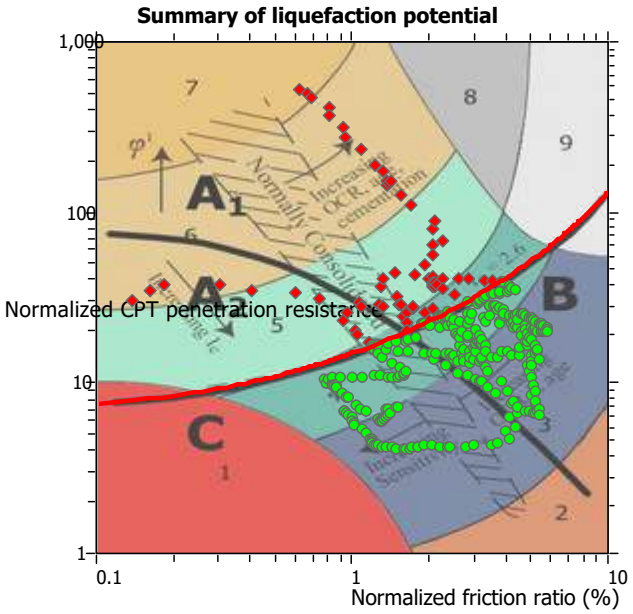
CPT file : CPT06

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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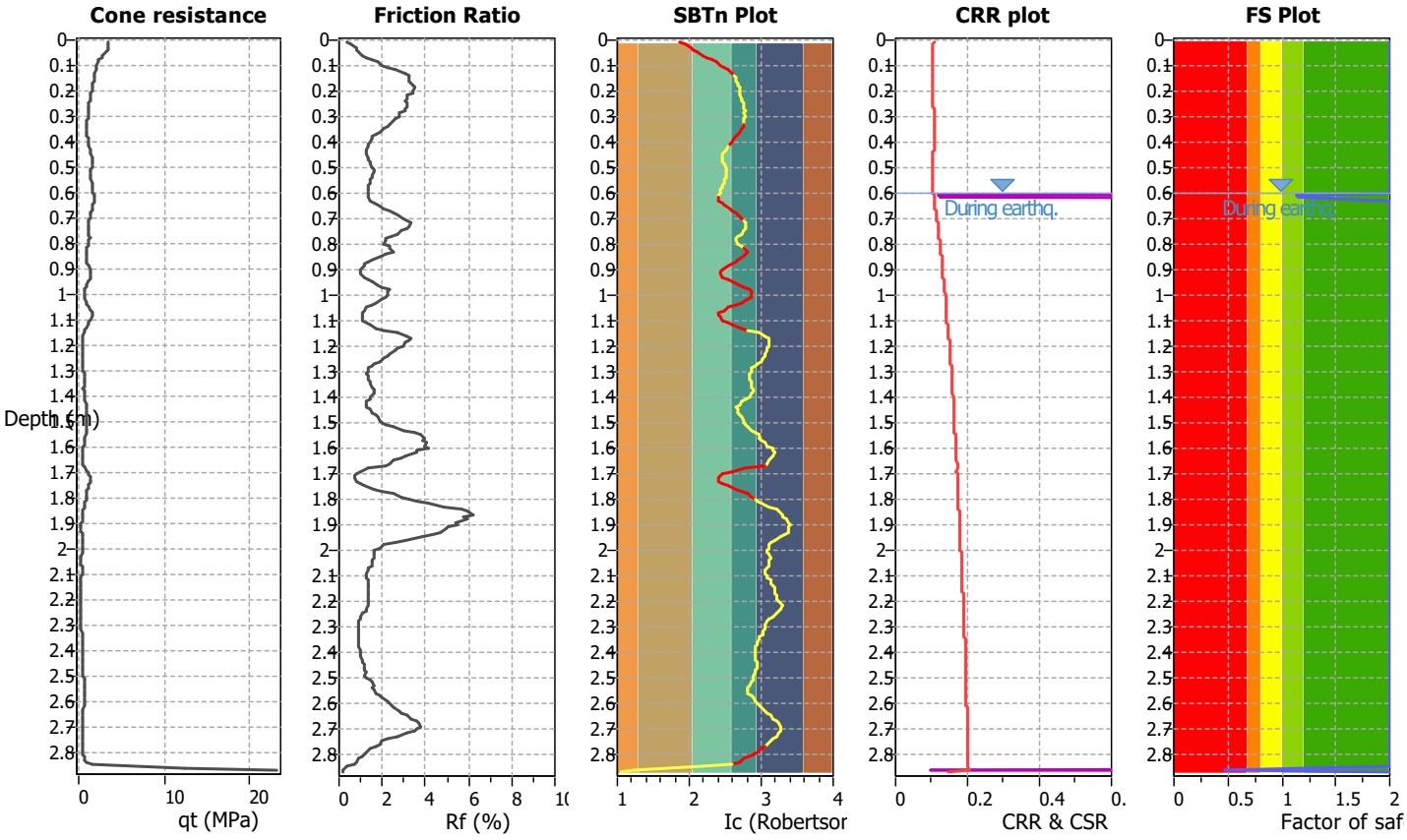
LIQUEFACTION ANALYSIS REPORT

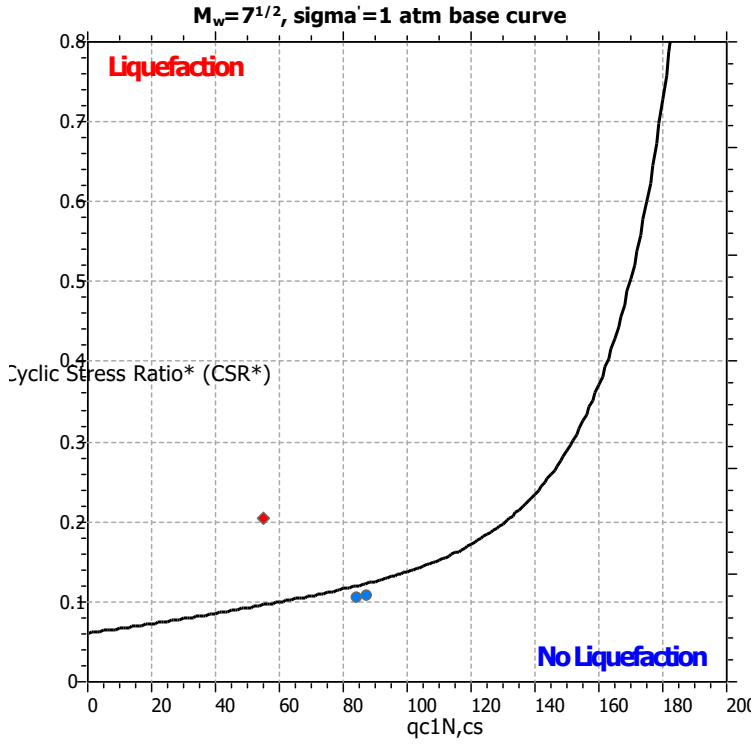
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

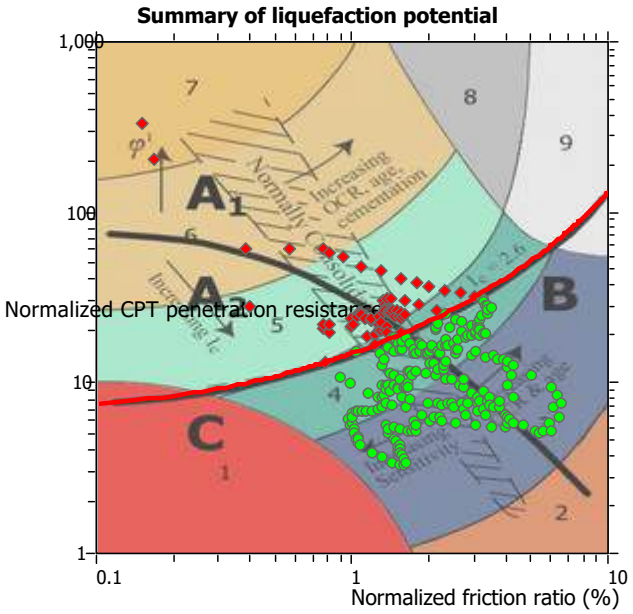
CPT file : CPT07

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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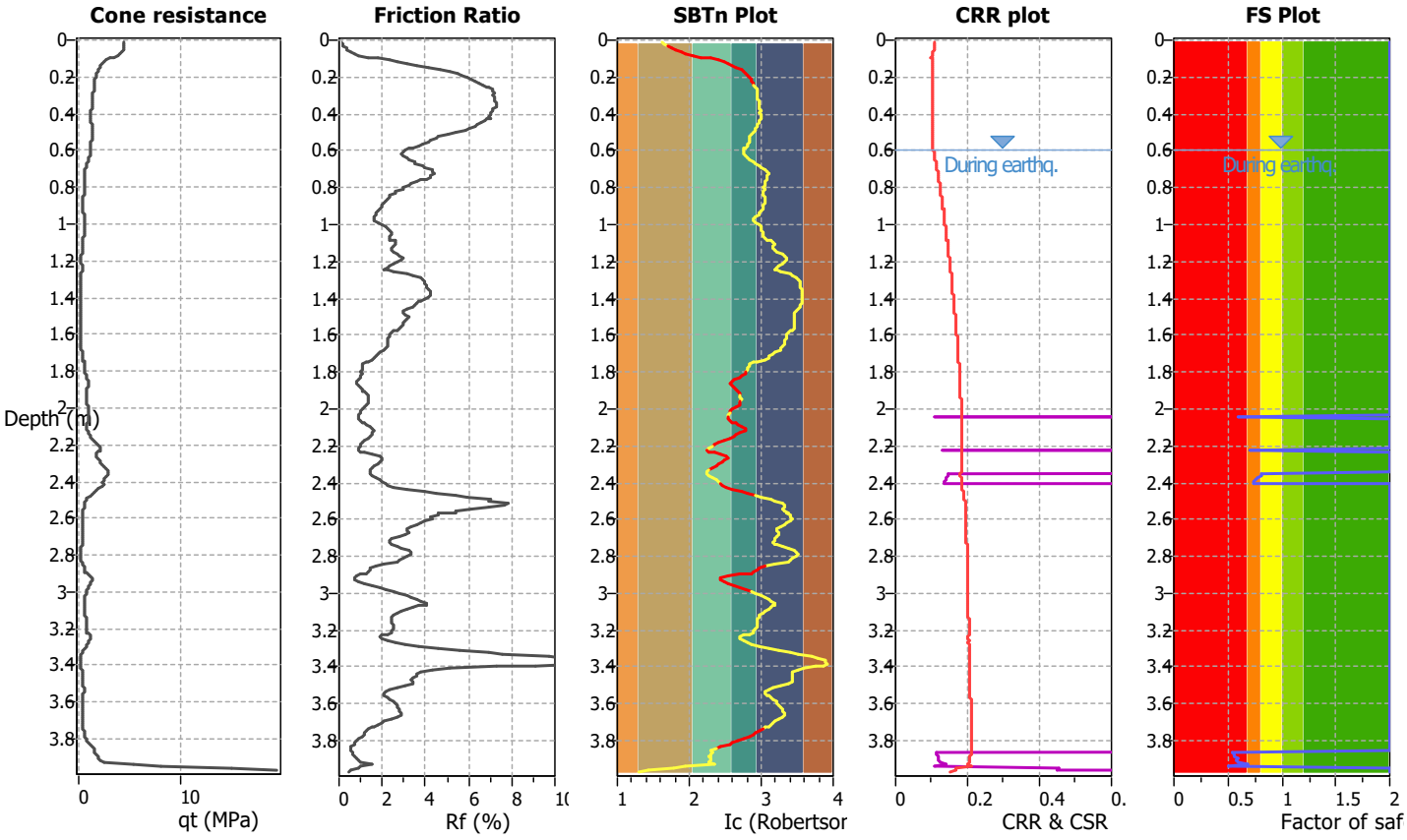
LIQUEFACTION ANALYSIS REPORT

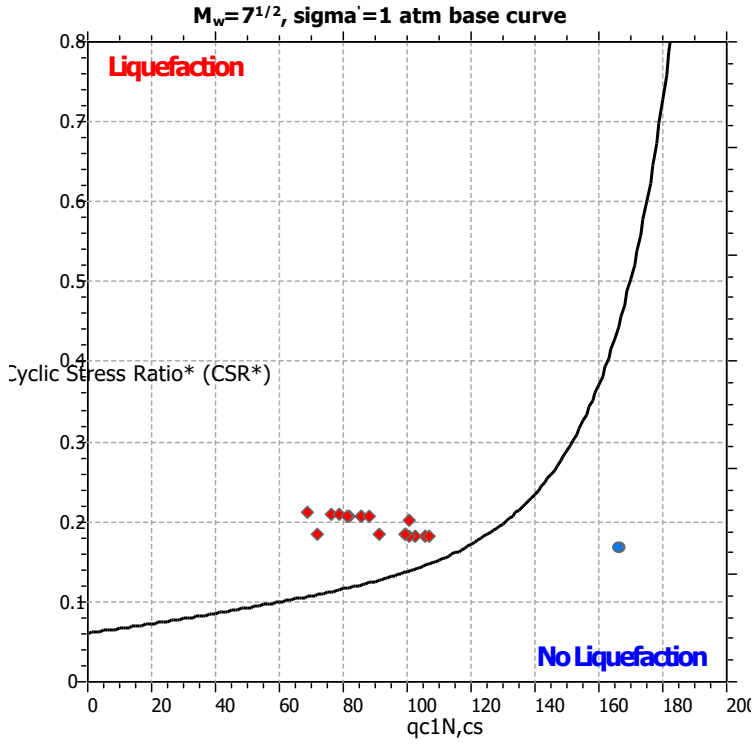
Project title : Lot 1, Kahikatearoa Lane **Location : Waipapa**

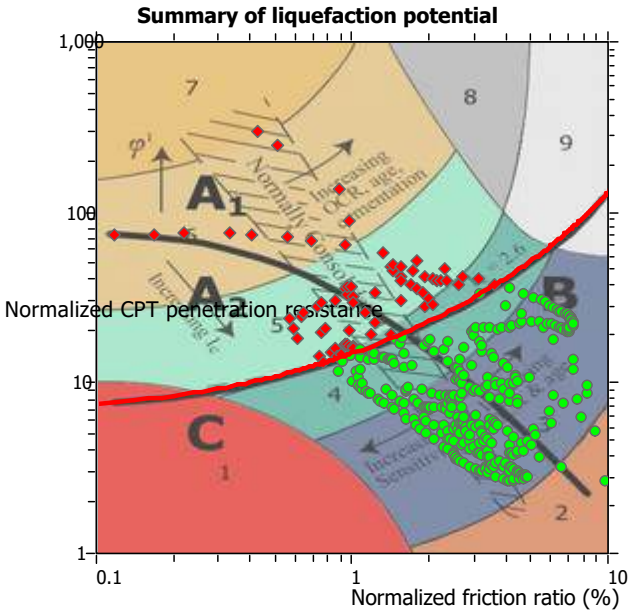
CPT file : CPT08

Input parameters and analysis data

Analysis method:	B&I (2014)	G.W.T. (in-situ):	0.60 m	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	B&I (2014)	G.W.T. (earthq.):	0.60 m	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.50	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.19	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		







Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

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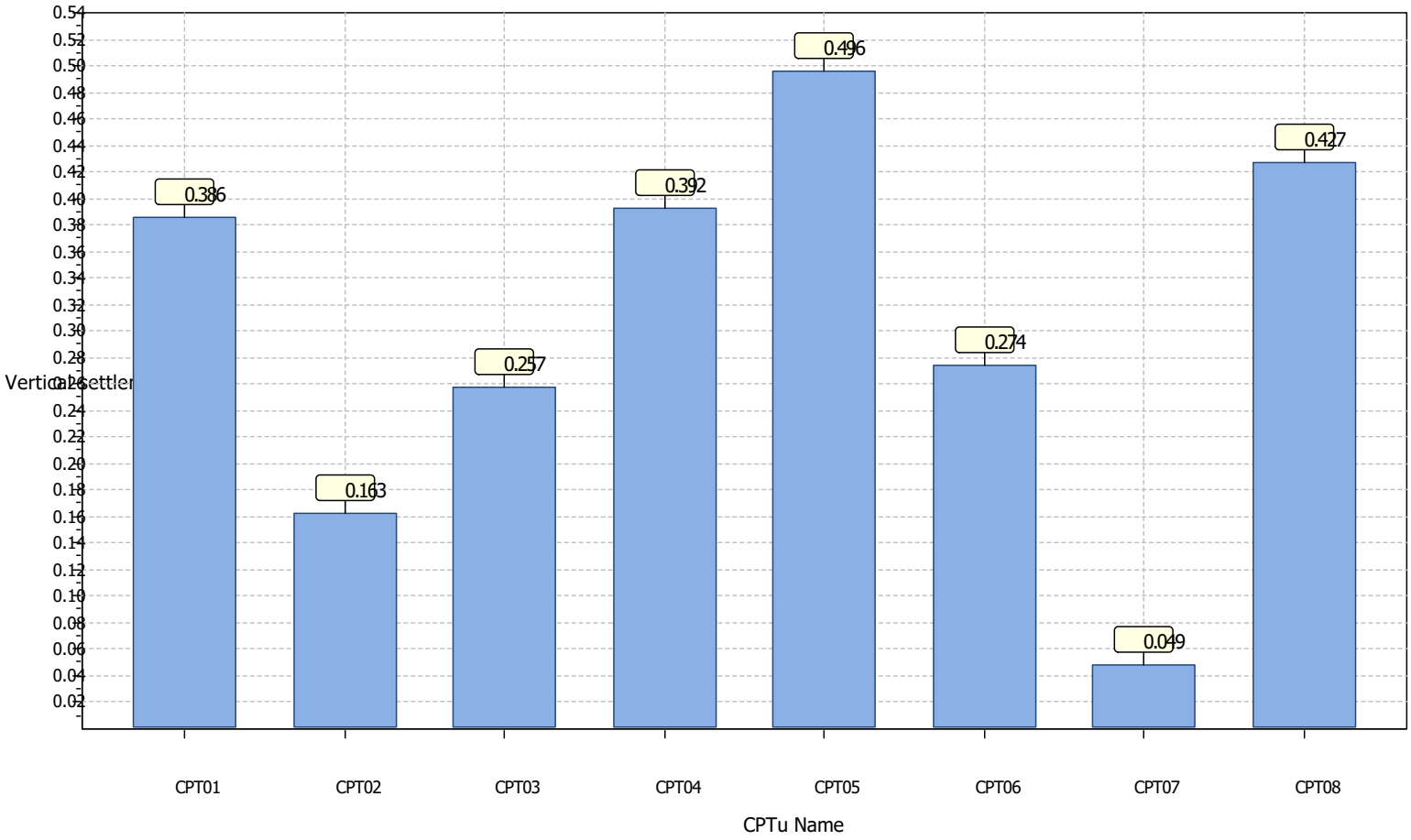
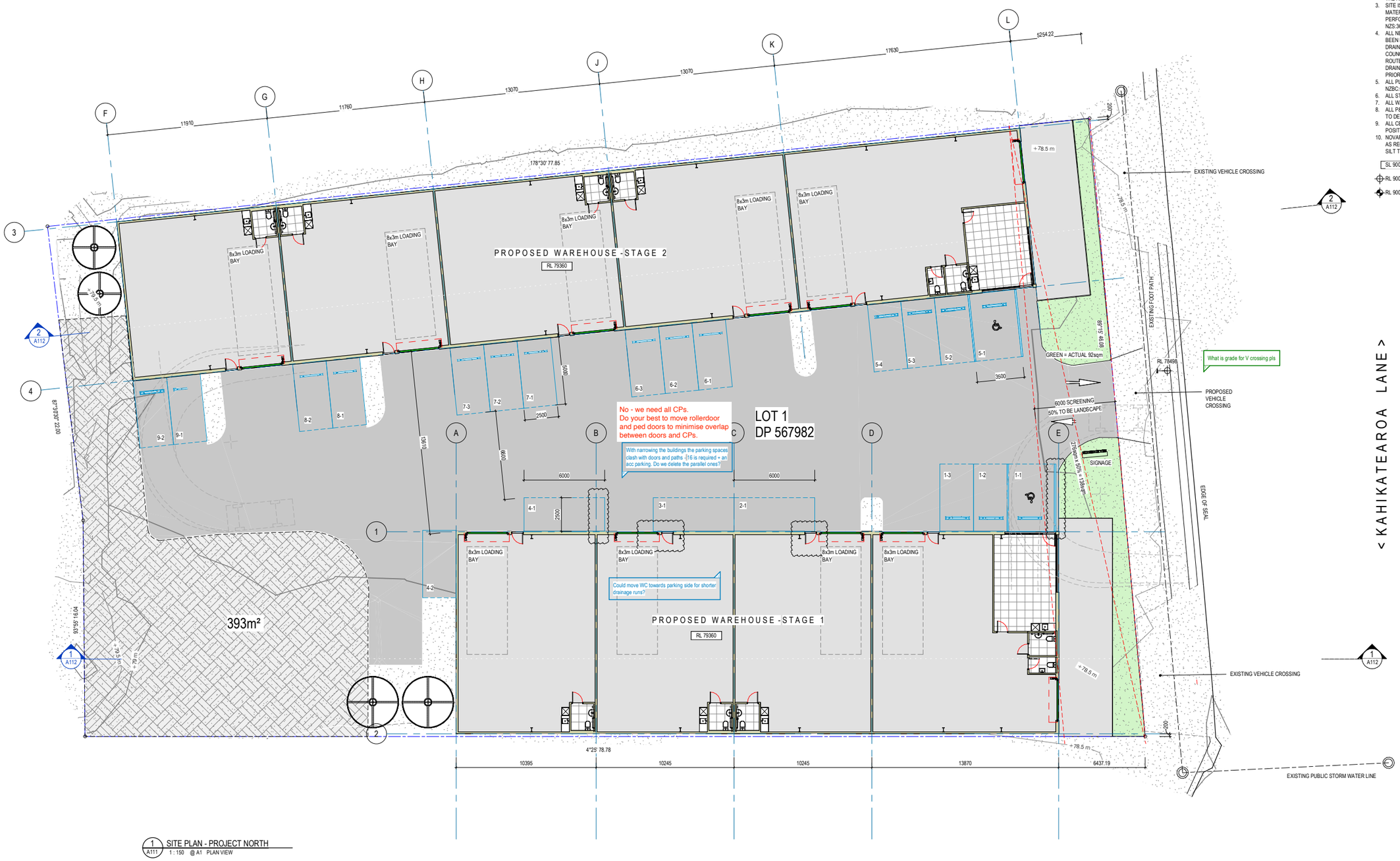
Project title : Lot 1, Kahikatearoa Lane

Location : Waipapa

Overall vertical settlements report



Appendix D– Provided Development Drawings



1 A111 SITE PLAN - PROJECT NORTH
1 : 150 @ A1 PLAN VIEW

LEGEND SITE

PARCEL : GET FROM BRANZ MAPS
APPELLATION : LOT 1 DP567982
ADDRESS :
SITE AREA :Xm²
TA :GET FROM BRANZ MAPS
ZONE :GET FROM BRANZ MAPS
EQ ZONE :GET FROM BRANZ MAPS
EXPOSURE :GET FROM BRANZ MAPS
CLIMATE :GET FROM BRANZ MAPS
WIND REG :GET FROM BRANZ MAPS
LEE ZONE :GET FROM BRANZ MAPS
WINDZONE :GET FROM BRANZ MAPS
RAINFALL :GET FROM NZBC E1 AS1 10% AEP, 2% AEP

1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. REGISTERED SURVEYOR TO CHECK ALL BOUNDARIES ARE ACCURATE & ESTABLISH GRIDS+LEVELS PRIOR TO CONSTRUCTION. ANY AMBIGUITIES TO BE REFERRED TO THE ARCHITECT.
3. SITE IS REGARDED AS 'SEA SPRAY ZONE' THEREFORE ALL MATERIAL AND BUILDING ELEMENTS DURABILITY SHOULD PERFORM ADEQUATELY TO COMPLY WITH NZBC:B2/AS1 AND NZS:3604:2011:SECTION 4.
4. ALL NEW PRIVATE DRAINAGE WITHIN OUR BOUNDARY HAVE BEEN LOCATED ACCORDING TO AS-BUILTS, ALL PUBLIC DRAINAGE HAVE BEEN POSITIONED ACCORDING TO COUNCIL INFORMATION. ALL NEW AND EXISTING SERVICE ROUTES AND DRAINS ARE SHOWN INDICATIVELY ONLY, DRAINAGE CONTRACTOR TO LOCATE EXACT POSITION PRIOR TO CONSTRUCTION.
5. ALL PLUMBING AND DRAINAGE WORK SHALL COMPLY WITH NZBC:G13:AS3 - AS/NZS:3500.2:2021.
6. ALL STORMWATER P&D TO COMPLY WITH NZBC:E1:AS1.
7. ALL WATER SUPPLY P&D TO COMPLY WITH NZBC:G12:AS1.
8. ALL P&D ROUTES ARE SHOWN INDICATIVELY, CONTRACTOR TO DETERMINE EXACT ROUTES ON SITE.
9. ALL CESSPITS TO BE LOCATED AT LOW POINTS WITH POSITIVE FALLS TOWARDS THEM.
10. NOVAFLO COIL TO ALL RETAINING WALLS & FOUNDATIONS AS REQUIRED. ALL SUBSOIL DRAINS TO DISCHARGE VIA A SILT TRAP TO STORMWATER DRAINAGE SYSTEM.

SL 9000 SLAB/STRUCTURAL SUBSTRATE LEVEL
RL 9000 EXISTING SPOT LEVEL
RL 9000 NEW SPOT LEVEL

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PROJECT:

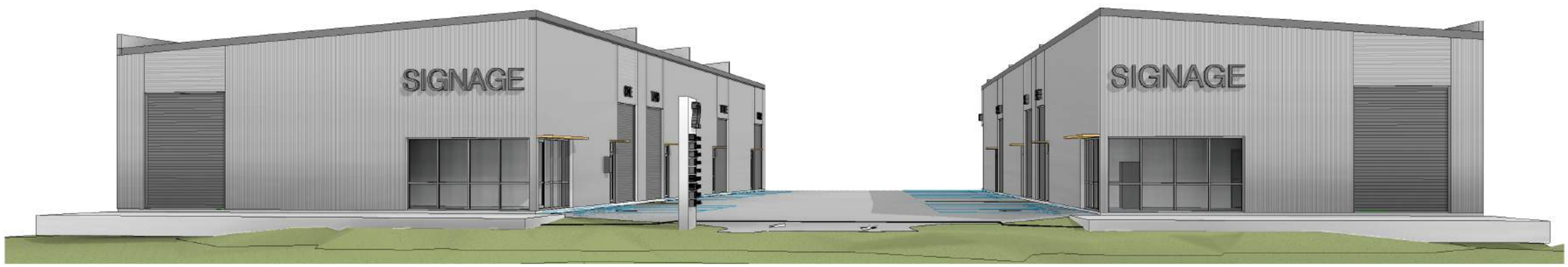
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SHEET NAME
SITE PLAN

REVISION DATE
STATUS
RESOURCE CONSENT WIP 25-05-07
PROJ. # 25063
DWG NO. A003
REV

would work better now sloping towards the front as IT wall parapets break up internal gutters

Yes. agreed. Please make this change.



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PROJECT:

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SHEET NAME
3D VIEWS

REVISION DATE
STATUS
RESOURCE CONSENT WIP 25-05-07

PROJ. # 25063
DWG NO. A005
REV

LEGEND FLOOR PLANS

1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. READ DRAWINGS IN CONJUNCTION WITH ALL RELEVANT CONSULTANTS DRAWINGS AND SPECIFICATIONS.
3. ALL FLOOR AND SUBFLOOR FRAMING TO COMPLY WITH NZS:3604:2011, SECTIONS 6, 7 & 14. ALL WORKS OUTSIDE THIS SCOPE TO ENGINEERS DESIGN.
4. ALL SUBFLOOR BRACING TO COMPLY WITH NZS:3604:2011, SECTIONS 5 & 6. ALL BRACING OUTSIDE THIS SCOPE TO ENGINEERS DESIGN.
5. ALL STANDARD FLOOR AND SUBFLOOR FRAMING TO BE OF THE FOLLOWING:
   - A. ALL PILES, POSTS AND POLES EMBEDDED IN THE GROUND TO BE TREATED H5.
   - B. ALL POSTS (ABOVE GROUND) & BEAMS TO BE TREATED TO H1.2. TO BE ON DPC BETWEEN 150mm AND 300mm ABOVE CLEAR GROUND LEVEL.
   - C. ALL BEARERS, JOISTS AND ASSOCIATED FRAMING TO ENCLOSED BALCONIES AND DECKS TO BE TREATED TO H1.2.
   - D. ALL BEARERS, JOISTS AND ASSOCIATED FRAMING, SUBFLOOR BRACING, SUBFLOOR JACK STUDS AND ASSOCIATED FRAMING TO BE TREATED H1.2.
   - E. ALL INTERMEDIATE FLOOR JOISTS AND ASSOCIATED FRAMING TO BE TREATED H1.2.
   - F. ALL CANTILEVERED FLOOR JOISTS TO BE TREATED H3.2.
   - G. ALL TIMBER DURABILITY TO COMPLY WITH NZBC:B2:AS1 AND NZS:3602:2002.
   - H. ALL STRUCTURAL TIMBER USED TO BE STRUCTURAL GRADE TO COMPLY WITH THE CURRENT EDITION NZS:3603:1993, AND MARKED ACCORDINGLY TO COMPLY WITH THE CURRENT EDITION NZS:3622:2004. ALL TIMBER SIZES ARE WORKED FROM THE SG8 TABLES FROM NZS:3604:2011, (THE YELLOW TABLES) THEREFORE ALL STRUCTURAL TIMBER SHOULD BE SG8 UNLESS OTHERWISE SPECIFIED.
6. SITE IS REGARDED AS 'SEA SPRAY ZONE' THEREFORE ALL MATERIALS AND BUILDING ELEMENTS DURABILITY SHOULD PERFORM ADEQUATELY TO COMPLY WITH NZBC:B2:AS1 AND NZS:3604:2011, SECTION 4.
7. ALL DOWNPIPE & GUTTER SIZES TO COMPLY WITH NZBC:E1:AS1.
8. ALL MEMBRANE ROOFS & DECKS ABOVE 40m² SHALL HAVE PROPRIETARY VENTS, INSTALLED TO MANUFACTURERS SPECIFICATIONS, LOCATIONS TO BE DETERMINED ON SITE BY ARCHITECT.

G01 W01	KEYNOTE / WALL TYPE
D1-01	DOOR REFERENCE. REFER TO INTERNAL DOOR SCHEDULE
P1-01	GLAZED PARTITION. REFER TO INTERNAL JOINERY SCHEDULE
W1-01	WINDOW REFERENCE. REFER TO EXTERNAL JOINERY SCHEDULE
RL 2000	EXISTING SPOT LEVEL
RL 2000	NEW SPOT LEVEL
SL 2000	SLAB / SUBSTRATE LEVEL
FFL+20	FINISHED FLOOR LEVEL (ABOVE SLAB)
	BOUNDARY LINE
EXIT	EXIT SIGNAGE
CD	CHANNEL DRAIN
COL	STRUCTURAL COLUMN
DP	DOWNPIPE
DRY	DRYER
DW	DISHWASHER
HWC	HOT WATER CYLINDER
SH	SHOWER
SK	SINK
SP	STRUCTURAL POST
TV	TERMINAL VENT
WC	TOILET
WHB	WASH HAND BASIN
WM	WASHING MACHINE

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PROJECT:

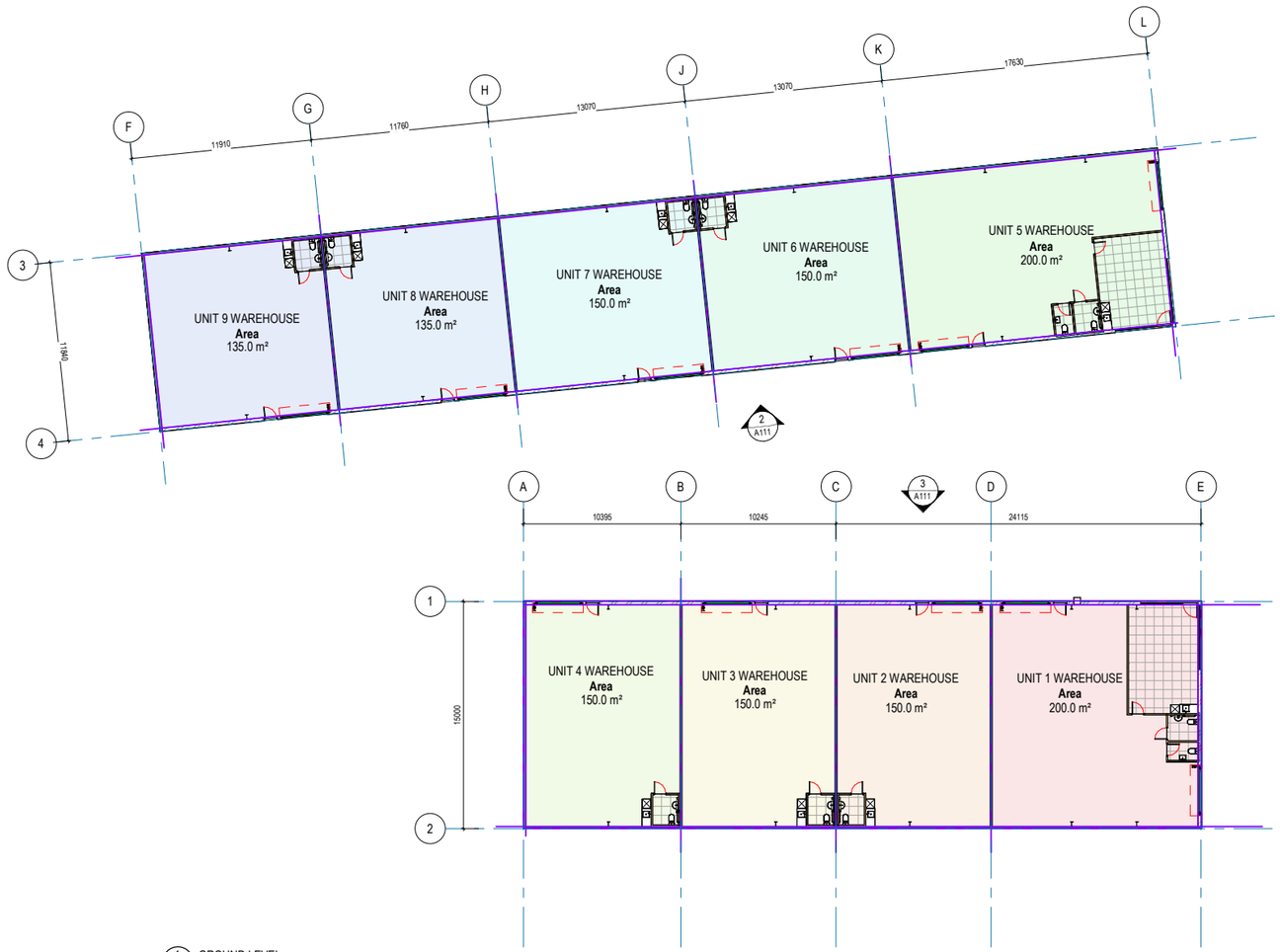
WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SHEET NAME
OVERALL FLOOR REFERENCE AND GRID PLAN

REVISION	DATE
STATUS: RESOURCE CONSENT WIP 25-05-07	
PROJ. # 25063	DWG NO. A101 REV

LEGEND AREA PLANS

1. AREA CALCULATIONS ARE ADVISORY ONLY AND RELATE TO AN ARCHITECTURAL PRELIMINARY DESIGN STAGE. ALL AREA FIGURES MAY VARY SUBJECT TO FURTHER COORDINATION OF BUILDING STRUCTURE, SERVICES AND FACADE, AND SHOULD NOT BE RELIED UPON.
2. FIGURES ARE FOR REFERENCE ONLY, AND SHOULD BE CHECKED AND VERIFIED BY A LICENSED SURVEYOR.



1 A111 GROUND LEVEL
1 : 200 @ A1 PLAN VIEW

AREAS - BY AREA TYPE

- UNIT 1 WAREHOUSE
- UNIT 2 WAREHOUSE
- UNIT 3 WAREHOUSE
- UNIT 4 WAREHOUSE
- UNIT 5 WAREHOUSE
- UNIT 6 WAREHOUSE
- UNIT 7 WAREHOUSE
- UNIT 8 WAREHOUSE
- UNIT 9 WAREHOUSE

ROOM NAME	ARAE

	Not Placed
UNIT 1 WAREHOUSE	200.0 m²
UNIT 2 WAREHOUSE	150.0 m²
UNIT 3 WAREHOUSE	150.0 m²
UNIT 4 WAREHOUSE	150.0 m²
UNIT 5 WAREHOUSE	200.0 m²
UNIT 6 WAREHOUSE	150.0 m²
UNIT 7 WAREHOUSE	150.0 m²
UNIT 8 WAREHOUSE	135.0 m²
UNIT 9 WAREHOUSE	135.0 m²

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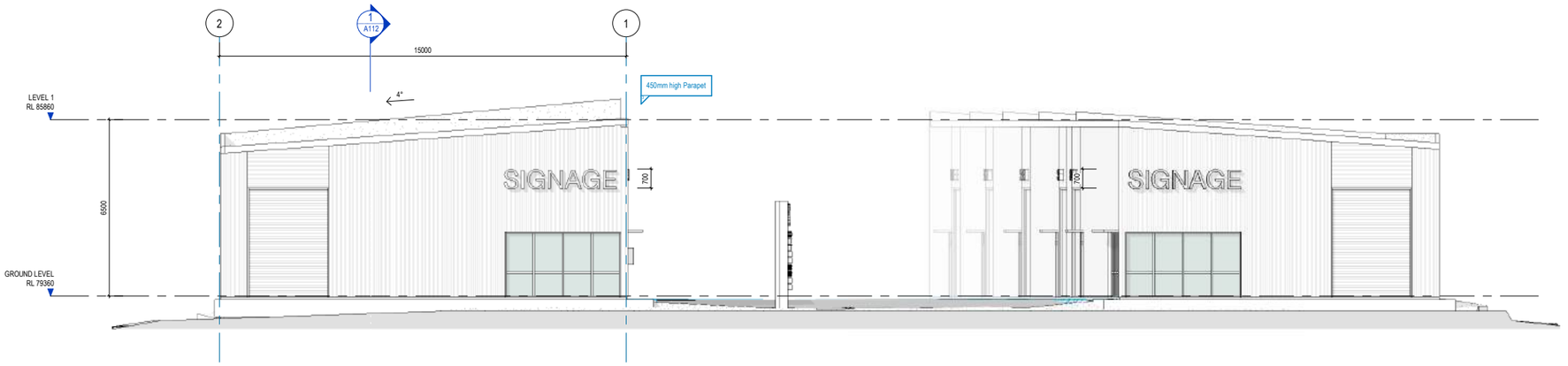
PROJECT:

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SHEET NAME
COMMON AREA PLAN

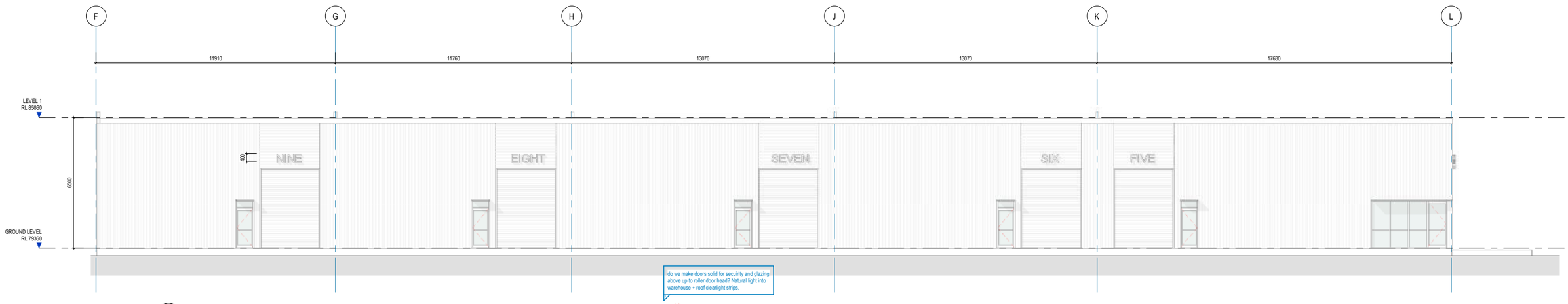
REVISION DATE
STATUS
RESOURCE CONSENT WIP 25-05-07
PROJ. # DWG NO. REV
25063 A103



1 A101 STAGE 1 BUILDING - SOUTH ELEVATION
1 : 100 @ A1 ELEVATION VIEW

LEGEND ELEVATIONS

1. ALL WORKS TO COMPLY WITH RELEVANT CLAUSES OF THE NZBC.
2. READ DRAWINGS IN CONJUNCTION WITH ALL RELEVANT CONSULTANTS DRAWINGS AND SPECIFICATIONS.
3. ALL MATERIALS DETAILED ARE TO COMPLY WITH THERE CURRENT MANUFACTURERS SPECIFICATION AND ARE TO BE INSTALLED BY NOMINATED INSTALLER IF REQUIRED.
4. ENSURE PARTICULAR CARE IS TAKEN WITH COMPATIBILITY AND SEPARATION OF ALL MATERIALS AND FIXINGS.
5. ENSURE ALL FLASHINGS AND FIXINGS ARE COMPATIBLE WITH CLADDING AND ROOFING.
6. READ IN CONJUNCTION WITH NZMRM CODE OF PRACTICE.
7. READ IN CONJUNCTION WITH NZS:3604:2011, SECTION 4 DURABILITY.
8. SITE IS REGARDED AS 'SEA SPRAY ZONE' THEREFORE ALL MATERIALS AND BUILDING ELEMENTS DURABILITY SHOULD PERFORM ADEQUATELY TO COMPLY WITH NZBC:B2:AS1 AND NZS:3604:2011, SECTION 4.
9. LIGHT REFLECTANCE VALUES:
   - A. NO PART OF ANY SURFACE OF ANY EXTERIOR WALL SHALL HAVE A REFLECTANCE VALUE EXCEEDING 50%.
   - B. NO PART OF ANY SURFACE OF ANY ROOF SHALL HAVE A REFLECTANCE VALUE EXCEEDING 50%.
   - C. NO PART OF ANY SURFACE OF ANY OTHER EXTERIOR STRUCTURE OR BUILDING SHALL HAVE A REFLECTANCE VALUE EXCEEDING 50%.
   - D. FOR THE PURPOSE OF THIS RULE, THE TERM REFLECTANCE VALUE SHALL HAVE THE SAME MEANING AS USED IN BRITISH STANDARD §252:1976 FRAMEWORK FOR COLOUR CO-ORDINATION FOR BUILDING PURPOSE.
   - E. THE USE OF COLOURS UNDER THIS RULE SHALL NOT INCLUDEANY OF THE COLOURS LISTED IN GROUP E 49-58 IN BS§252:1976.
   - F. THIS RULE SHALL NOT APPLY TO ANY WINDOW FRAMES, GUTTERING OR DOWN PIPES.
   - G. CLADDINGS & FLASHING ARE TO HAVE FINISH COLOUR WITH A LIGHT REFLECTANCE VALUE OF:
   - H. UPVC 40% OR MORE.
   - I. FIBRE CEMENT SHEETS FLUSH FINISHED 40% OR MORE.
   - J. EIFS 40% OR MORE.
   - K. TIMBER 45% OR MORE.



2 A101 STAGE 2 BUILDING - WEST ELEVATION
1 : 100 @ A1 ELEVATION VIEW

3 A101 STAGE 1 BUILDING - EAST ELEVATION
1 : 100 @ A1 ELEVATION VIEW

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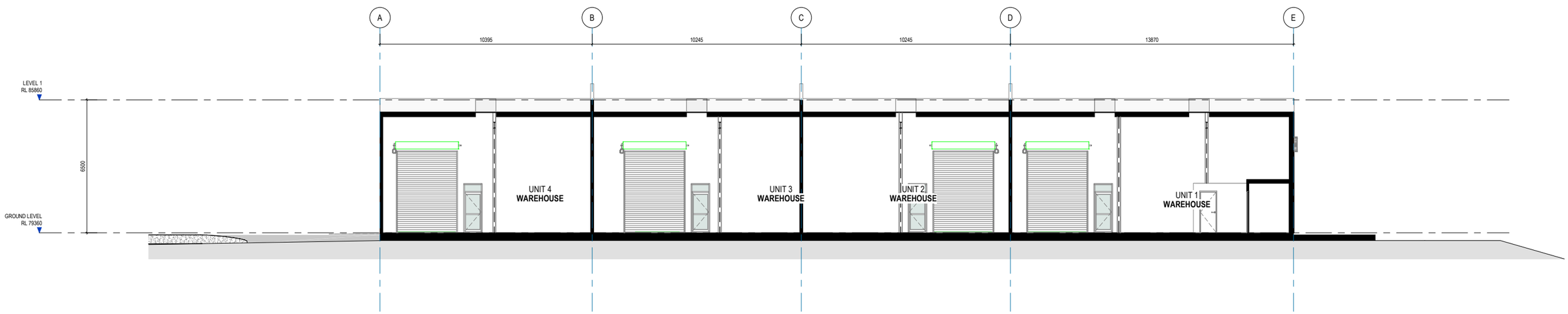
PROJECT:

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

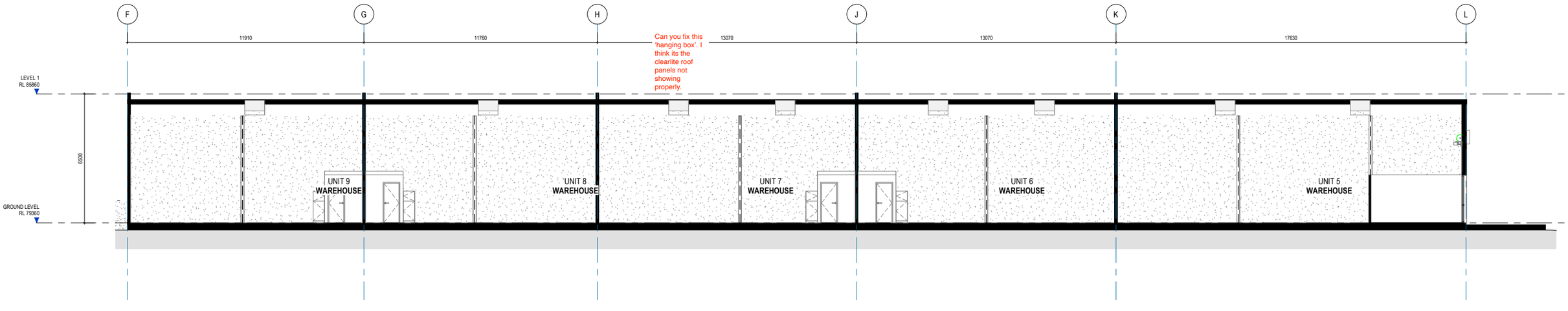
SHEET NAME: OVERALL SITE ELEVATIONS

REVISION	DATE
STATUS: RESOURCE CONSENT WIP 25-05-07	

PROJ. # 25063 DWG NO. A111 REV



1 / A003 STAGE 1 BUILDING - SITE SECTION
1 : 100 @ A1 SECTION VIEW



2 / A003 STAGE 2 BUILDING - SITE SECTION
1 : 100 @ A1 SECTION VIEW

assemble™

PROJECT:

WINDERMERE HOLDINGS LIMITED - WAREHOUSES
22 KAHIKATEAROA LANE, WAIPAPA

SHEET NAME
OVERALL SITE SECTIONS

REVISION
STATUS
RESOURCE CONSENT WIP 25-05-07

DATE

PROJ. #
25063

DWG NO.
A112

REV