



Our Reference: 10856.1 (FNDC)

2 April 2026

Resource Consents Department  
Far North District Council  
JB Centre  
KERIKERI

Dear Sir/Madam

**RE: Proposed Subdivision and consent pursuant to NES – Kapiro Road, Kerikeri – T & G Global Limited**

I am pleased to submit application on behalf of T & G Global Limited, for a proposed subdivision involving three adjacent titles at Kapiro Road, Kerikeri, all zoned Rural Production. The application is a restricted discretionary activity.

The application fee of \$8,851 (subdivision and NES) has been paid separately via direct credit.

Regards

Lynley Newport  
**Senior Planner**  
**THOMSON SURVEY LTD**

# Application for resource consent or fast-track resource consent

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

## 1. Pre-Lodgement Meeting

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

Yes  No

## 2. Type of consent being applied for

(more than one circle can be ticked):

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

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

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

Yes  No

## 4. Consultation

Have you consulted with Iwi/Hapū?  Yes  No

If yes, which groups have you consulted with?

Who else have you consulted with?

For any questions or information regarding iwi/hapū consultation, please contact Te Hono at Far North District Council, [tehonosupport@fndc.govt.nz](mailto:tehonosupport@fndc.govt.nz)

## 5. Applicant details

Name/s:

T & G Global Limited on behalf of Turners & Growers Fresh Limited

Email:

Phone number:

Postal address:

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

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

If yes, please provide details.


## 6. Address for correspondence

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

Name/s:

Lynley Newport

Email:

Phone number:

Postal address:

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

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

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## 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:

Turners & Growers Fresh Limited

Property address/  
location:


## 8. Application site details

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

Name/s:	Turners & Growers Fresh Limited		
Site address/ location:	Kapiro Road		
	KERIKERI		
	Postcode		
Legal description:	Lots15&16DP171115 Lot19DP...	Val Number:	
Certificate of title:	NA104C/379; NA104C/378 & NA110A/225		

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.

Contact Stephanie Fife (T&G Site Manager) before accessing site

Mob +64 212210462

Email: stephanie.fife@tandgfresh.co.nz

## 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.

Subdivisions of three titles zoned Rural Production, to create six additional titles, as a restricted discretionary activity under the Operative District Plan and a controlled activity under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

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

## 10. Would you like to request public notification?

Yes  No

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

(more than one circle can be ticked):

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

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

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

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

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

Subdividing land

Disturbing, removing or sampling soil

Changing the use of a piece of land

Removing or replacing a fuel storage system

## 13. Assessment of environmental effects:

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

Your AEE is attached to this application  Yes

## 14. Draft conditions:

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

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

## 15. Billing Details:

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

Name/s: (please write in full)

Email:

Phone number:

Postal address:

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

### Fees Information

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

## 15. Billing details continued...

### Declaration concerning Payment of Fees

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

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

Ian Hendry

**Signature:**

(signature of bill payer)

Digitally signed by Ian Hendry  
Date: 2026.03.23 13:28:47 +13'00'

**Date** 23-Mar-2026

**MANDATORY**

## 16. Important Information:

### Note to applicant

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

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

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

### Fast-track application

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

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

### Privacy Information:

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

## 17. Declaration

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

**Name** (please write in full)

Ian Hendry

**Signature**

Digitally signed by Ian Hendry  
Date: 2026.03.23 13:29:35 +13'00'

**Date** 23-Mar-2026

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

*See overleaf for a checklist of your information...*

## Checklist

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*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.

**T & G Global**

## **PROPOSED SUBDIVISION**

**Requiring consent under the Far North District Plan  
and the  
National Environmental Standard for Assessing and Managing  
Contaminants in Soil to Protect Human Health**

**Kapiro & Redcliffs Road & River Drive, Kerikeri**

### **PLANNING REPORT AND ASSESSMENT OF ENVIRONMENTAL EFFECTS**



**Thomson Survey Ltd  
Kerikeri**

## **1.0 INTRODUCTION**

### **1.1 The Proposal**

The applicants propose to carry out a subdivision of land held in three titles at Kapiro and Redcliffs Road and River Drive, Kerikeri, Kerikeri to create a total of 9 lots - 6 additional lots. The proposal is to create eight lots of approximately 2 to 2.5ha in area, and one lot of 10.8ha. Whilst the application is lodged as one application, it is effectively three subdivisions across three adjacent title, one per existing title, where all titles are dated pre April 2000 and where all comply with the restricted discretionary activity option of up to 5 lots of 2ha from an existing title.

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Access to Lots 1 & 2 will be via River Drive frontage, with Lots 3-5 being accessed off Kapiro Road. Access to Lot 6 will be off River Drive with Lots 7 & 9 gaining access off Kapiro Road. Lot 8 will get its access off Redcliffs Road.

A proposed scheme plan is attached in Appendix 1 and a Location Map is attached in Appendix 2.

## 1.2 Scope of this Report

This assessment and report accompanies the Resource Consent Application and is provided in accordance with Section 88 and Schedule 4 of the Resource Management Act 1991. The application seeks consent under the District Plan for restricted discretionary activity subdivision. The name and address of the owner of the properties is contained in the Form 9 Application form.

The subdivision also requires consent under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS) as a controlled activity.

## 2.0 PROPERTY DETAILS

Location:	Kapiro and Redcliffs Road, and River Drive, Kerikeri
Legal description:	Lots 15 & 16 DP 171115 & Lot 19 DP 178408
Record of Title:	NA104C/378, NA104C/379 & NA110A/225, dated 1996 and 1997 respectively, with a total combined area of 28.1535ha (copies attached in Appendix 3).

## 3.0 SITE DESCRIPTION

### 3.1 Physical Site Characteristics

The land in NA110A/225 is entirely in citrus orchard (lemons), with well established shelter rows throughout. It does not have any built environment. It is relatively level ground throughout. Overland flowpaths through the site are via existing surface water drains generally located by the shelter rows.

Land in NA104C/378 and 379 is also mostly in citrus orchard (lemons) and again has well established shelter rows in place. This land is more undulating than the land in NA110A/225. Again there are surface water drains. There is also a major overland flow path running from west to east through Lots 6 & 8.

None of the sites have a water boundary. They all have at least one road frontage. None of the sites have Council provided 3 water services.

Adjacent land to all three titles is now almost entirely in lifestyle or large lot residential use.



**Citrus orchard within proposed Lot 5**



**Looking north across Lot 7**

### **3.2 Mapped Site Characteristics**

The properties are zoned Rural Production in the Operative District Plan, with no resource overlays applying. They are proposed to be zoned Horticulture in the Proposed District Plan, again with no overlay applying.

The Land Use Capability classifications (soil class) mapped across the sites are a mixture of Class 2, 3 & 4 soils [source: *Our Environment; Manaaki Whenua*].

The sites are not shown/listed as a HAIL site or Selected Land Use [source: *FNDC online HAIL sites map and NRC online SLU map*] currently, but are currently used for horticulture.

The sites do not contain any mapped or scheduled historic sites, notable trees, archaeological sites or Sites of Significance to Maori [source: *FNDC online Historic sites map*].

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The sites are not mapped as containing any areas of significant indigenous vegetation or habitat and have no areas set aside for Conservation.

The sites are not mapped as containing any high or outstanding landscape or natural character values [source: FNDC and NRC online maps]. Neither do the sites contain any biodiversity wetlands [source: NRC online maps]. The sites are mapped as being within a 'kiwi present' area [source: FNDC online maps].

The sites are not mapped as being subject to any flood hazard [source: FNDC's PDP maps].

### 3.3 Legal Interests

Records of Title NA104C/378 and 379 are not subject to any easements.

Land in NA110A/225 is subject to water supply right created in Transfer C701839; and to right of way and rights to convey water, transmit electricity and telecommunications in Easement Certificate C858483.4. It is also subject to right of way in Easement Certificate C965805.4 and to a water supply right specified in EC D158365.3.

Whilst the title is shown as being subject to two water rights (in gross) in favour of the Kerikeri Irrigation Company Limited, these are not within the application site.

Similarly, the title is shown as being subject to easements in gross in favour of both Top Energy and Telecom NZ, but these are not within the application site either.

The title is subject to a right of way over part marked C on DP 174711, specified in EC D073592.4, however area 'C' on that DP is now road.

All relevant easement instruments form part of Appendix 3.

### 3.4 Consent History

The "site" consists of three titles adjacent to each other, albeit one is separated by River Drive. None of the titles support a residential dwelling or any other building, other than small sheds supporting operational infrastructure. Property file information is therefore limited to subdivision consent history as follows:

RC 1950328-RMASUB, affecting Lot 19 DP 178408, issued in 1995 and creating the bulk of the what is now Lot 19 DP 178408;

RC 1960353-RMASUB, also affecting Lot 19 DP 178408, issued in 1996, for a boundary adjustment involving land in what is now Lot 19 DP 178408;

RC 1970020-RMALUC (but which is a subdivision), also affecting Lot 19 DP 178408, also issued in 1996, and creating what is now Lot 19 DP 178408 and one other lot.

**4.0 SCHEDULE 4 – INFORMATION REQUIRED IN AN APPLICATION****Clauses 2 & 3: Information required in all applications**

<i>(1) An application for a resource consent for an activity must include the following:</i>	
<i>(a) a description of the activity:</i>	Refer Sections 1 and 5 of this Planning Report.
<i>(b) an assessment of the actual or potential effect on the environment of the activity:</i>	Refer to Section 6 of this Planning Report.
<i>(b) a description of the site at which the activity is to occur:</i>	Refer to Section 3 of this Planning Report.
<i>(c) the full name and address of each owner or occupier of the site:</i>	This information is contained in the Form 9 attached to the application.
<i>(d) a description of any other activities that are part of the proposal to which the application relates:</i>	Refer to Section 3 of this Planning Report. The application is for subdivision only and there are no other activities that are part of the proposal.
<i>(e) a description of any other resource consents required for the proposal to which the application relates:</i>	Consent is being sought for subdivision, pursuant to the Far North Operative District Plan; and pursuant to the NES for Assessing and Managing Contaminants in Soil to Protect Human Health.
<i>(f) an assessment of the activity against the matters set out in Part 2:</i>	Refer to Section 7 of this Planning Report.
<i>(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):</i>  <i>(a) any relevant objectives, policies, or rules in a document; and</i> <i>(b) any relevant requirements, conditions, or permissions in any rules in a document; and</i> <i>(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).</i>	Refer to Sections 5 and 7 of this Planning Report.
<i>(3) An application must also include any of the following that apply:</i>	
<i>(a) if any permitted activity is part of the 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)):</i>	The site (all these titles) do not contain buildings.

<p><i>(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)):</i></p> <p><i>(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)).</i></p>	<p>There is no existing resource consent. Not applicable.</p> <p>The site is not within an area subject to a customary marine title group. Not applicable.</p>
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**Clause 4: Additional information required in application for subdivision consent**

<p><i>(4) An application for a subdivision consent must also include information that adequately defines the following:</i></p>	
<p><i>(a) the position of all new boundaries:</i>  <i>(b) the areas of all new allotments, unless the subdivision involves a cross lease, company lease, or unit plan:</i>  <i>(c) the locations and areas of new reserves to be created, including any esplanade reserves and esplanade strips:</i>  <i>(d) the locations and areas of any existing esplanade reserves, esplanade strips, and access strips:</i>  <i>(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:</i>  <i>(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):</i>  <i>(g) the locations and areas of land to be set aside as new roads.</i></p>	<p>Refer to Scheme Plans in Appendix 1.</p>

**Clause 5: Additional information required for application for reclamation – not applicable.**

**Clause 6: Information required in assessment of environmental effects**

<p><i>(1) An assessment of the activity's effects on the environment must include the following information:</i></p>	
<p><i>(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:</i></p>	<p>Refer to Section 6 of this planning report. The activity will not result in any significant adverse effect on the environment.</p>

<i>(b) an assessment of the actual or potential effect on the environment of the activity:</i>	Refer to Section 6 of this planning report.
<i>(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:</i>	Not applicable as the application does not involve hazardous installations.
<i>(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:</i>	The subdivision does not involve any discharge of contaminant.
<i>(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:</i>	Refer to Section 6 of this planning report.
<i>(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted:</i>	Refer to Section 8 of this planning report. No affected persons are identified.
<i>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:</i>	No monitoring is required as the scale and significance of effects does not warrant any.
<i>(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).</i>	No protected customary right is affected.

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

<i>(1) An assessment of the activity's effects on the environment must address the following matters:</i>	
<i>(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:</i>	Refer to Sections 6 and 8 of this planning report and also to the assessment of objectives and policies in Section 7.
<i>(b) any physical effect on the locality, including any landscape and visual</i>	Refer to Section 6. The activity is a restricted discretionary activity and visual effects are not a matter to which the Council

<i>effects:</i>	restricts its discretion. The site has no outstanding or high landscape or natural character values.
<i>(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:</i>	Refer to Section 6.
<i>(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:</i>	Refer to Section 6.
<i>(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:</i>	The subdivision will not result in the discharge of contaminants, nor any unreasonable emission of noise.
<i>(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.</i>	The subdivision site is not subject to natural hazards and does not involve hazardous installations.

## 5.0 ACTIVITY STATUS

### 5.1 Operative District Plan

The property is zoned Rural Production. No resource features apply. The subdivision standards applying in the zones are contained in Table 13.7.2.1 as shown below.

**TABLE 13.7.2.1: MINIMUM LOT SIZES**

(viii) RURAL PRODUCTION ZONE

<b>Controlled Activity Status (Refer also to 13.7.3)</b>	<b>Restricted Discretionary Activity Status (Refer also to 13.8)</b>	<b>Discretionary Activity Status (Refer also to 13.9)</b>
The minimum lot size is 20ha. ....	1. Subdivision that complies with the controlled activity standard, but is within 100m of the boundary of the Minerals Zone; 2. The minimum lot size is 12ha; or 3. A maximum of 3 lots in any subdivision, provided that the minimum lot size is 4,000m <sup>2</sup> and there is at least 1 lot in the subdivision with a minimum lot size of 4ha, and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000; or <b>4. A maximum of 5 lots in a subdivision (including the parent lot) where the minimum size of the lots is 2ha, and where the subdivision is created from a site that existed at or prior to 28 April</b>	1. The minimum lot size is 4ha; or 2. A maximum of 3 lots in any subdivision, provided that the minimum lot size is 2,000m <sup>2</sup> and there is at least 1 lot in the subdivision with a minimum size of 4ha, and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000; or 3. A subdivision in terms of a management plan as per Rule 13.9.2 may be approved. ....

	2000; 5.....	
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Three titles are being subdivided, each of which is dated pre April 2000 and from which no more than 5 lots are being created per title (NA104C/378 and 379 only proposed for two lots apiece). This application is for subdivisions that are a restricted discretionary activity utilising Option 4 in the above RD options.

### Zone Rules

The lots are vacant so the subdivision does not create any breach of zone rules. Future development within the lots is expected to readily comply with permitted activity zone rules, so no consent is being sought in this regard.

### District Wide Rules

There are no applicable rules in Chapter 12 of the Operative District Plan. Excavation and/or filling will be minimal, related solely to access. Volume will be well within permitted activity thresholds.

I have not identified any breaches of rules in Chapter 15.1.6C. Existing crossings can be upgraded as required and new crossings will be to the required standard. Any existing or proposed rights of way can be upgraded or formed to the appropriate standard.

## **5.2 Proposed District Plan**

The property is zoned Rural Production under the new Proposed District Plan, publicly notified on 27<sup>th</sup> July 2022. Immediate legal effect has been given to a limited number of rules and these are addressed below.

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 application site and proposal does not involve hazardous substances, and the site does not contain any heritage resources of significant natural areas, these rules are not relevant to the proposal.

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.

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Ecosystems and Indigenous Biodiversity – Rules IB-R1 to R5 inclusive.

As no clearance of any indigenous vegetation is proposed, these rules are not relevant.

Subdivision (specific parts)

Only subdivision provisions relating to land containing Significant Natural Area or Heritage Resources have immediate legal effect. The site contains no scheduled or mapped Significant Natural Areas or Heritage Resources.

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 and artefacts are discovered. The subdivision works will involve only very minor earthworks related to access. Such works can be subject to the ADP. EW-13 and associated EW-S5 relate to ensuring Erosion and Sediment Control measures are in place during earthworks. They cite compliance with GD05. Any earthworks necessary for access can be subject to GD05.

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

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

In summary, there are no zone rules in the PDP with immediate legal effect that affect the proposal's activity status.

## 6.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

The assessment of environmental effects below includes such detail as corresponds with the scale and significance of the effects that the activity may have on the environment, as required by Clause 2(3)(c) of Schedule 4 of the Act.

A restricted discretionary activity is described in s87A of the Act, clause (3).

*If an activity is described in this Act, regulations (including any national environmental standard), a plan, or a proposed plan as a restricted discretionary activity, a resource consent is required for the activity and—*

*(a) **the consent authority's power to decline a consent, or to grant a consent and to impose conditions on the consent, is restricted to the matters over which discretion is restricted** (whether in its plan or proposed plan, a national environmental standard, or otherwise); and*

*(b) if granted, the activity must comply with the requirements, conditions, and permissions, if any, specified in the Act, regulations, plan, or proposed plan.*

It is also subject to s104C of the Act:

- (1) When considering an application for a resource consent for a restricted discretionary activity, a consent authority must consider **only** those matters over which-
- (a) A discretion is restricted in national environmental standards or other regulations;
- (b) It has restricted the exercise of its discretion in its plan or proposed plan; .....
- (3) ..... if it grants the application, the consent authority may impose conditions under section 108 **only** for those matters over which –
- (a) A discretion is restricted in national environmental standards or other regulations;
- (b) It has restricted the exercise of its discretion in its plan or proposed plan.

The subdivision meets the restricted discretionary number/size of lots specified in Table 13.7.2.1. Far North District Plan lays out in 13.8.1, the matters to which it restricts its discretion in determining whether to grant consent to a restricted discretionary activity, and then lays out the matters to which it will restrict its discretion when considering whether to impose conditions.

### **13.8.1 SUBDIVISION WITHIN THE RURAL PRODUCTION ZONE**

..... In considering **whether or not to grant consent** on applications for restricted discretionary subdivision activities, the Council will restrict the exercise of its discretion to the following matters:

- (i) for applications under 13.8.1(a):
- effects on the natural character of the coastal environment for proposed lots which are in the coastal environment.
- (ii) for applications under 13.8.1(b) or (c):
- effects on the natural character of the coastal environment for proposed lots which are in the coastal environment;
  - effects of the subdivision under (b) and (c) above within 500m of land administered by the Department of Conservation upon the ability of the Department to manage and administer its land;
  - effects on areas of significant indigenous flora and significant habitats of indigenous fauna;
  - the mitigation of fire hazards for health and safety of residents.

In considering **whether or not to impose conditions** on applications for restricted discretionary subdivision activities the Council will restrict the exercise of its discretion to the following matters:

- (1) the matters listed in 13.7.3;
- (2) the matters listed in (i) and (ii) above

In the case of this application, the application is lodged pursuant to 13.8.1(b), and therefore clause (ii) applies. The matters listed under clause (ii) are all addressed below in the matters covered in the AEE, however a summary is provided below:

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

The property is not within the coastal environment.

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

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The Rangitane Stream has a marginal strip adjacent to the stream (but not bounding the applications sites). This marginal strip is closer than 500m from parts of the application titles. It is land administered by the Department of Conservation. However, as none of the titles subject to the application share a boundary with the marginal strip, the subdivisions have nil effect on DoC's ability to manage that land.

- effects on areas of significant indigenous flora and significant habitats of indigenous fauna;

The site contains no areas of significant indigenous flora or significant habitat of indigenous fauna.

- the mitigation of fire hazards for health and safety of residents.

There are no areas of bush from which setback is required for future residential units.

In summary, there are no grounds for the Council to refuse consent.

In determining conditions of consent, the following AEE is offered.

### **6.1 Allotment sizes and dimensions**

All lots can readily accommodate a 30m x 30m square building envelope complying with permitted activity boundary setbacks. The lots are considered of a suitable size and shape for future use, including potential residential use.

### **6.2 Property Access**

The Subdivision Site Suitability Report in Appendix 4 to this application, addresses access and vehicle crossings in its Section 6. It recommends crossings to primary collector public roads be to FNDC/S/6B standard and crossings to other public roads and private right of ways, be to FNDC/S/6 standard. The report states that access to Lot 7 will be directly off Kapiro Road. An alternative, should the Council consider another crossing off Kapiro Road at this location unsuitable, would be for Lot 7 to share the Lot 9 access as this is already formed and has better sight distances, and then have access to Lot 7 boundary via a right of way.

Existing ROW A & B is to be upgraded to the appropriate standard. A proposed right of way from Lot 9's crossing to provide access to the boundary of Lot 7, should the Council consider this the preferred access, will be formed to the appropriate standard.



**Looking south out the existing entrance on Lot 9's frontage, to Kapiro Road**



**Looking north along Lot 8's Redcliffs Road frontage**

### **6.3 Natural and Other Hazards**

Given that none of the sites are subject to any hazards, a comprehensive assessment of hazard risk has not been considered necessary. No site is flood prone, nor erosion prone. No site has a water boundary or waterbody flowing through it. Drainage within the sites is related to orchard operations. Overland flow paths through the sites can be kept clear of any built development, and flow appropriately managed. There is no risk from erosion, alluvium, avulsion, subsidence, rockfall, landslip or flooding. There is no reason under section 106 of the Act to decline the subdivision.

The site has historically been in horticulture, and still is, and is therefore subject to assessment under the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS). This is discussed in more detail in Section 7.5. In summary, the Combined Preliminary and Detailed Site Investigation Report supporting the application – refer Appendix 5 – concludes it is highly unlikely that there will be any risk to human health as

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a result of the proposed activity. Consent is required under the NES-CS as a controlled activity.

#### **6.4 Water Supply**

There is no Council reticulated water supply available to the property. The SSSR in Appendix 4 recommends roof runoff water tanks be adopted for potable water supply. In addition, the Council can impose its standard requirement in regard to providing fire fighting water supply for any new residential development within the lots, at time of building consent.

#### **6.5 Sanitary Sewage Disposal**

The SSSR addresses on site wastewater treatment and disposal in its section 2. It conservatively uses a 5 bedroom (8 person) scenario for its preliminary design assessment. The SSSR recommends that each lot is subject to building consent specific review and design for any on site wastewater system. It concludes that the lots can provide for on site treatment and disposal in compliance with the Regional Plan's permitted activity standards. The SSSR includes a preliminary AEE in its Appendix D to demonstrate the proposed wastewater disposal concept will have a less than minor effect on the environment. Whilst the report recommends secondary treatment, it also states that primary treatment systems may be suitable, provided the lot owner can demonstrate suitable treatment quality, disposal area and compliance with the NRC Regional Plan.

#### **6.6 Stormwater Disposal**

The SSSR assesses on-site stormwater management in its section 3. Development can occur on the lots readily complying with the zone's permitted activity coverage thresholds. The report includes a stormwater management concept (including attenuation) for future development within the lots.

#### **6.7 Energy Supply & Telecommunications**

Power and telecoms are not a requirement for rural subdivisions. Council can impose a consent notice to this effect.

#### **6.8 Easements for any purpose**

Refer to Scheme Plan(s) in Appendix 1. Currently these show existing easements only. Should the Council prefer that Lot 7 shares a crossing with Lot 9, an additional right of way (and services) easement can be added.

#### **6.9 Preservation of heritage resources, vegetation, fauna and landscape, and land set aside for conservation purposes**

The site contains none of the following items listed in Rule 13.7.3.9 of the District Plan. There are no Notable Trees (Appendix 1D of the DP); no Historic Sites, Buildings or Objects (1E); no

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Outstanding Natural Features or Outstanding Landscape Features (1A and 1B); and no archaeological sites (1G) or Sites of Cultural Significance to Māori (1F).

#### Indigenous Flora & Fauna:

The property contains no areas of significant indigenous vegetation or habitat. The property is within a large mapped kiwi present area. I believe a simple advice note would suffice to remind the consent holder and future purchasers of the potential for kiwi to be present and to therefore ensure any dogs or cats kept on site are kept inside at night. This could be a consent notice as opposed to an Advice Note, if the Council considers this necessary.

### **6.10 Access to reserves and waterbodies**

There are no qualifying waterbodies to which public access is required and no nearby reserves.

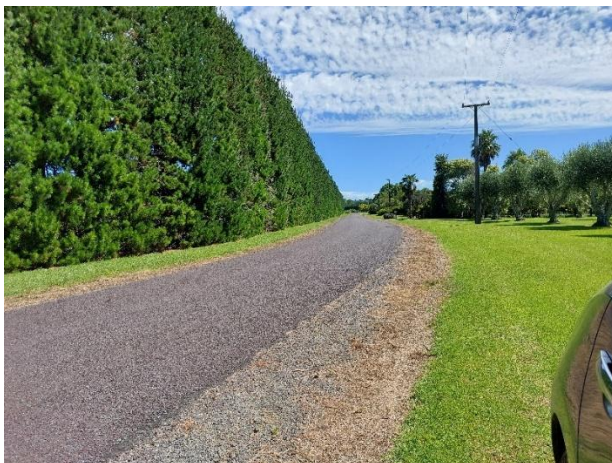
### **6.11 Earthworks**

The SSSR Report in Appendix 4 addresses earthworks in its Section 5. It assumes earthworks may be required service trenching; reinstatement of metalled accessway along ROW B; new double width vehicle crossing to ROW B and other vehicle crossings as proposed in the application. The total volume will be well within the zone's permitted standard. Earthworks can be subject to the ADP and to appropriate Erosion and Sediment Control measures.

### **6.12 Land use compatibility (reverse sensitivity)**

Whilst the titles are currently in citrus the land around the sites is no longer in productive use and, in the case of River Drive, hasn't been for some time. The exception is a kiwifruit operation across Kapiro Road from a portion of Lot 9's boundary. That operation has structured screening in place right along the road frontage. The existing situation poses a risk of reserve sensitivity issues arising, with orchard surrounded by residential and lifestyle living.

For the title at River Drive, this risk has been addressed on multiple occasions through the granting of progressive subdivision consents for land surrounding the application site. The risk is substantially mitigated by means of the well established and densely planted boundary shelter/screening vegetation, seen in the picture below.



There is also extensive shelter planting on northern and eastern boundaries of the other two titles – where there is existing and consented residential use on that northern boundary, and road on the eastern boundary. In addition there is existing residential use on the corner of River Drive and Kapiro Road, with that property's boundaries with citrus orchard also heavily planted. There is an orchard operation opposite part of Lot 9, with crop structures and screening in place. This, coupled with the existing road side screening along Lot 9's road frontage, provides ample mitigation in regard to future reverse sensitivity issues arising.

In short, the current means of mitigating and addressing the existing reverse sensitivity risk is based on effective vegetative screening and good operational practice on the part of the property owners. This has been regarded as sufficient by the Council.

The current situation in terms of land use pattern around the application titles is that, apart from a short section of orchard land opposite a portion of Lot 9's road boundary, land on that side of Kapiro Road consists of rural residential lifestyle land use. Should any of the land in the application sites with a Kapiro Road frontage be subject to a land use change away from intensive horticulture, something that may happen post consent, this reduces, rather than increases, the risk of reverse sensitivity.

The title with frontage to Redcliffs Road, from Lots 8 & 9 are proposed is in a similar situation. The property across Redcliffs Road was in farmland but is consented for intensification. As one drives west along Kapiro Road towards Redcliffs Road, one can see the site works taking place for residential housing. Providing for potential change of land use away from horticulture on Lots 8 & 9 will reduce the risk of reverse sensitivity rather than increase it.

Lots 6, 7 & 8 is land bounded by residential land use, or land consented for such use. The risk of reverse sensitivity would be reduced should the land use on Lots 6, 7 and 8 change away from horticulture.

Land in Lots 1 & 2 has a road boundary with River Drive. All of River Drive in this location has long since been retired from any kind of productive use and is in rural/residential use. To retire Lots 1 & 2 from horticulture and provide for same/similar land use would reduce reverse sensitivity risk where there is a boundary with River Drive.

The large balance Lot 3, at 10.88ha, will mostly likely remain in some form of horticulture, at least in the short term, and whilst this represents a no change situation on Lot 3's western and eastern boundaries, the risk of reverse sensitivity issues arising between that continued use and future residential use of land in Lots 4, 5 and Lot 2, will need to be considered and mitigated. Three mitigation measures are proposed:

- ensure a generous setback from boundary with Lot 3 for any future residential living on Lots 2, 4 and 5;
- ensure the planting of those same boundaries with closely planted screening/shelter species, and maintain that screening thereafter; and
- imposition of a 'reverse sensitivity' consent notice on Lots 2, 4 and 5 acknowledging the likely horticultural/productive land use on Lot 3 and ensuring it can continue to be utilised that way, compliant with any applicable rules or regulations. Typical wording that I've observed used by Council might be along the lines of:

*"The lot is located in proximity to land utilised for horticulture. Future lot owners and occupiers shall accept that noise, dust and spraying, resulting from activities associated with the lawful operation of the horticultural activity, may be experienced." (or similar)*

In summary I believe any residual risk of reverse sensitivity issues arising from these subdivisions can be satisfactorily mitigated.

## **7.0 STATUTORY ASSESSMENT**

### **7.1 Operative District Plan Objectives and Policies**

As a restricted discretionary subdivision activity, the proposal is considered consistent with the relevant Objectives and Policies in Chapter 13 Subdivision. The proposal promotes sustainable management of the natural and physical resources of the District. It is an appropriate subdivision that does not compromise the life-supporting capacity of air, water, or ecosystems, and adverse effects are capable of mitigation (Objectives 13.3.1 and 2 and Policy 13.4.14).

The lots have ample scope for on-site wastewater treatment and disposal. The lots will be reliant on on-site water catchment and supply. On site stormwater management is feasible so as to avoid off site effects (Objective 13.3.5 and related Policy 13.4.8).

I am not aware of any sites of significance to Māori or cultural values associated with the site. Building setbacks can readily meet requirements from overland flow paths. No major earthworks are required and no indigenous vegetation clearance is envisaged or required (Objective 13.3.7 and Policy 13.4.11)

Objectives 13.3.8-13.3.10 are about ensuring subdivisions have access to adequate services and make efficient use of infrastructure. I believe the proposal is consistent with these objectives. Power and telecoms are not a requirement of rural subdivisions.

The site displays no landscape values and no known cultural or heritage values. The site does not have high or outstanding natural character values. I do not believe the subdivision will prevent adjacent land uses from continuing to operate (Policy 13.4.1).

Safe and efficient access can be provided (Policies 13.4.2 and 3)

Relevant Rural Production Zone objectives and policies include:

*Objectives:*

*8.6.3.1 To promote the sustainable management of natural and physical resources in the Rural Production Zone.*

*8.6.3.2 To enable the efficient use and development of the Rural Production Zone in a way that enables people and communities to provide for their social, economic, and cultural well being and for their health and safety.*

*8.6.3.3 To promote the maintenance and enhancement of the amenity values of the Rural Production Zone to a level that is consistent with the productive intent of the zone.*

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8.6.3.4 To promote the protection of significant natural values of the Rural Production Zone.

8.6.3.6 To avoid, remedy or mitigate the actual and potential conflicts between new land use activities and existing lawfully established activities (reverse sensitivity) within the Rural Production Zone and on land use activities in neighbouring zones.

8.6.3.7 To avoid remedy or mitigate the adverse effects of incompatible use or development on natural and physical resources.

8.6.3.8 To enable the efficient establishment and operation of activities and services that have a functional need to be located in rural environments.

8.6.3.9 To enable rural production activities to be undertaken in the zone.

#### And policies

8.6.4.1 That a wide range of activities be allowed in the Rural Production Zone, subject to the need to ensure that any adverse effects on the environment, including any reverse sensitivity effects, on the environment resulting from these activities are avoided, remedied or mitigated and are not to the detriment of rural productivity.

8.6.4.2 That standards be imposed to ensure that the off site effects of activities in the Rural Production Zone are avoided, remedied or mitigated.

8.6.4.3 That land management practices that avoid, remedy or mitigate adverse effects on natural and physical resources be encouraged.

8.6.4.4 That the type, scale and intensity of development allowed shall have regard to the maintenance and enhancement of the amenity values of the Rural Production Zone to a level that is consistent with the productive intent of the zone.

8.6.4.5 That the efficient use and development of physical and natural resources be taken into account in the implementation of the Plan.

8.6.4.7 That although a wide range of activities that promote rural productivity are appropriate in the Rural Production Zone, an underlying goal is to avoid the actual and potential adverse effects of conflicting land use activities.

8.6.4.8 That activities whose adverse effects, including reverse sensitivity effects cannot be avoided remedied or mitigated are given separation from other activities

8.6.4.9 That activities be discouraged from locating where they are sensitive to the effects of or may compromise the continued operation of lawfully established existing activities in the Rural Production zone and in neighbouring zones.

Objective 8.6.3.5 and Policy 8.6.4.6 are not considered relevant as they are solely related to Kerikeri Road.

The proposed subdivision promotes an efficient use and development of the land (Objective 8.6.3.2). The citrus crop on the land in the application titles, is past its most productive 'best' and it no longer providing the financial return that is considered sustainable. The operators are therefore looking to divest themselves of the majority of the land. A large balance lot will remain available for horticultural use and reverse sensitivity effects can be satisfactorily mitigated. I consider the proposals to be a sustainable use of the land's natural and physical resources.

Amenity values can be maintained (8.6.3.3). Reverse sensitivity effects are satisfactorily addressed. The continued use of parts of the proposed 2ha lots for small scale and/or domestic productive use remains (Objectives 8.6.3.6-8.6.3.9 inclusive and Policies 8.6.4.8 and 8.6.4.9).

Policy 8.6.4.7 anticipates a wide range of activities that promote rural productivity, whilst avoiding the actual and potential adverse effects of conflicting land use activities. Reverse sensitivity issues have been addressed earlier and I believe they can be satisfactorily mitigated.

The proposal provides for sustainable management of natural and physical resources (8.2.4.1). Off site effects can be avoided, remedied or mitigated (8.6.4.2 and 8.6.4.3). Amenity values can be maintained through the size of the lots (open space to built environment ratio) (8.6.4.4). The proposal enables the efficient use and development of natural and physical resources (8.6.4.5).

In summary, I believe the proposal to be consistent with the Rural Production Zone objectives and policies.

## 7.2 Proposed District Plan

An assessment against the relevant objectives and policies in the Subdivision section of the Proposed District Plan (PDP) follows:

### **SUB-O1**

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

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

### **SUB-O2**

*Subdivision provides for the:*

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

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

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

### **SUB-O4**

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

- a. public open spaces;*
- b. esplanade where land adjoins the coastal marine area; and*
- c. esplanade where land adjoins other qualifying water bodies*

I consider the subdivision to be an efficient use of land for reasons outlined earlier in this report. The subdivision will allow for a land use pattern that is in keeping with the local character in terms of lot size and land use. The titles have a proposed Horticulture Zone and the proposal is unlikely to achieve all the objectives of that zone, other than for the large balance Lot 3. Two hectare lots can support small scale/ domestic level productive use. The proposal is assessed against the objectives and policies of the Horticulture Zone later in this report.

Reverse sensitivity effects will not be exacerbated/worsened and already are, or can be, satisfactorily mitigated. In regard to part (d) of SUB-O1, the land use pattern is already one that compromises intensive horticultural use because of the presence of a large number of properties used, or likely to be used, for residential purposes in the vicinity. This is a criterion that should have been included when considering the extent and locality of a Horticulture Zone.

Highly productive land is present on the application titles and some of that land, but not all, will remain available for horticultural use. However, the application is lodged pursuant to the Operative District Plan rules, not the Proposed District Plan rules, and as a restricted discretionary activity under the Operative Plan, the Council's discretion is restricted to assessing reverse sensitivity issues only, and not the loss of highly productive land.

The subdivision is of land that contains no outstanding natural features or landscapes and is not in the coastal environment. Neither does the site have any areas of high or outstanding natural character. The site is not identified as having any Site or Areas of Significance to Maori or Heritage Resources.

There is no planned 3 waters infrastructure in the area. The lots will have onsite servicing and have access to Council road network (SUB-O3). No Esplanade Reserve is required (SUB-O4).

**SUB-P1**

Enable boundary adjustments that:

.....

Not relevant – application is not a boundary adjustment.

**SUB-P2**

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

Not relevant – application does not involve public works, infrastructure, reserves or access lots.

**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.

The proposal does not meet the minimum lot size applying in the PDP's Horticulture zone, other than Lot 3. Two of the application titles are already less than the controlled activity minimum lot size. The proposed subdivision, whilst not consistent with the purpose,

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characteristics and qualities of the 'zone', does represent a land use pattern that is consistent with the characteristics and qualities of the immediate area. The lots are of an appropriate shape and size to support development; and 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*

The subdivision has had regard to all the matters listed, where relevant.

**SUB-P5**

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

Not relevant as the site is not zoned any of the zones referred 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 in accordance the purpose, characteristics and qualities of the zone.*

The site is reliant on existing on-site servicing. The sites have access to Council road network.

**SUB- P7**

*Require the vesting of esplanade reserves when subdividing land adjoining the coast or other qualifying water bodies.*

No Esplanade Reserve is required.

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

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

Not relevant as the site is not proposed to be zoned Rural Production.

**SUB-P9**

*Avoid subdivision [sic] rural lifestyle subdivision in the Rural Production zone and Rural residential subdivision in the Rural Lifestyle zone unless the development achieves the environmental outcomes required in the management plan subdivision rule.*

Not relevant as the site is not zoned Rural Production or Rural Lifestyle.

**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.*

Not relevant. No minor residential units proposed.

**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*

*Proposed subdivision*

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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.

All of the above have been considered in the layout and number of lots being proposed.

In summary I believe the proposed subdivision is consistent with some, but not all, of the PDP's objectives and policies in regard to subdivision. Those objectives and policies that it is not entirely consistent with are those related to the protection of highly productive land. The weighting to be afforded to the Operative compared with the Proposed District Plan is an important consideration in regard to this aspect. The Proposed District Plan rules have no legal effect and therefore the Council's discretion in considering a restricted discretionary activity under the Operative District Plan is limited to reverse sensitivity issues only. I believe the proposal is consistent with the objectives and policies in the PDP's subdivision section, where related to that matter.

The site is zoned Horticulture in the Proposed District Plan.

**Objectives**

**HZ-O1**

*The Horticulture zone is managed to ensure its long-term availability for horticultural activities and its longterm protection for the benefit of current and future generations.*

**HZ-O2**

*The Horticulture zone enables horticultural and ancillary activities, while managing adverse environmental effects on site.*

**HZ-O3**

*Land use and subdivision in the Horticulture zone:*

a. *avoids land sterilisation that reduces the potential for highly productive land to be used for a horticulture activity;*

b. *avoids land fragmentation that compromises the use of land for horticultural activities;*

c. *avoids any reverse sensitivity effects that may constrain the effective and efficient operation of primary production activities;*

d. *does not exacerbate any natural hazards;*

e. *maintains the rural character and amenity of the zone;*

f. *is able to be serviced by on-site infrastructure.*

The crop on the application titles is of an age and at a stage where it is no longer considered economically viable. The owners are therefore looking to diversify their holdings. The focus, in this instance, is on land that is struggling to continue to support crops that render a good financial return, in an area that has become increasingly unsuitable for ongoing horticultural use because of a trend towards change of land use to rural residential.

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Sterilisation of land is when it is covered by something that renders the soil unavailable for productive use. All lots can be developed within the permitted level of impermeable and building coverage. As this is a percentage of total site area, this coverage is no different to what can occur on existing titles.

It is acknowledged that subdivision equates to 'fragmentation', however this is where the weighting of the plans comes into play and where Council's discretion in considering a subdivision application is restricted to reverse sensitivity issues only.

Reverse sensitivity effects can be effectively mitigated. The site is not subject to any natural hazard. The subdivision maintains rural character and amenity and the lots are able to be serviced by on-site infrastructure.

As stated above, it is important to note that the Horticulture Zone and its provisions have no legal effect and the presiding document in assessing this application is the ODP. As a restricted discretionary activity under the ODP, the Council's discretion is restricted to matters relating to reverse sensitivity only when it comes to "highly productive land".

### **Policies**

#### **HZ-P1**

Identify a Horticulture zone in the Kerikeri/Waipapa area using the following criteria:

- a. presence of highly productive land suitable for horticultural use;
- b. access to a water source, such as an irrigation scheme or dam able to support horticultural use; and
- c. infrastructure available to support horticultural use.

This policy applies to the consent authority, not an individual property owner. A logical additional criterion for identifying the zone should have been the existing land use pattern where intensive horticulture may no longer be a sustainable or suitable use because of the already altered character featuring smaller lots supporting residential living.

#### **HZ-P2**

Avoid land use that: ....

Not relevant as the application is a subdivision, not a land use.

#### **HZ-P3**

Enable horticulture and associated ancillary activities that support the function of the Horticulture zone, where:

- a. adverse effects are contained on site to the extent practicable; and
- b. they are able to be serviced by onsite infrastructure.

Not relevant as application is not for a horticulture or associated ancillary activity.

#### **HZ-P4**

Ensure residential activities are designed and located to avoid, or otherwise mitigate, reverse sensitivity effects on horticulture activities, including adverse effects associated with dust, noise, spray drift and potable water collection.

*Proposed subdivision*

The lots are large and will enable future lot owners to be consistent with this policy. Earlier in this report I referred to three measures that could be implemented on three of the lots that have a boundary with the balance Lot 3, that would satisfactorily mitigate reverse sensitivity effects.

**HZ-P5**

Manage the subdivision of land in the Horticulture zone to:

- a. avoid fragmentation that results in loss of highly productive land for use by horticulture and other farming activities;
- b. ensure the long-term viability of the highly productive land resource to undertake a range of horticulture uses;
- c. enable a suitable building platform for a future residential unit; and
- d. ensure there is provision of appropriate onsite infrastructure.

The proposal is consistent with parts (c) and (d) of the above policy. It cannot be entirely consistent with parts (a) and (b), albeit Lot 3 is of a size to support ongoing horticultural use and 2ha of land continues to provide for smaller scale / domestic level productive use. The Council's discretion in assessing the application, however, is restricted by the Operative District Plan, to matters of reverse sensitivity only.

**HZ-P6**

Encourage the amalgamation or boundary adjustments of Horticulture zoned land where this will help to make horticultural activities more viable on the land.

This is not considered a viable or practical alternative.

**HZ-P7**

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. whether the proposal will increase production potential in the zone;
- b. whether the activity relies on the productive nature of the soil;
- c. consistency with the scale and character of the rural environment;
- d. location, scale and design of buildings or structures;
- e. for subdivision or non-primary production activities:
  - i. scale and compatibility with rural activities;
  - ii. potential reverse sensitivity effects on primary production activities and existing infrastructure;
  - iii. the potential for loss of highly productive land, land sterilisation or fragmentation
- f. at zone interfaces:
  - i. any setbacks, fencing, screening or landscaping required to address potential conflicts;
  - ii. the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable;
- g. the capacity of the site to cater for on-site infrastructure associated with the proposed activity, including whether the site has access to a water source such as an irrigation network supply, dam or aquifer;
- h. the adequacy of roading infrastructure to service the proposed activity;
- i. Any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity;
- j. Any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

The proposal does not require any consent under the PDP and the above policy is therefore of limited relevance. I consider the proposal will maintain rural character and amenity and the lots are suitable for their intended use.

### 7.3 Part 2 Matters

The subdivision is a restricted discretionary subdivision activity. It is therefore deemed to be consistent with the Operative District Plan, a document prepared in order to give effect to Part 2.

#### 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.*

The proposal provides for peoples' social and economic well being, and for their health and safety, while sustaining the potential of natural and physical resources, safeguarding the life-supporting capacity of air, water, soil and the ecosystems; and avoiding, remedying or mitigating adverse effects on the environment.

#### 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 does not contain or display any of the features, resources or values outlined in Section 6.

Proposed subdivision

---

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". These include 7(b), (c), (d) and (f). It is considered that the proposal represents efficient use and development of a site. Proposed layout, along with existing waste water and stormwater management, will ensure the maintenance of amenity values and the quality of the environment. The proposal has had regard to the values of ecosystems.

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 proposed subdivision 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

The only relevant national policy statement that I have identified is the National Policy Statement for Highly Productive Land (NPS-HPL). This requires regional councils to map highly productive land within their region. No such mapping has yet been carried out and in the interim, the NPS outlines what should be 'treated' as highly productive land (clause 3.5(7)):

- *land zoned general rural or rural production; and*
- *LUC 1, 2, or 3 land; but*
- *Is not identified for future urban development; or*
- *Subject to a Council initiated, or an adopted, notified plan change to rezone it from general rural or rural production to urban or rural lifestyle; or*

- 
- Subject to a resource consent application for subdivision, use or development on LUC 3 land for any activity other than rural lifestyle.

In this instance the site is zoned rural production under the ODP (the only zone with legal effect), and contains some LUC 2 & 3 land (as well as LUC 4). Therefore consideration must be given to the NPS HPL to the extent provided for in the ODP in terms of the Council's discretion. The Council has confirmed that where the application is a restricted discretionary subdivision application, any assessment of the proposal against the NPS HPL can and will be limited to **Reverse Sensitivity Effects**.

**Policy 9:** *Reverse sensitivity effects are managed so as not to constrain land-based primary production activities on highly productive land.*

In regard to Policy 9, the proposal does not create any additional reverse sensitivity effects that cannot be managed appropriately. In fact in regard to some of the proposed lots, the proposal will likely reduce the risk of reverse sensitivity effects given the proximity to existing residential use on adjacent sites. Refer to Section 6 of this report where Reverse Sensitivity effects are addressed in 6.12.

The lots are expansive and future residential development can be established well clear of any boundary with any operational horticulture activity (specifically that on Lot 3). Any roof catchment water supply can be filtered. It is proposed to establish boundary screening/shelter plantings to provide additional screening between adjacent horticultural operations and residences. I do not believe the subdivision will result in any additional constraint to land-based primary production activities continuing on Lot 3. Land adjacent to Lots 6-9 is not in horticultural use, other than an existing operation across Kapiro Road from a portion of Lot 9's road boundary. This is well screened. Land adjacent to Lot 1 is not in horticultural use.

Clause 3.8 of the NPS HPL requires territorial authorities (not individual property owners) to "avoid the subdivision of highly productive land". However, the avoidance of the subdivision of highly productive land is not a matter to which the Council has restricted its discretion in its Operative District Plan and therefore it has no ability to consider the avoidance of subdivision of highly productive land.

Sub part 2(b) states:

*(2) Territorial authorities must take measures to ensure that any subdivision of highly productive land: (b) avoids if possible, or otherwise mitigates, any actual or potential reverse sensitivity effects on surrounding land-based primary production activities.*

This part of 3.8 is within the Council's restricted discretion to consider.

Reverse sensitivity issues have been assessed at length elsewhere in this report, and in commentary under Policy 9 above. In my opinion, the proposal will not create any actual or potential reverse sensitivity effects on surrounding land-based primary production activities over and above what might already exist, noting the current land use pattern of the area.

---

In summary I do not believe there will be adverse reverse sensitivity effects as a result of this subdivision and the proposal has had adequate regard to those parts of the NPS HPL that the Council's discretion is restricted to.

## 7.5 National Environmental Standards (NES)

The NES for Assessing and Managing Contaminants in Soil to Protect Human Health (NES-CS) is relevant given the site's historic horticultural use.

A Combined Preliminary and Detailed Site Investigation is attached in Appendix 5. This provides site information and informs of the history of the site. It provides a sampling and analysis plan and provides the sample results. In summary no sample exceeded the relevant human health standard. No site remediation is required. The report assesses risk as minimal and concludes the activity is a controlled activity under the NES-CS. No conditions are required.

## 7.6 Regional Policy Statement for Northland (RPS)

The RPS contains objectives and policies related to infrastructure and regional form and economic development. These are enabling in promoting sustainable management in a way that is attractive for business and investment. The proposal is consistent with these objectives and policies.

The RPS also has policies ensuring that productive land is not subject to fragmentation and/or sterilisation to the point where productive capacity is materially reduced, and that reverse sensitivity effects be avoided, remedied or mitigated. The subdivisions are a restricted discretionary application and the Council's powers and matters of discretion are restricted accordingly.

### **Objective 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, with particular emphasis on either:*

(a) Reverse sensitivity for existing:

(i) Primary production activities; .....

In regard to this subdivision, it is considered that the risk of reverse sensitivity issues arising is not significantly increased and can be successfully managed & mitigated.

The associated Policy to the above Objective is **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: ....*

(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; ...*

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

---

(f) Ensures that plan changes and subdivision to / in a primary production zone, do not materially reduce the potential for soil-based primary production on land with highly versatile soils, or if they do, the net public benefit exceeds the reduced potential for soil-based primary production activities; and ...

Objectives and Policies in the Regional Policy Statement for Northland (RPS) provide direction when examining the subdivision of land in production zones where the soils meet the definition of 'highly versatile', the RPS states that Class I, II and III soils are 'highly versatile'. The site contains some LUC II and III soils, as well as LUC IV. Some of the land in the application titles will remain available for productive use, but some will potentially be removed from commercial level productive use. As stated earlier, however, the Council's discretion is restricted to matters of reverse sensitivity only, and not the loss of land or soil-based primary production.

### **5.1.3 Policy – 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):.....

The proposal does not, in my opinion, prevent the continued use of adjacent land currently in production, to continue in that use. Reverse sensitivity effects have been addressed earlier.

I believe the proposal is not contrary to any of the objectives or policies in the Regional Policy Statement for Northland.

## **7.7 Regional Plans**

The subdivision does not result in any breaches of the Regional Plan (Appeals version).

## **8.0 S 95A-E & CONSULTATION**

### **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 circumstances exist. Step 3 of s95A must therefore be considered. This specifies that public notification is required in certain circumstances. No such circumstance exists. 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.

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## 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. No such group or persons are identified in this instance. Step 2 of s95B specifies the circumstances that preclude limited notification. No such circumstances exist and Step 3 of s95B must be considered. This specifies that certain other affected persons must be notified, specifically:

- (7) *In the case of a boundary activity, determine in accordance with section 95E whether an owner of an allotment with an infringed boundary is an affected person.*
- (8) *In the case of any other activity, determine whether a person is an affected person in accordance with section 95E.*

The application is not for a boundary activity. The s95E assessment below concludes that there are no affected persons to be notified.

## 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.

## 8.5 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.

The activity is a restricted discretionary activity under the ODP and a controlled activity under the NES-CS. The activity is therefore considered an anticipated and expected one pursuant to both those pieces of planning legislation. Off site effects will be mitigated so as to be less than minor. No adjacent properties have been identified as affected.

The site does not contain any heritage or cultural sites or values and there are no areas of indigenous vegetation or habitat. The site is not accessed off state highway. No pre lodgement consultation has been considered necessary with tangata whenua, Heritage NZ, Department of Conservation or Waka Kotahi.

## 9.0 CONCLUSION

The sites are considered suitable for the proposed subdivisions, and effects on the wider environment are no more than minor. There is no District Plan rule or national environmental standard that requires the proposal to be publicly notified. No special circumstances have been identified that would suggest public notification is required. No affected persons are identified.

I consider the proposal to be consistent with the Operative District Plan and consistent with some, but not all of the Proposed District Plans' objectives and policies. However, in saying that, the Council discretion in considering the granting of the consent, pursuant to the ODP, and what conditions to impose, is restricted to reverse sensitivity matters in terms of the PDP's objectives and policies. The proposal is consistent with any objectives and policies in the PDP related to such matters.

I consider the proposal to be consistent with Part 2 of the Act and any relevant national or regional planning instrument.

It is requested that the Council give favourable consideration to this application and grant approval, on a non notified basis.



Signed  
**Lynley Newport**  
**Senior Planner**  
**THOMSON SURVEY LTD**

Dated

2<sup>nd</sup> April 2026

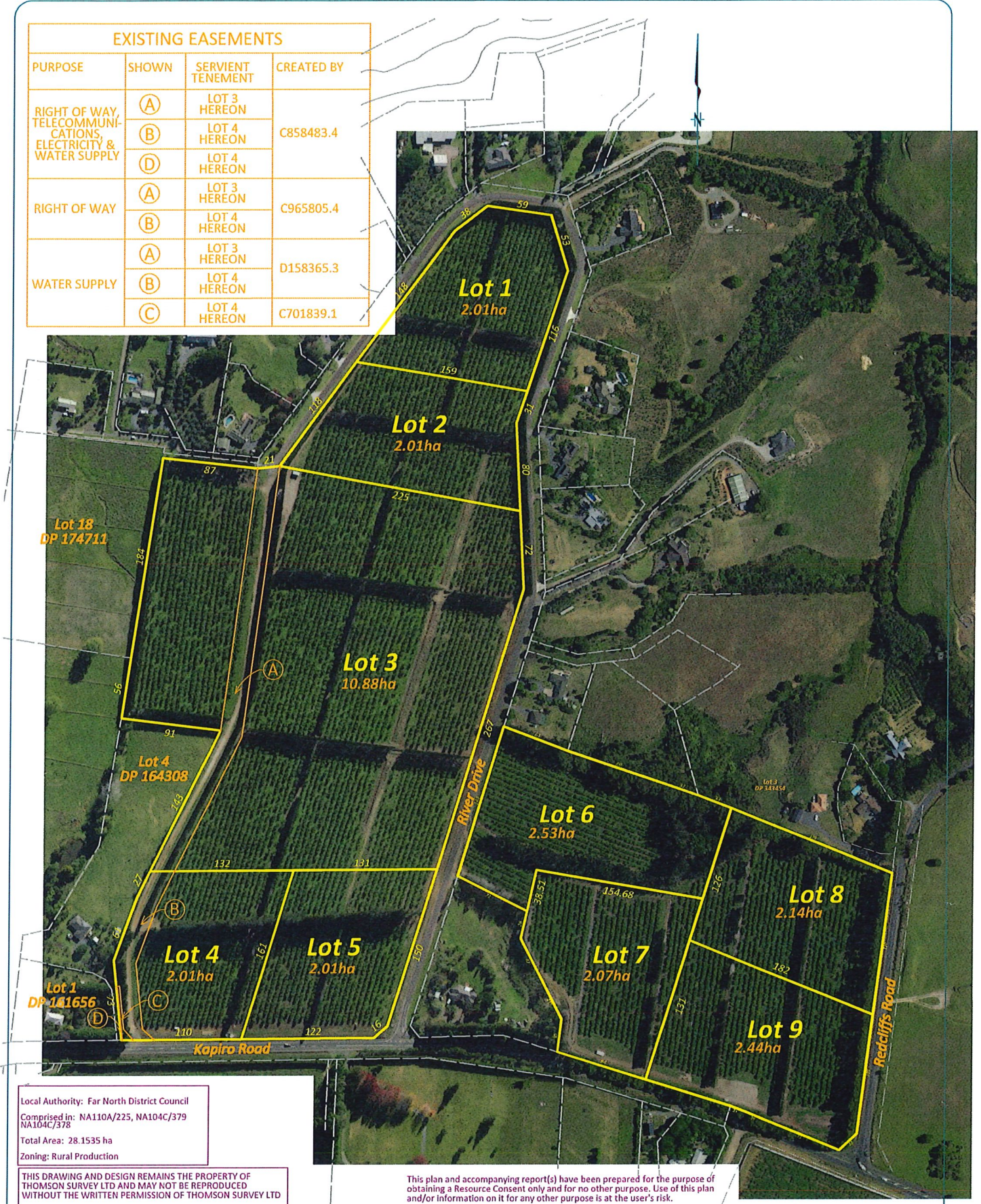
## 10.0 LIST OF APPENDICES

<b>Appendix 1</b>	Scheme Plan(s)
<b>Appendix 2</b>	Locality Plan
<b>Appendix 3</b>	Record of Title and relevant instruments
<b>Appendix 4</b>	Subdivision Site Suitability Engineering Report
<b>Appendix 5</b>	Combined Preliminary and Detailed Site Investigation

# **Appendix 1**

Scheme Plan(s)

EXISTING EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY
RIGHT OF WAY, TELECOMMUNICATIONS, ELECTRICITY & WATER SUPPLY	(A)	LOT 3 HEREON	C858483.4
	(B)	LOT 4 HEREON	
	(D)	LOT 4 HEREON	
RIGHT OF WAY	(A)	LOT 3 HEREON	C965805.4
	(B)	LOT 4 HEREON	
WATER SUPPLY	(A)	LOT 3 HEREON	D158365.3
	(B)	LOT 4 HEREON	
	(C)	LOT 4 HEREON	



Local Authority: Far North District Council  
 Comprised in: NA110A/225, NA104C/379  
 NA104C/378  
 Total Area: 28.1535 ha  
 Zoning: Rural Production

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AREAS AND MEASUREMENTS ARE SUBJECT TO FINAL SURVEY

TOPOGRAPHICAL DETAIL IS APPROXIMATE ONLY AND SCALED FROM AERIAL PHOTOGRAPHY

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.



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Registered Land Surveyors, Planners & Land Development Consultants

**PROPOSED SUBDIVISION OF LOTS 15 & 16 DP 171115 & LOT 19 DP 178408**

PREPARED FOR: T & G GLOBAL

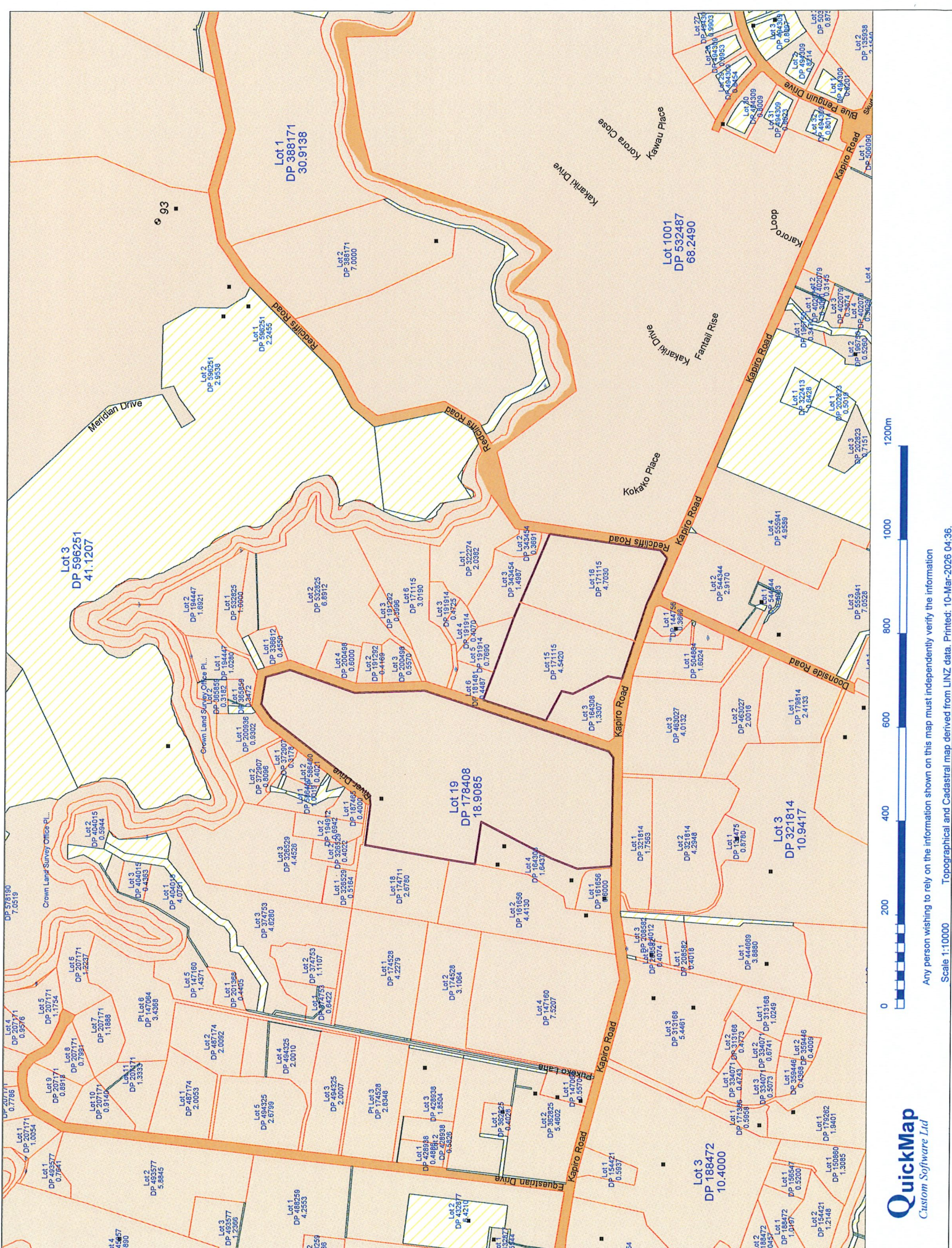
	Name	Date	ORIGINAL SCALE	SHEET SIZE
Survey			1:3000	A3
Design				
Drawn	SL	16.12.25		
Approved				
Rev				
			10856 Scheme	

Surveyors Ref. No:  
**10856**

Sheet 1 of 1

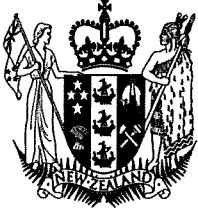
## **Appendix 2**

### Locality Plan



## **Appendix 3**

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** **NA104C/378**  
**Land Registration District** **North Auckland**  
**Date Issued** 11 March 1996

**Prior References**  
NA99A/309

---

**Estate** Fee Simple  
**Area** 4.5420 hectares more or less  
**Legal Description** Lot 15 Deposited Plan 171115  
**Registered Owners**  
Turners & Growers Fresh Limited

---

**Interests**

Subject to Section 11 Crown Minerals Act 1991

Subject to Part IV A Conservation Act 1987

Appurtenant hereto are electricity rights specified in Easement Certificate C661268.8

The easements specified in Easement Certificate C661268.8 are subject to Section 243 (a) Resource Management Act 1991

13332929.5 Mortgage to Bank of New Zealand - 2.7.2025 at 7:01 am





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



  
R.W. Muir  
Registrar-General  
of Land

**Identifier** **NA104C/379**  
**Land Registration District** **North Auckland**  
**Date Issued** 11 March 1996

**Prior References**  
NA99A/309

---

**Estate** Fee Simple  
**Area** 4.7030 hectares more or less  
**Legal Description** Lot 16 Deposited Plan 171115  
**Registered Owners**  
Turners & Growers Fresh Limited

---

**Interests**

Subject to Part IV A Conservation Act 1987  
Subject to Section 11 Crown Minerals Act 1991  
Appurtenant hereto are electricity rights specified in Easement Certificate C661268.8  
The easements specified in Easement Certificate C661268.8 are subject to Section 243 (a) Resource Management Act 1991  
13332929.5 Mortgage to Bank of New Zealand - 2.7.2025 at 7:01 am





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



  
R.W. Muir  
Registrar-General  
of Land

**Identifier** NA110A/225  
**Land Registration District** North Auckland  
**Date Issued** 20 June 1997

**Prior References**  
NA107C/147

---

**Estate** Fee Simple  
**Area** 18.9085 hectares more or less  
**Legal Description** Lot 19 Deposited Plan 178408  
**Registered Owners**  
Turners & Growers Fresh Limited

---

**Interests**

Subject to a water supply right over part marked C on DP 17411 created by Transfer C701839

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

Appurtenant hereto are electricity rights specified in Easement Certificate C661268.8

Subject to a right of way and rights to convey water, transmit electricity and telecommunications, and electricity, telecommunications and water rights over parts marked A on DP 164308 and C and D on DP 174711 specified in Easement Certificate C858483.4

The easements specified in Easement Certificate C858483.4 are subject to Section 243 (a) Resource Management Act 1991 C965805.2 Certificate pursuant to Section 321(3)(c) Local Government Act 1974 - 11.3.1996 at 3.07 pm

Subject to a right of way over parts marked B, C and D on DP 174711 specified in Easement Certificate C965805.4 - 11.3.1996 at 3.07 pm

Subject to a water right (in gross) over part marked B on DP 174711 in favour of the Kerikeri Irrigation Company Limited created by Transfer C965805.5 - 11.3.1996 at 3.07 pm

Subject to an electricity right (in gross) over part marked B on DP 174711 in favour of Top Energy Limited created by Transfer C965805.6 - 11.3.1996 at 3.07 pm

Subject to a telecommunications right (in gross) over part marked B on DP 174711 in favour of Telecom New Zealand Limited created by Transfer C965805.7 - 11.3.1996 at 3.07 pm

Subject to a right of way over part marked C on DP 174711 specified in Easement Certificate D073592.4 - 29.11.1996 at 1.23 pm

Appurtenant hereto is a right of way specified in Easement Certificate D073592.4 - 29.11.1996 at 1.23 pm

Subject to a water supply right over part marked B on DP 178408 specified in Easement Certificate D158365.3 - 20.6.1997 at 11.23 am

Subject to a right (in gross) to convey water over part marked A on DP 178408 in favour of Kerikeri Irrigation Company Limited created by Transfer D665854.1 - 3.12.2001 at 3.13 pm

13332929.5 Mortgage to Bank of New Zealand - 2.7.2025 at 7:01 am



C858483.4  
EC

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

## EASEMENT CERTIFICATE

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

~~1/4/95~~ KERIFRESH LIMITED at Kerikeri

being the registered proprietor(s) of the land described in the Schedule hereto hereby certify that the easements specified in that Schedule, the servient tenements in relation to which are shown on a plan of survey deposited in the Land Registry Office at **Auckland** on the            day of            1995 under No. **164308** are the easements which it is intended shall be created by the operation of section 90A of the Land Transfer Act 1952.

**SCHEDULE**  
**DEPOSITED PLAN NO. 164308**

Nature of Easement (e.g., Right of Way, etc.)	Servient Tenement		Dominant Tenement Lot No.(s) or other Legal Description	Title Reference
	Lot No.(s) or other Legal Description	Colour, or Other Means of Identification, of Part Subject to Easement		
Right of Way Right to Convey Water Right to Transmit Electricity and Telecommunications	LOT 6 hereon	A, B and C	LOT 5 hereon	99A/307 99A/306
Right to Transmit Electricity	LOT 1 hereon	F	LOT 2 hereon	99A/302 99A/303

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

1. Rights and powers: **See attached**

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

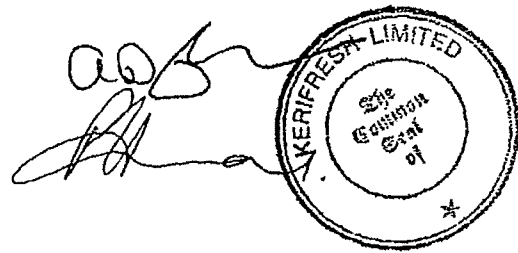
Dated this 23<sup>rd</sup> day of June 1995  
Signed by the above-named  
**KERIFRESH LIMITED**

in the presence of

Witness .....

Occupation .....

Address .....



**RIGHTS AND POWERS**

That in respect of the Telecommunications and Electricity Easements referred to in the Schedule hereto, the rights and powers applicable thereto are:

- (a) The full free uninterrupted and unrestricted right liberty and privilege for the occupier and registered proprietor for the time being of the dominant tenement from time to time and at all times to take convey and lead electrical current or any other mode of transmitting telecommunications in a free and unimpeded flow (except where the flow is halted for any reasonable period necessary for essential repairs) for the purposes of telecommunications across the land over which the Easement is created and to lay and maintain cables for such purpose.
- (b) The full free uninterrupted and unrestricted right liberty and privilege for the occupier and registered proprietor for the time being of the dominant tenement from time to time and at all times to take convey and lead electricity in a free and unimpeded flow (except where the flow is halted for any reasonable period necessary for essential repairs) across the land over which the Easement is created and to lay and maintain cables for such purpose.



**TERMS CONDITIONS COVENANTS OR RESTRICTIONS IN RESPECT OF ABOVE EASEMENTS:**

That in respect of the Electricity and Telecommunications Easements (hereinafter called "the Easements") referred to in the Schedule hereto the terms conditions covenants or restrictions applicable thereto are as follows:-

- (a) All cables placed within or such poles and cable erected upon the servient tenements shall be maintained and as required repaired to a good and serviceable condition by the registered proprietors for the time being of the dominant tenements.
- (b) All the costs and expenses of and incidental to the repairing and maintaining of the Easements herein specified shall be borne by the registered proprietor for the time being of the dominant tenements.
- (c) Any person wishing to carry out any work whatsoever on the Easements herein specified shall first give to the registered proprietor of the servient tenement thereof notice of such intention and of the nature and expense of the said work at least fourteen (14) days prior to any such work being commenced and shall obtain the prior consent in writing of the registered proprietor of the servient tenement provided that such consent shall not be unreasonably nor arbitrarily withheld.
- (d) Any person carrying out any work whatsoever on the Easements herein specified shall take all reasonable and proper action and care to interfere as little as possible with the comfort and convenience of the occupier or occupiers for the time being of the dominant and servient tenements and shall carry out such work or cause the same to be carried out with the utmost expedition and in a prudent manner and in particular shall during the course of such work:
  - (i) Shore up or cause to be shored up in a proper safe and workmanlike manner any part of the dominant or servient tenement affected thereby.
  - (ii) Take all reasonable and proper steps to preserve the said tenements and all parts thereof and all property and goods thereon from damage.
- (e) Subject to the other terms and conditions covenants and restrictions contained in these presents any person carrying out any work as aforesaid shall have the right to enter and to bring machinery and workmen on to any part of the dominant or servient tenement as shall be necessary for the purposes of carrying out maintenance on the Easements referred to herein and shall have the right to remove all soil roading paving metalling fencing and all other things as shall be reasonably necessary to give unimpeded access to the said Easement PROVIDED HOWEVER that such soil roading paving metalling and fencing which is so removed shall be restored as nearly as possible to its original condition and that any other damage done by reason of the said maintenance is repaired and that as little disturbance as possible is caused to the surface of the land and to the

005

enjoyment of the said tenements by the registered proprietors or occupiers.

- (f) Where the maintenance work which is required to be carried out in terms of these presents involves the total or partial replacement of any cables this work shall be deemed to be maintenance work which may be carried out in accordance with these presents.

005

REGISTERED IN DUPLICATE

**EASEMENT CERTIFICATE**

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

*Correct for the purposes of the  
Land Transfer Act*

*Solicitor for the registered proprietor*

*4FE*  
*ECC*  
PARTICULARS ENTERED IN REGISTER  
LAND REGISTRY AUCKLAND  
ASSISTANT REGISTRAR  
9/11/302, 303, 308 & 309

1.55 27 JUN 95 C 858483.4(f)

LAW NORTH PARTNERS  
SOLICITORS  
KERIKERI



C965805-4 EC

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

### EASEMENT CERTIFICATE

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

I/We KERIFRESH LIMITED at Kerikeri

being the registered proprietor(s) of the land described in the Schedule hereto hereby certify that the easements specified in that Schedule, the servient tenements in relation to which are shown on a plan of survey deposited in the Land Registry Office at Auckland 171115 on the day of 19 95 under No. ~~XXXXXX~~ are the easements which it is intended shall be created by the operation of section 90A of the Land Transfer Act 1952.

SCHEDULE  
DEPOSITED PLAN NO. 171115  
~~XXXXXX~~

Nature of Easement (e.g., Right of Way, etc.)	Servient Tenement		Dominant Tenement Lot No.(s) or other Legal Description	Title Reference
	Lot No.(s) or other Legal Description	Colour, or Other Means of Identification, of Part Subject to Easement		
Right of Way	LOT 13	B	LOTS 5 to 7 and 9 to 12 hereon	103A/240 <i>104c/376</i>
Right of Way	LOT 14	A	LOTS 5 to 7 and 9 to 12 hereon	103A/241 <i>104c/377</i>
Right of Way	LOT 13	C, D and E	LOTS 9 to 12 hereon	103A/240 <i>104c/376</i>

363 J.C. UTICA 1810 866  
104c/376

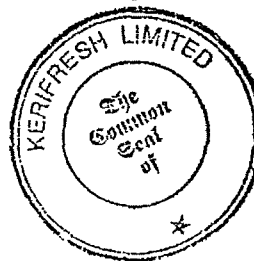
State whether any rights or powers set out here are in addition to or in substitution for those set out in the Seventh Schedule to the Land Transfer Act 1952.

1. Rights and powers: NIL

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

Dated this 21st day of February 19 96  
Signed by the above-named  
C: KERIFRESH LIMITED

in the presence of  
Witness .....  
Occupation .....  
Address .....



Handwritten signatures and the word "Director" next to them.

REGISTERED IN DUPLICATE

**EASEMENT CERTIFICATE**

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

*Correct for the purposes of the  
Land Transfer Act*

*Solicitor for the registered proprietor*

The above/within easements/<sup>marked 'A' and 'B'</sup> when created will be/~~are~~ subject to Section 243(a) Resource Management Act 1991

903

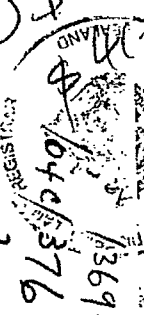
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SOLICITORS  
KERIKERI



## **Appendix 4**

### Subdivision Site Suitability Engineering Report



**geologix**  
consulting engineers

# SUBDIVISION SITE SUITABILITY ENGINEERING REPORT

LOTS 15 & 16 DP 171115  
& LOT 19 DP 178408, KERIKERI

T&G GLOBAL

**C0749N-S-03**  
**FEBRUARY 2026**  
**REVISION 1**





## DOCUMENT MANAGEMENT

**Document Title** Subdivision Site Suitability Engineering Report


**Site Reference** 409 Kapiro Road, Kerikeri


**Client** T&G Global

**Geologix Reference** C0749N-S-03

**Issue Date** February 2026

**Revision** 01

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## REVISION HISTORY

Date	Issue	Prepared	Reviewed	Approved
Feb 2026	First Issue	FS	SH	EC

C0749N-S-03

Proposed Subdivision of  
Lots 15 & 16 DP 171115  
& Lot 19 DP 178408, Kerikeri

2



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## 1 INTRODUCTION

This Site Suitability Engineering Report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for T&G Global as our Client in accordance with our standard short form agreement and general terms and conditions of engagement.

Our scope of works has been undertaken to assist with the Resource Consent application in relation to the proposed subdivision of Lots 15 & 16 DP 171115 & Lot 19 DP 178408 located at 409 Kapiro Road, Kerikeri, the 'site', to create 8 new rural residential lots.

This assessment addresses preliminary engineering elements of wastewater, stormwater, water supply, firefighting, access and associated earthworks requirements to provide building platforms with less than minor effects on the environment as a result of the proposed activities outlined in Section 1.1. This report is purposed to support the Resource Consent application and guide the requirements of future detailed design and/ or engineering plan approval processes. This report should be read in conjunction with other reports and documents prepared in support of the application.

### 1.1 Proposal

A proposed scheme plan was presented to Geologix at the time of writing, prepared by Thomson Survey Ltd<sup>1</sup> and has been reproduced within Appendix A as Drawing No 100. It is understood from the scheme plan that there will be 8 new lots in the proposed subdivision. A probable future on-lot development concept for the new lots will comprise a maximum building coverage of 300 m<sup>2</sup> within a designated 30 x 30 m square building site. It is anticipated that potential driveway or parking areas shall occupy 200 m<sup>2</sup>.

The subdivision is proposed to be serviced by onsite water supply, wastewater and stormwater management. Utility services (power & telecom) are to connect to the existing public networks. The above is summarised in Table 1 and detailed further within this report, with reference to the Preliminary Engineering Design Plans enclosed within Appendix A. Any amendments to the referenced scheme plan may require an update to the recommendations of this report.

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<sup>1</sup> Thomson Survey Ltd, Scheme Plan Ref. Proposed Subdivision of Lots 15 & 16 DP 171115 & Lot 19 DP 178408, Kerikeri, December 2025, Ref. 10856.



Table 1: Summary of Proposed Subdivision

Proposed Lot No.	Size	Purpose
1	2.0100 ha	New rural residential
2	2.0100 ha	New rural residential
3	10.8800 ha	Existing rural production
4	2.0100 ha	New rural residential
5	2.0100 ha	New rural residential
6	2.5300 ha	New rural residential
7	2.0700 ha	New rural residential
8	2.1400 ha	New rural residential
9	2.4400 ha	New rural residential

## 1.2 Site Description and Existing Infrastructure

The site is legally described as Lots 15 & 16 DP 171115 & Lot 19 DP 178408, Kerikeri with a total site area of 28.1535 ha and designated by the FNDC Operative District Plan as within the Rural Production zone. The current title comprises an existing agricultural block.

The site slopes gently from the west to east over a range of 60 to 25 m RL. Available LiDAR data does indicate some overland flow paths through the proposed lots by way of existing surface water drains located along shelter belt lines. There is also a major OLFP running from west to east through Lot 6 and Lot 8 before entering a northern flowing tributary of the Rangitane River. There is a downstream flood hazard associated with the Rangitane River that extends up the same tributary. The proposed lots are generally located outside of downstream mapped flood hazard area, but there is a very minor overlap at the northern boundary intersection of Lot 6 & 8. Any associated risk would be insignificant to the proposed land use.

The property is surrounded by similar, agricultural blocks and rural residential sites.

Existing infrastructure within this area includes roads, footpaths and utility networks.

Far North District Council (FNDC) GIS mapping indicates that no existing 3 water infrastructure or reticulated networks are present within Kapiro Road or the site boundaries.

There is nearby electricity supply from overhead power poles within the road corridor of Redcliffs Road, Kapiro Road and River Road. Existing features are marked on Drawing No. 100 within Appendix A.

## 2 WASTEWATER ASSESSMENT

### 2.1 Wastewater Volume and Treatment

It is proposed that the new lots are also serviced by an on-site wastewater treatment system and disposal field. A preliminary design is presented in this section and on Drawing No. 100 to demonstrate the proposed new lots can support on-site wastewater management. In lieu



of specific development plans, the preliminary design assumes that the proposed new lots may support up to a five-bedroom dwelling each with a peak occupancy of eight people<sup>2</sup>.

In lieu of potable water infrastructure servicing the site, roof rainwater collection within on-lot tanks has been proposed for this assessment. The design water volume for reticulated water supply is estimated at 160 litres/ person/ day<sup>3</sup> based upon standard water saving fixtures<sup>4</sup> being installed within the future development. This results in a total daily wastewater generation of 1,280 litres/ day per proposed lot.

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

## 2.2 Wastewater Discharge

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

Available geological mapping<sup>5</sup> indicates the site to be directly underlain by Kerikeri Volcanic Group Late Miocene basalt of Kaikohe - Bay of Islands Volcanic Field. These Neogene igneous rocks (basalt) can be expected to contain Basalt lava material, volcanic plugs and minor tuff material.

A site walkover survey and intrusive ground investigation was undertaken by Geologix on 04 February 2026. Eight hand auger boreholes were formed to depths of 1.2 m bgl, in the locations recorded on Drawing No. 100 and engineering logs presented as Appendix C. A qualified engineering geologist recorded the recovered arisings as generally brown clayey silt with trace gravel with depth, moist and of low plasticity. Groundwater was not encountered during the ground investigation.

The shallow soils are generally inferred to meet the drainage characteristics of TP58 Category 5/ NZS1547 Category 4. For a typical PCDI discharge system, a Soil Loading Rate (SLR) of 3.5mm/ day has been adopted from NZS1547 Table 5.2.

The proposed PCDI system may be surface laid, covered with minimum 150 mm mulch and planted with specific evapotranspiration species to provide a minimum of 80 % species

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<sup>2</sup> TP58 Table 6.1.

<sup>3</sup> TP58 Table 6.2, AS/ NZS 1547:2012 Table H3.

<sup>4</sup> Low water consumption dishwashers and no garbage grinders.

<sup>5</sup> Geological & Nuclear Science, 1:250,000 scale Geological Map, Sheet 2, Whangarei, 2009.



canopy cover. Alternatively, lines could be subsurface laid to topsoil with minimum 200 mm thickness and planted with lawn grass. Clean, inert site-won topsoil sourced during development from building and/ or driveways footprints may be used in the land disposal system to increase minimum thicknesses.

To satisfy the preliminary design, primary and reserve disposal fields are required as follows, as presented on Drawing No. 100.

- **Preliminary Primary Disposal Field.** A minimum PCDI primary disposal field of 366 m<sup>2</sup> laid parallel to the natural contours.
- **Preliminary Reserve Disposal Field.** A minimum reserve disposal field equivalent to 30% of the primary disposal field is required under NRP rule C.6.1.3(9)(b) for secondary or tertiary treatment systems. It is recommended each proposed lot provides a 110 m<sup>2</sup> reserve disposal area.

### 2.3 Summary and Assessment of Environmental Effects

Based on the above concept design assumptions a summary of the concept wastewater design is presented as Table 2. It is recommended that each lot is subject to Building Consent specific review and design amendment according to final development plans by a suitably qualified professional. This is typically applied as a condition of consent.

*Table 2: Concept Wastewater Design Summary*

Design Element	Specification
Concept development	Five-bedroom, peak occupancy of 8 (per lot)
Concept design generation volume	160 litres/ person/ day – 1,280 litres/ day/ lot
Water saving measures	Standard. Combined use of 11 litre flush cisterns, automatic washing machine & dishwasher, no garbage grinder <sup>1</sup>
Water meter required?	No
Recommended treatment quality	Secondary
Soil drainage category	TP58 Category 5, NZS1547 Category 4
Soil loading rate	3.5 mm/ day
Concept primary disposal field size	Surface/ subsurface laid PCDI. Min. 366 m <sup>2</sup>
Concept reserve disposal field size	Surface/ subsurface laid PCDI. Min. 30 %, or 110 m <sup>2</sup>
Concept disposal field level	Sited above 5 % AEP event. No specific site requirements.
Dosing method	Pump with high water level visual and audible alarm. Minimum 24-hour emergency storage volume.
Stormwater Control	Divert surface/ stormwater drains away from disposal fields. Contour drains not required. Stormwater management discharges downslope of all disposal fields.
NRC Proposed Regional Plan Activity Status	Permitted.

A preliminary site-specific Assessment of Environmental Effects (AEE) is presented as Appendix D to demonstrate the proposed wastewater disposal concept will have a less than minor effect on the environment. It is recommended that the AEE is reviewed at the time of

Building Consent once specific development plans, final disposal field locations and treatment systems are established.

### 3 STORMWATER ASSESSMENT

The permitted activity rules of the Far North District Plan allow for up to 15% impermeable surfaces in the Rural Production Zone. Whilst built development within the new rural lots following subdivision will result in an increase in impermeable surfaces from the existing coverage, it is highly unlikely to exceed the 15% permitted activity threshold, which would equate to approximately 3,000 m<sup>2</sup> per site, even taking into account ROW coverage. Considering the nature of rural subdivision and residential development, increased storm water runoff occurs as pervious surfaces such as pasture are converted to impervious features such as roads or future on-lot buildings and driveways.

Furthermore, any new impervious area shall be managed such that its effective runoff is mitigated in accordance with the Operative Plan and FNDC Engineering Standards 2023 for Flood and Flow Control.

#### 3.1 Impervious Surfaces and Management Concept

The amount of impervious area within the existing site is very minor, well below 1% of the total site area.

The proposed activity will increase impervious surfaces across the site. A summary of proposed pervious and impervious surfaces, including for conceptual future development is presented in the following table:

*Table 3: Summary of Proposed (Preliminary) Surface Covering*

Parameter		Lot 1	Lot 2	Lot 3	Lot 4	Lot 5	Lot 6	Lot 7	Lot 8	Lot 9
Roof	m <sup>2</sup>	300	300	0	300	300	300	300	300	300
	%	1.49	1.49	0	1.49	1.49	1.19	1.45	1.4	1.23
Driveway/ Parking	m <sup>2</sup>	200	200	0	200	200	200	200	200	200
	%	1	1	0	1	1	0.79	0.97	0.93	0.82
RoW	m <sup>2</sup>	0	0	1155	480	0	0	0	0	0
	%			0	2.39					
Pervious	m <sup>2</sup>	19600	19600	107645	19120	19600	24800	20200	20900	23900
	%	97.5	97.5	98.9	95.12	97.5	98.02	97.58	97.66	97.95
Total Impervious	m <sup>2</sup>	500	500	1155	980	500	500	500	500	500
	%	2.49 (of 20100 m <sup>2</sup> )	2.49 (of 20100 m <sup>2</sup> )	0.01 (of 108800 m <sup>2</sup> )	4.88 (of 20100 m <sup>2</sup> )	2.49 (of 20100 m <sup>2</sup> )	1.98 (of 25300 m <sup>2</sup> )	2.42 (of 20700 m <sup>2</sup> )	2.34 (of 21400 m <sup>2</sup> )	2.05 (of 24400 m <sup>2</sup> )
Threshold	15 %	3015 m <sup>2</sup>	3015 m <sup>2</sup>	16320 m <sup>2</sup>	3015 m <sup>2</sup>	3015 m <sup>2</sup>	3015 m <sup>2</sup>	3105 m <sup>2</sup>	3210 m <sup>2</sup>	3660 m <sup>2</sup>
Permitted		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



For the proposed lots (excluding the balance lot 3) the additional/ future impervious surfaces will be mitigated by attenuation within roof water tanks to 80 % of pre-development peak flows in accordance with FNDC Engineering Standards 2023 Table 4-1 and Operative Plan Section 12.7.3.4(a).

The preliminary design has been prepared to account for a typical residential development scale to demonstrate the proposed lot can support the intended use. However, the preliminary design must be advanced at Building Consent stage by a future developer.

It is noted that the accessways of RoW A and B within Lots 3 and 4, respectively, are already under metal surfacing and no further impervious area is proposed. Therefore, no attenuation of this runoff is required.

### 3.2 Design Storm Event

FNDC Engineering Standards 2023 Table 4-1 stipulates that flow attenuation controls reduce the post-development peak discharge to 80% of the pre-development condition for the 50% and 20% AEP storm event. Furthermore, the concept design has also considered the 10 % AEP pre-development requirement to comply with NRP Rule C6.4.2(2) and with the Operative District Plan 13.10.4.

Due to the site's relative proximity to the coastal marine area and its lower position within the Rangitane river catchment, the relative timing of peak discharge from the site should not be delayed as it will more likely overlap with the general river flooding. It is therefore recommended to not provide for flood control (10% and 1% AEP).

However, it is recommended to provide flow control for higher frequency storms to mitigate the effects of scour and erosion to the receiving environment including neighbouring properties. As such it is proposed to provide peak flow and attenuation for roof water storage for 50% and 20% AEP events. The relevant calculations are provided in Appendix E of this document.

Tank overflow will be dispersed by means of a suitably designed level spreader device or similar energy dissipator device. This shall be finalised to suit final development plans at building consent stage.

Relevant design rainfall intensity and depths have been ascertained for the site location from the NIWA HIRDS meteorological model<sup>6</sup>. Provision for climate change has been adopted by means of applying a factor of 20 % to rainfall intensities, in accordance with FNDC Engineering Standards 2023.

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<sup>6</sup> NIWA High Intensity Rainfall Data System, <https://hirds.niwa.co.nz>.

### 3.3 Preliminary Stormwater Attenuation

The rational method has been adopted by Geologix with run-off coefficients as published by FNDC Engineering Standards<sup>7</sup> to provide a suitable preliminary attenuation design by installing specifically sized low-flow orifices into the attenuation devices.

Conceptual stormwater attenuation for the proposed lots has been modelled on a 300m<sup>2</sup> roof area and 200m<sup>2</sup> driveway within the future building envelope.

Calculations to support the preliminary design are presented as Appendix E to this report. A summary of the probable future development attenuation concept design is presented as Table 4 and a typical schematic retention/ detention tank arrangement detail is presented as Drawing No. 400 within Appendix A. As above, it is recommended that this concept design is refined at the Building Consent/ 223 stage as required by conditions of consent.

*Table 4: Probable Future Development Attenuation Concept*

Design Parameter	Flow Attenuation: 50 % AEP (80% of pre-dev)	Flow Attenuation: 20 % AEP (80% of pre-dev)	Flood Control: 10 % AEP
<b>Future Lots 1,2,4,5,6,7,8,9 Preliminary Design (300 m2 roof, 200 m2 driveway)</b>			
Regulatory Compliance	FNDC Engineering Standards Table 4-1	FNDC Engineering Standards Table 4-1	NRC Proposed Regional Plan
Pre-development peak flow	5.32 l/s	6.89 l/s	8.04 l/s
80 % pre-development peak flow	4.25 l/s	5.51 l/s	N/A
Post-development peak flow	9.69 l/s	12.56 l/s	14.65 l/s
Total Storage Volume Req.	7836 litres	10294 litres	5143 litres
Concept Summary:	<ul style="list-style-type: none"> <li>- Attenuation storage calculation accounts for offset flow from 200m<sup>2</sup> driveway. Refer Appendix E for calcs in full.</li> <li>- Attenuation for 20% AEP storm represents maximum storage requirement and is adopted for the concept design tank storage.</li> <li>- 2 x 25,000 litre tanks are sufficient for attenuation.</li> <li>- 20 % AEP attenuation (in isolation) requires a 30 mm orifice 0.53 m below overflow and bottom 150mm reserved for sediment retention. However regulatory requirements are to consider an additional orifice/s to control the 50 % AEP event specifically. We note this may vary the concept orifice indicated above. Generally, this results in slightly larger volume requirements, which will be still be well within the proposed tank arrangement capacity. This should be considered with detailed design for building consent approval.</li> </ul>		

<sup>7</sup> FNDC Engineering Standards 2023, Version 0.6, Issued May 2023.

### 3.4 Stormwater Quality

The key contaminant risks of the site setting include:

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

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

- Leaf guards on roof guttering/ first flush devices on roof guttering and downpipes.
- Rainwater tank for potable use onsite only to be filled by roof runoff.
- Room for sedimentation (minimum 150 mm recommended as per Auckland Council GD01) within the base of the stormwater attenuation roof runoff tanks as dead storage volume.
- Stormwater discharges directed towards roading swale drains where possible.
- Grassed swale drains from rainwater inception (road surfaces) to discharge points, where required.

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

## 4 POTABLE WATER & FIRE FIGHTING

In the absence of potable water infrastructure within Kapiro Road or within the site it is recommended that roof runoff water tanks are adopted for potable water supply with appropriate filtration and UV disinfection at point of use. Consideration to any stormwater attenuation volumes must also be given when selecting the volume of potable water in Building Consent. On these properties an additional tank may be required for sufficient potable water volumes.

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

## 5 EARTHWORKS

The following earthworks provisions are anticipated to form the subdivision:

- **Service trenching.** Power, telecom pipeline trenching. (insignificant)



- **Reinstatement of metalled accessway (ROW B).** Rip 300mm depth, replace/reinstate with suitable layerworks and metal wearing course. Earthworks area < 500m<sup>2</sup> ; volume < 150m<sup>3</sup>.
- **New double width vehicle crossing to ROW B.** Anticipated earthworks area = 60m<sup>2</sup> ; volume < 20m<sup>3</sup>.
- **Vehicle crossing to lot 1,2,4,5,6,7,8 & 9.** Vehicle crossings may not be formed at subdivision stage but deferred to lot development stage. In any event, to form concrete apron 3m wide at the road boundary and 13.0 m wide at the carriageway intersection. Anticipated combined earthworks area < 300m<sup>2</sup> ; volume < 100m<sup>3</sup>.

Proposed earthwork volumes are within the 5000m<sup>3</sup> Permitted Activity volume limit outlined by FNDC District Plan Rule 12.3.6.1.1(a) and the maximum cut and fill height of <3.0 m combined cut and fill to comply with 12.3.6.1.1(b).

## 6 INTERNAL ACCESS

### 6.1 Vehicle Crossings

New vehicle crossings are proposed as follows:

- Proposed new crossings onto primary collector roads (i.e. Redcliffs and Kapiro Road) recommended to be FNDC/S/6B standard crossings for domestic crossing on rural and unkerbed roads.
- Proposed new crossings onto public and private access roads (i.e. River Drive and RoW B) to be FNDC/S/6 vehicle crossing standard (for residential / unkerbed roads).

Specific crossings as below:

- Lot 9 - The existing metal surfaced vehicle crossing off Kapiro Road to proposed Lot 9 will need to be upgraded as it comes off an existing sealed road. This should be upgraded to a sealed crossing with dimensions as per the FNDC/S/6B single width vehicle crossing standard.
- Lot 5 and Lot 7 - These lots have proposed access off Kapiro Road and will require new sealed crossing with dimensions as per the FNDC/S/6B single width vehicle crossing standard.
- Lot 8 – This lot has a proposed vehicle crossing off the sealed Redcliffs Road and will require new sealed crossing with dimensions as per the FNDC/S/6B single width vehicle crossing standard.
- Lot 6, Lot 2 and Lot 1 - These lots will have proposed vehicle crossing off the eastern alignment of River Drive, a sealed road, and will require new sealed crossing with dimensions as per the FNDC/S/6 vehicle crossing standard.



- Lot 4 - This lot has a proposed vehicle crossing off the proposed RoW B and is recommended to have new sealed or unsealed crossing with dimensions as per the FNDC/S/6 vehicle crossing standard.
- RoW B - The existing metal surfaced vehicle crossing off Kapiro Road to Row B will need to be upgraded as it is in poor surface condition and comes off an existing sealed road. This should be upgraded to a sealed double width crossing with dimensions as per the FNDC/S/6B vehicle crossing standard.

It is recommended for consideration that the proposed vehicle crossings are only finalised and constructed at lot development stage, not subdivision formation, to give flexibility to future developers for their preferred driveway alignment.

## 6.2 Right of Ways

An existing metal accessway runs through Lot 19 DP 178408. It connects Kapiro Road to the western alignment of River Drive. It comprises an existing metal surface finish with a width of approximately 3 m.

Proposed RoW A and RoW B are positioned over this existing accessway. RoW B is accessed off Kapiro Road via an existing crossing place. It is proposed to provide accessway to Lot 4. The accessway then extends into RoW A to provide access to the balance Lot 3.

The existing ROW A and B accessway is functional, however, the existing metal surface to the proposed RoW B extent is in a poor condition and is recommended to be ripped and reinstated. The RoW extent is recommended suitable as-is for current purposes.

## 7 LIMITATIONS

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

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

The recommendations and opinions in this report are based on arisings extracted from exploratory boreholes at discrete locations and any available existing borehole records. The nature and continuity of subsurface conditions, interpretation of ground condition and



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models away from these specific ground investigation locations are inferred. It must be appreciated that the actual conditions may vary from the assumed ground model. Differences from the encountered ground conditions during subdivision construction may require an amendment to the recommendations of this report.



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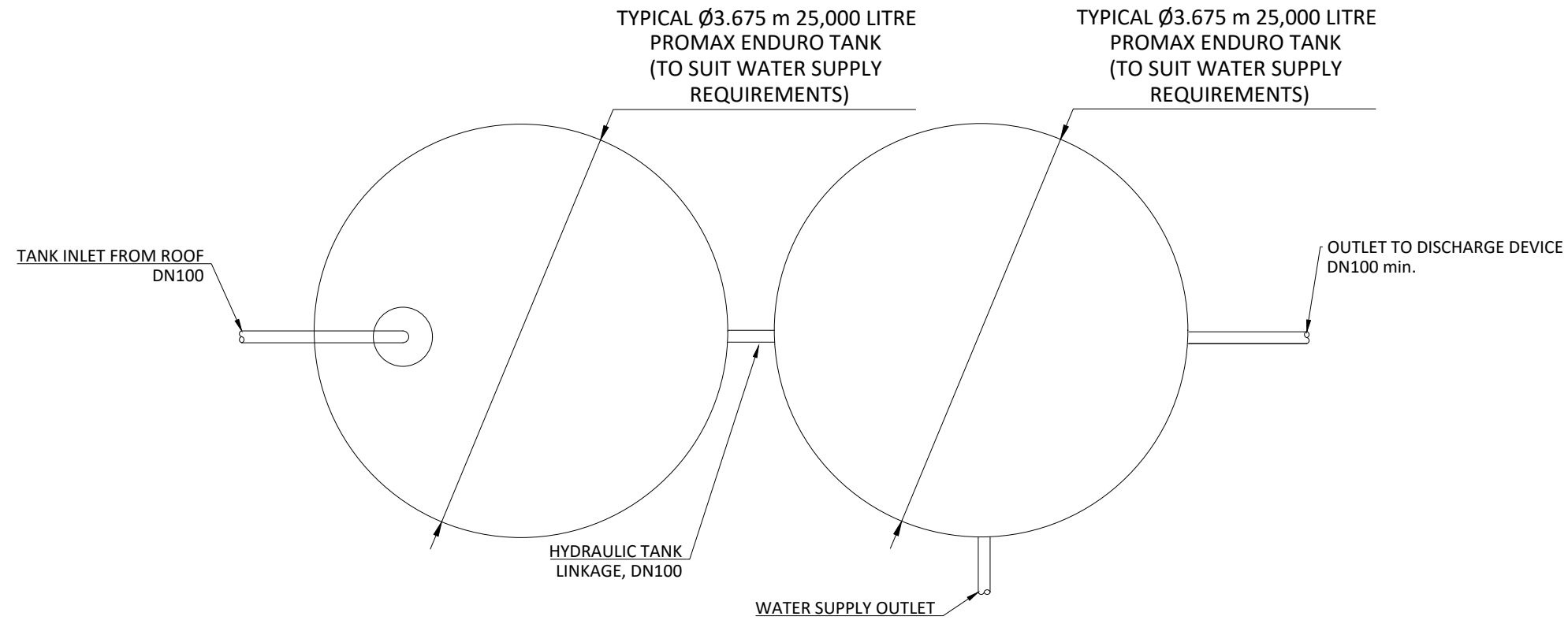
## APPENDIX A

### Drawings



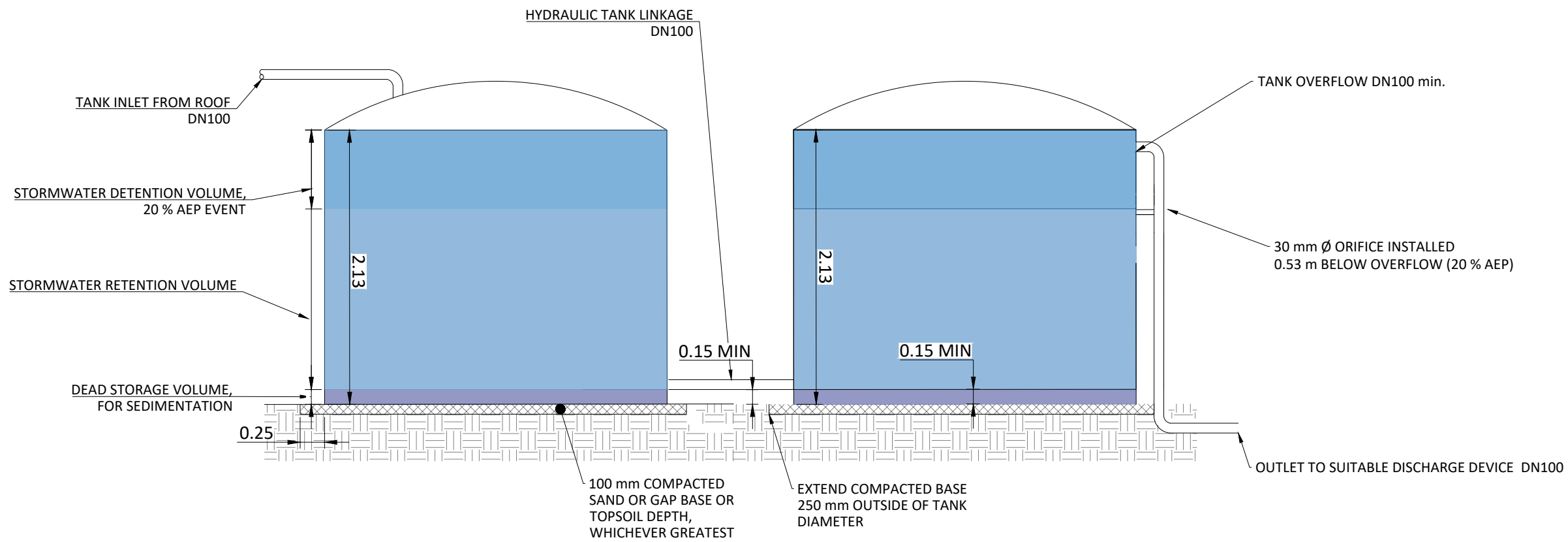
**PROPOSED TANK PLAN VIEW**

1:50, A3

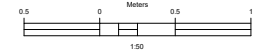


**PROPOSED TANK SIDE VIEW**

1:50, A3



**GENERAL NOTES**



A	FOR CONSENT	05/02/2026
Revision	Issue	Date



Project Name and Address  
 C0749N-03  
 409 KAPIRO ROAD, KERIKERI  
 PROP. SUBDIVISION OF LOTS15 & 16 DP 171115  
 LOT 19 DP 178408

Project C0749N-03	Drawn By FS
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Client  
**T&G Global**

Sheet Title  
**STORMWATER TANK DETAILS**

Sheet  
400

FILE PATH: N:\Projects\C0700-C0799\C0749N - T&G Global - Kapiro Road, Kerikeri\C0749N-03\07 - Technical & Drawings\Drawings\C0749N-03-100-400-FS-0749-03-existing-surface-01.dwg

PLOTED: 03/02/2022



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## APPENDIX B

**Site Photographs (None provided)**



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## APPENDIX C

### Engineering Borehole Records



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# WASTEWATER LOG

Project Ref:  
Client: Ian Hendry  
Hole ID: **HA01 (S3Lot1)**  
Date: 03-02-2026

Project Location: Kapiro Road, Kerikeri

Hole Position: 1,687,411.97 mE 6,105,637.75 mN 41 m

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark grey; moist; friable; [TOPSOIL].					0
0.2 m	Clayey SILT; brown; moist; low plasticity; [RESIDUAL SOIL].					
0.6 m	Silty CLAY; light brown; moist; high plasticity; [KERIKERI VOLCANICS].					
1.2 m	Terminated at 1.2 m					

Remarks:  
1. Hand Auger terminated at target depth.  
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Karikeri

Hole ID: **HA02 (S3Lot2)**

Project Location: Kapiro Road, Kerikeri

Date: 03-02-2026

Hole Position: 1,687,346.86 mE 6,105,519.85 mN 43 m

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark grey; moist; friable; [TOPSOIL].					0
0.2	Clayey SILT; brown; moist; low plasticity; [RESIDUAL SOIL].					
0.6	Silty CLAY; light reddish brown; moist; high plasticity; [KERIKERI VOLCANICS].					
1						1
1.2	Terminated at 1.2 m					2

Remarks:

1. Hand Auger terminated at target depth.
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Karikeri

Hole ID: **HA03 (S3Lot4)**

Project Location: Kapiro Road, Kerikeri

Date: 03-02-2026

Hole Position: 1,687,132.49 mE 6,105,074.55 mN 59.92 m

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark grey; moist; friable; [TOPSOIL].					0
0.1	Gravelly SILT; dark brown mottled reddish brown; moist; friable. Gravel is medium to coarse; sub-rounded to sub-angular; [KERIKERI VOLCANICS].					
0.5	Terminated at 0.5 m					
1						1
2						2

**Remarks:**

1. Hand Auger terminated at 0.50m due to hard strata.
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Kerikeri

Hole ID: **HA04 (S3Lot5)**

Project Location: Kapiro Road, Kerikeri

Date: 03-02-2026

Hole Position: 1,687,273.22 mE 6,105,004.34 mN

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark brown; moist; friable; [TOPSOIL].					0
	0.2 m					
	SILT, with trace gravel; dark brown mottled reddish brown; moist; low plasticity. Gravel is medium, sub-rounded to sub-angular; [RESIDUAL SOIL].					
	0.7 m					
	Silty CLAY; reddish brown; moist; high plasticity; [KERIKERI VOLCANICS].					
1						1
	1.2 m					
	Terminated at 1.2 m					
2						2

**Remarks:**

1. Hand Auger terminated at target depth.
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Kerikeri

Hole ID: **HA05 (S3Lot6)**

Project Location: Kapiro Road, Kerikeri

Date: 04-02-2026

Hole Position: 1,687,454.52 mE    6,105,167.92 mN    42 m

Logged By: CA    Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark brown; moist; friable; [TOPSOIL].					0
0.2 m	Clayey SILT; brown; moist; low plasticity; [RESIDUAL SOIL].					
0.6 m	Silty CLAY, with trace gravel; light reddish brown; moist; low plasticity. Gravel is fine to medium; sub-rounded to sub-angular; [KERIKERI VOLCANICS].					
1.2 m	Terminated at 1.2 m					

**Remarks:**

1. Hand Auger terminated to target depth.
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Karikeri

Hole ID: **HA06 (S3Lot7)**

Project Location: Kapiro Road, Kerikeri

Date: 04-02-2026

Hole Position: 1,687,511.72 mE 6,104,958.98 mN 40 m

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; brown; moist; friable; [TOPSOIL].					0
0.2 m	SILT; black; moist; friable; [RESIUAL SOIL].					
0.45 m	Clayey SILT; brown; moist; low plasticity; [KERIKERI VOLCANICS].					
1						1
1.2 m	Terminated at 1.2 m					2

Remarks:

1. Hand Auger terminated at target depth.
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Karikeri

Hole ID: **HA07 (S3Lot9)**

Project Location: Kapiro Road, Kerikeri

Date: 04-02-2026

Hole Position: 1,687,638.48 mE 6,104,914.17 mN 40 m

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark grey; moist; friable; [TOPSOIL].					0
0.3 m	Clayey SILT; light brown; moist; low plasticity; [RESIDUAL SOIL].					
0.6 m	Clayey SILT, with trace gravel; light brown mottled reddish brown; moist; low plasticity. Gravel is fine, sub-angular to sub-rounded; [KERIKERI VOLCANICS].					
1.2 m	Terminated at 1.2 m					
2						2

Remarks:

1. Hand Auger terminated at target depth.
2. Groundwater not encountered during drilling.



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# WASTEWATER LOG

Project Ref:

Client: Ian Hendry

Project Name: T&G Global, Kapiro Road, Karikeri

Hole ID: **HA08 (S3Lot8)**

Project Location: Kapiro Road, Kerikeri

Date: 04-02-2026

Hole Position: 1,687,699.76 mE 6,105,025.18 mN 39.04 m

Logged By: CA Approved: AW

DEPTH (M)	MATERIAL DESCRIPTION (SEE CLASSIFICATION AND SYMBOLOGY SHEET FOR DETAILS)	LEGEND	WASTEWATER CATEGORY (NZS1547)	WASTEWATER ASSESSMENT		GROUND WATER
				MOISTURE	COLOR	
0	SILT, with trace rootlets; dark grey; moist; friable; [TOPSOIL].					0
0.3 m	Clayey SILT; brown; moist; low plasticity; [RESIDUAL SOIL].					
0.8 m	Silty CLAY; light greenish grey; moist; high plasticity; [KERIKERI VOLCANICS].					
1.2 m	Terminated at 1.2 m					

Remarks:

- Hand Auger terminated at target depth.
- Groundwater not encountered during drilling.

## APPENDIX D

### Wastewater Assessment of Effects

Table 5: Wastewater Assessment of Environmental Effects

Item	NRC Separation Requirement <sup>2</sup>	FNDC Separation Requirement	Site Assessment <sup>3</sup>
<b>Individual System Effects</b>			
Flood plains	Above 5 % AEP	NR	Complies. Disposal field well above mapped flood hazard.
Stormwater flowpath <sup>4</sup>	5 m	NR	Complies, see annotations on Drawing No. 100.
Surface water feature <sup>5</sup>	15 m	15 – 30 m	Complies.
Coastal Marine Area	15 m	30 m	Complies.
Existing water supply bore.	20 m	NR	Complies.
Property boundary	1.5 m	1.5m	Complies. Including proposed subdivision boundaries.
Winter groundwater table	0.6 m	0.6 m	Complies.
Topography			Complies, <10 °.
Cut off drain required?			No.
Discharge Consent Required?			No.
	<b>TP58</b>	<b>NZS1547</b>	
<b>Cumulative Effects</b>			
Biological Oxygen Demand		≤20 g/m <sup>3</sup>	Complies – secondary treatment.
Total Suspended Solids		≤30 g/m <sup>3</sup>	Complies – secondary treatment.
Total Nitrogen	10 – 30 g/m <sup>3</sup>	15 – 75 g/m <sup>3</sup>	Complies – secondary treatment.
Phosphorous	NR	4 – 10 g/m <sup>3</sup>	Complies – secondary treatment.
Ammonia	NR	Negligible	Complies – secondary treatment.
Nitrites/ Nitrates	NR	15 – 45 g/m <sup>3</sup>	Complies – secondary treatment.
<b>Conclusion: Effects are less than minor on the environment.</b>			
1. AEE based on proposed secondary treated effluent.			
2. Northland Regional Plan Table 9.			
3. Based on the recommendations of this report and Drawing No. 100.			
4. Including any formed road with kerb and channel, and water-table drain that is down-slope of the disposal area.			
5. River, lake, stream, pond, dam, or natural wetland.			
AEP Annual Exceedance Probability.			
NR No Requirement.			



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## APPENDIX E

### Stormwater Calculations

Project Ref:	C0749N-03	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	409 Kapiro Road, Kerikeri		
Design Case:	CONCEPT Future Lot 1,2,4,5,6,7,8,9		
Date:	13 February 2026 REV 1		
<b>50 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT</b>			

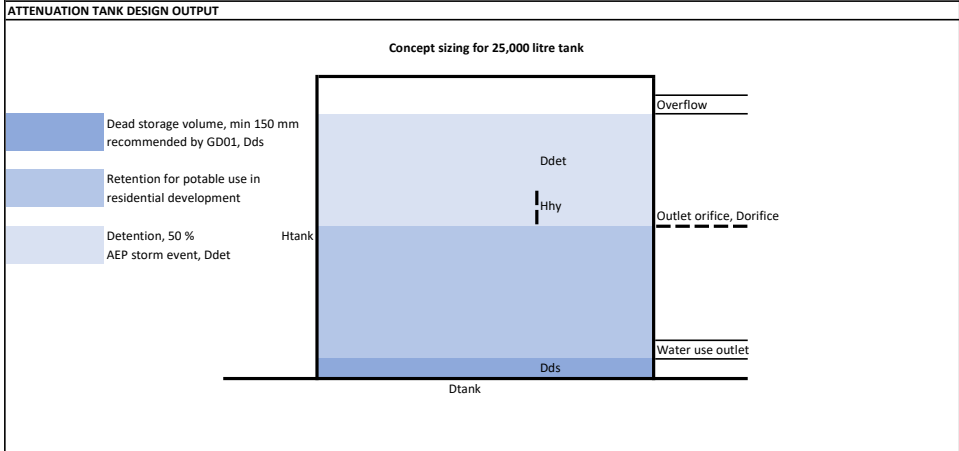
ATTENUATION DESIGN PROVIDED IN ACCORDANCE WITH NEW ZEALAND BUILDING CODE E1 FOR THE RATIONALE METHOD ACCOUNTING FOR THE EFFECTS OF CLIMATE CHANGE (20% FACTOR AS PER 2023 FNDC ENGINEERING STANDARDS).  
 PRE-DEVELOPMENT RUNOFF IS FACTORED BY 80% TO SUIT FNDC STANDARDS  
 RUNOFF COEFFICIENTS DETERMINED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

PRE DEVELOPMENT CATCHMENT PARAMETERS				POST DEVELOPMENT CATCHMENT PARAMETERS			
ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	DESCRIPTION
IMPERVIOUS A				TO TANK	300	0.96	ROOF
IMPERVIOUS B	0	0		OFFSET	200	0.8	DRIVEWAY - METAL
IMPERVIOUS C	0	0		PERVIOUS	0	0	
EX. PERVIOUS	500	0.59	PASTURE	EX. CONSENTED	0	0	
<b>TOTAL</b>	<b>500</b>	<b>TYPE C</b>		<b>TOTAL</b>	<b>500</b>	<b>TYPE C</b>	


RAINFALL INTENSITY, 50% AEP, 10MIN DURATION			
50 % AEP RAINFALL INTENSITY, 10 MIN, 1, mm/hr	64.9	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	77.88	mm/hr	

PRE AND POST-DEVELOPMENT RUNOFF, 50%AEP, VARIOUS DURATIONS							
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s	80% of PRE DEV RUNOFF, Qpre(80%), l/s	COMMENTS
10	64.90	1.2	77.88	9.69	5.32	4.25	Critical duration (time of concentration) for the catchments is 10min
20	47.00	1.2	56.40	7.02	3.85	3.08	
30	38.90	1.2	46.68	5.81	3.19	2.55	
60	27.90	1.2	33.48	4.17	2.29	1.83	Pre-dev calculated on Intensity without CC factor
120	19.60	1.2	23.52	2.93	1.61	1.28	
360	10.70	1.2	12.84	1.60	0.88	0.70	
720	7.03	1.2	8.44	1.05	0.58	0.46	
1440	4.42	1.2	5.30	0.66	0.36	0.29	
2880	2.64	1.2	3.17	0.39	0.22	0.17	
4320	1.91	1.2	2.29	0.29	0.16	0.13	

ATTENUATION ANALYSIS, VARIOUS DURATIONS							
DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW, Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre(80%) - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	COMMENTS
10	3.46	6.23	0.79	0.79	5.44	3262	Selected Tank Outflow is selected for critical duration (time of concentration).
20	2.51	4.51	0.57	0.79	3.72	4463	
30	2.07	3.73	0.48	0.79	2.94	5294	
60	1.49	2.68	0.34	0.79	1.89	6787	select largest required storage, regardless of duration, to avoid overflow for event of any duration
120	1.05	1.88	0.24	0.79	1.09	7836	
360	0.57	1.03	0.13	0.79	0.23	5054	
720	0.37	0.67	0.09	0.79	No Att. Req.	0	
1440	0.24	0.42	0.05	0.79	No Att. Req.	0	
2880	0.14	0.25	0.03	0.79	No Att. Req.	0	
4320	0.10	0.18	0.02	0.79	No Att. Req.	0	



SPECIFICATION		
TOTAL STORAGE REQUIRED	7.836 m <sup>3</sup>	Select largest storage as per analysis
TANK HEIGHT, Htank	2.6 m	Concept sizing for 25,000 litre tank
TANK DIAMETER, Dtank	3.5 m	No. of Tanks 2
TANK AREA, Atank	19.24 m <sup>2</sup>	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	50030 litres	
REQUIRED STORAGE HEIGHT, Ddet	0.41 m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.56 m	
SELECTED TANK OUTFLOW, Qout, l/s	0.00079 m <sup>3</sup> /s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, Hhy	0.20 m	
AREA OF ORIFICE, Aorifice	6.40E-04 m <sup>2</sup>	
ORIFICE DIAMETER, Dorifice	29 mm	
VELOCITY AT ORIFICE	2.83 m/s	At max. head level

Project Ref:	C0749N-03	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	409 Kapiro Road, Kerikeri		
Design Case:	CONCEPT Future Lot 1, 2, 4, 5, 6, 7, 8, 9		
Date:	13 February 2026 REV 1		
<b>20 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT</b>			

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

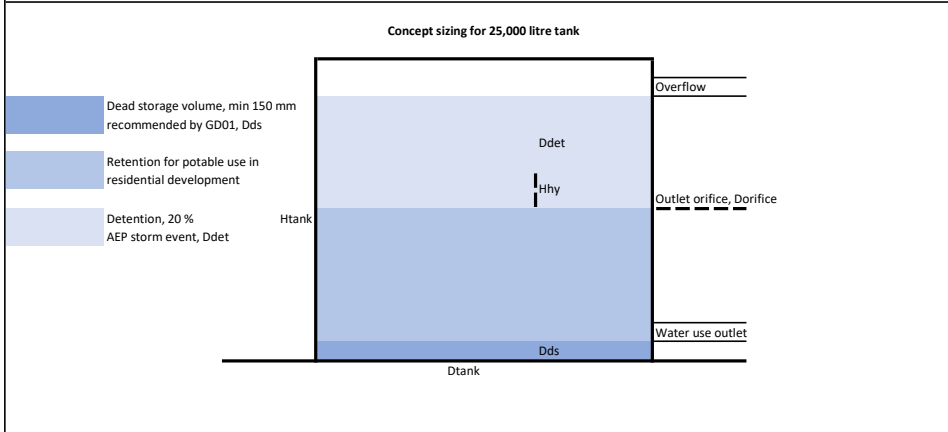
PRE DEVELOPMENT CATCHMENT PARAMETERS				POST DEVELOPMENT CATCHMENT PARAMETERS			
ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	DESCRIPTION
IMPERVIOUS A	0	0		TO TANK	300	0.96	ROOF
IMPERVIOUS B	0	0		OFFSET	200	0.8	DRIVEWAY - METAL
IMPERVIOUS C	0	0		PERVIOUS	0	0	
EX. PERVIOUS	500	0.59	PASTURE	EX. CONSENTED	0	0	
					0	0	
<b>TOTAL</b>	<b>500</b>	<b>TYPE C</b>		<b>TOTAL</b>	<b>500</b>	<b>TYPE C</b>	

RAINFALL INTENSITY, 20% AEP, 10MIN DURATION			
20 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	84.1	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
20 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	100.9	mm/hr	

PRE AND POST-DEVELOPMENT RUNOFF, 20%AEP, VARIOUS DURATIONS							
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Q <sub>post</sub> , l/s	PRE DEV RUNOFF, Q <sub>pre</sub> , l/s	80% OF PRE DEV RUNOFF, Q <sub>pre(80%)</sub> , l/s	COMMENTS
10	84.10	1.2	100.92	12.56	6.89	5.51	Critical duration (time of concentration) for the catchments is 10min
20	61.00	1.2	73.20	9.11	5.00	4.00	
30	50.50	1.2	60.60	7.54	4.14	3.31	
60	36.20	1.2	43.44	5.41	2.97	2.37	Pre-dev calculated on Intensity without CC factor
120	25.60	1.2	30.72	3.82	2.10	1.68	
360	14.00	1.2	16.80	2.09	1.15	0.92	
720	9.20	1.2	11.04	1.37	0.75	0.60	
1440	5.79	1.2	6.95	0.86	0.47	0.38	
2880	3.48	1.2	4.18	0.52	0.29	0.23	
4320	2.51	1.2	3.01	0.37	0.21	0.16	


ATTENUATION ANALYSIS, VARIOUS DURATIONS							
DURATION, min	OFFSET FLOW, Q <sub>off</sub> , l/s	TANK INFLOW, Q <sub>in</sub> , l/s	ALLOWABLE TANK OUTFLOW, Q <sub>pre(80%)</sub> - Q <sub>off</sub> , l/s	SELECTED TANK OUTFLOW, Q <sub>out</sub> , l/s	DIFFERENCE (Q <sub>in</sub> - Q <sub>out</sub> ), l/s	Required Storage, litres	COMMENTS
10	4.49	8.07	1.03	1.03	7.05	4227	Selected Tank Outflow is selected for critical duration (time of concentration).
20	3.25	5.86	1.75	1.03	4.83	5794	
30	2.69	4.85	1.44	1.03	3.82	6876	
60	1.93	3.48	1.04	1.03	2.45	8810	select largest required storage, regardless of duration, to avoid overflow for event of any duration
120	1.37	2.46	0.73	1.03	1.43	10294	
360	0.75	1.34	0.40	1.03	0.32	6828	
720	0.49	0.88	0.26	1.03	No Att. Req.	0	
1440	0.31	0.56	0.17	1.03	No Att. Req.	0	
2880	0.19	0.33	0.10	1.03	No Att. Req.	0	
4320	0.13	0.24	0.07	1.03	No Att. Req.	0	

**ATTENUATION TANK DESIGN OUTPUT**



**SPECIFICATION**

TOTAL STORAGE REQUIRED	10.294 m <sup>3</sup>	Select largest storage as per analysis
TANK HEIGHT, H <sub>tank</sub>	2.6 m	Concept sizing for 25,000 litre tank
TANK DIAMETER, D <sub>tank</sub>	3.5 m	No. of Tanks 2
TANK AREA, A <sub>tank</sub>	19.24 m <sup>2</sup>	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, V <sub>tank</sub>	50030 litres	
REQUIRED STORAGE HEIGHT, D <sub>det</sub>	0.53 m	Below overflow
DEAD STORAGE VOLUME, D <sub>ds</sub>	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.68 m	
SELECTED TANK OUTFLOW, Q <sub>out</sub> , l/s	0.00103 m <sup>3</sup> /s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, H <sub>hy</sub>	0.27 m	
AREA OF ORIFICE, A <sub>orifice</sub>	7.24E-04 m <sup>2</sup>	
ORIFICE DIAMETER, D <sub>orifice</sub>	30 mm	
VELOCITY AT ORIFICE	3.24 m/s	At max. head level

Project Ref:	C0749N-03	<b>STORMWATER ATTENUATION TANK DESIGN</b>	
Project Address:	409 Kapiro Road, Kerikeri		
Design Case:	CONCEPT Future Lot 1, 2, 4, 5, 6, 7, 8, 9		
Date:	13 February 2026 REV 1		

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

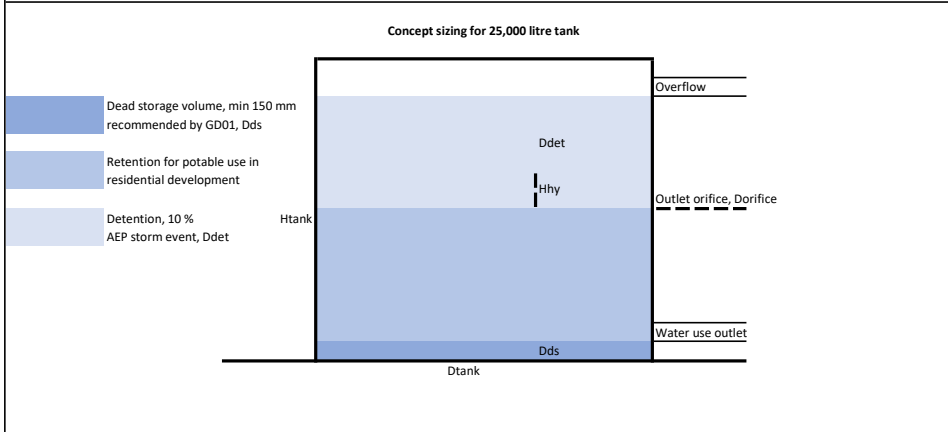
PRE DEVELOPMENT CATCHMENT PARAMETERS				POST DEVELOPMENT CATCHMENT PARAMETERS			
ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	DESCRIPTION	ITEM	AREA, A, m <sup>2</sup>	COEFFICIENT, C	DESCRIPTION
IMPERVIOUS A	0	0		TO TANK	300	0.96	ROOF
IMPERVIOUS B	0	0		OFFSET	200	0.8	DRIVEWAY - METAL
IMPERVIOUS C	0	0		PERVIOUS	0	0	
EX. PERVIOUS	500	0.59	PASTURE	EX. CONSENTED	0	0	
	0	0			0	0	
<b>TOTAL</b>	<b>500</b>	<b>TYPE C</b>		<b>TOTAL</b>	<b>500</b>	<b>TYPE C</b>	

RAINFALL INTENSITY, 10% AEP, 10MIN DURATION			
10 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	98.1	mm/hr	* CLIMATE CHANGE FACTOR OF 20% APPLIED IN ACCORDANCE WITH FNDC ENGINEERING STANDARDS 4.3.9.1. NIWA HISTORIC RAINFALL INTENSITY DATA, 10MIN, IS MULTIPLIED BY CLIMATE CHANGE FACTOR.
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%	
10 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	117.7	mm/hr	

PRE AND POST-DEVELOPMENT RUNOFF, 10%AEP, VARIOUS DURATIONS						
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Q <sub>post</sub> , l/s	PRE DEV RUNOFF, Q <sub>pre</sub> , l/s	COMMENTS
10	98.10	1.2	117.72	14.65	8.04	Critical duration (time of concentration) for the catchments is 10min
20	71.30	1.2	85.56	10.65	5.84	
30	59.00	1.2	70.80	8.81	4.83	
60	42.40	1.2	50.88	6.33	3.47	Pre-dev calculated on Intensity without CC factor
120	30.00	1.2	36.00	4.48	2.46	
360	16.50	1.2	19.80	2.46	1.35	
720	10.80	1.2	12.96	1.61	0.89	
1440	6.82	1.2	8.18	1.02	0.56	
2880	4.10	1.2	4.92	0.61	0.34	
4320	2.96	1.2	3.55	0.44	0.24	

ATTENUATION ANALYSIS, VARIOUS DURATIONS							
DURATION, min	OFFSET FLOW, Q <sub>off</sub> , l/s	TANK INFLOW, Q <sub>in</sub> , l/s	ALLOWABLE TANK OUTFLOW, Q <sub>pre</sub> - Q <sub>off</sub> , l/s	SELECTED TANK OUTFLOW, Q <sub>out</sub> , l/s	DIFFERENCE (Q <sub>in</sub> - Q <sub>out</sub> ), l/s	Required Storage, litres	
10	5.23	9.42	2.81	2.81	6.61	3967	Selected Tank Outflow is selected for critical duration (time of concentration).
20	3.80	6.84	2.04	2.81	4.04	4846	
30	3.15	5.66	1.69	2.81	2.86	5143	
60	2.26	4.07	1.21	2.81	1.26	4549	select largest required storage, regardless of duration, to avoid overflow for event of any duration
120	1.60	2.88	0.86	2.81	0.07	527	
360	0.88	1.58	0.47	2.81	No Att. Req.	0	
720	0.58	1.04	0.31	2.81	No Att. Req.	0	
1440	0.36	0.65	0.20	2.81	No Att. Req.	0	
2880	0.22	0.39	0.12	2.81	No Att. Req.	0	
4320	0.16	0.28	0.08	2.81	No Att. Req.	0	

**ATTENUATION TANK DESIGN OUTPUT**



**SPECIFICATION**

TOTAL STORAGE REQUIRED	5,143 m <sup>3</sup>	Select largest storage as per analysis
TANK HEIGHT, H <sub>tank</sub>	2.6 m	Concept sizing for 25,000 litre tank
TANK DIAMETER, D <sub>tank</sub>	3.5 m	No. of Tanks 2
TANK AREA, A <sub>tank</sub>	19.24 m <sup>2</sup>	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, V <sub>tank</sub>	50030 litres	
REQUIRED STORAGE HEIGHT, D <sub>det</sub>	0.27 m	Below overflow
DEAD STORAGE VOLUME, D <sub>ds</sub>	0.15 m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.42 m	
SELECTED TANK OUTFLOW, Q <sub>out</sub> , l/s	0.00281 m <sup>3</sup> /s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, H <sub>hy</sub>	0.13 m	
AREA OF ORIFICE, A <sub>orifice</sub>	2.80E-03 m <sup>2</sup>	
ORIFICE DIAMETER, D <sub>orifice</sub>	60 mm	
VELOCITY AT ORIFICE	2.29 m/s	At max. head level

HIRDS V4 Intensity-Duration-Frequency Results  
 Sitename: 407 Kapiro Road Kerikeri  
 Coordinate system: WGS84  
 Longitude: 173.9554  
 Latitude: -35.1946  
 DDF Model

Parameters: c d e f g h i  
 Values: 0.00230497 0.50822142 -0.01677217 -0.00349682 0.25393995 -0.0116834 3.23561216  
 Example: Duration (hrs) ARI (yrs) y Rainfall Rate (mm/hr)

24 100 3.17805383 4.600149227 10.44051618

Rainfall Intensities (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	59.3	42.9	35.5	25.4	17.9	9.78	6.4	4.02	2.4	1.74	1.36	1.12
2	0.5	64.3	47	38.9	27.9	16.7	10.7	7.03	4.42	2.64	1.91	1.5	1.23
5	0.2	84.1	61	50.5	36.2	25.6	14	9.2	5.79	3.48	2.51	1.97	1.62
10	0.1	98.1	71.3	59	42.4	30	16.5	10.8	6.82	4.1	2.96	2.33	1.92
20	0.05	112	81.8	67.8	48.8	34.5	19	12.5	7.88	4.74	3.43	2.7	2.22
30	0.033	121	88	73	52.5	37.2	21.6	13.5	8.51	5.17	3.71	2.92	2.4
40	0.025	127	92.4	76.7	55.2	39.1	21.6	14.2	8.97	5.4	3.91	3.08	2.53
50	0.02	132	95.9	79.5	57.3	40.6	22.4	14.8	9.32	5.61	4.07	3.2	2.64
60	0.017	135	98.7	81.9	59	41.9	23.1	15.2	9.62	5.79	4.2	3.3	2.72
80	0.013	142	103	85.6	61.7	43.8	24.2	15.9	10.1	6.07	4.41	3.46	2.85
100	0.01	146	107	88.5	63.9	45.3	25	16.1	10.3	6.29	4.57	3.59	2.96
250	0.004	165	121	100	72.3	51.4	28.5	18.8	11.9	7.19	5.22	4.11	3.39

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	7.9	5	3.6	2.4	1.8	1.1	0.77	0.61	0.38	0.29	0.22	0.19
2	0.5	8.6	5.5	3.9	2.6	2	1.2	0.86	0.68	0.42	0.32	0.25	0.21
5	0.2	12	7.7	5.8	3.7	2.8	1.6	1.2	0.92	0.57	0.44	0.33	0.29
10	0.1	15	10	7.8	4.9	3.6	2.1	1.5	1.1	0.68	0.52	0.39	0.34
20	0.05	19	13	10	6.4	4.7	2.7	2	1.3	0.8	0.62	0.47	0.41
30	0.033	22	15	12	7.5	5.5	3.2	2.3	1.4	0.88	0.68	0.51	0.45
40	0.025	24	17	14	8.4	6.1	3.6	2.5	1.5	0.94	0.73	0.55	0.48
50	0.02	26	19	15	9.1	6.7	3.9	2.8	1.6	1	0.77	0.58	0.5
60	0.017	28	20	16	9.8	7.2	4.2	3	1.7	1	0.8	0.6	0.53
80	0.013	31	22	18	11	8.1	4.8	3.3	1.8	1.1	0.86	0.65	0.56
100	0.01	33	24	20	12	8.8	5.2	3.6	1.9	1.2	0.9	0.68	0.59
250	0.004	45	34	29	17	13	7.5	5.2	2.4	1.4	1.1	0.85	0.73

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	63.5	46	38	27.2	19.1	10.3	6.7	4.18	2.49	1.79	1.4	1.15
2	0.5	69.6	50.4	41.7	29.9	21	11.4	7.38	4.6	2.74	1.97	1.54	1.27
5	0.2	84.1	65.6	54.3	39	27.5	14.9	9.7	6.06	3.61	2.61	2.04	1.67
10	0.1	106	76.8	63.6	45.7	32.2	17.5	11.4	7.15	4.27	3.08	2.41	1.98
20	0.05	121	88.2	73.1	52.6	37.1	20.2	13.2	8.26	4.94	3.56	2.79	2.29
30	0.033	130	95	78.7	56.7	40	21.8	14.3	8.93	5.34	3.86	3.02	2.48
40	0.025	137	99.8	82.7	59.6	42.1	23	15	9.41	5.63	4.07	3.19	2.62
50	0.02	142	104	85.9	61.9	43.8	23.9	15.6	9.79	5.86	4.23	3.32	2.73
60	0.017	146	107	88.4	63.7	45.1	24.7	16.1	10.1	6.05	4.37	3.43	2.82
80	0.013	153	111	92.5	66.7	47.2	25.8	16.9	10.6	6.34	4.58	3.6	2.96
100	0.01	158	115	95.6	69	48.8	26.7	17.5	11	6.57	4.75	3.73	3.07
250	0.004	178	130	108	78.1	55.4	30.4	19.9	12.5	7.51	5.43	4.26	3.51

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	63.5	46	38	27.2	19.1	10.3	6.7	4.18	2.49	1.79	1.4	1.15
2	0.5	69.6	50.4	41.7	29.9	21	11.4	7.38	4.6	2.74	1.97	1.54	1.27
5	0.2	84.1	65.6	54.3	39	27.5	14.9	9.7	6.06	3.61	2.61	2.04	1.67
10	0.1	106	76.8	63.6	45.7	32.2	17.5	11.4	7.15	4.27	3.08	2.41	1.98
20	0.05	121	88.2	73.1	52.6	37.1	20.2	13.2	8.26	4.94	3.56	2.79	2.29
30	0.033	130	95	78.7	56.7	40	21.8	14.3	8.93	5.34	3.86	3.02	2.48
40	0.025	137	99.8	82.7	59.6	42.1	23	15	9.41	5.63	4.07	3.19	2.62
50	0.02	142	104	85.9	61.9	43.8	23.9	15.6	9.79	5.86	4.23	3.32	2.73
60	0.017	146	107	88.4	63.7	45.1	24.7	16.1	10.1	6.05	4.37	3.43	2.82
80	0.013	153	111	92.5	66.7	47.2	25.8	16.9	10.6	6.34	4.58	3.6	2.96
100	0.01	158	115	95.6	69	48.8	26.7	17.5	11	6.57	4.75	3.73	3.07
250	0.004	178	130	108	78.1	55.4	30.4	19.9	12.5	7.51	5.43	4.26	3.51

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	64.5	46.7	38.6	27.6	19.4	10.5	6.78	4.22	2.51	1.8	1.41	1.16
2	0.5	70.8	51.3	42.4	30.4	21.3	11.5	7.47	4.65	2.76	1.99	1.55	1.28
5	0.2	92	66.8	55.3	39.7	27.9	15.1	9.83	6.13	3.65	2.63	2.06	1.69
10	0.1	108	78.2	64.8	46.5	32.8	17.8	11.5	7.23	4.31	3.11	2.43	2
20	0.05	123	89.8	74.4	53.6	37.8	20.6	13.4	8.36	4.99	3.6	2.82	2.31
30	0.033	133	96.7	80.2	57.7	40.8	22.2	14.5	9.03	5.4	3.89	3.05	2.51
40	0.025	139	102	84.3	60.7	42.9	23.4	15.2	9.53	5.69	4.11	3.22	2.65
50	0.02	145	105	87.5	63	44.5	24.3	15.8	9.9	5.92	4.27	3.35	2.75
60	0.017	149	109	90.1	64.9	45.9	25.1	16.3	10.2	6.11	4.41	3.46	2.84
80	0.013	156	114	94.3	68	48.1	26.2	17.1	10.7	6.41	4.63	3.63	2.98
100	0.01	161	117	97.4	70.3	49.7	27.2	17.7	11.1	6.64	4.8	3.76	3.09
250	0.004	182	133	110	79.6	56.4	30.9	20.2	12.7	7.59	5.49	4.3	3.54

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	67.8	49.1	40.6	29.1	20.3	10.9	7.02	4.36	2.57	1.84	1.44	1.18
2	0.5	74.5	54	44.6	32	22.4	12	7.75	4.8	2.84	2.04	1.59	1.3
5	0.2	97.1	70.5	58.3	41.9	29.4	15.8	10.2	6.34	3.76	2.7	2.11	1.73
10	0.1	114	82.6	68.4	49.2	34.6	18.6	12.1	7.49	4.44	3.2	2.5	2.05
20	0.05	130	94.9	78.7	56.6	39.9	21.5	14	8.66	5.15	3.7	2.9	2.37
30	0.033	140	102	84.8	61	43	23.3	15.1	9.37	5.57	4.01	3.14	2.57
40	0.025	147	107	89.1	64.2	45.2	24.5	15.9	9.88	5.88	4.23	3.31	2.72
50	0.02	153	112	92.5	66.7	47	25.5	16.5	10.3	6.12	4.4	3.45	2.83
60	0.017	158	115	95.3	68.7	48.5	26.3	17.1	10.6	6.31	4.55	3.56	2.92
80	0.013	163	119	99.7	71.9	50.8	27.5	17.9	11.1	6.63	4.77	3.73	3.07
100	0.01	170	124	103	74.4	52.5	28.5	18.5	11.5	6.87	4.95	3.87	3.18
250	0.004	192	140	117	84.2	59.6	32.4	21.1	13.1	7.84	5.65	4.43	3.64

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
158	0.633	64.1	46.4	38.4	27.5	19.3	10.4	6.74	4.21	2.5	1.8	1.4	1.15
2	0.5	70.3	50.9	42.1	30.2	21.2	11.5	7.43	4.63				

## **Appendix 5**

Combined Preliminary and Detailed Site  
Investigation



**geologix**  
consulting engineers

# COMBINED PRELIMINARY AND DETAILED SITE INVESTIGATION

LOTS 15 AND 16 DP 171115 AND  
LOT 19 DP 178408,  
KAPIRO ROAD, KERIKERI


T & G GLOBAL

**C0749N-E-03  
FEBRUARY 2026  
REVISION 1**





## DOCUMENT MANAGEMENT

<b>Document Title</b>	Combined Preliminary and Detailed Site Investigation
<b>Site Reference</b>	Lots 15 and 16 DP 171115 and Lot 19 DP 178408, Kapiro Road, Kerikeri
<b>Client</b>	T & G Global
<b>Geologix Reference</b>	C0749N-E-03
<b>Issue Date</b>	18 February 2026
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## REVISION HISTORY

Date	Issue	Prepared by	Approved
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## 1 INTRODUCTION

This combined Preliminary and Detailed Site Investigation (PSI/ DSI) report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for T & G Global as our Client in accordance with our standard short form agreement and general terms and conditions of engagement.

This investigation was to assist with the Resource Consent application in relation to the proposed subdivision of Lots 15 and 16 DP 171115 and Lot 19 DP 178408, 409 Kapiro Road, Kerikeri (herein, referred to as the 'site', Figure 1, Section 2.1).

### 1.1 Background and Objectives

At the time of writing this report, the site is proposed for a nine-lot subdivision. Proposed subdivision plans by Thomson Survey Limited dated 16 December 2025 are provided in Appendix A.

The Ministry for Environment's (MfE's) Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (NES:CS) (MfE, 2011a) applies to all site activities that trigger the NES:CS which are defined by Regulation 5 Subclauses (2) to (6). When one or more of these activities occur within a piece of land for which an activity or industry described by the Hazardous Activities and Industries List (HAIL) is either being undertaken, has previously been undertaken or is more likely than not to have occurred on it the NES:CS is enacted.

Therefore, the objective of this investigation was to:

- Determine the applicability of the NES:CS to the site.
- Assess the likelihood of human health risk associated with the proposed subdivision.
- Characterise site soils within the site (refer to Section 4), to assess the potential risks to human health and the environment; and
- Assess the requirements for potential consents in relation to the NES:CS.

### 1.2 Scope of Works

The following scope of works was undertaken in accordance with the staged process defined by the MfE Contaminated Land Management Guidelines (CLMG) No. 1 - *Reporting on Contaminated Site in New Zealand*. Ministry for the Environment, Wellington, New Zealand, Revised in 2021 (MfE 2011b).

- Desktop review of:
  - Provided council property information.
  - The Northland Regional Council (NRC) Selected Land Use Register (SLUR).



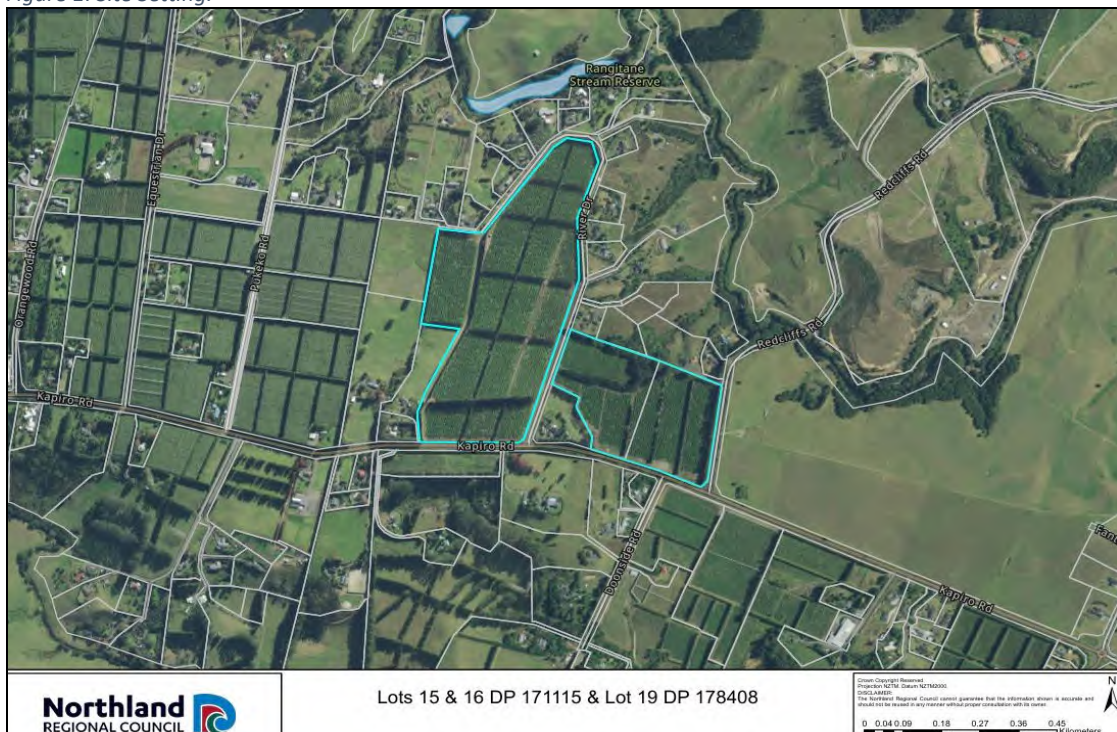
- The Far North District (FNDC) Far North Maps.
- Historical aerial photography available on the Local Government Geospatial Alliance’s (LGGGA’s) Retrolens webpage as well as FNDC Maps LINZ Aerial Imagery.
- Soil sampling comprising the collection of 207 surface soil samples (including 18 duplicate samples) from 189 locations within the site.
- As required by the NES:CS, 18 duplicate sample were collected to confirm the consistency of the analysis.
- Soil samples were sent to RJ Hill Laboratories (Hills) for analysis (with Chain of Custody documentation).
- Preparation of this report in general accordance with current contaminated land guideline documents by a Suitably Qualified and Experienced Practitioner (SQEP) as defined by the NES:CS.

## 2 SITE INFORMATION/ DESCRIPTION

### 2.1 Site Identification

The site is located at 409 Kapiro Road in Kerikeri, approximately 3.8 km east of the State Highway 10 (Twin Coast Discovery Highway) and Kapiro Road intersection. The site setting is presented in Figure 1 below with the centre of the site approximately at geographical position NZGD: 1687345, 6105203.

Figure 1: Site Setting.





The site is legally described as Lots 15-16 DP 171115 and Lot 19 DP 178408 with a total site area of approximately 28.15 ha and designated by the FNDC Operative District Plan as within the Rural Production zone. The current titles comprise existing agricultural blocks, all are existing orchard plantations (i.e., citrus). Details of the site are listed in Table 1 below.

*Table 1: Site Details.*

Address	Zone	Legal Description	Area (m <sup>2</sup> )
409 Kapiro Road, Kerikeri	Rural Production	Lots 15-16 DP 171115 and Lot 19 DP 178408	281,535

## 2.2 Proposal and Proposed Site Use

It is understood that the Client proposes to subdivide the rural property into nine separate sites. The proposed application includes subdivision formation only and not lot-specific development at this stage. A summary of the proposed subdivision plan is outlined in Table 2 below.

*Table 2: Summary of Proposed Subdivision*

Proposed Subdivision of Lots 15 and 16 DP 171115 and Lot 19 DP 178408		
Proposed Lot	Size Range (ha)	Purpose
1	2.01 ha	New rural residential
2	2.01 ha	New rural residential
3	10.88 ha	Existing rural production (no change)
4	2.01 ha	New rural residential
5	2.01 ha	New rural residential
6	2.53 ha	New rural residential
7	2.07 ha	New rural residential
8	2.14 ha	New rural residential
9	2.44 ha	New rural residential

This understanding has been established from the proposed subdivision plan provided by Thomson Survey Limited dated 16 December 2025, provided in Appendix A. Any amendments to the referenced proposed subdivision plan may require an update to the scope and/ or recommendations of this report.

It is expected that any future soil disturbance activities will be required to potentially upgrade existing site access roads, create new site access/ driveways for the proposed new lots, and to form potential future building platforms. However, no earthworks are proposed at this stage.

The current site use for the proposed rural residential subdivision areas (proposed Lots 1, 2 and 4-9) are anticipated to change from rural production to rural residential. However, proposed Lot 3 land use is not proposed to change, and is remaining as production land.

## 2.3 Current Land Use

The site is currently in use for horticultural activities. The site is zoned Rural Production under the FNDC Operative District Plan.



The future site use of a large portion of the site is anticipated to change (i.e., proposed Lots 1, 2 and 4-9) to rural residential land use following the proposed subdivision, while proposed Lot 3 land use is not anticipated to change.

**2.4 Surrounding Land Uses**

The site is surrounded by mixed use rural properties including horticultural land use to the south and south-east (southern side of Kapiro Road), grazing land to the west and east, and rural residential properties to the north, north-east, north-west, south-west, and south.

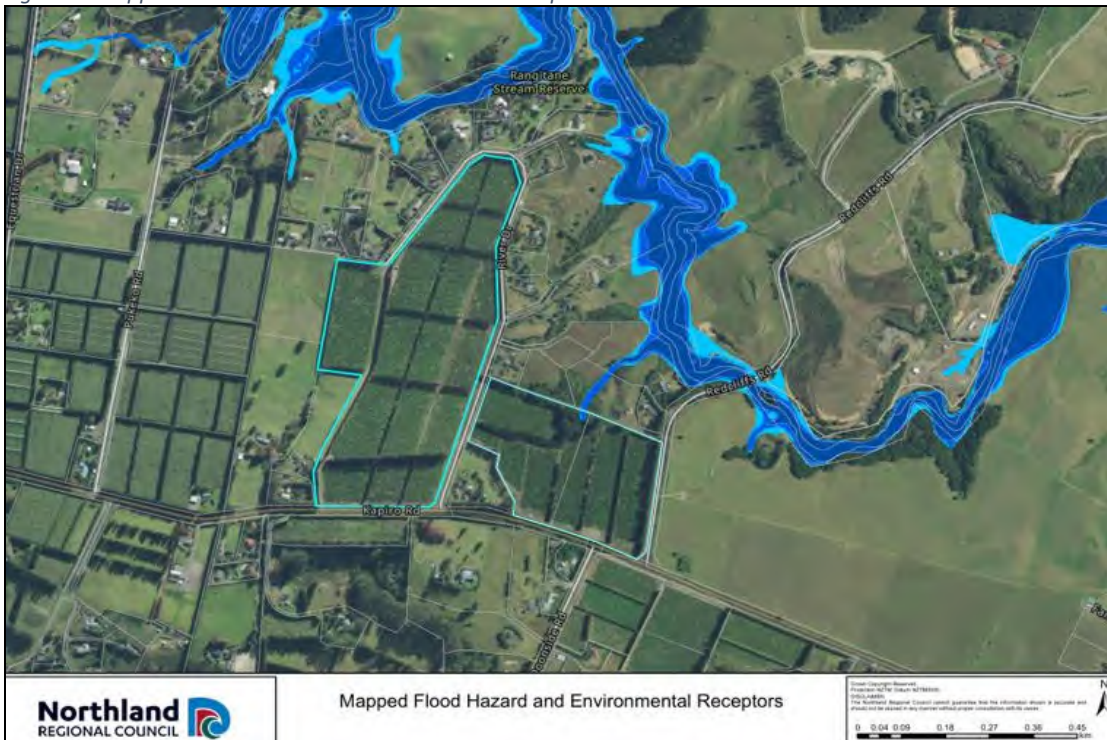
**2.5 Environmental Setting/ Ecological Receptors**

To provide protection for natural resources, ecological receptors on or near a site should be considered. The nearest ecological receptors are a tributary of the Rangitane Stream which is located within the north-eastern portion of Lot 15 DP 171115, and the Rangitane Stream, located to the north and north-east of the site. The nearest area of the Rangitane Stream is approximately 120 m to the north-west of the site.

In relation to this consent application, the tributary of the Rangitane Stream is located within an influencing distance (i.e., less than 100 m), therefore, is considered an environmental receptor in this instance.

Additionally, Figure 2 below indicates that with the exception of a small, localised corner of Lot 15 DP 171115, the site is outside of a mapped flood hazard area, flood hazard under all modelled scenarios.

*Figure 2: Mapped Flood Hazard and Environmental Receptors*





## 2.6 Geology

Published geological records indicates that to be directly underlain by Kerikeri Volcanic Group Late Miocene basalt of Kaikohe - Bay of Islands Volcanic Field. These Neogene igneous rocks (basalt) can be expected to contain Basalt lava material, volcanic plugs and minor tuff material. (GNS Science, 2022).

## 2.7 Site Inspection

A site walkover in conjunction with onsite investigation works was undertaken in January 2026 and the following observations were made. Selected site photographs (specifically the areas proposed for change of use) are provided in Appendix B):

- The site appears as outlined by the most recent available 2025 aerial photograph (Google Earth Pro).
- With the exception of a small bush area within the north-eastern portion of proposed Lot 6, the entire site is in use for horticultural purposes (i.e., citrus orchard).
  - Small stream observed within the bush area.
- Two small portable sheds are present onsite (office/ break rooms) within the northwest portion of proposed Lot 3 and southern portion of proposed Lot 7. No implement/ equipment storage observed.
- Green waste stockpile observed on the southern portion of proposed Lot 9.
- No burn pits/ burn areas (e.g., burning of refuse) were observed on site.
- No treated timber posts observed onsite which is typical of the type of horticulture (e.g., citrus orchard).

## 3 HISTORICAL SITE USE

A review of selected publicly available information was undertaken to gain an understanding of the history of the site, particularly the nature and location of potentially contaminating activities that may have occurred within the site. This included reviews of:

- Publicly available historical aerial photographs from the Local Government Geospatial Alliance's (LGGAs) Retrolens and FNDC Maps (LINZ Aerial Imagery).
- Provided council property information, and
- NRCs SLUR.

### 3.1 Historical Aerial Photographs

Historical aerial photographs of the site and the surrounding area taken between 1950 and



2025 were sourced from the LGGAs Retrolens and FNDC Maps. A summary of observations made from the review of these photographs is provided below. Historical aerial photographs are provided in Appendix C.

Our review comprises visually evident land-use activities within the site boundaries of the site which may pose a risk to human or environmental receptor health. Land-use history activities relevant to the site are summarised as follows:

#### **LGGAs Retrolens**

- **1950-1982:** The earliest available historical aerial photographs indicate that the site appears to have been used for grazing land prior to 1950. No significant changes are observed within the site over this period.

There are no available historical aerial photographs between 1982 and 2000.

#### **FNDC Maps LINZ Aerial Imagery**

- **2000:** With the exception of a small bush area within the north-eastern portion of proposed Lot 6, the entire site is in use for horticultural purposes, as per observed made during the site inspection. No structures are present on site.
- **2005-2006:** No significant changes observed since the previous aerial image.

There are no available historical aerial photographs between 2006 and 2014.

- **2014-Present:** The 2014-2016 aerial image shows some potential soil disturbance areas within the north-western portion of proposed Lot 3 and southern portions of proposed Lot 9. Consistent to observations made during the site inspection where hardfill observed onsite, spread for access/ parking areas associated with horticultural activities.

Clearing of a small portion of the orchard is observed within the south-eastern portion of proposed Lot 9, consistent with observations made during the site inspection and the green waste stockpile located onsite at this location.

Two small sheds are present the 2023-2025 aerial image, within the northwest portion of proposed Lot 3 and southern portion of proposed Lot 7, consistent with observations made during the site inspection.

No other significant changes were observed over this period to date.

In summary, the site was in use for grazing land purposes prior to 1950 until circa 2000, where the site was then used for horticultural land use with the establishment of an orchard.

### **3.2 Property Information**

A summary of the relevant property information reviewed is provided below and selected property information is provided in Appendix D.



### 3.2.1 *Property Files*

The review of the site property information provided by the client contained very limited. Information. No relevant information regarding contamination and/ or contaminating activities were noted within the provided information.

### 3.2.2 *Selected Land Use Register*

A review of the NRCs selected land use register (SLUR) was undertaken in February 2026. No HAIL activities have currently been identified within the property. The nearest identified HAIL area identified is located to the south-west of the site, southern side of Kapiro Road.

## 3.3 Actual/ Potential HAIL Activities

Specific land use and associated activities through the available site history can be appointed to a site wide HAIL category A10; persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds.

The above desktop review presents current and historical potential land-use activities that may have impacted the natural environmental properties of the shallow soils. Considering the nature of these activities are surface based and significant ground disturbance has not visibly been undertaken it can be concluded that potentially impacted soils will lie within the upper 0.5 m of the soil column.

The above land use activities equate to the whole site area (i.e., horticulture over the entire site). Therefore, the entire, 281,535 m<sup>2</sup> area of the site can be determined as a 'piece of land' according to the definitions of the NES:CS.

## 4 SAMPLING AND ANALYSIS PLAN

### 4.1 Potential Contaminants of Concern

Based on the potential HAIL activity(s) identified and from our experience, it is expected that contaminants of concern (CoC) (if any) associated with horticultural activities would typically be contained within the topsoil/ shallow site soils and may include heavy metals and, organochlorine pesticides resulting from the potential spraying of crops.

### 4.2 Sampling Methodology

Due to the proposed subdivision plan, only proposed Lots 1, 2 and 4-9 are planned for change of use (i.e., rural residential), proposed Lot 3 is remaining as production land (no change). Therefore, no sampling was undertaken within proposed Lot 3. Should the subdivision plan change indicating a change of use for proposed Lot 3, then further investigation will be required.

Based on the above and due to the potential HAIL activities identified (Section 3.3), the following sampling was undertaken to determine contaminant concentrations within a portion of the identified HAIL area (i.e., proposed Lots 1, 2 and 4-9 only). Based on this, the



sampling investigation has targeted the surface horizon from within a portion of the site (i.e., proposed Lots 1, 2 and 4-9 only) comprising topsoil/ shallow site soils from up to 0.2 m below ground level (bgl) to target the CoCs and to quantify the nature and dispersion of any residual contamination. Sample locations are indicated on Figure 4 below and Drawing 700 in Appendix E.

Figure 3: Approximate Sample Locations.



Soil sampling was undertaken in general accordance with the MfE CLMG No.5 - *Site Investigation and Analysis of Soils* (revised 2021) (MfE, 2011c). To meet the MfE sampling guidelines for a site area of approximately 172,735 m<sup>2</sup>, the following sampling programme was undertaken:

- From a total of 189 sample locations (designated S3C01a, S3C01b, S3C01c to S3C063a, S3C063b, S3C63c), 189 shallow soil samples were collected from the surface horizon comprising topsoil from 0.0 - 0.2 m bgl. Samples were composited into 63 samples (three primary subsamples per one composite sample) and analysed for the CoCs (metals (arsenic, cadmium, chromium, copper, lead, nickel and zinc) and OCPs)
- As required by the NES:CS, 18 duplicate soil samples from 18 locations were also collected and labelled under a unique identification (S3QC1a, b and c samples to S3QC6a, b and c samples) and composited into six duplicate composite samples and analysed for metals only.
- Samples were composited within the laboratory environment.
- Six individual samples designated S3pH1 to S3pH6 were also collected and analysed for pH.



- Sampling was undertaken in accordance with Geologix Standard Operating Procedures including:
  - Each soil sample was collected using a clean pair of nitrile gloves for each sample, then placed into laboratory supplied sample containers. Prior to sampling at each location, the sampling equipment was decontaminated by washing with potable water, followed by a decontamination solution, and rinsing with deionised water.
  - The soil samples were placed in new laboratory supplied sample containers, placed in chilly bins with ice and couriered to a RJ Hill Laboratories (Hills) in Hamilton alongside Chain of Custody documentation.

#### 4.3 Quality Assurance and Quality Control

The quality assurance/ quality control (QA / QC) procedures employed during the works included:

- Collection of soil samples by suitably qualified staff in accordance with Geologix standard operating procedures.
- Submission of all samples to the analytical laboratory within the acceptable holding times for the contaminants of concern.
- Submission of 18 duplicate soil samples from locations S3C01 (a, b and c samples), S3C19 (a, b and c samples), S3C30 (a, b and c samples) S3C39 (a, b and c samples) S3C56 (a, b and c samples) and S3C55 (a, b and c samples). These duplicate samples were composited into six composite samples and submitted under the unique identification S3QC01 to S3QC6 respectively and analysed for metals only.
- Sample analysis by Hill Laboratories who are accredited by International Accreditation New Zealand (IANZ) for the analyses performed.

#### 4.4 Soil Guideline Values

The following environmental guidelines were used to screen the sample results. Relevant guidelines values are provided in the data analysis table attached as Appendix E.

##### 4.4.1 *Background Concentrations*

According to Regulation 5(9) of the NES:CS, if a DSI can demonstrate that any contaminants on a HAIL site are at, or below, background concentrations, then the NES:CS regulations do not apply. However, there are no natural background concentration available for Northland region at the time of this investigation. Therefore Regulation 5(9) of the NES:CS is not applicable.



#### 4.4.2 Soil Contaminant Standards (NES:CS)

The NES:CS (MfE, 2011) details soil contaminant standards (SCSs) for seven inorganic substances. SCSs are available for these substances and compounds when present in land used for five land use scenarios. The contaminants analysed at this site for which SCSs are available are arsenic, cadmium, chromium, copper and lead. For this site, a rural residential/ lifestyle block 25% produce and commercial land use scenarios were adopted, which includes the following source-pathway-receptor assumptions:

- The selected residential SCSs assume that intended future land use will be either:
  - Rural residential/ lifestyle lot, for single dwelling sites with gardens, including some home-grown produce consumption, or
  - Commercial site with varying degrees of exposed soil.
- Potential receptors include site workers during the redevelopment works and residents or workers (dependant on the site use) following the redevelopment.
- The NES:CS adopted standards for rural residential/ lifestyle block 25% produce and commercial have been used to assess risks to both site workers and end users of the site.
- It has been assumed that the average soil pH is 5, and that all lead is present in inorganic form.

#### 4.4.3 Other Applicable Human Health Standards

For contaminants of potential concern that are not priority contaminants, the NESCS references the hierarchy defined in the MfE CLMG No.2 – *Hierarchy and Application in New Zealand of Environmental Guideline Values* (MfE, 2011d).

In accordance with this hierarchy, the Australian National Environment Protection Council (NEPC) (1999 rev: 2013) National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) has been used for two metals (nickel and zinc). Health-based investigation levels for 'Residential A' and 'Commercial/ industrial' land use have been selected in accordance with the potential proposed end use of the site and to protect site workers during the development work.

'Residential A' investigation levels are described in the ASC NEPM to include "*Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry), also includes childcare centres, preschools and primary schools*" (NEPC 2013).

'Commercial/ Industrial' investigation levels are described in the ASC NEPM to include "*premises such as shops, offices, factories and industrial sites*" (NEPC 2013).

## 5 SAMPLING RESULTS

Laboratory analytical results of the samples collected are summarised in Section 5.1 below



and the soil analytical results table attached as Appendix E. The full laboratory analytical reports are provided in Appendix F.

## 5.1 Analytical Results

As previously mentioned, all composite samples were analysed for metals (arsenic, cadmium, chromium, copper, lead, nickel, and zinc) and OCPs with the two individual samples for pH only. The results of the laboratory analysis indicated the following:

- No heavy metals were detected above human health criteria.
- No OCPs were detected above the laboratory level of reporting.
- From the six samples collected for pH analysis, pH was measured at 6.6, 6.4, 5.9, 5.9, 6.5, and 6.4, samples S3pH1 to sample S3pH6 respectively.
- In addition, no visual or olfactory evidence of contamination was observed in any of the soil samples collected.

### 5.2.1 Confidence in Results

The analytical laboratory is required to conduct cross checking and routine duplicate sample analysis to maintain an IANZ accreditation. Discrete project specific duplicate analysis was undertaken to confirm the reliability of laboratory analysis. In accordance with CLMG, primary to secondary sample acceptable relative difference (RPD) is 50 % for soil samples.

18 duplicate samples (S3QC1a, b and c samples to S3QC6a, b and c samples) were composited into six composite samples and analysed for metals to replicate the analysis of composite samples S3C01 (a, b and c samples), S3C19 (a, b and c samples), S3C30 (a, b and c samples) S3C39 (a, b and c samples) S3C56 (a, b and c samples) and S3C55 (a, b and c samples) respectively. The relative percentage difference (RPD) between the primary and duplicate samples ranged between 0% and 29%. As such, it is considered that the precision of the sampling and analysis is well within acceptable limits. The results are presented in the data analysis table attached as Appendix E.

## 5.2 Summary of Results

The result of analytical testing indicates that contaminants concentrations of the CoCs are below human health guidelines for a rural/ lifestyle block land use scenario.

## 6 DISPOSAL DOCUMENTATION

A disposal criteria analysis for metals has been made in accordance with the MfE Hazardous Waste Acceptance Criteria (WAC) screening criteria for Class A and B landfill facilities and summarised as follows:

- With the exception of Composite Sample 17 locations, site wide exceedance of Class A landfill screening criteria for total chromium.



- Localised exceedance of Class A landfill screening criteria for copper from sample locations Composite Sample 13 (north-east corner of proposed Lot 7 and south-western corner of proposed Lot 8) and Composite Sample 19 (proposed Lot 6)
- Site wide exceedance of Class B landfill screening criteria for:
  - Total chromium from all sample locations.
  - Copper from all sample locations.
  - With the exception of Composite Sample 50 locations, zinc from all sample locations.
  - With the exception of Composite Samples 37, 45, 47, 57 and 60-63 locations, nickel from all sample locations.
  - Localised exceedance of Class B landfill screening criteria for lead from sample locations Composite Samples 32 and 33 (proposed Lot 1), and Composite Sample 47 (proposed Lot 2).

Based on the above, and as natural background concentrations are not available for Northland, soils do not meet the requirement and definition of clean fill and any soil proposed for removal from site shall be disposed of to an appropriate managed fill facility. Sample results should be provided to a managed fill facility to determine if they can accept.

## 7 RISK ASSESSMENT

Although all laboratory results were below the human health criteria and no natural background concentrations for northland region are available. Based on the information presented in this report, a quantitative risk assessment of contamination potential to cause an effect upon human and/ or ecological receptors was still undertaken. This is further developed into a regulatory assessment for consent.

The available information summarised above (Sections 2 – 6) indicates the site has been used for horticultural activities conducted from circa 2000 to date. HAIL activities (category A10 particularly associated with contaminants associated with historical horticultural land-use.

The following Conceptual Site Model (CSM), Table 3 below, has been developed for the potentially complete contaminant pathways at the site:

*Table 3: Conceptual Site Model.*

Source	Pathway	Receptor	Risk Score
Metals and OCPs	• Incidental soil ingestion.	<ul style="list-style-type: none"> <li>• Site users/ workers of the site.</li> <li>• Future site users.</li> </ul>	<ul style="list-style-type: none"> <li>• Incomplete/ very low – as results below human health limits</li> </ul>
	• Inhalation of dusts.		
	• Dermal absorption.		



Metals and OCPs in soil remaining on site.	• Migration	• Groundwater • Surface water	• Incomplete/ very low – as results below human health limits
Metals and OCPs in soil taken away from site.	• Migration	• Groundwater • Surface water	• Low – provided taken to a suitable managed fill facility

For an exposure pathway to be complete and subsequently cause a risk, there must be a contamination source, a contaminant transport mechanism (pathway) and a receptor, typically human or ecological.

### 7.1 Quantification of Risk and Discussion

The actual and potential HAIL activities undertaken (refer to Section 3.3) on site identifies a very low potential risk to human health and ecological receptors across the site area.

As such, due to concentrations below human health criteria, a very low risk is applied to long-term human health exposure to the proposed use for rural residential purposes if these soils are to remain on site.

## 8 REGULATORY CONSIDERATIONS (CONTAMINATED LAND)

Based on the findings of this investigation, the NES:CS regulations apply to the entire site area. Proposed subdivision plans by Thomson Survey Limited dated 16 December 2025 are provided in Appendix A. This section provides clarification of consent conditions against national, regional and local standards and regulations in regard to the proposed subdivision only.

### 8.1 National Environmental Standards

The NES:CS regulation applies to activities of subdivision and soil disturbance where HAIL activity is being / has been / more likely than not to have been undertaken. The results of the historical review indicated that, under subclause (7) the NES:CS applies to the site due to the HAIL Category A10; Persistent pesticide bulk storage or use including sport turfs, market garden green house or spray sheds.

In relation to soil disturbance, no soil disturbance is proposed as part of the subdivision at this time, however, the NES:CS allows (per year) a soil disturbance volume of 25 m<sup>3</sup> per 500 m<sup>2</sup> of `piece of land` area and soil disposal volume of 5 m<sup>3</sup> per 500 m<sup>2</sup> of piece of land area.

Calculated on a `piece of land` basis, to be able to comply with this activity status, allowable earthwork volumes to form the subdivision and post subdivision (i.e., site development) have been provided on Table 4 below.



Table 4: Allowable Soil Disturbance Volumes

Site	Site Area (m <sup>2</sup> )	Allowable Soil Disturbance - Per Year (m <sup>3</sup> )	Allowable Off-site Disposal - Per Year (m <sup>3</sup> )
Lots 15-16 DP 171115 and Lot 19 DP 178408 (subdivision)	281,535	14,076.75	2,815.35
Proposed Lot 1 (site development)	20,100	1,005	201
Proposed Lot 2 (site development)	20,100	1,005	201
Proposed Lot 3 (production land)	108,800	5,440	1,088
Proposed Lot 4 (site development)	20,100	1,005	201
Proposed Lot 5 (site development)	20,100	1,005	201
Proposed Lot 6 (site development)	25,300	1,265	253
Proposed Lot 7 (site development)	20,700	1,035	207
Proposed Lot 8 (site development)	21,400	1,070	214
Proposed Lot 8 (site development)	24,400	1,220	244

Therefore, where any potential future soil disturbance volume remains below or at the allowable limits, the activity of soil disturbance would be considered to be a permitted activity. In addition, should any soil disturbance volumes exceed the above allowable thresholds, the activity would be considered as a controlled activity.

For subdivision and soil disturbance activities (if undertaken) under Regulation 9 of the NES:CS the soil contamination does not exceed the applicable standard in Regulation 7. Therefore, activities of subdivision and proposed soil disturbance (if any) is considered to be a controlled activity.

In addition, to note, proposed Lot 3 is proposed to remain as production land (no change proposed), therefore, under regulation 5(8)(c) of the NES:CS, the regulations do not apply to this proposed activity and Lot 3.

## 8.2 Northland Regional Plan

Potentially contaminated land refers to land where a HAIL activity is / has been undertaken. Due to the identified HAIL activity within the site, the piece of land (i.e., the entire site) is considered to be potentially contaminated land. However, based on our investigation, contaminants do not pose a human health risk or environmental risk. Therefore, the proposed activity (subdivision, and potential future soil disturbance) complies with rule C.6.8.2 (discharges from contaminated land), which is considered a permitted activity under the proposed regional plan.

In addition, and to be noted; Northland Regional Plan Rule C.6.8.1 (Investigating potentially contaminated land – permitted activity), the disturbance of land for a site investigation to assess the concentration of hazardous substances in soil, water or air is a permitted activity, provided:

- 1) The site investigation is certified by a suitably qualified and experienced practitioner, and



- 2) The person or organisation initiating the site investigation provides a copy of the site investigation report to the Regional Council within three months of the completion of the investigation, and
- 3) Site investigations undertaken to assess the concentrations of contaminants in soil are undertaken in accordance with Contaminated Land Management Guidelines No. 5: Site Investigation and Analysis of Soils (Ministry for the Environment, 2011).

This report complies with items 1 and 3 above, therefore, to fully comply with rule C.6.8.1, this report must be submitted to the Regional Council within three months of the completion of the investigation.

## 9 SUMMARY AND RECOMMENDATIONS

This combined Preliminary and Detailed Site Investigation (PSI/ DSI) report has been prepared by Geologix Consulting Engineers Ltd (Geologix) for T & G Global (the 'Client'). This investigation was to assist with the Resource Consent application in relation to the proposed subdivision of Lots 15 and 16 DP 171115 and Lot 19 DP 178408, 409 Kapiro Road, Kerikeri (the 'site'). The following summarises the findings of the investigation:

In summary, the site was in use for grazing land purposes prior to 1950 until circa 2000, where the site was then used for horticultural land use with the establishment of an orchard.

Based on the HAIL activity above, the NES:CS applies.

HAIL category A10 was identified (as indicated in Section 3.3), however, soil results confirm that:

- No heavy metals or OCPs were detected over human health criteria guidelines.
- No OCPs were detected above the laboratory level of reporting.

Based on the findings of the investigation, Geologix considers that there is very low risk to long-term human health exposure in the proposed subdivision and soil disturbance activities (if undertaken) if these soils are to remain on site. Site soils, while suitable for onsite use (subject to geotechnical suitability), any soils proposed for removal from site (if any) shall be disposed of to an appropriate managed fill facility.

For subdivision and soil disturbance activities (if undertaken) under Regulation 9 of the NES:CS the soil contamination does not exceed the applicable standard in Regulation 7. Therefore, subdivision and/ or any soil disturbance activities (if required) associated with the proposed subdivision regarding contaminated land will be required as a controlled activity under the NES:CS and in addition permitted activity under the proposed Northland Regional Plan. Noting that proposed Lot 3 is proposed to remain as production land (no change proposed), therefore, under regulation 5(8)(c) of the NES:CS, regulations do not apply to proposed Lot 3 for this activity.

As previously mentioned, to comply with rule C.6.8.1, this report must be submitted to the



Regional Council within three months of the completion of the investigation.

To be noted, due to the proposed subdivision plan, proposed Lots 1,2 and 4-9 are planned for change of use (i.e., rural residential land use), proposed Lot 3 is remaining as production land (no change). Therefore, sampling was not undertaken within proposed Lot 3. Should the subdivision plan change indicating a change of use for proposed Lot 3, then further investigation will be required.

## 10 LIMITATIONS

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

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

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



## 11 REFERENCES

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Retrolens Historical Image Resource. <https://retrolens.co.nz/>. Accessed February 2026.

Users' guide, 2012: National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health. April 2012.



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## APPENDIX A

### Subdivision Plans

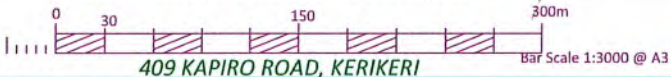
EXISTING EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	CREATED BY
RIGHT OF WAY, TELECOMMUNICATIONS, ELECTRICITY & WATER SUPPLY	(A)	LOT 3 HEREON	C858483.4
	(B)	LOT 4 HEREON	
	(D)	LOT 4 HEREON	
RIGHT OF WAY	(A)	LOT 3 HEREON	C965805.4
	(B)	LOT 4 HEREON	
WATER SUPPLY	(A)	LOT 3 HEREON	D158365.3
	(B)	LOT 4 HEREON	
	(C)	LOT 4 HEREON	



Local Authority: Far North District Council  
 Comprised in: NA110A/225, NA104C/379  
 NA104C/378  
 Total Area: 28.1535 ha  
 Zoning: Rural Production

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 AREAS AND MEASUREMENTS ARE SUBJECT TO FINAL SURVEY  
 TOPOGRAPHICAL DETAIL IS APPROXIMATE ONLY AND SCALED FROM AERIAL PHOTOGRAPHY

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.



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Registered Land Surveyors, Planners & Land Development Consultants

### PROPOSED SUBDIVISION OF LOTS 15 & 16 DP 171115 & LOT 19 DP 178408

PREPARED FOR: T & G GLOBAL

Name	Date	ORIGINAL SCALE	SHEET SIZE
Survey		1:3000	A3
Design			
Drawn	SL 16.12.25		
Approved			
Rev			
10856 Scheme			

Surveyors Ref. No:  
**10856**  
 Sheet 1 of 1



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## APPENDIX B

### Selected Site Photographs



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## SITE PHOTOGRAPHS

Project: 409 Kapiro Road, Kerikeri

Project no.: C0749N

Figure no.: 1 of 4

Photograph 1: Example of site, Lot 15 & 16 DP 171115, looking east.



Photograph 2: Green waste stockpile, southern portion of Lot 16 DP 171115, looking north-east.





Photograph 3: Stream located within the corner of Lot 15 DP 171115, looking south.



Photograph 4: Example of the site, southern portion of Lot 19 DP 178408, looking east.





Photograph 5: Example of the site, northern portion of Lot 19 DP 178408, looking south-west.



Photograph 6: Example of the site, western portion of portion of Lot 15 DP 171115, looking south-east.





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## SITE PHOTOGRAPHS

Project: 409 Kapiro Road, Kerikeri

Project no.: C0749N

Figure no.: 4 of 4

Photograph 3: Example of the site, central portion of Lot 19 DP 178408, looking north-west.





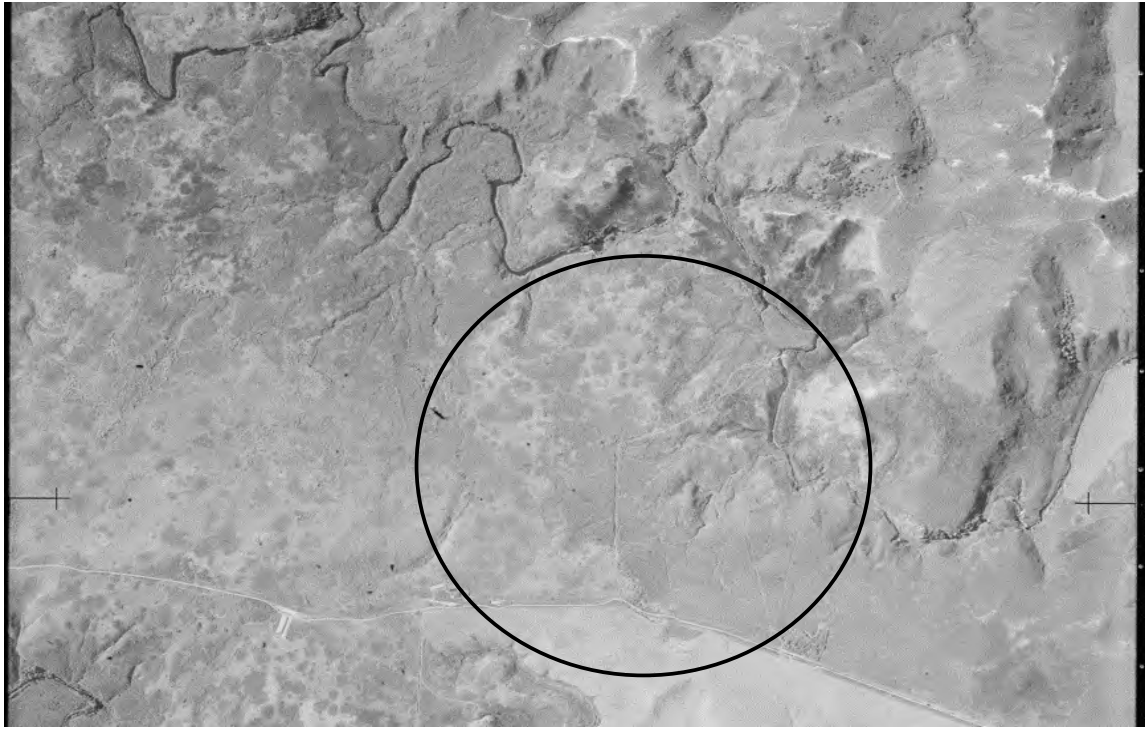
**geologix**  
consulting engineers

## APPENDIX C

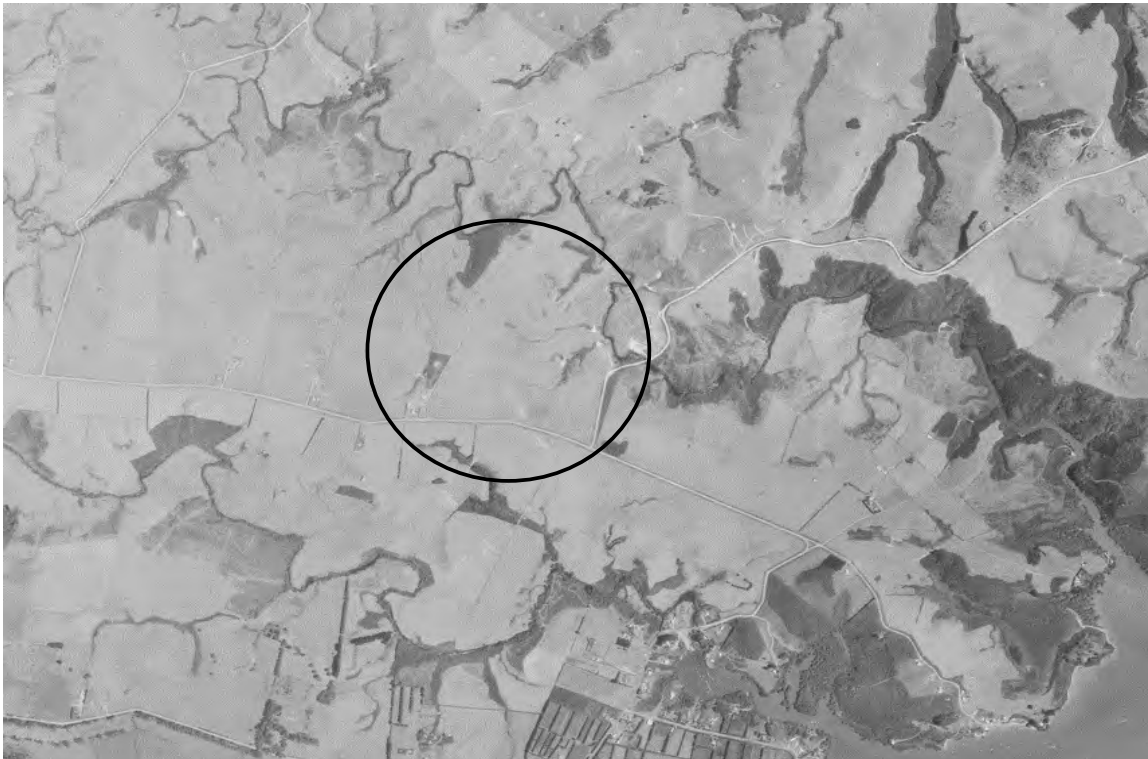
### Historical aerial photographs



1950: Retrolens



1968: Retrolens





1977: Retrolens



1979: Retrolens





1982: Retrolens



2000: FNDC Maps (LINZ Aerial Imagery)





2005-2006: FNDC Maps (LINZ Aerial Imagery)



2014-2016: FNDC Maps (LINZ Aerial Imagery)





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## Historical Aerial Photographs

Project: 409 Kapiro Road, Kerikeri

Project no.: C0749N

Figure no.: 5 of 5

2023-2025: FNDC Maps (LINZ Aerial Imagery)





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## APPENDIX D

### Selected Property Information

**FAR NORTH DISTRICT COUNCIL**

**CERTIFICATE OF LOCAL AUTHORITY  
UNDER SECTION 321(3)(C)  
LOCAL GOVERNMENT ACT, 1974**

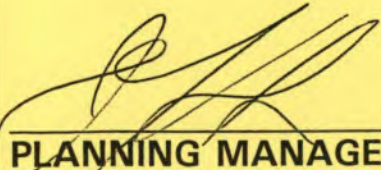
**VALUATION NO: 400-474-02**

**FILE NUMBER: RC 1960353**

**APPLICANT: KERIFRESH LTD**

I HEREBY CERTIFY that the FAR NORTH DISTRICT COUNCIL, resolved, pursuant to Section 321 (3) (c) of the Local Government Act 1974, that it is satisfied that in the matter of Resource Consent 1960353 being subdivision of Lots 12 - 14 DP 171115 at Kapiro Road, Kerikeri, adequate access is provided to Lot 18 pursuant to easements of right-of-way running with the land and appurtenant to those allotments; and Council resolves on that ground that Sub-section (1) of Section 321 of the of the Act shall not apply.

**DATED** at Kawakawa this 17th day of June 1996.

  
\_\_\_\_\_  
**PLANNING MANAGER**

Approvals



Registered Owners.

APPROVED PURSUANT TO SECTION 223 OF THE RESOURCE MANAGEMENT ACT 1991 ON THE 6<sup>th</sup> DAY OF May 1996 THE COMMON SEAL OF THE FAR NORTH DISTRICT COUNCIL IS AFFIXED HERETO IN THE PRESENCE OF:



*[Signature]*  
 AUTHORIZED OFFICER  
 (Under Delegated Authority)

PROPOSED EASEMENTS

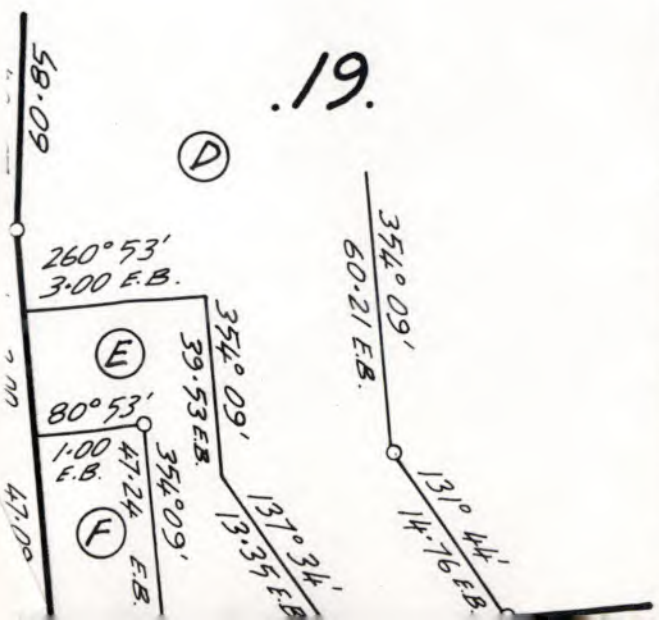
PURPOSE	SERVIENT TENEMENT SHOWN	DOMINANT TENEMENT.
Right of Way.	Lot 19 hereon	(A) (C) (D) Lot 18 hereon
	Lot 18 hereon	(B) Lot 19 hereon.

EXISTING EASEMENTS

PURPOSE	SHOWN	CREATED BY.
Water Supply.	(E)	C. 701839-1
Right to Convey Water	(C) (D)	
Right to Transmit Electricity	(C) (D)	
Right to Transmit Telecommunications	(C) (D)	
Right of Way.	(C)	
	(D) (E) (F)	

887100 mN

ROAD TO VEST [20.00 wide]



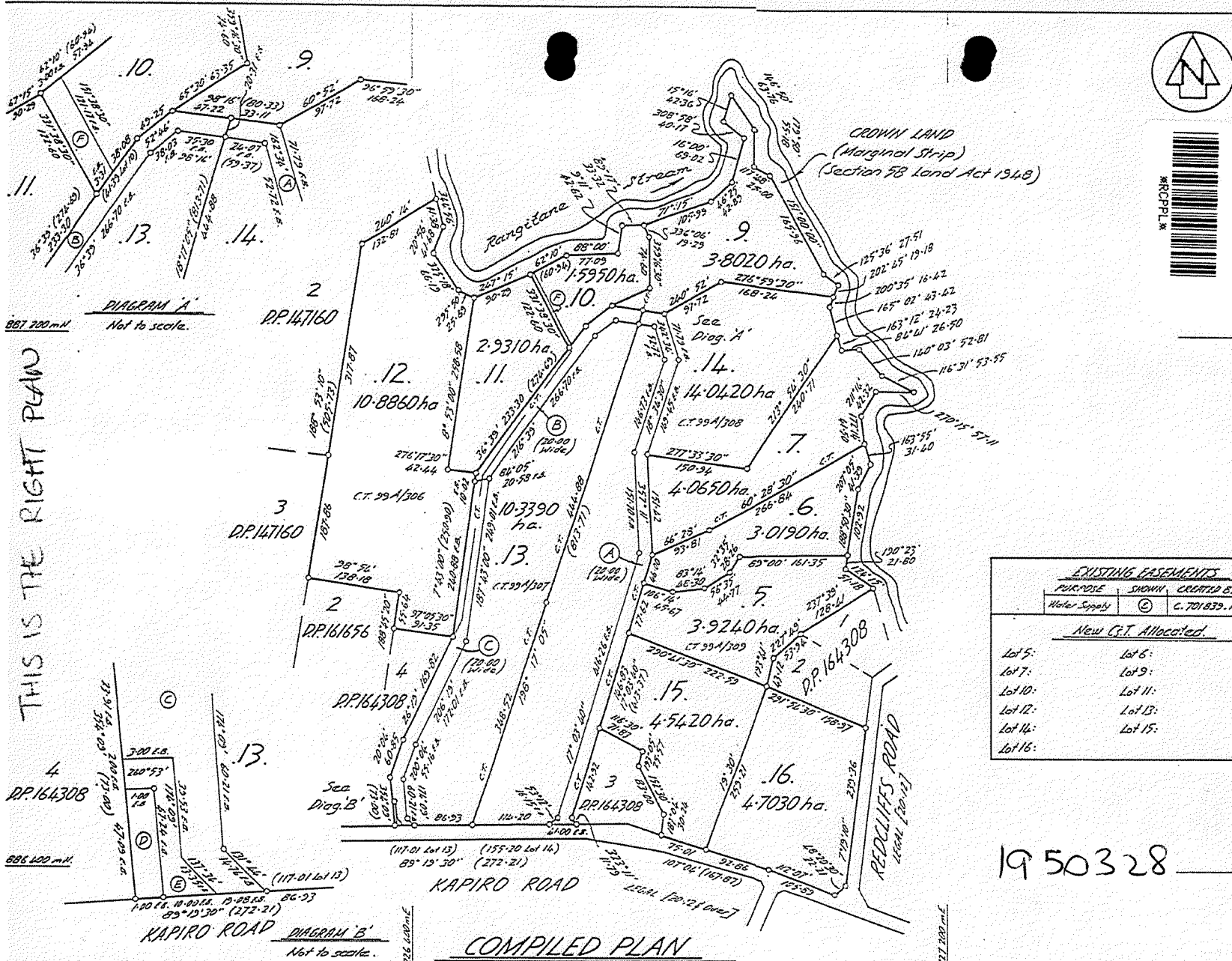
New Cs.T. allocated:

Lot 8: Lot 18:  
 Lot 19:

Total Area 35.2660 ha.....

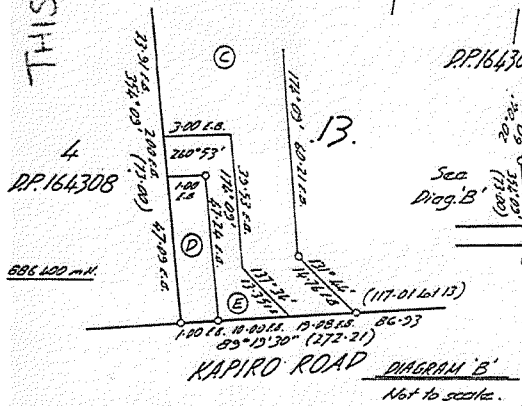
Comprised in Cs.T. 104.5/375-377 (All).....

I, ROBERT JOHN DONALDSON  
 Registered Surveyor and holder of an annual practising certificate (or who may act as a registered surveyor pursuant to section 25 of the Survey Act 1986) hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1977 or any regulations made in substitution thereof



887 200 mtl  
**DIAGRAM A**  
 Not to scale.

THIS IS THE RIGHT PLAN



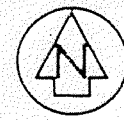
886 100 mtl  
**DIAGRAM B**  
 Not to scale.

**COMPILED PLAN**

LAND DISTRICT NORTH AUCKLAND  
 SURVEY BLK. & DIST. XIII. KARIKIERI S.D.  
 NZMS 261 SHT P.05 RECORD MAP No 6.1

LOTS 5-7 & 9-16  
 BEING A SUBDIVISION OF  
 LOTS 5- D.P. 164308

TERRITORIAL AUTHORITY FAR NORTH DISTRICT  
 Surveyed by P. DONALDSON & ASSOCIATES  
 Scale 1:400 Date October 1995



Approvals THE COMMON SEAL OF KARIKIERI  
IS AFFIXED HERETO IN THE PRESENCE OF:

Registered Owners  
 Approved pursuant to Section 223 of the Resource Management Act 1991 on the \_\_\_ day of \_\_\_\_\_ 1995  
 Subject to the granting or reserving of the easements set out in the Memorandum hereon.  
 The Common Seal of the Far North District Council is affixed hereto in the presence \_\_\_\_\_

Authorised Officer  
 (Under Delegated Authority)

**MEMORANDUM OF EASEMENTS**

PURPOSE	SEVERITY TENEMENT	SHOWN	DOMINANT TENEMENT
Right of Way	Lot 13 hereon	(B)	lots 5-7 & 9-12 hereon
	Lot 14 hereon	(A)	

**PROPOSED EASEMENTS**

PURPOSE	SEVERITY TENEMENT	SHOWN	DOMINANT TENEMENT
Right of Way	Lot 13 hereon	(C)(D)	lots 9-12 hereon

**PROPOSED EASEMENTS IN GROSS**

PURPOSE	SEVERITY TENEMENT	SHOWN	GRANTEE
Right to Carry Water	Lot 13 hereon	(D)(C)	Kerikeri Irrigation Company
	Lot 14 hereon	(A)	
Right to Transmit Electricity	Lot 13 hereon	(B)(C)	Tep Energy Ltd.
	Lot 14 hereon	(A)	
Right to Transmit Telecommunications	Lot 13 hereon	(B)(C)	Telecom
	Lot 14 hereon	(A)	Auckland Ltd.
Right to Drain Water	Lot 10 hereon	(E)	Far North District Council

**EXISTING EASEMENTS**

PURPOSE	SHOWN	CREATED BY
Water Supply	(C)	C. 701839.1

**New C.G.T. Allocated**

Lot 5:	Lot 6:
Lot 7:	Lot 9:
Lot 10:	Lot 11:
Lot 12:	Lot 13:
Lot 14:	Lot 15:
Lot 16:	

Total Area 63,848.0 ha.  
 Comprised in C.G.T. 99A/306-309 (All)

I, ROBERT PAUL ROBERTSON  
 Registered Surveyor and holder of an annual practising certificate for who may act as a registered surveyor pursuant to section 25 of the Survey Act 1986) hereby certify that this plan has been made from surveys executed by me or under my directions, that both plan and survey are correct and have been made in accordance with the Survey Regulations 1972 or any regulations made in substitution thereof.  
 Dated at KARIKIERI this 1st day of October 1995 Signature [Signature]

Field Book ..... p. Traverse Book ..... p.  
 Reference Plans C.T. 168,967.1 D.P. 164305  
 Examined ..... Correct

Approved as to Survey  
 ...../...../..... Chief Surveyor

Deposited this ..... day of ..... 19 .....

District Land Registrar

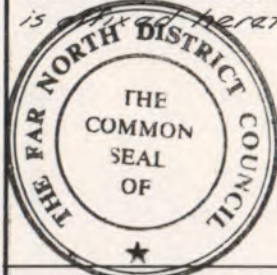
Folio 2640/2  
 Received Instructions



**Approvals** THE COMMON SEAL OF KERIFRESH LTD.  
IS AFFIXED HERETO IN THE PRESENCE OF:

Registered Owners.

Approved pursuant to Section 223 of the Resource Management Act 1991 on the 12<sup>th</sup> day of October 1995 Subject to the granting or reserving of the Easements set out in the Memorandum hereon. The Common Seal of the Far North District Council is affixed hereto in the presence of:



*[Signature]*  
AUTHORISED OFFICER  
(Under Delegated Authority)

**MEMORANDUM OF EASEMENTS**

PURPOSE	SERVIENT TENEMENT	SHOWN	DOMINANT TENEMENT
Right of Way	Lot 13 hereon	(B)	Lots 5-7 8-12 hereon
	Lot 14 hereon	(A)	

**PROPOSED EASEMENTS**

PURPOSE	SERVIENT TENEMENT	SHOWN	DOMINANT TENEMENT
Right of Way	Lot 13 hereon	(C)(D)(E)	Lots 9-12 hereon

**PROPOSED EASEMENTS IN GROSS**

PURPOSE	SERVIENT TENEMENT	SHOWN	GRANTEE
Right to Convey Water	Lot 13 hereon	(B)(C)	Kerikeri Irrigation Company
	Lot 14 hereon	(A)	
Right to Transmit Electricity.	Lot 13 hereon	(B)(C)	Top Energy Ltd.
	Lot 14 hereon	(A)	
Right to Transmit Telecommunications.	Lot 13 hereon	(B)(C)	Telecom Auckland Ltd.
	Lot 14 hereon	(A)	
Right to Drain Water	Lot 10 hereon	(F)	Far North District Council.

**EXISTING EASEMENTS**

PURPOSE	SHOWN	CREATED BY
Water Supply	(E)	C. 701839.1

**New C.s.T. Allocated.**

- Lot 5: Lot 6:
- Lot 7: Lot 9:
- Lot 10: Lot 11:
- Lot 12: Lot 13:
- Lot 14: Lot 15:

Total Area 63.8480 ha.....

Comprised in C.s.T. 99A/306-309 (All).....

I, ROBERT JOHN DONALDSON.....  
Registered Surveyor and holder of an annual practising certificate (or who may act as a registered surveyor pursuant to section 25 of the Survey Act 1981) hereby certify that the information contained in this

48)



**Legend**

Permitted Activities - Permitted Activity (Point)

- Coastal Permit
- Discharge Permit
- Land Use Consent
- Water Permit
- SLU Points
- SLU Polygons



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## APPENDIX E

### Summary of Soil Analytical Results

### Sample Location Plan

Table 1a: Soil Analytical Results	Sample Name	Composite Sample 1 (S3C01a, S3C01b & S3C01c)			Composite Sample 2 (Composite of S3C02a, S3C02b & S3C02c)	Composite Sample 3 (Composite of S3C03a, S3C03b & S3C03c)	Composite Sample 4 (Composite of S3C04a, S3C04b & S3C04c)	Composite Sample 5 (Composite of S3C05a, S3C05b & S3C05c)	Composite Sample 6 (Composite of S3C06a, S3C06b & S3C06c)	Composite Sample 7 (Composite of S3C07a, S3C07b & S3C07c)	Composite Sample 8 (Composite of S3C08a, S3C08b & S3C08c)	Composite Sample 9 (Composite of S3C09a, S3C09b & S3C09c)	Composite Sample 10 (Composite of S3C10a, S3C10b & S3C10c)	Composite Sample 11 (Composite of S3C11a, S3C11b & S3C11c)	Composite Sample 12 (Composite of S3C12a, S3C12b & S3C12c)	Composite Sample 13 (Composite of S3C13a, S3C13b & S3C13c)	Composite Sample 14 (Composite of S3C14a, S3C14b & S3C14c)	Composite Sample 15 (Composite of S3C15a, S3C15b & S3C15c)	Composite Sample 16 (Composite of S3C16a, S3C16b & S3C16c)	Composite Sample 17 (Composite of S3C17a, S3C17b & S3C17c)	NES:CS <sup>1</sup> Human Health Rural/ Lifestyle Block Criteria	NES:CS <sup>2</sup> Human Health Commercial/ Industrial Criteria
		Primary	Duplicate (S3QC1)	RPD (%)																		
<b>Heavy Metals</b>																						
Arsenic		3	3	0	3	3	2	4	<2	2	3	3	<2	<2	<2	2	<2	2	4		17	70
Cadmium		0.13	0.15	14	0.37	0.36	0.46	0.46	0.45	0.31	0.48	0.28	0.26	0.33	0.41	0.42	0.45	0.42	0.28	0.19	0.8	1,300
Chromium <sup>5</sup>		120	113	6	191	187	128	181	181	138	139	130	151	139	128	150	156	173	240	95	290	6,300
Copper		32	30	6	70	57	78	78	90	72	74	49	57	48	72	104	86	96	45	26	>10,000	>10,000
Lead		8.7	8.2	6	6.4	5.9	4.1	4	4.3	6.7	5.2	8.8	6.4	5.3	4.9	4.9	4.7	4.7	5.6	6.3	160	3,300
Nickel		23	22	4	23	22	21	26	35	25	31	24	28	23	24	26	29	31	24	20	400 <sup>3</sup>	6,000 <sup>4</sup>
Zinc		27	26	4	47	43	57	52	52	43	59	46	34	29	48	59	46	52	28	29	7,400 <sup>3</sup>	400,000 <sup>4</sup>

Organochlorine Pesticides (OCPs) - None detected in any of the samples analysed for OCPs over laboratory limit of reporting. Refer to full laboratory reports attached.

Table 1b: Soil Analytical Results	Sample Name	Composite Sample 18 (Composite of S3C18a, S3C18b & S3C18c)	Composite Sample 19 (Composite of S3C19a, S3C19b & S3C19c)			Composite Sample 20 (Composite of S3C20a, S3C20b & S3C20c)	Composite Sample 21 (Composite of S3C21a, S3C21b & S3C21c)	Composite Sample 22 (Composite of S3C22a, S3C22b & S3C22c)	Composite Sample 23 (Composite of S3C23a, S3C23b & S3C23c)	Composite Sample 24 (Composite of S3C24a, S3C24b & S3C24c)	Composite Sample 25 (Composite of S3C25a, S3C25b & S3C25c)	Composite Sample 26 (Composite of S3C26a, S3C26b & S3C26c)	Composite Sample 27 (Composite of S3C27a, S3C27b & S3C27c)	Composite Sample 28 (Composite of S3C28a, S3C28b & S3C28c)	Composite Sample 29 (Composite of S3C29a, S3C29b & S3C29c)	Composite Sample 30 (Composite of S3C30a, S3C30b & S3C30c)			Composite Sample 31 (Composite of S3C31a, S3C31b & S3C31c)	Composite Sample 32 (Composite of S3C32a, S3C32b & S3C32c)	NES:CS <sup>1</sup> Human Health Rural/ Lifestyle Block Criteria	NES:CS <sup>2</sup> Human Health Commercial/ Industrial Criteria
			Primary	Duplicate (S3QC2)	RPD (%)											Primary	Duplicate (S3QC3)	RPD (%)				
<b>Heavy Metals</b>																						
Arsenic		<2	<2	<2	0	<2	2	3	3	3	<2	2	<2	<2	<2	4	3	29	4	4	17	70
Cadmium		0.41	0.44	0.41	7	0.52	0.56	0.35	0.39	0.26	0.3	0.44	0.57	0.42	0.26	0.42	0.44	5	0.21	0.41	0.8	1,300
Chromium <sup>5</sup>		104	144	144	0	165	140	153	142	119	146	145	128	108	112	175	175	0	173	164	290	6,300
Copper		66	109	90	19	72	90	77	69	48	73	64	92	71	83	36	46	24	44	71	>10,000	>10,000
Lead		5.8	4.7	5.1	8	5.3	6.2	8	9.3	7.3	5.2	6.1	3.8	4.9	4.2	9.4	7.5	22	9.7	10.6	160	3,300
Nickel		25	31	29	7	34	30	34	26	23	33	34	29	28	26	24	26	8	23	23	400 <sup>3</sup>	6,000 <sup>4</sup>
Zinc		41	65	57	13	39	56	48	54	41	46	45	53	45	41	28	33	16	29	47	7,400 <sup>3</sup>	400,000 <sup>4</sup>

Organochlorine Pesticides (OCPs) - None detected in any of the samples analysed for OCPs over laboratory limit of reporting. Refer to full laboratory reports attached.

Table 1c: Soil Analytical Results	Sample Name	Composite Sample 33 (Composite of S3C33a, S3C33b & S3C33c)	Composite Sample 34 (Composite of S3C34a, S3C34b & S3C34c)	Composite Sample 35 (Composite of S3C35a, S3C35b & S3C35c)	Composite Sample 36 (Composite of S3C36a, S3C36b & S3C36c)	Composite Sample 37 (Composite of S3C37a, S3C37b & S3C37c)	Composite Sample 38 (Composite of S3C38a, S3C38b & S3C38c)	Composite Sample 39 (Composite of S3C39a, S3C39b & S3C39c)			Composite Sample 40 (Composite of S3C40a, S3C40b & S3C40c)	Composite Sample 41 (Composite of S3C41a, S3C41b & S3C41c)	Composite Sample 42 (Composite of S3C42a, S3C42b & S3C42c)	Composite Sample 43 (Composite of S3C43a, S3C43b & S3C43c)	Composite Sample 44 (Composite of S3C44a, S3C44b & S3C44c)	Composite Sample 45 (Composite of S3C45a, S3C45b & S3C45c)	Composite Sample 46 (Composite of S3C46a, S3C46b & S3C46c)	Composite Sample 47 (Composite of S3C47a, S3C47b & S3C47c)	Composite Sample 48 (Composite of S3C48a, S3C48b & S3C48c)	Composite Sample 49 (Composite of S3C49a, S3C49b & S3C49c)	NES:CS <sup>1</sup> Human Health Rural/ Lifestyle Block Criteria	NES:CS <sup>2</sup> Human Health Commercial/ Industrial Criteria
								Primary	Duplicate (S3QC4)	RPD (%)												
<b>Heavy Metals</b>																						
Arsenic		3	3	4	3	3	3	3	3	0	4	3	3	3	3	3	4	2	2	2	17	70
Cadmium		0.26	0.23	0.35	0.39	0.23	0.26	0.29	0.27	7	0.32	0.5	0.39	0.34	0.29	0.28	0.3	0.37	0.39	0.36	0.8	1,300
Chromium <sup>5</sup>		136	131	142	164	151	175	194	180	7	156	131	153	150	170	191	170	111	143	128	290	6,300
Copper		36	34	65	55	27	52	43	46	7	63	70	54	50	40	39	41	54	52	57	>10,000	>10,000
Lead		10.8	8.2	8	8.9	9.3	8.7	7	6.6	6	9	6.7	8.6	7.4	8.5	7.3	6.5	11.7	8.1	7	160	3,300
Nickel		21	21	25	24	18	21	26	23	12	27	28	27	23	22	20	26	18	22	24	400 <sup>3</sup>	6,000 <sup>4</sup>
Zinc		26	34	45	41	21	33	31	30	3	39	49	35	40	28	31	29	57	30	40	7,400 <sup>3</sup>	400,000 <sup>4</sup>

Organochlorine Pesticides (OCPs) - None detected in any of the samples analysed for OCPs over laboratory limit of reporting. Refer to full laboratory reports attached.

Table 1d: Soil Analytical Results	Sample Name	Composite Sample 50 (Composite of S3C50a, S3C50b & S3C50c)	Composite Sample 51 (Composite of S3C51a, S3C51b & S3C51c)	Composite Sample 52 (Composite of S3C52a, S3C52b & S3C52c)	Composite Sample 53 (Composite of S3C53a, S3C53b & S3C53c)	Composite Sample 54 (Composite of S3C54a, S3C54b & S3C54c)	Composite Sample 55 (Composite of S3C55a, S3C55b & S3C55c)			Composite Sample 56 (Composite of S3C56a, S3C56b & S3C56c)			Composite Sample 57 (Composite of S3C57a, S3C57b & S3C57c)	Composite Sample 58 (Composite of S3C58a, S3C58b & S3C58c)	Composite Sample 59 (Composite of S3C59a, S3C59b & S3C59c)	Composite Sample 60 (Composite of S3C60a, S3C60b & S3C60c)	Composite Sample 61 (Composite of S3C61a, S3C61b & S3C61c)	Composite Sample 62 (Composite of S3C62a, S3C62b & S3C62c)	Composite Sample 63 (Composite of S3C63a, S3C63b & S3C63c)	NES:CS <sup>1</sup> Human Health Rural/ Lifestyle Block Criteria	NES:CS <sup>2</sup> Human Health Commercial/ Industrial Criteria
							Primary	Duplicate (S3QC6)	RPD (%)	Primary	Duplicate (S3QC5)	RPD (%)									
<b>Heavy Metals</b>																					
Arsenic		<2	<2	2	2	2	3	3	0	3	3	0	2	2	3	2	2	2	3	17	70
Cadmium		0.32	0.36	0.41	0.4	0.47	0.24	0.25	4	0.31	0.33	6	0.35	0.36	0.32	0.3	0.3	0.27	0.27	0.8	1,300
Chromium <sup>5</sup>		138	146	139	150	159	153	154	1	158	156	1	151	127	147	149	129	136	141	290	6,300
Copper		43	53	70	72	72	46	43	7	51	55	8	47	57	82	47	38	43	46	>10,000	>10,000
Lead		7.7	7.8	8.2	6.6	6.5	7	7.2	3	9.4	9.6	2	8.4	9.2	8.7	9.1	7.7	8.8	9.2	160	3,300
Nickel		26	29	24	29	27	30	33	10	24	26	8	20	24	26	18	16	19	18	400 <sup>3</sup>	6,000 <sup>4</sup>
Zinc		20	30	50	47	40	23	22	4	41	42	2	39	45	32	37	25	32	39	7,400 <sup>3</sup>	400,000 <sup>4</sup>

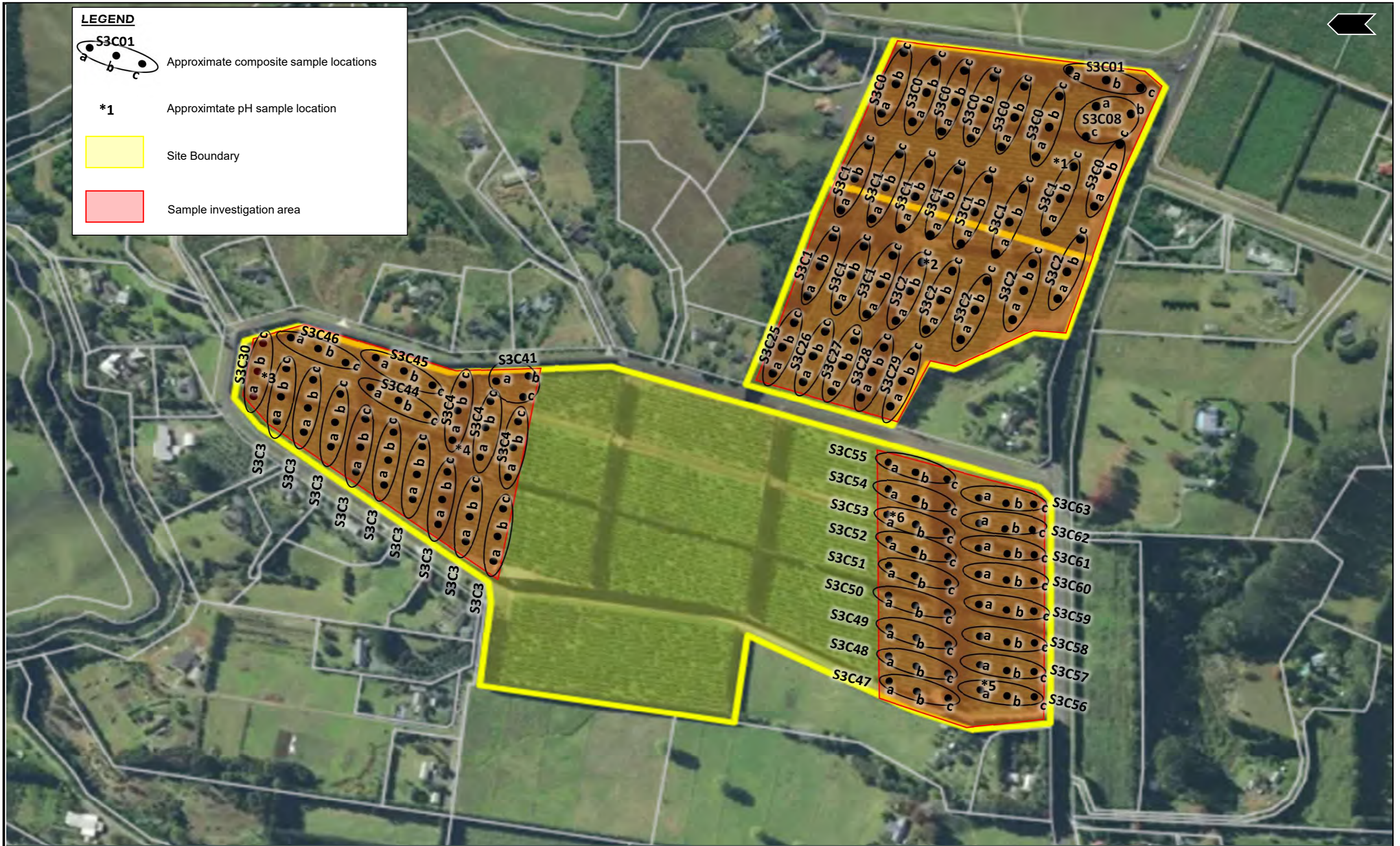
Organochlorine Pesticides (OCPs) - None detected in any of the samples analysed for OCPs over laboratory limit of reporting. Refer to full laboratory reports attached.


Table 1e: Soil Analytical Results	Sample Name	S3pH1	S3pH2	S3pH3	S3pH4	S3pH5	S3pH6	NES:CS <sup>1</sup> Human Health Rural/ Lifestyle Block Criteria	NES:CS <sup>2</sup> Human Health Commercial/ Industrial Criteria
	pH	6.6	6.4	5.9	5.9	6.5	6.4	-	-

Highlighted, coloured cell indicates samples exceeds human health guideline

Notes:  
All results in milligrams per kilogram (mg/kg) unless stated otherwise.  
RPD - relative percent difference.

- Ministry for the Environment National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health -Rural/ Lifestyle Block Land Use Scenario.
- Ministry for the Environment National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health -Commercial/ Industrial Land Use Scenario.
- National Environmental Protection Measure (Assessment of Site Contamination)1999, update 2013 Schedule B1, Land use Residential A.
- National Environmental Protection Measure (Assessment of Site Contamination)1999, update 2013 Schedule B1, Land use Commercial/ Industrial D.
- Criteria presented are for chromium VI.



	DRAWN: RM	PROJECT: C0733N, LOTS 15 & 16 DP 171115 & LOT19 DP 178408, KAPIRO ROAD, KERIKERI						STATUS: FINAL
	VERIFIED: RM	CLIENT: T&G GLOBAL	0	09/02/26	FIRST ISSUE - RESOURCE CONSENT	RM	EC	DRAWING TITLE: ENVIRONMENTAL SITE PLAN
	APPROVED: EC		REV	DATE	REVISION DETAILS	BY	APP	DRAWING NUMBER: 700      SCALE: NTS



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## APPENDIX F

### Laboratory Reports

## Certificate of Analysis

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<b>Client:</b>	Geologix Consulting Engineers Limited	<b>Lab No:</b>	4086111	SPV1
<b>Contact:</b>	Ray Mayor C/- Geologix Consulting Engineers Limited 13/2181 East Coast Road Stanmore Bay Silverdale 0932	<b>Date Received:</b>	30-Jan-2026	
		<b>Date Reported:</b>	10-Feb-2026	
		<b>Quote No:</b>	142948	
		<b>Order No:</b>		
		<b>Client Reference:</b>	C0749N	
		<b>Submitted By:</b>	Ray Mayor	

### Sample Type: Soil

Sample Name:	S3pH1	S3pH2	S3pH3	S3pH4	S3pH5
	29-Jan-2026	29-Jan-2026	29-Jan-2026	29-Jan-2026	29-Jan-2026
Lab Number:	4086111.208	4086111.209	4086111.210	4086111.211	4086111.212

Individual Tests						
pH*	pH Units	6.6	6.4	5.9	5.9	6.5

Sample Name:	S3pH6	Composite of S3C01a, S3C01b & S3C01c	Composite of S3C02a, S3C02b & S3C02c	Composite of S3C03a, S3C03b & S3C03c	Composite of S3C04a, S3C04b & S3C04c
	29-Jan-2026				
Lab Number:	4086111.213	4086111.214	4086111.215	4086111.216	4086111.217

Individual Tests						
Dry Matter	g/100g as rcvd	-	73	73	72	74
pH*	pH Units	6.4	-	-	-	-

Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	-	3	3	3	2
Total Recoverable Cadmium	mg/kg dry wt	-	0.13	0.37	0.36	0.46
Total Recoverable Chromium	mg/kg dry wt	-	120	191	187	128
Total Recoverable Copper	mg/kg dry wt	-	32	70	57	78
Total Recoverable Lead	mg/kg dry wt	-	8.7	6.4	5.9	4.1
Total Recoverable Nickel	mg/kg dry wt	-	23	23	22	21
Total Recoverable Zinc	mg/kg dry wt	-	27	47	43	57

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
alpha-BHC	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
beta-BHC	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
delta-BHC	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
cis-Chlordane	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
trans-Chlordane	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
2,4'-DDD	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
4,4'-DDD	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
2,4'-DDE	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
4,4'-DDE	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
2,4'-DDT	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
4,4'-DDT	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Total DDT Isomers	mg/kg dry wt	-	< 0.08	< 0.09	< 0.09	< 0.08
Dieldrin	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Endosulfan I	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Endosulfan II	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Endosulfan sulphate	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Endrin	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Endrin aldehyde	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014
Endrin ketone	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014	< 0.014



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**Sample Type: Soil**

<b>Sample Name:</b>	S3pH6 29-Jan-2026	Composite of S3C01a, S3C01b & S3C01c	Composite of S3C02a, S3C02b & S3C02c	Composite of S3C03a, S3C03b & S3C03c	Composite of S3C04a, S3C04b & S3C04c
<b>Lab Number:</b>	4086111.213	4086111.214	4086111.215	4086111.216	4086111.217
Organochlorine Pesticides Screening in Soil					
Heptachlor	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014
Heptachlor epoxide	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014
Hexachlorobenzene	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014
Methoxychlor	mg/kg dry wt	-	< 0.014	< 0.014	< 0.014

<b>Sample Name:</b>	Composite of S3C05a, S3C05b & S3C05c	Composite of S3C06a, S3C06b & S3C06c	Composite of S3C07a, S3C07b & S3C07c	Composite of S3C08a, S3C08b & S3C08c	Composite of S3C09a, S3C09b & S3C09c
<b>Lab Number:</b>	4086111.218	4086111.219	4086111.220	4086111.221	4086111.222

Individual Tests						
Dry Matter	g/100g as rcvd	74	73	72	75	72
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	< 2	2	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.46	0.45	0.31	0.48	0.28
Total Recoverable Chromium	mg/kg dry wt	181	181	138	139	130
Total Recoverable Copper	mg/kg dry wt	78	90	72	74	49
Total Recoverable Lead	mg/kg dry wt	4.0	4.3	6.7	5.2	8.8
Total Recoverable Nickel	mg/kg dry wt	26	35	25	31	24
Total Recoverable Zinc	mg/kg dry wt	52	52	43	59	46

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.09	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Endosulfan I	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.013	< 0.014

<b>Sample Name:</b>	Composite of S3C10a, S3C10b & S3C10c	Composite of S3C11a, S3C11b & S3C11c	Composite of S3C12a, S3C12b & S3C12c	Composite of S3C13a, S3C13b & S3C13c	Composite of S3C14a, S3C14b & S3C14c
<b>Lab Number:</b>	4086111.223	4086111.224	4086111.225	4086111.226	4086111.227

Individual Tests						
Dry Matter	g/100g as rcvd	71	71	70	73	73
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	< 2	< 2	< 2	2
Total Recoverable Cadmium	mg/kg dry wt	0.26	0.33	0.41	0.42	0.45
Total Recoverable Chromium	mg/kg dry wt	151	139	128	150	156

**Sample Type: Soil**

<b>Sample Name:</b>	Composite of S3C10a, S3C10b & S3C10c	Composite of S3C11a, S3C11b & S3C11c	Composite of S3C12a, S3C12b & S3C12c	Composite of S3C13a, S3C13b & S3C13c	Composite of S3C14a, S3C14b & S3C14c
<b>Lab Number:</b>	4086111.223	4086111.224	4086111.225	4086111.226	4086111.227

Heavy Metals, Screen Level						
Total Recoverable Copper	mg/kg dry wt	57	48	72	104	86
Total Recoverable Lead	mg/kg dry wt	6.4	5.3	4.9	4.9	4.7
Total Recoverable Nickel	mg/kg dry wt	28	23	24	26	29
Total Recoverable Zinc	mg/kg dry wt	34	29	48	59	46

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014

<b>Sample Name:</b>	Composite of S3C15a, S3C15b & S3C15c	Composite of S3C16a, S3C16b & S3C16c	Composite of S3C17a, S3C17b & S3C17c	Composite of S3C18a, S3C18b & S3C18c	Composite of S3C19a, S3C19b & S3C19c
<b>Lab Number:</b>	4086111.228	4086111.229	4086111.230	4086111.231	4086111.232

Individual Tests						
Dry Matter	g/100g as rcvd	73	72	67	72	72

Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	2	4	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.42	0.28	0.19	0.41	0.44
Total Recoverable Chromium	mg/kg dry wt	173	240	95	104	144
Total Recoverable Copper	mg/kg dry wt	96	45	26	66	109
Total Recoverable Lead	mg/kg dry wt	4.7	5.6	6.3	5.8	4.7
Total Recoverable Nickel	mg/kg dry wt	31	24	20	25	31
Total Recoverable Zinc	mg/kg dry wt	52	28	29	41	65

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014

**Sample Type: Soil**

<b>Sample Name:</b>	Composite of S3C15a, S3C15b & S3C15c	Composite of S3C16a, S3C16b & S3C16c	Composite of S3C17a, S3C17b & S3C17c	Composite of S3C18a, S3C18b & S3C18c	Composite of S3C19a, S3C19b & S3C19c
<b>Lab Number:</b>	4086111.228	4086111.229	4086111.230	4086111.231	4086111.232

Organochlorine Pesticides Screening in Soil						
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.09
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.015	< 0.014	< 0.014

<b>Sample Name:</b>	Composite of S3C20a, S3C20b & S3C20c	Composite of S3C21a, S3C21b & S3C21c	Composite of S3C22a, S3C22b & S3C22c	Composite of S3C23a, S3C23b & S3C23c	Composite of S3C24a, S3C24b & S3C24c
<b>Lab Number:</b>	4086111.233	4086111.234	4086111.235	4086111.236	4086111.237

Individual Tests						
Dry Matter	g/100g as rcvd	74	76	75	73	70
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	2	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.52	0.56	0.35	0.39	0.26
Total Recoverable Chromium	mg/kg dry wt	165	140	153	142	119
Total Recoverable Copper	mg/kg dry wt	72	90	77	69	48
Total Recoverable Lead	mg/kg dry wt	5.3	6.2	8.0	9.3	7.3
Total Recoverable Nickel	mg/kg dry wt	34	30	34	26	23
Total Recoverable Zinc	mg/kg dry wt	39	56	48	54	41

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.08	< 0.08	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.015

**Sample Type: Soil**

<b>Sample Name:</b>	Composite of S3C20a, S3C20b & S3C20c	Composite of S3C21a, S3C21b & S3C21c	Composite of S3C22a, S3C22b & S3C22c	Composite of S3C23a, S3C23b & S3C23c	Composite of S3C24a, S3C24b & S3C24c
<b>Lab Number:</b>	4086111.233	4086111.234	4086111.235	4086111.236	4086111.237
Organochlorine Pesticides Screening in Soil					
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.015
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.015

<b>Sample Name:</b>	Composite of S3C25a, S3C25b & S3C25c	Composite of S3C26a, S3C26b & S3C26c	Composite of S3C27a, S3C27b & S3C27c	Composite of S3C28a, S3C28b & S3C28c	Composite of S3C29a, S3C29b & S3C29c
<b>Lab Number:</b>	4086111.238	4086111.239	4086111.240	4086111.241	4086111.242

Individual Tests						
Dry Matter	g/100g as rcvd	77	72	73	74	70

Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	2	< 2	< 2	< 2
Total Recoverable Cadmium	mg/kg dry wt	0.30	0.44	0.57	0.42	0.26
Total Recoverable Chromium	mg/kg dry wt	146	145	128	108	112
Total Recoverable Copper	mg/kg dry wt	73	64	92	71	83
Total Recoverable Lead	mg/kg dry wt	5.2	6.1	3.8	4.9	4.2
Total Recoverable Nickel	mg/kg dry wt	33	34	29	28	26
Total Recoverable Zinc	mg/kg dry wt	46	45	53	45	41

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
alpha-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
beta-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
delta-BHC	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.09	< 0.09	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Endosulfan I	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Endosulfan II	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Endrin	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Endrin ketone	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Heptachlor	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015
Methoxychlor	mg/kg dry wt	< 0.013	< 0.014	< 0.014	< 0.014	< 0.015

<b>Sample Name:</b>	Composite of S3C30a, S3C30b & S3C30c	Composite of S3C31a, S3C31b & S3C31c	Composite of S3C32a, S3C32b & S3C32c	Composite of S3C33a, S3C33b & S3C33c	Composite of S3C34a, S3C34b & S3C34c
<b>Lab Number:</b>	4086111.243	4086111.244	4086111.245	4086111.246	4086111.247

Individual Tests						
Dry Matter	g/100g as rcvd	74	73	74	72	75

Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	4	4	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.42	0.21	0.41	0.26	0.23
Total Recoverable Chromium	mg/kg dry wt	175	173	164	136	131
Total Recoverable Copper	mg/kg dry wt	36	44	71	36	34
Total Recoverable Lead	mg/kg dry wt	9.4	9.7	10.6	10.8	8.2

**Sample Type: Soil**

<b>Sample Name:</b>		Composite of S3C30a, S3C30b & S3C30c	Composite of S3C31a, S3C31b & S3C31c	Composite of S3C32a, S3C32b & S3C32c	Composite of S3C33a, S3C33b & S3C33c	Composite of S3C34a, S3C34b & S3C34c
<b>Lab Number:</b>		4086111.243	4086111.244	4086111.245	4086111.246	4086111.247
Heavy Metals, Screen Level						
Total Recoverable Nickel	mg/kg dry wt	24	23	23	21	21
Total Recoverable Zinc	mg/kg dry wt	28	29	47	26	34
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.09	< 0.09	< 0.09	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.013

<b>Sample Name:</b>		Composite of S3C35a, S3C35b & S3C35c	Composite of S3C36a, S3C36b & S3C36c	Composite of S3C37a, S3C37b & S3C37c	Composite of S3C38a, S3C38b & S3C38c	Composite of S3C39a, S3C39b & S3C39c
<b>Lab Number:</b>		4086111.248	4086111.249	4086111.250	4086111.251	4086111.252

Individual Tests						
Dry Matter	g/100g as rcvd	76	74	76	75	75
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	3	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.35	0.39	0.23	0.26	0.29
Total Recoverable Chromium	mg/kg dry wt	142	164	151	175	194
Total Recoverable Copper	mg/kg dry wt	65	55	27	52	43
Total Recoverable Lead	mg/kg dry wt	8.0	8.9	9.3	8.7	7.0
Total Recoverable Nickel	mg/kg dry wt	25	24	18	21	26
Total Recoverable Zinc	mg/kg dry wt	45	41	21	33	31
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013

**Sample Type: Soil**

<b>Sample Name:</b>	Composite of S3C35a, S3C35b & S3C35c	Composite of S3C36a, S3C36b & S3C36c	Composite of S3C37a, S3C37b & S3C37c	Composite of S3C38a, S3C38b & S3C38c	Composite of S3C39a, S3C39b & S3C39c
<b>Lab Number:</b>	4086111.248	4086111.249	4086111.250	4086111.251	4086111.252

Organochlorine Pesticides Screening in Soil						
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	< 0.013

<b>Sample Name:</b>	Composite of S3C40a, S3C40b & S3C40c	Composite of S3C41a, S3C41b & S3C41c	Composite of S3C42a, S3C42b & S3C42c	Composite of S3C43a, S3C43b & S3C43c	Composite of S3C44a, S3C44b & S3C44c
<b>Lab Number:</b>	4086111.253	4086111.254	4086111.255	4086111.256	4086111.257

Individual Tests						
Dry Matter	g/100g as rcvd	74	72	72	70	71
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	4	3	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.32	0.50	0.39	0.34	0.29
Total Recoverable Chromium	mg/kg dry wt	156	131	153	150	170
Total Recoverable Copper	mg/kg dry wt	63	70	54	50	40
Total Recoverable Lead	mg/kg dry wt	9.0	6.7	8.6	7.4	8.5
Total Recoverable Nickel	mg/kg dry wt	27	28	27	23	22
Total Recoverable Zinc	mg/kg dry wt	39	49	35	40	28

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.09	< 0.09	< 0.09
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.014	< 0.014	< 0.014

**Sample Type: Soil**

<b>Sample Name:</b>	Composite of S3C45a, S3C45b & S3C45c	Composite of S3C46a, S3C46b & S3C46c	Composite of S3C47a, S3C47b & S3C47c	Composite of S3C48a, S3C48b & S3C48c	Composite of S3C49a, S3C49b & S3C49c
<b>Lab Number:</b>	4086111.258	4086111.259	4086111.260	4086111.261	4086111.262

Individual Tests						
Dry Matter	g/100g as rcvd	72	72	76	78	74
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	4	2	2
Total Recoverable Cadmium	mg/kg dry wt	0.28	0.30	0.37	0.39	0.36
Total Recoverable Chromium	mg/kg dry wt	191	170	111	143	128
Total Recoverable Copper	mg/kg dry wt	39	41	54	52	57
Total Recoverable Lead	mg/kg dry wt	7.3	6.5	11.7	8.1	7.0
Total Recoverable Nickel	mg/kg dry wt	20	26	18	22	24
Total Recoverable Zinc	mg/kg dry wt	31	29	57	30	40

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.09	< 0.09	< 0.08	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.013	< 0.014

<b>Sample Name:</b>	Composite of S3C50a, S3C50b & S3C50c	Composite of S3C51a, S3C51b & S3C51c	Composite of S3C52a, S3C52b & S3C52c	Composite of S3C53a, S3C53b & S3C53c	Composite of S3C54a, S3C54b & S3C54c
<b>Lab Number:</b>	4086111.263	4086111.264	4086111.265	4086111.266	4086111.267

Individual Tests						
Dry Matter	g/100g as rcvd	77	79	75	74	73
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	< 2	2	2	2
Total Recoverable Cadmium	mg/kg dry wt	0.32	0.36	0.41	0.40	0.47
Total Recoverable Chromium	mg/kg dry wt	138	146	139	150	159
Total Recoverable Copper	mg/kg dry wt	43	53	70	72	72
Total Recoverable Lead	mg/kg dry wt	7.7	7.8	8.2	6.6	6.5
Total Recoverable Nickel	mg/kg dry wt	26	29	24	29	27
Total Recoverable Zinc	mg/kg dry wt	20	30	50	47	40

Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
alpha-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
beta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
delta-BHC	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014

**Sample Type: Soil**

<b>Sample Name:</b>		Composite of S3C50a, S3C50b & S3C50c	Composite of S3C51a, S3C51b & S3C51c	Composite of S3C52a, S3C52b & S3C52c	Composite of S3C53a, S3C53b & S3C53c	Composite of S3C54a, S3C54b & S3C54c
<b>Lab Number:</b>		4086111.263	4086111.264	4086111.265	4086111.266	4086111.267
Organochlorine Pesticides Screening in Soil						
gamma-BHC (Lindane)	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
cis-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
trans-Chlordane	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
2,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
4,4'-DDD	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
2,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
4,4'-DDE	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
2,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
4,4'-DDT	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.09
Dieldrin	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Endosulfan I	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Endosulfan II	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Endosulfan sulphate	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Endrin	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Endrin aldehyde	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Endrin ketone	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Heptachlor	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Heptachlor epoxide	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Hexachlorobenzene	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014
Methoxychlor	mg/kg dry wt	< 0.013	< 0.013	< 0.014	< 0.013	< 0.014

<b>Sample Name:</b>		Composite of S3C55a, S3C55b & S3C55c	Composite of S3C56a, S3C56b & S3C56c	Composite of S3C57a, S3C57b & S3C57c	Composite of S3C58a, S3C58b & S3C58c	Composite of S3C59a, S3C59b & S3C59c
<b>Lab Number:</b>		4086111.268	4086111.269	4086111.270	4086111.271	4086111.272
Individual Tests						
Dry Matter	g/100g as rcvd	75	77	74	74	77
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	3	3	2	2	3
Total Recoverable Cadmium	mg/kg dry wt	0.24	0.31	0.35	0.36	0.32
Total Recoverable Chromium	mg/kg dry wt	153	158	151	127	147
Total Recoverable Copper	mg/kg dry wt	46	51	47	57	82
Total Recoverable Lead	mg/kg dry wt	7.0	9.4	8.4	9.2	8.7
Total Recoverable Nickel	mg/kg dry wt	30	24	20	24	26
Total Recoverable Zinc	mg/kg dry wt	23	41	39	45	32
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
alpha-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
beta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
delta-BHC	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	< 0.08
Dieldrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endosulfan I	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endosulfan II	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013

Sample Type: Soil						
Sample Name:		Composite of S3C55a, S3C55b & S3C55c	Composite of S3C56a, S3C56b & S3C56c	Composite of S3C57a, S3C57b & S3C57c	Composite of S3C58a, S3C58b & S3C58c	Composite of S3C59a, S3C59b & S3C59c
Lab Number:		4086111.268	4086111.269	4086111.270	4086111.271	4086111.272
Organochlorine Pesticides Screening in Soil						
Endrin	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Endrin ketone	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Heptachlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Methoxychlor	mg/kg dry wt	< 0.014	< 0.013	< 0.014	< 0.014	< 0.013
Sample Name:		Composite of S3C60a, S3C60b & S3C60c	Composite of S3C61a, S3C61b & S3C61c	Composite of S3C62a, S3C62b & S3C62c	Composite of S3C63a, S3C63b & S3C63c	Composite of S3QC1a, S3QC1b & S3QC1c
Lab Number:		4086111.273	4086111.274	4086111.275	4086111.276	4086111.277
Individual Tests						
Dry Matter	g/100g as rcvd	74	75	76	76	-
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	2	2	2	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.30	0.30	0.27	0.27	0.15
Total Recoverable Chromium	mg/kg dry wt	149	129	136	141	113
Total Recoverable Copper	mg/kg dry wt	47	38	43	46	30
Total Recoverable Lead	mg/kg dry wt	9.1	7.7	8.8	9.2	8.2
Total Recoverable Nickel	mg/kg dry wt	18	16	19	18	22
Total Recoverable Zinc	mg/kg dry wt	37	25	32	39	26
Organochlorine Pesticides Screening in Soil						
Aldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
alpha-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
beta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
delta-BHC	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
gamma-BHC (Lindane)	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
cis-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
trans-Chlordane	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
2,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
4,4'-DDD	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
2,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
4,4'-DDE	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
2,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
4,4'-DDT	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Total DDT Isomers	mg/kg dry wt	< 0.08	< 0.08	< 0.08	< 0.08	-
Dieldrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Endosulfan I	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Endosulfan II	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Endosulfan sulphate	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Endrin	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Endrin aldehyde	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Endrin ketone	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Heptachlor	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Heptachlor epoxide	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Hexachlorobenzene	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Methoxychlor	mg/kg dry wt	< 0.014	< 0.014	< 0.013	< 0.014	-
Sample Name:		Composite of S3QC2a, S3QC2b & S3QC2c	Composite of S3QC3a, S3QC3b & S3QC3c	Composite of S3QC4a, S3QC4b & S3QC4c	Composite of S3QC5a, S3QC5b & S3QC5c	Composite of S3QC6a, S3QC6b & S3QC6c
Lab Number:		4086111.278	4086111.279	4086111.280	4086111.281	4086111.282

Sample Type: Soil						
Sample Name:	Composite of S3QC2a, S3QC2b & S3QC2c	Composite of S3QC3a, S3QC3b & S3QC3c	Composite of S3QC4a, S3QC4b & S3QC4c	Composite of S3QC5a, S3QC5b & S3QC5c	Composite of S3QC6a, S3QC6b & S3QC6c	
Lab Number:	4086111.278	4086111.279	4086111.280	4086111.281	4086111.282	
Heavy Metals, Screen Level						
Total Recoverable Arsenic	mg/kg dry wt	< 2	3	3	3	3
Total Recoverable Cadmium	mg/kg dry wt	0.41	0.44	0.27	0.33	0.25
Total Recoverable Chromium	mg/kg dry wt	144	175	180	156	154
Total Recoverable Copper	mg/kg dry wt	90	46	46	55	43
Total Recoverable Lead	mg/kg dry wt	5.1	7.5	6.6	9.6	7.2
Total Recoverable Nickel	mg/kg dry wt	29	26	23	26	33
Total Recoverable Zinc	mg/kg dry wt	57	33	30	42	22

## Summary of Methods

The following table(s) gives a brief description of the methods used to conduct the analyses for this job. The detection limits given below are those attainable in a relatively simple matrix. Detection limits may be higher for individual samples should insufficient sample be available, or if the matrix requires that dilutions be performed during analysis. A detection limit range indicates the lowest and highest detection limits in the associated suite of analytes. A full listing of compounds and detection limits are available from the laboratory upon request. Unless otherwise indicated, analyses were performed at Hill Labs, 28 Duke Street, Frankton, Hamilton 3204.

Sample Type: Soil			
Test	Method Description	Default Detection Limit	Sample No
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%.	-	208-213
Environmental Solids Sample Drying*	Air dried at 35°C Used for sample preparation. May contain a residual moisture content of 2-5%. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed).	-	214-282
Soil Prep Dry & Sieve for Agriculture	Air dried at 35°C and sieved, <2mm fraction.	-	208-213
Heavy Metals, Screen Level	Dried sample, < 2mm fraction. Nitric/Hydrochloric acid digestion. Complies with NES Regulations. ICP-MS screen level, interference removal by Kinetic Energy Discrimination if required. US EPA 200.2 (modified), APHA 3125 B: Online Edition.	0.10 - 4 mg/kg dry wt	214-282
Organochlorine Pesticides Screening in Soil	Sonication extraction, GC-ECD analysis. Tested on as received sample. In-house based on US EPA 8081.	0.010 - 0.06 mg/kg dry wt	214-276
Dry Matter	Dried at 103°C for 4-22hr (removes 3-5% more water than air dry) , gravimetry. (Free water removed before analysis, non-soil objects such as sticks, leaves, grass and stones also removed). US EPA 3550.	0.10 g/100g as rcvd	214-276
Composite Environmental Solid Samples*	Individual sample fractions mixed together to form a composite fraction.	-	1-207
pH*	1:2 (v/v) soil : water slurry followed by potentiometric determination of pH. In-house.	0.1 pH Units	208-213

These samples were collected by yourselves (or your agent) and analysed as received at the laboratory.

Testing was completed between 30-Jan-2026 and 10-Feb-2026. For completion dates of individual analyses please contact the laboratory.

Samples are held at the laboratory after reporting for a length of time based on the stability of the samples and analytes being tested (considering any preservation used), and the storage space available. Once the storage period is completed, the samples are discarded unless otherwise agreed with the customer. Extended storage times may incur additional charges.

This certificate of analysis must not be reproduced, except in full, without the written consent of the signatory.



Kim Harrison MSc  
Client Services Manager - Environmental



## STATEMENT OF QUALIFICATION

I Edward John Collings of Geologix Consulting Engineers Ltd certify that:

1. This combined Preliminary and Detailed Site Investigation meets the requirements of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011 (the NES:CS) because it has been:
  - a. Prepared and certified by a suitably qualified and experienced practitioner registered under the Certified Environmental Practitioner Scheme (Registration Number 0861) and Engineering New Zealand Chartered Professional Engineer (Registration Number 1033153).
  - b. The SQEP has over 18 years post graduate experiencing practicing as an environmental consultant with a tertiary education qualification equivalent to a Master of Science with supporting evidence from Engineering New Zealand that the Consultant has equivalent knowledge to Washington Accord equivalence.
  - c. Reported on in accordance with the current edition of Contaminated Land Management Guidelines No. 1 – Reporting on contaminated sites in New Zealand, 2021.
2. This investigation concludes that:
  - a. For subdivision and soil disturbance activities (if any) under Regulation 9 of the NES:CS the soil contamination does not exceed the applicable standard in Regulation 7 of the Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations.

Evidence of qualifications and experience of the suitably qualified and experienced practitioner is available below.

Signed:

Dated: 18 February 2026



Role	Name	Relevant Experience
<b>Project Manager</b>	<b>Ray Mayor</b> Unitec New Zealand, 2010, Bachelor of Engineering (Environmental) Unitec New Zealand, 2007, Diploma in Environmental Technology	Ray is a Senior Environmental Consultant with more than 17 years' experience on contaminated sites. His project experience includes conducting site assessments, compliance monitoring, managing environmental risk and remediation across numerous sites including residential, industrial and commercial developments as well as New Zealand Defence Force sites.
<b>Senior Technical Reviewer</b>	<b>Edward Collings</b> MPhys (Hons) Physical Geography Certified Environmental Practitioner Chartered Professional Engineer	Edward is a Principal Engineer and Managing Director with more than 18 years' experience on geotechnical design and contaminated land remediation on a variety of residential, commercial and critical infrastructure projects in the UK and New Zealand. Edward attained recognition as a Certified Environmental Practitioner in 2016 in Australia and New Zealand with specialist knowledge in contaminated land and groundwater remediation and wastewater design. In recent years Edward has provided professional engineering assessments for prospective candidates to the scheme.