Far North District Council

Office Use Only
Application Number:

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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
- O Fast Track Land Use*
- (✓) Subdivision
- O Discharge
- O Extension of time (s.125)
- O Change of conditions (s.127)
- O Change of Consent Notice (s.221(3))
- O Consent under National Environmental Standard (e.g. Assessing and Managing Contaminants in Soil)
- O Other (please specify) _____

***The fast track for simple land use consents is restricted to consents with a controlled activity status and requires you provide an electronic address for service.**

3. Would you like to opt out of the Fast Track Process?

Yes / (No)

4. Applicant Details:

Name/s: Kainga Ora c/- THOON

Electronic Address for Service (E-mail): [redacted]

Phone Numbers: [redacted]

Postal Address: (*or* alternative method of service under section 352 of the Act) [redacted]

Post Code: 0405

5. Address for Correspondence: *Name and address for service and correspondence (if using an Agent write their details here).*

Name/s: Hamish Anderson, Chester Consultants Ltd

Electronic Address for Service (E-mail): [redacted]

Phone Numbers: [redacted]

Postal Address: (*or* alternative method of service under section 352 of the Act) [redacted]

Post Code: 0627

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

6. **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: THOON, Kainga Ora

Property Address/: Location: Bisset Rd, 10 Rimu Place

7. **Application Site Details:**

Location and/or Property Street Address of the proposed activity:

Site Address/ Location: Bisset Rd
10 Rimu Place

Legal Description: Various, refer AEE Val Number:

Certificate of Title: various, refer AEE

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.

8. **Description of the Proposal:**

Please enter a brief description of the proposal here. Attach a detailed description of the proposed activity and drawings (to a recognized scale, e.g. 1:100) to illustrate your proposal. Please refer to Chapter 4 of the District Plan, and Guidance Notes, for further details of information requirements.

90 unit residential development with associated earthworks & servicing. Fee simple subdivision will follow. Refer to ~~Updated~~ AEE attached.

If this is an application for an Extension of Time (s.125); Change of Consent Conditions (s.127) or 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) or extension being sought, with reasons for requesting them.

9. **Would you like to request Public Notification** Yes/No

10. Other Consent required/being applied for under different legislation (more than one circle can be ticked):

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

11. 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 (further information in regard to this NES is available on the Council's planning web pages):

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? (If the activity is any of the activities listed below, then you need to tick the 'yes' circle). ☑ yes ○ no ○ don't know

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

12. 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.

Please attach your AEE to this application.

13. 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 all names in full) THOON c/- Steve Sanson

Email: [redacted]

Postal Address: [redacted]

Post Code: 0405

Phone Numbers: [redacted] Fax: [redacted]

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

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

Name: Steven Sanson (please print)

Signature: [redacted] (signature of bill payer – **mandatory**) Date: 05.06.2024

14. Important Information:

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

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

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

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

Name: Steven Sanson (please print)

Signature: [redacted] (signature) Date: 05.06.2024

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

Checklist (please tick if information is provided)

- ○ Payment (cheques payable to Far North District Council)
- ✓ A current Certificate of Title (Search Copy not more than 6 months old)
- ✓ 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.

Only one copy of an application is required, but please note for copying and scanning purposes, documentation should be:

UNBOUND **SINGLE SIDED** **NO LARGER THAN A3 in SIZE**

Assessment of Environmental Effects

Bisset Road and 5, 6, 7, 8 and 10 Rimu Place and Taraire 1M, Kaikohe
Proposed Residential Development

Job No.: 15443

Rev: 0 Date: 5 July 2024

Prepared For:

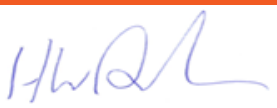
Kāinga Ora – Homes and Communities
PO Box 74598,
Greenlane,
Auckland 1546
New Zealand

CHESTER

Revision History

Revision No	Description/comments	Prepared By	Date
0	Original	H. Anderson	

Document Control

Action	Name	Signed	Date
Prepared by	H. Anderson Planning Team Leader		05/07/2024
Reviewed by	T. Robins Senior Planner		05/07/2024

Distribution

Business/company	Attention	Role

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4	Wetland Summary Memo	Wild Ecology	26/06/2024
5	Traffic Assessment	Engineering Outcomes	03/07/2024
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12	Objectives & Policies Assessment	Chester Consultants	04/07/2024
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1 Introduction

This application seeks land use and use and subdivision consent from the Far North District Council to erect 90 residential units, with associated earthworks, roading and infrastructure and undertake a freehold subdivision, of the properties at Bisset Road and 5, 6, 7, 8 and 10 Rimu Place and Taraire 1M, Kaikohe. Resource consent is required as a Non-Complying activity under the Far North District Council District Plan.

This application also seeks regional consent from the Northland Regional Council for undertaking earthworks near and within an identified natural wetland. Resource consent is required as a Discretionary activity.

Consent is also sought under the National Environmental Standard for Freshwater (2020) (NES-FW) for earthworks and stormwater due to the proximity to the wetland and watercourse.

Section 88 of the Resource Management Act 1991 ('the RMA') sets out the particular requirements for persons making an application to a local authority for a resource consent. Section 88(2)(b) states that:

> "*an application must be made in the prescribed form and manner; and include, in accordance with Schedule 4 of the Act, an assessment of environmental effects in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment*".

The following assessment is made in accordance with these requirements.

Overall, it is concluded that the effects on the environment of the proposal will be less than minor, subject to appropriate conditions of consent.

The proposal is not in any way contrary to the relevant objectives and policies of the Operative Far North District Plan, the Proposed Far North District Plan, the Northland Regional Plan, the National Policy Statement for Freshwater 2020 or any other statutory document; in fact, the proposal supports many of the relevant objectives and policies.

No persons are considered adversely affected by the proposal to an extent which is minor or more than minor.

It is considered that the proposal is consistent with Part 2 of the Resource Management Act.

It is therefore considered that the application may be processed on a non-notified basis and consent from both the Far North District Council and Northland Regional Council may be granted subject to appropriate conditions.

2 Subject Site

2.1 Subject Site Details

Address	Bisset Road and 5, 6, 7, 8 and 10 Rimu Place and Taraire 1M, Kaikohe
Legal Description	Taraire 1M Block (NA268/22) Part Taraire No 1A Block and Lot 1-2 Deposited Plan 363959 (RT - 260166) Section 85 Blk XV Omapere SD (RT – NA49C/136) Section 86 Blk XV Omapere SD (RT – NA56D/1037; NA56D/1038) Section 87 Blk XV Omapere SD (NA49C/138) Allot 88-89 Blk XV Omapere SD, Sec 88 Blk XV Omapere SD (NA59B/900; NA59B/901; NA59B/902)
Property Area	6.1 hectares
Regional Authority	Northland Regional Council
Territorial Authority	Far North District Council

3 Site and Surrounding Environment

3.1 Site Description

The application site is known as Part Taraire 1A Block, Taraire 1M Block, Lot 1 DP 363959 (Bisset Road) and 5, 6, 7, 8 and 10 Rimu Place, Kaikohe and measures 6.1 hectares in area. The corresponding Records of Title are attached as Appendix 1 and the site is identified in Figure 1 below.

The site is located at the north end of Kaikohe at the immediate edge of the existing residential development. The majority of the site is currently predominantly rural in appearance and is devoid of buildings. The exception is the property at 10 Rimu Place which is an existing residential site occupied by a single storey dwelling and ancillary building. Those buildings would be removed as part of the overall development of the site.

The majority of the site is pasture with a slight slope down from south to north.

Freshwater habitats within the site and immediate surrounds include a permanent stream habitat meandering along the site's north-western boundary, being identified as Mangamutu Stream, a small pond area and a wetland area.

To the north, northeast and west of the site are rural properties, to the southeast is residential and to the south is the Kaikohe Care Centre Rest Home and Dementia Unit and Hospital. It is noted that THOON own the adjoining property to the northeast of the site.

As shown in Figure 2, below, the site is located within the Residential Zone in the Far North District Council's District Plan (Operative District Plan). The surrounding area, to the west, south and east are also zoned Residential and the land to the north and northeast is zoned Rural Production.

Figure 2: Site Location (Source: FNDC GIS)

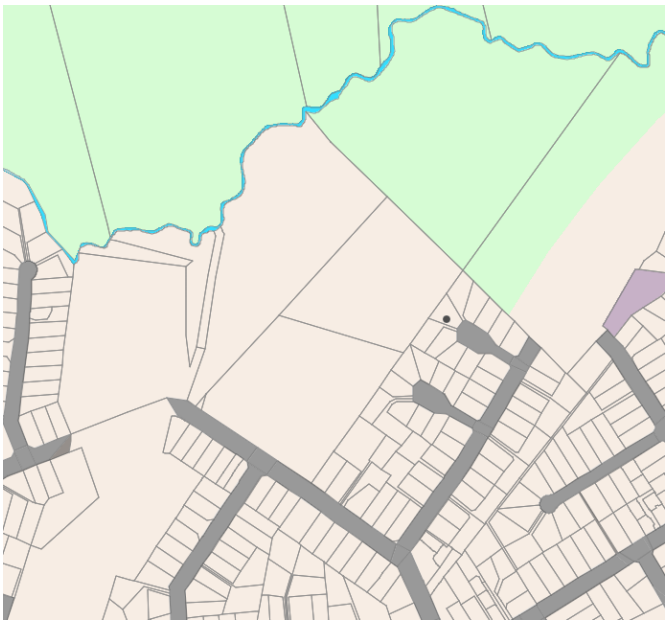

Figure 1: Operative District Plan zoning. (Source: FNDC GIS)

The site is zoned as General Residential under the Proposed Far North District Plan, as shown in Figure 3 below.

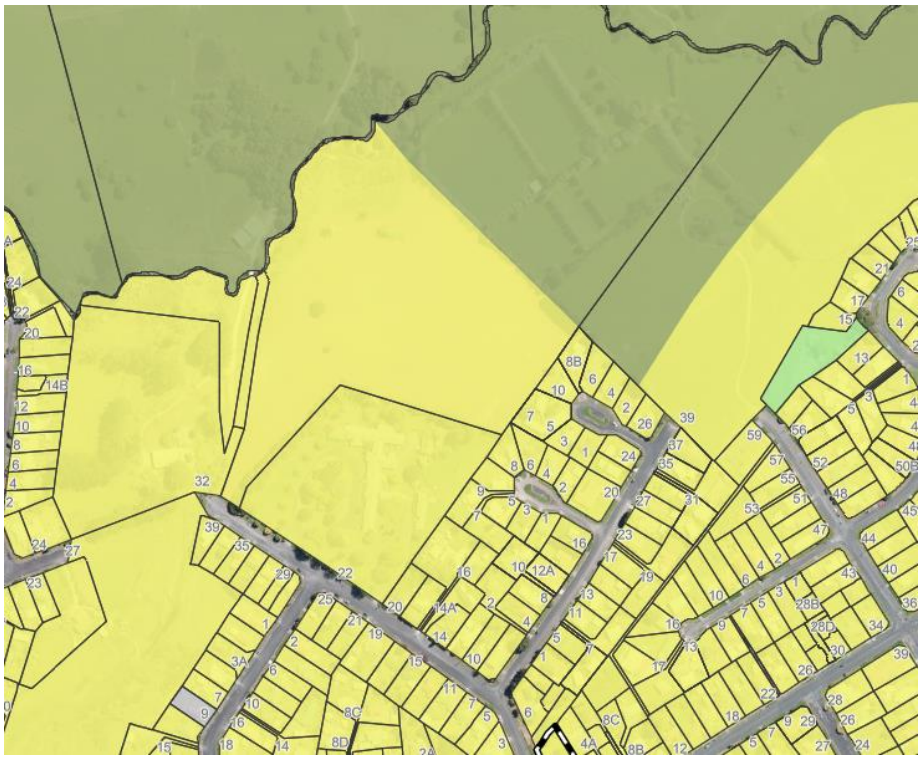

Figure 3: Proposed District Plan zoning. Source: FNDC GIS

The subject site has areas at the northern end (as shown in Figure 4 below) that are identified as subject to flooding.

Figure 4: Flooding. Source: FNDC GIS

3.2 Surrounding Environment

To the north, northeast and west of the site are rural properties, to the southeast is residential and to the south is the Kaikohe Care Centre Rest Home and Dementia Unit and Hospital. The site is on the northern periphery of the Kaikohe township in close proximity to childcare, schools, a grocery store and recreational activities.

4 Background

The site has been laid out and designed by a number of consultants with input from both Te Hau Ora O Ngāpuhi (THOON) and Kāinga Ora. Architects, Young and Richards, have prepared an Urban Design Statement (attached as Appendix 10) that outlines the rationale behind the layout and development of the site.

5 Proposal

5.1 Description of the Proposal

The applicants propose to redevelop the site by undertaking:

- earthworks to create building platforms, stormwater infrastructure and roading infrastructure
- construction of 90 residential units
- installation of services [power, telecoms, wastewater, water, stormwater]
- construction of a stormwater detention pond

The development will comprise a number of residential typologies (refer Appendix 9 for the floor plans and elevations of the proposed typologies and where they will be located on the site). In short, they will comprise:

- 20 * 1 bed single storey dwellings
- 13 * 2 bed single storey dwellings
- 14 * 2 bed two storey dwellings
- 13 * 3 bed single storey dwellings
- 16 * 3 bed two storey dwellings
- 14 * 4 bed two storey dwellings

The site plan and elevations are included as Appendix 9 and Figure 2, below, shows the general layout of the site.

Figure 5: Site Layout (Source: Young and Richards)

Earthworks will amount to a volume of 18,780m^3 over an area of 56,641m^2 and will comprise the following:

Location	Area (m^2)	Cut (m^3)	Fill (m^3)
Within 10m Offset of Existing Wetland	700	-1	+273
Within 10m Offset of Stream	610	-26	+510
Within 1%AEP Flood Extent	687	-26	+435
Total Site	56641	-9414	+9366

It is anticipated that the development will be undertaken in stages with a total time of not more than 3 years to complete [per stage]. Figure 6, below, outlines the anticipated stages for the development. Of note is that Stage 1 (access off the Bisset Road and including the western portion of the stie) will include the stormwater pond and Road 1.

Figure 6: Development Staging Plan (Source: Chester Consultants)

Following the completion of the development, the applicant will undertake a fee simple subdivision to create individual lots for all units (refer to Appendix 2 for the scheme plan) on a staged basis. In addition to the above, access will also be created from Rimu Place [at Stage 2]. To provide for that access, several of the sections on Rimu Place will undergo a boundary adjustment to create legal road width. Note that those sites will continue to have legal access to Rimu Road and will continue to meet the bulk and location standards of the Far North District Plan. All properties subject to the boundary adjustment are owned by Kainga Ora.

A 20 wide esplanade strip is proposed along the majority of the Mangamutu Stream, as it passes through the site. It is acknowledged that the width is less than 20m for a stretch, however, that is unavoidable given the location of the stormwater pond, in this instance that is considered to be acceptable. Whilst the full 20m is achievable within the northern part of the site, the reduction is necessary to protect the stormwater pond. It is noted that the north area of the site will not be built on and there will be no encumbrance to people walking around that area of the site.

Given the works required under the proposed stages, the applicants seek a 10-year lapse period for this application.

6 Consultation

During the development of the design for the site a number of parties have been consulted. Consultation was held with:

- Kaikohe Care Centre Rest Home and Dementia Unit and Hospital
    - This meeting was held via zoom and the following changes have been made following the comments received:
        - The proposal has been reduced from 100 to 90 residential units.
        - The proposal has changed typologies along the boundary to only include single level dwellings.
        - Whilst outside of the consent process, there is general agreement to work with the owner on landscaping matters that affect both sites [i.e trimming / cutting of trees and new landscape treatment across this frontage].
- Ngāpuhi Hapu:
    - At time of lodgement the proposal will have been circulated with local hapu for their comment. They will provide their comment [if any] to the development. As the proposal has been developed in partnership with THOON [a subsidiary of Te Runanga a Iwi o Ngāpuhi] there are little concerns from this perspective.

7 Statutory Context

7.1 Far North District Council Operative District Plan

Under the Operative District Plan the site is zoned Residential, with River Flood Hazard Zone (100 Year ARI Event) and River Flood Hazard Zone (10 Year ARI Event), as shown in Figure 4 above.

Under the Operative District Plan, resource consent is required for the following reasons:

Urban Environment

- To develop the residential dwellings, as the buildings will not meet the permitted or restricted discretionary standards for Residential Intensity, Sunlight and Transportation, they are considered a non-complying activity pursuant to Rule 7.6.5.4(c).

Natural and Physical Resources

- To undertake general earthworks of 18,780m^3, as the earthworks are greater than 500m^3 in the Residential zone, therefore do not comply with Rule 12.3.6.2.2(a) and are considered a discretionary activity under Rule 12.3.6.3.

- To undertake general earthworks that will have a cut and fill face that exceeds 1.5m in height in the Residential zone, therefore do not comply with Rule 12.3.6.2.2(b) and are considered a discretionary activity under Rule 12.3.6.3.

- To establish buildings within 30m of the natural wetland is considered a discretionary activity under Rule 12.7.6.3.

Subdivision

- The subject site is not currently sewered therefore the lot sizes do not meet minimum stipulated in table 13.7.2.1 (v) and are considered a non-complying activity.

7.2 Far North Proposed District Plan

The Far North District Council notified the Far North Proposed District Plan (FNPDP) on 27 July 2022. Whilst the majority of rules in the FNPDP will not have legal effect until such time as the FNDC publicly notifies its decisions on submissions, there are certain rules that have been identified in the PDP as having immediate legal effect and that may therefore need to be addressed in this application and may affect the category of activity under the Act. These fall under sites subject to:

- Hazardous substances;
- Heritage Area Overlays;
- Notable Trees;
- Sites and Areas of Significance to Maori;
- Indigenous Biodiversity;
- Activities on the Surface of Water;
- Earthworks;
- Signs; and
- Specific Subdivisions.

Under the Proposed District Plan the site is zoned General Residential and all relevant provisions with legal effect will be complied with as shown in the rules assessment (Appendix 11).

7.3 Proposed Regional Plan for Northland 2024

- Controlled activity for land preparation pursuant to Rule C.8.2.2 as the land preparation will be undertaken within 10m of a natural wetland.
- Discretionary activity pursuant to Rule C.8.3.2 as the earthworks will be undertaken within 10m of a natural wetland.
- Controlled activity pursuant to Rule C.8.3.3 as the earthworks will exceed 100m^3 (but not more than 1000m^3) in a flood hazard area.

7.4 National Environmental Standard for Freshwater (2020)

The wetland survey conducted at the site by Wild Ecology (refer to Appendix 4) identified a natural wetland in the north corner of the site and within 100m of the development footprint. This wetland is considered natural under the NES – FM framework.

Under the NES-FW resource consent is required for the following reasons:

- Restricted Discretionary activity pursuant to Regulation 45C(1) Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a restricted discretionary activity if it is for the purpose of constructing urban development.

- Restricted Discretionary activity pursuant to Regulation 45C(2) Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a restricted discretionary activity if it is for the purpose of constructing urban development.

For these reasons, the proposal is considered a restricted discretionary activity under NES-FW Regulation 54(c)-(d).

7.5 NES - Contaminants in Soil 2011

The subject sites have no historic record of being subject to HAIL activities and a review of the historic aerial photographs has not indicated that there is any site that has been subject to a HAIL activity. As such, this development is not considered as a piece of land as described in NES-S Regulation 5 (7)-(9).

7.6 Overall Status

The overall activity status of this application is Non-Complying.

7.7 Resource Management Act 1991- s95-95E and s104-104B

In terms of notification considerations in sections 95A-95E of the Act the following matters are noted:

i. public notification is not requested by the applicant

ii. there are no special circumstances necessitating public notification

As a non-complying activity, the provisions in sections 104 and 104B direct the substantive determination of applications and the following sections of this AEE have regard to the relevant provisions referred to therein.

8 Assessment of Environmental Effects

8.1 Ecology

Given the location of the wetland and the proximity of earthworks and stormwater discharge an ecological assessment was undertaken by Wild Ecology (attached as Appendix 4). The following is a summary of the assessment and recommendations.

Currently, the majority of the site is dominated by exotic pasture and exotic scrubland, with some isolated indigenous trees dotted throughout the pasture areas. No habitat on-site or the immediate surrounds has been identified as a Protected Natural Area (PNA) or a proposed Significant Ecological Area (SEA).

A small open water feature (i.e. stock pond which had been established within what is a likely historic wetland feature) and a wetland feature is present within the site's north-western aspect seeping in a northerly direction and discharging into Mangamutu Stream roughly at the site's north-western boundary. A riverine wetland feature also encompasses the lower lying Mangamutu Stream margins which extend along the site's northern aspect.

To give effect to NPS-FM and NES-FW, Wild Ecology recommended that all infrastructure including stormwater retention and attenuation ponds and any associated outlets are located fully outside of the identified natural inland wetland areas (W1-W3) to avoid partial or complete drainage of the wetland feature. It is deemed that the site contains sufficient land area for stormwater retention and attenuation ponds and associated outfall to be located outside the identified natural inland wetland areas on site, and ideally outside a 10m setback from the wetland areas. This has been accounted for in the Civil Plans.

It is recommended that the natural inland wetland areas identified on site are enhanced through appropriate revegetation planting, weed control and protected in perpetuity as part of any site development proposal. The protection mechanism offered is to seek the vesting of the land containing the wetlands as a drainage reserve to the Far North District Council.

The assessment and recommendations of the ecological assessment are adopted, and it is considered any adverse effect on the wetland will be less than minor.

8.2 Character and Amenity

The Resource Management Act 1991 (RMA) defines amenity values as those natural or physical qualities and characteristics of an area that contribute to people's appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes. The surrounding lawfully established physical environment provides a useful context in terms of evaluating character and amenity effects of the proposal on the existing environment.

The following activities are proposed as part of this application which have the potential to effect residential character and amenity:

- A large volume of earthworks will be undertaken over a large area of land to create the roads, infrastructure and building platforms.
- 90 new dwellings will be erected on a site that is currently vacant and with a rural appearance.
- The new roads to vest will create an increase in impervious area and built development within the landscape.
- The new road will have streetlights that will provide illumination at night where previously there was darkness.

Whilst the site has a rural appearance, that appearance was anticipated to transform to residential given the underlying residential zoning. The density of the proposed development will be larger than permitted under the Zoning but, given the dwellings will be either single or two storey with generous separation distances, the proposal dwellings will be a design, colour and construction commensurate with that expected for the General Residential Zone.

In the site layout, the existing environment, as experienced by the properties along Rimu Place has been acknowledged with the lower density sites abutting that boundary and the more intensive development further to the north at the lower relief of the site. The development will be visible from adjacent sites, and sites further to the north and northwest, however, there are limited viewing angles into the site from existing public areas, ie nearby roads, and the full extent of the development is unlikely to be visible from the public realm.

The site development will be out of character with the existing character of the area as it will comprise a more intense scale of development. However, the proposed development represents an increase in housing capacity, intensity and choice in a manner which is in keeping with the neighbourhood's planned built character. The underlying built character, in any event represented along Kauri and Rimu Place, is that of the 1980's. In 2024, land development economics make development to that existing density challenging, particularly in provincial townships such as Kaikohe.

The number of houses proposed also roughly aligns with the requirements associated with the Infrastructure Accelerator Fund which is outlined in Appendix 13.

The site has been laid out so that the more intensive aspects are toward the northern end of the site and will be separated from existing development to the south by proposed lower density development. The intensity of the development near the south boundary (300m^2) per site will be more akin to the existing

development along Rimu Place and the residential streets to the south. Those sites nearest that south boundary will be elevated above the northern part of the site and the dwellings on those sites will soften the view further into the subject site.

The development and landscape plans (attached as Appendices 8 and 9 respectively) demonstrate the appearance of the development when viewed from the south. The building design and landscape planting will lend to an attractive appearance when viewed from the street.

The proposal will have complying building and impermeable surfaces. The extent of the built form and impermeable coverage are shown in the development and landscape plans (Appendices 8 and 9). Those plans demonstrate planting at the front, the periphery, and within the sites and clearly show this be an efficient utilisation of the overall site.

The site is considered an ideal location for increased density for the reasons above. It has good access to both Kaikohe West and Kaikohe Intermediate Schools approximately 500m to the south of the site. The main township of Kaikohe is a short drive away with various service offerings and civic buildings and institutions.

For the aforementioned reasons, it is considered that any neighbourhood character and residential amenity effects will be less than minor and acceptable.

8.3 Urban design

The development consists of a number of design typologies comprising 2-, 3- and 4-bedroom dwellings that are either single or two storey. This range of typology will provide for a variety of household compositions and diversity amongst the residents.

The roading network has been designed so that the roads are straight and there are no cul-de sacs (it is noted that there are 5 JOALs. This will enable efficient flow of traffic and pedestrian movement through the neighbourhood with associated interaction of residents.

Streetlights and lighting within the reserves will be in accordance with accepted codes of practice.

All sites have been designed for the dwellings to be located and orientated to receive maximum sunlight to both indoor and outdoor living areas. In addition, the layout has been designed so that proposed dwellings will not dominate or shade the outdoor or indoor living areas of other dwellings within the development or adjacent sites.

The landscape planting (attached as Appendix 8) is suitable for an urban situation and trees selected will be of a suitable size. The selected planting species will reflect common species with the Northland Region.

The proposal meets CPTED principles with: clear and wide pedestrian spaces alongside the roads and into and through reserve areas; fencing types that demarcate between public and private space whist providing surveillance; living space windows that overlook both the street and the internal shared spaces; and a high-quality environment through material use and vegetation.

Whilst there will be retaining walls adjacent to the reserve area at the north of the site, those walls have been kept as low as possible to avoid dominance of the reserve. It is noted that the walls are to the south of that reserve area and will not cause shading. The proposal was considered by Kainga Ora in-house urban designers as acceptable.

For the above reasons, it is considered that the development has been appropriately designed and responds well to the location and the surrounding environment.

8.4 Site servicing effects

Potential future wastewater and stormwater discharges as well as provisions for water and vehicle access to the sites have been assessed by Chester Consultants (refer to Appendix 6).

In summary, the Engineering Report concludes:

Water Supply

The site is located within a reticulated water supply area, an extension of the fire main and reticulated network is proposed to ensure each lot to have a public service connection. New hydrants are proposed to provide sufficient coverage.

It is understood that a wider network upgrade is underway, and we recommend a consent condition to be included to ensure that the proposed development shall not be connected to the public network until the wider network upgrade work has been completed.

Fire Fighting

The site is zoned Residential and there is no reticulated water supply network available. As such, at source firefighting water supply solutions need to be utilized. As such, it is proposed to reticulate the subdivision and install new fire hydrants within the proposed development to provide sufficient firefighting water supply coverage.

Stormwater

The existing site is not reticulated. An existing natural watercourse flows from west to east is located north of the site.

It is proposed to construct a wetland and a new reticulated stormwater system to provide stormwater management for the proposed development. The entirety of the primary network flow and majority of the secondary network flow will be captured by the proposed wetland.

The reasons for choosing a constructed wetland over 'at source' management options such as attenuation tanks and rain gardens are:

- The topography of the site naturally provides a logical location for the constructed wetland.
- Rain gardens in the road reserve means more regular and scattered maintenance works for FNDC.
- Kāinga Ora have policies against having attenuation tanks and pumps attached to the social housing units, to reduce the level of maintenance required.
- Having less above ground components makes the site tidy and more user-friendly.

It is also proposed to feed treated stormwater from the constructed wetland into the existing wetland in a controlled manner, to keep the existing natural wetland water level to its pre-development status.

Best practical stormwater management approach has been considered to ensure effects on the stormwater network and downstream receiving environments are less than minor.

Wastewater

The site is connected to the reticulated system, however there is not sufficient capacity within the existing network to cater for the development. The reticulated network is anticipated to be upgraded, and will be capable of servicing the development, by the time that the first dwellings in Stage 1 are complete. The applicant is fully aware that, should there be slippage in the timeframes for that upgrade, the dwellings will not be able to be inhabited.

It is important to note that it is in the best interests of both this development and the IAF to align completion of the development (i.e. the demand) with the IAF upgrades (i.e. capacity) as close as practical. This is to ensure there is not underutilised infrastructure spend and that the housing needs of Kaikohe are met as soon as possible.

We propose that this is achieved by issuing consent with a consent notice condition like the following:

Advice Note:

The FNDC advises that due to constraints with the wastewater network servicing Kaikohe, approval to connect additional sites and / or dwellings to the wastewater system may not be provided for some years. Until such time that wastewater servicing meeting the relevant standards is in place, the issue of a s224(c) certificate for the sites will not be possible or alternatively issued subject to the following consent notice condition.

Prior to the issuance of a Code of Compliance Certificate for any building work relying on connection to the public wastewater system the written approval from councils Asset Manager shall be obtained and provided confirming that the council wastewater system can service the site.

Telecommunications & Electricity

The surrounding sites have existing connections from either Bisset Road or Rimu Place. The subject sites will connect into this local network.

Site servicing conclusion

With regard serving, I rely on the professional advice of Chester Consultants and conclude that the proposed development will be able to be adequately serviced. For the aforementioned reasons, potential adverse effects in this regard are de minimis.

8.5 Earthworks & Land Stability

The following earthworks will be required to be undertaken:

- A cut volume of approximately 9297m^3 and a fill volume of approximately 9562m^3 is anticipated over an area of approximately 56,419m^2.
- The maximum cut of 4.5m would be located on the west end of the site to construct the wetland.

The works will be required to be undertaken within 10m of a natural wetland. The nearest of the works will be for the stormwater treatment and storage pond in the north corner. In addition, a recontouring of the slope up to Road 1 will be required.

Whilst the scale of earthworks will be large, given the level of development that is proposed, they are not considered excessive on this site. For the majority of the site, the earthworks will largely be limited to a scraping of the surface to create the building platforms and the associated access parking and manoeuvring space.

Toward the north of the site, a combination of cut and fill will be required to create a northern section of the internal road. Those works will be supported by a retaining wall that will be geotechnically designed to support the surcharge of the road.

The location of the walls is shown on the Retaining Wall Plan in the Civil Plan set contained in Appendix 7.

The proposed development has been informed by a geotechnical report (attached as Appendix 3). That report considers that the proposed site development is suitable for this site and makes recommendations regarding the proposed works. The geotech report also provides recommendations associated with land stability matters [i.e foundations]. Provided these recommendations are adhered to there are no known geotechnical effects arising.

Potential impacts on sedimentation and dust nuisance will be controlled by an Erosion and Sediment Control Plan which will be prepared in accordance with both FNDC and NRC requirements and publications. In terms of any noise or disturbance effects during the earthworks process, truck movements are not anticipated to be significant – given that they will be for a temporary period only and spread over

the period of construction. Both of these matters can be engrained within an overall Construction Management Plan for the site, taking into consideration the proposed staging and management of construction effects.

In respect of visual amenity, the earthworks will not be highly visible from the street or surrounds and in time they will be covered by buildings, the access, and landscaped areas.

Based on the above assessment, it is considered that the earthworks associated with the proposal will have less than minor and acceptable effects.

8.6 Traffic and Access Effects

There will be vehicular movement associated with the development of the site. These movements can be managed through the proposed Construction Management Plan.

Vehicles will utilise the Bisset Road access to the site to limit the vehicle movement along the already established Rimu Place.

The site has road frontage to Bisset Road to the southwest and Rimu Place to the southeast. The entire development will consist of the construction and vesting of four (4) public roads, and the construction of five (5) jointly owned access lots (JOALS) to provide access to all proposed units as per the FNDC engineering standards. It is proposed to remove the existing dwelling at 10 Rimu Place and join the proposed public road to Rimu Place. Following the completion of the development there will be increased numbers of vehicle movement to and from the site to both Bisset Road and Rimu Place. Given that the site is zoned for residential development, a greater level of traffic than currently exists is anticipated.

To address traffic, Engineering Outcomes have prepared a Traffic Assessment (attached as Appendix 5). That traffic assessment has identified that the majority of the traffic movement from the development will be to Bisset Road rather than Rimu Place. The following comments were made in regards non-compliance with District Plan Transport Standards:

Traffic Intensity

> *The proposal will not enable traffic generation at levels above those anticipated by the proposed district plan for subdivision at the controlled activity density, which is 600 sq.m lots for sewered sites. Assuming 70% of the controlled activity density can be achieved when accounting for the effects of access, other services, unsuitable land and lot configuration, the district plan will enable some seventy lots in a conventional subdivision, for which the TIF is 700 movements per day.*

Road Width

> *It is acknowledged that the internal site accesses, plus part of Rimu Place, are narrower than the council standard. However, recent research has found that the "social cost" of crashes, when standardised by vehicle-kilometres travelled, is similar for roads in both width ranges. It is also generally acknowledged that narrower roads moderate speeds and, conversely, wider roads encourage higher speeds. It is not known what speed limit the council will set for the roads to vest, but the speed limit is not likely to have as much influence as the road width in any event.*
>
> *The first 30 metres of Rimu Place has a carriageway only 6.0 metres wide and a legal corridor only 12.0 metres wide with a footpath on only one side (its southern side). The carriageway is a suitable width for the reasons already given. Electricity is the only service that will be delivered to the site through Rimu*

Place and that is already underground, so there will not be any challenges associated with services in the corridor of that road.

Parking

The proposed rate of parking spaces, including those on streets, is slightly more than 2.0 parking spaces per dwelling unit and will be more than sufficient. In fact, the provision of some public spaces is more efficient than the provision of all spaces on private sites.

For these reasons, any adverse effect from vehicle movement and access will be less than minor.

8.7 Flooding

The site has identified watercourses and overland flow paths and is subject to flooding. Chester Consultants (report attached as Appendix 6) have addressed the potential flooding on the site. The site is located within the Kaikohe catchment and drains into the Mangamutu Stream. The stream drains from north to southeast and merges with Kopenui Stream and becomes the Wairoro Stream. The development site is not subjected to coastal inundation flooding but is subjected to flooding from overflows of the Mangamutu Stream.

There is an overland flow path (OLFP) that is generated from Hillcrest Road and flows down through the gully formation towards the cul de sac at the end of Bisset Road before draining into the Mangamutu Stream immediately upstream of the site. There is also another OLFP further west that flows northeast towards Omapere Road before flowing through an assumed culvert under Omapere Road and drains into Mangamutu Stream downstream.

To assess the flooding risk posed to the development site and determine effective measures to manage the risk, Chester Consultants completed flood modelling to estimate the flood levels and the extent of the overflow from the Mangamutu Stream during the 1% AEP rainfall event (MPD + CC) looking at both pre and post development scenarios.

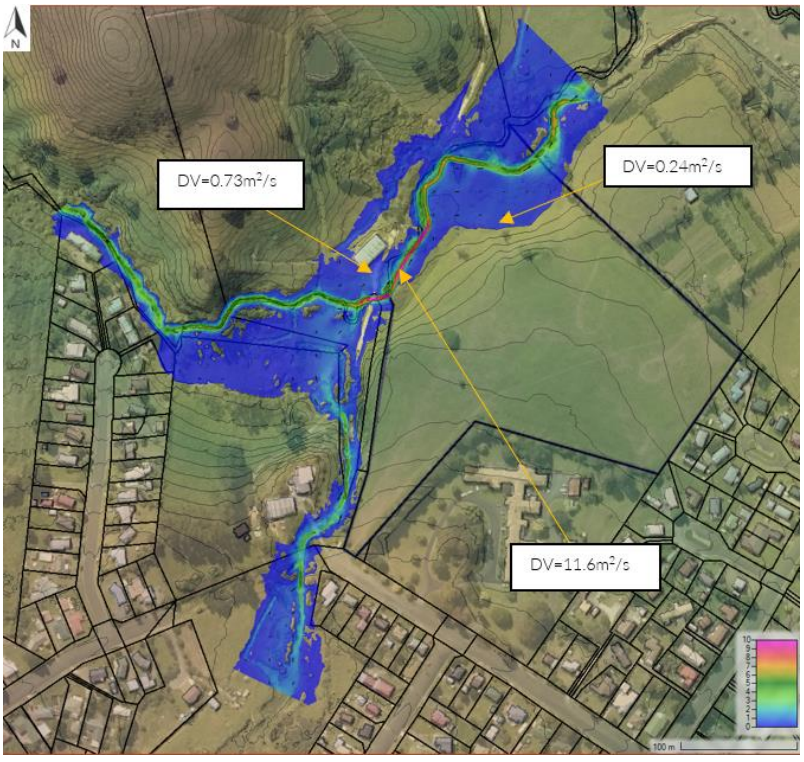

Figure 7: 1% AEP (MPD + CC) maximum flood depth x velocity from the pre-development model

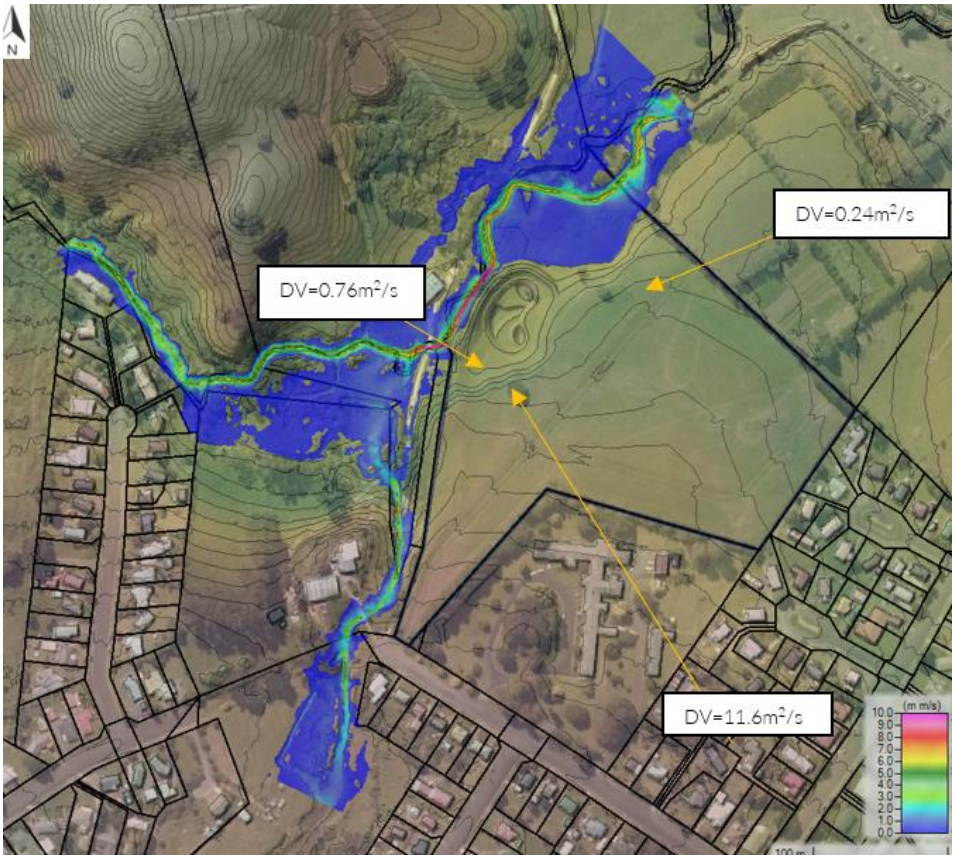

Figure 8: 1% AEP (MPD + CC) maximum flood depth x velocity from the post-development model

Based on the post-development model, it is estimated that the OLFP will act in similar manner as the pre-development scenario with the flood extent remaining unchanged except in the area adjacent to the proposed wetland, where the proposed wetland embankment acts as a barrier to allow flood waters into the development site along its length.

There is a minor difference between the maximum flood depth and maximum velocity between the pre- and post-development scenario model. Overall, there is less than minor change to the flood hazard on-site or in the neighbouring properties.

The entry and exit points of the flooding do not change and based on the flood model results the proposed development is estimated to have less than minor effect on the flood hazard on the neighbouring properties as there is no difference in the floodplain extents. Therefore, we believe the required 0.5m freeboard will mitigate the flooding effects while keeping in line with the requirements of the Far North District Council.

Any surface runoff within the development area due to runoff directly on-site is to be managed adequately to prevent creating flood hazard on-site. Surface runoff on-site is to be managed in such a way that runoff is not allowed to be directed towards buildings, to pond on-site (unless specifically designed to do) or left to channelise uncontrollably.

The peak flood levels along the northern part of the development site are estimated to vary between RL 193.34m – 191.82m following the ground level change along Mangamutu Stream. The FNDC Engineering Standards require 0.5m minimum freeboard above the 1% AEP flood levels. To meet the minimum freeboard requirements, the proposed dwelling's FFL needs to be 0.5m above the adjacent 1% AEP flood levels, i.e. situated at RL 192.32 - 193.84m or higher. All proposed dwellings of the development project are well clear of the 1% AEP flood plain and above the required minimum FFLs.

As such, any adverse effects from flooding will be less than minor.

8.8 Subdivision

The individual residential allotments will measure between 173m^2 and 604m^2 and will therefore be less than the 600m^2 minimum for residentially zoned sites. However, for the reasons outlined above, the sites are considered usable for the proposed development.

The Land Development Report (attached as Appendix 6) demonstrates that the sites can be sufficiently serviced and the servicing is laid out in the Scheme Plan (attached as Appendix 2).

The proposed sites subject to the boundary adjustment are incorporated by consequence of the additional access proposed into the site. By undertaken the adjustment to those sites along Rimu Place, the overall development benefits from better access and thoroughfare options.

A 20m wide esplanade strip will be provided within the site alongside the watercourse. That strip will narrow to 10m at a pinch point adjacent to the stormwater pond.

It is proposed that the wetland and its surrounds be vested with Council. It is noted that Council have earlier expressed reservations with respect to the device being vested to council as a public asset. The reason for this is understood to be largely due to operation and maintenance responsibilities and on-going costs, particularly those associated with the wider land area. However, for the reasons outlined in Section 8.6 of the Land Development Report, it is our opinion that the proposal results in a public stormwater network including the drainage reserve that is fit for purpose and economical to operate and maintain particularly considering the scale of the catchment it serves. It is considered that it would be inappropriate for FNDC, in this instance, to not take ownership of the device.

For the aforementioned reasons, any adverse effect from the subdivision will be less than minor.

8.9 Positive Effects

New residential sites and communal recreation areas will be created which is a positive social and economic effect for future owners and occupiers, while adding to the housing provision in the wider Kaikohe area. In addition, the purpose-built stormwater pond and enhanced wetland will provide additional stormwater treatment for this site and immediately adjacent sites, such as the adjacent hospital and dementia unit.

8.10 Summary

Overall, it is considered that the proposal will have no more than minor adverse effects upon the surrounding environment.

9 Notification Assessment

9.1 Public Notification Assessment (s95A)

9.1.1 Step 1 - Mandatory in certain circumstances

The application does not meet any of the criteria under s95A(3), therefore public notification is not required by Step 1.

9.1.2 Step 2 - Precluded in certain circumstances

The application does not meet either of the criteria under s95A(5), therefore public notification is not precluded by Step 2.

9.1.3 Step 3 (Part 1) - Required by rule

The application does not require public notification under s95A(8), therefore Step 3 of the Public Notification assessment is to be continued below.

9.1.4 Step 3 (Part 2) - Effects on wider environment assessment (s95D)

In accordance with s95D, the application will not have and is not likely to have adverse effects on the environment that are more than minor, therefore public notification is not required by Step 3.

9.1.5 Step 4 - Special circumstances

It is considered that no special circumstances warranting public notification of the application exist, therefore public notification is not required by Step 4.

9.2 Limited Notification Assessment (s95B)

9.2.1 Step 1 - Certain affected groups and affected persons must be notified

No affected groups and/or affected persons have been identified in relation to the application (under s95B(2) and s95B(3)), therefore, no limited notification is required under Step 1.

In terms of the tests for limited notification the adjacent properties in proximity to the proposed development are shown below and are listed as:

- 5 Rimu Place
- 7 Rimu Place
- 8 Rimu Place
- 6 Kauri Place
- 8 Kauri Place
- 22 Bisset Road
- 32 Bisset Road

Given those sites are immediately adjacent to the subject site there are a number of generic matters with regard construction works that should be considered. Specific effects to those adjacent sites are considered further down.

The construction period is anticipated to be in the order of 3 years to complete all the dwellings in each stage (a 10 year lapse period is sought for the entire site build out). These works will be undertaken over three consecutive stages. That staging will mean that no one adjacent site will be immediately adjacent to development works for that entire duration.

The initial Stage 1 will be located at the western end of the site and will be removed from the majority of the adjacent sites.

The earthworks will be subject to a construction management plan and the plan will address the measures that will be undertaken to prevent adverse effects to adjacent sites. Measures such as dust suppression and informing contractors to be cognisant of the adjacent properties will be required. The construction management plan will require the contractors to inform the adjacent and nearby properties of specific high noise events. The neighbours will also be given the contact details of the site manager to voice any complaints.

In addition to the management plan, the applicants offer the following hours that works can take place on the site:

- Monday to Friday 7am until 6pm
- Saturday 10am until 5pm
- Sundays and public holidays no works

In addition to the above, adverse effects specific to those immediately adjacent sites are addressed below:

6 and 8 Kauri Place

The Rimu Place properties are all owned by Kainga Ora and written approval is inherent in the application.

22 Bisset Road

The property at 22 Bisset Road is occupied by the Kaikohe Care Centre Rest Home and Dementia Unit and Hospital. Cognisance of the location of the hospital has informed the design for that southwest part of the development. Whilst the development will be large, it will be well removed from the buildings and recreation areas on the Hospital site. In addition, a combination of boundary fencing and landscape planting will be undertaken along that boundary. Furthermore, the hospital buildings are single storey and the view to the site will be softened.

Care has been taken in the design to have only single storey dwellings along all boundaries of the site.

The proposed sites abutting the Hospital site are generally larger than others within the subject site, ie they range between 258m^2 and 600m^2.

As outlined above, THOON have been in contact with the owner of this site and whilst written approval is not forthcoming, changes to the overall scheme have been undertaken as a result of comments received.

For the aforementioned reasons, any adverse effect to the property at 22 Bisset Road will be less than minor.

32 Bisset Road

This property is located to the west of the subject site and is separated from it by an unformed section of Bisset Road. The dwelling on that site will be well removed from the nearest of the units on the subject site.

Whilst the built form and traffic movement will be visible from 32 Bisset Road, the intensity of the development of the site will be softened by the large open space areas on the northwest section of the subject site.

Any adverse effect to the property at 32 Bisset Road will be less than minor.

9.2.2 Step 2 - Precluded in certain circumstances

The application does not meet either of the criteria under s95B(6), therefore limited notification is not precluded by Step 2.

9.2.3 Step 3 - Affected persons assessment (s95E)

The application does not meet either of the criteria under s95B(7)-(8) and does not result in any persons considered to be affected persons in accordance with s95E, therefore limited notification is not required by Step 3.

9.2.4 Step 4 - Special circumstances

It is considered that no special circumstances warranting limited notification of the application exist, therefore no one else is to be notified under Step 4.

9.3 Notification Conclusion

The steps set out in s95A and s95B of the RMA were followed to determine whether public or limited notification is warranted for this application. Overall, it is considered that no circumstances warranting public or limited notification exist, therefore the application can be processed on a non-notified basis.

10 Section 104 Assessment

10.1 Actual, Potential and Positive Effects (s104(1)(a)-(ab))

The actual and potential effects of the proposal on the environment have been assessed to be less than minor in Appendix 12 of this report. The relevant statutory documents assessed, as follows:

- NPS – Freshwater 2020
- Far North District Council Operative District Plan Objectives and Policies
- Far North District Council Proposed District Plan Objectives and Policies
- Proposed Regional Plan for Northland Objectives and Policies

In summary, for the reasons set out in Appendix 12 otherwise having regard to the assessment of effects (including relevant assessment matters), the proposal is considered to be consistent with the relevant provisions of the relevant statutory documents listed above.

10.2 Non-complying Activities (s104D)

The proposal is a non-complying activity and therefore a determination in relation to the s104D Gateway test must be undertaken. Consent cannot be granted to a non-complying activity if the effects of the proposal on the environment are more than minor or if the proposal is contrary to relevant objectives and policies.

The assessment undertaken demonstrates that the actual adverse effects of the proposal on the environment are less than minor and the proposal is in keeping with the majority of the relevant objectives and policies of the relevant Plan. The proposal therefore passes both of the branches of the Gateway test and can be granted. The merits of the application can therefore be considered in relation to s104 and s104B.

All relevant matters that need to be considered for the s104 assessment have been addressed in the preceding sections of this report. There is no prohibition under s104D of the RMA on granting this non-complying activity proposal.

In accordance with an assessment under s104(1)(b) of the RMA, the proposal is consistent with the relevant statutory documents.

10.3 Other Matters

10.3.1 Mitigation Measures

Based on the assessment of effects in the previous section, no particular mitigation measures are considered necessary for this proposal.

10.3.2 Consideration of Alternatives

The preceding assessment of effects shows that the proposal will not have any significant adverse effects on the environment. Therefore, an assessment of alternatives is not required.

10.4 Conclusion

In summary, for the reasons set out in Appendix 12 and otherwise having regard to the assessment of effects (including relevant assessment matters), the proposal is considered to be consistent with the relevant provisions of the NES Freshwater, Northland Regional Plan and the FNDC District Plan (Operative and Proposed).

11 Other Relevant RMA Sections

11.1 Subdivision (s106)

Under s106 of the RMA, there are no grounds to refuse consent as:

- There is no significant risk from natural hazards and future development will be subject to the requirements of the geotechnical report, secured by conditions of consent. The geotechnical assessment included an assessment of the likelihood of the natural instability hazards occurring; the material damage that would result from natural hazards to the land where the consent is sought, other land, or structures; and any likely subsequent use of the land that would accelerate or worsen the damage predicted from a natural hazard.
- Sufficient provision has been made for legal and physical access as per the proposed scheme plan, Appendix 2.

Under s106, consent authority may grant this subdivision consent subject to conditions.

11.2 Part 2 (sections 5-8) Resource Management Act 1991

The relevant statutory documents are considered a valid, complete and certain planning documents and have already given substance to the principles in Part 2 of the RMA. They were prepared in a manner that reflects Part 2, therefore no further assessment against Part 2 matters are required for this application (*R J Davidson Family Trust v Marlborough District Council* [2018] NZCA 316).

Regardless, the proposed development is considered to recognise and provide for the relevant matters of Sections 6, 7 and 8 and to represent a sustainable management of the land resource and achieve the purpose of the RMA, as well as give substance to Part 2 of the RMA.

12 Conclusion

In conclusion, the proposal is consistent with the purpose and principles of the RMA in that it enables people to provide for their economic and social wellbeing, whilst maintaining and enhancing the quality and amenity of the local environment and avoiding adverse effects.

In terms of section 104, the proposal will be consistent with the relevant provisions of the Operative Far North District Plan, the Proposed Far North District Plan, the Northland Regional Plan and the National Policy Statement for Freshwater 2020 and will have actual or potential effects on the environment which are less than minor and consistent with the environmental outcomes envisaged by the relevant statutory planning framework.

Accordingly, it is concluded that the Council should grant consent to the activity on a non-notified basis in accordance with sections 104, 104B, 106 and Part 2 of the Act, subject to appropriate conditions.

13 Limitations

This assessment contains the professional opinion of Chester Consultants Ltd as to the matters set out herein, in light of the information available to it during the preparation, using its professional judgement and acting in accordance with the standard of care and skill normally exercised by consultants providing similar services in similar circumstances. No other express or implied warranty is made as to the professional advice contained in this report.

We have prepared this report in accordance with the brief as provided and our terms of engagement. The information contained in this report has been prepared by Chester Consultants Ltd at the request of Kāinga Ora and THOON and is exclusively for its Client's use and reliance. It is not possible to make a proper assessment of this assessment without a clear understanding of the terms of engagement under which it has been prepared, including the scope of the instructions and directions given to and the assumptions made by Chester Consultants Ltd. The assessment will not address issues that would need to be considered for another party if that party's particular circumstances, requirements, and experience were known and, further, may make assumptions about matters of which a third party is not aware. No responsibility or liability to any third party is accepted for any loss or damage whatsoever arising out of the use of or reliance on this assessment by any third party.

The assessment is also based on information that has been provided to Chester Consultants Ltd from other sources or by other parties. The assessment has been prepared strictly on the basis that the information that has been provided is accurate, completed, and adequate. To the extent that any information is inaccurate, incomplete, or inadequate, Chester Consultants Ltd takes no responsibility and disclaims all liability whatsoever for any loss or damage that results from any conclusions based on information that has been provided to Chester Consultants Ltd.

Appendix 1: Record of Title

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **260166**

Land Registration District **North Auckland**

Date Issued 30 May 2006

Prior References

NA1056/198 NA1159/25

Estate Fee Simple

Area 5.9311 hectares more or less

Legal Description Part Taraire No 1A Block and Lot 1-2
Deposited Plan 363959

Registered Owners

Te Hau Ora O Ngapuhi Limited

Interests

Subject to Section 59 Land Act 1948 (affects part formerly in CT 1159/25)

Subject to Section 8 Coal Mines Amendment Act 1950 (affects part formerly in CT 1159/25)

Subject to Section 241(2) Resource Management Act 1991 (affects DP 363959)

Title Diagram CT26016
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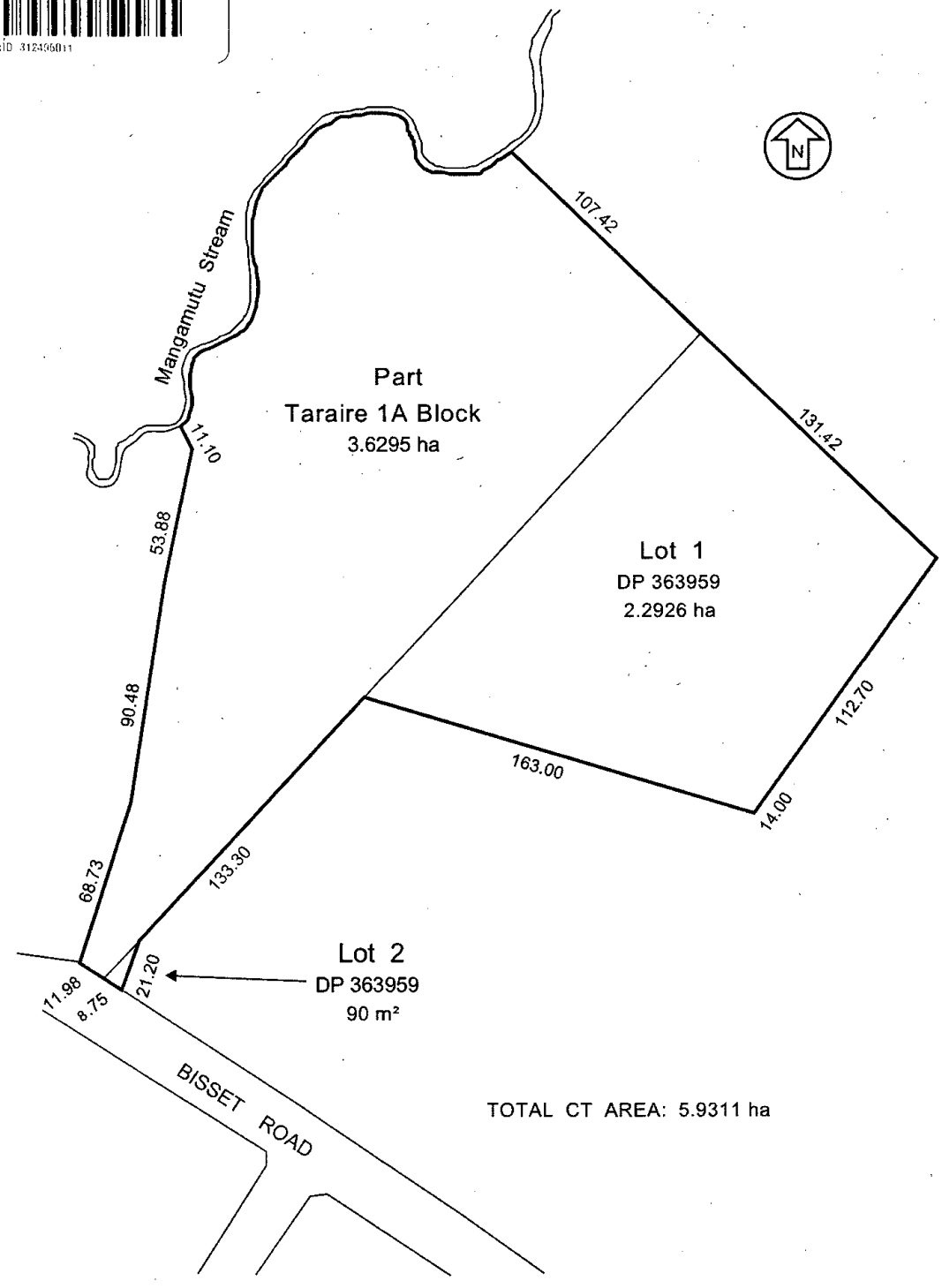
DocID 312496011

CT 260166
N7116



RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**NA49C/136**
Land Registration District	**North Auckland**
Date Issued	04 February 1981

Prior References
GN 823737.1

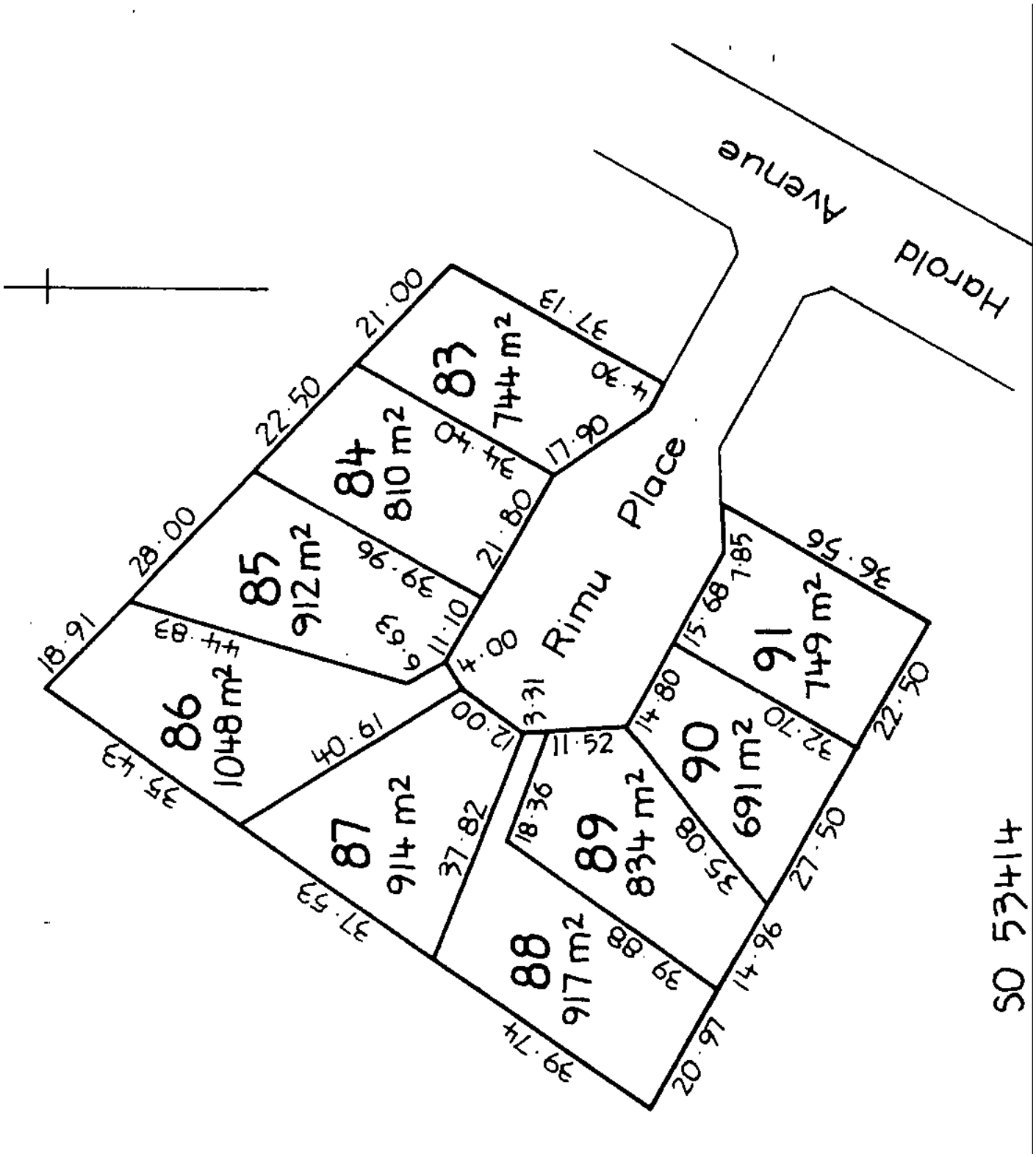
Estate	Fee Simple
Area	912 square metres more or less
Legal Description	Section 85 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991


Harold Avenue
Rimu Place
SO 57414
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834 m²
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691 m²
91
749 m²
21.00
37.13
22.50
34.34
17.90
28.00
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RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**NA49C/138**
Land Registration District	**North Auckland**
Date Issued	04 February 1981

Prior References
GN 823737.1

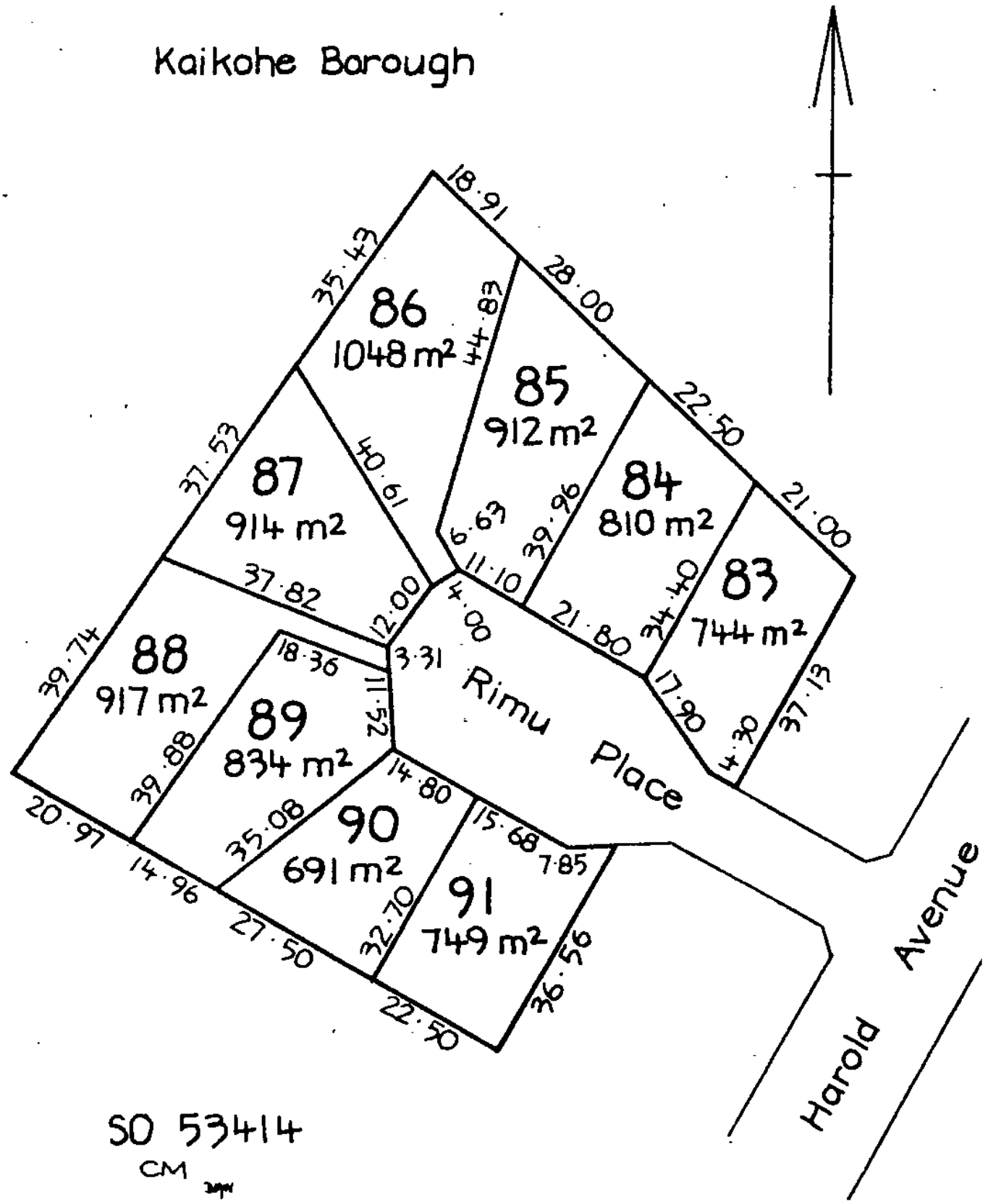
Estate	Fee Simple
Area	914 square metres more or less
Legal Description	Section 87 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991


Kaikohe Barough
86
1048 m²
85
912 m²
84
810 m²
83
744 m²
87
914 m2
88
917 m2
89
834 m²
90
691 m²
91
749 m²
Rimu Place
Harold Avenue
18·91
28·00
22·50
21·00
35·43
44·83
37·53
40·61
6·63
39·96
11·10
34·40
37·82
12·00
4·00
21·80
39·74
18·36
3·31
11·52
17·90
4·30
37·13
39·88
14·80
15·68
7·85
20·97
35·08
14·96
27·50
32·70
36·56
22·50
SO 53414
CM

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
CROSS LEASE

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**NA56D/1037**
Land Registration District	**North Auckland**
Date Issued	01 October 1984

Prior References
NA49C/137

Estate	Fee Simple - 1/2 share
Area	1048 square metres more or less
Legal Description	Section 86 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Estate	Leasehold	**Instrument**	L B334274.1
		Term	999 years commencing on the 1.10.1984
Legal Description	Flat 1 Deposited Plan 103202		

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

B334274.1 Lease of Flat 1 DP 103202 Term 999 years commencing on the 1.10.1984 Composite CT NA56D/1037 issued - 1.10.1984 (Affects Fee Simple)

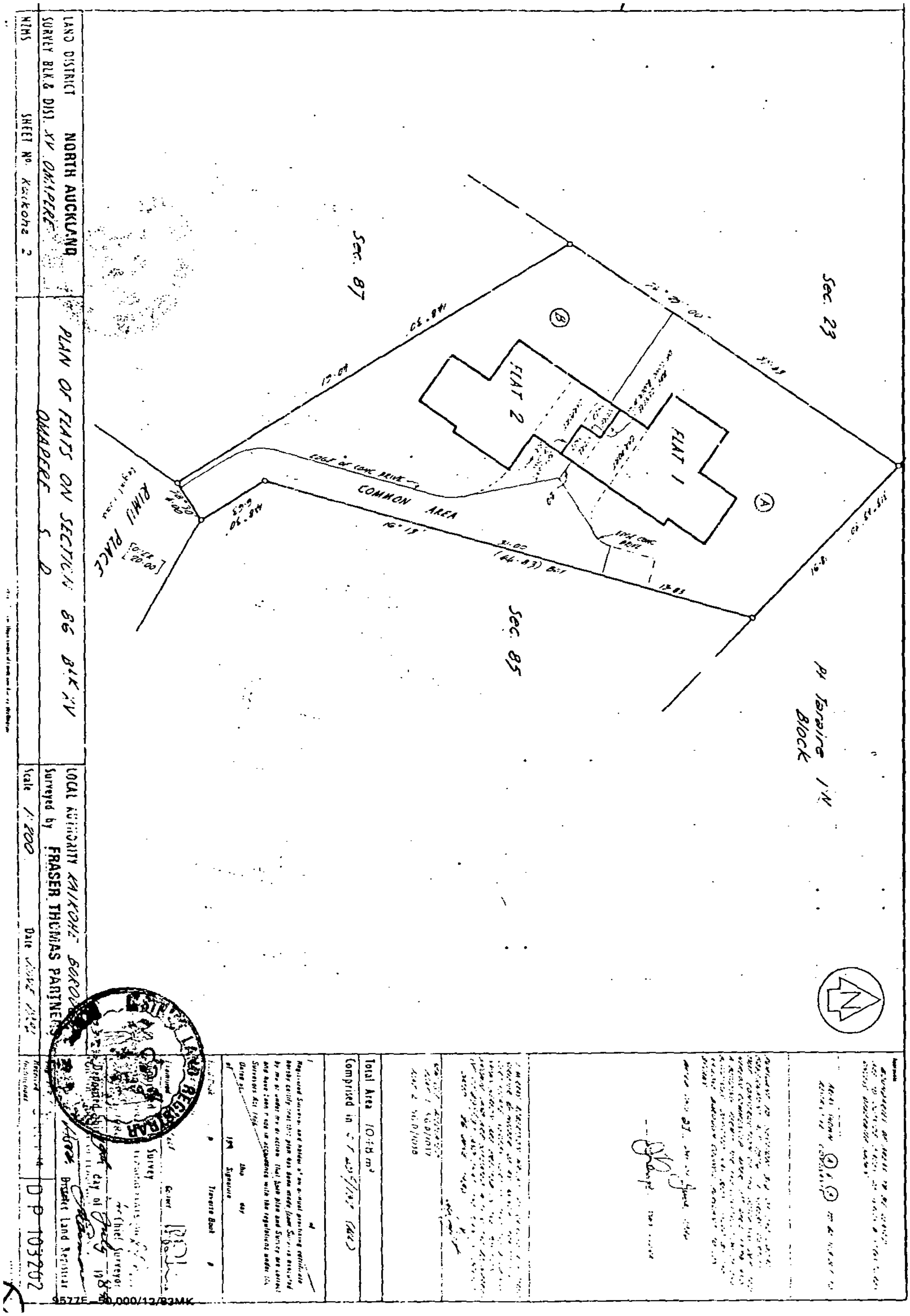
Land Covenant in Lease B334274.1 - 1.10.1984 (Affects Fee Simple)

B334274.2 Lease of Flat 2 Composite CT NA56D/1038 issued - 1.10.1984 (Affects Fee Simple)

Land Covenant in Lease B334274.2 - 1.10.1984 (Affects Fee Simple)

D183584.1 Variation of Lease B334274.1 - 18.8.1997 at 10.17 am

D183584.2 Variation of Lease B334274.2 - 18.8.1997 at 10.17 am (Affects Fee Simple)


LAND DISTRICT NORTH AUCKLAND
SURVEY BLK & DIST. XV OMAPERE
NZMS
SHEET No
PLAN OF FLATS ON SECTION 86 BLK XV
OMAPERE S D
LOCAL AUTHORITY
Surveyed by FRASER THOMAS PARTNERS
Scale 1:200
Sec. 87
Sec. 23
Sec. 85
FLAT 2
FLAT 1
COMMON AREA
RIMU PLACE
Total Area
DP 103202

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
CROSS LEASE

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **NA56D/1038**
Land Registration District **North Auckland**
Date Issued 01 October 1984

Prior References
NA49C/137

Estate Fee Simple - 1/2 share
Area 1048 square metres more or less
Legal Description Section 86 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Estate Leasehold
Instrument L B334274.2
Term 999 years commencing on the 1.10.1984

Legal Description Flat 2 Deposited Plan 103202

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

B334274.1 Lease of Flat 1 Composite CT NA56D/1037 issued - 1.10.1984 (Affects Fee Simple)

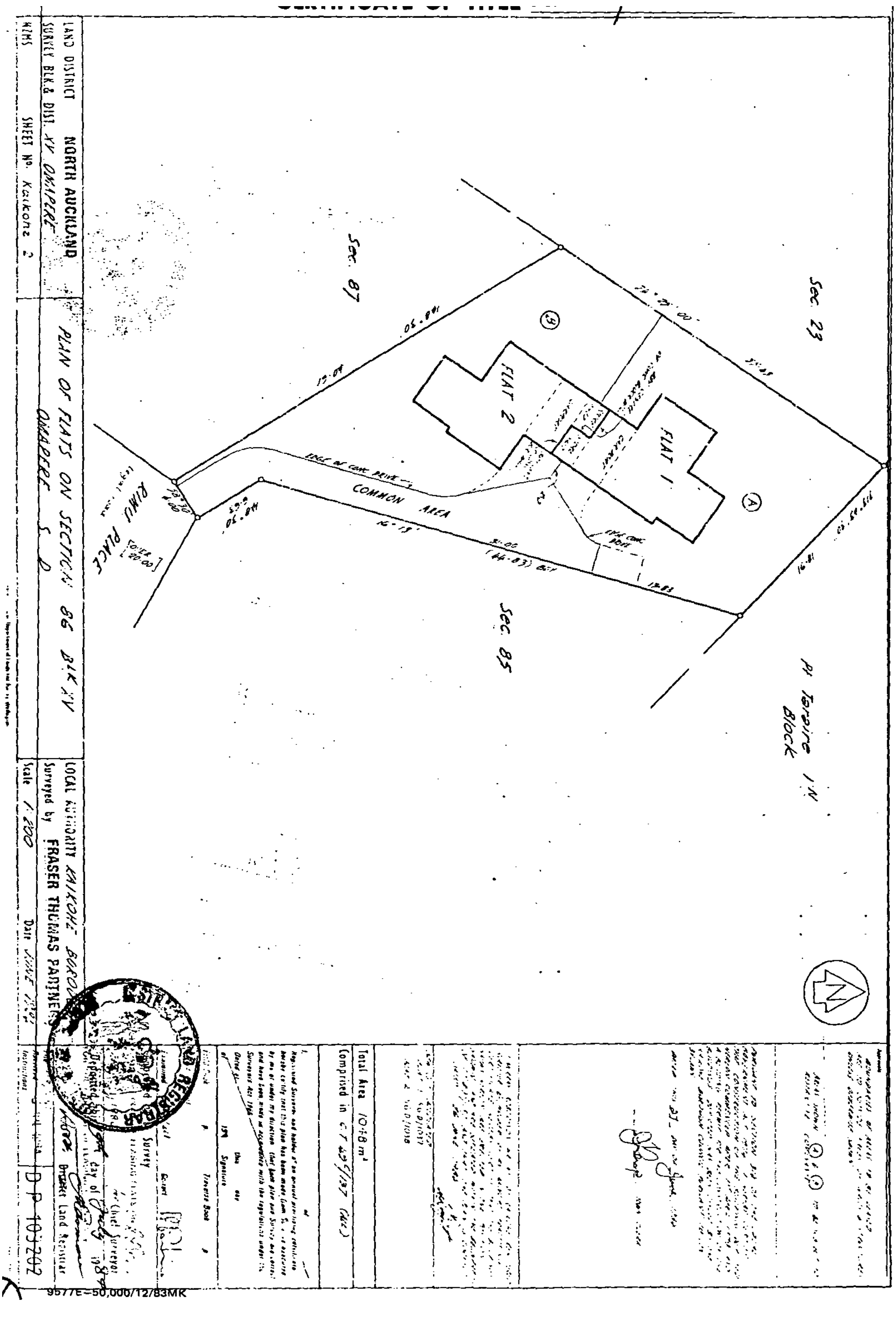
Land Covenant in Lease B334274.1 - 1.10.1984 (Affects Fee Simple)

Land Covenant in Lease B334274.2 - 1.10.1984 (Affects Fee Simple)

B334274.2 Lease of Flat 2 DP 103202 Term 999 years commencing on the 1.10.1984 Composite CT NA56D/1038 issued - 1.10.1984 (Affects Fee Simple)

D183584.1 Variation of Lease B334274.1 - 18.8.1997 at 10.17 am (Affects Fee Simple)

D183584.2 Variation of Lease B334274.2 - 18.8.1997 at 10.17 am


LAND DISTRICT NORTH AUCKLAND
SHEET No. Kaikohe 2
PLAN OF FLATS ON SECTION 86 BLK XV OMAPERE S.D
Surveyed by FRASER THOMAS PARTNERS
Scale 1:200
SEC 87
SEC 23
SEC 85
FLAT 1
FLAT 2
COMMON AREA
RIMU PLACE
BLOCK
9577E—50,000/12/83MK

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
CROSS LEASE

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **NA59B/900**

Land Registration District **North Auckland**

Date Issued 20 June 1985

Prior References
NA56B/631

Estate Fee Simple - 1/3 share

Area 1751 square metres more or less

Legal Description Allotment 88-89 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Estate Leasehold

Instrument L B426573.1

Term 999 years commencing on 1 June 1985

Legal Description Flat 1 Deposited Plan 106485 and Shed 1 Deposited Plan 106485

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

B426573.1 Lease of Flat 1 and Shed 1 DP 106485 Term 999 years commencing on 1 June 1985 Composite CT NA59B/900 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.1 - 20.6.1985 (Affects Fee Simple)

B426573.2 Lease of Flat 2 Composite CT NA59B/901 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.2 - 20.6.1985 (Affects Fee Simple)

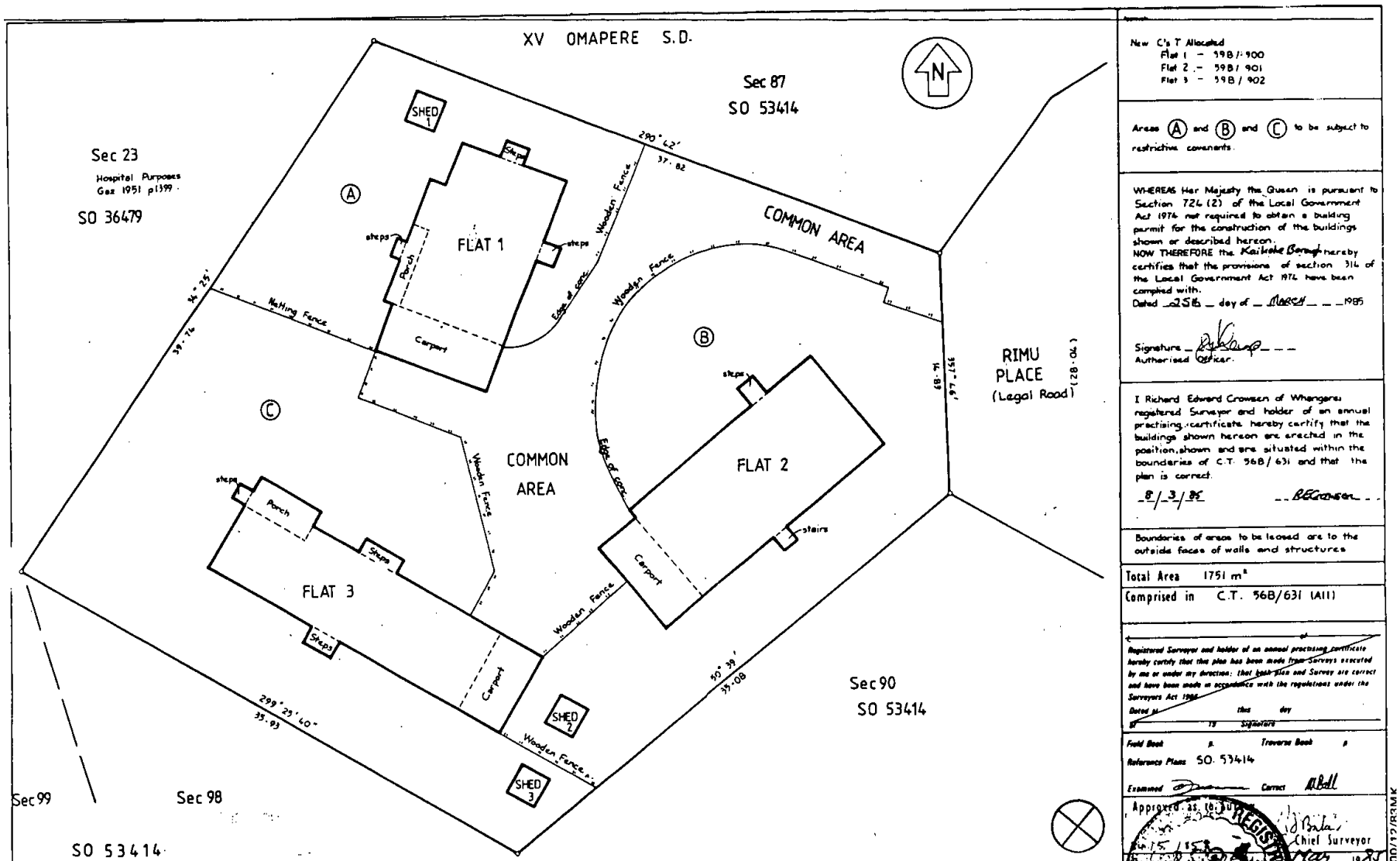
B426573.3 Lease of Flat 3 Composite CT NA59B/902 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.3 - 20.6.1985 (Affects Fee Simple)

D179317.1 Variation of Lease B426573.1 - 5.8.1997 at 3.39 pm

D179317.2 Variation of Lease B426573.2 - 5.8.1997 at 3.39 pm (Affects Fee Simple)

D179317.3 Variation of Lease B426573.3 - 5.8.1997 at 3.39 pm (Affects Fee Simple)



New C's T Allocated
Flat 1 – 59B/900
Flat 2 – 59B/901
Flat 3 – 59B/902

Areas (A) and (B) and (C) to be subject to restrictive covenants.

WHEREAS Her Majesty the Queen is pursuant to Section 724 (2) of the Local Government Act 1974 not required to obtain a building permit for the construction of the buildings shown or described hereon.
NOW THEREFORE the Kaikohe Borough hereby certifies that the provisions of section 314 of the Local Government Act 1974 have been complied with.
Dated 25th day of March 1985

Signature _____
Authorised Officer.

I Richard Edward Crowsen of Whangarei registered Surveyor and holder of an annual practising certificate hereby certify that the buildings shown hereon are erected in the position shown and are situated within the boundaries of C.T. 56B/631 and that the plan is correct.

8/3/85 R.E.Crowsen

Boundaries of areas to be leased are to the outside faces of walls and structures

Total Area 1751 m²
Comprised in C.T. 56B/631 (All)

Registered Surveyor and holder of an annual practising certificate hereby certify that this plan has been made from Surveys executed by me or under my direction; that both plan and Survey are correct and have been made in accordance with the regulations under the Surveyors Act 1966.
Dated at this day of 19
Signature

Field Book p. Traverse Book p.
Reference Plans SO 53414
Examined Correct A Ball

Approved as to Survey
Chief Surveyor
Deposited this 8th day of May 1985
FOR THE PURPOSES OF ISSUING TITLES ONLY
District Land Registrar
Received Instruments
106485

LAND DISTRICT NORTH AUCKLAND
SURVEY BLK.& DIST. XV OMAPERE S.D.
N/MS SHEET No. KAIKOHE 2

PLAN OF FLATS ON SECS 88 & 89 BLOCK XV OMAPERE S.D.

LOCAL AUTHORITY KAIKOHE BOROUGH
Surveyed by R.E.Crowsen
Scale 1:150 Date Feb 1985

9577E—50 000/12/83MK

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
CROSS LEASE

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **NA59B/901**

Land Registration District **North Auckland**

Date Issued 20 June 1985

Prior References
NA56B/631

Estate Fee Simple - 1/3 share

Area 1751 square metres more or less

Legal Description Allotment 88-89 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Estate Leasehold

Instrument L B426573.2

Term 999 years commencing on 1 June 1985

Legal Description Flat 2 Deposited Plan 106485 and Shed 2 Deposited Plan 106485

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

B426573.1 Lease of Flat 1 Composite CT NA59B/900 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.1 - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.2 - 20.6.1985 (Affects Fee Simple)

B426573.2 Lease of Flat 2 and Shed 2 DP 106485 Term 999 years commencing on 1 June 1985 Composite CT NA59B/901 issued - 20.6.1985 (Affects Fee Simple)

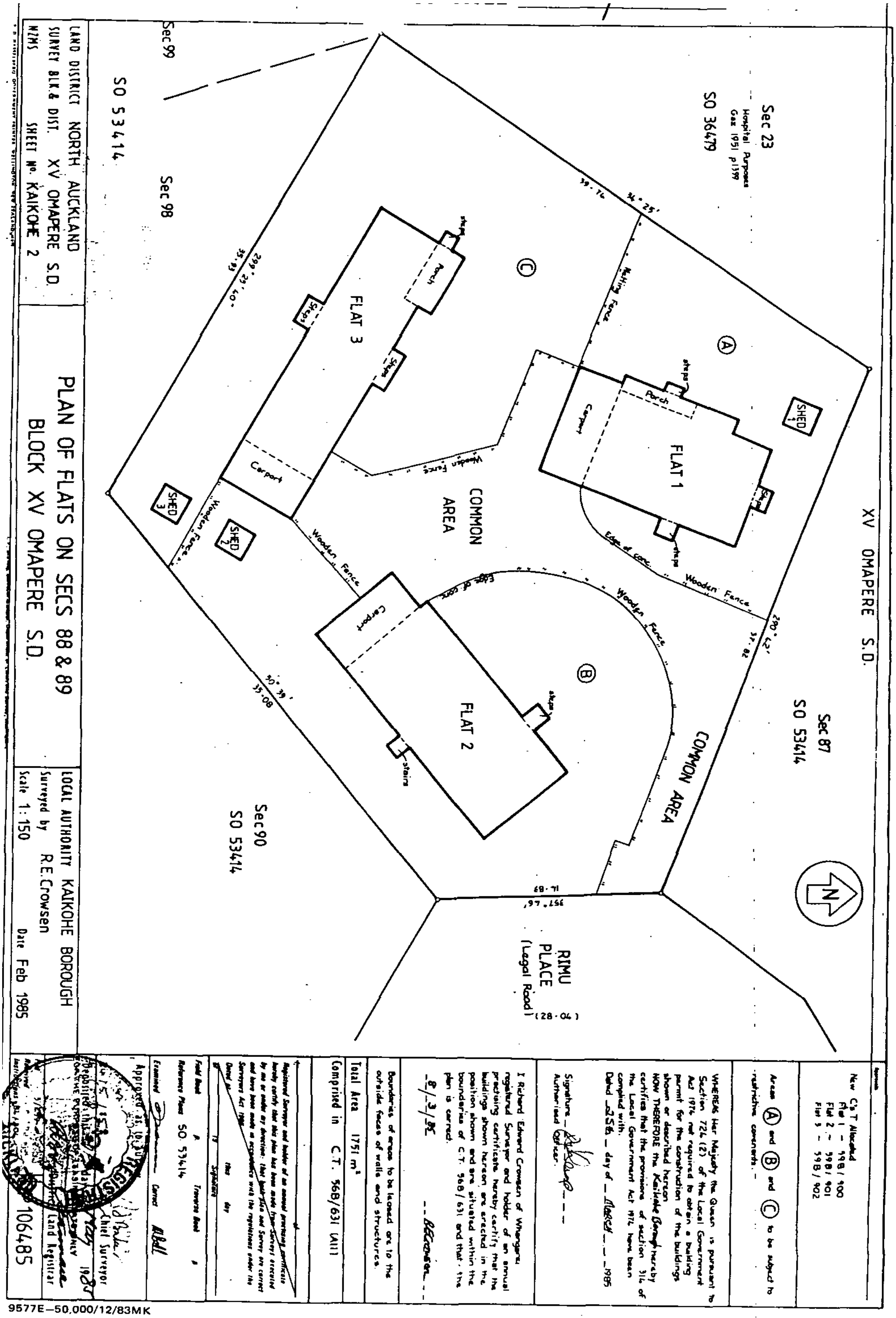
B426573.3 Lease of Flat 3 Composite CT NA59B/902 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.3 - 20.6.1985 (Affects Fee Simple)

D179317.1 Variation of Lease B426573.1 - 5.8.1997 at 3.39 pm (Affects Fee Simple)

D179317.2 Variation of Lease B426573.2 - 5.8.1997 at 3.39 pm

D179317.3 Variation of Lease B426573.3 - 5.8.1997 at 3.39 pm (Affects Fee Simple)



9577E—50,000/12/83MK

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
CROSS LEASE

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier **NA59B/902**

Land Registration District **North Auckland**

Date Issued 20 June 1985

Prior References
NA56B/631

Estate Fee Simple - 1/3 share

Area 1751 square metres more or less

Legal Description Allotment 88-89 Block XV Omapere Survey District

Registered Owners
Housing New Zealand Limited

Estate Leasehold

Instrument L B426573.3

Term 999 years commencing on 1 June 1985

Legal Description Flat 3 Deposited Plan 106485 and Shed 3 Deposited Plan 106485

Registered Owners
Housing New Zealand Limited

Interests

Subject to Part IV A Conservation Act 1987

Subject to Section 11 Crown Minerals Act 1991

B426573.1 Lease of Flat 1 Composite CT NA59B/900 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.1 - 20.6.1985 (Affects Fee Simple)

B426573.2 Lease of Flat 2 Composite CT NA59B/901 issued - 20.6.1985 (Affects Fee Simple)

Land Covenant in Lease B426573.2 - 20.6.1985 (Affects Fee Simple)

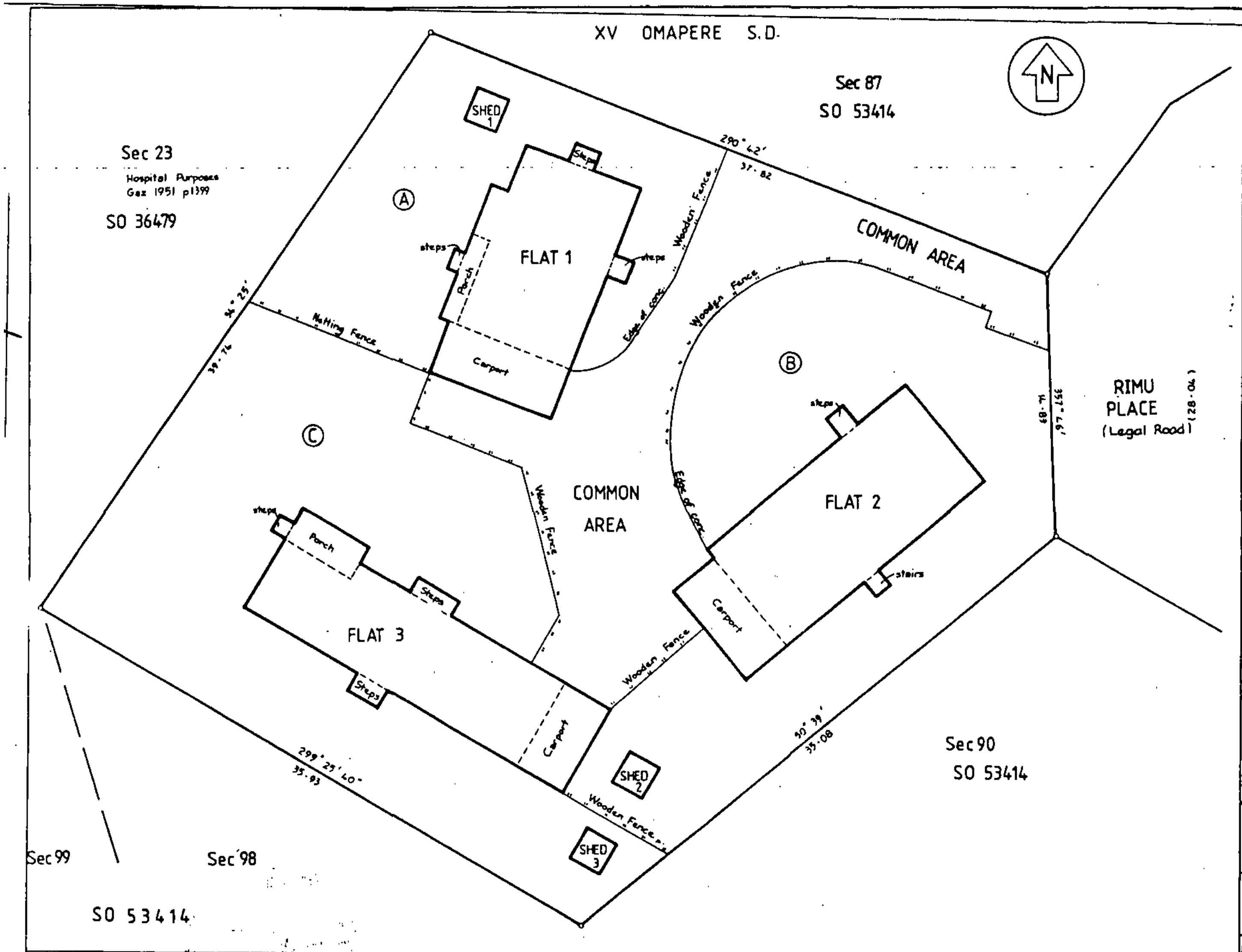
Land Covenant in Lease B426573.3 - 20.6.1985 (Affects Fee Simple)

B426573.3 Lease of Flat 3 and Shed 3 DP 106485 Term 999 years commencing on 1 June 1985 Composite CT NA59B/902 issued - 20.6.1985 (Affects Fee Simple)

D179317.1 Variation of Lease B426573.1 - 5.8.1997 at 3.39 pm (Affects Fee Simple)

D179317.2 Variation of Lease B426573.2 - 5.8.1997 at 3.39 pm (Affects Fee Simple)

D179317.3 Variation of Lease B426573.3 - 5.8.1997 at 3.39 pm



LAND DISTRICT NORTH AUCKLAND SURVEY BLK.& DIST. XV OMAPERE S.D. NZMS SHEET No. KAIKOHE 2	PLAN OF FLATS ON SECS 88 & 89 BLOCK XV OMAPERE S.D.	LOCAL AUTHORITY KAIKOHE BOROUGH Surveyed by R.E.Crowsen Scale 1:150 Date Feb 1985

Approvals

New C's T Allocated
Flat 1 - 59B/900
Flat 2 - 59B/901
Flat 3 - 59B/902

Areas (A) and (B) and (C) to be subject to restrictive covenants

WHEREAS Her Majesty the Queen is pursuant to Section 724(2) of the Local Government Act 1974 not required to obtain a building permit for the construction of the buildings shown or described hereon
NOW THEREFORE the Kaikohe Borough hereby certifies that the provisions of section 314 of the Local Government Act 1974 have been complied with.
Dated 25th day of March 1985

Signature ______
Authorised Officer.

I Richard Edward Crowsen of Whangarei registered Surveyor and holder of an annual practising certificate hereby certify that the buildings shown hereon are erected in the position shown and are situated within the boundaries of C.T. 56B/631 and that the plan is correct.
8/3/85 R.E.Crowsen

Boundaries of areas to be leased are to the outside faces of walls and structures

Total Area 1751 m²

Comprised in C.T. 56B/631 (All)

Registered Surveyor and holder of an annual practising certificate hereby certify that this plan has been made from Surveys executed by me or under my direction; that both plan and Survey are correct and have been made in accordance with the regulations under the Surveyors Act 1986
Dated at this day of 19 Signature

Field Book p Traverse Book p
Reference Plans SO 53414
Examined ______ Correct A.Bell

Approved as to survey
Chief Surveyor
Deposited this day of May 1985
FOR THE PURPOSES OF LEASING ONLY
District Land Registrar

106485

9577E–50.000/12/83MK

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

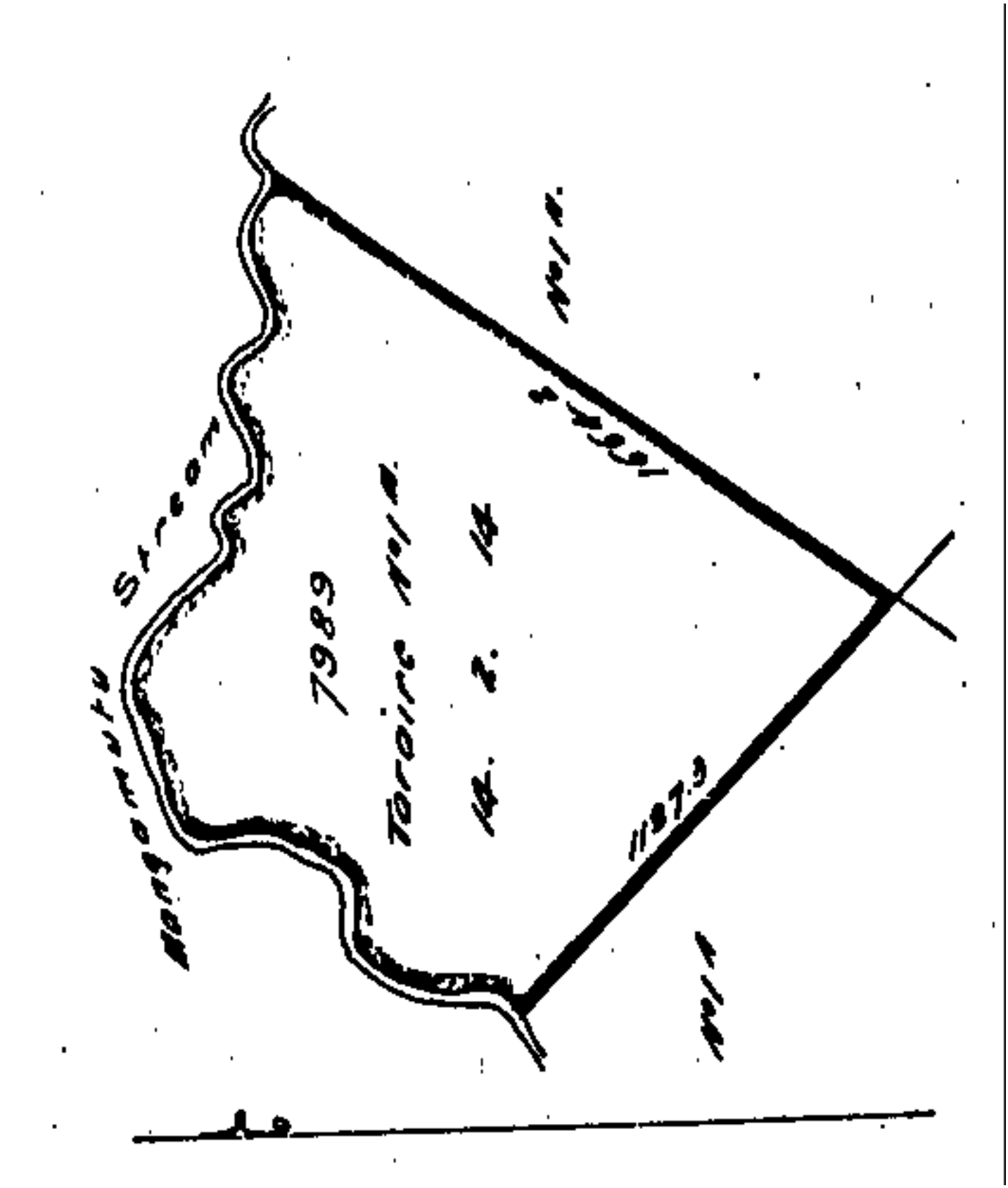
Identifier	**NA268/22**
Land Registration District	**North Auckland**
Date Issued	04 May 1917

Prior References
NAPR102/47

Estate	Fee Simple
Area	5.9034 hectares more or less
Legal Description	Taraire No 1M Block

Registered Owners
Te Hau Ora O Ngapuhi Limited

Interests


Stream
7989
1197.3

Appendix 2: Scheme Plan

SITE DESCRIPTION:

ADDRESS: BISSET ROAD & 10 RIMU PLACE, KAIKOHE, FAR NORTH DISTRICT

ZONING: RESIDENTIAL

APPELLATION / AREA / TITLE:

1. PART TARAIRE 1A BLOCK & LOTS 1& 2 DP363959 - 5.9311Ha - RT 260166
2. TARAIRE No 1M BLOCK - 59034m² - NA268/22

INTERESTS:
A. SUBJECT TO SECTION 59 LAND ACT 1948 (CT1159/25)
B. SUBJECT TO SECTION 8 COAL MINE AMENDMENT ACT 1950 (CT1159/25)
C. SUBJECT TO SECTION 241(2) RESOURCE MANAGEMENT ACT 1991 (DP363959)

SECTION 85 BLOCK XV OMAPERE SECTION DISTRICT - 912m² - NA 49C/136

SECTION 86 BLOCK XV OMAPERE SECTION DISTRICT - 1048m²- NA 56D/1037 FLA1 1 (½ SHARE)
SECTION 86 BLOCK XV OMAPERE SECTION DISTRICT - 1048m -²NA 56D/1038 FLAT 2 (½ SHARE)

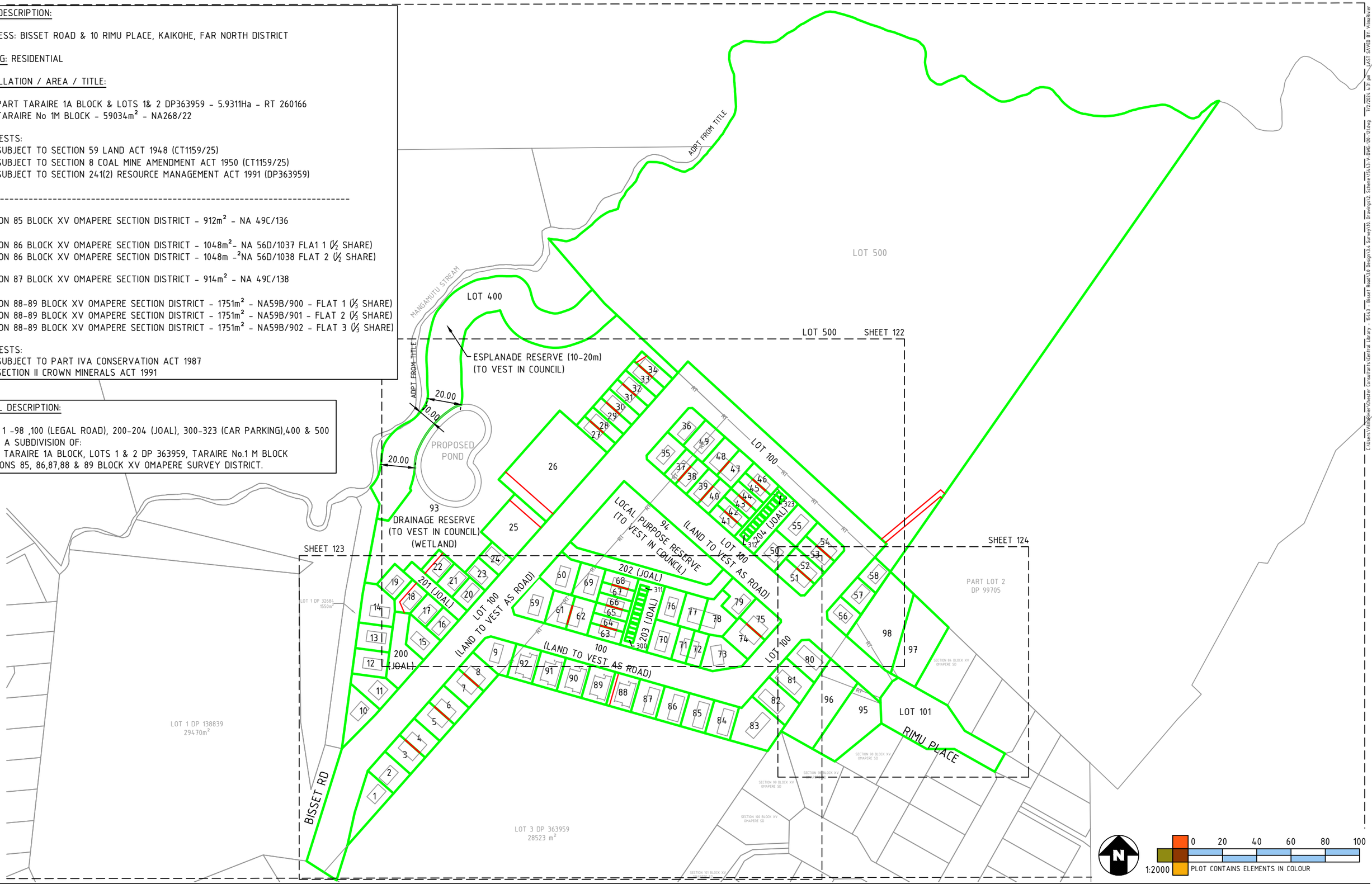
SECTION 87 BLOCK XV OMAPERE SECTION DISTRICT - 914m² - NA 49C/138

SECTION 88-89 BLOCK XV OMAPERE SECTION DISTRICT - 1751m² - NA59B/900 - FLAT 1 (⅓ SHARE)
SECTION 88-89 BLOCK XV OMAPERE SECTION DISTRICT - 1751m² - NA59B/901 - FLAT 2 (⅓ SHARE)
SECTION 88-89 BLOCK XV OMAPERE SECTION DISTRICT - 1751m² - NA59B/902 - FLAT 3 (⅓ SHARE)

INTERESTS:
A. SUBJECT TO PART IVA CONSERVATION ACT 1987
B. SECTION II CROWN MINERALS ACT 1991

LEGAL DESCRIPTION:

LOTS 1 -98 ,100 (LEGAL ROAD), 200-204 (JOAL), 300-323 (CAR PARKING),400 & 500 BEING A SUBDIVISION OF:
PART TARAIRE 1A BLOCK, LOTS 1 & 2 DP 363959, TARAIRE No.1 M BLOCK SECTIONS 85, 86,87,88 & 89 BLOCK XV OMAPERE SURVEY DISTRICT.



Rev	Date	Amendments	By

Drafter:	V. RIVIER	Job Title:	SURVEY SCHEME - STAGED DEVELOPMENT
Designer:	J. CHEN	Client:	KĀINGA ORA
Checker:	G. METCALF	Address:	BISSET ROAD & 10 RIMU PLACE, KAIKOHE 0504
Date:	21.06/2024	Drawing Title:	SCHEME PLAN - OVERALL PLAN

Drawing:	120	Rev:	0
Scale:	1:2000 @ A3		
Project:	15443		
Issue:	CONSENT		

CHESTER
LAND DEVELOPMENT & INFRASTRUCTURE | ENGINEERING | SURVEYING | PLANNING
www.chester.co.nz

RESOURCE CONSENT NOTES:

1. THIS PLAN IS FOR A SUBDIVISION RESOURCE CONSENT APPLICATION ONLY. AREAS, BOUNDARY DIMENSIONS AND LEVELS ARE SUBJECT TO A LAND TRANSFER SURVEY AND APPROVAL BY THE LOCAL AUTHORITY AND LAND INFORMATION NZ.
2. ANY DISCREPANCIES ON THIS PLAN ARE TO BE REFERRED TO CHESTER CONSULTANTS LTD FOR COMMENT OR RESOLUTION.
3. THIS DOCUMENT HAS BEEN PREPARED FOR THE AGREED PURPOSES OF OUR CLIENT. NO REPRODUCTION, COPYING, REUSE, SALE, HIRE, LOAN OR GIFT OF THIS DOCUMENT DIRECTLY OR INDIRECTLY IS PERMITTED WITHOUT PRIOR WRITTEN CONSENT OF CHESTER CONSULTANTS LTD.

LEGEND	
STAGES	
STAGE 1	
STAGE 2	
STAGE 3	

LOT 500

MANGAMUTU STREAM

LOT 400

ESPLANADE RESERVE (10-20m)
(TO VEST IN COUNCIL)

20.00
10.00
20.00

PROPOSED POND

93
DRAINAGE RESERVE
(TO VEST IN COUNCIL)
(WETLAND)

94
LOCAL PURPOSE RESERVE
(TO VEST IN COUNCIL)

LOT 100
(LAND TO VEST AS ROAD)

100
(LAND TO VEST AS ROAD)

200 (JOAL)
201 (JOAL)
202 (JOAL)
203 (JOAL)
204 (JOAL)

311
312
323

LOT 100

LOT 101

RIMU PLACE

BISSET RD

LOT 1 DP 32684
1550m²

DP 138839
470m²

LOT 3 DP 363959
28523 m²

PART LOT 2
DP 99705

SECTION 84 BLOCK XV OMAPERE SD
SECTION 90 BLOCK XV OMAPERE SD
SECTION 98 BLOCK XV OMAPERE SD
SECTION 99 BLOCK XV OMAPERE SD
SECTION 100 BLOCK XV OMAPERE SD
SECTION 101 BLOCK XV OMAPERE SD

1:1500 0 15 30 45 60 75 PLOT CONTAINS ELEMENTS IN COLOUR

Rev	Date	Amendments	By

Drafter:	V. RIVIER	Job Title:	SURVEY SCHEME - STAGED DEVELOPMENT
Designer:	J. CHEN	Client:	KĀINGA ORA
Checker:	G. METCALF	Address:	BISSET ROAD & 10 RIMU PLACE, KAIKOHE 0504
Date:	21.06/2024	Drawing Title:	SCHEME PLAN - STAGE PLAN

Drawing:	121	Rev:	0
Scale:	1:1500 @ A3		
Project:	15443		
Issue:	CONSENT		

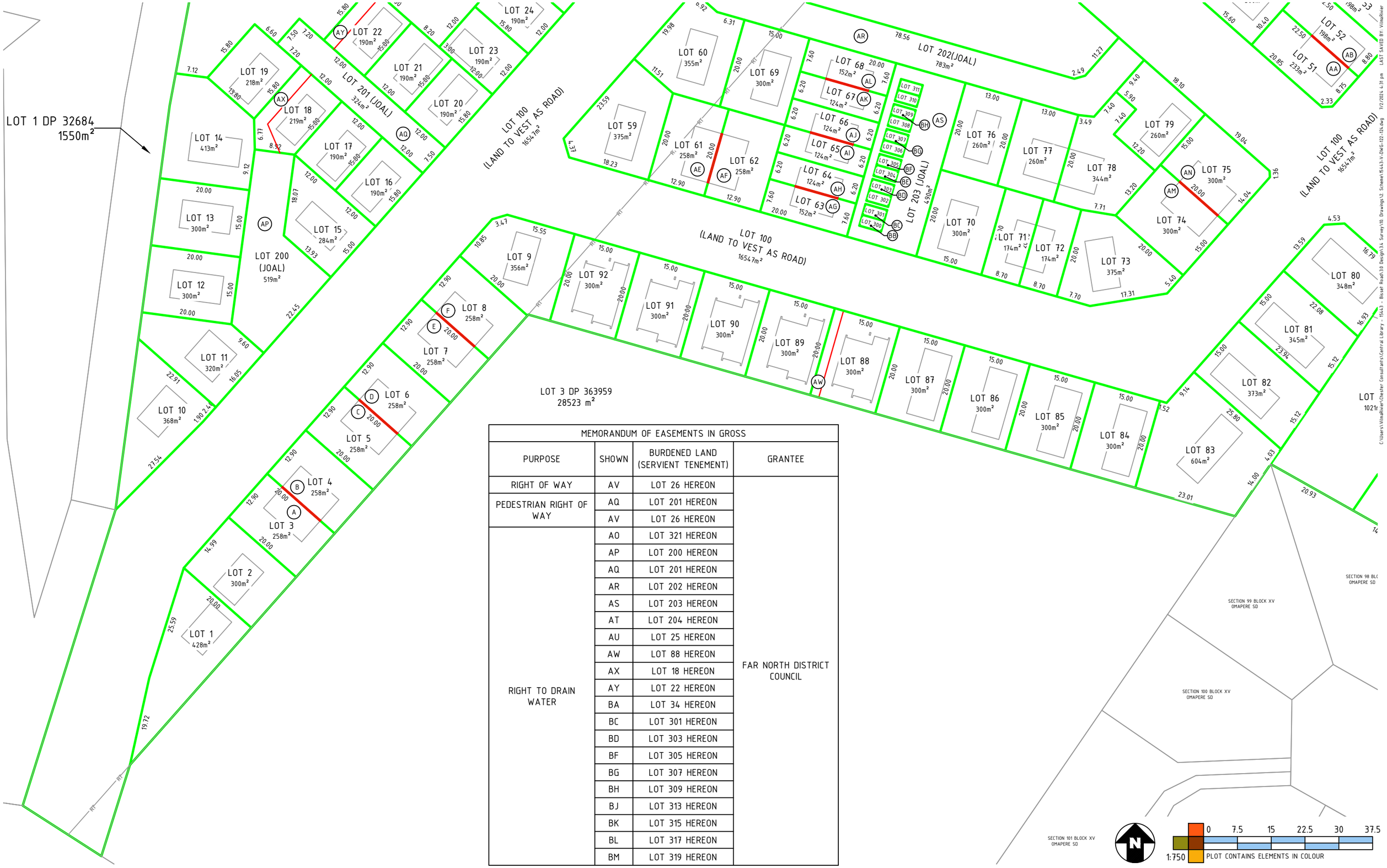
CHESTER
LAND DEVELOPMENT & INFRASTRUCTURE | ENGINEERING | SURVEYING | PLANNING
www.chester.co.nz

Rev	Date	Amendments	By

Drafter:	V. RIVIER	Job Title:	SURVEY SCHEME - STAGED DEVELOPMENT
Designer:	J. CHEN	Client:	KĀINGA ORA
Checker:	G. METCALF	Address:	BISSET ROAD & 10 RIMU PLACE, KAIKOHE 0504
Date:	21.06/2024	Drawing Title:	SCHEME PLAN - SHEET 1

Drawing:	122 Rev: 0
Scale:	1:750 @ A3
Project:	15443
Issue:	CONSENT

CHESTER
LAND DEVELOPMENT & INFRASTRUCTURE | ENGINEERING | SURVEYING | PLANNING
www.chester.co.nz



MEMORANDUM OF EASEMENTS IN GROSS			
PURPOSE	SHOWN	BURDENED LAND (SERVIENT TENEMENT)	GRANTEE
RIGHT OF WAY	AV	LOT 26 HEREON	FAR NORTH DISTRICT COUNCIL
PEDESTRIAN RIGHT OF WAY	AQ	LOT 201 HEREON	
	AV	LOT 26 HEREON	
RIGHT TO DRAIN WATER	AO	LOT 321 HEREON	
	AP	LOT 200 HEREON	
	AQ	LOT 201 HEREON	
	AR	LOT 202 HEREON	
	AS	LOT 203 HEREON	
	AT	LOT 204 HEREON	
	AU	LOT 25 HEREON	
	AW	LOT 88 HEREON	
	AX	LOT 18 HEREON	
	AY	LOT 22 HEREON	
	BA	LOT 34 HEREON	
	BC	LOT 301 HEREON	
	BD	LOT 303 HEREON	
	BF	LOT 305 HEREON	
	BG	LOT 307 HEREON	
	BH	LOT 309 HEREON	
	BJ	LOT 313 HEREON	
	BK	LOT 315 HEREON	
	BL	LOT 317 HEREON	
	BM	LOT 319 HEREON	

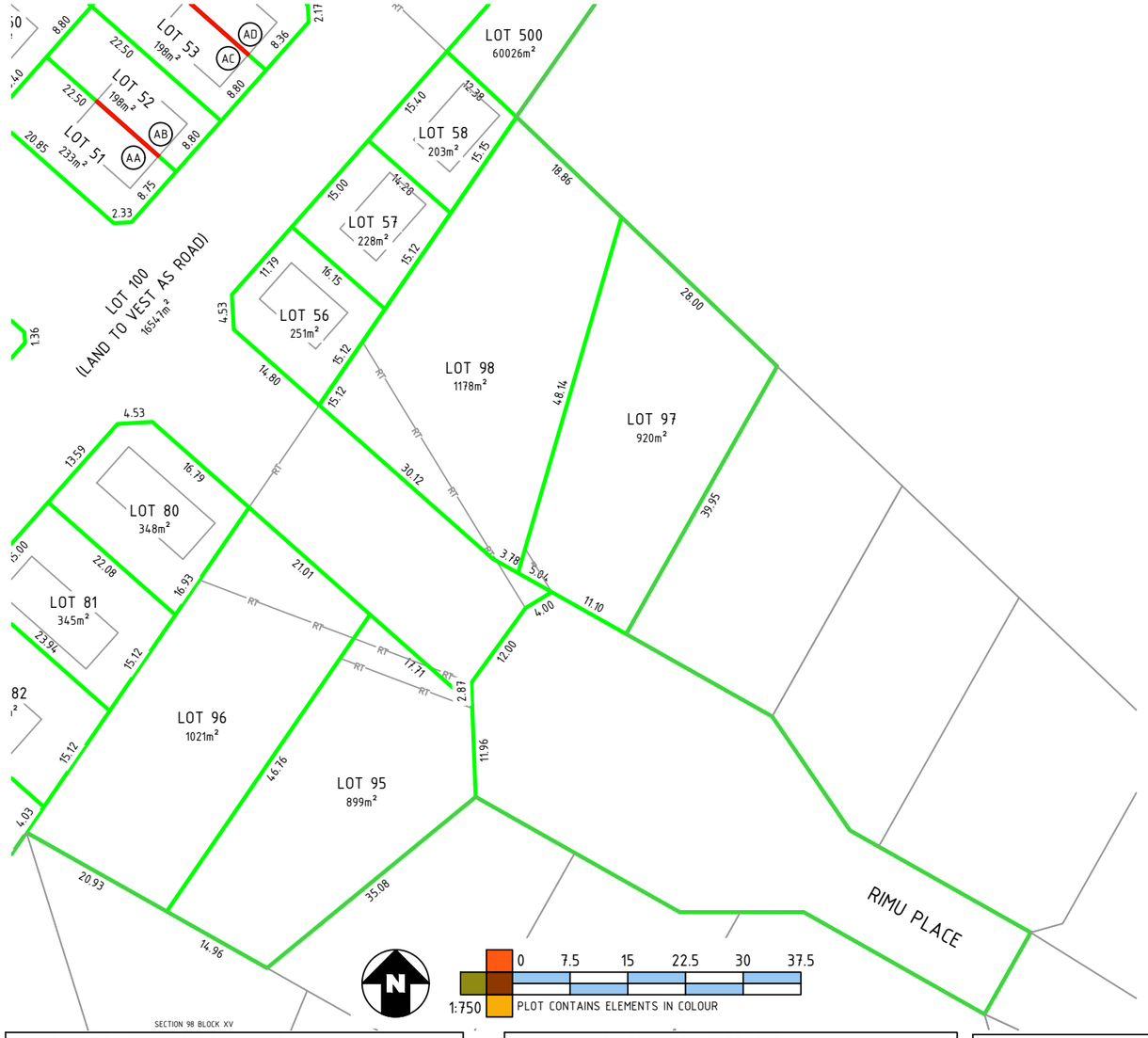
Rev	Date	Amendments	By

Drafter: V. RIVIER
Designer: J. CHEN
Checker: G. METCALF
Date: 21.06/2024

Job Title: SURVEY SCHEME - STAGED DEVELOPMENT
Client: KĀINGA ORA
Address: BISSET ROAD & 10 RIMU PLACE, KAIKOHE 0504
Drawing Title: SCHEME PLAN - SHEET 2

Drawing: 123 Rev: 0
Scale: 1:750 @ A3
Project: 15443
Issue: CONSENT

CHESTER
LAND DEVELOPMENT & INFRASTRUCTURE | ENGINEERING | SURVEYING | PLANNING
www.chester.co.nz



MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	BURDENED TENEMENT	BENEFITED TENEMENT
PARTY WALL	A	LOT 3 HEREON	LOT 4 HEREON
	B	LOT 4 HEREON	LOT 3 HEREON
	C	LOT 5 HEREON	LOT 6 HEREON
	D	LOT 6 HEREON	LOT 5 HEREON
	E	LOT 7 HEREON	LOT 8 HEREON
	F	LOT 8 HEREON	LOT 7 HEREON
	G	LOT 27 HEREON	LOT 28 HEREON
	H	LOT 28 HEREON	LOT 27 HEREON
	I	LOT 29 HEREON	LOT 30 HEREON
	J	LOT 30 HEREON	LOT 29 HEREON
	K	LOT 31 HEREON	LOT 32 HEREON
	L	LOT 32 HEREON	LOT 31 HEREON
	M	LOT 33 HEREON	LOT 34 HEREON
	N	LOT 34 HEREON	LOT 33 HEREON
	O	LOT 37 HEREON	LOT 38 HEREON
	P	LOT 38 HEREON	LOT 37 HEREON
	Q	LOT 39 HEREON	LOT 40 HEREON
	R	LOT 40 HEREON	LOT 39 HEREON
	S	LOT 41 HEREON	LOT 42 HEREON
	T	LOT 42 HEREON	LOT 41 HEREON
	U	LOT 43 HEREON	LOT 44 HEREON
	V	LOT 44 HEREON	LOT 43 HEREON
	W	LOT 45 HEREON	LOT 46 HEREON
	X	LOT 46 HEREON	LOT 45 HEREON
	Y	LOT 48 HEREON	LOT 47 HEREON
	Z	LOT 47 HEREON	LOT 48 HEREON
	AA	LOT 51 HEREON	LOT 52 HEREON
	AB	LOT 52 HEREON	LOT 51 HEREON
	AC	LOT 53 HEREON	LOT 54 HEREON
	AD	LOT 54 HEREON	LOT 53 HEREON
	AE	LOT 61 HEREON	LOT 62 HEREON
	AF	LOT 62 HEREON	LOT 61 HEREON
	AG	LOT 63 HEREON	LOT 64 HEREON
	AH	LOT 64 HEREON	LOT 63 HEREON
	AI	LOT 65 HEREON	LOT 66 HEREON
	AJ	LOT 66 HEREON	LOT 65 HEREON
	AK	LOT 67 HEREON	LOT 68 HEREON
	AL	LOT 68 HEREON	LOT 67 HEREON
	AM	LOT 74 HEREON	LOT 75 HEREON
	AN	LOT 75 HEREON	LOT 74 HEREON

SCHEDULE OF EASEMENTS IN GROSS			
PURPOSE	SHOWN	BURDENED LAND (SERVIENT TENEMENT)	GRANTEE
RIGHT TO CONVEY ELECTRICITY	AP	LOT 200 HEREON	TOP ENERGY LIMITED
	AQ	LOT 201 HEREON	
	AR	LOT 202 HEREON	
	AS	LOT 203 HEREON	
	AT	LOT 204 HEREON	
RIGHT TO CONVEY TELECOMUNICATIONS	AP	LOT 200 HEREON	CHORUS NEW ZEALAND LIMITED
	AQ	LOT 201 HEREON	
	AR	LOT 202 HEREON	
	AS	LOT 203 HEREON	
	AT	LOT 204 HEREON	

MEMORANDUM OF EASEMENTS IN GROSS			
PURPOSE	SHOWN	BURDENED LAND (SERVIENT TENEMENT)	GRANTEE
RIGHT TO DRAIN SEWAGE	AO	LOT 321 HEREON	FAR NORTH DISTRICT COUNCIL
	AP	LOT 200 HEREON	
	AQ	LOT 201 HEREON	
	AR	LOT 202 HEREON	
	AS	LOT 203 HEREON	
	AT	LOT 204 HEREON	
	AZ	LOT 500 HEREON	
	BB	LOT 300 HEREON	
	BC	LOT 301 HEREON	
	BD	LOT 303 HEREON	
	BE	LOT 304 HEREON	
	BF	LOT 305 HEREON	
	BG	LOT 307 HEREON	
	BH	LOT 309 HEREON	
	BI	LOT 312 HEREON	
	BK	LOT 315 HEREON	
	BL	LOT 317 HEREON	
	BM	LOT 319 HEREON	

MEMORANDUM OF EASEMENTS			
PURPOSE	SHOWN	BURDENED LAND (SERVIENT TENEMENT)	GRANTEE
RIGHT TO CONVEY ELECTRICITY, TELECOMMUNICATIONS, WATER, GAS, RIGHT TO DRAIN WATER	AP	LOT 200 HEREON	LOTS 12-14 HEREON
	AQ	LOT 201 HEREON	LOTS 16-22 HEREON
	AR	LOT 202 HEREON	LOTS 60, 63-69, 76-79 HEREON
	AS	LOT 203 HEREON	LOTS 63-68 HEREON
	AT	LOT 204 HEREON	LOTS 41-46 HEREON

AMALGAMATION CONDITION: CARPARKS

THAT LOT 41 HEREON AND LOTS 312 & 313 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 42 HEREON AND LOTS 314 & 315 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 43 HEREON AND LOTS 316 & 317 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 44 HEREON AND LOTS 318& 319 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 45 HEREON AND LOTS 320 & 321 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 46 HEREON AND LOTS 322 & 323 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

AMALGAMATION CONDITION: CARPARKS

THAT LOT 63 HEREON AND LOTS 300 & 301 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 64 HEREON AND LOTS 302 & 303 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 65 HEREON AND LOTS 304 & 305 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 66 HEREON AND LOTS 306 & 307 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 67 HEREON AND LOTS 308 & 309 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 68 HEREON AND LOTS 310 & 311 HEREON BE HELD AS TENANTS IN COMMON AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

AMALGAMATION CONDITION:

THAT LOT 200 HEREON (LEGAL ACCESS) BE HELD AS TO THREE UNDIVIDED ONE-THIRD SHARES BY THE OWNERS OF LOTS 12-14 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE

THAT LOT 201 HEREON (LEGAL ACCESS) BE HELD AS TO SEVEN UNDIVIDED ONE-SEVENTH SHARES BY THE OWNERS OF LOTS 16-22 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE

THAT LOT 202 HEREON (LEGAL ACCESS) BE HELD AS TO TWELVE UNDIVIDED - ONE TWELFTH SHARES BY THE OWNERS OF LOTS 60, 63-69 & 76-79 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 203 HEREON (LEGAL ACCESS) BE HELD AS TO SIX UNDIVIDED - ONE SIXTH SHARES BY THE OWNERS OF LOTS 63-68 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

THAT LOT 204 HEREON (LEGAL ACCESS) BE HELD AS TO SIX UNDIVIDED - ONE SIXTH SHARES BY THE OWNERS OF LOTS 41-46 HEREON AS TENANTS IN COMMON IN THE SAID SHARES AND THAT INDIVIDUAL RECORD OF TITLES BE ISSUED IN ACCORDANCE THEREWITH.

Rev	Date	Amendments	By

Drafter: V. RIVIER
Designer: J. CHEN
Checker: G. METCALF
Date: 21.06/2024

Job Title: SURVEY SCHEME - STAGED DEVELOPMENT
Client: KĀINGA ORA
Address: BISSET ROAD & 10 RIMU PLACE, KAIKOHE 0504
Drawing Title: SCHEME PLAN - SHEET 3

Drawing: 124 Rev: 0
Scale: 1:750 @ A3
Project: 15443
Issue: CONSENT

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Appendix 3: Geotech Report

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Geotechnical Investigation for Proposed Residential Development at

Bisset Road and 10 Rimu Place, Kaikohe

Rev A **6 October 2023** **Job No. NL230070**

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GEOTECHNICAL INVESTIGATION
FOR PROPOSED RESIDENTIAL DEVELOPMENT AT
BISSET ROAD AND 10 RIMU PLACE, KAIKOHE

Job Number:	NL230070
Name of Project:	Bisset Road and 10 Rimu Place, Kaikohe
Client:	Kāinga Ora Homes and Communities
Author:	Ayda Azimi, Geotechnical Engineer, MEngNZ
Reviewer & Authoriser:	Bruce Green, Principal Geotechnical Engineer, CMEngNZ, CPEng
Document Version:	A
Published:	27 October 2023
Author Signature:	
Reviewer& Authoriser Signature:	

Table of Contents

Appendices:

Report Summary

The following summarises the findings of this report however is not to be taken in isolation. It is a requirement that any user of this report review the document in its entirety, including all appendices.

Feature	Commentary
Project	Greenfields to Medium-Dense Residential Housing
RMA: Section106 & Building Act: Section 71	No *geotechnical* natural hazards were identified (as listed in these Acts) that are considered an undue impediment to subdivision/construction (respectively) or that cannot be reasonably addressed by typical engineering design and construction
Fill	Encountered at AH07 location to 0.6m bpgl
Natural Soils	Stiff to hard Kerikeri Volcanic Group soils and, in places, stiff to hard Tauranga Group Soils
Unduly Weak, Sensitive, or Compressible Soils	Not encountered.
Groundwater	Encountered at AH01, AH04, AH05 and AH15 at depths ranging between 2.3m and 3.4m bpgl.
Seismic Site Class	Site Class C
Expansive Soils	Classified as Highly Expansive in accordance with B1/AS1
Slope Stability	Slopes steeper than 1V:4H are present. We consider the site to be suitable for the construction of the proposed structures from a land stability point of view
Foundations	Shallow foundations embedded into stiff natural ground and designed for expansivity Class H are suitable for typical residential development.
Drawing Review prior to Consent Application	Required
Construction Constraints	See Section 14.0 of this report
Construction Observation	Recommended

1.0 Introduction

Soil & Rock Consultants (S&RC) were engaged by Kāinga Ora Homes and Communities to carry out a geotechnical investigation at Bisset Road and 10 Rimu Place, Kaikohe regarding the Proposed Residential Development.

Our investigation has been informed by Section 106 of the Resource Management Act and Section 71 of the Building Act 2004 which list 'Natural Hazards' that must be considered by Council when assessing a Resource or Building Consent application respectively. Our assessment has also extended to consideration of the following:

- Provision of a seismic site class in accordance with NZS1170.5:2004.
- Provision of geotechnical recommendations related to foundation design, stability and earthworks requirements.

The primary purpose of this reporting is to identify the issues discussed above and provide associated remedial, mitigating, and design recommendations in order that Consent can be granted. Information and advice related to good construction practise are also provided.

1.1 Limitations

This report has been prepared by Soil & Rock Consultants for the sole benefit of Kāinga Ora Homes and Communities (the client) with respect to Bisset Road and 10 Rimu Place, Kaikohe and the brief given to us. Far North District Council may use this report to support processing of a consent related to the development.

The data and/or opinions contained in this report may not be used in other contexts, for any other purpose or by any other party without our prior review and agreement. This report may only be read or transmitted in its entirety, including the appendices.

The recommendations given in this report are based on data obtained from discrete locations and soil conditions between locations are inferred only. Our geotechnical models are based on those actual and inferred conditions however variations between test locations may occur and Soil & Rock Consultants should be contacted in this event.

Soil & Rock Consultants should also be contacted should the scope or scale of the development proposal vary from that currently indicated.

1.2 Previous Geotechnical Reporting

A geotechnical investigation and report pertaining to the subdivision of the site (Bisset Road, Kaikohe) has been undertaken by Haigh Workman Civil & Structural Engineers. The report titled 'Geotechnical Assessment Report, Proposed Subdivision, Bisset Road, Kaikohe for Te Hau Ora o Ngapuhi Ltd' dated October 2019, provided preliminary recommendations for the subdivision.

2.0 Site Description

The site subject to development, legally described as Pt Taraire No 1A Block, Lot 1-2 DP 363959 and Section 87 Block XV Omapere, is irregular in shape and covers an area of 6.0ha (see Figure 1).

The site is located east of Bisset Road, Kaikohe bounded by developed areas to the south and east and rural farmlands with isolated dwellings on other boundaries. Mangamutu Stream runs along the north and northwest of the site.

The site is currently undeveloped and serves as farmland with sparse tree and scrub vegetation. There is a single dwelling located at the southwest end of the site, at 10 Rimu Place, Kaikohe. The site is currently accessed from Bisset Road.

The ground surface is predominately near level to gently sloping, in the main gradually descending to the north and northwest at inclinations of less than 5°. Slopes become moderately steep toward the northwest end of the site, where a wetland and a pond are present.

Figure 1: Aerial Image *(Source: Northland Regional Council Map)*

2.1 Proposed Development

A draft scheme plan supplied by Kainga Ora shows the proposed development will comprise construction of 87 dwellings with associated access and vehicle parking areas. These are indicated in Figure 2 below.

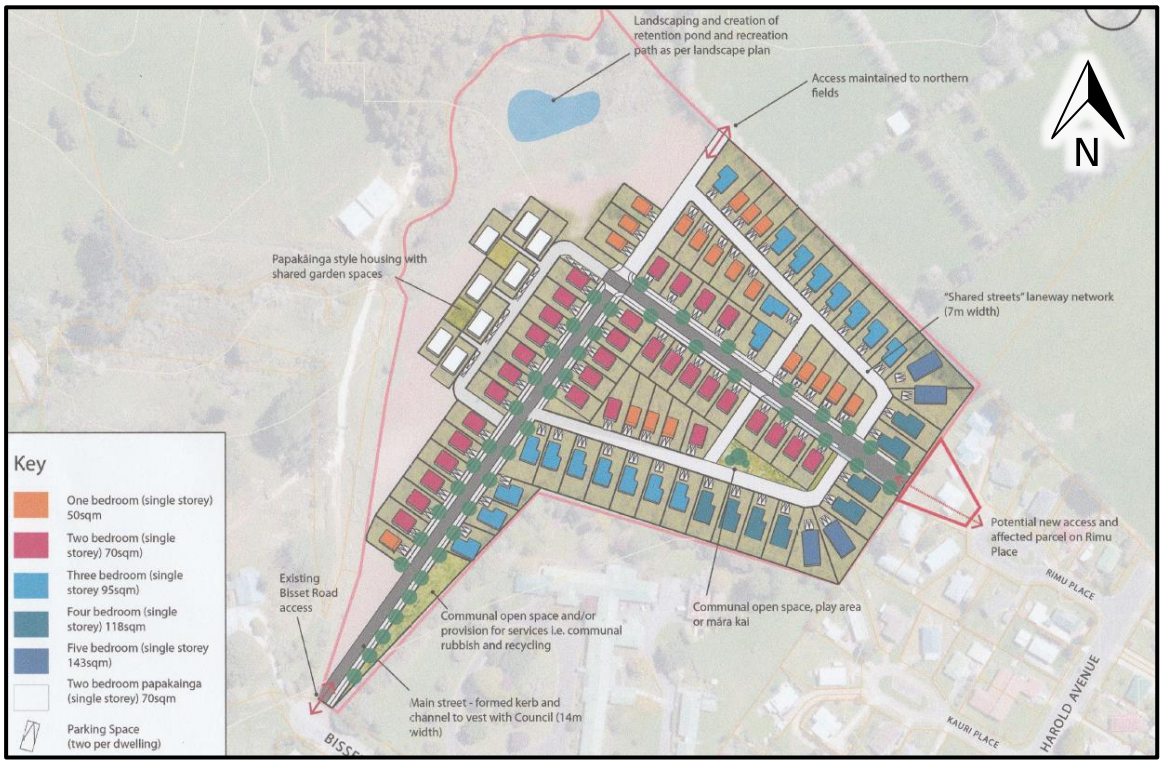

Figure 2: Proposed Development *(Source:* Site Plan by Kainga Ora*)*

3.0 Geology

Reference to the GNS New Zealand Geological Web Map 1:250,000 'Geology' map, indicates the site is underlain by soils and rocks of the Kerikeri Volcanic Group (See Figure 3).

Kerikeri Volcanic Group

Generally, Kerikeri Volcanic Group deposits comprise basalt lava flows overlain by weathered tuff deposits with basalt boulder inclusions.

The presence of volcanic tuff was confirmed during our site investigation. These soils can be sensitive to exposure and can shrink and swell significantly in response to changes in moisture content.

Tauranga Group

Tauranga Group soils are variable in terms of consistency and strength and are found typically along stream channels and flood plains of creeks, or along localised gully features.

Alluvial soils are often susceptible to consolidation (resulting in settlement) when subjected to foundation or fill loads, particularly where organic soils are present. In addition, these soils shrink and swell with soil moisture content changes and can be sensitive, often rapidly losing strength in response to disturbance by construction plant and/or exposure to the elements.

It is not uncommon for Alluvium and Volcanic soils to overlie each other as both are placed as discrete geological episodes. Further, alluvium is usually found in low-lying areas and it is in the nature of lava flows that they flow downslope to cover the in-situ soils. Our augerhole data and Cross Section drawings indicate that this has been the case at the subject site.

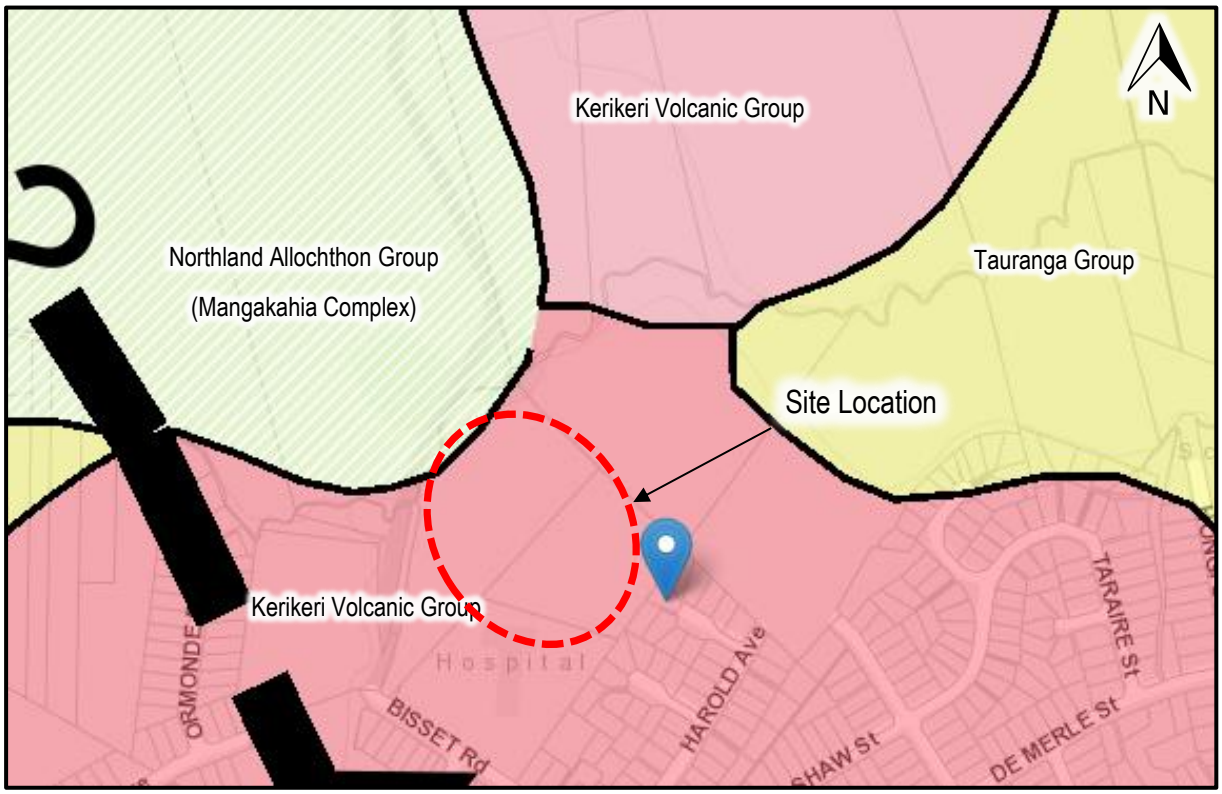

Figure 3: Geological Map *(Source: GNS WebMaps Website)*

4.0 Field Investigation

The field investigation carried out from 28th to 30th August 2021 comprised the following components:

- Visual appraisal of the site
- Drilling of twenty hand augerholes (AH01 – AH20 inclusive) – Appendix B
- Undertaking of eight Machine Test Pits (TP01-TP08 inclusive) – Appendix B
- Retrieval and laboratory testing of two soil expansivity samples (SS01 & SS02) – Appendix C

The test locations are shown on the Site Plan, Drawing No NL230070/1 (Appendix A). The locations were measured from existing site features using hand-held tape or determined from hand-held GPS and are therefore approximate only.

Measurements of undrained shear strength were undertaken in the augerholes at intervals of depth using a handheld shear vane in accordance with the New Zealand Geotechnical Society Guidelines for Handheld Shear Vane Tests, dated August 2001. Peak and remoulded vane shear strengths shown on the attached augerhole logs represent dial readings off the shear vane adjusted using the BS 1377 calibration correction factor given on the log.

A visual-tactile field classification of the soils encountered during drilling was carried out in accordance with 'Guidelines for the Field Classification and Description of Soil and Rock for Engineering Purposes', issued by the New Zealand Geotechnical Society Inc. (2005).

Dynamic Cone (Scala) Penetrometer testing was carried out within he augerholes in-lieu of shear vane testing where soils became sand-dominated/hard to auger and from the base of augerholes until refusal was reached. Refusal is defined as five consecutive blow counts of 10 or greater per 50mm penetration or a blow count of 20 for 50mm penetration. The results are given on the attached log sheet (Appendix B).

4.1 Subsurface Conditions

Subsurface conditions have been interpolated between the test locations and localised variations between and away from the test locations will exist.

In general, the soils encountered weathered soils of the Kerikeri Volcanic Group and/or Tauranga Group. At the time of our investigation, topsoil had been removed from the majority of the site and was encountered only in isolated areas. An outline of the soil conditions and investigation results is given below and summarised in Table 1 and 2, and detailed descriptions of the soils are given on the attached logs (Appendix B).

- **Topsoil/Fill.** Topsoil was encountered at AH03, AH04, AH07, AH18-AH20 locations to a maximum depth of 0.3m below present ground level (bpgl).

  Fill was encountered at AH07 location to 0.6m bpgl. This fill is likely to have been left in place during previous earthworks, and is 'non-engineered'.

  These materials are unsuitable for the support of permanent structures (i.e. building foundations, floor slabs, pavements etc.) and may be present at scattered locations.

- **Kerikeri Volcanic Group.** Weathered Kerikeri Volcanic tuff deposits were encountered at AH01-AH05, AH09-AH14, AH16, AH18-AH20, TP02, TP04, TP05, TP07 and TP08 underlying the topsoil or from the surface to the termination depths of the handauger holes. At AH06, AH15, AH1, TP01, TP03 and TP06 weathered Kerikeri Volcanic tuff deposits were encountered underlying or overlying the Tauranga Group soils. The Volcanic soils comprised stiff to hard clayey silt/silts with lesser amounts of clay and fine sand. Vane shear strengths ranged from 80kPa to greater than 200kPa where the soil strength was in excess of the shear vane dial capacity or was 'UTP' – Unable to Penetrate into the soil.

- **Tauranga Group.** Tauranga Group soils were encountered at AH06-AH08, AH17, TP03 and TP06 locations underlying the topsoil/fill or Volcanic deposits to the termination depth of the hand augerholes. At AH15 and TP01 Tauranga Group soils were interbedded with Volcanic deposits. The Tauranga Group soils comprised generally stiff to hard clayey silt/silts with lesser amounts of clay and fine sand. Vane shear strengths ranged from 99kPa to greater than 200kPa where the soil strength was in excess of the shear vane dial capacity or was 'UTP' – Unable to Penetrate into the soil. An isolated spot logged as 'firm' was encountered within TP01 between 2.5m and 3.0m bpgl. We infer this is likely attributed to the soil saturation at this depth.
- **Basalt Cobbles/Boulders:** Basalt cobbles/boulders were encountered at each test pit location (except for TP02 and TP06) at depths ranging between 0.9m and 3.5m bpgl underlying the more-weathered Volcanic Tuff (or Ash) soil.
- **Scala Penetrometer Testing.** Scala Penetrometer testing was carried out from the base of each augerhole. Refusal, inferred to be contact with the transition zone into an underlying dense stratum, was encountered at depths ranging between 1.7m and 6.0m bpgl. The upper surface of this dense stratum is most likely several metres below the refusal depth encountered above.

  Sudden refusal, inferred to indicate contact with a hard or dense surface such as monolithic basalt rock or large boulder, was encountered within AH11 at 1.5m bpgl and at greater depth within some fo the remaining holes. Refer to the penetrometer log sheet for refusal depths.
- **Groundwater.** Groundwater was encountered at AH01, AH04, AH05 and AH15 at depths ranging between 2.3m and 3.4m bpgl.

  Groundwater measurements taken during drilling are not always an accurate portrayal of the actual long-term groundwater table as groundwater levels can take time to stabilise within the augerhole following drilling. Volcanic soils are typically free-draining however groundwater could 'perch' on soils of lesser permeability, rising into the volcanic deposits.

  Where soil logs indicate 'wet' or 'saturated' soils, it should be expected that groundwater would be encountered at those depths. That groundwater could be regional or perched.

Table 1 – Summary of Subsurface Conditions (Hand Augerholes)

Test ID	Termination Depth	Depth to the base of Topsoil/Fill	Vane Shear Strength Range (kPa)	Scala Penetrometer Termination	Groundwater Depth
All depths measured in (m) below present ground level. (Rounded to 1 DP)					
AH01	2.4	NE	135 -200+	2.5	2.3
AH02	1.2	NE	162 – 200+	2.4	NE
AH02a	1.7	NE	+200	NT	NE
AH03	5.0	0.2	123 – 200+	5.7 (s)	NE
AH04	4.5	0.2	117 – 200+	5.0 (s)	3.2
AH05	2.9	NE	130 – 200+	3.5 (s)	2.8
AH06	2.3	NE	200+	2.7	NE
AH07	5.0	0.6 (Fill)	51 – 200+	6.0	NE
AH08	5.0	NE	155 – 200+	5.8	NE
AH09	1.1	NE	200+	2.9 (s)	NE
AH10	0.8	NE	200+	2.8 (s)	NE
AH11	1.5	NE	200+	1.5 (s)	NE
AH12	0.6	NE	200+	2.6(s)	NE
AH13	1.2	NE	172 – 200+	2.3 (s)	NE
AH14	0.6	NE	179 – 200+	3.6	NE
AH15	3.9	NE	167 – 200+	5.0 (s)	3.4
AH16	1.4	NE	158 – 200+	3.2 (s)	NE
AH17	5.0	NE	119 – 200+	5.8	NE
AH18	0.5	0.2	200+	3.6	NE
AH19	1.2	0.2	200+	1.7 (s)	NE
AH20	1.5	0.3	200+	2.9 (s)	NE

NE = Not Encountered NT = Not Tested (S) = Sudden (blow count +20)

Table 2 – Summary of Subsurface Conditions (Test Pits)

Test ID	Test Pit Termination Depth	Depth to the base of Topsoil/Fill	Vane Shear Strength Range (kPa)	Groundwater Depth
All depths measured in (m) below present ground level. (Rounded to 1 DP)				
TP01	5.4	NE	45 – 200+	NE (2.3) [1]
TP02	3.1	NE	80 – 200+	NE
TP03	4.6	NE	118 – 200+	NE
TP04	1.3	NE	200+	NE
TP05	2.2	NE	200+	NE
TP06	3.8	NE	99 – 200+	NE
TP07	1.6	NE	148 – 200+	NE
TP08	3.0	NE	200+	NE

NE = Not Encountered, 1: The value in the brackets indicates the depth at which wet soil was encountered – potential GW table

5.0 Expansive Soils

Two soil samples (SS01 & SS02) were retrieved from near-surface strata and tested in our laboratory to determine soil expansivity characteristics in accordance with AS 1289.7.1.1.

The laboratory test results and our experience in this geology indicate the soils lie in 'Expansive Soil Class H – Highly Expansive' with reference to B1/AS1, or Class H1 with reference to AS2870:2011. Laboratory test results are presented in Appendix C.

6.0 Sensitive Soils

The ratio of peak to remoulded vane shear strength values recorded during our investigation ranges approximately between 2 and 4, indicative of a 'moderately sensitive' subgrade. Sensitive soils are potentially susceptible to mechanical disturbance and/or exposure to the elements and soils that test well in-situ can perform poorly when construction is underway. Further, the characteristic nature of a silt-cobble matrix basaltic tuff is to be irregularly consolidated.

Care is therefore required during construction to ensure the soils are protected to ensure favourable short and long-term subgrade and foundation performance.

Practical means of protecting the soils include avoidance of vibration-based compaction equipment, protecting the subgrade following initial site clearance, minimising the passage of heavy or vibrating construction plant, and extra care during foundation excavations, particularly any pile excavations. Further subgrade protection measures are provided in Section 11.0 of this report.

7.0 Seismic Design Parameters

The site is considered a Class C – 'Shallow Soil Site' as defined by NZS 1170.5:2004.

The Peak Ground Acceleration (PGA) value for a structure of Importance Level 2, adopted for stability analysis of the site is 0.19g (ULS) with an effective earthquake magnitude of 6.5. The PGA has been adopted as the minimum value for the design based on relevant guidelines[1].

8.0 Liquefaction

Typically, the two principal factors which can result in liquefaction occurring under seismic conditions are the presence of unconsolidated/loose sands/sandy silts, and groundwater. The soils encountered during the investigation are generally stiff to hard clayey silt/silt with lesser amounts of clay and fine sand. The sandy silt/silty sand soils (where encountered) are interbedded in thin layers in the soil profile and assessed to be medium dense to dense. Considering the geological age of the site, we consider that these soils are likely consolidated.

These soils are not conducive to liquefaction (and consequently lateral spread) under any design-level seismic event.

9.0 Slope Stability

Qualitative Assessment

The ground surface across the site is predominantly near-level to gently falling towards the northwest. Slopes become moderately steep-inclined near the pond, however are modest in length and located away from the proposed development area.

[1] Refer to Appendix A of "Earthquake Geotechnical Engineering Practice Manual – Module 1" prepared by MBIE, dated November 2021.

At the time of our investigation no visual evidence of major, deep-seated instability was identified and given the modest length of the steeper slopes coupled the favourable soil strengths, we infer any soil creep activity will be minimal.

Quantitative Assessment

To quantitatively check the overall stability of the slopes within the proposed site, stability analyses have been undertaken for the existing topography through cross section A-A' and B-B' as indicated on the Site Plan, Drawing No. NL230070/1.

RocScience Inc. SLIDE software was used for stability analyses. Stability of theoretical circular surfaces was assessed using the Spencer method.

Stability analyses have been undertaken for the measured groundwater, extreme (worst credible) groundwater, and seismic conditions. The measured groundwater condition has been adopted for the seismic condition. Peak Ground Acceleration (PGA) values for the Northland Region have been determined as given in Section 7.0 of this report.

Lower-bound effective stress shear strength parameters used for our analyses are summarised in Table 3. These have been developed from the soil description, in-situ strength testing, limited back analysis, and our experience with these soil types in both the immediate area and the wider region.

Table 3 – Effective Shear Stress Parameters

Soil Type	Estimated Unit Weight γ (kN/m^3)	Effective Cohesion on the Failure Plane c' (kPa)	Effective Angle of Internal Friction ø' (°)
Alluvial Deposits (Tauranga Group Soils)	18	3	27
Weathered Kerikeri Volcanic Group Soils	18	5	30
Less weathered Kerikeri Volcanic Group Soils	19	10	36

Table 4 – Stability Analysis Results

Section	Modelled Conditions	Global Factor of Safety		Pass/Fail
		Required	Calculated	
A-A'	Measured Groundwater	1.5	4.1	Pass
	Extreme (Worst Credible) Groundwater	1.3	2.7	Pass
	Seismic Loading	1.1	2.0	Pass
B-B'	Measured Groundwater	1.5	3.3	Pass
	Extreme (Worst Credible) Groundwater	1.3	2.2	Pass
	Seismic Loading	1.1	1.7	Pass

Stability Conclusions

The global minimum FOS results in Table 4 are greater than the published Council requirements (see Appendix D).

We therefore consider the proposed site to be suitable for development from a global land stability point of view contingent upon the recommendations of this report being adopted in design and construction.

10.0 Foundation Design Recommendations

S&RC should inspect all foundation excavations to determine whether the exposed soil and foundation conditions are consistent with those described in this report.

10.1 Shallow Foundations

The natural site soils are considered suited to the use of shallow foundations which may comprise a 'waffle' or 'rib-raft' slab (surface-supported, no embedment) or senton/strip footings embedded a minimum of 1.0m into stiff natural ground or engineered fill to accommodate the expansivity characteristics of the expansivity characteristics of the soils, classified as Expansive Soil Class H1 as per Section 5.0 of this report. Concrete slab on grade foundations shall be embedded a minimum of 600mm (for light weight cladding) or 800mm (for heavy weight cladding) into stiff natural ground or engineered fill in accordance with B1/AS1.

A Design (Dependable) Bearing Capacity of 150kPa is available for Ultimate Limit State Design of shallow foundations carried out in accordance with B1/AS1 or AS2870:2011, B1/VM4 and AS/NZS 1170:2002. A

Strength Reduction Factor ($Ø_{bc}$) of 0.5 has been applied to the Geotechnical Ultimate Bearing Capacity value to determine the Design Bearing Capacity.

10.2 Pile Foundations

Given the encountered soil conditions, shallow foundations are recommended. However, pile foundations will be required where structural design calls for greater bearing capacity than those given for shallow foundations.

We recommend pile foundations take the form of bored, concrete-encased timber, or steel-reinforced concrete piles embedded into stiff natural ground. Pile excavations that penetrate groundwater, expected from approximately 2.3m depth bpgl, will be susceptible to collapse and casing may be required.

Pile bores may prove difficult to excavate within the gravel and cobble-rich subsoils, and where the excavation penetrates the groundwater table, however soil strengths and the presence of cobbles and boulders would most likely render driven timber piles impractical. Driven steel columns could be considered as an alternative.

11.0 Floor Slabs and Pavements

All topsoil, non-engineered fill, vegetation, organic or otherwise unsuitable material should be removed from under floor slab and pavement areas prior to construction.

For preliminary design a CBR value of 3% or a modulus of subgrade reaction of 20kPa/mm are considered appropriate for flexible and rigid pavements respectively. These values should be confirmed by specific testing by S&RC following preparation of the subgrade.

Maintaining the natural moisture content of a subgrade prior to construction is important. The subgrade should be protected from desiccation, rain damage, and plant-trafficking by placing a protective layer of granular fill immediately upon excavating or filling to grade following inspection by the Geotechnical Engineer. The granular fill can later be left in-situ as a construction sub-base or basecourse if managed well and protected from damage.

In dry conditions, we recommend watering the subgrade approximately 48 hours prior to concrete placement to return the subgrade to its inferred pre-excavation moisture content.

Any concrete floor-slab or pavement should be underlain by a basecourse of clean, free-draining granular fill as specified by the designer and should be subjected to compaction by a device of appropriate weight

and energy. Silty or sandy subgrades are generally sensitive to disturbance and 'static' rolling only (no vibration) may be a requirement.

12.0 Cuts and Fills

All fills, regardless of depth, must be placed in accordance with NZS 4431:2022 with respect to subgrade preparation and standard of compaction.

The current ground surface is gently-inclined to near level; hence we anticipate earthworks, including levelling and removing topsoil/fill (where encountered) to be minimal.

Any proposal to create cuts or fills greater than 600mm in height should be the subject of specific design advice.

13.0 Stormwater

Concentrated stormwater flows must not be allowed to run onto or over slopes or saturate the ground as this could adversely affect slope stability or foundation conditions. Flows from all impermeable areas must be collected and carried in sealed pipes to a disposal point approved by Council.

We expect stormwater disposal will be via detented and throttled systems discharging to the nearby Mangamutu Stream. On-site disposal of concentrated flows via in-ground soak pits or trenches, especially if undetented or unthrottled, should be avoided unless specific advice is given by an experienced Geotechnical Engineer.

14.0 Construction Constraints

Geotechnical aspects of construction that are anticipated to require special attention by the Contractor and inspecting Geotechnical Engineer include (but are not necessarily limited to) the following:

- Foundation excavations within the Basaltic Silt-Cobble matrix may encounter cobble-sized obstructions.
- Basalt substrates are inherently unpredictable. Reference should be made to Appendix E in this regard.
- Sensitive soils are present in places. These can exhibit a significant strength reduction when disturbed or exposed to the weather. Care is therefore required to protect the exposed soils during construction. Reference should be made to Section 11.0 of this report in this regard.

15.0 Drawing Review

No detailed drawings of the proposed development were provided at the time of preparation of this report. We recommend once plans are available that they be submitted to S&RC so that the applicability and implementation of the recommendations made in this report can be confirmed prior to application for Building Consent.

16.0 Observation of Construction

The recommendations given in this report are based on limited site data from discrete locations and it is in the nature of geotechnical engineering that variations in ground conditions will exist across a site. S&RC should be engaged to inspect excavations and foundation conditions exposed during construction so that 'actual' ground conditions can be compared with those assumed in formulating this report.

The aspects of the development that require geotechnical observation, testing, and final certification will be determined by Council and given in the Special Conditions of the Consent. The Contractor should make themselves familiar with those conditions and ensure adequate observations are carried out. In any case, the contractor should notify S&RC should ground conditions encountered during construction vary from those described in this report.

Any ground covered by fill or concrete prior to geotechnical inspection will be specifically excluded from completion certification (PS4).

End of Report Text – Appendices Follow

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Appendix A

Drawings

LOCATION MAP SITE LOCATION

NOTES:

1. Locations of features approximate only.
2. Location of all buried services to be verified prior to construction.
3. Original sheet size A3.
4. Boundary information on this Site plan adapted from Auckland Council Aerial Photographs and/or GIS Data.

KEY:

- Approximate Site Boundary
- AH01 — Approximate Hand Augerhole Locations, Soil & Rock Consultants, Aug 2023
- TP01 — Approximate Test Pit Locations, Soil & Rock Consultants, Aug 2023
- SS01 — Approximate Expansivity Sample Locations, Soil & Rock Consultants, Aug 2023
- A — A' Approximate Cross Section Locations

AMENDMENTS		
DATE	REV	DESCRIPTION

Soil&Rock Consultants
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Level 1, 131 Lincoln Road, Waitakere
PO Box 21-424 Henderson, Waitakere 0650
Ph 09 835 1740 Fax 09 835 1847
www.soilandrock.co.nz

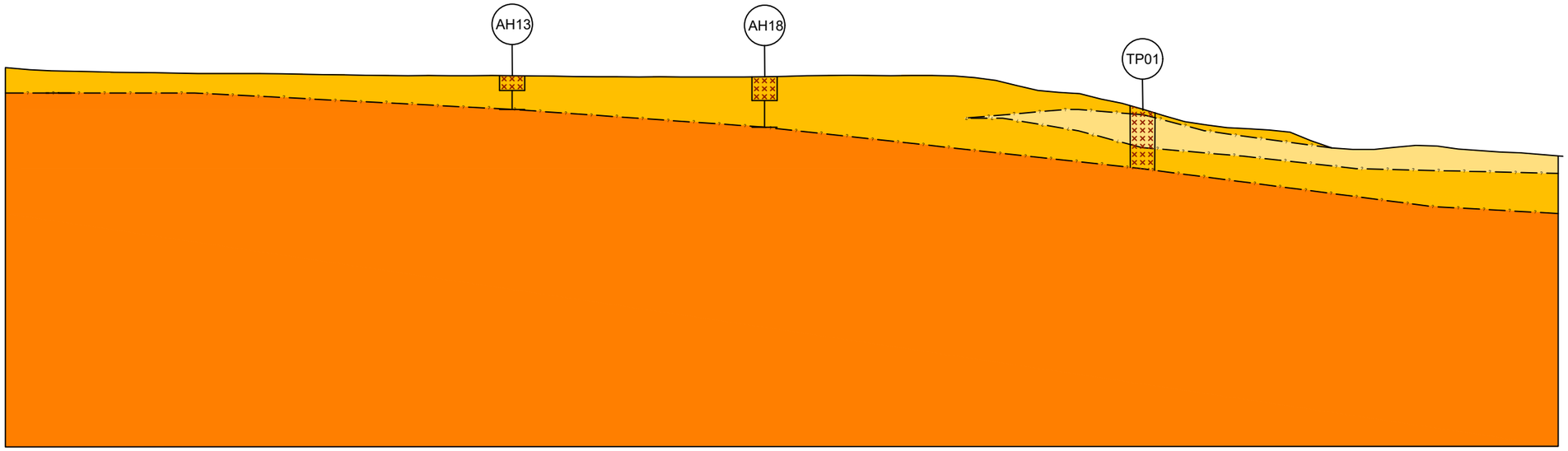
Bisset Road & 10 Rimu Place
Kaikohe

SITE PLAN

NL230070 / 1	DRAWN: AA	DATE: Sep 2023	
SCALES: 1: 2000 AT A3	CHECKED:		REV.
	DESIGNED:		
Filename: Site Plan			

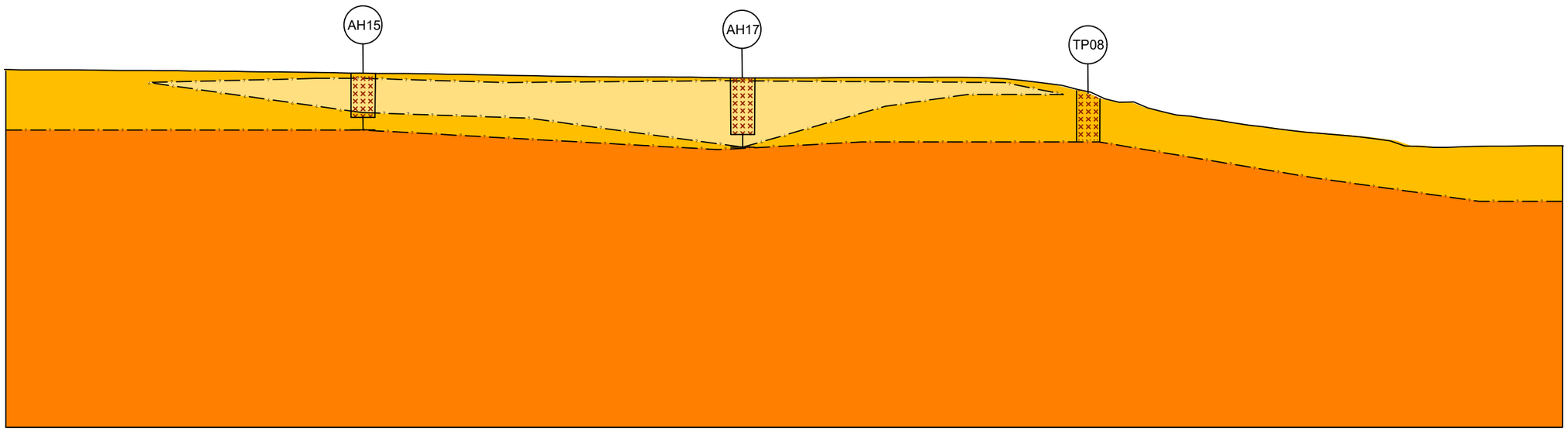
SE
A

NW
A'

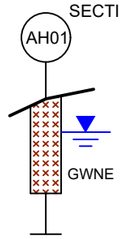


SE
B

NW
B'



KEY TO CROSS SECTION SYMBOLS



Hand Drilled Augerhole

Groundwater Level

Groundwater Not Encountered

Scala Penetrometer Test from base of Augerhole

KEY TO LITHOLOGY SHADES

Soil Shade
Rock Shade

Auckland Volcanic Field

Alluvial Deposits

KEY TO LITHOLOGY HATCHES

Silt/clayey Silt

NOTES:

1. Soil & Rock Consultants cross sections surveyed by tape and clinometer.
2. Soil descriptions shown approximate only, refer to borelogs for details.
3. Extrapolation of ground conditions away from test locations has been made but cannot be guaranteed.
4. Groundwater measurements were made August 2023
5. Locations of features approximate only.

AMENDMENTS		
DATE	REV	DESCRIPTION

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Kaikohe

CROSS SECTION A-A' & B-B'

NL230070/2	DRAWN: AA	DATE: Sep 2023
SCALES: 1: 400 AT A3	CHECKED:	REV.
	DESIGNED:	

Filename: Section

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Appendix B

Investigation Logs

Soil&Rock Consultants
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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH01

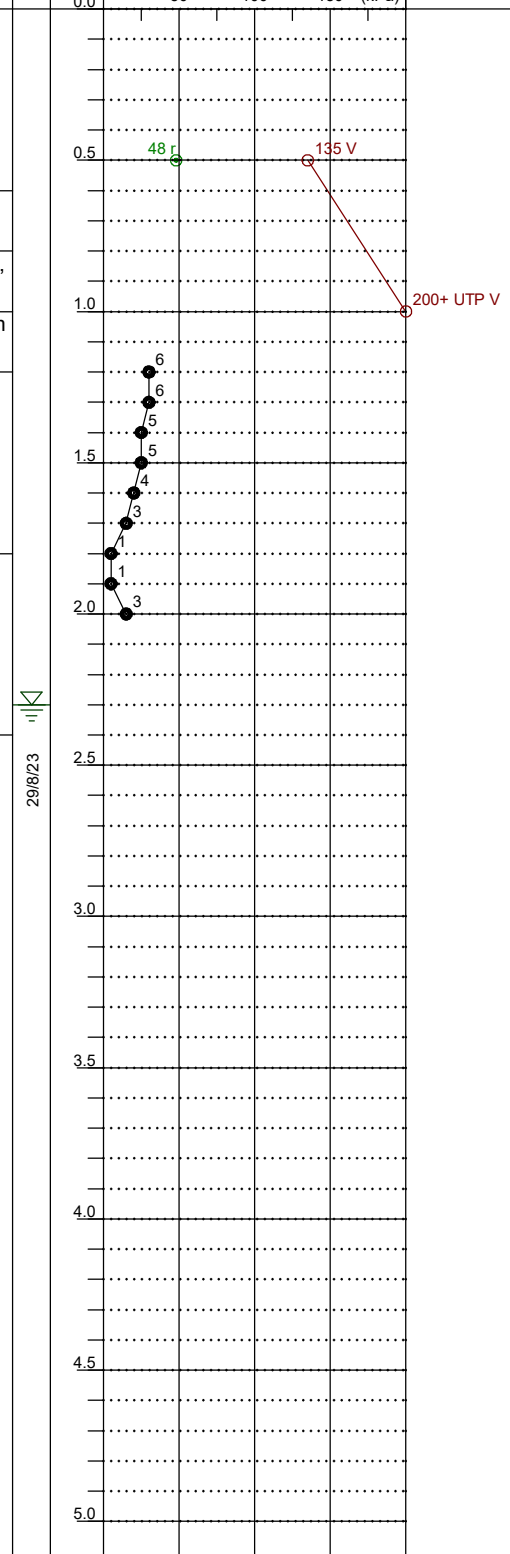
Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG, JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	29/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	29/8/23	Water Level:	2.3m 29/8/23		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
KERIKERI VOLCANIC FIELD	0.0		SILT, some fine to medium sand, brown, stiff, moist, non-plastic (WEATHERED TUFF)	
			dark orange brown	
	0.5		trace fine to coarse angular gravel	
			fine to medium sandy SILT, trace clay, brown, dark grey, very stiff, moist, non-plastic	
	1.0		SILT, some fine sand, some clay, dark orange brown, very stiff, moist, slightly plastic	
			fine to medium SAND, some silt, dark grey, red brown, medium dense, moist	
	1.5		SILT, some clay, minor fine to medium sand, red brown, brown, very stiff, moist, slightly plastic	
			purple red, red brown	
			trace fine to medium angular gravel	
	2.0		fine sandy SILT, minor clay, red brown, dark purple red, very stiff, moist, slightly plastic	
	2.5		END OF BORE. 2.40 METRES. (TOO HARD TO AUGER)	29/8/23
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)



LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

Soil&Rock Consultants
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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH02

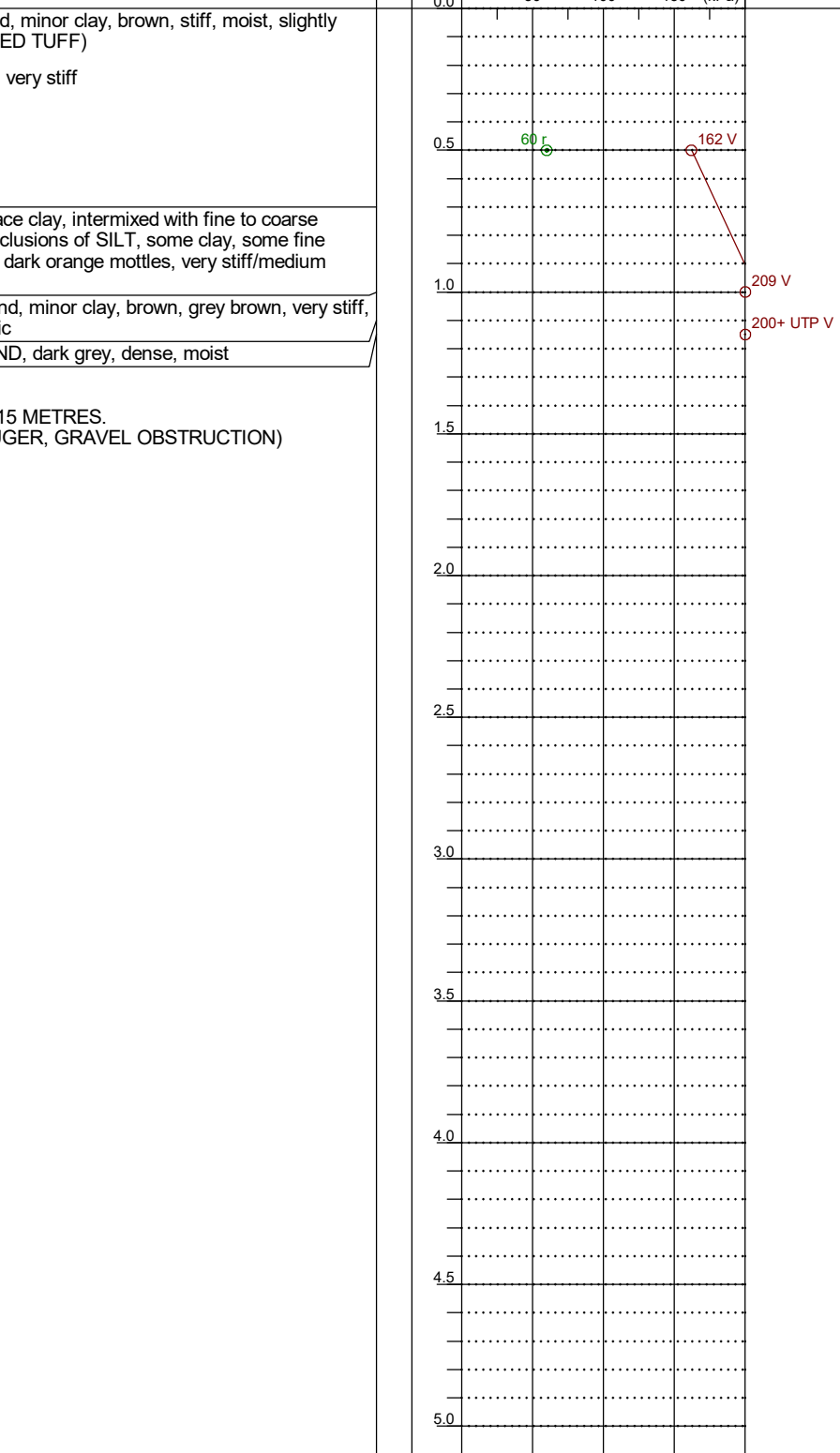
Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
KERIKERI VOLCANIC FIELD	0.0		SILT, minor fin sand, minor clay, brown, stiff, moist, slightly plastic (WEATHERED TUFF)	
			dark orange brown, very stiff	
	0.5		some clay	
			fine sandy SILT, trace clay, intermixed with fine to coarse SAND and some inclusions of SILT, some clay, some fine sand, brown, some dark orange mottles, very stiff/medium dense, moist,	
	1.0		SILT, some fine sand, minor clay, brown, grey brown, very stiff, moist, slightly plastic	
			fine to medium SAND, dark grey, dense, moist	
	1.5		END OF BORE. 1.15 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)	
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)



LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH02a

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR v r 50 100 150 (kPa)	LABORATORY TESTS
KERIKERI VOLCANIC FIELD	0.0		SILT, minor fine sand, dark brown, very stiff, moist, non-plastic (WEATHERED TUFF)		0.0		
			minor clay, light yellow brown, slightly plastic				
	0.5		hard		0.5	210 V	
			brown, occasional orange brown mottles				
			minor fine angular gravel				
			dark grey brown, grey mottles				
	1.0				1.0	210 V	
	1.5		trace clay, grey, yellow grey, yellow specks, non-plastic		1.5	210 V	
						200+ UTP V	
			END OF BORE. 1.70 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)				
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH03

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	HHe
Drilled By:	HHe	Coordinates:		Shear Vane No - Calibration Date:	GEO3563 - 5/07/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TS	0.0		TOPSOIL	
KERIKERI VOLCANIC FIELD			SILT, some fine sand, light brown, hard, dry, non-plastic (WEATHERED TUFF)	
	0.5		clayey SILT, some fine sand, light brown, yellow, very stiff, moist, slightly plastic hard	
			white and red streaks	
	1.0		some fine sand, white, red and orange streaks	
			SILT, some clay, some fine to medium sand, red, white, orange streaks, hard, moist, slightly plastic	
	1.5		clayey SILT, minor fine sand, grey, red, hard, moist, slightly plastic	
			red, grey streaks	
	2.0		red	
			red, grey streaks	
	2.5		fine to medium sandy SILT, some clay, red, very stiff, moist, non-plastic	
	3.0		clayey SILT, some fine sand, red, yellow streaks, very stiff, moist, slightly plastic	
			fine to coarse sandy SILT, red, grey mottles, very stiff, moist, non-plastic	
			clayey SILT, some fine to medium sand, grey, red, very stiff, moist, slightly plastic	
	3.5		fine to coarse sandy SILT, some angular gravel, red, very stiff, moist, non-plastic	
			clayey SILT, some fine to coarse sand, red, grey streaks, very stiff, moist, slightly plastic	
	4.0			
	4.5			
			silty CLAY, trace fine to medium sand, red orange, very stiff, moist, moderately plastic band 50mm thick, black decomposed wood fragments	
	5.0		END OF BORE. 5.00 METRES. (TARGET DEPTH)	

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)

DEPTH (m)		LABORATORY TESTS
0.0		
0.5	75 r	207 V
1.0		210 V
1.5		200+ UTP V
2.0		210 V
2.5	108 r	172 V
3.0	102 r	165 V
3.5	116 r	208 V
4.0	108 r	171 V
4.5	75 r	123 V
5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH04

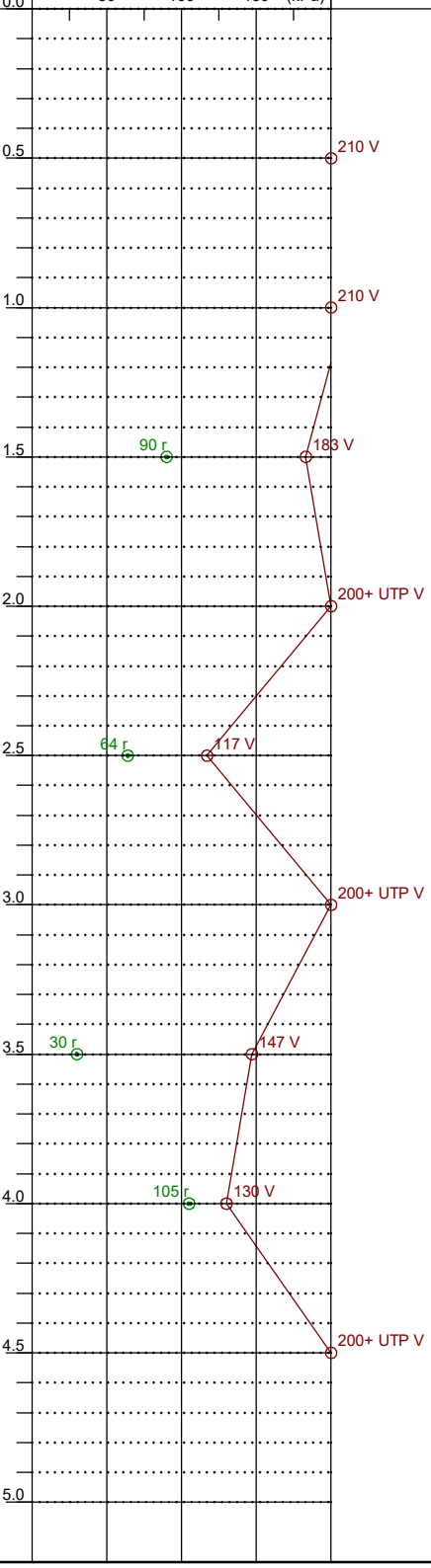
Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	HHe
Drilled By:	HHe	Coordinates:		Shear Vane No - Calibration Date:	GEO3563 - 5/07/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	3.2m 28/8/23		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
TS	0.0		TOPSOIL	
KERIKERI VOLCANIC FIELD	0.5		SILT, some fine sand, dark brown, hard, dry, non-plastic (WEATHERED TUFF)	
			minor clay	
	1.0		some clay	
	1.5		very stiff	
	2.0		clayey SILT, dark brown, very stiff, moist, slightly plastic	
			band 50mm thick coarse gravel	
			dark brown	
			light brown	
	2.5		minor fine to medium sand, red, yellow streaks	
	3.0		SILT, some fine to medium sand, minor clay, light grey, yellow mottles, hard, moist, non-plastic	
			wet	
			saturated	28/8/23
	3.5		<20% recovery	
	4.0			
	4.5		END OF BORE. 4.50 METRES. (TOO HARD TO AUGER)	
	5.0			

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)



LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH05

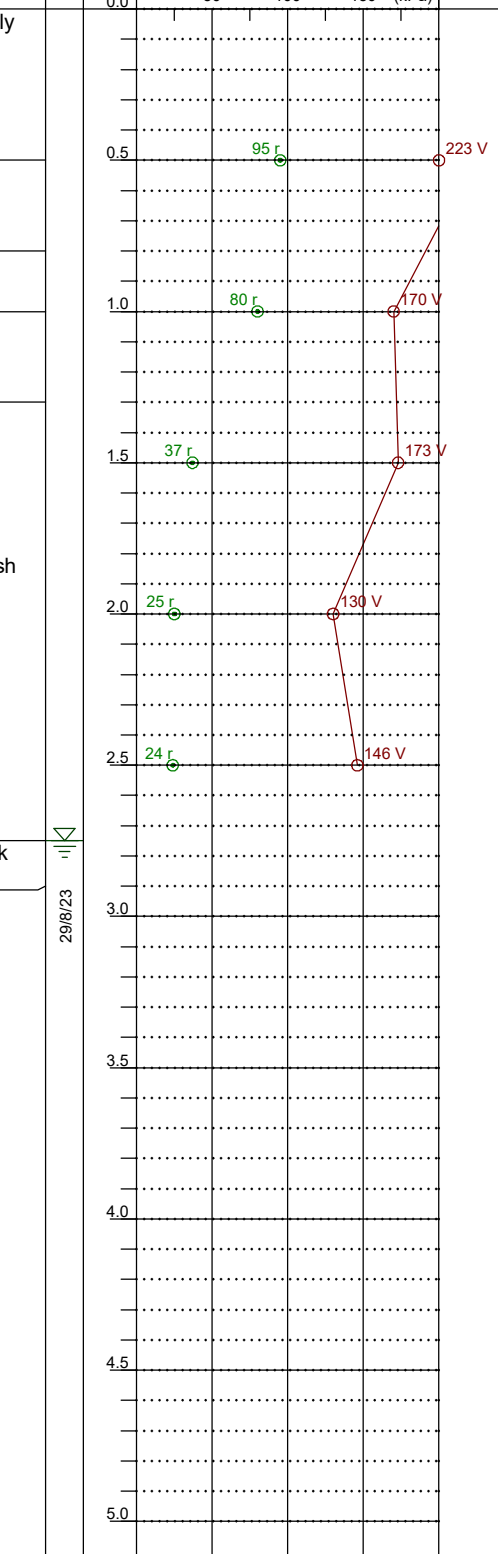
Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG, JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	29/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	29/8/23	Water Level:	2.8m 29/8/23		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
KERIKERI VOLCANIC FIELD	0.0		SILT, minor clay, minor fine sand, brown, stiff, moist, slightly plastic (WEATHERED TUFF)	
			dark orange brown, very stiff	
	0.5		clayey SILT, minor fine sand, dark orange brown, very stiff, moist, moderately plastic	
			fine sandy SILT, trace clay, dark brown, very stiff, moist, non-plastic	
	1.0		SILT, some clay, minor fine sand, dark orange brown, very stiff, moist, moderately plastic	
			dark orange brown	
			clayey SILT, minor fine sand, dark orange brown, very stiff, moist, moderately plastic	
	1.5		some inclusions up to 10mmø of coarse SAND, dark reddish brown	
	2.0		dark red	
			some inclusions up to 20mmø of fine SAND	
			wet	
	2.5		fine to coarse SAND, some silt, dark purple, dark red & dark grey, loose, saturated	29/8/23
	3.0		END OF BORE. 2.90 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)	
	3.5			
	4.0			
	4.5			
	5.0			

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)



LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH06

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG, JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	29/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
KERIKERI VOLCANIC FIELD	0.0		SILT, some fine sand, brown, stiff, moist, non-plastic (WEATHERED TUFF)	
			very stiff	
			dark orange brown	
			minor clay, slightly plastic	
	0.5		some clay	
			fine SAND, dark grey, loose, moist	
			clayey SILT, minor fine sand, orange brown, very stiff, moist, moderately plastic	
	1.0		some orange streaks	
			fine sandy SILT, dark brown, very stiff, moist, non-plastic	
TAURANGA GROUP			SILT, some clay, some fine sand, orange pink. yellow streaks, very stiff, moist, slightly plastic (PLEISTOCENE DEPOSITS)	
	1.5		red and orange streaks	
	2.0		clayey SILT, trace fine sand, yellow, red streaks, very stiff, moist, moderately plastic	
	2.5		END OF BORE. 2.30 METRES. (TOO HARD TO AUGER)	
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)

DEPTH (m) 0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

200+ UTP V
200+ UTP V

4 2 3 4 4 4 3 5 5 5 5 6 7 7 8 8 10

LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

Soil&Rock Consultants
Your responsive & cost-effective engineers

CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH07

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Slightly sloping grass
Date Finished:	28/9/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
FILL	0.0		TOPSOIL (FILL)	
			some red and orange clayey SILT inclusions	
	0.5		clayey SILT, trace fine sand intermixed with SILT, some clay, minor fine sand and topsoil inclusions, brown, red, pink, orange, stiff, moist, slightly and moderately plastic	
TAURANGA GROUP			SILT, some fine sand, some clay, orange brown, very stiff, moist, slightly plastic (PLEISTOCENE DEPOSITS)	
	1.0		clayey SILT, some fine sand, orange brown, orange, very stiff, moist, moderately plastic	
			orange, yellow, red, light grey streaks	
			SILT, some fine to medium sand, some clay, orange, light grey, red streaks, very stiff, moist, slightly plastic	
	1.5		clayey SILT, trace fine sand, light blue grey, orange, red streaks, very stiff, moist, moderately plastic	
	2.0		SILT, some clay, minor fine sand, light orange, red, light grey streaks, very stiff, moist, slightly plastic	
			some fine to coarse sand, minor fine to medium angular gravel, hard	
	2.5		clayey SILT, minor fine to medium sand, orange, red streaks, very stiff, moist, moderately plastic	
			trace fine sand, no medium sand, red, light grey streaks	
	3.0			
			80mm band some fine to coarse sand, trace fine angular gravel	
			red, pink, some light grey streaks	
	3.5			
			80mm band some fine to coarse sand, trace fine angular gravel	
	4.0		pink, red, some yellow streaks	
	4.5			
	5.0		fine to coarse sandy SILT, minor clay, minor fine angular gravel, pink, red, very stiff, moist, slightly plastic	
			END OF BORE. 5.00 METRES. (TARGET DEPTH)	

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)

DEPTH (m)		
0.5	27 r	51 V
1.0	57 r	130 V
1.5	95 r	169 V
2.0		200+ UTP V
2.5	143 r	218 V
3.0	108 r	169 V
3.5	80 r	167 V
4.0	81 r	148 V
4.5	80 r	148 V
5.0		200+ UTP V

LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

Soil&Rock Consultants
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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH08

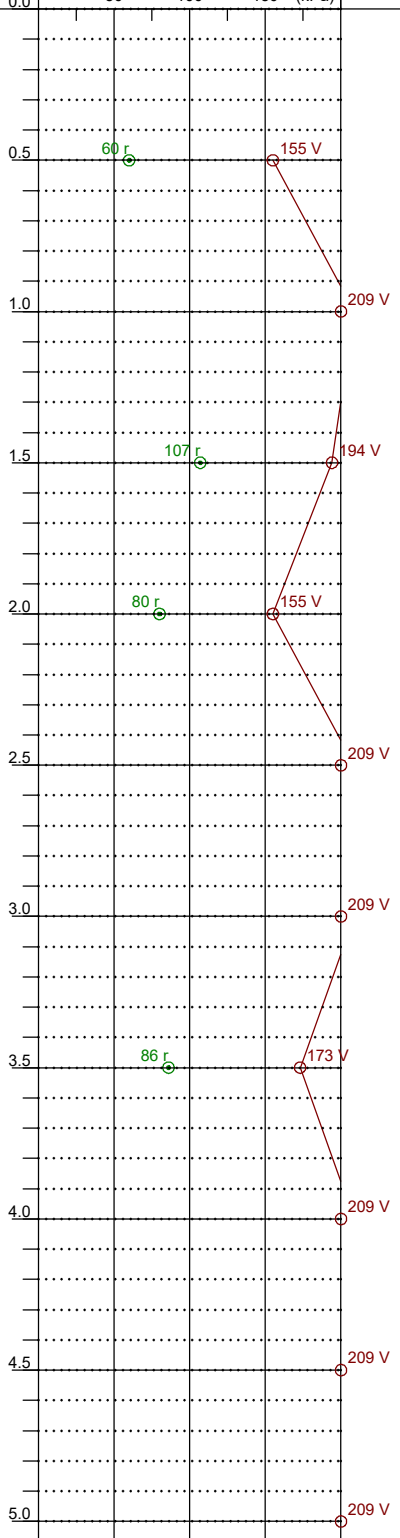
Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
KVF	0.0		SILT some fine sand, trace clay, dark brown, red mottles, black speckles, very stiff, moist, non plastic (WEATHERED TUFF)	
			minor clay, yellow brown, slightly plastic	
	0.5		SILT some clay, minor fine sand, yellow, very stiff, moist, slightly plastic (PLEISTOCENE DEPOSITS)	
			clayey SILT, trace fine sand, yellow, yellow orange streaks, very stiff, moist, moderately plastic	
	1.0		intermixed with, fine to coarse sandy SILT, minor clay, light grey, yellow, orange streaks, very stiff, moist, slightly plastic	
			minor fine to medium sand, red streaks, orange mottles, yellow, light grey	
	1.5		fine to medium sandy SILT, minor clay, red pink, light grey streaks, light yellow, very stiff, moist, slightly plastic	
TAURANGA GROUP	2.0		SILT some fine to medium sand, some clay, red, pink, red streaks, very stiff, moist, slightly plastic	
	2.5		clayey SILT, minor fine sand, pink red, light grey streaks, very stiff, moist, moderately plastic	
			SILT some fine to medium sand, some clay, red, pink, red streaks, very stiff, moist, slightly plastic	
	3.0		fine sandy SILT, minor clay, pink red, light grey, very stiff, moist, slightly plastic	
			SILT minor fine sand, minor clay, red pink, light grey, very stiff, moist, slightly plastic	
	3.5		some clay	
			minor clay	
	4.0		some hard orange SILT inclusions, minor fine to medium sand	
			minor fine sand, dark red brown, light grey	
	4.5		light grey, red brown streaks	
			trace clay, light red pink, light grey, non plastic	
			minor clay, slightly plastic	
	5.0		END OF BORE. 5.00 METRES. (TARGET DEPTH)	

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH
REMOULDED SHEAR
v
r
50 100 150 (kPa)



LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

Soil&Rock Consultants
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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH09

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Slightly sloping grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR v r 50 100 150 (kPa)	LABORATORY TESTS
KERIKERI VOLCANIC FIELD	0.0		SILT some fine sand, trace clay, brown, hard, moist, non plastic (WEATHERED TUFF)		0.0		
	0.5		some with white and grey SILT inclusions red brown grey, orange mottles brown, red brown		0.5		209 V
	1.0		trace fine to medium angular gravel, grey brown		1.0		200+ UTP V 200+ UTP V
			END OF BORE. 1.10 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)				
	1.5				1.5		
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH10

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	29/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	29/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR ○ v ◉ r 50 100 150 (kPa)	LABORATORY TESTS
KERIKERI VOLC. F.	0.0		SILT minor fine sand, trace clay, brown, very stiff, moist, non plastic (WEATHERED TUFF)		0.0		
	0.5		grey brown, orange brown mottles		0.5	10	200+ UTP V
	1.0		END OF BORE. 0.80 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)		1.0		
	1.5				1.5		
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH11

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	30/8/23	Ground Elevation:		Surface Conditions:	Slightly sloping grass
Date Finished:	30/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR v r 50 100 150 (kPa)	LABORATORY TESTS
KERIKERI VOLC. FIELD	0.0		SILT some fine sand, brown, very stiff, moist, non plastic (WEATHERED TUFF)		0.0		
			dark orange brown				
	0.5		some clay, slightly plastic		0.5		223 V
			clayey SILT, minor fine sand, dark orange brown, very stiff, moist, moderately plastic				
	1.0		SILT some fine to coarse sand, some clay, minor fine to medium angular gravel, brown with black mottles, very stiff, moist, slightly plastic		1.0		200+ UTP V
			trace coarse angular gravel				
	1.5		fine to medium SAND, some silt, some coarse sand, brown, medium dense, moist		1.5		200+ UTP V
			END OF BORE. 1.50 METRES. (BASALT? OBSTRUCTION)				
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH12

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	29/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	29/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR ○ v ◉ r 50 100 150 (kPa)	LABORATORY TESTS
KERIKERI VOLC. F.	0.0		SILT some fine to medium sand, brown, stiff, moist, non plastic (WEATHERED TUFF)		0.0		
			some clay, dark red brown, slightly plastic				
	0.5		fine to medium SAND, brown, dark grey, dense, moist		0.5		223 V 200+ UTP V
			END OF BORE. 0.60 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)				
	1.0				1.0		
	1.5				1.5		
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH13

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Slightly sloping grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY: KERIKERI VOL F

DEPTH (m) / GRAPHIC LOG

Soil description in accordance with the NZ Geotechnical Society Inc 2005
"Guidelines for Field Description of Soil and Rock in Engineering Use"

0.0 SILT minor fine sand, brown, stiff, moist, non plastic (WEATHERED TUFF)
very stiff
dark orange brown

0.5 red brown, dark red
minor clay, slightly plastic

some clay, pink red, red brown

1.0 clayey SILT, minor fine sand, purple red, dark red, very stiff, moist, moderately plastic

fine SAND, some silt, purple brown, dense, moist

END OF BORE. 1.25 METRES.
(TOO HARD TO AUGER, GRAVEL OBSTRUCTION)

1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

WATER LEVEL (m)

DEPTH (m)

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)

0.0
0.5 52 r 172 V
1.0 51 r 221 V
200+ UTP V
1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0

LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH14

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	29/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	29/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
K. VOLC. F	0.0		SILT some fine sand, brown, very stiff, moist, non plastic (WEATHERED TUFF)	
			for 50mm; trace fine angular gravel trace clay, dark brown	
	0.5		fine to medium sandy SILT, trace fine angular gravel, trace coarse sand, dark orange brown, very stiff, moist, non plastic	
			fine to medium SAND, brown, dark grey, dense, moist	
	1.0		END OF BORE. 0.65 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)	
	1.5			
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH
REMOULDED SHEAR
v
r
50 100 150 (kPa)

DEPTH (m)

0.0
0.5 — 67 r — 179 V — 200+ UTP V
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0

LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH15

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	30/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	30/8/23	Water Level:	3.4m 30/8/23		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"
K.V.F	0.0		SILT some fine sand, minor clay, brown, very stiff, moist, slightly plastic (WEATHERED TUFF)
			dark orange brown with black streaks
TAURANGA GROUP	0.5		clayey SILT, minor fine sand, dark yellow, very stiff, moist, moderately plastic (PLEISTOCENE DEPOSITS) yellow
			some silt
	1.0		trace fine to coarse sand
	1.5		SILT some fine to medium sand, some clay, trace medium to coarse sand, light grey, yellow, red, very stiff, moist, slightly plastic
	2.0		clayey SILT, trace fine sand, red with yellow streaks, very stiff, moist, moderately plastic
	2.5		SILT some fine sand, some clay, pink, hard, moist, slightly plastic
			very stiff
	3.0		clayey SILT, minor fine sand, pink, orange, yellow, very stiff, moist, moderately plastic
K.V.F	3.5		fine to coarse sandy SILT, minor fine angular gravel, brown, some yellow streaks, stiff, saturated, non plastic (VOLCANIC DEPOSITS)
			very stiff
			minor clay, slightly plastic
	4.0		END OF BORE. 3.90 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)
	4.5		
	5.0		

WATER LEVEL (m): 30/8/23

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)

DEPTH (m)		
0.5	64 r	167 V
1.0	108 r	204 V
1.5	114 r	210 V
2.0	116 r	167 V
2.5		200+ UTP V
3.0	114 r	210 V
3.5		223 V
4.0		200+ UTP V
4.5		
5.0		

LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

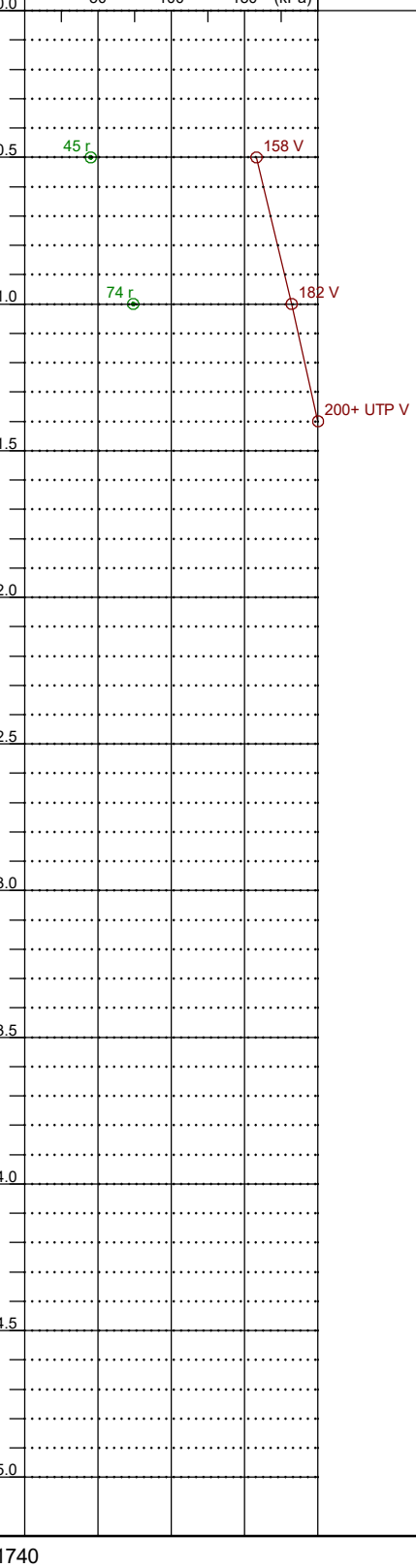
PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH16

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	JN
Drilled By:	JN	Coordinates:		Shear Vane No - Calibration Date:	GEO3562 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Slightly sloping grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)
KERIKERI VOLCANIC FIELD	0.0		SILT some fine sand, trace clay, brown, very stiff, moist, non plastic (WEATHERED TUFF)	
	0.5		trace coarse subrounded basalt gravel	
			light yellow brown, orange mottles, trace fine to medium subangular gravel	
			yellow mottles	
	1.0		minor fine sand, minor clay, orange mottles, slightly plastic	
			minor fine to medium angular gravel, trace clay, grey speckles, non plastic	
			yellow mottles	
	1.5		END OF BORE. 1.40 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)	
	2.0			
	2.5			
	3.0			
	3.5			
	4.0			
	4.5			
	5.0			



LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH17

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	DEG
Drilled By:	DEG	Coordinates:		Shear Vane No - Calibration Date:	GEO3564 - 2/05/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"
K.V.F	0.0		SILT some fine sand, minor clay, brown, stiff, moist, slightly plastic (WEATHERED TUFF)
			dark orange brown
			some clay
TAURANGA GROUP	0.5		clayey SILT, trace fine sand, orange brown, very stiff, moist, moderately plastic (PLEISTOCENE DEPOSITS)
			yellow orange with white speckles
	1.0		some red streaks
			SILT some fine to medium sand, minor clay, light yellow, yellow, orange, red, very stiff, moist, slightly plastic
	1.5		clayey SILT, trace fine to medium sand, orange, yellow, red, very stiff, moist, moderately plastic
	2.0		SILT some fine sand, some clay, trace medium to coarse sand, trace fine to medium angular gravel, light grey, pink red, very stiff, moist, slightly plastic
	2.5		clayey SILT, trace fine sand, pink, red, light grey, very stiff, moist, moderately plastic
			brown, red
			for 50mm; fine SAND, red, loose
			trace fine to medium angular gravel
	3.0		pink, orange, yellow, red streaks
	3.5		SILT some fine to coarse sand, some clay, pink, yellow, red, very stiff, moist, slightly plastic
			clayey SILT, trace fine sand, pink, red, yellow streaks, very stiff, moist, moderately plastic
			SILT some fine to coarse sand, minor clay, pink with yellow streaks, very stiff, moist, slightly plastic
	4.0		clayey SILT, trace fine to coarse sand, red, pink, light yellow, very stiff, moist, moderately plastic
			red, some yellow streaks
	4.5		SILT some fine sand, some clay, trace medium to coarse sand, trace fine angular gravel, red brown, orange, very stiff, moist, slightly plastic
			orange, yellow orange, some brown streaks
	5.0		END OF BORE. 5.00 METRES. (TARGET DEPTH)

WATER LEVEL (m)

SCALA PENETROMETER TEST
NZS:4402:1986 test 6.5.2
(Blows per 100mm Increment)
10 20 30 (Blows)

SHEAR STRENGTH ○ v
REMOULDED SHEAR ◉ r
50 100 150 (kPa)

DEPTH (m)		
0.0		
0.5	52 r	132 V
1.0		223 V
1.5	127 r	172 V
2.0	95 r	167 V
2.5	83 r	146 V
3.0	99 r	210 V
3.5	67 r	119 V
4.0	68 r	127 V
4.5	114 r	210 V
5.0	95 r	167 V

LABORATORY TESTS

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

Soil&Rock Consultants
Your responsive & cost-effective engineers

CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH18

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	HHe
Drilled By:	HHe	Coordinates:		Shear Vane No - Calibration Date:	GEO3563 - 5/07/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR v r 50 100 150 (kPa)	LABORATORY TESTS
TS	0.0		TOPSOIL		0.0		
K.V.F.	0.5		SILT some fine sand, brown, hard, dry, non plastic (WEATHERED TUFF)		0.5	200+ UTP V	
	1.0		END OF BORE. 0.50 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)		1.0		
	1.5				1.5		
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23

Soil&Rock Consultants
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CLIENT: Stuart Robinson

PROJECT: Geotechnical Investigation, BIsset Rd & 10 Rimu Pl, Kaikohe

Auger Hole No: AH19

Sheet 1 of 1

Drill Type:	Hand Auger	Project No:	NL230070	Logged By:	HHe
Drilled By:	HHe	Coordinates:		Shear Vane No - Calibration Date:	GEO3563 - 5/07/2023
Date Started:	28/8/23	Ground Elevation:		Surface Conditions:	Near level grass
Date Finished:	28/8/23	Water Level:	Groundwater Not Encountered		

STRATIGRAPHY	DEPTH (m)	GRAPHIC LOG	Soil description in accordance with the NZ Geotechnical Society Inc 2005 "Guidelines for Field Description of Soil and Rock in Engineering Use"	WATER LEVEL (m)	DEPTH (m)	SCALA PENETROMETER TEST NZS:4402:1986 test 6.5.2 (Blows per 100mm Increment) 10 20 30 (Blows) / SHEAR STRENGTH REMOULDED SHEAR v r 50 100 150 (kPa)	LABORATORY TESTS
TS	0.0		TOPSOIL		0.0		
KERIKERI VOLC. FIELD	0.5		SILT trace clay, trace fine sand, light brown, very stiff, dry, non plastic (WEATHERED TUFF)		0.5	210 V	
			hard				
			dark brown streaks				
	1.0		grey streaks, light orange speckles, moist		1.0	200+ UTP V	
			END OF BORE. 1.25 METRES. (TOO HARD TO AUGER, GRAVEL OBSTRUCTION)				
	1.5				1.5		
	2.0				2.0		
	2.5				2.5		
	3.0				3.0		
	3.5				3.5		
	4.0				4.0		
	4.5				4.5		
	5.0				5.0		

HAND AUGER LOG WITH SCALA NL230070 - AH01-AH20 &TP01-TP10 - BISSET RD & 10 RIMU PL - 2023-08-30.GPJ S+R_2013.GDT 4/9/23