THOMSON SURVEY LIMITED

SURVEYORS AND RESOURCE PLANNERS

Our Reference: 10696.1 (FNDC)

14 May 2025

Resource Consents Department
Far North District Council
JB Centre
KERIKERI

Dear Sir/Madam

RE: Proposed Subdivision at 6701 State Highway 12, Waimamaku for John Parker

I am pleased to submit application on behalf of John Parker, for a proposed subdivision of land at State Highway 12 Waimamaku, zoned Rural Production. The application seeks to create a total of 3 lots (2 additional) and is a restricted discretionary activity.

The application fee of $2,967 has been paid separately via direct credit.

Regards

Lynley Newport
Senior Planner
THOMSON SURVEY LTD

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

Office Use Only
Application Number:

Application for resource consent or fast-track resource consent

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA)) (If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of Schedule 4). Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges — both available on the Council's web page.

1. Pre-Lodgement Meeting

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

2. Type of Consent being applied for

(more than one circle can be ticked):

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

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

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

✓ **Yes** ◯ **No**

4. Consultation

Have you consulted with Iwi/Hapū? ◯ **Yes** ✓ **No**

If yes, which groups have you consulted with?	
Who else have you consulted with?	

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

5. Applicant Details

Name/s: John Parker

Email: [redacted]

Phone number:

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

6. Address for Correspondence

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

Name/s: Lynley Newport

Email: [redacted]

Phone number:

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

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

7. Details of Property Owner/s and Occupier/s

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

Name/s: As per item 5

Property Address/ Location:

Postcode

8. Application Site Details

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

Name/s: as per item 5

Site Address/ Location: 6701 State Highway 12
Waimamaku

Postcode 0473

Legal Description: PT Sec 32 BLK XIV WAOKU SD **Val Number:** 00619-73603

Certificate of title:

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.

There are no hazards or risk to note just use common sense.
Dog at home address is harmless.
Council to contact or call before to notify of site visit.

9. Description of the Proposal:

Please enter a brief description of the proposal here. Please refer to Chapter 4 of the District Plan, and Guidance Notes, for further details of information requirements.

Subdivision of land in the Rural Production Zone to create two additional lots (3 in total), as a restricted discretionary activity.

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

10. Would you like to request Public Notification?

◯ **Yes** ✓ **No**

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

(more than one circle can be ticked):

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

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

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

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

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

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

13. Assessment of Environmental Effects:

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

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

13. Draft Conditions:

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

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

14. Billing Details:

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

Name/s: (please write in full) Stephen Jonathon Parker

Email: [redacted]

Phone number:

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

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

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

Name: (please write in full) Stephen Jonathon Parker

Signature:
(signature of bill payer [redacted] MANDATORY

Date 14-May-2025

15. Important Information:

Note to applicant

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

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

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

Fast-track application

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

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

Privacy Information:

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

15. Important information continued...

Declaration

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

Name: (please write in full) Stephen Jonathon Parker

Signature: [redacted] Date 25-May-2025

A si[redacted]cation is made by electronic means

Checklist (please tick if information is provided)

- ☑ Payment (cheques payable to Far North District Council)
- ☑ A current Certificate of Title (Search Copy not more than 6 months old)
- ☐ Details of your consultation with Iwi and hapū
- ☑ Copies of any listed encumbrances, easements and/or consent notices relevant to the application
- ☑ Applicant / Agent / Property Owner / Bill Payer details provided
- ☑ Location of property and description of proposal
- ☑ Assessment of Environmental Effects
- ☐ Written Approvals / correspondence from consulted parties
- ☑ Reports from technical experts (if required)
- ☐ Copies of other relevant consents associated with this application
- ☐ Location and Site plans (land use) AND/OR
- ☑ Location and Scheme Plan (subdivision)
- ☐ Elevations / Floor plans
- ☐ Topographical / contour plans

Please refer to Chapter 4 of the District Plan for details of the information that must be provided with an application. Please also refer to the RC Checklist available on the Council's website. This contains more helpful hints as to what information needs to be shown on plans.

John Parker

PROPOSED SUBDIVISION PURSUANT TO FNDC OPERATIVE DISTRICT PLAN

6701 State Highway 12, Waimamaku

PLANNER'S REPORT & ASSESSMENT OF ENVIRONMENTAL EFFECTS

Thomson Survey Ltd
Kerikeri

1.0 THE PROPOSAL

Subdivision:

The applicant proposes to subdivide property at 6701 SH 12 Waimamaku, to create a total of three lots (two additional), with lot areas as follows:

Lot 1 1.01ha(vacant);
Lot 2 1.57ha (vacant);
Lot 3 4.001ha (containing existing built development).

The Scheme Plan(s) are presented in Appendix 1.

Access is off State Highway 12, on a section of the highway that is not Limited Access Road. Pre lodgement consultation has been carried out with NZTA with agreement reached as conditions of NZTA's approval. Proposed new Lots 1 & 2 will share a proposed new crossing. Lot 3 will continue to utilise existing crossings.

The proposed lots do not have access to any Council reticulated 3 water services. The existing development within Lot 3 has existing on site wastewater system, stormwater management, and water supply. Lots 1 & 2 will need to be self reliant in regard to those on site components.

Scope of this Report:

This assessment and report accompanies the Resource Consent Application made by the applicant, and is provided in accordance with Section 88 and Schedule 4 of the Resource Management Act 1991. The application seeks consent to subdivide an existing site to create a total of three lots (two additional), as a restricted discretionary activity. The information provided in this assessment and report is considered commensurate with the scale and

intensity of the activity for which consent is being sought. Applicant details are contained within the Application Form 9.

2.0 PROPERTY DETAILS

Location:	6701 State Highway 12, Waimamaku (Location Map in Appendix 2)
Legal description:	Pt Section 32 Blk XIV Waoku SD
Record of Title:	NA35B/279, 6.743ha in area. Copy attached in Appendix 3.

3.0 SITE DESCRIPTION

3.1 Site Characteristics

The site is zoned Rural Production in the Operative District Plan (ODP) and Proposed District Plan (PDP). No resource features apply in either the ODP or PDP. The site shares its southern boundary with land zoned Conservation, with that land having an outstanding landscape coverage. This does not affect the application site.

The site contains the applicant's dwelling and ancilliary buildings, to be within Lot 3, and existing access via two separate crossings.

The site is moderately sloping upwards from the highway. Lots have a north facing aspect. An area of indigenous vegetation at the rear of Lots 2 & 3, on the western boundary, is proposed for protection. The remainder of the site is in grazed pasture.

Topographically, the site is undulating with gullies running predominantly west to east from a ridgeline extending along the western side of the site. The overall slope is moderate to steep with localised areas of more gentle slope, specifically on the eastern side.

The site does not contain any historic sites, archaeological sites or Sites of Significance to Maori. It is mapped as being within a kiwi present area. It is not mapped as containing any PNA (Protected Natural Area). Land to the west is subject to QE II Open Space Covenant. The soils are predominantly LUC Class 6. There are no major watercourse or wetlands on the site.

3.2 Legal Interests on Titles

There no interest on the title relevant to this subdivision.

3.3 Consent History

The property file contains two historic land use consents (1990 and 1992), for the establishment of a craft shop and tea rooms (the latter added in the 1992 consent). In both instances, NZTA (then known as Transit) provided approval for the crossings serving the proposed activity.

4.0 SCHEDULE 4 – INFORMATION REQUIRED IN AN APPLICATION

Clauses 2 & 3: Information required in all applications

(1) An application for a resource consent for an activity must include the following:	
(a) a description of the activity: *.*	Refer Sections 1 above and 5 of this Planning Report.
(b) an assessment of the actual or potential effect on the environment of the activity:	Refer to Section 6 of this Planning Report.
(b) a description of the site at which the activity is to occur:	Refer to Section 3 of this Planning Report.
(c) the full name and address of each owner or occupier of the site:	This information is contained in the Form 9 attached to the application.
(d) a description of any other activities that are part of the proposal to which the application relates:	Refer to Section 3 of this Planning Report for existing activities within the site. The application is for subdivision pursuant to the FNDC's ODP.
(e) a description of any other resource consents required for the proposal to which the application relates:	Consent is being sought for subdivision, pursuant to the Far North Operative District Plan.
(f) an assessment of the activity against the matters set out in Part 2:	Refer to Section 7 of this Planning Report.
(g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b), including matters in Clause (2): *(a) any relevant objectives, policies, or rules in a document; and* *(b) any relevant requirements, conditions, or permissions in any rules in a document; and* *(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).*	Refer to Sections 5 and 7 of this Planning Report.
(3) An application must also include any of the following that apply:	
(a) if any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements,	Refer to section 5.

conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)):	
(b) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A)):	There is no existing resource consent. Not applicable.
(c) if the activity is to occur in an area within the scope of a planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana) Act 2011, an assessment of the activity against any resource management matters set out in that planning document (for the purposes of section 104(2B)).	The site is not within an area subject to a customary marine title group. Not applicable.
(4) An application for a subdivision consent must also include information that adequately defines the following:	
(a) the position of all new boundaries: *(b) the areas of all new allotments, unless the subdivision involves a cross lease, company lease, or unit plan:* *(c) the locations and areas of new reserves to be created, including any esplanade reserves and esplanade strips:* *(d) the locations and areas of any existing esplanade reserves, esplanade strips, and access strips:* *(e) the locations and areas of any part of the bed of a river or lake to be vested in a territorial authority under section 237A:* *(f) the locations and areas of any land within the coastal marine area (which is to become part of the common marine and coastal area under section 237A):* *(g) the locations and areas of land to be set aside as new roads.*	Refer to Scheme Plans in Appendix 1.

Clause 6: Information required in assessment of environmental effects

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

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

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

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

social, economic, or cultural effects:	
(b) any physical effect on the locality, including any landscape and visual effects:	Refer to Section 6. The site has no high or outstanding landscape or natural character values.
(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:	Refer to Section 6. The subdivision has no effect on ecosystems or habitat.
(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:	Refer to Section 6. The site has no aesthetic, recreational, scientific, historical, spiritual or cultural values that I am aware of, that will be adversely affected by the proposal.
(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:	The subdivision will not result in the discharge of contaminants, nor any unreasonable emission of noise.
(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.	The site is not subject to hazard. The proposal does not involve hazardous installations.

5.0 ACTIVITY STATUS

5.1 Operative District Plan

The site is zoned Rural Production and has no resource features.

Table 13.7.2.1: Minimum Lot Sizes

(i) RURAL PRODUCTION ZONE

Controlled Activity Status (Refer also to 13.7.3)	**Restricted Discretionary Activity Status (Refer also to 13.8)**	**Discretionary Activity Status (Refer also to 13.9)**
The minimum lot size is 20ha.	1. The minimum lot size is 12ha; or 2. The minimum lot size is 12ha; or **3. A maximum of 3 lots in any subdivision, provided that the minimum lot size is 4,000m2 and there is at least 1 lot in the subdivision with a minimum lot size of 4ha, and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000;** or 4. A maximum of 5 lots in a subdivision (including the parent lot) where the minimum size of	**1. The minimum lot size is 4ha**; or 2. A maximum of 3 lots in any subdivision, provided that the minimum lot size is 2,000m² and there is at least 1 lot in the subdivision with a minimum size of 4ha, and provided further that the subdivision is of sites which existed at or prior to 28 April 2000, or which are amalgamated from titles existing at or prior to 28 April 2000; or 3. A subdivision in terms of a management plan as per Rule 13.9.2 may be approved. Option 4 N/A

	the lots is 2ha, and where the subdivision is created from a site that existed at or prior to 28 April 2000; Option 5. N/A as the proposal does not utilise remaining rights.	

The lots are greater than 4000m^2 in area, with one lot greater than 4ha in area; and the title is older than April 2000, being dated 1976. The subdivision is a **restricted discretionary** subdivision activity.

Other Rules:

Zone Rules:

The existing built development is well internal to the site with no zone rule breaches resulting from new boundaries.

District Wide Rules:

Chapter 12.1 Landscapes and Natural Features does not apply as there is no landscape or natural feature overlay applying to the site.

Chapter 12.2 Indigenous Flora and Fauna does not apply as no clearance of indigenous vegetation is proposed.

Chapter 12.3 Soils and Minerals does not apply/ is complied with. Subdivision earthworks will be minimal and all associated with the formation of crossings and access. The Site Suitability Report attached in Appendix 5 confirms that proposed earthworks associated with subdivision works will remain well within the ODP's permitted activity thresholds.

Chapter 12.4 Natural Hazards does not apply as the site is not subject to any coastal hazard as currently mapped in the Operative District Plan (the only hazards with rules). Future residential units can achieve a 20m setback from the dripline of bush areas.

Rules in Chapters 12.5, 5A and 5B Heritage do not apply as the site contains no heritage values or sites, no notable trees, no Sites of Cultural Significance to Maori and no registered archaeological sites. The site is not within any Heritage Precinct.

Chapter 12.7 Waterbodies does not apply as the application site is not adjacent to, nor contain, any waterbodies.

Chapter 12.8 Hazardous Substances does not apply as the activity being applied for is not a hazardous substances facility.

Chapter 12.9 does not apply as the activity does not involve renewable energy.

Chapter 14 Financial Contributions (esplanade reserve) is not relevant as the site does not adjoin a water body.

Chapter 15.1 Traffic, Parking and Access

Rules in Chapter 15.1.6A are not considered relevant to the proposal. This is because the traffic intensity rules apply to land use activities, not subdivisions. In any event both a single residential dwelling and 'farming' are exempt from traffic intensity rules. Similarly rules in Chapter 15.1.6B (parking requirements) also relate to proposed land use activities, not subdivisions. Notwithstanding this, no breaches of parking rules have been identified.

Chapter 15.1.6C (access) is the only part of Chapter 15.1 relevant to a subdivision. A brief assessment of relevant rules in 15.1.6C.1.1-11 follows.

Part (a) of Rule 15.1.6C.1.1 requires private accessway to be undertaken in accordance with Appendix 3B-1. ROW A is the only new private accessway and will serve two lots. It can be constructed to the appropriate standard. The shared access has been drawn in excess of the required minimum legal width.

15.1.6C.1.1(c) and (d) are both complied with. All parts of (e) are also complied with. The proposed crossing for Lots 1 & 2 is an existing farm crossing, with the proposed shared residential use already provisional approval from NZTA subject to upgrade. Access to Lot 3 is also existing and historically approved by NZTA. I consider part (e)(i) to be complied with.

Rule 15.1.6C.1.3 relates to passing bays, none of which are required. Rule 15.1.6C.1.5 applies to rural and coastal zones. The crossings to Lots 1 & 2, and to Lot 3 will be formed / upgraded to the standards required by NZTA (the roading authority in this instance, and therefore the FNDC is not involved). Rule 15.1.6C.1.7 addresses various general access standards, which can be complied with.

In summary, the application remains a **restricted discretionary** activity.

5.2 Proposed District Plan

The FNDC publicly notified its PDP on 27th July 2022. Whilst the majority of rules in the PDP 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 include:

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

There are no scheduled sites or areas of significance to Maori, significant natural areas or any scheduled heritage resource on the site, therefore these rules are not relevant to the proposal.

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

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

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

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

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

No indigenous vegetation clearance is proposed.

Subdivision (specific parts) – only subdivision provisions relating to land containing Significant Natural Area or Heritage Resources have immediate legal effect. The site contains no scheduled or mapped Significant Natural Areas or Heritage Resources.

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

Earthworks – Only some rules and standards have legal effect. These are Rules EW-R12 and R13 and related standards EW-S3 and ES-S5 respectively. EW-R12 and associated EW-S3 relate to the requirement to abide by Accidental Discovery Protocol if carrying out earthworks and artefacts are discovered. EW-R13 and associated EW-S5 refer to operating under appropriate Erosion and Sediment Control measures. The only earthworks required to give effect to the subdivision is the formation of access to the boundary of the proposed new lots. This can be carried out in compliance with the above referenced rules/standards.

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

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

There are no zone rules in the PDP with immediate legal effect that affect the proposal's activity status.

6.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

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

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

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

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

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

It is also subject to s104C of the Act:

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

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

13.8.1 SUBDIVISION WITHIN THE RURAL PRODUCTION ZONE

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

(i) for applications under 13.8.1(a):
- *effects on the natural character of the coastal environment for proposed lots which are in the coastal environment.*

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

*In considering **whether or not to impose conditions** on applications for restricted discretionary subdivision activities the Council will restrict the exercise of its discretion to the following matters:*
(1) the matters listed in 13.7.3;
(2) the matters listed in (i) and (ii) above

In the case of this application, the application is lodged pursuant to 13.8.1(b), and therefore clause (ii) applies:

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

The property is not within the coastal environment.

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

The site abuts Conservation zoned land along its southern boundary. This entire boundary remains within the larger balance lot containing existing built development. Effectively this is a no-change situation in terms of the southern boundary, and there will be no effects on the ability of the Department of Conservation to manage and administer its land.

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

There is an area of indigenous vegetation within the site that bounds a QE II covenant on adjacent land. It is proposed to protect this vegetation – refer to Scheme Plan.

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

Vacant proposed Lots 1 & 2 have abundant cleared land to mitigate fire hazard for future residential units.

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

To assist in determining conditions of consent, the following AEE is offered.

6.1 Allotment Sizes and Dimensions

Lot 3 contains existing development. The proposed vacant lots are both large and can easily accommodate 30m x 30m square building envelopes. Indicative locations are provided in the Site Suitability Report in Appendix 6.

6.2 Natural and Other Hazards

Refer to the Site Suitability Report in Appendix 6, section 9. The minor risk of erosion can be mitigated by means of stormwater dispersion control and erosion and sediment control measures such that resultant effects are less than minor. The risk of inundation can similarly be mitigated by means of flood control attenuation and avoidance of overland flow paths, such that effects are less than minor.

The site is not subject to landslip, rockfall, alluvion, avulsion, unconsolidated fill, subsidence, fire hazard, or sea level rise.

In summary there is no reason pursuant to s106 of the Act as to why this application should not be granted.

6.3 Water Supply

There is no Council reticulated water supply to the site. Lot 3 has existing residential use and I do not believe it is necessary for the Council to impose its standard consent notice on the new title for that lot in terms supplying sufficient water for potable and fire fighting purposes. In regard to Lots 1 and 2, however, such a consent notice could be applied.

6.4 Energy Supply & Telecommunications

Power and phone is not a requirement for rural subdivision. Notwithstanding that, existing facilities within the site have power and telecommunication connections. Top Energy has been consulted and confirm that power connections can be made available for the vacant lots – refer Appendix 4. However, there should not be a condition requiring such connections. Instead, the Council can impose a consent notice applicable to Lots 1 & 2 specifying that power and telecoms connections were not a requirement of the subdivision and remain the responsibility of the lot owner.

6.5 Stormwater Disposal

Refer to the Site Suitability Report in Appendix 6, section 6. An assumed impermeable surface coverage of 300m^2 of roof area and 200m^3 of access, per vacant lot, has been used to assess stormwater management. The report confirms that appropriate stormwater management can be achieved at time of building consent. It is highly unlikely that either Lot 1 or Lot 2's future development will come anywhere near the permitted coverage of 15% of total site area.

6.6 Sanitary Sewage Disposal

Refer to the Site Suitability Report in Appendix 6, section 5. The wastewater assessment is very conservative in that (a) it assumes a five bedroom dwelling; and (b) it assumes secondary treatment. The rationale is that if the vacant lots can support on-site wastewater treatment and disposal to the 'assumed' levels of discharge and treatment, then their use for residential purposes is feasible.

However, it should be noted that alternative wastewater treatment design may be equally feasible, and the final design option chosen by a future lot owner should be left to that lot owner at time of building consent. The Site Suitability Report makes it clear that primary treatment may be feasible as well and that a future owner can investigate that level of treatment as an alternative.

6.7 Easements for any purpose

There are no existing easements. Easement A is proposed – refer to Scheme Plan in Appendix 1.

6.8 Property Access

It is proposed that access to all lots be off State Highway 12. Lot 3's access points (two of) will remain and a new shared crossing is proposed for Lots 1 & 2. Email confirmation of NZTA's conditions and preliminary approval is attached in Appendix 5. As requested by NZTA, a copy of this Planning Report has been sent to NZTA. A response had not been received at time of writing this report. Thomson Survey Ltd conducted sight line measures and assessed operating speed to show that safe access can be provided.

NZTA has acknowledged the safe existing use of the crossings for Lot 3 and that the annual average daily traffic volume is low and the operating speeds are low. NZTA has expressed its willingness to accept the Lot 3 accesses as they are, without the need for upgrading. NZTA has requested signage and vegetation clearance as sufficient to mitigate any effects on the state highway, noting however that any future development on the lot (lot 3) may require these accesses to be upgraded. The applicant accepts this.

In regard to the proposed access upgrade for Lots 1 & 2 (shared), NZTA has requested this be to Diagram C standard, and vegetation clearance to optimise sight lines. The applicant accepts this condition.

The third aspect of NZTA's approval is in regard to reverse sensitivity (traffic noise to future residential development). NZTA is seeking a consent notice to apply to Lots 1 & 2 as follows:

> *"Any dwelling or other noise sensitive location on the site in or partly within 80m o the edge of State Highway 12 carriageway must be designed, constructed and maintained to achieve an indoor design noise level of 40 dB* $L_{Aeq(24hr)}$ *inside all habitable spaces".*

This is also acceptable to the applicant.

ROW A can be suitably dimensioned (in regard to width) to accommodate a turning vehicle to access Lot 1. The internal driveway to a house site on Lot 1 will be the responsibility of the future lot owner, as will an internal driveway to a house site on Lot 2.

6.9 Earthworks & Utilities

Subdivision works will be restricted to minor access works, on reasonably level ground. No new utilities are required to be installed as part of subdivision works.

6.10 Building Locations

There are no restrictions in regard to natural hazard as to where dwellings/buildings can be located, therefore no need to impose minimum floor levels. Overland flow paths can be avoided.

6.11 Preservation and enhancement of heritage resources (including cultural), vegetation, fauna and landscape, and land set aside for conservation purposes

Vegetation, fauna and landscape

The site has no resource feature overlays. It contains no features mapped in the Regional Policy Statement as having any high or outstanding landscape or natural values and no mapped biodiversity wetlands. The site contains an area of indigenous vegetation that is contiguous with an adjoining property's QE II covenant area. It is proposed to covenant the vegetation (on Lots 2 & 3) for bush protection accordingly.

The site is mapped as kiwi present. I consider it a reasonable allowance to provide for a single dog per lot, grandfathering in any existing dogs owned by the applicant. Any new dog kept on a lot should be controlled and micro chipped, and preferably had kiwi aversion training. The applicant is happy with a no mustelids or cats restriction.

Heritage/Cultural

The site does not contain any historic sites, nor any archaeological sites. Neither does the site contain any Sites of Cultural Significance to Maori (as scheduled in the ODP or PDP).

6.12 Soil

The site is not a large productive farming property. Its soils are not highly productive. I do not believe the proposal will adversely affect the life supporting capacity of soils.

6.13 Access to, and protection of, waterbodies

There is no qualifying water body along which, or around which, public access is required to be provided.

6.14 Land use compatibility (reverse sensitivity)

The proposal is to subdivide an existing rural holding to create an opportunity for two additional rural living/lifestyle blocks. The land is currently lightly grazed and can continue to be utilised in this fashion. The density level being proposed is well within the ODP's restricted discretionary subdivision lot sizes. The site is bounded by vegetation with limited views into the site from the highway or from across the road. I do not believe the proposal will create additional reverse sensitivity issues in terms of land use on the site and on adjacent sites.

NZTA has requested the inclusion of a reverse sensitivity consent notice which effectively alerts future owners of the proximity of the highway and the need, therefore, to construct habitable buildings with a degree of noise attenuation.

In summary I consider any reverse sensitivity effects to be capable of avoidance, remedy or mitigation.

6.15 Proximity to Airports

The site is outside of any identified buffer area associated with any airport.

6.16 Natural Character of the Coastal Environment

The site is not within the coastal environment.

6.17 Energy Efficiency and renewable Energy Development/Use

The proposal has not considered energy efficiency. This is an option for future lot owners. Proposed vacant lots have a northerly aspect which will afford good access to sunlight.

6.18 National Grid Corridor

The National Grid does not run through the application site.

6.19 Effects on Rural Character and Amenity

The proposal meets the ODP's restricted discretionary minimum lot sizes and is therefore an anticipated level of development in the rural zone. I believe the new lots can be developed without adverse effects on rural character and amenity.

6.20 Cumulative and Precedent Effects

The proposal will create two additional lots, and complies with the ODP's restricted discretionary subdivision lot size and number. I do not foresee any adverse cumulative effects resulting.

Precedent effects are a matter for consideration when a consent authority is considering whether or not to grant consent and are generally reserved for the consideration of non complying activities, which this is not. I see no adverse precedent effect.

7.0 STATUTORY ASSESSMENT

7.1 Operative District Plan Objectives and Policies

Objectives and policies relevant to this proposal are considered to be primarily those listed in Chapter 8.6 (Rural Production Zone); and 13 (Subdivision), of the District Plan. These are listed and discussed below where relevant to this proposal.

<u>Subdivision Objectives & Policies</u>

Objectives

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

This is an enabling objective. The Rural Production Zone is predominantly, but not exclusively, a working productive rural zone. The site is currently used as a rural lifestyle block with limited grazing and areas of bush, and will continue to be utilised in a similar fashion. The proposal is considered a sustainable use of the land.

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

The Assessment of Environmental Effects and supporting report conclude that the proposed subdivision is appropriate for the site and that the subdivision can avoid, remedy or mitigate any potential adverse effects.

Objectives 13.3.3 and 13.3.4 refer to outstanding landscapes or natural features; and scheduled heritage resources; and to land in the coastal environment. The site exhibits none of these features.

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

The existing development within the site is self sufficient in terms of on-site water storage and appropriate stormwater management. So too will future development on the additional lots.

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

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

13.3.7 To ensure the relationship between Maori and their ancestral lands, water, sites, wahi tapu and other taonga is recognised and provided for.

And related Policy

13.4.11 That subdivision recognises and provides for the relationship of Maori and their culture and traditions, with their ancestral lands, water, sites, waahi tapu and other taonga and shall take into account the principles of the Treaty of Waitangi.

The site is not known to contain any sites of cultural significance to Maori, or wahi tapu. The subdivision will have minimal, if any, impact on water quality. I do not believe that the proposal adversely impacts on the ability of Maori to maintain their relationship with ancestral lands, water, sites, wahi tapu and other taonga.

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

The provision of power is not a requirement for rural allotments. Notwithstanding this, the existing site has existing power connection(s), and Top Energy has confirmed that power connections are possible.

13.3.9 To ensure, to the greatest extent possible, that all new subdivision supports energy efficient design through appropriate site layout and orientation in order to maximise the ability to provide light, heating, ventilation and cooling through passive design strategies for any buildings developed on the site(s).

13.3.10 To ensure that the design of all new subdivision promotes efficient provision of infrastructure, including access to alternative transport options, communications and local services.

The subdivision has not considered energy efficiency.

Objective 13.3.11 is not discussed further as there is no National Grid on or near the subject site.

Policies

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

The values outlined above, where relevant to the proposal, have been discussed earlier in this report. I believe regard has been had to items (a) through (g) (where relevant) in the design of the subdivision.

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

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

Access to the property is off public road (State Highway, not Limited Access Road). Access can be provided to an appropriate standard for the level of development being proposed, without adversely affecting natural and physical resources.

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

The site is not mapped as containing any natural hazards.

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

Power and telecommunications are not a requirement for rural allotments.

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

The site does not contain any heritage resources. Nor does it contain any known significant areas of indigenous vegetation or habitat. Areas of indigenous bush that abut a QEII Open Space on adjacent land, is proposed to be covenanted. The site is not in the coastal environment. There are no riparian margins within the site. The site contains no outstanding landscape or natural features.

Policy 13.4.7 is not relevant as there is no qualifying water body to which esplanade requirements apply.

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

This is discussed earlier.

13.4.13 Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the applicable zone in regards to ***s6 matters****. In addition subdivision, use and development shall avoid adverse effects as far as practicable by using techniques including:*
(a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns;
(b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as seen from public land and the coastal marine area;
(c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas;
(d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Maori with their culture, traditions and taonga including concepts of mauri, tapu, mana, wehi and karakia and the important contribution Maori culture makes to the character of the District (refer Chapter 2 and in particular Section 2.5 and Council's "Tangata Whenua Values and Perspectives" (2004);
(e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests;
(f) protecting historic heritage through the siting of buildings and development and design of subdivisions.
(g) achieving hydraulic neutrality and ensuring that natural hazards will not be exacerbated or induced through the siting and design of buildings and development.

S6 matters (National Importance) are addressed later in this report.

In addition:

(a) The proposal subdivides off two vacant additional blocks, complying with the restricted discretionary subdivision provisions;

(b) The proposal provides for an appropriate type and scale of activity for the zone;
(c) The proposal is in an area not displaying high or outstanding natural values;
(d) The site contains indigenous vegetation, some of this is proposed to be protected;
(e) The site is not within the coastal environment;
(f) The proposal enables the maintenance of amenity and rural character values;
(g) The proposal is not believed to negatively impact on the relationship of Maori with their culture;
(h) There are no identified heritage values within the site; and
(i) The site is not subject to any significant natural hazards.

I consider the proposal to be consistent with Policy 13.4.13.

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

The subdivision has had regard to the underlying zone's objectives and policies – see below.

In summary, I believe the proposal to be consistent with the above Objectives and Policies.

Rural Production Zone Objectives and Policies

Objectives:

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

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

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

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

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

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

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

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

And policies

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

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

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

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

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

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

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

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

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

The proposed subdivision promotes an efficient use and development of the land (Objective 8.6.3.2). Amenity values can be maintained (8.6.3.3). Reverse sensitivity effects are not considered to be a significant risk (Objectives 8.6.3.6-8.6.3.9 inclusive and Policies 8.6.4.8 and 8.6.4.9).

Policy 8.6.4.7 anticipates a wide range of activities that promote rural productivity, and that the underlying goal is to avoid any actual and potential adverse effects of conflicting land use activities. I believe in the case of this proposal, additional adverse reverse sensitivity effects are unlikely.

The proposal provides for sustainable management of natural and physical resources (8.2.4.1). Off site effects can be avoided, remedied or mitigated (8.6.4.2 and 8.6.4.3). Amenity values can be maintained and enhanced (8.6.4.4). The proposal enables the efficient use and development of natural and physical resources (8.6.4.5).

In summary, I believe the proposal to be consistent with the objectives and policies as cited above.

7.2 Proposed District Plan Objectives and Policies

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

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

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

SUB-O3 *Infrastructure is planned to service the proposed subdivision and development where:*
a. there is existing infrastructure connection, infrastructure should provided in an integrated, efficient, coordinated and future-proofed manner at the time of subdivision; and
b.where no existing connection is available infrastructure should be planned and consideration be give n to connections with the wider infrastructure network.

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

I consider the subdivision achieves the objectives of the relevant zone, and district wide provisions. Local character is not affected; reverse sensitivity issues will not result; and risk from natural hazards will not be increased. Adverse effects on the environment are considered to be less than minor and not requiring mitigation (SUB-O1).

The site does not contain any land that meets the definition of 'highly productive land'. The site contains no ONF's or ONL's, nor any areas of high or outstanding natural character. There are no 'natural inland wetlands'. There are no lakes or rivers, no Sites and Areas of Significance to Maori and no Historic Heritage. There are small areas of indigenous vegetation and these are proposed to be protected (SUB-O2).

The proposal is consistent with SUB-O3 and SUB-O4 does not apply.

SUB-P1
Enable boundary adjustments that:

Not relevant – application is not a boundary adjustment.

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

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

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

The subdivision results in vacant lots that do not comply with the minimum allotment sizes for the zone proposed in the PDP. However, rules specifying minimum lot sizes have no legal effect and have been heavily submitted on. The proposed allotments are consistent with the purpose, characteristics and qualities of the zone, have an adequate size and shape to contain building platforms, and the lots have legal and physical access. I consider the proposal to be more consistent than not with the relevant parts of SUB-P3 above.

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

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

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

Not applicable.

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

The subdivision is rural with no nearby Council administered or operated.

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

No qualifying water body.

SUB-P8 *Avoid rural lifestyle subdivision in the Rural Production zone unless the subdivision:*
- *a. will protect a qualifying SNA in perpetuity and result in the SNA being added to the District Plan SNA schedule; and*
- *b. will not result in the loss of versatile soils for primary production activities.*

The Council, in its decisions on submissions to the indigenous biodiversity chapter of the PDP (that has legal effect) has deleted any and all references to SNA's. Part a of the above policy is therefore irrelevant. Notwithstanding this, the proposal offers protection of

indigenous vegetation within the site. The subdivision will not result in the loss of versatile soils, so is consistent with this policy.

SUB-P9
Avoid subdivision [sic] rural lifestyle subdivision in the Rural Production zone and Rural residential subdivision inthe Rural Lifestyle zone unless the development achieves the environmental outcomes required in the management plan subdivision rule.

The subdivision is not a Management Plan subdivision.

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

Not relevant. No minor residential units exist.

SUB-P11
Manage subdivision to address the effects of the activity requiring resource consent including (but not limited to) consideration of the following matters where relevant to the application:
a.consistency with the scale, density, design and character of the environment and purpose of the zone;
b. the location, scale and design of buildings and structures;
c.the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity; or the capacity of the site to cater for on-site infrastructure associated with the proposed activity;
d. managing natural hazards;
e. Any adverse effects on areas with historic heritage and cultural values, natural features and landscapes, natural character or indigenous biodiversity values; and
f. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

No subdivision consent is required under the PDP. All of the above have been considered in the layout and number of lots being proposed, where relevant.

In summary I believe the proposed subdivision to be consistent with the PDP's objectives and policies in regard to subdivision.

The site is proposed to be zoned Rural Production in the Proposed District Plan.

Objectives

RPROZ-O1
The Rural Production zone is managed to ensure its availability for primary production activities and its long-term protection for current and future generations.

RPROZ-O2
The Rural Production zone is used for primary production activities, ancillary activities that support primary production and other compatible activities that have a functional need to be in a rural environment.

RPROZ-O3
Land use and subdivision in the Rural Production zone:

a.protects highly productive land from sterilisation and enables it to be used for more productive forms of primary production;
b.protects primary production activities from reverse sensitivity effects that may constrain their effective and efficient operation;
c.does not compromise the use of land for farming activities, particularly on highly productive land;
d.does not exacerbate any natural hazards; and
e. is able to be serviced by on-site infrastructure.

RPROZ-O4
The rural character and amenity associated with a rural working environment is maintained.

The subdivision maintains rural character and amenity. The development can occur without exacerbating natural hazards and is able to be serviced with on-site infrastructure. RPROZ-O2 is an activities based rule and the subdivision does not pre-suppose any specific activity. The objective is unfortunately written in such a way as to exclude any use other than primary production in the zone, yet zone rules actually provide for other activities as permitted activities, including residential living. The objective therefore seems contradictory to the rules. Residential use is an expected land use in the rural area.

The soils over the site are not LUC class 1, 2 or 3. As such the site contains no highly productive land (by definition in the National Policy Statement Highly Productive Land). The proposal is not considered to have minor or more than minor adverse impact on the overall productivity of the soils on the site. The subdivision does not unduly increase any risk of reverse sensitivity and does not compromise the use of nearby land for rural production activities.

Policies

RPROZP1
Enable primary production activities, provided they internalise adverse effects onsite where practicable while recognising that typical adverse effects associated with primary production should be anticipated and accepted within the Rural Production zone.

The application is not for a primary production activity.

RPROZP2
Ensure the Rural Production zone provides for activities that require a rural location by:
a. enabling primary production activities as the predominant land use;
b. enabling a range of compatible activities that support primary production activities, including ancillary activities, rural produce manufacturing, rural produce retail, visitor accommodation and home businesses.

Primary production includes grazing, which can continue as a land use. Residential activity is an accepted complementary land use within a rural area. The site is not an economic primary production unit currently and allowing the low density subdivision proposed, is a sustainable use of the land.

RPROZP3
Manage the establishment, design and location of new sensitive activities and other non-productive activities in the Rural Production Zone to avoid where possible, or otherwise mitigate, reverse sensitivity effects on primary production activities.

Reverse sensitivity effects have been discussed elsewhere in this report and it is considered the proposal does not unduly or significantly increase the risk of reverse sensitivity.

RPROZP4
Land use and subdivision activities are undertaken in a manner that maintains or enhances the rural character and amenity of the Rural Production zone, which includes:
a. a predominance of primary production activities;
b. low density development with generally low site coverage of buildings or structures;
c. typical adverse effects such as odour, noise and dust associated with a rural working environment; and
d. a diverse range of rural environments, rural character and amenity values throughout the District.

I believe the proposal maintains rural character and amenity. The proposal is low density, with low percentage site coverage by buildings or structures. Reverse sensitivity effects will not increase unduly.

RPROZP5
Avoid land use that:....

Not relevant as the proposal is not a land use.

RPROZP6
Avoid subdivision that:
a. results in the loss of highly productive land for use by farming activities;
b. fragments land into parcel sizes that are no longer able to support farming activities,taking into account:
1. *the type of farming proposed; and*
2. *whether smaller land parcels can support more productive forms of farming due to the presence of highly productive land.*

c. provides for rural lifestyle living unless there is an environmental benefit.

The subdivision does not result in loss of highly productive land. The soils are poor and a limited number (two in this case) of smaller parcels is considered a sustainable use of land. As stated earlier, the land is currently not an economic productive unit given its size and site characteristics. Providing for low density intensification is a sustainable use of the land. In addition, environmental benefit is achieved by way of the proposed bush protection.

RPROZP7
Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:
a. whether the proposal will increase production potential in the zone;
b. whether the activity relies on the productive nature of the soil;
c. consistency with the scale and character of the rural environment;
d. location, scale and design of buildings or structures;
e. for subdivision or non-primary production activities:

i. scale and compatibility with rural activities;
ii. potential reverse sensitivity effects on primary production activities and existing infrastructure;
iii. the potential for loss of highly productive land, land sterilisation or fragmentation

f. at zone interfaces:
i. any setbacks, fencing, screening or landscaping required to address potential conflicts;
ii.the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable;

g.the capacity of the site to cater for on-site infrastructure associated with the proposed activity, including whether the site has access to a water source such as an irrigation network supply, dam or aquifer;
h. the adequacy of roading infrastructure to service the proposed activity;
i.Any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity;
j.Any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

The application is not a land use and does not require resource consent under the PDP. Notwithstanding this, part (e), which relates to subdivision, has been considered and commented on earlier in this report.

7.3 Part 2 Matters

5 Purpose

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

(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—
(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and
(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and
(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

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

6 Matters of national importance

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

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

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

(c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:
(d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:
(e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:
(f) the protection of historic heritage from inappropriate subdivision, use, and development:
(g) the protection of protected customary rights:
(h) the management of significant risks from natural hazards.

The site does not contain any of the features listed in (a) or (b). There are pockets of indigenous vegetation, the more substantial of which are proposed for protection (part (c)). There is no adjacent water body, nor any within the site (part (d)). The proposal does not adversely impact the relationship of Maori and their culture and traditions and there are no protected customary rights (parts (e) & (g)). There are no historic heritage values associated with the site (part (f)). The site is not subject to hazard (h).

7 Other matters

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

(a) kaitiakitanga:
(aa) the ethic of stewardship:
(b) the efficient use and development of natural and physical resources:
(ba) the efficiency of the end use of energy:
(c) the maintenance and enhancement of amenity values:
(d) intrinsic values of ecosystems:
(e) [Repealed]
(f) maintenance and enhancement of the quality of the environment:
(g) any finite characteristics of natural and physical resources:
(h) the protection of the habitat of trout and salmon:
(i) the effects of climate change:
(j) the benefits to be derived from the use and development of renewable energy.

Regard has been had to any relevant parts of Section 7 of the RMA, "Other Matters". These include 7(b), (c) and (g). The subdivision represents an efficient use and development of natural and physical resources and takes into account the finite characteristics of those resources. The proposed layout and lot size will not adversely impact on amenity values.

8 Treaty of Waitangi

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

The principles of the Treaty of Waitangi have been considered and Ibelieve that this proposed subdivision does not offend any of those principles.

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

7.4 National Policy Statements and National Environmental Standards

There are no national policy statements of standards relevant to the application.

7.5 Regional Policy Statement

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

Objective 3.6 Economic activities – reverse sensitivity and sterilisation

The viability of land and activities important for Northland's economy is protected from the negative impacts of new subdivision, use and development, with particular emphasis on either:

(a) Reverse sensitivity for existing:

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

The associated Policy to the above Objective is ***Policy 5.1.1 – Planned and coordinated development***.

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

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

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

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

Policy 5.1.1 seeks to ensure that subdivision in a primary production zone does not "*materially reduce the potential for soil-based primary production on land with highly versatile soils, or if they do, the net public benefit exceeds the reduced potential for soil-based primary production activities*".

The site contains no highly versatile soils.

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

Avoid the adverse effects, including reverse sensitivity effects of new subdivision, use and development, particularly residential development on the following:

(a) Primary production activities in primary production zones (including within the coastal marine area);.....

In regard to this subdivision, it is considered that no significant additional reverse sensitivity issues arise as a result.

8.0 s95A-E ASSESSMENT & CONSULTATION

8.1 S95A Public Notification Assessment

A consent authority must follow the steps set out in s95A to determine whether to publicly notify an application for a resource consent. Step 1 specifies when public notification is mandatory in certain circumstances. No such circumstances exist. Step 2 of s95A specifies the circumstances that preclude public notification. No such circumstance exists and Step 3 of s95A must be considered. This specifies that public notification is required in certain circumstances, neither of which exists. There are no special circumstances. In summary public notification is not required pursuant to Step 3 of s95A.

8.2 S95B Limited Notification Assessment

A consent authority must follow the steps set out in s95B to determine whether to give limited notification of an application for a resource consent, if the application is not publicly notified pursuant to s95A. Step 1 identifies certain affected groups and affected persons that must be notified. None exist in this instance. Step 2 of s95B specifies the circumstances that preclude limited notification. No such circumstance exists and Step 3 of s95B must be considered. This specifies that certain other affected persons must be notified. The application is not for a boundary activity. The s95E assessment below concludes that there are no affected persons to be notified. There are no special circumstances.

8.3 S95D Level of Adverse Effects

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

8.4 S95E Affected Persons

A person is an 'affected person' if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor). A person is not an affected person if they have provided written approval for the proposed activity.

The activity is a restricted discretionary activity and as such an expected outcome. I have not identified any affected persons in terms of adjacent sites.

The site does not contain any heritage or cultural sites or values and areas of indigenous vegetation are being protected. The adjacent land to the south, whilst administered by DoC, is not adversely affected in any way because the lot that adjoins the DoC administered land contains the existing built development and there will be no change in terms of impact on DoC administered land. No pre lodgement consultation has been considered necessary with tangata whenua, Heritage NZ, or Department of Conservation. The site is accessed directly off state highway and NZTA has been consulted and provided conditional approval – conditions that the applicant is willing to accept. Refer to Appendix 5.

9.0 CONCLUSION

The site is considered suitable for the proposed subdivision. Effects on the wider environment are no more than minor. The proposal is not considered contrary to the relevant objectives and policies of the Operative and Proposed District Plans, and is considered to be consistent with relevant objectives and policies of National and Regional Policy Statements. Part 2 of the Resource Management Act has been had regard to.

There is no District Plan rule or national environmental standard that requires the proposal to be publicly notified. No affected persons have been identified.

It is requested that the Council give favourable consideration to this application and grant consent under delegated authority.

Signed Dated 14th May 2025

Lynley Newport,
Senior Planner
Thomson Survey Ltd

10.0 LIST OF APPENDICES

Appendix 1 Scheme Plan(s)

Appendix 2 Location Plan

Appendix 3 Record of Title & Relevant Instruments

Appendix 4 Consultation with Top Energy

Appendix 5 Consultation with NZTA

Appendix 6 Site Suitability Report

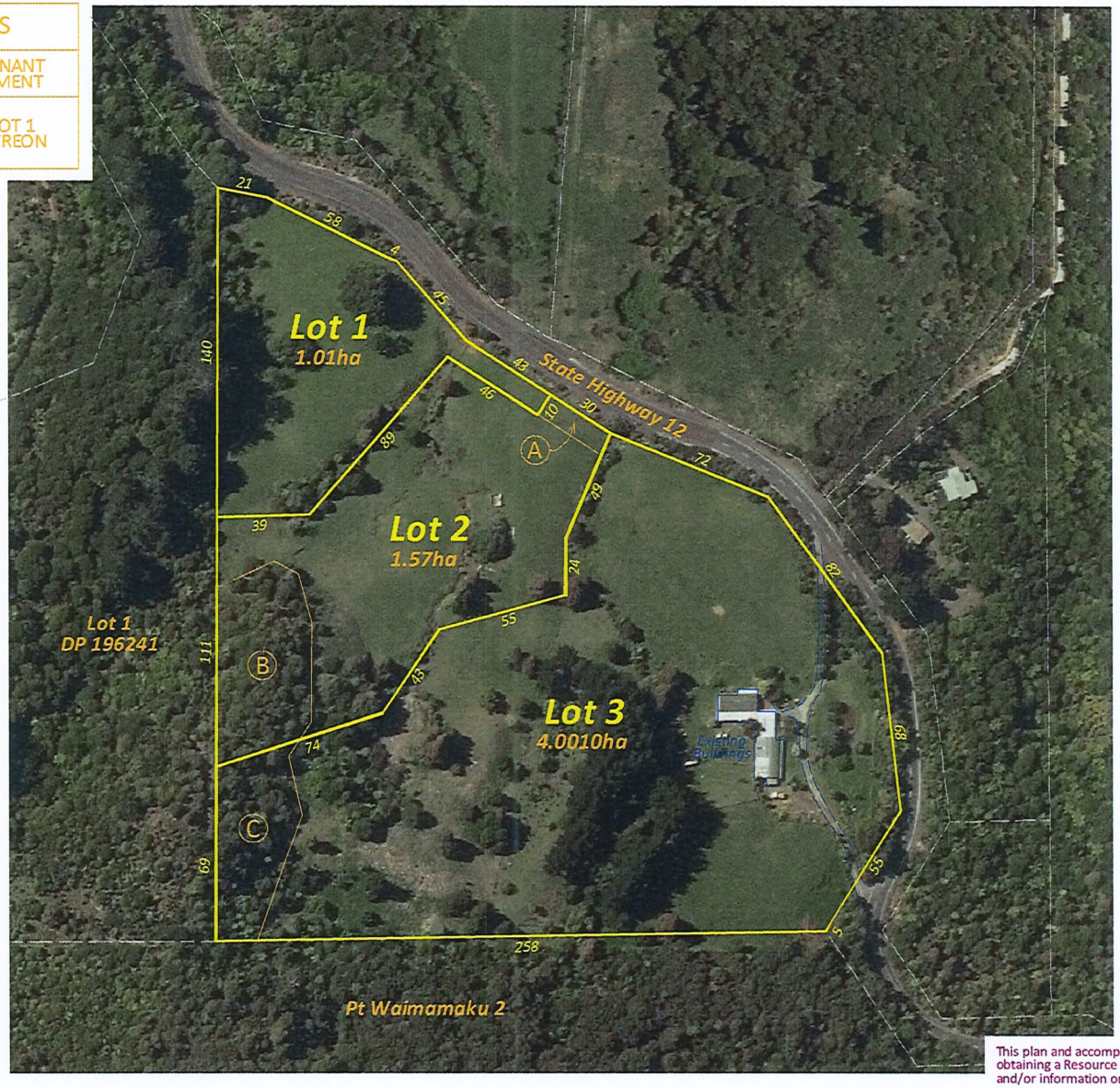
Appendix 1

Scheme Plan(s)

MEMORANDUM OF EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT OF WAY, TELECOMMUNI-CATIONS & ELECTRICITY	(A)	LOT 2 HEREON	LOT 1 HEREON

AREAS MARKED (B) (C) ARE TO BE SUBJECT TO BUSH PROTECTION COVENANTS



AREAS AND MEASUREMENTS ARE SUBJECT TO FINAL SURVEY

TOPOGRAPHICAL DETAIL IS APPROXIMATE ONLY AND SCALED FROM AERIAL PHOTOGRAPHY

Local Authority: Far North District Council
Comprised in: NA35B/279
Total Area: 6.7430ha
Zoning: Rural Production
Resource features: NIL

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

0 20 100 200m

Bar Scale 1:2000 @ A3

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

PROPOSED SUBDIVISION OF PT SECTION 32 BLK XIV WAOKU SD

6701 STATE HIGHWAY 12, WAIMAMAKU

PREPARED FOR: S. PARKER

	Name	Date
Survey		
Design		
Drawn	KY	15.10.24
Approved		
Rev	KY	21.10.24

10696 Scheme 20241021

ORIGINAL
SCALE 1:2000
SHEET SIZE A3

Surveyors Ref. No: 10696

Sheet 1 of 1

MEMORANDUM OF EASEMENTS

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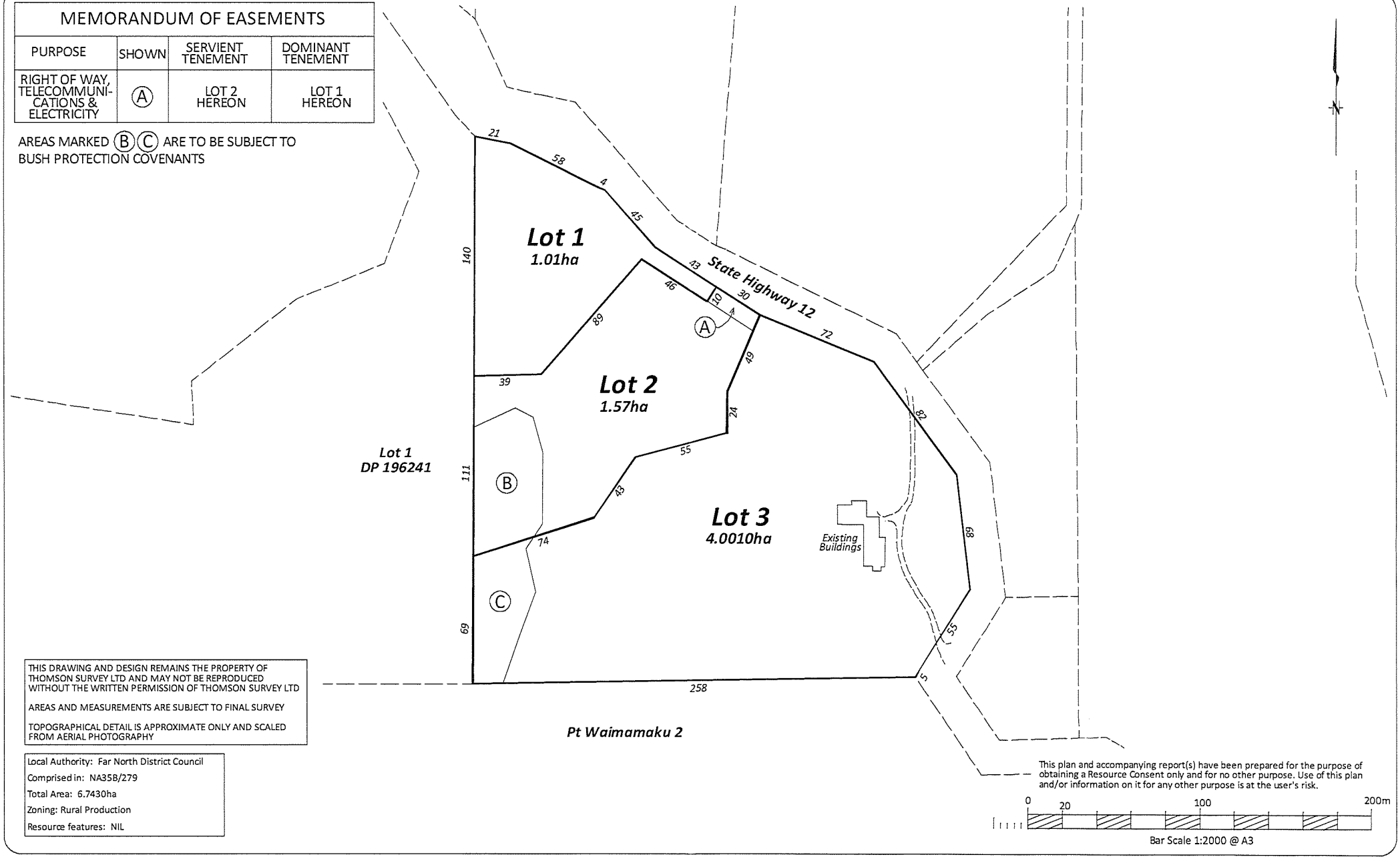

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6701 STATE HIGHWAY 12, WAIMAMAKU

PREPARED FOR: S. PARKER

	Name	Date
Survey		
Design		
Drawn	KY	15.10.24
Approved		
Rev	KY	21.10.24

10696 Scheme 20241021

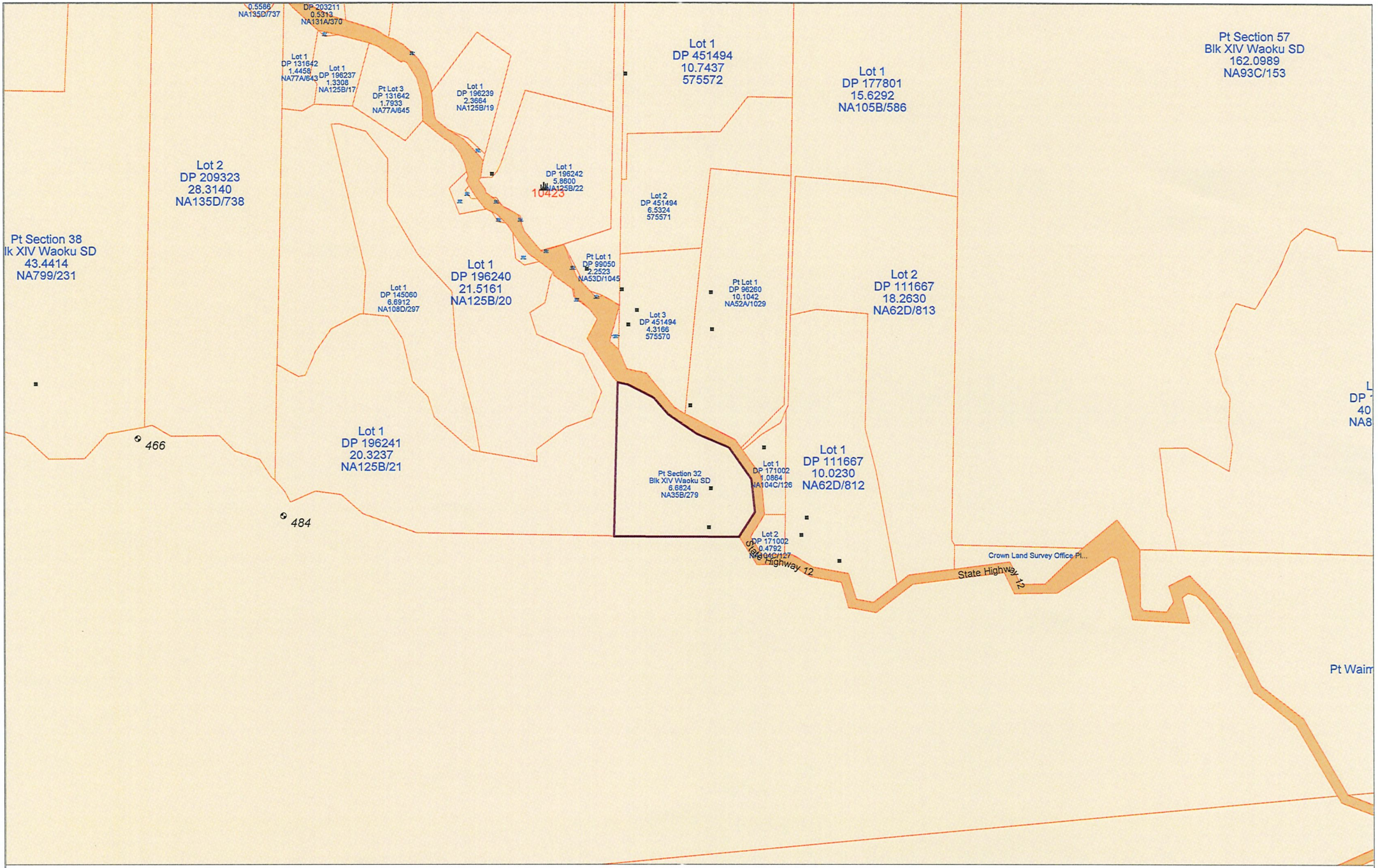
ORIGINAL
SCALE 1:2000
SHEET SIZE A3

Surveyors Ref. No: 10696

Sheet 1 of 1

Appendix 2

Location Plan



0 200 400 600 800 1000 1200m

QuickMap
Custom Software Ltd

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

Scale 1:10000 Topographical and Cadastral map derived from LINZ data. Printed: 14-May-2025 01:07.

Appendix 3

Record of Title & Relevant Instruments

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Part-Cancelled

Identifier	**NA35B/279**
Land Registration District	**North Auckland**
Date Issued	01 July 1976

Prior References
NA33A/714

Estate	Fee Simple
Area	6.7430 hectares more or less
Legal Description	Section 32 Block XIV Waioku Survey District

Registered Owners
Stephen Jonathan Parker

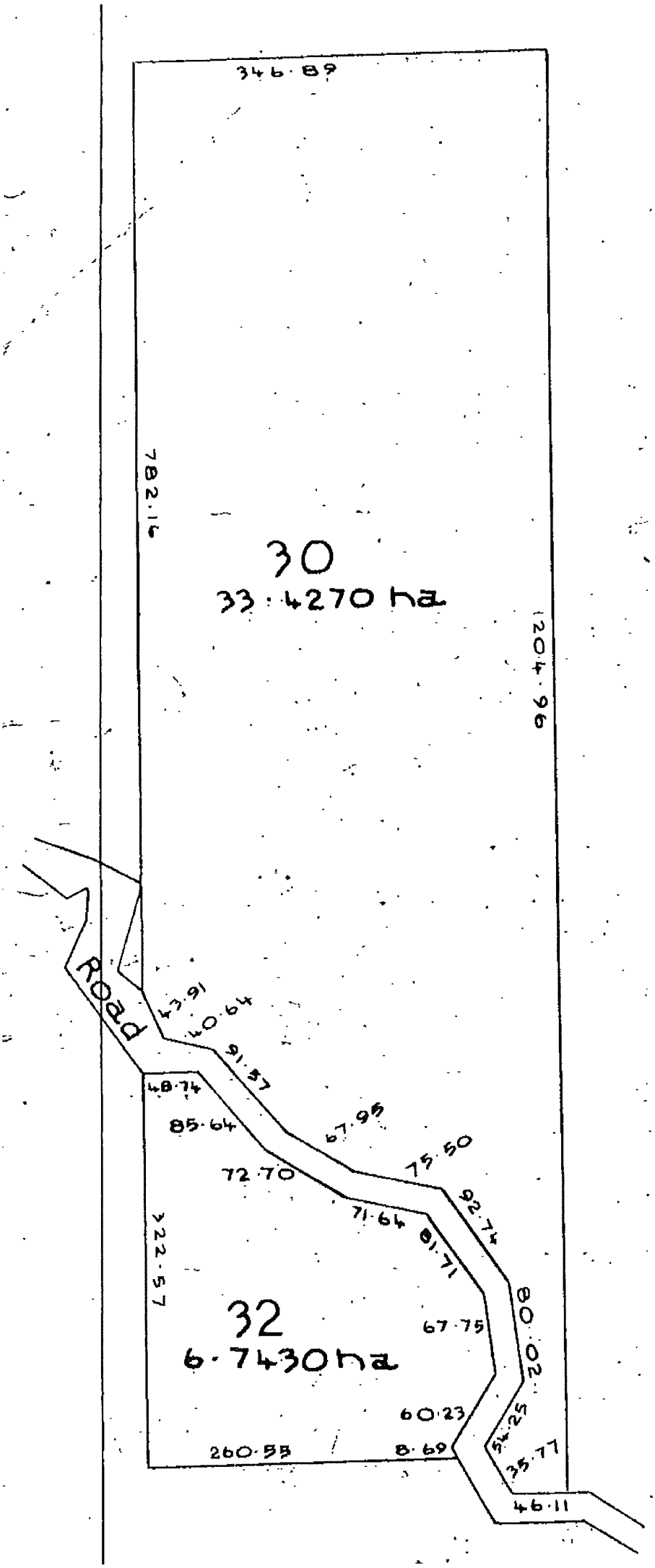
Interests

Subject to Section 8 Mining Act 1971

Subject to Section 168A Coal Mines Act 1925

D492050.4 Mortgage to The National Bank of New Zealand Limited - 30.3.2000 at 10.26 am

D572168.2 Gazette Notice 2001 Page 64 acquiring part of the within land (606m²) for road pursuant to Section 60(2) Transit New Zealand Act 1989, shall form part of State Highway No. 12 and shall vest in the Crown - 17.1.2001 at 9.00 am


346·89
782·16
30
33·4270 ha
1204·96
Road
43·91
40·64
91·87
48·74
85·64
67·95
75·50
72·70
92·74
71·64
81·71
322·57
80·02
32
6·7430 ha
67·75
60·23
54·25
35·77
260·55
8·69
46·11

Appendix 4

Consultation with Top Energy

TOP ENERGY® Te Puna Hihiko
www.topenergy.co.nz

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

6 May 2025

Lynley Newport
Thomson Survey
PO Box 372
KERIKERI 0245

Email: lynley@tsurvey.co.nz

To Whom It May Concern:

RE: PROPOSED SUBDIVISION
John Parker – 6701 State Highway 12, Waimamaku. Pt Section 32 BLK XIV Waoku SD.

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

Top Energy's requirement for this subdivision is nil. Top Energy advises that proposed lot 3 has an existing power supply. Costs to supply power to lots 1 & 2 could be provided after application and an on-site survey have been completed. Link to application: Top Energy | Top Energy

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

If you have any further queries, please do not hesitate to contact the writer.

Yours sincerely

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

Appendix 5

Consultation with NZTA

From: Jaclyn Phillott [mailto:Jaclyn.Phillott@nzta.govt.nz]
Sent: Tuesday, 17 December 2024 10:19 AM
To: Lynley Newport
Subject: RE: 6701 State Highway 12, Waimamaku - Application-2024-1426 CRM:0312000095

Good morning Lynley,

Thank you for your response and reasoning for each of the matters NZTA is concerned about. In this instance NZTA notes the following:

- NZTA acknowledges the safe existing use of the crossings for Proposed Lot 3 and the annual average daily traffic volume (AADT) is low and the operating speeds are low. Therefore in this instance NZTA is willing to accept the accesses do not need to be upgraded and signage and vegetation clearance will be sufficient to mitigate any effects on the state highway. However, please note that any future development on Lot 3 may require these accesses to be upgraded.
- NZTA still requires the proposed access to Lots 1 & 2 to be upgraded to a Diagram C standard as required in the PPM and vegetation clearance is required to optimise sight lines.
- With regard to the reverse sensitivity condition, the existing dwelling is exempt from requiring this upgrade, however it is standard nationwide for all new dwellings within close proximity to the state highway to address noise concerns. However, as the highway has a low AADT, NZTA would support the following less stringent condition in this case (note this is in draft form):

  " A consent notice pursuant to Section 221 of the Resource Management Act 1991 shall be registered against the title of proposed Lot 1 & 2 of the subdivision of land shown on Scheme Plan [Insert scheme plan name, date and reference number] that addresses potential reverse sensitivity effects resulting from the normal operation of State Highway 12. This consent notice shall read as follows:

  Any dwelling or other noise sensitive location on the site in or partly within 80m of the edge of State Highway 12 carriageway must be designed, constructed and maintained to achieve an indoor design noise level of 40 dB $L_{Aeq(24hr)}$ inside all habitable spaces.

As I noted in my previous email the above are high level comments to assist in preparing your application and does not constitute approval. When drafting your formal application, NZTA recommends you note the reasoning you have outlined in your email below specifically the operating speeds, sight lines, and identify areas where vegetation can be cleared to improve the sight lines and where the proposed sign will be installed.

When you have completed your application taking into consideration the above points, NZTA will undertake a full assessment of the proposal and will determine our position. Formal written approval from NZTA should be obtained prior to lodgement for resource consent.

Ngā mihi

Jaclyn Phillott BEPP(hons)
Environmental Planner – Waikato/Bay of Plenty
Poutiaki Taiao / Environmental Planning
System Design, Transport Services
Email: Jaclyn.Phillott@nzta.govt.nz
Phone: 07 987 2707

Available: Monday, Tuesday, Wednesday 8:30am-3:30pm

Waka Kotahi NZ Transport Agency
Tauranga, Level 3, Harrington House, 32 Harington Street
PO Box 13055, Tauranga Central, Tauranga 3141, New Zealand
Facebook | Twitter | LinkedIn

Appendix 6

Site Suitability Report

geologix
consulting engineers

SUBDIVISION SITE SUITABILITY ENGINEERING REPORT

6701 STATE HIGHWAY 12, WAIMAMAKU

JOHN PARKER

C0598-S-01
MAY 2025
REVISION 1

geologix
consulting engineers

DOCUMENT MANAGEMENT

Document Title	Subdivision Site Suitability Engineering Report
Site Reference	6701 State Highway 12, Waimamaku
Client	John Parker
Geologix Reference	C0598-S-01
Issue Date	May 2025
Revision	01
Prepared	Fred Sennoga Civil Design Engineer, BScEng Civil, MEngNZ
Reviewed	Sebastian Hicks Principal Civil Engineer, CPEng Reg. 1168062, CMEngNZ, IntPE(NZ) /APEC Engineer
Approved	Edward Collings Managing Director, CEnvP Reg. 0861, CPEng Reg. 1033153, CMEngNZ
File Reference	*Z:\Projects\C0500-C0599\C0598 - 6701 State Highway 12, Waimamaku\06 - Reports\C0598-S-01-R01.docx*

REVISION HISTORY

Date	Issue	Prepared	Reviewed	Approved
May 2025	First Issue	FS	SH	EC

geologix
consulting engineers

TABLE OF CONTENTS

FIGURES

TABLES

1 INTRODUCTION

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

Our scope of works has been undertaken to assist with the Resource Consent application in relation to the proposed subdivision of rural properties section PT 32 BLK XIV WAOKU SD situated along State Highway 12 , Waimamaku, the 'site', into two new rural residential lots with a remaining balance lot.

Specifically, this assessment addresses engineering elements of natural hazards, wastewater, stormwater, access and associated earthworks requirements to provide safe and stable building platforms with less than minor effects on the environment as a result of the proposed activities outlined in Section 1.1.

1.1 Proposal

A proposed scheme plan was presented to Geologix at the time of writing, prepared by Thomson Survey Ltd[1] and has been reproduced within Appendix A as Drawing No 100. It is understood from the scheme plan that there will be three separate lots comprising:

- Proposed Lots 1& 2, which are proposed rural residential lots.
- Proposed Lot 3, which is the balance rural residential lot comprising the balance areas of section PT 32 BLK XIV WAOKU SD. The above is summarised in Table 1. Any amendments to the referenced scheme plan may require an update to the recommendations of this report which are based on conservative, typical rural residential development concepts.

The site is located in the rural production zone as per the FNDC Operative District Plan.

Table 1: Summary of Proposed Subdivision

Proposed Lot No.	Size	Purpose
1	1.01 ha	New residential
2	1.57 ha	New residential
3	4.0010 ha	Production Land/ Balance Lot

Site access for each lot will be provided from State Highway 12 from a combined new vehicle crossing and right of way. Lot 3 has existing access. A specific Traffic Impact Assessment (TIA) is not within the scope of this report.

[1] *Thomson Survey, PROPOSED SUBDIVISION OF SECTION 77 BLK XVI KAWAKAWA SD & PT SECTION 30 BLK XVI KAWAKAWA SD, dated Aug 2023.*

2 DESKTOP APPRAISAL

The site is located along the western side of SH12. It has an irregular alignment to define the northern and eastern boundary of the site. Topographically, the site area is undulating with gullies running predominantly west to east from a ridgeline extending along the western side of the site. The overall slope of the terrain is moderate to steep with some localised areas sloping more gently further east within the site.

The site setting is presented schematically as Figure 1 below.

Figure 1: Site Setting

The entire site area is currently in pasture with rough grass and occasional vegetation. There are existing structures present within the site boundaries in the balance Lot 3.

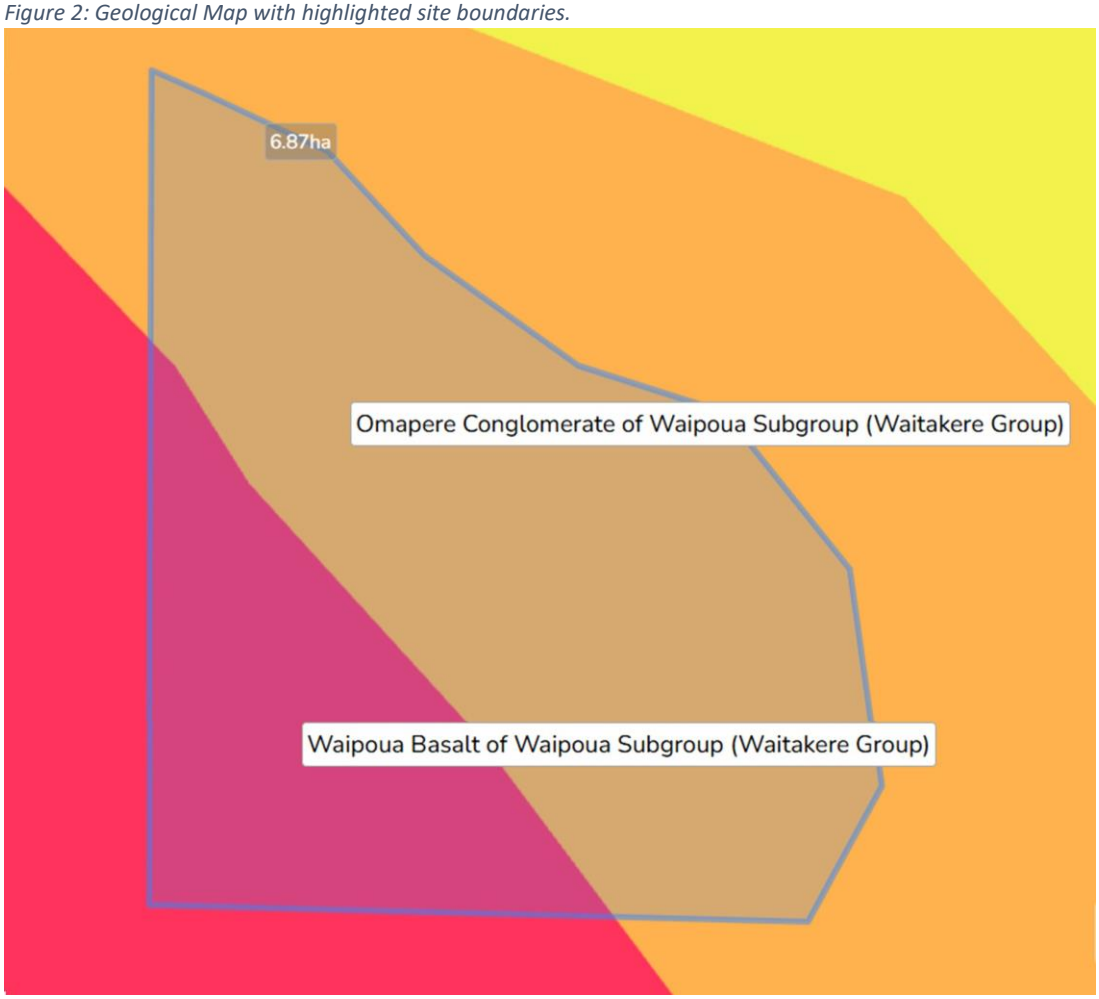
2.1 Existing Reticulated Networks

Far North District Council (FNDC) GIS mapping indicates that no existing public three waters infrastructure or reticulated networks are present within State Highway 12 or the site boundaries. This report has been prepared with the goal of the subdivision and future development being self-sufficient for the provision of wastewater, stormwater, and potable water supply.

2.2 Geological Setting

Available geological mapping[2] indicates the site to be directly underlain by Omapere Conglomerate of Waipoua Subgroup (Waitakere Group) and Waipoua Basalt of Waipoua Subgroup (Waitakere Group) Refer to Figure 2 below:

Figure 2: Geological Map with highlighted site boundaries.



2.3 Existing Geotechnical Information

Existing ground investigations were not made available to Geologix at the time of writing. Furthermore, a review of available GIS databases, including the New Zealand Geotechnical Database,[3] did not indicate borehole records within 500 m of the site.

[2] *Geological & Nuclear Science, 1:250,000 scale Geological Map, Sheet 2, Whangarei, 2009.*
[3] https://www.nzgd.org.nz/

3 SURFACE WATER FEATURES AND OVERLAND FLOWPATHS

During our site walkover and desktop appraisal of GIS topographic data, Geologix have developed an understanding of the surface water features and overland flow paths influencing the site. This is summarised in the following sections.

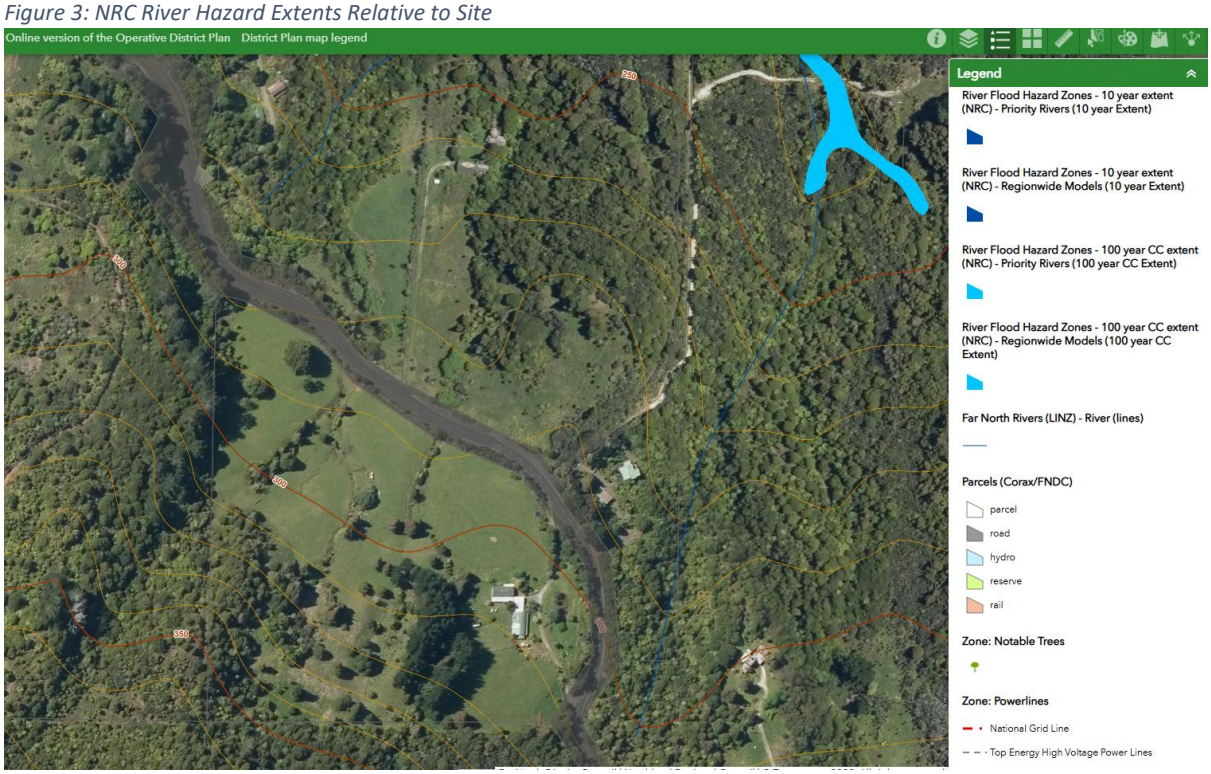
3.1 Surface Water Features

The site is at the upper elevations of a larger catchment.

Stormwater will flow north east across the site towards gulleys that eventually flow towards a streams north of State Highway 12 that flow northwards to Waimamaku river.

There is a mapped flood hazard (100year CC River Flood Regionwide Model) located 300m south east of the site, at around elevation 235m. The nearest site corner boundary is at around elevation 290m. Refer Figure 3 below.

Figure 3: NRC River Hazard Extents Relative to Site



3.2 Sensitive Receptors

Based on GIS data, national topographic maps and survey data provided at the time of writing we do not understand there to be sensitive receptors such as wetlands at the site. However, we have not been engaged to provide an ecological assessment of the site or surface water features.

3.3 Overland Flow Paths

Some minor flow paths are evident within the site boundaries upon relatively flat to gently sloping land, generally fed from the upper elevations of the site adjacent to SH12.

Our walkover survey was undertaken in late February during a relatively dry period and noted no flow through the overland flow paths.

4 GROUND INVESTIGATION

A site-specific walkover survey and intrusive ground investigation was undertaken by Geologix on 19 February 2025. The ground investigation was scoped to confirm the desktop assessment findings (where possible) and to provide parameters for the wastewater assessment. The ground investigation comprised the following:

- Three hand augered boreholes designated HA01, HA02 and HA03, formed within suitable areas for wastewater disposal fields on each proposed residential lot with a target depth of 1.2 m below ground level (bgl). HA01 was selected for as an alternative disposal field location and HA02 and HA03 were selected as the concept wastewater field locations. See Figure 4 for location of the boreholes.

Figure 4: Hand Auger locations Relative to proposed platforms

4.1 Site Walkover Survey

A visual walkover survey of the property confirmed the following:

- The topographical understanding of the site developed from our desktop study, as outlined in Section 2, is in general accordance with that observed on site.
- Suitable building envelopes[4] can be formed on gently sloping land <10°.
- SH12 defines the northeastern site boundary. Nearby land in all directions includes similar rural properties with open pasture.
- Overland flow paths extend throughout the lots and are predominantly covered by reed grasses in wet areas.
- A dwelling structure and associated gravel access road is located towards the southeastern corner of the balanced lot, Lot 3.
- There is an overhead power line running through the site approximately from south-east to north-west. One power pole is in the vicinity of the proposed site access road to Lot 1.

4.2 Ground Conditions

Arisings recovered from the exploratory boreholes were logged by a suitably qualified geotechnical engineering professional in general accordance with New Zealand Geotechnical Society guidelines[5]. Engineering borehole logs are presented as Appendix B to this report and approximate borehole positions recorded on Drawing No. 100 within Appendix A. Strata identified during the ground investigation can be summarised as follows:

- **Topsoil encountered ranging between 0.15 and 0.3 m bgl.** Described as generally brown organic silt, with trace gravel and trace rootlets, low plasticity and dry to moist.
- **Northland Waitakere Group Residual Soil to depths between 0.3 and <1.2 m bgl.** The residual soil was typically cohesive, described as clayey silt, brown or brownish orange, with trace volcanic fine gravels, low plasticity and moist.

A summary of the ground investigation data is presented below as Table 2.

Table 2: Summary of Ground Investigation

Hole ID	Lot	Hole Depth	Topsoil Depth	Groundwater[2]	Wastewater Category[4]
HA01	1	1.2 m	0.15 m	NE	6 – slow draining
HA02	1	1.2 m	0.2 m	NE	6 – slow draining
HA03	2	1.2 m	0.3 m	NE	6 – slow draining

1. *All depths recorded in m bgl unless stated.*
2. *Groundwater measurements taken on day of drilling.*

[4] *Measuring 30 m x 30 m according to FNDC District Plan Rule 13.7.2.2.*
[5] *New Zealand Geotechnical Society, Field Description of Soil and Rock, 2005.*

3. *NE – Not Encountered.*
4. *Wastewater category in accordance with Auckland Council TP58[6].*

5 WASTEWATER ASSESSMENT

The scope of this wastewater assessment comprised a ground investigation to ascertain a lot-specific wastewater disposal classification for concept design of suitable systems for a probable future rural residential development. Relevant design guideline documents adopted include:

- Auckland Council, Technical Publication 58, On-site Wastewater Systems: Design and Management Manual, 2004.
- NZS1547:2012, On-site Domestic Wastewater Management.

The concept rural residential development within this report assumes that the proposed new lot may comprise up to a five-bedroom dwelling with a peak occupancy of eight people[7]. This considers the uncertainty of potential future Building Consent designs. The number of usable bedrooms within a residential dwelling must consider that proposed offices, studies, gyms, or other similar spaces may be considered a potential bedroom by the Consent Authority.

5.1 Existing Wastewater Systems

No existing wastewater treatment or disposal systems have been identified or surveyed within the site boundaries.

5.2 Wastewater Generation Volume

In lieu of potable water infrastructure servicing the site, roof rainwater collection within on-lot tanks has been proposed for this assessment. The design water volume for roof water tank supply is estimated at 160 litres/ person/ day[8]. This assumes standard water saving fixtures[9] being installed within the proposed future development. This should be reviewed for each proposed lot at the Building Consent stage.

For the concept wastewater design, this provides a total daily wastewater generation of 1,280 litres/ day per proposed lot.

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[6] *Auckland Council, Technical Publication 58, On-site Wastewater Systems: Design and Management Manual, 2004, Table 5.1.*
[7] *TP58 Table 6.1.*
[8] *TP58 Table 6.2, AS/ NZS 1547:2012 Table H3.*
[9] *Low water consumption dishwashers and no garbage grinders.*

5.3 Treatment System

Selection of a wastewater treatment system will be provided by future developers at Building Consent stage. This will be a function of a refined design peak occupancy.

It is recommended within the concept solution provided that to meet suitable minimum treated effluent output, secondary treatment systems are accounted for across the site. The concept solution is detailed further in the following sections.

In the Building Consent design phase, a higher treated effluent output standard such as UV disinfection to tertiary quality may be required should specifically controlled zones such as the prescribed offsets of this report are encroached upon. Moreover, a primary treatment solution may also be considered for the Lot development, provided that the system complies with the proposed Northland Regional Plan. Specifically, controlling rules include:

- Rule C.6.1.3 (6), discharge of wastewater from primary systems is to slopes less than 10°.
- Rule C.6.1.3 (9.a), 100 % reserve disposal area where the wastewater has received primary treatment.
- Table 9, exclusion areas and setback distances for primary treated domestic type wastewater.

No specific treatment system design restrictions and manufacturers are currently in place. However, the developer will be required to specify the treatment system proposed at the Building Consent stage.

5.4 Land Disposal System

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

The proposed PCDI systems may be surface laid and covered with a minimum of 150 mm mulch and planted with specific evapotranspiration species with a minimum of 80 % species canopy cover or subsurface laid with a minimum 200 mm thickness of topsoil and planted with lawn grass. Site-won topsoil stripped during development from buildings and/ or driveway footprints may be used in the area of land disposal systems to increase minimum thicknesses. Specific requirements of the land disposal system include the following which have been complied with for this report.

Table 3: Disposal Field Design Criteria

Design Criteria	Site Conditions
Topography at the disposal areas shall not exceed 25°. Exceedances will require a Discharge Consent.	Concept design complies
On shallower slopes <25 ° but >10 °, compliance with Northland Regional Plan (NRP) rule C.6.1.3(6) is required.	Concept design complies for Lot 1 and 2, disposal fields sited on slopes <10 °.
On all terrain irrigation lines should be laid along contours.	Concept design complies
Disposal system situated no closer than 600 mm (vertically) from the winter groundwater table (secondary treated effluent).	Concept design complies
Separation from surface water features such as stormwater flow paths (including road and kerb channels), rivers, lakes, ponds, dams, and natural wetlands according to Table 9, Appendix B of the NRP.	Concept design complies. All overland flow paths separation distances to disposal areas are >15 m.
The effluent is treated and disposed of on-site such that each site has its own treatment and disposal system no part of which shall be located closer than 30 m from the boundary of any river, lake, wetland, or the boundary of the coastal marine area. FNDC rule 12.7.6.1.4	Concept design complies.

5.4.1 Soil Loading Rate

Based on the results of the ground investigation, the shallow soils are inferred to meet the drainage characteristics of TP58 Category 6, sandy clay, non-swelling clay and silty clay – slowly draining. This correlates to NZS1547 Category 5, poorly drained described as light clays. For a typical PCDI system, a Soil Loading Rate (SLR) of 2-3 mm/ day is recommended within NZS1547 Table 5.2 and TP58 Table 9.2.

To achieve the above SLR, technical guidance documents require the following compliance within the final design.

- 100 to 150 mm minimum depth of good quality topsoil (NZS1547 Table M1, note 1) to slow the soakage and assist with nutrient reduction.
- Minimum 50 % reserve disposal field area (TP58 Table 9.2, note 3) to adopt 3 mm/day, rather than 2mm/day SLR.

The proposed concept design adopts 3.0mm /day SLR, utilising a 50% reserve disposal field area.

5.4.2 Disposal Areas

The sizing of wastewater system disposal areas is a function of soil drainage, the loading rate and topographic relief. For each proposed lot, a primary and reserve disposal field is required as follows. The recommendations below are presented on Drawing No. 100.

- **Primary Disposal Field.** A minimum PCDI primary disposal field of 427 m^2 laid parallel to the natural contours.
- **Reserve Disposal Field.** NRP rule C.6.1.3(9)(b) requires a minimum reserve disposal field equivalent to 30 % of the primary disposal field for secondary or tertiary treatment systems. As discussed above in Section 5.4.1, the proposed concept design presents a 50% reserve disposal field area. Therefore, each proposed lot provides a 214 m^2 reserve disposal area to be laid parallel to the natural contours.
- Disposal fields discharging secondary treated effluent are to be set above the 20-year ARI (5 % AEP) flood inundation height to comply with the above NRP rule. Flood hazard potential has only been identified just entering within the south-eastern corner of the site and as such the site can provide freeboard well above the 1 % AEP (and 5% AEP) flood height to comply with this rule.

5.5 Summary of Concept Wastewater Design

Based on the above design assumptions a concept wastewater design is presented in Table 4 and presented schematically upon Drawing No. 100 (Appendix A). It is recommended that each lot is subject to Building Consent specific review and design amendment according to final development plans.

Table 4: Concept Wastewater Design Summary

Design Element	Specification
Concept development	Five-bedroom, peak occupancy of 8 (per lot)
Design generation volume	160 litres/ person/ day
Water saving measures	Standard. Combined use of 11 litre flush cisterns, automatic washing machine & dishwasher, no garbage grinder[1]
Water meter required?	No
Min. Treatment Quality	Secondary
Soil Drainage Category	TP58 Category 6, NZS1547 Category 5
Soil Loading Rate	3.0 mm/ day
Primary disposal field	Surface/ subsurface laid PCDI, min. 427 m^2
Reserve disposal field	Surface/ subsurface laid PCDI, min. 50 % or 214 m^2
Dosing Method	Pump with high water level visual and audible alarm. Minimum 24-hour emergency storage volume.
Stormwater Control	Divert surface/ stormwater drains away from disposal fields. Cut off drain required for Lot 1 (>10°), not for Lot 2

1. Unless further water saving measures are included.

5.6 Assessment of Environmental Effects

An Assessment of Environmental Effects (AEE) is required to address two aspects of wastewater disposal. These include the effect of treated wastewater disposal for an individual lot and the cumulative or combined effect of multiple lots discharging treated wastewater to land as a result of subdivision.

The scale of final development is unknown at the time of writing and building areas, impervious areas including driveways, ancillary buildings, landscaped gardens, and swimming pools may reduce the overall area for on-site wastewater disposal. For the purpose of this report, the above impervious features are considered to be comprised within the conceptual 30 x 30 m square building envelope indicated on Drawing 100, Appendix A. The conceptual wastewater disposal field areas are clear of this indicative building envelope area.

It is recommended that the AEE is reviewed at the time of Building Consent once specific development plans, final disposal field locations and treatment systems are established. The TP58 guideline document provides a detailed AEE for Building Consent applications. Based on the proposed scheme, ground investigation, walkover inspection and Drawing No. 100, a site-specific AEE is presented as Appendix C to demonstrate the proposed wastewater disposal concept will have a less than minor effect on the environment.

6 STORMWATER ASSESSMENT

Considering the nature of rural subdivision and residential development, increased storm water runoff occurs as pervious surfaces such as pasture are converted to impervious features such as roads or future on-lot buildings and driveways.

6.1 Impervious Surfaces and Activity Status

A summary of the impervious areas of the proposed lots is provided as Table 5 below which has been developed from our observations and the provided Scheme Plan. For the proposed lots, this has been taken as conceptual maximum probable development of typical rural residential scenarios. Refer Section 6.2.

The activity status reflected in Table 5 is with respect to Operative FNDC Plan Section 8.6.5.1.3 only.

Table 5: Summary of Impervious Surfaces

Surface	Proposed Lot 1		Proposed Lot 2		Proposed Lot 3	
Existing Condition	**NA**		**NA**		**(65,810 m²)**	
Roof (house & surround)					550 m²	0.836 %
Driveway					495 m²	0.752 %
Total impervious					1045 m²	1.588 %
Proposed Condition	(10,100m²)		(15,700 m²)		(40,010 m²)	
Roof (house & surround)	300 m²	2.97 %	300 m²	1.91 %	550 m²	1.38 %
Driveway	200 m²	1.98 %	200 m²	1.27 %	495 m²	1.24 %
Total	500 m²	4.95 %	500 m²	3.18 %	1045 m²	2.61 %
Activity Status	Permitted		Permitted		Permitted	

6.2 Stormwater Management Concept

The stormwater management concept considered in this report has been prepared to meet the requirements of the local and regional consent authorities considering the design storm event as follows:

- **Probable Future Development (Lot 1 & 2).** The proposed application includes subdivision formation only and not lot-specific residential development at this stage. However, a conservative model of probable future on-lot development has been developed for this assessment considering variation of scale in typical rural residential development. The probable future on-lot development concept includes up to 300 m^2 potential roof area and up to 200 m^2 potential driveway or parking areas. The latter has been modelled as an offset within lot-specific attenuation devices.
- **Subdivision Development.** Access to each proposed lot will be established by a combined vehicle crossing to the boundary from SH12. This impervious surfaces will produce an insignificant increase in runoff, with less than minor adverse effect on environment, therefore requiring no attenuation.

6.3 Design Storm Event

Relevant design rainfall intensity and depths have been ascertained for the site location from the NIWA HIRDS meteorological model[10]. The NIWA HIRDS rainfall data is presented in full within Appendix D. Provision for climate change has been adopted by means of applying a factor of 20 % to rainfall intensities, in accordance with FNDC Engineering Standards 2023.

Noting the risk of flood hazard downstream of the site as discussed in Section 3.1, this assessment has been modelled to provide stormwater attenuation up to and including 80 % of the pre-development condition for the 1 % AEP storm event which is recommended for the site including any future activities to comply with FNDC Engineering Standard Table 4-1.

This provides additional conservatism over the 10 % AEP pre-development requirement to comply with NRP Rule C6.4.2(2) and also with the Operative District Plan 13.7.3.4 (a). Attenuation modelling under this scenario avoids exacerbating downstream flooding and provides for sufficient flood control as presented in the FNDC Engineering Standards.

Furthermore, the Table 4-1 stipulates that flow attenuation controls reduce the post-development peak discharge to 80 % of the pre-development condition for the 50 % and 20 % AEP storm event. To be compliant with the above rules, the attenuation modelling within this report has been undertaken for all of the above storm events. The results are summarised in Table 7 with calculations provided in full in Appendix D.

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

Outlet dispersion devices have been designed to manage the 1% AEP event to reduce scour and erosion at discharge locations. These are detailed further in Section 6.4.1 of this report.

6.4 Concept Stormwater Attenuation

Based on the design storm events indicated above and the corresponding modelling results (in Appendix D) an attenuation concept to suit the maximum storage requirement has been provided. In this case the concept limits the post-development peak discharge to 80% of the pre-development condition for the 1% AEP storm event. This is achievable by installing specifically sized low-flow orifices into the attenuation devices.

The rational method has been adopted by Geologix with run-off coefficients as published by FNDC Engineering Standards[11] to provide a suitable concept attenuation design to limit post-development peak flows to 80% of pre-development conditions. The proposed devices with the concept design are listed below:

- Roof Runoff Tanks

Conceptual storage and outlet requirements within the tanks are included in Appendix D and a typical schematic retention/ detention tank arrangement detail is presented as Drawing No. 401 within Appendix A.

Table 6: Summary of Concept Stormwater Attenuation

Item	Pre-development Impervious Area	Post-development Impervious Area	Proposed Concept Attenuation Method
Future Concept Development (Lot 1, 2)			
Potential buildings	0 m^2	300 m^2	Detention within roof water tanks
Potential driveways	0 m^2	200 m^2	Off-set detention in roof water tanks
Total	**0 m^2**	**500 m^2**	

Calculations to support the concept design are presented as Appendix D to this report. A summary of the probable future development attenuation concept design is presented as Table 7. As above, it is recommended that this concept design is refined at the Building Consent stage once final development plans are available.

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

Table 7: Probable Future Development Attenuation Concept - Tanks

Design Parameter	Flow Attenuation: 50 % AEP (80 % of pre dev)	Flow Attenuation: 20 % AEP (80 % of pre dev)	Flood Control: 10 % AEP	Flood Control: 1 % AEP (80 % of pre dev)
Proposed Lot 1 & 2				
Regulatory Compliance	FNDC Engineering Standards Table 4-1	FNDC Engineering Standards Table 4-1	NRC Proposed Regional Plan	FNDC Engineering Standards Table 4-1
Pre-development peak flow	5.42 l/s	7.02 l/s	8.2 l/s	12.38 l/s
80 % pre-development peak flow	4.33 l/s	5.61 l/s	NA	9.9 l/s
Post-development peak flow	8.81 l/s	11.41 l/s	13.33 l/s	20.13 l/s
Total Storage Volume Required	4,152 litres	5,388 litres	3,131 litres	9,616 litres
Concept Summary:	- Attenuation storage calculation accounts for offset flow from 200 m^2 driveway (not indicated explicitly indicated in summary above. Refer Appendix D for calcs in full) - Attenuation to 80 % of pre-development condition for 1 % AEP storm represents maximum storage requirement and is adopted for the concept design tank storage. - 2 x 25,000 litre tanks is sufficient for attenuation (9,616 l) + domestic water storage (40,384 l) - 1 % AEP attenuation (in isolation) requires a 49 mm orifice 0.50 m below overflow. However regulatory requirements are to consider an additional orifice/s to control the 50 %, 20 % and 1 % AEP events specifically. We note this may vary the concept orifice indicated above. This should be provided with detailed design for building consent approval.			

6.4.1 On-Lot Discharge Dispersion

The direct discharge of rainwater tank overflow in a concentrated manner can cause scour and erosion in addition to saturation of shallow soils. It is recommended that overflow from rainwater detention tanks is conveyed in sealed pipes to a designated discharge point with suitable dispersion devices that are downslope of proposed building footprints and wastewater disposal fields. A concept design accommodating this is presented within Appendix A on Drawing Nos. 402.

It is recommended that the conceptually sized dispersion devices are subject to specific assessment at the Building Consent stage to limit scour and erosion from tank overflows.

Typical rural residential developments construct either above or below ground discharge dispersion pipes. Feeding pipes can be either buried or pinned to the surface as desired. It is recommended that all pipes are designed to accommodate the maximum tank overflow. A concept dispersion pipe or trench length is presented as Table 8. Calculations to derive this are presented within Appendix D, based on the Auckland Council TR2013/018 document, a widely adopted standard for this application in New Zealand.

Table 8: Summary of Concept Dispersion Devices

Concept Impervious Area to Tank	Velocity at single spreader orifices	Tank outlet pipe diameter	Spreader pipe diameter	Dispersion Pipe/ Trench Length	Spreader orifice size	Concept
Proposed Lot 1, 2						
500 m^2 (inc. 200m^2 offset)	0.92 m/s	0.1 m	0.15 m	6.6 m	20 mm, spaced at 150 mm intervals	Above ground dispersion device or in-ground dispersion trench.

6.5 Subdivision Development Management

The existing crossing from SH12 to serve Lots 1 & 2 has an existing pipe culvert under it. The client has liaised directly with NZTA in regard to the required standard for this crossing to be upgraded to (i.e. NZTA Accessway way Diagram C) and that may include work on the existing culvert.

It is noted that Lot 1's private driveway will traverse an overland flow path that runs near the boundary of Lot 1 and 2. It is recommended that a stormwater culvert is provided at this crossing, although this should only be a requirement of the future development of Lot 1, not necessarily formed at subdivision.

6.6 Stormwater Quality

The proposed application is for a rural residential subdivision and future development. The key contaminant risks in this setting include:

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

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

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

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

7 POTABLE WATER & FIRE FIGHTING

In the absence of potable water infrastructure within SH12 or within the site, it is recommended that roof runoff water tanks are adopted for potable water supply with appropriate filtration and UV disinfection at point of use. The volume of potable water supply on each lot should consider the required stormwater detention volume identified within Table 7.

Furthermore, the absence of potable water infrastructure and fire hydrants within SH12 require provision of the on-lot roof water supply tanks to be used for firefighting purposes (if required). Specific analysis and calculations for firefighting is outside the scope of this report and may require specialist input. Supply for firefighting should be made in accordance with SNZ PAS4509:2008.

8 EARTHWORKS

The following earthworks provisions are anticipated for subdivision formation only:

- **Upgrading of vehicle crossing (Lot 1 & 2).** As required by NZTA. Required at subdivision formation.

Proposed earthwork volumes are well within a 5,000 m^3 Permitted Activity volume limit outlined by FNDC District Plan Rule 12.3.6.1.1(a) and the maximum cut and fill height is <3 m to comply with 12.3.6.1.1(b).

Rule C.8.3.1, Table 15 of the Proposed Regional Plan outlines a Permitted Activity as 5,000 m^2 of exposed earth at any time for 'other areas'. Proposed earthwork areas to form the subdivision, are anticipated to comply with the Permitted Activity standard for other areas.

8.1 General Recommendations

Bulk fill with site-won earth can be moderately sensitive to disturbance when exposed to rain or runoff which may cause saturation or vehicle movements and trafficking during earthworks. Accordingly, care should be taken during construction, including probable future developments to minimise degradation of any earth fill due to construction traffic and to minimise machinery on site.

Any areas of proposed bulk fill which are required to meet specific subgrade requirements within should be subject to a specific earthwork specification prepared by a professional Engineer such as Geologix.

Due to the scope of work and topography of the site, significant excavations are not anticipated. However, to reduce the risk of instability of excavations during construction, it is

recommended that **temporary** unsupported excavations have a maximum vertical height of 0.5 m. Excavations >0.5 m should be battered at 1V:1H or 45°. Permanent batter slopes may require a shallower angle to maintain long term stability and if proposed these should be assessed at the Building Consent stage within a specific geotechnical investigation report.

Temporary batters should be covered with polythene sheets secured to the surface with pins or batons to prevent saturation. All works within close proximity to excavations should be undertaken in accordance with Occupational Safety and Health regulations.

All earthworks should be carried out in periods of fine weather within the typical October to April earthwork season. Consent conditions commonly prescribe working restrictions.

8.2 Erosion and Sediment Control

Specific erosion and sediment control measures are required to control sediment runoff from areas of proposed earthworks within the scope of this application. It is recommended that specific on-lot development is assessed at the time of Building Consent by the future developer. To form the subdivision the following erosion and sediment control measures are recommended:

• Silt fence around the downslope face of the proposed vehicle crossing and right of way construction.

•Clean water diversion channel and bund upstream of the proposed vehicle crossing and right of way area to divert potential overland flows away and around construction works zones.

9 NATURAL HAZARD ASSESSMENT

To satisfy the Resource Management Act, 1991 the proposed subdivision must plan for and manage the risk from natural hazards to reduce the potential adverse effects to less than minor. Regulatory assessment of natural hazards at the site location are managed under the jurisdiction of the FNDC District Plan[12], Northland Regional Council (NRC) Proposed Regional Plan for Northland[13] and Regional Water and Soil Plan for Northland. Following our ground investigation and considering the measures presented in this report, a summary of the proposed activities against defined natural hazards is presented as Table 9.

Table 9: Summary of Natural Hazards

Natural Hazard	Applicability	Mitigation & Effect on Environment
Erosion	Yes	Mitigation provided by means of stormwater dispersion control and erosion and sediment control measures; resultant effects are less than minor.

[12] *Operative District Plan Rule 13.7.3.2.*
[13] *Proposed Regional Plan for Northland, Appeals Version, July 2021, Chapter D.6.*

Overland flow paths, flooding, inundation	Yes	Mitigation provided by means of flood control attenuation; resultant effects are less than minor.
Landslip	NA	No mitigation required, less than minor.
Rockfall	NA	No mitigation required, less than minor.
Alluvion	NA	No mitigation required, less than minor.
Avulsion	NA	No mitigation required, less than minor.
Unconsolidated fill	NA	No mitigation required, less than minor.
Soil contamination	NA	No mitigation required, less than minor.
Subsidence	NA	No mitigation required, less than minor.
Fire hazard	NA	No mitigation required, less than minor.
Sea level rise	NA	No mitigation required, less than minor.

NA – Not Applicable.

10 LIMITATIONS

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

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

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

APPENDIX A

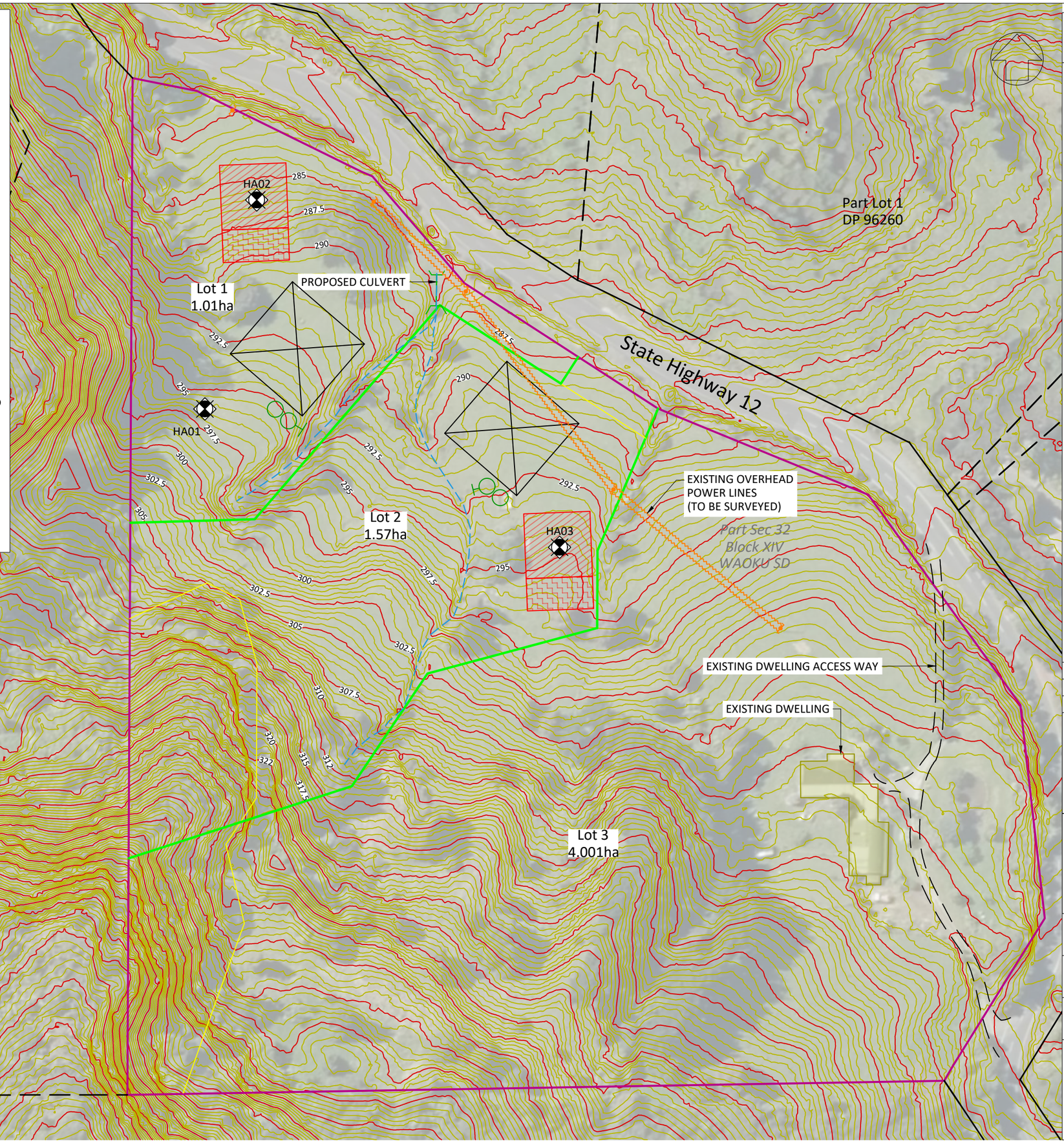
Drawings

NOTES:

- CONTOUR INTERVAL IS 20 m MAJOR, 5 m MINOR EXTRACTED FROM LINZ
- AERIAL PHOTOGRAPH, EXTRACTED FROM GRIP
- HORIZONTAL DATUM IN MT EDEN CIRCUIT 2000
- VERTICAL DATUM IN TERMS OF NEW ZEALAND VERTICAL DATUM 2016
- EXISTING SITE BOUNDARIES EXTRACTED FROM GRIP.CO.NZ
- PROPOSED BOUNDARIES PROVIDED BY THOMSON SURVEY PLAN 10519 DATED AUGUST 2023

LEGEND:

- 75.0 — MAJOR CONTOUR
- MINOR CONTOUR
- SUBJECT LOT
- PROPOSED LOTS
- PROPOSED EASEMENT
- EXISTING ROAD RESERVE BOUNDARY
- EXISTING ABUTTAL LOT BOUNDARY
- PROPOSED PRIMARY WASTE DISPOSAL FIELD
- PROPOSED SECONDARY WASTE DISPOSAL FIELD
- CONCEPT BUILDING ENVELOPE (30m x 30m)
- CONCEPT 2 x 25,000 LITRE WATER TANK ATTENUATING TO DISPERSION DEVICE TO CONTROL 500m² AREA
- HAXX GEOLOGIX HAND AUGER
- OVERLAND FLOWPATH (OLFP)



1
DP 196241

GENERAL NOTES

1. DRAWING REPRODUCED FROM THOMSON SURVEY PROPOSED SCHEME PLAN REF. 10696, DATED OCTOBER 2024.
3. HORIZONTAL CO ORDINATE SYSTEM = NZTM.
4. VERTICAL DATUM = NZVD.
5. MAJOR INTERVALS 20.0 m.
6. MINOR INTERVALS 5.0 m.
7. FOR INDICATION ONLY, NOT FOR CONSTRUCTION.

CONCEPT WASTEWATER DESIGN

CONCEPT DEVELOPMENT	5 BEDROOM
CONCEPT NO. OF OCCUPANTS	8 PERSONS
DAILY WASTEWATER GEN.	160 LITRES/PERSON/ DAY
TOTAL WASTEWATER GEN.	1,280 LITRES/ DAY
SOIL CATEGORY (TP58)	CATEGORY 6
SOIL CATEGORY (NZS1547)	CATEGORY 5
SOIL LOADING RATE	3.0 mm/ DAY
TREATMENT SYSTEM	NO - SUBJECT TO BUILDING CONSENT DESIGN
PRIMARY DISPOSAL AREA	427 m²
RESERVE DISPOSAL AREA	214 m² (50 %)

Meters
20 0 20 40
1:1250

Revision	Issue	Date
A	FOR CONSENT	02/05/25

geologix
consulting engineers
AUCKLAND | NORTHLAND

Project Name and Address

C0598
STATE HIGHWAY 12
WAIMAMAKU
PART SECTION 32 BLOCK XIV WAOKU SD

Project	Drawn By
C0598	B.NEL

Client
STEPHEN PARKER

Sheet Title
SITE SUITABILITY LAYOUT

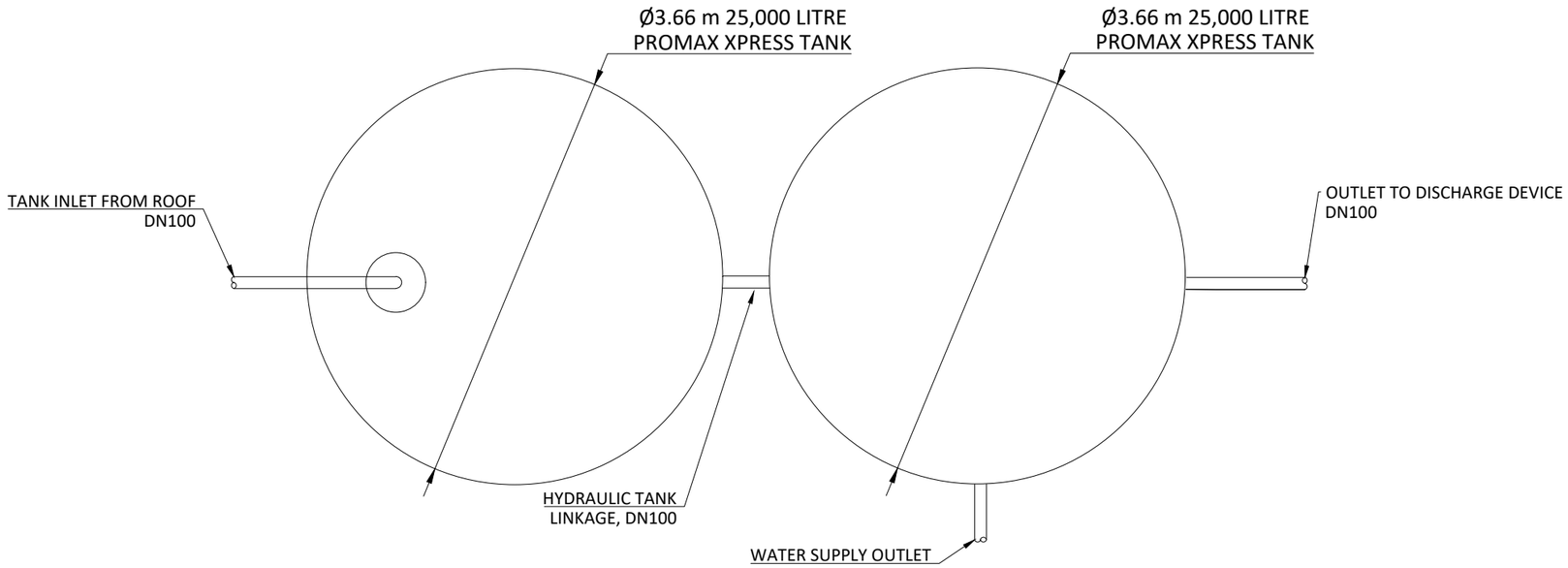
Sheet
100

FILE PATH: D:\Synology\Drive\Projects\C0500-C0599\C0598 - 6701 State Highway 12, Waimamaku\07 - Technical\& Drawings\Drawings\C0598-S-100-401-A.dwgC0598-S-100-401-A.dwg

PLOTTED: 03/04/2025

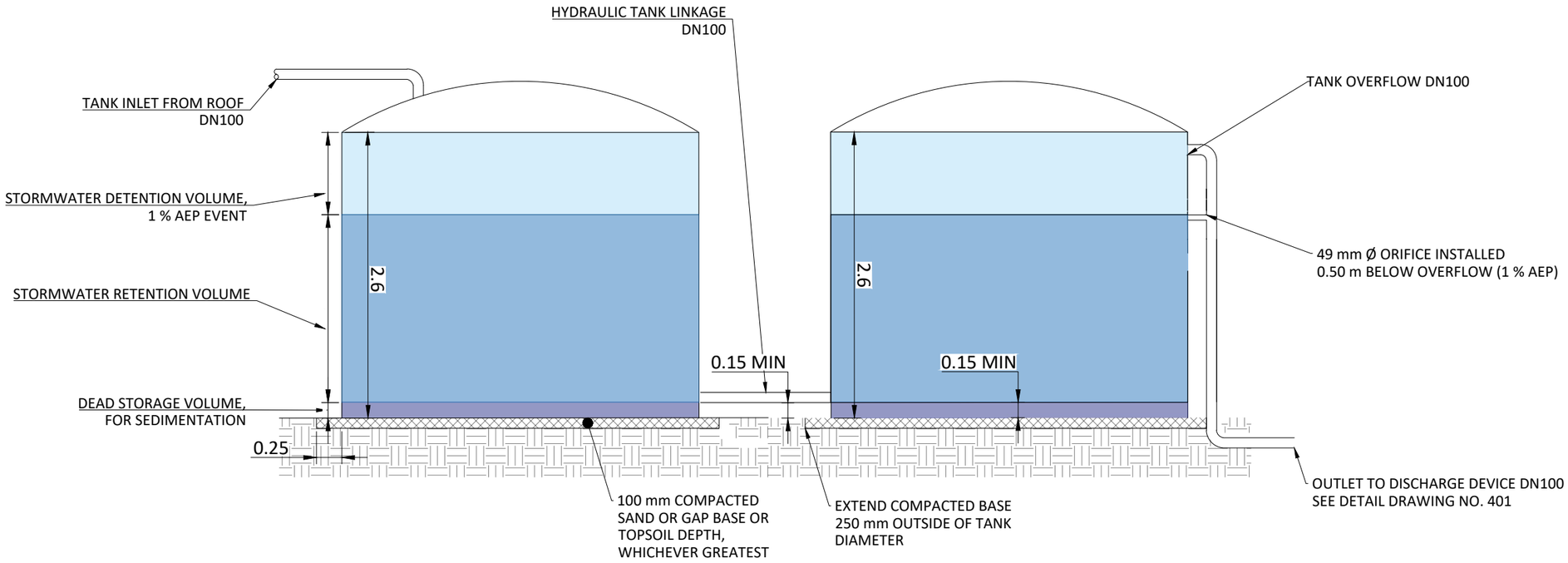
PROPOSED TANK PLAN VIEW

1:50, A3

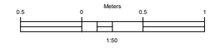


PROPOSED TANK SIDE VIEW

1:50, A3



GENERAL NOTES



A	FOR CONSENT	02/05/25
Revision	Issue	Date

geologix
consulting engineers

AUCKLAND | NORTHLAND

Project Name and Address

C0598
STATE HIGHWAY 12
WAIMAMAKU
PART SECTION 32 BLOCK XIV WAOKU SD

Project	Drawn By
C0598	B.NEL

Client

STEPHEN PARKER

Sheet Title

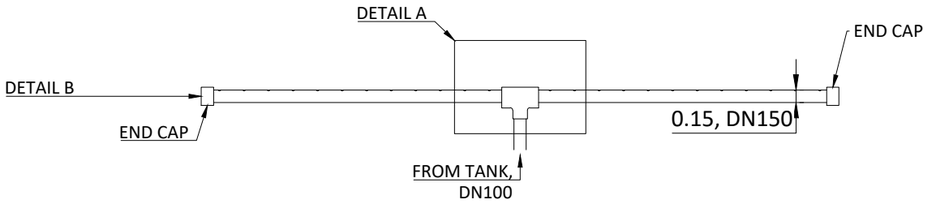
STORMWATER TANK DETAILS

Sheet

400

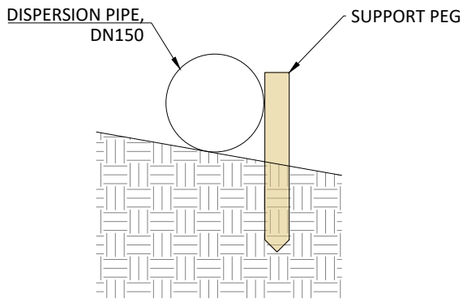
OPTION 1: DISPERSION VIA ABOVE GROUND PIPE

NOT TO SCALE



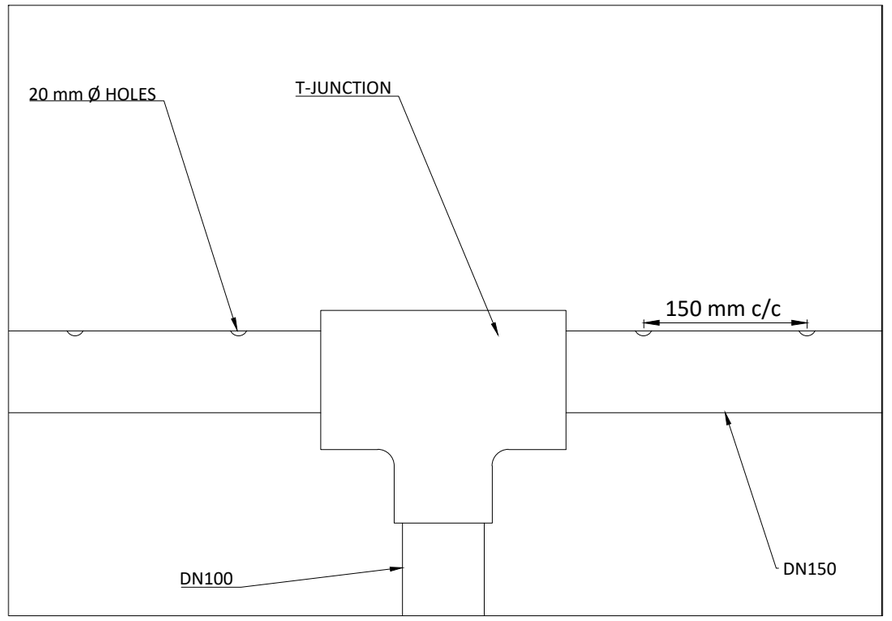
DETAIL B - SIDE VIEW

NOT TO SCALE



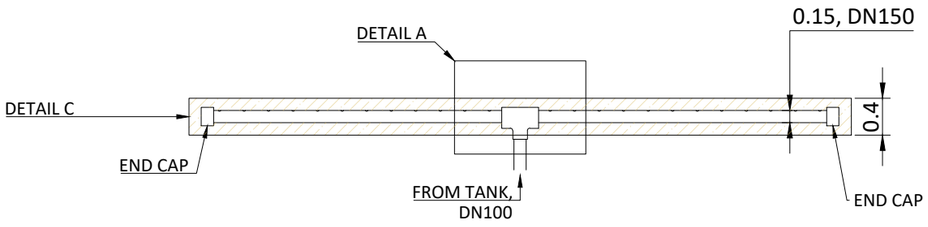
DETAIL A - T JUNCTION AND PERFORATIONS

NOT TO SCALE



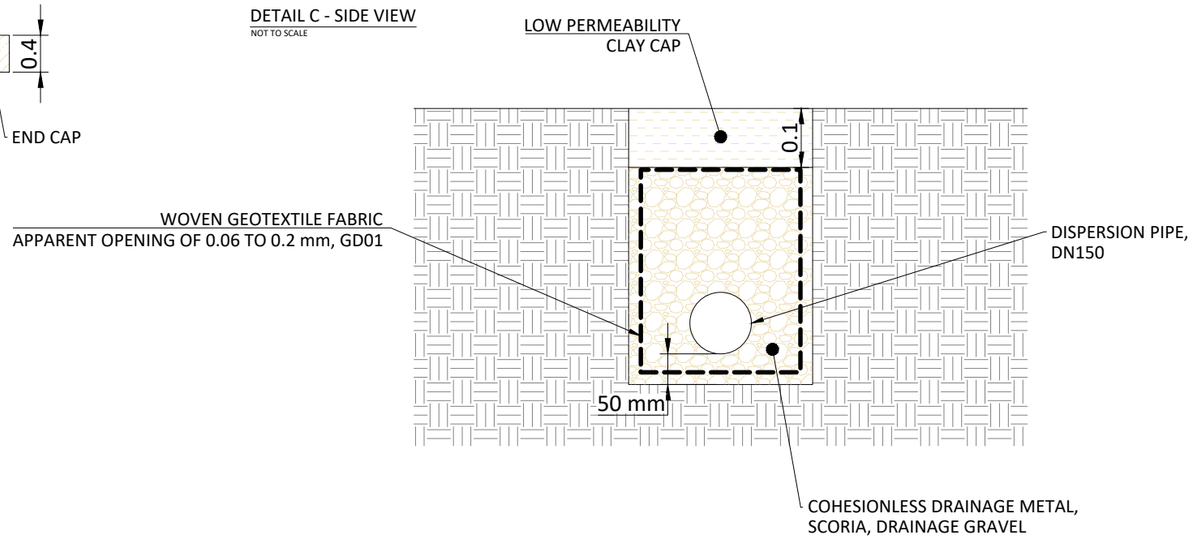
OPTION 2: DISPERSION VIA BELOW GROUND TRENCH

NOT TO SCALE

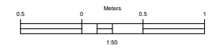


DETAIL C - SIDE VIEW

NOT TO SCALE



GENERAL NOTES



Revision	Issue	Date
A	FOR CONSENT	02/05/25

geologix consulting engineers

AUCKLAND | NORTHLAND

Project Name and Address

C0598
STATE HIGHWAY 12
WAIMAMAKU
PART SECTION 32 BLOCK XIV WAOKU SD

Project	Drawn By
C0598	B.NEL

Client

STEPHEN PARKER

Sheet Title

STORMWATER DETAILS

Sheet

401

geologix
consulting engineers

APPENDIX B

Engineering Borehole Records

INVESTIGATION LOG

HOLE NO.: HA01

CLIENT: John Parker

JOB NO.: C0598

PROJECT: 6701 State Highway 12, Waimamaku

SITE LOCATION: South West of Twin Coast Discovery Hwy

START DATE: 19/02/2025

CO-ORDINATES: 1646363.000mE, 6061782.000mN

ELEVATION: Ground

END DATE: 19/02/2025

CONTRACTOR: Internal

RIG: 50mm Hand Auger

DRILLER: TW GB

LOGGED BY: GB

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)	VANE SHEAR STRENGTH (kPa)	WATER
TOPSOIL comprising organic SILT; trace rootlets; brown; moist; low plasticity.		0.0	TS	2 4 6 8 10 12 14 16 18	Vane: 50 100 150 200 Values	Groundwater Not Encountered
Clayey SILT; brown. Moist; low plasticity; [Waitakere Group].		0.2				
		0.4				
		0.6				
		0.8				
0.9m - 1.2m: Becoming brown with pinkish dark orange and orange mottles. Trace fine sand and trace fine gravel.		1.0				
		1.2				
End Of Hole: 1.20m		1.4				
		1.6				
		1.8				
		2.0				
		2.2				
		2.4				
		2.6				
		2.8				

PHOTO(S)

REMARKS

1. Hand auger completed at target depth 1.2m bgl.
2. Groundwater not encountered at the time of drilling.

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit

INVESTIGATION LOG

HOLE NO.: HA02

CLIENT: John Parker

JOB NO.: C0598

PROJECT: 6701 State Highway 12, Waimamaku

SITE LOCATION: South West of Twin Coast Discovery Hwy

START DATE: 19/02/2025

CO-ORDINATES: 1646364.000mE, 6061838.000mN

ELEVATION: Ground

END DATE: 19/02/2025

CONTRACTOR: Internal

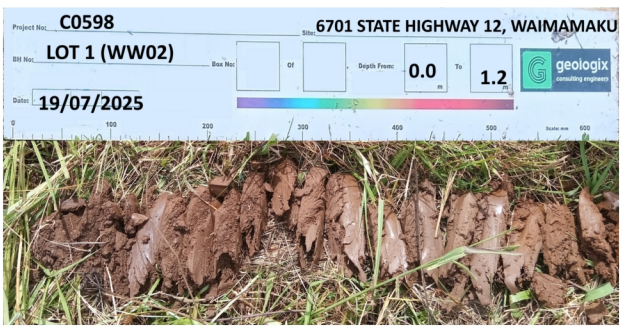
RIG: 50mm Hand Auger

DRILLER: TW GB

LOGGED BY: TW

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)	VANE SHEAR STRENGTH (kPa)	WATER
TOPSOIL comprising organic SILT; trace rootlets; dark brown; moist; low plasticity.		0.0	TS	2 4 6 8 10 12 14 16 18	Vane: 50 100 150 200 Values	Groundwater Not Encountered
SILT, with some clay; dark brown. Moist; low plasticity; [Waitakere Group].		0.2				
Clayey SILT; dark brown. Moist; low plasticity; [Waitakere Group].		0.4				
		0.6				
		0.8				
		1.0				
End Of Hole: 1.20m		1.2				
		1.4				
		1.6				
		1.8				
		2.0				
		2.2				
		2.4				
		2.6				
		2.8				

PHOTO(S)



REMARKS

1. Hand auger completed at target depth 1.2m bgl.
2. Groundwater not encountered at the time of drilling.

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit

INVESTIGATION LOG

HOLE NO.: HA03

CLIENT: John Parker

PROJECT: 6701 State Highway 12, Waimamaku

JOB NO.: C0598

SITE LOCATION: South West of Twin Coast Discovery Hwy

START DATE: 19/02/2025

CO-ORDINATES: 1646458.260mE, 6061738.790mN

ELEVATION: Ground

END DATE: 19/02/2025

CONTRACTOR: Internal

RIG: 50mm Hand Auger

DRILLER: TW GB

LOGGED BY: GB

MATERIAL DESCRIPTION (See Classification & Symbology sheet for details)	SAMPLES	DEPTH (m)	LEGEND	SCALA PENETROMETER (Blows / 0mm)	VANE SHEAR STRENGTH (kPa)	WATER
TOPSOIL comprising organic SILT; trace gravels and trace rootlets ; brown; dry to moist; friable.		0.0	TS	2 4 6 8 10 12 14 16 18	Vane: 50 100 150 200 Values	Groundwater Not Encountered
Clayey SILT; brownish orange . Moist; low plasticity; [Waitakere Group].		0.4				
0.8m - 1.2m: Trace volcanic fine gravels.		0.8				
End Of Hole: 1.20m		1.2				
		1.4				
		1.6				
		1.8				
		2.0				
		2.2				
		2.4				
		2.6				
		2.8				

PHOTO(S)

REMARKS

1. Hand auger completed at target depth 1.2m bgl.
2. Groundwater not encountered at the time of drilling.

WATER

- Standing Water Level
- Out flow
- In flow

INVESTIGATION TYPE

- [x] Hand Auger
- [ ] Test Pit

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APPENDIX C

Assessment of Environmental Effects and Assessment Criteria

Table 10: Wastewater Assessment of Environmental Effects

Item	NRC Separation Requirement[2]	FNDC Separation Requirement	Site Assessment[3]
Individual System Effects			
Flood Plains	Above 5 % AEP	NR	Complies according to available GIS data and visual assessment.
Stormwater Flowpath[4]	5 m	NR	Complies, see annotations on Drawing No. 100.
Surface water feature[5]	15 m	30 m	Complies.
Coastal Marine Area	15 m	30 m	Complies, site is inland.
Existing water supply bore.	20 m	NR	Complies. None recorded within or within 20 m of the site boundaries.
Property boundary	1.5 m	1.5	Complies. Including proposed subdivision boundaries.
Winter groundwater table	0.6 m	0.6 m	Complies.
Topography			Ok – chosen disposal areas are gently sloped. Lot 1 <12° slope; Lot 2 < 10° slope
Cut off drain required?			Yes for Lot 1 (> 10°). Not for Lot 2.
Discharge Consent Required?			No.
	TP58	**NZS1547**	
Cumulative Effects			
Biological Oxygen Demand	≤20 g/m^3		Complies – secondary treatment.
Total Suspended Solids	≤30 g/m^3		Complies – secondary treatment.
Total Nitrogen	10 – 30 g/m^3	15 – 75 g/m^3	Complies – secondary treatment.
Phosphorous	NR	4 – 10 g/m^3	Complies – secondary treatment.
Ammonia	NR	Negligible	Complies – secondary treatment.
Nitrites/ Nitrates	NR	15 – 45 g/m^3	Complies – secondary treatment.
Conclusion: Effects are less than minor on the environment.			

1. AEE based on proposed secondary treated effluent.
2. Northland Regional Plan Table 9.
3. Based on the recommendations of this report and Drawing No. 100.
4. Including any formed road with kerb and channel, and water-table drain that is down-slope of the disposal area.
5. River, lake, stream, pond, dam, or natural wetland.

AEP Annual Exceedance Probability.
NR No Requirement.

Table 11: Operative FNDC Subdivision Stormwater Disposal Assessment Criteria, to rule 13.7.3.4

Assessment Criteria	Comments
(a) All allotments shall be provided, within their net area, with a means for the disposal of collected stormwater from the roof of all potential or existing buildings and from all impervious surfaces, in such a way so as to avoid or mitigate any adverse effects of stormwater runoff on receiving environments, including downstream properties. This shall be done for a rainfall event with a 10% Annual Exceedance Probability (AEP).	Concept design complies and has adopted latest FNDC engineering standards (2023) for runoff curves and proposed area within all undeveloped lots will be attenuated to 80 % of pre-development levels for specified design storms by FNDC standards and NRP. This proposed flow control exceeds the requirements of 10% AEP.
(b) The preferred means of disposal of collected stormwater in urban areas will be by way of piping to an approved outfall, each new allotment shall be provided with a piped connection to the outfall laid at least 600mm into the net area of the allotment. This includes land allocated on a cross lease or company lease. The connection should be at the lowest point of the site to enable water from driveways and other impervious surfaces to drain to it. Where it is not practical to provide stormwater connections for each lot then the application for subdivision shall include a report detailing how stormwater from each lot is to be disposed of without adversely affecting downstream properties or the receiving environment.	There are no available public stormwater assets for connection. Each lot's discharge will be disposed of with controlled discharge devices that adequately disperse flows to mitigate erosion and damage to downstream properties.
(c) The provision of grass swales and other water retention devices such as ponds and depressions in the land surface may be required by the Council in order to achieve adequate mitigation of the effects of stormwater runoff.	Tanks provided for flow control mitigation. Culvert noted to be provided under driveway within right to drain easement.
(d) All subdivision applications creating sites 2ha or less shall include a detailed report from a Chartered Professional Engineer or other suitably qualified person addressing stormwater disposal.	Provided herein.
(e) Where flow rate control is required to protect downstream properties and/or the receiving environment then the stormwater disposal system shall be designed in accordance with the onsite control practices as contained in "Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual" Auckland Regional Council (2003).	Level spreader discharge device concept design provided

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APPENDIX D

Stormwater Calculations

Project Ref:	C0598	**STORMWATER ATTENUATION TANK DESIGN**	geologix consulting engineers
Project Address:	6701 State Highway 12, Waimamaku		
Design Case:	CONCEPT FUTURE DEVELOPMENT	**50 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT**	
Date:	1 April 2025 REV 1		

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

PRE DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
IMPERVIOUS A			
IMPERVIOUS B	0	0	
IMPERVIOUS C	0	0	
EX. PERVIOUS	500	0.67	PASTURE
TOTAL	**500**	TYPE D	

POST DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
TO TANK	300	0.96	ROOF
OFFSET	200	0.83	DRIVEWAY - METAL
PERVIOUS	0	0	
EX. CONSENTED	0	0	
TOTAL	**500**	TYPE D	

RAINFALL INTENSITY, 50% AEP, 10MIN DURATION

50 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	58.2	mm/hr
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%
50 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	69.84	mm/hr

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

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

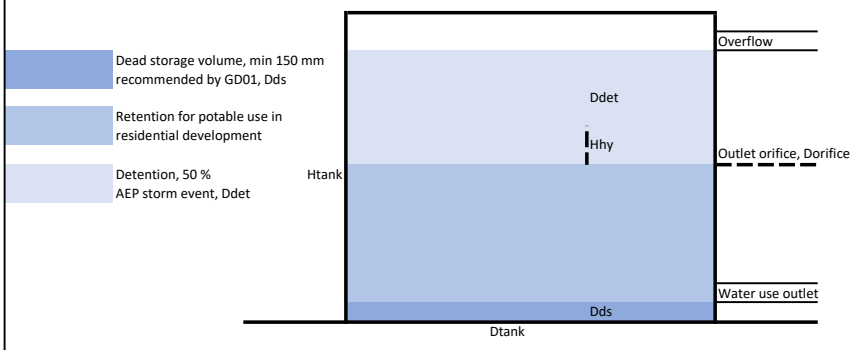
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s	80% of PRE DEV RUNOFF, Qpre(80%), l/s	COMMENTS
10	58.20	1.2	69.84	8.81	5.42	4.33	*Critical duration (time of concentration) for the catchments is 10min*
20	40.80	1.2	48.96	6.17	3.80	3.04	
30	33.30	1.2	39.96	5.04	3.10	2.48	
60	23.60	1.2	28.32	3.57	2.20	1.76	
120	16.70	1.2	20.04	2.53	1.55	1.24	*Pre-dev calculated on Intensity without CC factor*
360	9.49	1.2	11.39	1.44	0.88	0.71	
720	6.51	1.2	7.81	0.99	0.61	0.48	
1440	4.36	1.2	5.23	0.66	0.41	0.32	
2880	2.84	1.2	3.41	0.43	0.26	0.21	
4320	2.17	1.2	2.60	0.33	0.20	0.16	

ATTENUATION ANALYSIS, VARIOUS DURATIONS

DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW , Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre(80%) - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	
10	3.22	5.59	1.11	1.11	4.47	2685	*Selected Tank Outflow is selected for critical duration (time of concentration).*
20	2.26	3.92	0.78	1.11	2.80	3365	
30	1.84	3.20	0.64	1.11	2.08	3752	
60	1.31	2.27	0.45	1.11	1.15	4152	
120	0.92	1.60	0.32	1.11	0.49	3535	*select largest required storage , regardless of duration, to avoid overflow for event of any duration*
360	0.53	0.91	0.18	1.11	No Att. Req.	0	
720	0.36	0.62	0.12	1.11	No Att. Req.	0	
1440	0.24	0.42	0.08	1.11	No Att. Req.	0	
2880	0.16	0.27	0.05	1.11	No Att. Req.	0	
4320	0.12	0.21	0.04	1.11	No Att. Req.	0	

ATTENUATION TANK DESIGN OUTPUT

Concept sizing for 25,000 litre tank



SPECIFICATION

TOTAL STORAGE REQUIRED	4.152	m3	Select largest storage as per analysis
TANK HEIGHT, Htank	2.6	m	Concept sizing for 25,000 litre tank
TANK DIAMETER, Dtank	3.5	m	No. of Tanks 2
TANK AREA, Atank	19.24	m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	50030	litres	
REQUIRED STORAGE HEIGHT, Ddet	0.22	m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15	m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.37	m	
SELECTED TANK OUTFLOW, Qout, l/s	0.00111	m3/s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, Hhy	0.11	m	
AREA OF ORIFICE, Aorifice	1.23E-03	m2	
ORIFICE DIAMETER, Dorifice	40	mm	
VELOCITY AT ORIFICE	2.06	m/s	At max. head level

Project Ref:	C0598		**STORMWATER ATTENUATION TANK DESIGN**	geologix consulting engineers
Project Address:	6701 State Highway 12, Waimamaku			
Design Case:	CONCEPT FUTURE DEVELOPMENT		**20 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT**	
Date:	1 April 2025	REV 1		

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

PRE DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
IMPERVIOUS A	0	0	
IMPERVIOUS B	0	0	
IMPERVIOUS C	0	0	
EX. PERVIOUS	500	0.67	PASTURE
TOTAL	**500**	TYPE D	

POST DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
TO TANK	300	0.96	ROOF
OFFSET	200	0.83	DRIVEWAY - METAL
PERVIOUS	0	0	
EX. CONSENTED	0	0	
0	0	0	
TOTAL	**500**	TYPE D	

RAINFALL INTENSITY, 20% AEP, 10MIN DURATION

20 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	75.4	mm/hr
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%
20 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	90.5	mm/hr

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

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

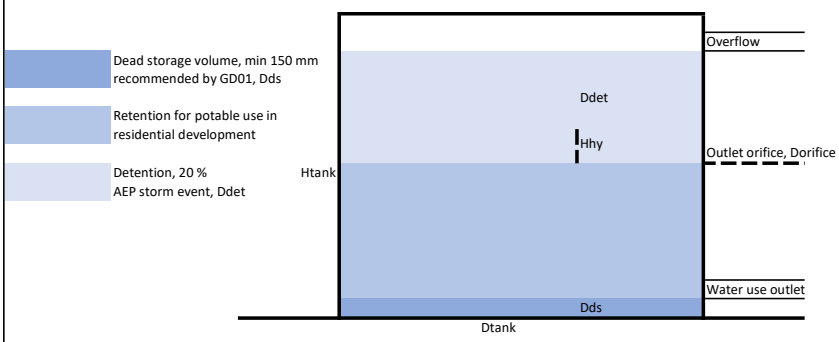
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s	80% of PRE DEV RUNOFF, Qpre(80%), l/s	COMMENTS
10	75.40	1.2	90.48	11.41	7.02	5.61	*Critical duration (time of concentration) for the catchments is 10min*
20	52.90	1.2	63.48	8.01	4.92	3.94	
30	43.20	1.2	51.84	6.54	4.02	3.22	
60	30.60	1.2	36.72	4.63	2.85	2.28	
120	21.70	1.2	26.04	3.28	2.02	1.62	*Pre-dev calculated on Intensity without CC factor*
360	12.40	1.2	14.88	1.88	1.15	0.92	
720	8.49	1.2	10.19	1.28	0.79	0.63	
1440	5.70	1.2	6.84	0.86	0.53	0.42	
2880	3.71	1.2	4.45	0.56	0.35	0.28	
4320	2.84	1.2	3.41	0.43	0.26	0.21	

ATTENUATION ANALYSIS, VARIOUS DURATIONS

DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW , Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre(80%) - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	
10	4.17	7.24	1.44	1.44	5.80	3478	*Selected Tank Outflow is selected for critical duration (time of concentration).*
20	2.93	5.08	2.00	1.44	3.64	4365	
30	2.39	4.15	1.63	1.44	2.71	4871	
60	1.69	2.94	1.15	1.44	1.50	5388	
120	1.20	2.08	0.82	1.44	0.64	4624	*select largest required storage , regardless of duration, to avoid overflow for event of any duration*
360	0.69	1.19	0.47	1.44	No Att. Req.	0	
720	0.47	0.82	0.32	1.44	No Att. Req.	0	
1440	0.32	0.55	0.22	1.44	No Att. Req.	0	
2880	0.21	0.36	0.14	1.44	No Att. Req.	0	
4320	0.16	0.27	0.11	1.44	No Att. Req.	0	

ATTENUATION TANK DESIGN OUTPUT

Concept sizing for 25,000 litre tank



SPECIFICATION

TOTAL STORAGE REQUIRED	5.388	m3	Select largest storage as per analysis
TANK HEIGHT, Htank	2.6	m	Concept sizing for 25,000 litre tank
TANK DIAMETER, Dtank	3.5	m	No. of Tanks 2
TANK AREA, Atank	19.24	m2	Area of two tanks hydraulically linked
TANK MAX STORAGE VOLUME, Vtank	50030	litres	
REQUIRED STORAGE HEIGHT, Ddet	0.28	m	Below overflow
DEAD STORAGE VOLUME, Dds	0.15	m	GD01 recommended minimum
TOTAL WATER DEPTH REQUIRED	0.43	m	
SELECTED TANK OUTFLOW, Qout, l/s	0.00144	m3/s	Selected tank outflow
AVERAGE HYDRAULIC HEAD, Hhy	0.14	m	
AREA OF ORIFICE, Aorifice	1.40E-03	m2	
ORIFICE DIAMETER, Dorifice	42	mm	
VELOCITY AT ORIFICE	2.34	m/s	At max. head level

Project Ref:	C0598		**STORMWATER ATTENUATION TANK DESIGN**	geologix consulting engineers
Project Address:	6701 State Highway 12, Waimamaku			
Design Case:	CONCEPT FUTURE DEVELOPMENT		**1 % AEP STORM EVENT, 80 % OF PRE DEVELOPMENT**	
Date:	1 April 2025	REV 1		

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

PRE DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
IMPERVIOUS A	0	0	
IMPERVIOUS B	0	0	
IMPERVIOUS C	0	0	
EX. PERVIOUS	500	0.67	PASTURE
0	0	0	
TOTAL	**500**	TYPE D	

POST DEVELOPMENT CATCHMENT PARAMETERS

ITEM	AREA, A, m2	COEFFICIENT, C	DESCRIPTION
TO TANK	300	0.96	ROOF
OFFSET	200	0.83	DRIVEWAY - METAL
PERVIOUS	0	0	
EX. CONSENTED	0	0	
0	0	0	
TOTAL	**500**	TYPE D	

RAINFALL INTENSITY, 1% AEP, 10MIN DURATION

1 % AEP RAINFALL INTENSITY, 10 MIN, I, mm/hr	133.0	mm/hr
CLIMATE CHANGE FACTOR, 2.1 DEG, 10 MIN*	20	%
1 % AEP RAINFALL INTENSITY, 10 MIN WITH CC	159.6	mm/hr

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

PRE AND POST-DEVELOPMENT RUNOFF, 1%AEP, VARIOUS DURATIONS

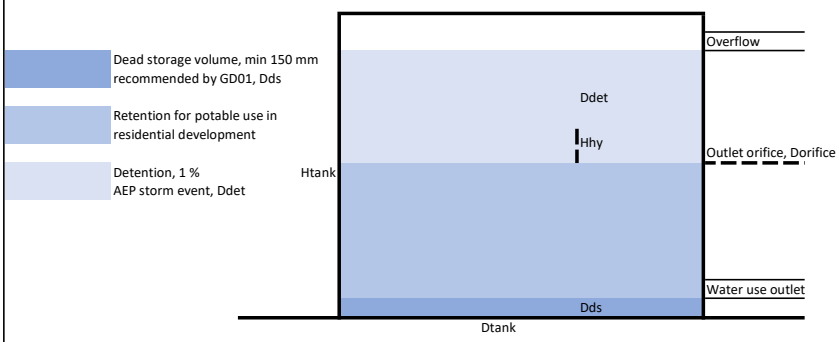
DURATION, min	INTENSITY, mm/hr	CC FACTOR	INTENSITY WITH CC, mm/hr	POST DEV RUNOFF, Qpost, l/s	PRE DEV RUNOFF, Qpre, l/s	80% of PRE DEV RUNOFF, Qpre(80%), l/s	COMMENTS
10	133.00	1.2	159.60	20.13	12.38	9.90	*Critical duration (time of concentration) for the catchments is 10min*
20	93.30	1.2	111.96	14.12	8.68	6.95	
30	76.30	1.2	91.56	11.55	7.10	5.68	
60	54.30	1.2	65.16	8.22	5.05	4.04	
120	38.60	1.2	46.32	5.84	3.59	2.87	*Pre-dev calculated on Intensity without CC factor*
360	22.10	1.2	26.52	3.34	2.06	1.65	
720	15.20	1.2	18.24	2.30	1.41	1.13	
1440	10.20	1.2	12.24	1.54	0.95	0.76	
2880	6.70	1.2	8.04	1.01	0.62	0.50	
4320	5.14	1.2	6.17	0.78	0.48	0.38	

ATTENUATION ANALYSIS, VARIOUS DURATIONS

DURATION, min	OFFSET FLOW, Qoff, l/s	TANK INFLOW , Qin, l/s	ALLOWABLE TANK OUTFLOW, Qpre(80%) - Qoff, l/s	SELECTED TANK OUTFLOW, Qout, l/s	DIFFERENCE (Qin - Qout), l/s	Required Storage, litres	
10	7.36	12.77	2.54	2.54	10.23	6136	*Selected Tank Outflow is selected for critical duration (time of concentration).*
20	5.16	8.96	1.78	2.54	6.42	7698	
30	4.22	7.32	1.46	2.54	4.78	8609	
60	3.00	5.21	1.04	2.54	2.67	9616	
120	2.14	3.71	0.74	2.54	1.16	8380	*select largest required storage , regardless of duration, to avoid overflow for event of any duration*
360	1.22	2.12	0.42	2.54	No Att. Req.	0	
720	0.84	1.46	0.29	2.54	No Att. Req.	0	
1440	0.56	0.98	0.19	2.54	No Att. Req.	0	
2880	0.37	0.64	0.13	2.54	No Att. Req.	0	
4320	0.28	0.49	0.10	2.54	No Att. Req.	0	

ATTENUATION TANK DESIGN OUTPUT

Concept sizing for 25,000 litre tank



SPECIFICATION

TOTAL STORAGE REQUIRED	9.616	m3	Select largest storage as per analysis	
TANK HEIGHT, Htank	2.6	m	Concept sizing for 25,000 litre tank	
TANK DIAMETER, Dtank	3.5	m	No. of Tanks	2
TANK AREA, Atank	19.24	m2	Area of two tanks hydraulically linked	
TANK MAX STORAGE VOLUME, Vtank	50030	litres		
REQUIRED STORAGE HEIGHT, Ddet	0.50	m	Below overflow	
DEAD STORAGE VOLUME, Dds	0.15	m	GD01 recommended minimum	
TOTAL WATER DEPTH REQUIRED	0.65	m		
SELECTED TANK OUTFLOW, Qout, l/s	0.00254	m3/s	Selected tank outflow	
AVERAGE HYDRAULIC HEAD, Hhy	0.25	m		
AREA OF ORIFICE, Aorifice	1.85E-03	m2		
ORIFICE DIAMETER, Dorifice	49	mm		
VELOCITY AT ORIFICE	3.13	m/s	At max. head level	

Project Ref:	C0598	**STORMWATER DISPERSION PIPE/ TRENCH**	geologix consulting engineers
Project Address:	6701 State Highway 12, Waimamaku		
Design Case:	CONCEPT FUTURE DEVELOPMENT	**DISCHARGE DEVICE - LEVEL SPREADER OR TRENCH**	
Date:	1 April 2025 REV 1		

DESIGN BASED ON REFERENCED DEVELOPMENT PLANS TO PROVIDE A MINIMUM LENGTH OF ABOVE OR BELOW GROUND STORMWATER TANK OVERFLOW DISCHARGE DISPERSION DEVICE. IN GENERAL ACCORDANCE WITH MODIFIED RATIONAL METHOD AND AUCKLAND COUNCIL TR2013/018.

DESIGN STORM EVENT **1%** AEP EVENT

SLOPE BETWEEN SOURCE & DISPERSION DEVICE

ELEVATION	h	CHAINAGE, x	Δ x	h bar	Δ A
m	m	m	m	m	m2
295	0	0	0	0	0
293	15	37.4	37.4	7.5	280.5
	TOTALS	37.4	37.4		280.5
	SLOPE, Sc	0.401	m/m		

MANNINGS PIPE FLOW - INCOMING PIPE

Dia, m	d/D	α, rad	P, m	A, m^2	R	1:S	n	V, m/s	Q, m^3/s	Q, l/s	
0.1	0.000	6.283	0.0000	0.0000	0.000	2.4933	0.009	0.000	0.0000	0.000	**0 % full**
0.100	0.050	5.381	0.0451	0.0001	0.003	2.4933	0.009	1.546	0.0002	0.227	
0.100	0.100	4.996	0.0644	0.0004	0.006	2.4933	0.009	2.413	0.0010	0.987	
0.100	0.150	4.692	0.0795	0.0007	0.009	2.4933	0.009	3.109	0.0023	2.297	
0.100	0.200	4.429	0.0927	0.0011	0.012	2.4933	0.009	3.700	0.0041	4.138	
0.100	0.250	4.189	0.1047	0.0015	0.015	2.4933	0.009	4.215	0.0065	6.473	
0.100	0.300	3.965	0.1159	0.0020	0.017	2.4933	0.009	4.669	0.0093	9.253	
0.100	0.350	3.751	0.1266	0.0024	0.019	2.4933	0.009	5.072	0.0124	12.424	
0.100	0.400	3.544	0.1369	0.0029	0.021	2.4933	0.009	5.428	0.0159	15.923	
0.100	0.450	3.342	0.1471	0.0034	0.023	2.4933	0.009	5.742	0.0197	19.682	
0.100	0.500	3.142	0.1571	0.0039	0.025	2.4933	0.009	6.016	0.0236	23.626	**50 % full**
0.100	0.550	2.941	0.1671	0.0044	0.026	2.4933	0.009	6.253	0.0277	27.676	
0.100	0.600	2.739	0.1772	0.0049	0.028	2.4933	0.009	6.452	0.0317	31.746	
0.100	0.650	2.532	0.1875	0.0054	0.029	2.4933	0.009	6.614	0.0357	35.742	
0.100	0.700	2.319	0.1982	0.0059	0.030	2.4933	0.009	6.737	0.0396	39.561	
0.100	0.750	2.094	0.2094	0.0063	0.030	2.4933	0.009	6.819	0.0431	43.088	
0.100	0.800	1.855	0.2214	0.0067	0.030	2.4933	0.009	6.857	0.0462	46.187	
0.100	0.850	1.591	0.2346	0.0071	0.030	2.4933	0.009	6.843	0.0487	48.690	
0.100	0.900	1.287	0.2498	0.0074	0.030	2.4933	0.009	6.764	0.0504	50.361	
0.100	0.950	0.902	0.2691	0.0077	0.029	2.4933	0.009	6.588	0.0508	50.773	
0.100	1.000	0.000	0.3142	0.0079	0.025	2.4933	0.009	6.016	0.0473	47.252	**Flowing full**

DISPERSION SPECIFICATION

INCOMING PIPE PROPERTIES:

TANK OUTFLOW, 1 % AEP	12.77	l/s		
MAXIMUM PIPE FLOW	50.77	l/s		
SUFFICIENT CAPACITY IN PIPE	YES			
LONGITUDINAL SLOPE	0.401	m/m		
DESIGN VELOCITY, Dv	6.857	m/s		

LEVEL SPREADER SPECIFICATIONS:

PIPE DIAMETER, m	0.15	m
MANNINGS PIPE ROUGHNESS	0.009	
NUMBER OF ORIFICES	45	No.
DIA. OF ORIFICE, D	20	mm
ORIFICE INTERVALS, C/C	150	mm
DISPERSION PIPE LENGTH, L	**6.6**	**m**

ORIFICE DESIGN FLOW CHECK:

AREA OF SINGLE ORIFICE, A	0.00031	m2		
FLOW OUT OF 1 ORIFICE	0.000289379	m3/s	0.29 l/s	
FLOW OUT OF ALL ORIFICES	0.01302206	m3/s	13.02 l/s	**DESIGN OK**
VELOCITY FROM SINGLE ORIFICE	0.92	m/s		

BROAD CRESTED WEIR DESIGN FLOW CHECK:

FLOW DEPTH, h	0.1125	m		
BASE WIDTH = L	6.6	m		
FLOW AREA	0.74	m2		
WEIR FLOW	0.01754	m3/s	17.54 l/s	**DESIGN OK**
WEIR VELOCITY	0.024	m/s		

INCOMING PIPE & SPREADER SUMARY:

	LOT 1	
INCOMING PIPE DIAMETER, m	0.100	m
SPREADER PIPE DIAMETER, m	0.150	m
MANNINGS PIPE ROUGHNESS	0.009	
NUMBER OF ORIFICES	45	No.
DIA. OF ORIFICE, D	20	mm
ORIFICE INTERVALS, C/C	150	mm
DISPERSION PIPE LENGTH, L	**6.6**	**m**

HIRDS V4 Intensity-Duration-Frequency Results
Sitename: Waimamaku
Coordinate system: WGS84
Longitude: 173.514
Latitude: -35.5872

DDF Mode Parameters:	c	d	e	f	g	h	i
Values:	0.00147889	0.50321359	-0.00105415	-0.00310535	0.25031025	-0.01074709	3.07067077

Example:	Duration (hrs)	ARI (yrs)	x	y	Rainfall Rate (mm/hr)
	24	100	3.17805383	4.600149227	10.24915244

Rainfall intensities (mm/hr) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	53.2	37.3	30.4	21.5	15.2	8.66	5.94	3.98	2.59	1.98	1.62	1.39
2	0.5	58.2	40.8	33.3	23.6	16.7	9.49	6.51	4.36	2.84	2.17	1.78	1.52
5	0.2	75.4	52.9	43.2	30.6	21.7	12.4	8.49	5.7	3.71	2.84	2.33	1.99
10	0.1	88.1	61.8	50.5	35.9	25.4	14.5	9.97	6.69	4.36	3.34	2.75	2.34
20	0.05	101	71	58	41.2	29.3	16.7	11.5	7.72	5.04	3.86	3.17	2.71
30	0.033	109	76.5	62.6	44.5	31.6	18	12.4	8.34	5.45	4.18	3.43	2.93
40	0.025	114	80.5	65.8	46.8	33.2	19	13.1	8.79	5.74	4.4	3.62	3.09
50	0.02	119	83.6	68.3	48.6	34.5	19.7	13.6	9.14	5.97	4.58	3.76	3.22
60	0.017	122	86.1	70.4	50.1	35.6	20.4	14	9.43	6.16	4.73	3.88	3.32
80	0.013	128	90.2	73.7	52.5	37.3	21.3	14.7	9.89	6.46	4.96	4.08	3.48
100	0.01	133	93.3	76.3	54.3	38.6	22.1	15.2	10.2	6.7	5.14	4.22	3.61
250	0.004	151	106	86.8	61.9	44	25.2	17.4	11.7	7.67	5.89	4.84	4.14

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

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	6.8	4.3	3.3	2.5	1.6	1.1	0.76	0.65	0.41	0.3	0.24	0.21
2	0.5	7.4	4.7	3.5	2.7	1.7	1.2	0.83	0.73	0.46	0.33	0.27	0.24
5	0.2	10	6.6	5	3.7	2.4	1.6	1.1	0.98	0.62	0.45	0.37	0.32
10	0.1	13	8.7	6.7	4.7	3.1	1.9	1.3	1.2	0.74	0.54	0.44	0.38
20	0.05	16	11	9	6.1	4	2.4	1.6	1.4	0.88	0.64	0.53	0.45
30	0.033	19	13	11	7.1	4.7	2.7	1.8	1.5	0.97	0.71	0.58	0.49
40	0.025	21	15	12	8	5.2	3	2	1.6	1	0.76	0.62	0.53
50	0.02	23	16	13	8.7	5.7	3.2	2.1	1.7	1.1	0.8	0.66	0.56
60	0.017	24	18	14	9.3	6.1	3.4	2.3	1.8	1.2	0.83	0.69	0.58
80	0.013	27	20	16	10	6.8	3.8	2.5	1.9	1.2	0.89	0.73	0.62
100	0.01	29	21	18	11	7.4	4.1	2.6	2	1.3	0.94	0.77	0.66
250	0.004	40	30	25	16	10	5.5	3.5	2.5	1.6	1.2	0.97	0.81