Far North District Council

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Website: www.fndc.govt.nz

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 Form 9)

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

1. Pre-Lodgement Meeting

Have you met with a Council Resource Consent representative to discuss this application prior to lodgement? Yes / No

2. Type of Consent being applied for (more than one circle can be ticked):

O Land Use O Fast Track Land Use* (X) Subdivision O Discharge

O Extension of time (s.125) O Change of conditions (s.127) O Change of Consent Notice (s.221(3))

O Consent under National Environmental Standard (e.g. Assessing and Managing Contaminants in Soil)

O Other (please specify) _____

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

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

Yes / ~~No~~

4. Applicant Details:

Name/s: Terence Trethewey

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

Phone Numbers:

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

Post Code:

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

Name/s: Northland Planning and Development

Electronic Address for Service (E-mail): info@northplanner.co.nz

Phone Numbers: Work: 09 408 1866 Home:

Postal Address: (*or* alternative method of service under section 352 of the Act) PO Box 526, Kaitaia

Post Code: 0441

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

6. Details of Property Owner/s and Occupier/s: *Name and Address of the Owner/Occupiers of the land to which this application relates (where there are multiple owners or occupiers please list on a separate sheet if required)*

Name/s: Terence Trethewey

Property Address/: Location 38 Reef View Road, Ahipara

7. Application Site Details:

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

Site Address/ Location: 38 Reef View Road, Ahipara

Legal Description: Lot 37 DP 127889 Val Number:

Certificate of Title: NA74C/499

Please remember to attach a copy of your Certificate of Title to the application, along with relevant consent notices and/or easements and encumbrances (search copy must be less than 6 months old)

Site Visit Requirements:

Is there a locked gate or security system restricting access by Council staff? Yes / (No)

Is there a dog on the property? Yes / (No)

Please provide details of any other entry restrictions that Council staff should be aware of, e.g. health and safety, caretaker's details. This is important to avoid a wasted trip and having to re-arrange a second visit.

Please phone applicant prior to arranging site visit.

8. Description of the Proposal:

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

A subdivision to create one additional allotment in the Residential zone as a Controlled Activity.

If this is an application for an Extension of Time (s.125); Change of Consent Conditions (s.127) or Change or Cancellation of Consent Notice conditions (s.221(3)), please quote relevant existing Resource Consents and Consent Notice identifiers and provide details of the change(s) or extension being sought, with reasons for requesting them.

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

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

O Building Consent (BC ref # if known)

O Regional Council Consent (ref # if known)

O National Environmental Standard consent

O Other (please specify)

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

The site and proposal may be subject to the above NES. In order to determine whether regard needs to be had to the NES please answer the following (further information in regard to this NES is available on the Council's planning web pages):

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL) — O yes ⊗ no O don't know

Is the proposed activity an activity covered by the NES? (If the activity is any of the activities listed below, then you need to tick the 'yes' circle). — O yes ⊗ no O don't know

O Subdividing land

O Changing the use of a piece of land

O Disturbing, removing or sampling soil

O Removing or replacing a fuel storage system

12. Assessment of Environmental Effects:

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

Please attach your AEE to this application.

13. Billing Details:

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

Name/s: (please write all names in full) [redacted]

Email:

Postal Address:

Phone Numbers:

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: [redacted] print)

Signat re of bill payer – **mandatory**) Date: 31.10.23

14. Important Information:

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

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

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

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

Nam[redacted] (please print)

Sign[redacted] signature) Date: 31.10.23.

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

Checklist (please tick if information is provided)

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

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

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

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

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Guaranteed Search Copy issued under Section 60 of the Land Transfer Act 2017

R.W. Muir
Registrar-General of Land

Identifier **NA74C/499**

Land Registration District **North Auckland**

Date Issued 18 September 1991

Prior References

NA20A/206 NA20A/207

Estate Fee Simple

Area 5437 square metres more or less

Legal Description Lot 37 Deposited Plan 127889

Registered Owners

[redacted]

Estate Fee Simple - 1/12 share

Area 1377 square metres more or less

Legal Description Lot 25 Deposited Plan 127889

Registered Owners

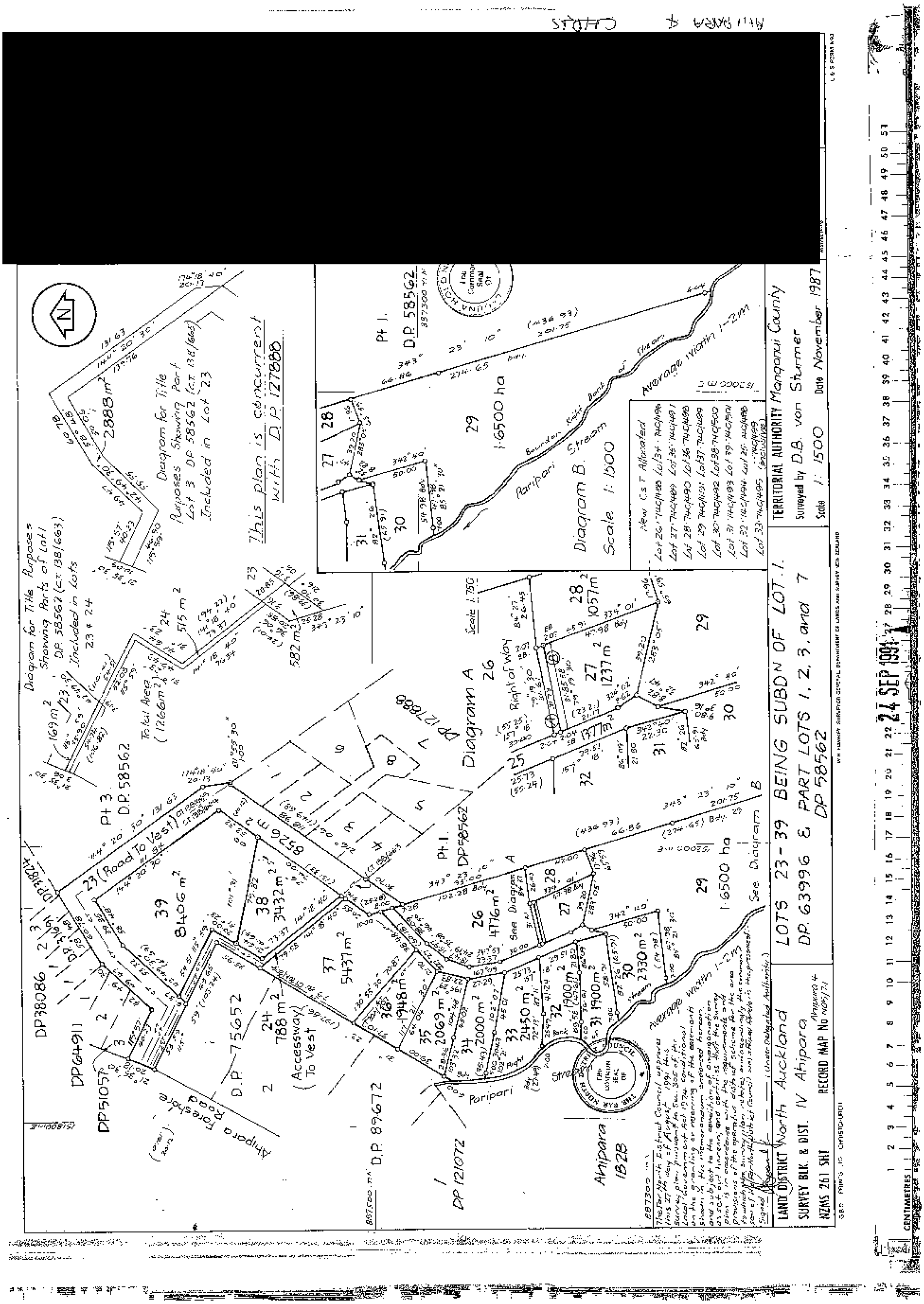
Clifford Terence Trethewey

Interests

Subject to Section 308 (4) Local Government Act 1974

Appurtenant hereto is a right of way specified in Easement Certificate A381942

C174428.2 Mortgage to ANZ Banking Group (New Zealand) Limited - 13.8.1990 at 1.30 pm


LOTS 23 - 39 BEING SUBDN OF LOT 1. DP 63996 & PART LOTS 1, 2, 3, and 7 DP 58562
TERRITORIAL AUTHORITY Mangonui County
Surveyed by D.B. von Sturmer
Scale 1: 1500
Date November 1987
LAND DISTRICT North Auckland
SURVEY BLK. & DIST. IV Ahipara
Diagram A
Diagram B Scale 1:1500
This plan is concurrent with D.P. 127888
Paripari Stream
Ahipara Foreshore Road
24 SEP 1991
CENTIMETRES

Subdivision Resource Consent Proposal

Terence Trethewey

38 Reef View Road, Ahipara

4 December 2023

Attention: Trish Routley

Please find attached:

- an application form for a Subdivision Resource Consent in the Residential Zone; and
- an Assessment of Environmental Effects indicating the potential and actual effects of the proposal on the environment.

The subdivision application has been assessed as a **Controlled Activity** under the Far North Operative District Plan.

The following **amalgamation condition** is proposed.

That *Lot 25 DP 127889 (legal access) be held as "two undivided one-twenty fourth (1/24) shares by the owners of Lots 1 & 2 hereon".*

If you require further information, please do not hesitate to contact me.

Regards,

Shanay Howard

[redacted]

Resource Planner

Reviewed by:

[redacted]

Sheryl Hansford

Director/Senior Planner

NORTHLAND PLANNING & DEVELOPMENT 2020 LIMITED

1.0 Table of Contents

Attachments

1. **FNDC Resource Consent Application –** *Signed.*
2. **Certificate of Title –** *LINZ.*
3. **Scheme Plan** *- Salt Design.*
4. **Site Suitability Report –** *PK Engineering.*
5. **Correspondence –** *Top Energy.*
6. **Correspondence –** *Chorus.*
7. **Correspondence –** *Development Engineer.*

Assessment of Environment Effects Report

1.0 Description of the Proposed Activity

1.1 The proposal is to undertake a one lot subdivision at 38 Reef View Road, Ahipara located in the Residential Zone as a Controlled Activity. The proposed lot sizes are shown below.

- Lot 1 = 3184m^2
- Lot 2 = 2253m^2

Area and measurements subject to final survey.

1.2 The following amalgamation condition is proposed.

***That** Lot 25 DP 127889 (legal access) be held as "two undivided one-twenty fourth (1/24) shares by the owners of Lots 1 & 2 hereon".*

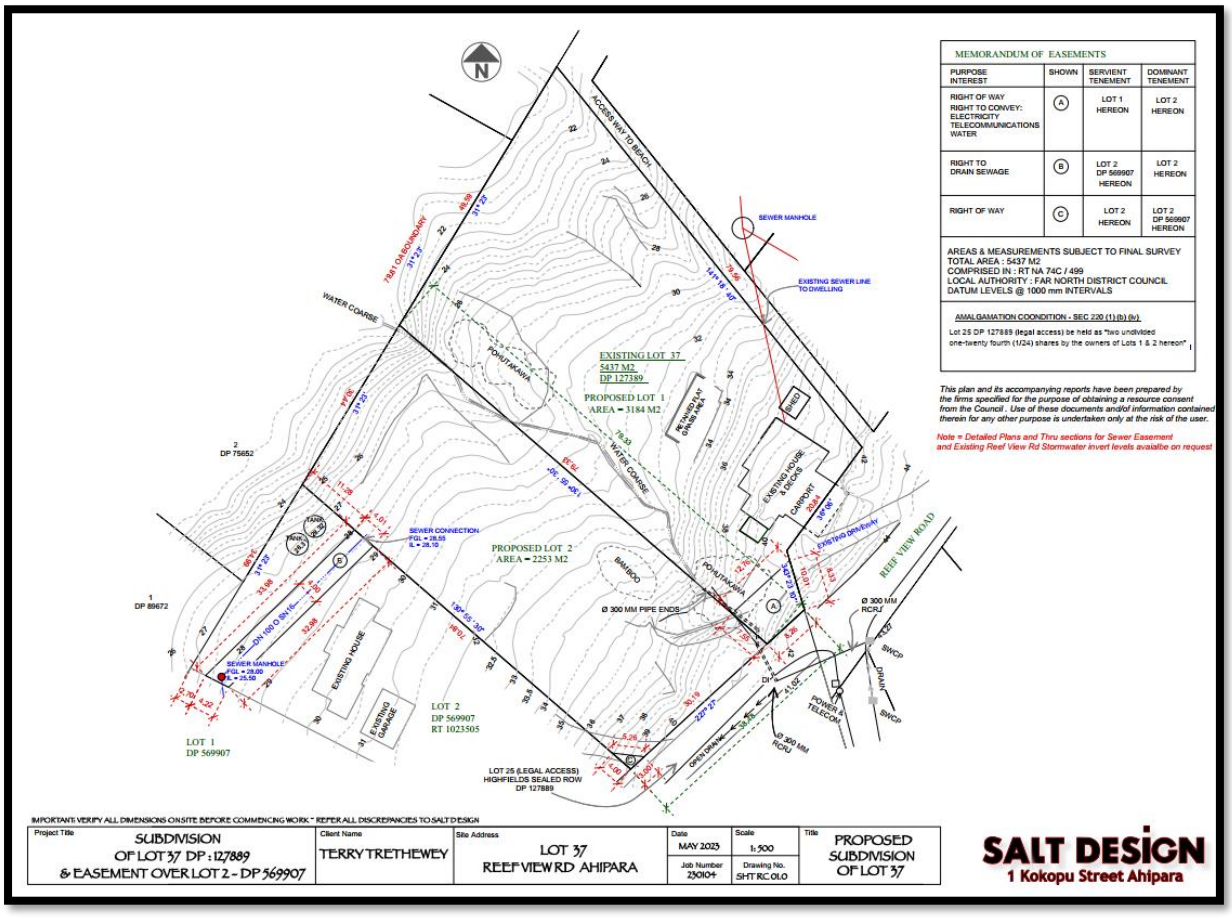


Figure 1: Scheme Plan.

2.0 Site Description

2.1 The site is located at 38 Reef View Road, Ahipara which is legally described as Lot 37 DP 127889 with an area of 5437m^2.

2.2 The site is accessed from Reef View Road via a sealed vehicle crossing which provides access to the property and existing parking area.

2.3 The site contains an existing house near the road boundary adjoining Reef View Road, with the remainder of the site in lawn and scattered trees.

2.4 The topography of the land slopes downwards from Reef View Road, with an irregular shape.

2.5 The site currently has two easements which are shown on the scheme plan as 'B', and 'C'. As part of this application easement 'A' is proposed. These will be discussed further below.

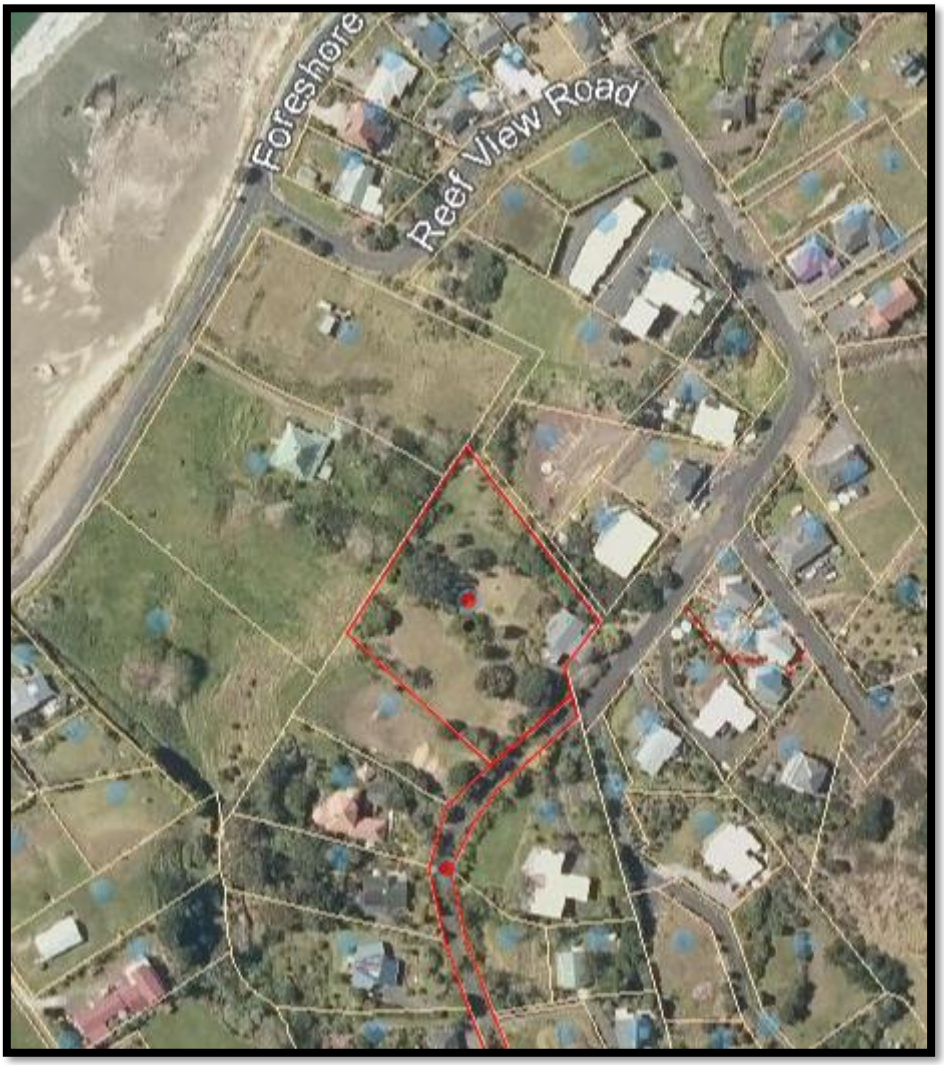


Figure 2: Surrounding environment

2.6 The surrounding environment consists of residential allotments within a coastal setting. The immediate environment is urban in character with a Coastal Outlook. The sites will continue to be serviced by FNDC reticulated sewer.

Site Visit

2.7 A site visit was carried out on 22.11.2023. A compilation of photos has been copied below.

Figure 3: Existing vehicle crossing from Reef View Road to the subject site.

Figure 4: Looking from the vehicle crossing towards Highfields Drive.

Figure 5: Proposed ROW A.

Figure 6: ROW A to proposed Lot 2.

Figure 8: Proposed Lot 2.

Figure 7: Proposed Lot 2.

Title

2.8 38 Reef View Road is held in Record of Title NA 74C/499 and is dated 18th September 1991. The site has Easement Certificate A381942, which relates to the sewer easement (Easement B) on Lot 2 DP 569907. There are no other recorded interests on the title.

Site Features

2.9 Under the Operative District Plan, the site is located within the Residential zone and is not subject to any Outstanding Landscapes or other resource features.

2.10 Under the Proposed District Plan, the site is zoned as General Residential and located within the Coastal Environment overlay. The site is also located within a Treaty Settlement area of interest, this is a non-district plan layer which are only used as reference to give context to the Proposed District Plan.

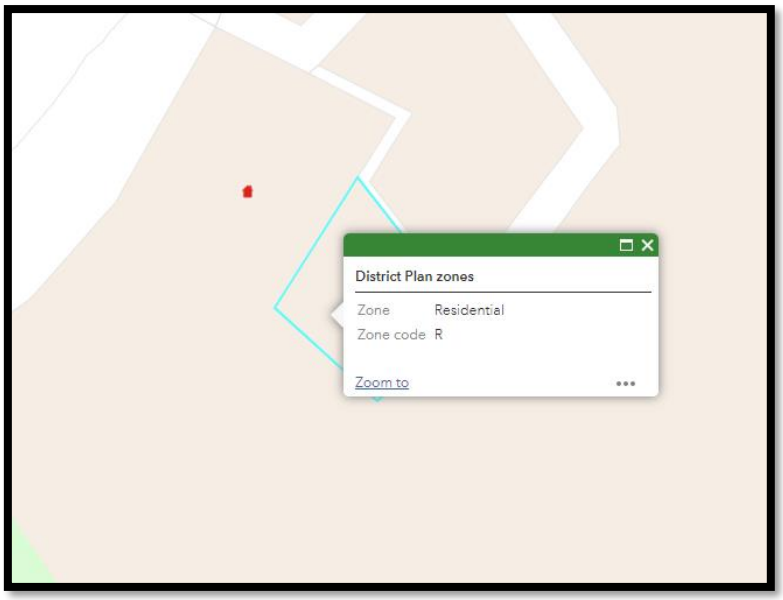


Figure 9: District Plan zoning.

2.11 The subject site has existing connection to Councils reticulated wastewater, this has been confirmed by the FNDC infrastructure and Asset Team.

2.12 With regard to the Regional Policy Statement for Northland the site is located within the Coastal Environment and is not identified as containing any areas of High Natural Character.

2.13 The NRC Hazard maps show part of the site is subject is subject to Coastal Erosion (Zone 3). This only covers a small portion of the north-western corner of the site, such that there is ample space remaining for the construction of a dwelling outside of this area on proposed Lot 2.

2.14 The site is located behind the Reid/Berghan house, which is listed by HNZPT as a category 2 heritage site located at 177 Foreshore Road. The Heritage site is located in front of an area which has been heavily modified. Any building sites are likely to be located a reasonable distance from the heritage site and any earthworks being carried out will be in accordance with GD05 erosion and sediment controls.

2.15 The soil has a Land Use Classification (LUC) of LUC 6e 2, which is not considered to be highly productive land.

3.0 Activity Status of the proposal

Operative District Plan

3.1 The subject site is located within the Residential Zone. An assessment of the relevant subdivision, zone and district wide rules of the District Plan is set out in the tables below.

Subdivision

Assessment of the applicable Subdivision Rules for the Residential Zone:		
PERFORMANCE STANDARDS		
Plan Reference	**Rule**	**Performance of Proposal**
13.7.2.1	MINIMUM LOT SIZES	**Controlled Activity.** Lot's 1 & 2 are able to comply with the minimum allotment size of 600m^2 for sewered sites.
13.7.2.2	ALLOTMENT DIMENSIONS	**Permitted** The minimum dimension is 14m x 14m which both lots can achieve. Note: proposed Lot 1 contains an existing dwelling.
13.7.2.3 – 9	**Not Applicable for this application.**	

Residential Zone standards

Assessment of the permitted RESIDENTIAL ZONE RULES:		
PERFORMANCE STANDARDS		
Plan Reference	**Rule**	**Performance of Proposal**
7.6.5.1.1	RELOCATED BUILDINGS	**Permitted** Not applicable.
7.6.5.1.2	RESIDENTIAL INTENSITY	**Permitted** The site contains one residential dwelling. The activity will result in Proposed Lot 1 containing the existing dwelling and Proposed Lot 2 being vacant land.
7.6.5.1.3	SCALE OF ACTIVITIES	**Permitted** Not applicable.
7.6.5.1.4	BUILDING HEIGHT	**Permitted** Not applicable.
7.6.5.1.5	SUNLIGHT	**Permitted** The structure within proposed Lot 1 is an existing consented dwelling. There are no infringements in regard to Sunlight of the new lot boundary that separates Lot 1 & 2.
7.6.5.1.6	STORMWATER MANAGEMENT	**Permitted.** The new allotment sizes are a sufficient size, such that any existing impermeable surfaces will be well within 50%.

7.6.5.1.7	SETBACK FROM BOUNDARIES	**Permitted.** The structure within proposed Lot 1 is an existing consented dwelling. There are no infringements in regard to Setback from boundaries of the new lot boundary that separates Lot 1 & 2.
7.6.5.1.8	SCREENING FOR NEIGHBOURS NON-RESIDENTIAL ACTIVITIES	**Permitted.** Not applicable as the proposal is for residential activities only.
7.6.5.1.9	OUTDOOR ACTIVIITES	**Permitted.** Not applicable.
7.6.5.1.10	VISUAL AMENITY	**Permitted.** Not applicable as the proposal is not within the Coopers Beachfront Estate or within Kerikeri.
7.6.5.1.11	TRANSPORTATION	**Permitted.** Assessed below.
7.6.5.1.12	SITE INTENSITY – NON-RESIDENTIAL ACTIVITIES	**Permitted.** All activities on site are residential.
7.6.5.1.13	HOURS OF OPERATION – NON-RESIDENTIAL ACTIVITIES	**Permitted.** Not applicable.
7.6.5.1.14	KEEPING OF ANIMALS	**Permitted.** Not applicable.
7.6.5.1.15	NOISE	**Permitted.** Not applicable.
7.6.5.1.16	HELICOPTER LANDING AREA	**Permitted.** Not applicable.
7.6.5.1.17	BUILDING COVERAGE	**Permitted.** Proposed Lot 1 will be over 3000m^2, the bult development on-site is well within this permitted threshold. Proposed Lot 2 is vacant.

District Wide Standards

Assessment of the applicable permitted DISTRICT WIDE RULES:		
PERFORMANCE STANDARDS		
Plan Reference	**Rule**	**Performance of Proposal**
15.1.6A	TRAFFIC	**Permitted.** The proposal will result in one additional allotment which is anticipated to have a dwelling.
15.1.6B	PARKING	**Permitted.** Proposed Lot 1 has existing parking. Proposed Lot 2 has ample area to accommodate parking.

15.1.6C.1.1	PRIVATE ACCESSWAY IN ALL ZONES	**Permitted.** (a) Appendix 3B-1 requires that an accessway in the Residential zone which services 1 H.E.s has a carriageway width of 3 metres which can been provided. (b) Gradients do not exceed 1:8. (c) The ROW will only serve 1 household. (d) No requirement for a public road. (e) Crossing is existing.
15.1.6C.1.2	PRIVATE ACCESSWAYS IN URBAN ZONES	**Permitted.** (a) The private accessway is not less than 3m wide and has no restrictions in regard to overhead clearance. (b) Not applicable. (c) Not applicable as each lot will eventually contain one dwelling which is considered to be the same activity.
15.1.6C.1.3	PASSING BAYS ON PRIVATE ACCESSWAYS IN ALL ZONES	**Complies.** Not applicable
15.1.6C.1.4	ACCESS OVER FOOTPATHS	**Complies** Not applicable.
15.1.6C.1.5	VEHICLE CROSSING STANDARDS IN RURAL AND COASTAL ZONES	**Complies** Not applicable.
15.1.6C.1.6	VEHICLE CROSSING STANDARDS IN URBAN ZONES	**Complies** (a) Access is currently via a sealed vehicle crossing, if upgrades are required, this can be achieved. (b) Not applicable.
15.1.6C.1.7	GENERAL ACCESS STANDARDS	**Complies** (a) Both lots will have less than 4 carparking spaces. (b) Not applicable. (c) complies. (d) Stormwater will be managed on site.
15.1.6C.1.8	Frontage to Existing Roads	**Complies**
15.1.6C.1.9 – 11	**Not applicable to this development.**	

3.2 The assessment above has identified the following breaches in the Operative District Plan rules:

13.7.2.1 Minimum Allotment Sizes

3.2.1 The proposal will create an allotment which is able to comply with the Controlled Activity allotment size of 600m^2 for sewered sites.

Overall status of the proposal under the District Plan

3.3 In accordance with *Controlled Activities 13.7.3* the subdivision component will be assessed as a **Controlled Activity.** The relevant sections of Chapter 13 will be assessed as part of this application.

Proposed District Plan

Figure 10: Proposed District Plan Map of subject site.

3.4 The proposal is also subject to the Proposed District Plan process. Within the Proposed District Plan, the site is zoned as General Residential with the Coastal Environment overlay. When the Proposed Plan was first notified there were a number of rules which were identified as having immediate legal effect. The Summary of submissions have now been released, and no additional rules have been identified by Council's Policy department as having immediate legal effect under s86F. An assessment of the relevant rules and related objectives and policies of the Proposed District Plan now forms part of this application.

3.5 The site is also located within a Treaty Settlement Area of Interest, this section of the Proposed Plan does not have legal effect at the time of writing this application.

3.6 The site is also partially subject to the Coastal Hazard Zone 3 overlay. As depicted in the image above by the brown line, this only covers a very small portion of the north-western corner. This section of the Proposed Plan does not have legal effect at the time of writing this application.

3.7 Assessment of the matters relating to the Proposed District Plan that have immediate legal effect, has been undertaken below:

Chapter	Rule Reference	Compliance of Proposal

Hazardous Substances	The following rules have immediate legal effect: Rule HS-R2 has immediate legal effect but only for a new significant hazardous facility located within a scheduled site and area of significance to Māori, significant natural area or a scheduled heritage resource Rules HS-R5, HS-R6, HS-R9	**Not applicable.** The site does not contain any hazardous substances to which these rules would apply.
Heritage Area Overlays	All rules have immediate legal effect (HA-R1 to HA-R14) All standards have immediate legal effect (HA-S1 to HA-S3)	**Not applicable.** The site is not located within a Heritage Area Overlay.
Historic Heritage	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	**Not applicable.** The site does not contain any areas of historic heritage.
Notable Trees	All rules have immediate legal effect (NT-R1 to NT-R9) All standards have legal effect (NT-S1 to NT-S2) Schedule 1 has immediate legal effect	**Not applicable.** The site does not contain any notable trees.
Sites and Areas of Significance to Maori	All rules have immediate legal effect (SASM-R1 to SASM-R7) Schedule 3 has immediate legal effect	**Not applicable.** The site does not contain any sites or areas of significance to Maori.
Ecosystems and Indigenous Biodiversity	All rules have immediate legal effect (IB-R1 to IB-R5)	**Not applicable.** The site does not contain any ecosystems or indigenous biodiversity to which these rules would apply.
Subdivision	The following rules have immediate legal effect: SUB-R6, SUB-R13, SUB-R14, SUB-R15, SUB-R17	**Not applicable.** The subdivision is not an Environmental Benefit Subdivision (SUB-R6), Subdivision of a site with heritage area overlay (SUB-R13), Subdivision of site that contains a scheduled heritage resource (SUB-R14), Subdivision of a site containing a scheduled site and area of significance to Maori (SUB-R15) or Subdivision of a site containing a scheduled SNA (SUB-R17).

Activities on the Surface of Water	All rules have immediate legal effect (ASW-R1 to ASW-R4)	**Not applicable.** The proposal does not involve activities on the surface of water.
Earthworks	The following rules have immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	**Complies.** Any earthworks will proceed under the guidance of an ADP in accordance with Rule EW-R12 and EW-S3.
Signs	The following rules have immediate legal effect: SIGN-R9, SIGN-R10 All standards have immediate legal effect but only for signs on or attached to a scheduled heritage resource or heritage area	**Not applicable.** No signs are proposed as part of this application.
Orongo Bay Zone	Rule OBZ-R14 has partial immediate legal effect because RD-1(5) relates to water	**Not applicable.** The site is not located in the Orongo Bay Zone.

3.8 The assessment above indicates the proposal is able to comply with the Proposed District Plan rules that have immediate legal effect.

National Environmental Standards

3.9 A site visit, review of aerials and review of the property file for 77 Foreshore Road did not indicate that the site was HAIL. No such assessment of the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health has therefore been undertaken. The application has been considered **Permitted** in terms of this regulation.

3.10 The site does not adjoin any freshwater bodies such as lakes, rivers, or wetlands and as such the National Environmental Standard for Freshwater management was not considered applicable to this development. The application has been considered Permitted in terms of this regulation.

3.11 No other National Environmental Standards are considered applicable to this development. The proposal is permitted in terms of these above-mentioned documents.

4.0 Statutory Assessment

Section 104A of the Act

4.1 Section 104A governs the determination of applications for Controlled Activities. With respect to Controlled Activities, a consent authority may not refuse an application, unless s106 applies.

Council may impose conditions under s108 only for those matters which control is reserved in a national environmental standard, an operative or proposed plan or other regulations.

Section 104(1)(a) of the Act

4.2 Section 104(1) of the Act states that when considering an application for resource consent –

"the consent authority must, subject to Part II, have regard to –

(a) any actual and potential effects on the environment of allowing the activity; and

(ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment that will or may result from allowing the activity; and

(b) any relevant provisions of –

i. a national environmental standard:

ii. other regulations:

iii. a national policy statement:

iv. a New Zealand Coastal Policy Statement:

v. a regional policy statement or proposed regional policy statement:

vi. a plan or proposed plan; and

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

4.3 Actual and potential effects arising from a development as described in 104(1)(a) can be both positive and adverse (As described in section 3 of the act). Positive effects arising from this subdivision is that one additional allotment will be created, within an area which is anticipated for residential development. The subject site is located within the Ahipara township, with connection to infrastructure available. There is an existing access point which is already formed; this provides access to the existing dwelling onsite.

4.4 Section 104(1)(ab) requires that the consent authority consider 'any measure proposed or agreed to by the applicant for the purposes of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity'. In this case the proposal is not of a scale or nature that would require specific offsetting or environmental compensation measures to ensure positive effects on the environment.

4.5 Section 104(1)(b) requires the consent authority to consider the relevant provisions of the above listed documents. An assessment of the relevant statutory documents that corresponds with the scale and significance of the effects that the activity may have on the environment has been provided in section 5.0 below.

4.6 Section 104(1)(c) states that consideration must be given to 'any other matters that the consent authority considers relevant and reasonable, necessary to determine the application'. There are no other matters relevant to this application.

5.0 Environmental Effects Assessment

5.1 Having reviewed the relevant plan provisions and taking into account the matters that must be addressed by an assessment of environmental effects as outlined in Clause 7 of Schedule 4 of the Act, the following environmental effects warrant consideration as part of this application.

5.2 The proposal is a Controlled activity as per Rule 13.7.2.1. The criteria within 13.7.3 of the District Plan is therefore to be used for assessment of the subdivision, in conjunction with the matters set out under Sections 104, 104A, and 106 of the Resource Management Act 1991. An assessment that corresponds with the scale and significance of the effects on the environment is provided below:

Subdivision

5.3 An assessment has been undertaken in accordance with Section 13.7.3 Assessment Criteria of the District Plan below.

13.7.3.1 Property Access.

5.3.1 Proposed Lot 1 has existing access, parking and manoeuvring from an existing vehicle crossing to the existing dwelling.

5.3.2 Currently the site gains access from Reef View Road to the subject site, by an existing ~6-metre-wide sealed vehicle crossing.

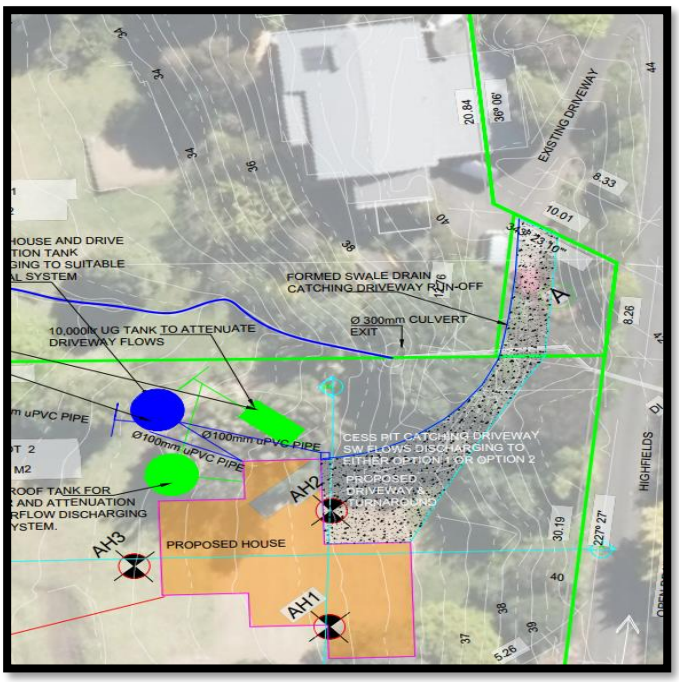


Figure 11: Site Plan (source: Pk Engineering).

5.3.3 Access to proposed Lot 2 will utilize the existing vehicle crossing for Lot 1, which will provide access to the proposed Right of Way (Easement A shown on the plan).

5.3.4 As demonstrated within Section 3 of this report, the proposal is able to comply with the permitted thresholds outlined in Chapter 15 Transportation.

5.3.5 Overall, it is considered that the proposal will not have any adverse effects in relation to access and traffic movements, as what is currently in existence will not alter as a result of the subdivision.

13.7.3.2 Natural Hazards

5.3.6 The NRC Hazard Maps show that the subject site is partially located within Coastal Erosion Hazard Zone 3 (100 years + Rapid Sea Level Rise Scenario). However, as depicted in the image below this is a very small portion of land which is located at a lower elevation than the rest of the site and reasonably isolated from the usable space.

Figure 11: Image showing the area of land subject to Coastal Erosion Hazard Zone 3.

5.3.7 The subject site is separated from the coast by Foreshore Road and other residential dwellings that are located adjacent to the beach. Proposed Lot 1 is already developed with an existing dwelling. The Hazard Zone only affects a very small portion of Proposed Lot 2, such that it is anticipated any future building will be located well away from the area of land affected by the Coastal Erosion Hazard.

5.3.8 No other hazards have been identified while the owner has occupied the property.

5.3.9 As per above, the site has not been identified as HAIL.

5.3.10 Overall, the proposal is not considered to create any adverse effects in relation to the site itself or the surrounding environment. There are no items within Section 106 which could determine that the proposal should be refused.

13.7.3.3 Water Supply

5.3.11 The subject site does not have connection to a lawfully established reticulated water supply system as per FNDC water services maps.

5.3.12 Proposed Lot 1 has an existing dwelling, which gains potable water by way of roof collection to water tanks. This will remain unchanged as a result of the subdivision.

5.3.13 Proposed Lot 2 can accommodate water tanks at the time of development for potable water supply.

5.3.14 The existing and proposed methods for water supply is considered adequate and suitable for this type and nature of development. Adequate water supply for firefighting can be provided at the time of development in conjunction with a building consent.

13.7.3.4 Stormwater Disposal

5.3.15 The impermeable surfaces within Lot 1 are made up of the existing dwelling, carport and the concrete driveway and parking area. Given the new site area exceeds 3000m^2, proposed Lot 1 will remain compliant with stormwater management and Lot 2 will be vacant.

Figure 12 Infrastructure map

5.3.16 The impermeable surfaces have been in existence for many years with no issues occurring within the site. The FNDC 3 waters map indicate that Council's reticulated Stormwater line, runs from Reef View Road and down Highfields Road via an open drain to a SW culvert which directs stormwater to Foreshore Road. In addition to this, the Site Suitability Report prepared by PK Engineering has recommended that at the time of development on proposed Lot 2 that one of the two options be used.

1. A 25,000L attenuation tank be installed to store and slow release run off from any future dwelling and driveway.
2. A 25,000L storage tank for potable water and attenuation be used to capture run off from any future dwelling; and am underground tank for the driveway.

The overflow from the tank shall be dispersed via a suitable dispersal system producing sheet flow to natural flow paths. For further information regarding the proposed stormwater management methods on proposed Lot 2 please refer to the Site Suitability Report prepared by PK Engineering.

5.3.17 It is considered that the existing stormwater methods that are already in place on proposed Lot 1 will continue to adequately manage stormwater runoff within the site without creating any adverse downstream effects. It is therefore considered that the proposal will adequately mitigate any effects from stormwater runoff to a less than minor degree.

13.7.3.5 Sanitary Sewage Disposal.

5.3.18 Lot 1 has an existing dwelling which is connected to Councils reticulated system for wastewater as shown on the scheme plan provided with this application.

5.3.19 FNDC Development Engineer has advised that Lot 2 can connect to Councils reticulated system. There is an existing sewer easement over Lot 2 DP 569907 which has provided a connection point for any future dwelling on proposed Lot 2.

5.3.20 FNDC Development Engineer mentioned in the email sent on 17th of May 2023 that it would be good to have an easement over the existing line. At the time of engaging the Infrastructure Team, the connection from the existing dwelling to the sewer connection point was not shown on the scheme plan, so it may have been assumed that the existing connection was via the manhole located on Lot 2 DP 569907. As depicted in the scheme plan provided with this application, the existing connection on Proposed Lot 2 is via the manhole located on 26 Reef View Road, therefore no easement is required as part of this subdivision.

13.7.3.6 Energy Supply and 13.7.3.7 Telecommunications.

5.3.21 Top Energy has provided approval for this application and have advised connection is available to the site.

5.3.22 Chorus has provided approval for this application and have advised connection is available to the site.

13.7.3.8 Easements for any purpose.

5.3.23 There are two existing easements, shown as easement 'B' and 'C' on the scheme plan. Easement 'B' is for the right to drain sewage and easement 'C' provides Lot 2 DP 1028505 access over the south-western corner of proposed Lot 2.

5.3.24 As part of this subdivision, easement A is proposed for the following purpose.

- a Right of way, right to convey electricity, water and telecommunications over the area of land shown as Easement A.

13.7.3.9 Preservation of heritage resources, vegetation, fauna and landscape, and land set aside for conservation purposes

5.3.25 The subject site is located within the Residential Zone and does not include any of the items noted under this section. The site is not known to contain any archaeological sites and is not within an area where kiwi is present. The subject site also does not contain any areas of indigenous flora or fauna.

13.7.3.10 Access to reserves and waterways.

5.3.26 There are no reserves or waterways which require access.

13.7.3.11 Land Use Compatibility.

5.3.27 It is considered that the intention of the Residential zone is to provide new residential areas at similar densities to those prevailing at present with the provision to provide for a range of housing types and forms of accommodation. It is considered that the proposal fulfils this, by providing lots which can comply with the Controlled Activity status threshold. The proposed lot sizes are considered to be of ample area to provide for the intended purpose or land use as each site will contain an existing residential dwelling with associated infrastructure. The density proposed is not out of character for this area.

5.3.28 The proposal is not considered out of character or to be objectional in the surrounding environment. The proposal will enable the best utilization of the land while still maintaining the urban character. It is considered that the proposal fulfils the intended purpose of the site, being zoned Residential. The proposal will not generate any additional effects as the built development is existing and will continue to be utilized for residential use which is in demand.

13.7.3.12 Proximity to Airports.

5.3.29 Not relevant to this application.

6.0 Policy Documents

6.1 In accordance with section 104(1)(b) of the Act the following documents are considered relevant to this application.

National Environmental Standards

6.2 As discussed in the sections above the proposal is permitted in terms of the relevant National Environmental Standard documents.

National Policy Statements

6.3 There are currently 7 National Policy Statements in place. These are as follows:

- National Policy Statement on Urban Development.
- National Policy Statement for Freshwater Management.
- National Policy Statement for Renewable Electricity Generation.
- National Policy Statement on Electricity Transmission.
- National Policy Statement for Highly Productive Land.
- New Zealand Coastal Policy Statement.
- National Policy Statement for indigenous Biodiversity.

6.4 The subject site is located within the Coastal Environment under the Regional Policy Statement Maps, and therefore the NZ Coastal Policy Statement is relevant to this proposal.

NZ Coastal Policy Statement 2010

6.5 Assessment of the NZ Coastal Policy Statement 2010 has been included below:

Policy 6 Activities in the coastal environment
(1) In relation to the coastal environment:
(f) consider where development that maintains the character of the existing built environment should be encouraged, and where development resulting in a change in character would be acceptable;

It is considered that the existing built development is not out of character in this area and the addition of another allotment will not alter the character of the area. The site has existing connections to reticulated services and will also utilise the existing access points which results in minimal visual change to the area.

Policy 13 Preservation of natural character
(1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use, and development:
(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and
(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment;

The site and surrounding area are zoned as Residential, and the existing built development and lot size being created is reflective of a dense urban area. The site is not located in an area identified as being within an Outstanding Natural Landscape or Natural Feature or within an area of High Natural Character or Outstanding Natural Character.

The proposal is a controlled activity and is considered to be consistent with the objectives and policies of the NZ Coastal Policy Statement.

Regional Policy Statement

6.6 The role of The Regional Policy Statement is to promote sustainable management of Northland's natural and physical resources by providing an overview of the regions resource management issues and setting out policies and methods to achieve integrated management of Northland's natural and physical resources.

6.7 This proposal is of a small scale, containing existing development, outside of hazard areas, and outside of areas containing any resource features. The proposal is considered compatible with the intent of the RPS.

Assessment of the objectives and policies within the Residential Zone

The relevant objectives and policies of the Plan are those related to the Subdivision Chapter, Urban Environment and the Residential Zone. The proposal is considered to create no more than minor adverse effects.

The proposal has been assessed as a Controlled Activity as it is anticipated by the Operative District Plan. Therefore, the proposal is not considered to be contrary to the objectives and policies within the relevant chapters.

Objectives

7.6.3.1 To achieve the development of new residential areas at similar densities to those prevailing at present.

7.6.3.2 To enable development of a wide range of activities within residential areas where the effects are compatible with the effects of residential activity

7.6.3.3 To protect the special amenity values of residential sites on the urban fringe, specifically Lot 1 DP 28017, Lot 1 DP 46656, Lot 1 DP 404507, Lot 1 DP 181291, Lot 2 DP 103531, Lot 1 DP 103531, Lot 2 DP 58333, Pt Lot 1 DP 58333 (and any sites created as a result of a subdivision of these lots), and those having frontage to Kerikeri Road between its intersection with SH10 and Cannon Drive

Policies

7.6.4.1 That the Residential Zone be applied to those parts of the District that are currently predominantly residential in form and character.

7.6.4.2 That the Residential Zone be applied to areas which are currently residential but where there is scope for new residential development.

7.6.4.3 That the Residential Zone be applied to areas where expansion would be sustainable in terms of its effects on the environment.

7.6.4.4 That the Residential Zone provide for a range of housing types and forms of accommodation

7.6.4.5 That non-residential activities only be allowed to establish within residential areas where they will not detract from the existing residential environment

7.6.4.7 That residential activities have sufficient land associated with each household unit to provide for outdoor space, planting, parking and manoeuvring.

7.6.4.8 That the portion of a site or of a development that is covered in buildings and other impermeable surfaces be limited so as to provide open space around buildings to enable planting, and to reduce adverse hydrological, ecological and amenity effects.

7.6.4.9 That sites have adequate access to sunlight and daylight.

7.6.4.10 That provision be made to ensure a reasonable level of privacy for inhabitants of buildings on a site.

6.8 The proposal will provide for a residential site within the Ahipara township that contains an existing dwelling on Lot 1 and a vacant section on Lot 2. No non-residential activities are proposed. The effects will remain consistent with those of a typical single residential unit. There is sufficient space associated with both allotments for outdoor space, planting, parking and manoeuvring areas. The proposal will not alter the existing impermeable surfaces. Privacy will still be achieved between Lots 1 & 2 with sufficient distance between the development on the allotments. There will be no change to the physical attributes of the sites.

6.9 The relevant objectives and policies of the Plan are those relating to the Residential Zone. The proposal is considered to create no more than minor adverse effects on the residential environment. The proposal will be creating a site which is consistent with the residential character of the surrounding area. The proposal is considered to have negligible effects on the residential amenity value of the area, as there will be no physical changes to the sites. The proposal is a Controlled activity given the proposed allotment size and therefore the proposal is consistent with the objectives and policies of the Operative Plan.

Assessment of the objectives and policies for Subdivision Activities

Objectives

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

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

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

13.3.4 To ensure that subdivision does not adversely affect scheduled heritage resources through alienation of the resource from its immediate setting/context.

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

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

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

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

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

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

13.3.11 To ensure that the operation, maintenance, development and upgrading of the existing National Grid is not compromised by incompatible subdivision and land use activities.

6.10 The subdivision will be consistent with the purpose of the Residential zone which is to *enable development of residential areas where the effects of activities permitted in the zone are compatible with sustainable development and with the existing character and amenity, which is typically medium density residential living*.

Policies

13.4.1 That the sizes, dimensions and distribution of allotments created through the subdivision process be determined with regard to the potential effects including cumulative effects, of the use of those allotments on:
(a) natural character, particularly of the coastal environment;
(b) ecological values;

(c) landscape values;
(d) amenity values;
(e) cultural values;
(f) heritage values; and
(g) existing land uses.

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

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

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

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

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

13.4.7 That the need for a financial contribution be considered only where the subdivision would:
(a) result in increased demands on car parking associated with non-residential activities; or
(b) result in increased demand for esplanade areas; or
(c) involve adverse effects on riparian areas; or
(d) depend on the assimilative capacity of the environment external to the site.

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

13.4.9 That bonus development donor and recipient areas be provided for so as to minimise the adverse effects of subdivision on Outstanding Landscapes and areas of significant indigenous flora and significant habitats of fauna.

13.4.10 The Council will recognise that subdivision within the Conservation Zone that results in a net conservation gain is generally appropriate.

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

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

13.4.13 Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the applicable zone in regards to s6 matters. In addition

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

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

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

13.4.16 When considering proposals for subdivision and development within an existing National Grid Corridor the following will be taken into account:
(a) the extent to which the proposal may restrict or inhibit the operation, access, maintenance, upgrading of transmission lines or support structures;
(b) any potential cumulative effects that may restrict the operation, access, maintenance, upgrade of transmission lines or support structures; and
(c) whether the proposal involves the establishment or intensification of a sensitive activity in the vicinity of an existing National Grid line.

The subdivision is a Controlled activity and therefore anticipated by the plan. The proposal is considered appropriate as it will not result in any adverse effects on the surrounding environment. No resource or heritage features will be impacted by this development. Reticulated water supply is not available to this site, as such on-site water will continue to be harvested. The development is very small scale and as such innovative development or

superior outcomes is not a consideration for this application. It is not anticipated that this proposal will have any impact on local Maori areas of tapu, their taonga or traditions. Power supply and telecommunications are existing on Lot 1 as there is an existing dwelling. Connection can be provided on proposed Lot 2. No new built development is sought. No changes to the infrastructure are sought. The national grid will not be compromised.

6.11 There will be no adverse impacts on any of the items listed within Policy 13.4.1. Vehicular access to the site will not change and is considered adequate for the existing activities on site. The site is located partially within the Coastal Erosion Hazard Zone 3 (100 years + Rapid Sea Level Rise Scenario) as is most of the Ahipara township. The site does not contain any of the items listed within policy 13.4.6. The proposal does not meet any of the criteria within policy 13.4.7. Water storage can be provided for on-site with the subdivision design including space for the existing water tanks on Lot 1 and future water tanks on Lot 2. The site is not zoned conservation, nor does it contain any of the features listed within 13.4.9. The proposal is unlikely to have any impacts on local tangata whenua. A management plan development is not appropriate in this instance. The development is a small-scale subdivision, as such the items listed within policy 13.4.13 are not applicable. The application is a Controlled Activity, which is anticipated by than plan where the development is considered consistent with the overall aims. The site is not within a National Grid corridor.

Proposed Disctrict Plan

6.12 Under the Proposed District Plan, the site is zoned General Residential, with the Coastal Environment overlay and therefore an assessment of the objectives and policies within these chapters have been included below. The proposal is considered to create no more than minor adverse effects on the residential environment and is consistent with the residential intent of the surrounding environment and the zone. The proposal is considered to be consistent with the objectives and policies of the Proposed District Plan.

Assessment of the objectives and policies within the General Residential Zone

Objectives

GRZ-O1 - The General Residential zone provides a variety of densities, housing types and lot sizes that respond to:

(a)housing needs and demand;

(b)the adequacy and capacity of available or programmed development infrastructure;

(c)the amenity and character of the receiving residential environment; and

(d)historic heritage.

GRZ-O2 - The General Residential zone consolidates urban residential development around available or programmed development infrastructure to improve the function and resilience of the receiving residential environment while reducing urban sprawl.

GRZ-O3 - Non-residential activities contribute to the well-being of the community while complementing the scale, character and amenity of the General Residential zone.

GRZ-O4 - Land use and subdivision in the General Residential zone is supported where there is adequacy and capacity of available or programmed development infrastructure.
GRZ-O5 - Land use and subdivision in the General Residential zone provides communities with functional and high amenity living environments.
GRZ-O6 - Residential communities are resilient to changes in climate and are responsive to changes in sustainable development techniques.

6.12.1 The proposal will provide one additional allotment with an existing dwelling that has established existing connections to both onsite and council infrastructure. This type of section is in high demand due to the shortfall of housing and vacant allotments in the area. The proposal is considered to be consistent with the amenity and character of the surrounding environment, with lots of this size not being out of the ordinary in the surrounding environment. The proposal is not considered to impact any areas of historic heritage.

6.12.2 The proposal is not considered to contribute to urban sprawl.

6.12.3 No non-residential activities are proposed.

6.12.4 It is considered there is adequacy and capacity of infrastructure to adequately cater for the one additional lot as what is currently in existence will not change.

6.12.5 The proposal will provide functional and high amenity living environments by providing a development which is of high demand.

6.12.6 The proposal is not considered to alter the resilience of the community to climate change.

Policies

GRZ-P1 - Enable land use and subdivision in the General Residential zone where:
(a)there is adequacy and capacity of available or programmed development infrastructure to support it; and
(b)it is consistent with the scale, character and amenity anticipated in the residential environment.
GRZ-P2 - Require all subdivision in the General Residential zone to provide the following reticulated services to the boundary of each lot:
(a)telecommunications:
i. fibre where it is available; or
ii. copper where fibre is not available;
(b)local electricity distribution network;
(c)wastewater; and
(d)potable water and stormwater where it is available.
GRZ-P3 - Enable multi-unit developments within the General Residential zone, including terraced housing and apartments, where there is adequacy and capacity of available or programmed development infrastructure.
GRZ-P4 - Enable non-residential activities that:
(a) do not detract from the vitality and viability of the Mixed Use zone;

(b)support the social and economic well-being of the community;

(c)are of a residential scale; and

(d)are consistent with the scale, character and amenity of the General Residential zone.

GRZ-P5 - Provide for retirement villages where they:

(a)compliment the character and amenity values of the surrounding area;

(b)contribute to the diverse needs of the community;

(c)do not adversely affect road safety or the efficiency of the transport network; and

(d)can be serviced by adequate development infrastructure.

GRZ-P6 - Encourage and support the use of on-site water storage to enable sustainable and efficient use of water resources.

GRZ-P7 - Encourage energy efficient design and the use of small-scale renewable electricity generation in the construction of residential development.

GRZ-P8 - Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:

(a)consistency with the scale, design, amenity and character of the residential environment;

(b)the location, scale and design of buildings or structures, potential for shadowing and visual dominance;

(c)for residential activities:

i. provision for outdoor living space;

ii. privacy for adjoining sites;

iii. access to sunlight;

(d)for non-residential activities:

i. scale and compatibility with residential activities

ii. hours of operation

(e)at zone interfaces, any setbacks, fencing, screening or landscaping required to address potential conflicts;

(f)the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity, including:

i. opportunities for low impact design principles

ii. ability of the site to address stormwater and soakage;

(g)managing natural hazards; and

(h)any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6

6.12.7 As mentioned throughout this report it is considered that there is adequate infrastructure available to service the proposed lots, with the existing dwelling having existing connections. The proposal is considered consistent with the scale, character and amenity of the surrounding environment.

6.12.8 Comments from both Chorus and Top Energy have been obtained with no additional work or requirements needed.

6.12.9 No multi-unit developments are proposed.

6.12.10 No non-residential activities or retirement villages are proposed.

6.12.11 As mentioned, Lot 1 has connection to Councils reticulated sewer and Lot 2 can connect.

6.12.12 Lot 1 has provision for existing energy supply.

6.12.13 The proposal is considered consistent with the scale, design and amenity and character of the surrounding environment. The proposed boundaries provide adequate distance from the existing building to ensure no over-shadowing or visual dominance. There is ample area within each site for outdoor living space, privacy and access to sunlight. No non-residential activities are proposed and there are no known zone interfaces. The site is not known to have any impacts on any historical, spiritual or cultural association held by tangata whenua.

Coastal Environment

6.12.14 An assessment of the objectives and policies within the Coastal Environment have been provided below.

Objectives:

CE-O1 The natural character of the coastal environment is identified and managed to ensure its long-term preservation and protection for current and future generations.

CE-O2 Land use and subdivision in the coastal environment:

a. preserves the characteristics and qualities of the natural character of the coastal environment;

b. is consistent with the surrounding land use;

c. does not result in urban sprawl occurring outside of urban zones;

d. promotes restoration and enhancement of the natural character of the coastal environment; and

e. recognises tangata whenua needs for ancestral use of whenua Māori.

CE-O3 Land use and subdivision in the coastal environment within urban zones is of a scale that is consistent with existing built development.

6.12.15 Any future dwelling will be absorbed into the existing built environment within the General Residential zone. The natural character of the existing environment consists of residential dwellings throughout the landscape as the surrounding environment is urban. Due to the existing development, buildings in the surrounding environment are easily integrated into the environment, which is consistent with the proposed development.

6.12.16 The site is located on the north-western facing slope which overlooks Ahipara. The proposal is consistent with the development in the immediate environment being medium density residential development with a coastal character and outlook. The proposal does not result in urban sprawl, the subdivision will be creating one additional site within an area which is anticipated for residential development.

6.12.17 As stated earlier in this report, the proposal is consistent with the scale and design of other properties within the existing built environment.

Policies:

CE-P1 Identify the extent of the coastal environment as well as areas of high and outstanding natural character using the assessment criteria in APP1- Mapping methods and criteria.

Avoid adverse effects of land use and subdivision on the characteristics and qualities of the coastal environment identified as:

a) outstanding natural character;

b) ONL;

c) ONF.

CE-P3 Avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of land use and subdivision on the characteristics and qualities of the coastal environment not identified as:

a) Outstanding natural character;

b) ONL;

c) ONF

CE-P4 Preserve the visual qualities, character and integrity of the coastal environment by:

a) Consolidating land use and subdivision around existing urban centres and rural settlements; and

b) Avoiding sprawl or sporadic patterns of development

CE-P5 Enable land use and subdivision in urban zones within the coastal environment where:

a) There is adequacy and capacity of available or programmed development infrastructure; and

b) The use is consistent with, and does not compromise the characteristics and qualities.

CE-P6 Enable farming activities within the coastal environment where:

a) the use forms part of the values that established natural character of the coastal environment; or

b) the use is consistent with, and does not compromise the characteristics and qualities.

CE-P7 Provide for the use of Māori Purpose zoned land and Treaty Settlement land in the coastal environment where:

a) the use is consistent with the ancestral use of that land; and

b) the use does not compromise any identified characteristics and qualities.'

CE-P8 Encourage the restoration and enhancement of the natural character of the coastal environment.

CE-P9 Prohibit land use and subdivision that would result in any loss and/or destruction of the characteristics and qualities in outstanding natural character areas.

CE-P10 Manage land use and subdivision to preserve and protect the natural character of the coastal environment, and to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:

a) the presence or absence of buildings, structures or infrastructure;

b) the temporary or permanent nature of any adverse effects;

c) the location, scale and design of any proposed development;

d) any means of integrating the building, structure or activity;

e) the ability of the environment to absorb change;

f) the need for and location of earthworks or vegetation clearance;

g) the operational or functional need of any regionally significant infrastructure to be sited in the particular location;

h) any viable alternative locations for the activity or development;

i) any historical, spiritual or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6;

j) the likelihood of the activity exacerbating natural hazards;

k) the opportunity to enhance public access and recreation;

l) the ability to improve the overall quality of coastal waters; and

m) any positive contribution the development has on the characteristics and qualities.

6.12.18 The site is located within the Coastal Environment; it is considered the proposed subdivision is compatible and in keeping with the existing character and amenity of the surrounding area.

6.12.19 The site is not mapped as Outstanding Natural Character, ONL or ONF within the Proposed District Plan maps.

6.12.20 The site is located within a coastal area with a pattern of moderate residential development. The proposal is not considered to create any patterns of sporadic development. The development is for a subdivision which is intended by the plan being within the General Residential Zone.

6.12.21 The proposal has demonstrated that both allotments can accommodate firefighting water supply, potable water and stormwater management. The development is consistent with the subdivision patterns within the existing environment. The subdivision is consistent with that

is anticipated within the zone which ensures the subdivision does not comprise the characterises and qualities of the coastal environment.

6.12.22 Not relevant, the activity is not for a farming activity.

6.12.23 Not relevant.

6.12.24 The proposed subdivision will be integrated into the existing built environment, such that the natural character of the coastal environment will not be compromised.

6.12.25 The property is not located within an area of Outstanding Natural Character.

6.12.26 As detailed throughout the report, the proposal is consistent with the criteria set out in CE-P10 (a – m), such that any potential effects resulting from the subdivision are considered to be less than minor.

6.13 Under the Proposed District Plan, the site is zoned Rural lifestyle and sits within the Coastal Environment overlay. The proposal is considered to create no more than minor adverse effects on the surrounding environment and is consistent with the intent of the surrounding environment and the zone. The proposal is consistent with the objectives and policies of the Proposed District Plan within the Coastal Environment.

Summary

6.14 The above assessment of the relevant policy documents demonstrates that the proposal will be consistent with the relevant objectives and policies of those statutory documents.

7.0 Notification Assessment – Sections 95A to 95G of the Act

Public Notification Assessment

7.1 Section 95A requires a council to follow specific steps to determine whether to publicly notify an application. The following is an assessment of the application against these steps:

Step 1 Mandatory public notification in certain circumstances

(2) Determine whether the application meets any of the criteria set out in subsection (3) and, —
(a)if the answer is yes, publicly notify the application; and
(b) if the answer is no, go to step 2.
(3)The criteria for step 1 are as follows:
(a)the applicant has requested that the application be publicly notified:
(b)public notification is required under section 95C:
(c)the application is made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1977.

7.1.1 It is not requested the application be publicly notified and the application is not made jointly with an application to exchange reserve land. Therefore step 1 does not apply and Step 2 must be considered.

Step 2: Public Notification precluded in certain circumstances.

(4) Determine whether the application meets either of the criteria set out in subsection (5) and,—
(a) if the answer is yes, go to step 4 (step 3 does not apply); and
(b)if the answer is no, go to step 3.
(5) The criteria for step 2 are as follows:
(a) the application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes public notification:
(b)the application is for a resource consent for 1 or more of the following, but no other, activities:
(i)a controlled activity:
(ii)[Repealed]
(iii) a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity.
(iv)[Repealed]
(6)[Repealed]

7.1.2 The application is for a Controlled Activity, therefore step 3 does not apply and step 4 must be applied.

Step 4; Public notification in special circumstances

(9) Determine whether special circumstances exist in relation to the application that warrant the application being publicly notified and,—
(a) if the answer is yes, publicly notify the application; and
(b)if the answer is no, do not publicly notify the application, but determine whether to give limited notification of the application under section 95B.

7.1.3 There are no special circumstances that exist to justify public notification of the application because the proposal is not considered to be controversial or of significant public interest, particularly given that it is private land, and the application is for the subdivision of the site to create one additional allotment. The application is neither exceptional nor unusual.

Public Notification Summary

7.1.4 From the assessment above it is considered that the application does not need to be publicly notified, but assessment of limited notification is required.

Limited Notification Assessment

7.2 If the application is not publicly notified, a consent authority must follow the steps of section 95B to determine whether to give limited notification of an application.

Step 1: Certain affected groups and affected persons must be notified

(2) Determine whether there are any—
(a) affected protected customary rights groups; or
(b)affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity).
(3) Determine—
(a)whether the proposed activity is on or adjacent to, or may affect, land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11; and
(b)whether the person to whom the statutory acknowledgement is made is an affected person under section 95E.
(4) Notify the application to each affected group identified under subsection (2) and each affected person identified under subsection (3).

7.2.1 There are no protected customary rights groups or customary marine title groups or statutory acknowledgement areas that are relevant to this application. Therefore Step 1 does not apply and Step 2 must be considered.

Step 2: Limited notification precluded in certain circumstances

(5) Determine whether the application meets either of the criteria set out in subsection (6) and,—
(a)if the answer is yes, go to step 4 (step 3 does not apply); and
(b)if the answer is no, go to step 3.
(6) The criteria for step 2 are as follows:
(a)the application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes limited notification:
(b) the application is for a controlled activity (but no other activities) that requires a resource consent under a district plan (other than a subdivision of land).

7.2.2 There is no rule in the plan or national environmental standard that precludes notification. The application is for a controlled activity. Therefore Step 3 is not applicable and we move to step 4.

Step 3: Certain other affected persons must be notified.

(7) In the case of a boundary activity, determine in accordance with section 95E whether an owner of an allotment with an infringed boundary is an affected person.
(8) In the case of any other activity, determine whether a person is an affected person in accordance with section 95E.
(9) Notify each affected person identified under subsections (7) and (8) of the application.
The proposal is not for a boundary activity nor is it a prescribed activity.

7.2.3 Not applicable.

Step 4: Further notification in special circumstances

(10) whether special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined to be eligible for limited notification under this section (excluding persons assessed under section 95E as not being affected persons),

7.2.4 The proposal is to undertake a subdivision to create one additional allotment. It is considered that no special circumstances exist in relation to the application.

Limited Notification Assessment Summary

7.3 Overall, from the assessment undertaken Steps 1 to 4 do not apply and there are no affected persons.

Notification Assessment Conclusion

7.4 Pursuant to sections 95A to 95G it is recommended that the Council determine the application be non-notified for the above-mentioned reasons.

8.0 Part 2 Assessment

8.1 The application must be considered in relation to the purpose and principles of the Resource Management Act 1991 which are contained in Section 5 to 8 of the Act inclusive.

8.2 The proposal will meet Section 5 of the RMA as there will be no changes to the natural and physical resources which currently exists on site. The proposal is considered to retain the residential character of the immediate surrounding environment. In addition, the proposal will avoid adverse effects on the environment and will maintain the urban character of the site and surrounding environment.

8.3 Section 6 of the Act sets out a number of matters of national importance. None of those matters of national importance are considered relevant to this application.

8.4 Section 7 identifies a number of "other matters" to be given particular regard by a Council in the consideration of any assessment for resource consent, including the maintenance and enhancement of amenity values. The proposal maintains amenity values in the area as the proposal will create residential allotments which are not objectionable to the surrounding environment.

8.5 Section 8 requires Council to take into account the principals of the Treaty of Waitangi. It is considered that the proposal raises no Treaty issues. The subject site is not known to be located within an area of significance to Maori and no physical development is proposed as a result of this subdivision. The proposal has taken into account the principals of the Treaty of Waitangi; and is not considered to be contrary to these principals.

8.6 Overall, the application is considered to be consistent with the relevant provisions of Part 2 of the Act, as expressed through the objectives, policies and rules reviewed in earlier sections of this application. Given that consistency, we conclude that the proposal achieves the purposes of sustainable management set out by section 5 of the Act.

9.0 Conclusion

9.1 The proposal is to undertake a subdivision to create one additional allotment where the lot sizes are able to comply with the controlled activity lot sizes for the zone. The subdivision will result in one allotment containing a dwelling and another vacant allotment. Existing connections to Councils reticulated Infrastructure and on-site infrastructure on Lot 1 will remain.

9.2 In terms of section 104(1)(a) of the Act, the actual and potential effects of the proposal will be less than minor.

9.3 It is also considered that the proposal will have less than minor adverse effects on the wider environment; no persons will be adversely affected by the proposal and there are no special circumstances.

9.4 The relevant provisions within Part 2 of the Act have been addressed as part of this application. The overall conclusion from the assessment of the statutory considerations is that the proposal is considered to be consistent with the sustainable management purpose of the Resource Management Act 1991.

9.5 As a Controlled activity, the proposal has been assessed against the specific matters and limitations imposed by the District Plan. It is considered that the proposal results in no more than minor effects on the environment and the proposal is generally consistent with the relevant objectives and policies set out under the District Plan and the Regional Policy Statement. The development is considered appropriate for consent to be granted on a non-notified basis.

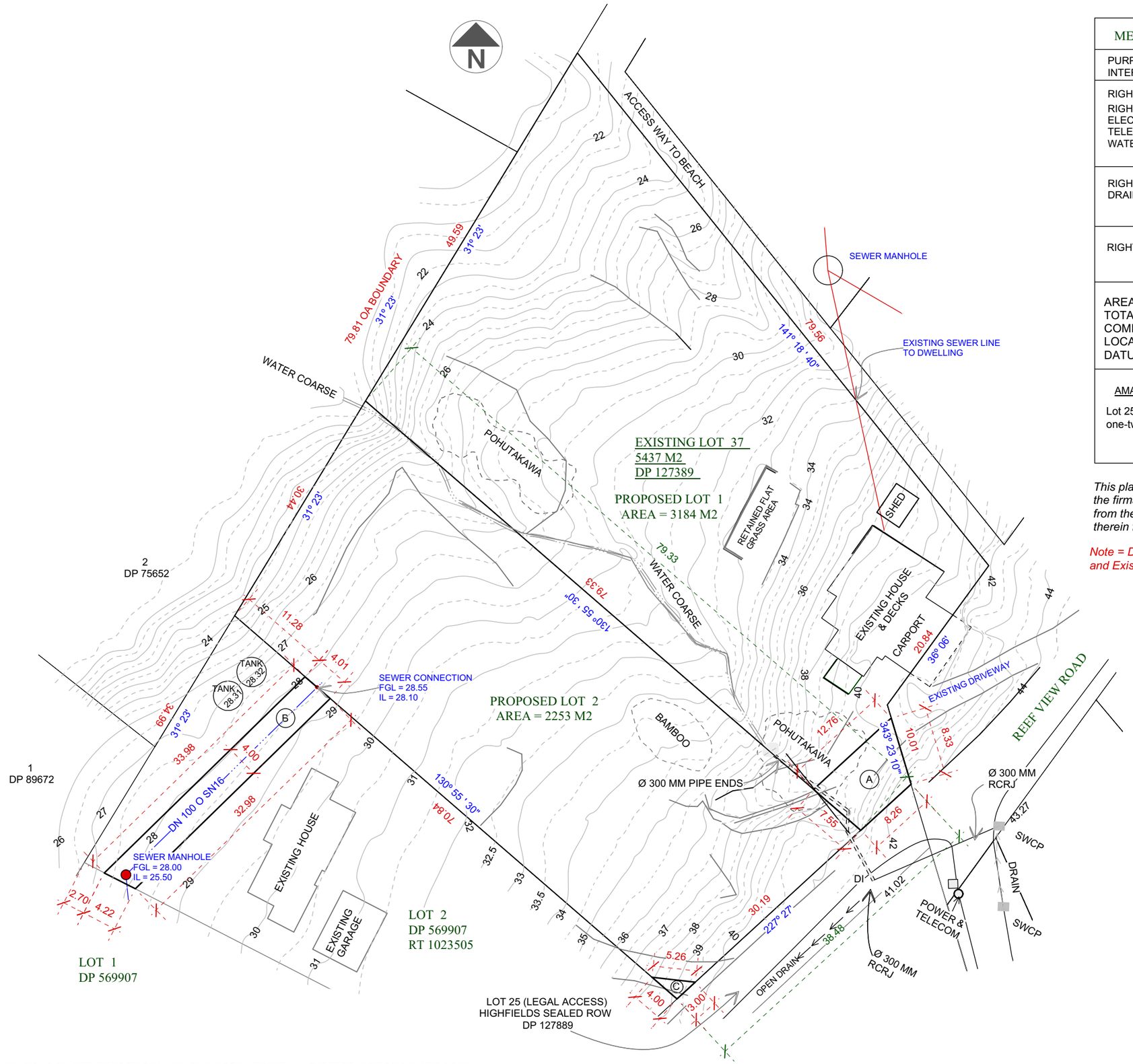
10.0 LIMITATIONS

10.1 This report has been commissioned solely for the benefit of our client, in relation to the project as described above, and to the limits of our engagement, with the exception that the Far North District Council or Northland Regional Council may rely on it to the extent of its appropriateness, conditions and limitations, when issuing their subject consent.

10.2 Copyright of Intellectual Property remains with Northland Planning and Development 2020 Limited, and this report may NOT be used by any other entity, or for any other proposals, without our written consent. Therefore, no liability is accepted by this firm or any of its directors, servants or agents, in respect of any information contained within this report.

10.3 Where other parties may wish to rely on it, whether for the same or different proposals, this permission may be extended, subject to our satisfactory review of their interpretation of the report.

10.4 Although this report may be submitted to a local authority in connection with an application for a consent, permission, approval, or pursuant to any other requirement of law, this disclaimer shall still apply and require all other parties to use due diligence where necessary.



MEMORANDUM OF EASEMENTS

PURPOSE INTEREST	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT OF WAY RIGHT TO CONVEY: ELECTRICITY TELECOMMUNICATIONS WATER	(A)	LOT 1 HEREON	LOT 2 HEREON
RIGHT TO DRAIN SEWAGE	(B)	LOT 2 DP 569907 HEREON	LOT 2 HEREON
RIGHT OF WAY	(C)	LOT 2 HEREON	LOT 2 DP 569907 HEREON

AREAS & MEASUREMENTS SUBJECT TO FINAL SURVEY
TOTAL AREA : 5437 M2
COMPRISED IN : RT NA 74C / 499
LOCAL AUTHORITY : FAR NORTH DISTRICT COUNCIL
DATUM LEVELS @ 1000 mm INTERVALS

AMALGAMATION COONDITION - SEC 220 (1) (b) (iv)

Lot 25 DP 127889 (legal access) be held as “two undivided one-twenty fourth (1/24) shares by the owners of Lots 1 & 2 hereon”

This plan and its accompanying reports have been prepared by the firms specified for the purpose of obtaining a resource consent from the Council . Use of these documents and/of information contained therein for any other purpose is undertaken only at the risk of the user.

Note = Detailed Plans and Thru sections for Sewer Easement and Existing Reef View Rd Stormwater invert levels avaialbe on request

MICHAEL SLOANE PH (64 9) 409 4012 EMAIL: michaelrsloane@mac.com

IMPORTANT: VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK ~ REFER ALL DISCREPANCIES TO SALT DESIGN

Project Title	Client Name	Site Address	Date	Scale	Title
SUBDIVISION OF LOT 37 DP : 127889 & EASEMENT OVER LOT 2 ~ DP 569907	TERRY TRETHEWEY	LOT 37 REEF VIEW RD AHIPARA	MAY 2023	1: 500	PROPOSED SUBDIVISION OF LOT 37
			Job Number 230104	Drawing No. SHT RC 01.0	

SALT DESIGN
1 Kokopu Street Ahipara

MICHAEL SLOANE PH (64 9) 409 4012 EMAIL: michaelrsloane@mac.com

IMPORTANT: VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK ~ REFER ALL DISCREPANCIES TO SALT DESIGN

	Project Title	Client Name	Site Address	Date	Scale	Title
	SUBDIVISION OF LOT 37	TERRY TRETHEWEY	LOT 37 REEF VIEW RD AHIPARA	MAY 2023	NOT TO SCALE	AERIAL VIEWS & LOCATION OF LOT 37
				Job Number 230104	Drawing No. SHT RC 02.0	

SALT DESIGN
1 Kokopu Street Ahipara

SITE SUITABILITY REPORT

FOR

PROPOSED SUBDIVISION & NEW DWELLING

AT

PROPOSED LOT 2 OF LOT 37 DP 127389

AHIPARA

FOR

TERRY AND TAWA TRETHEWEY

Job No: 23-034
Date: September 2023

Level 1 ANZ Bank Building 90 Kerikeri Road, Kerikeri, New Zealand

Telephone: 09 407 3255 Email: teampk@pkengin.co.nz

Contents

PK ENGINEERING
CHARTERED PROFESSIONAL ENGINEERS

1. INTRODUCTION

This report was requested by Terry and Tawa Trethewey and has been prepared to assess the site suitability of the proposed Lot 2 for future development.

This report addresses land stability, foundation requirements, ground retention requirements, access, and stormwater management and has been prepared for the sole use of the client. It shall not be used, reproduced, or copied in any manner or form without the permission of PK Engineering Limited.

2. GENERAL SITE DESCRIPTION

The total area of the Lot is approximately 2,253m^2. Slopes on the Lot vary from 9^o to 26^o. The area for the proposed dwelling is gently sloping at ~ 9^o to the north-west, and lies within the Far North District Council Residential Zone. The lot is currently in grass with occasional mature trees.

The proposed dwelling is to be sited on the gently sloping ground as indicated on the Site Plan, Sheet SG1, Appendix A.

The location of all features discussed in this report are from information supplied by Salt Design of 1 Kokopu street, Ahipara and tape measurements made on site.

The subsurface conditions discussed in this report have been determined at very specific locations and will not identify any variations in ground strength or composition at other locations on the site. During construction should ground conditions be found to vary significantly from those described in this report PK Engineering is to be notified immediately.

3. NATURAL HAZARDS

Coastal Erosion Hazard Zone 3

The western corner of the Lot lies within the coastal erosion hazard zone 3, 100 years rapid sea level rise scenario. Refer Sheet SG3, Appendix A.

4. GEOLOGY

Soil type –*"Awapuku clay loam"* overlying *"Basalt and dolerite: flows (commonly pillow form) of fine to medium grained crystalline basalt and dolerite with minor mudstone, intruded by numerous medium-grained dikes and plugs of diorite and gabbro: closely to moderately fractured; hard to very hard. Altered and weathered to soft brown clay to depths of 30m."*
NZMS 290, Sheet N04/05, Ahipara - Herekino soil and rock maps

5. SITE INVESTIGATIONS

5.1 VISUAL INSPECTION

A thorough walkover of the site was undertaken and geotechnical features relating to site stability and stormwater flows were noted.

5 subsurface exploratory auger holes were drilled at the locations shown on the Site Plan SG1 attached as AH1 to AH5. In situ undrained shear strength readings were taken at 300mm intervals in each hole. These holes were drilled with a 50mm hand auger to various depths below existing ground level. Scala penetrometer tests were then undertaken from the base of each of auger holes AH2- AH5 (PT2 -PT6) and terminated on inferred semi weathered rock. PT1 was driven from surface adjacent to AH1. Refer Table 1 below for a data summary.

Table 1 Data Summary

	Auger Depth (m)	Rock Intercept (m)	Scala Depth (m)
AH1/PT1	2.4	2.85	2.95
AH2/PT2	3.2	4.15	4.6
AH3/PT3	2.8	3.85	3.9
AH4/PT4	2.4	3.3	3.65
AH5/PT5	2.2	3.3	3.75

Auger holes AH1 – AH5 intercepted predominantly strong ground with shear strength in excess of 100kPa.

The ground water table was intercepted in auger hole AH2 at 2.1m depth below existing ground level.

Scala penetrometer tests PT1 - PT5 intercepted inferred semi weathered rock at 2.85, 4.15, 3.85, 3.3, and 3.3m depth below existing ground level respectively. All scala tests were terminated on inferred semi weathered rock at various depths below existing ground level. Weak layers were intercepted in scala tests PT1, from surface to 1.35m, PT2 from 3.2-3.5m, PT3 from 2.8- 3.05m, and PT5 from 2.2-2.6m depth below existing ground level.

Cross sections A – A and B – B shown in Appendix A Sheet SG2 gives an illustration of the inferred sub soil profile. The logs of the auger holes and Scala Penetrometer tests are given in Appendix A.

6. SITE STABILITY

6.1 GENERAL

The sub soil on this site predominantly indicates good engineering qualities. However due to the presence of the weak layer, indicated in cross section A -A, that runs the length of the site slope this development will require a specific engineered design conducted by a Chartered Professional Engineer. This weak layer may act as a slip plane with increasing soil pore pressure. Refer Cross section A-A sheet SG2 Appendix A.

6.2 BUILDING FOUNDATIONS

A pile supported rib-raft type of foundation would be suitable for the proposed house and garage with piles embedded a minimum of 500mm into the rock layer. Refer Table 1, Data Summary for depth to inferred rock.
The raft to be designed by a suitably experienced Chartered Professional Engineer.

The following parameters should be utilized for the design of footings and piled foundations:

IN STIFF CLAY:

Bulk Density	= 18 kN/m^3
Ultimate Bearing Capacity	= 300kPa
Allowable Bearing Capacity (F.O.S = 3)	= 100kPa
Dependable Bearing Capacity (ϕ = 0.5)	= 150kPa

IN WEAK CLAY:

Bulk Density	= 18 kN/m^3
Ultimate Bearing Capacity	= 150kPa
Allowable Bearing Capacity (F.O.S = 3)	= 50kPa
Dependable Bearing Capacity (ϕ = 0.5)	= 75kPa

IN SEMI-WEATHERED ROCK:

Bulk Density	= 25 kN/m^3
Ultimate Bearing Capacity	= 6MPa
Allowable Bearing Capacity (F.O.S = 3)	= 2MPa
Dependable Bearing Capacity (ϕ = 0.5)	= 3MPa

Fill may be placed around the building site to create the building platform provided that no foundations are supported onto this fill. This fill material should be rolled with a sheepsfoot roller.

All fill material under buildings should be well compacted GAP 40 hardfill, verified by an engineer. This hardfill should extend a minimum of 1m past the building edge.

6.3 TOPSOIL AND UNSUITABLE SOILS

All topsoil, organics, vegetation, and any unapproved fill, are to be stripped from the building envelope. All unsuitable materials where not recycled on site are to be carted to waste.

7. LIQUEFACTION

The site has a low risk of liquefaction due to the known properties of Awapuku clay loam. The clay fraction ensures that the critical property of a soil that leads to liquefaction has a very low probability of occurring on this site. It would be recommended to provide some sub surface counterfort drains to lower the groundwater table to well below ant proposed floor levels.

8. EROSION

Care must be taken to ensure maximum ground cover and limit exposure to any cut surfaces during construction. There is no evidence of voids or cliff features. Underlying settlement and geological subsidence are unlikely. Silt fences to be erected across the slope below the building envelope prior to any excavation to prevent the migration of silt off site during construction.

9. Coastal Erosion Hazard Zone 3

The proposed building envelope is set back 42m from theNorthland Regional Council modelled 100 year plus rapid climate change scenario Coastal erosion Hazard Zone 3.

10. STORMWATER

The careful management of stormwater runoff is vital to minimise downstream effects from the proposed development. During construction, silt fences should be erected around the downhill perimeter of the site and filter cloth to line cesspits onsite to minimise runoff. No water is to be discharged on open cut slopes around the building envelope during construction.

This site is zoned as Residential under the Far North District Plan. To constitute a permitted activity the maximum proportion of impermeable surfaces is 50% of the total site area. The proposed development, house and garage roof area is191m^2, driveway and turnaround 128m^2, giving a total of 319m^2 of impermeable surfaces – 14.2% of the total proposed site area. This site appears to lie within the permitted impermeable surface area rule. However, the proposed Lot being a new subdivision, and the potential for flooding, downstream of the Lot modelled by the Northland Regional Council, the Far North District Council may require stormwater attenuation.

We recommend attenuating stormwater to predevelopment levels to mitigate any effects on downstream properties or the wider environment.

To accomplish attenuation of stormwater flows from the proposed house and garage roof and the proposed driveway we recommend using one of the two options below.

1. Install a 25,000ltr. Attenuation tank (indicated in blue) on Sheet SG1 to store and slow-release stormwater flows from the house and driveway. Attenuation system parameters are listed below in Table 2 for option 1.

Table 2 Attenuation System Parameters Option 1

	Orifice diameter	**Orifice invert location**	
ARI 10	**33 mm**	**1640**	**mm** below overflow invert
ARI 100	**30 mm**	**840**	**mm** below overflow invert
Tank Size	**1 x**	**25,000**	**litres @ 3.0 m Ø**
ARI 10		**10,409.3**	**litres**
ARI 100		**21,405.6**	**litres**
Reuse		**3,594.4**	**litres**

2. Install a 25,000ltr. storage tank for potable water and house roof attenuation and an underground tank for the driveway flows attenuation (indicated in green) on Sheet SG1. Attenuation system parameters are listed below in Tables 2 and 3 for option 2.

Table 3 Attenuation System Parameters Option 2 House

	Orifice diameter	**Orifice invert location**	
ARI 10	**27 mm**	**1200**	**mm** below overflow invert
ARI 100	**25 mm**	**600**	**mm** below overflow invert
Tank Size	**1 x**	**25,000**	**litres @ 3 m Ø**
ARI 10		**6,241.1**	**litres**
ARI 100		**12,735.8**	**litres**
Reuse		**12,264.2**	**litres**

Table 4 Attenuation System Parameters Option 2 Driveway

	Orifice diameter	**Orifice invert location**	
ARI 10	**25 mm**	**750**	**mm** below overflow invert
ARI 100	**23 mm**	**390**	**mm** below overflow invert
Tank Size	**1 x**	**10,000**	**litres 1.115*10 m**
ARI 10		**4,109.2**	**litres**
ARI 100		**8,504.4**	**litres**
Reuse		**1,495.6**	**litres**

The attenuation systems to discharge to a suitable dispersal system producing sheet flow to natural flow paths. The orifice flows from either system to discharge to the relevant overflow pipe that in turn discharge to a suitable dispersal system producing sheet flow. A cess pit to be installed at the lower point of the turn around as indicated on Site Plan Sheet SG1. The cess pit to discharge to either of the attenuation systems.

We have used coefficients of 0.53 for predevelopment and 0.96 for post development.
Rainfall data has been sourced from HIRDS data for Ahipara for the period 2081-2100 RCP6.

11.WASTEWATER

Wastewater to be piped to the reticulated sewer connection in the western corner of the Lot.

12. POTABLE WATER SUPPLY

Potable water supply is from a private reticulated supply (information from architect) plus or minus filtered tank supply.

13. ACCESS

Access to this property is to be via a proposed right of way from Reef View Road marked A on Site Plan Sheet SG1 Appendix A.

14. RECOMMENDATIONS

I recommend that:

- This site is considered suitable for subdivision and development as shown in the included plan.
- Foundation design should be conducted by a suitably experienced Chartered Professional Engineer.
- Any ground retaining required over 1.0m retained height or subject to surcharge loading to be designed by a suitably experienced Chartered Professional Engineer
- Stormwater management to follow section 10 of this report.
- All earthworks are to be inspected and approved by an engineer. All hardfill over 600mm depth is to be inspected, tested, and approved by an engineer.

15. CONCLUSION

This site is suitable for the proposed development provided that the recommendations in this report are followed diligently.

All Earthworks will need to be inspected and approved by a Chartered Professional Engineer.

Pradeep Kumar.
B.E hons, NZCE, MIPENZ,
IntPE, CP Eng.
(Structural, Geotechnical)
Chartered Professional Engineer.

APPENDIX A

- AUGER HOLE LOGS
- SCALA PENETROMETER LOGS
- SITE PLAN 'SG1'
- CROSS-SECTION A – A & B –B 'SG2'
- NATURAL HAZARD MAP 'SG3'
- STORMWATER DISPERSAL SYSTEM 'SG4'

BOREHOLE LOG NO - AH 1

Project: 38 Reef View Road
Client: Trethewey, Terry
Job No: 23-034

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Graphic Symbol	@@@	#####	%%%	ØØØ	‡‡‡‡‡		ÐÐÐÐÐ	In situ shear vane reading
	FILL	CLAY	SILT	SAND	TOP SOIL	ROCK	Organic Soil	Remoulded shear vane reading
								Scale Penetrometer

Depth (mm)	Graphical Log	GWL	Soil Type	Field Description	Undrained Shear Strength (kPa)	Scale Penetrometer (blows/300mm)
0 – 300	‡‡‡‡‡‡‡‡	Ground Water Level not Intercepted	Awapuku clay loam	TOP SOIL	65, 111	
300 – 600	%%%%			SILT, brownish orange, dense, dry, very stiff, low plasticity	121, 153	
600 – 900	%%%%				121, 166	
900 – 1200	%%%%					
1200 – 1500	#####			Silty, CLAY, streaks of red and specs of white, dry, hard, low plasticity	186, 215	
1500 – 1800	#####				171, 204	
1800 – 2100	#####			Silty, CLAY, gravel inclusions ,bluish, grey, moist	127, 209	
2100 – 2400	#####			Silty, CLAY, brown gravel inclusions ,bluish, grey	153, 227	
2400 – 2700	#####			Silty, CLAY, weathered rock inclusions		
2700 – 3000	#####			Silty, CLAY, black rock fragments ,hard ,moist	UTP	
3000 – 3300				E.O.B at 2.4m (UTP)		
3300 – 3600				Inferred clays and or silts		
3600 – 3900						
3900 – 4200						
4200 – 4500						
4500 – 4800						
4800 – 5100						
5100 – 5400					0	

Drill Methods	50-100 mm hand auger	**Note:**
Test Location	Refer to site plan	1. The subsurface data described above has been determined at a specific borehole location. The data
Test Date	26/07/2023	will not identify any variations away from the location.
Inspector	KC	2. UTP - Unable to penetrate.

Level 1 ANZ Bank Building 90 Kerikeri Road, Kerikeri New Zealand
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BOREHOLE LOG NO - AH2

Project: 38 Reef View Road
Client: Trethewey, Terry
Job No: 23-034

PK ENGINEERING
CHARTERED PROFESSIONAL ENGINEERS

Graphic Symbol	@@@	#####	%%%	ØØØ	‡‡‡‡‡		ĐĐĐĐĐ	In situ shear vane reading
	FILL	CLAY	SILT	SAND	TOP SOIL	ROCK	Organic Soil	Remoulded shear vane reading
								Scale Penetrometer

Depth (mm)	Graphical Log	GWL	Soil Type	Field Description	Undrained Shear Strength (kPa)	Scale Penetrometer (blows/300mm)
300	‡‡‡‡‡‡‡‡	Ground Water Level Intercepted @2.1m	Awapuku Clay Loam	TOPSOIL	228	
600	%%%%			SILT, very gravelly, light brown, specs of red, hard, dry	228	
900	%%%%				228	
1200	%%%%			gravel inclusions, black, hard	228	
1500	%%%%				204 / 179	
1800	%%%%			specs of orange clay	130 / 98	
2100	#####			CLAY, dark brown with specs of grey, stiff, wet	111 / 55	
				water table at 2.1m		
2400	%%%%				171 / 137	
2700	%%%%			SILT, grey, very stiff, very wet. Poor sample recovery from 3.2m	137 / 85	
3000	%%%%					
3300	%%%%			EOB @ 3.2m		
3600	%%%%			Inferred clays and or silts		
3900	%%%%					
4200	%%%%					
4500						
4800						
5100						
5400						

Drill Methods	50-100 mm hand auger	**Note:**
Test Location	Refer to site plan	1. The subsurface data described above has been determined at a specific borehole location. The data
Test Date	26/08/2023	will not identify any variations away from the location.
Inspector	KC	2. UTP - Unable to penetrate.

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BOREHOLE LOG NO - AH3

Project: 38 Reef View Road
Client: Trethewey, Terry
Job No: 23-034

PK ENGINEERING
CHARTERED PROFESSIONAL ENGINEERS

Graphic Symbol	@@@	#####	%%%	ØØØ	‡‡‡‡‡		ÐÐÐÐÐ	In situ shear vane reading
	FILL	CLAY	SILT	SAND	TOP SOIL	ROCK	Organic Soil	Remoulded shear vane reading
								Scale Penetrometer

Depth (mm)	Graphical Log	GWL	Soil Type	Field Description	Undrained Shear Strength (kPa)	Scale Penetrometer (blows/50mm)
300	‡‡‡‡‡‡‡‡	Ground Water Level not Intercepted	Awapuku clay loam	TOPSOIL	163, 124	
600					153, 82	
900					196, 130	
1200					153, 139	
				TOPSOIL specs of red		
1500	#####			CLAY, gravel inclusions white with specs of red, dense, dry	225, 212	
1800					202, 139	
2100				CLAY, with black rock inclusions, light yellow, dense, dry	228	
2400					228	
2700				CLAY, orange, , stiff streaks, black rock inclusions	207, 173	
				E.O.B at 2.8m		
3000						
3300						
3600				inferred clays and or silts		
3900						
4200						
4500						
4800						
5100						
5400						

Drill Methods	50-100 mm hand auger	**Note:**
Test Location	Refer to site plan	1. The subsurface data described above has been determined at a specific borehole location. The data
Test Date	26/07/2023	will not identify any variations away from the location.
Inspector	KC	2. UTP - Unable to penetrate.

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BOREHOLE LOG NO - AH4

Project: 38 Reef View Road
Client: Trethewey, Terry
Job No: 23-034

PK ENGINEERING
CHARTERED PROFESSIONAL ENGINEERS

Graphic Symbol	@@@	#####	%%%	ØØØ	‡‡‡‡‡		ÐÐÐÐÐ	In situ shear vane reading
	FILL	CLAY	SILT	SAND	TOP SOIL	ROCK	Organic Soil	Remoulded shear vane reading
								Scale Penetrometer

Depth (mm)	Graphical Log	GWL	Soil Type	Field Description	Undrained Shear Strength (kPa)	Scale Penetrometer (blows/50mm)
0	‡‡‡‡‡‡‡‡	Ground Water Level not Intercepted	Stoney Clay Loom	TOPSOIL	212, 106	
300	%%%%			SILT with gravel inclusions, brown, hard, dry	212, 139	
600	%%%%			orange streaks	222, 163	
900	#####			CLAY with gravel inclusions white/grey, very stiff, dry	163, 122	
1200	#####			black rocks	204, 187	
1500	#####				196, 171	
1800	#####			red/orange streaks	196, 163	
2100	#####				228	
2400				E.O.B at 2.4m	0	
2700				Where Scala Penetrometer reading 8 blows/50mm Classification of material assumed as moderately weathered greywacke rock	0	
3000					0	
3300					0	
3600					0	
3900					0	
4200					0	
4500					0	
4800					0	
5100					0	
5400					0	

Drill Methods	50-100 mm hand auger	**Note:**
Test Location	Refer to site plan	1. The subsurface data described above has been determined at a specific borehole location. The data
Test Date	26/07/2023	will not identify any variations away from the location.
Inspector	KC	2. UTP - Unable to penetrate.

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BOREHOLE LOG NO - AH5

Project: 38 Reef View Road
Client: Trethewey, Terry
Job No: 23-034

PK ENGINEERING
CHARTERED PROFESSIONAL ENGINEERS

Graphic Symbol	@@@	#####	%%%	ØØØ	‡‡‡‡‡		ÐÐÐÐÐ	In situ shear vane reading
	FILL	CLAY	SILT	SAND	TOP SOIL	ROCK	Organic Soil	Remoulded shear vane reading
								Scale Penetrometer

Depth (mm)	Graphical Log	GWL	Soil Type	Field Description	Undrained Shear Strength (kPa)	Scale Penetrometer (blows/300mm)
	‡‡‡‡‡‡‡‡‡	Ground Water Level not Intercepted		TOPSOIL	186, 160	
300	#####			Silly, CLAY, grey, very stiff, dry	166, 160	
600	#####			gravel inclusions with orange specs	228	
900	#####				228	
1200	#####			black rocks, red streaks	228	
1500	#####			gravel inclusions	215, 173	
1800	#####			CLAY, red/orange, very stiff, dry	163, 143	
2100	#####			E.O.B at 2.2m		
2400	#####			inferred clays and or silts		
2700	#####					
3000	#####					
3300						
3600						
3900						
4200						
4500						
4800						
5100						
5400						

Drill Methods	50-100 mm hand auger	**Note:**
Test Location	Refer to site plan	1. The subsurface data described above has been determined at a specific borehole location. The data
Test Date	26/07/2023	will not identify any variations away from the location.
Inspector	KC	2. UTP - Unable to penetrate.

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P K ENGINEERING LIMITED

90 KERIKERI RD Phone (09) 4073255 EMAIL pk.engin@xtra.co.nz

PENETROMETER HOLE No.

SHT. 1 of 2

Location: 38 Reef View Road, Ahipara

Job No. 23-034

Driven by: KC

Date: 26/07/2023

R.L at Ground Level: n/a

GWL:

Depth	PT1	PT2	PT3	PT4	Depth	PT1	PT2	PT3	PT4	Depth	PT1	PT2	PT3	PT4	Depth	PT1	PT2	PT3	PT4
50					2550	3			2	5050					7550				
100					2600	3			3	5100					7600				
150					2650	4			5	5150					7650				
200					2700	6			2	5200					7700				
250					2750	6			4	5250					7750				
300					2800	6			4	5300					7800				
350					2850	9		1	4	5350					7850				
400	1				2900	12		2	2	5400					7900				
450	1				2950	15		2	2	5450					7950				
500	1				3000			1	4	5500					8000				
550	1				3050			1	5	5550					8050				
600	2				3100			2	6	5600					8100				
650	1				3150			3	6	5650					8150				
700	1				3200			3	6	5700					8200				
750	2				3250		1	2	5	5750					8250				
800	1				3300		1	3	8	5800					8300				
850	1				3350		2	2	8	5850					8350				
900	1				3400		1	4	8	5900					8400				
950	1				3450		1	5	9	5950					8450				
1000	1				3500		2	5	9	6000					8500				
1050	1				3550		3	6	10	6050					8550				
1100	1				3600		3	6	9	6100					8600				
1150	1				3650		4	5	12	6150					8650				
1200	1				3700		5	5		6200					8700				
1250	1				3750		4	7		6250					8750				
1300	2				3800		5	7		6300					8800				
1350	1				3850		4	12		6350					8850				
1400	3				3900		6	15		6400					8900				
1450	4				3950		6			6450					8950				
1500	3				4000		6			6500					9000				
1550	3				4050		5			6550					9050				
1600	4				4100		5			6600					9100				
1650	4				4150		9			6650					9150				
1700	3				4200		10			6700					9200				
1750	3				4250		10			6750					9250				
1800	2				4300		9			6800					9300				
1850	3				4350		9			6850					9350				
1900	3				4400		6			6900					9400				
1950	3				4450		10			6950					9450				
2000	3				4500		10			7000					9500				
2050	3				4550		10			7050					9550				
2100	5				4600		11			7100					9600				
2150	3				4650					7150					9650				
2200	4				4700					7200					9700				
2250	4				4750					7250					9750				
2300	3				4800					7300					9800				
2350	3				4850					7350					9850				
2400	3				4900					7400					9900				
2450	3				4950					7450					9950				
2500	4			1	5000					7500					10000				

P K ENGINEERING LIMITED

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PENETROMETER HOLE No.

SHT. 2 of 2

Location: 38 Reef view Road, Ahipara

Job No. 23-034

Driven by: KC

Date: 26/07/2023

R.L at Ground Level: n/a

GWL:

Depth	PT1	PT2	PT3	PT4	Depth	PT1	PT2	PT3	PT4	Depth	PT1	PT2	PT3	PT4	Depth	PT1	PT2	PT3	PT4
50					2550	2				5050					7550				
100					2600	2				5100					7600				
150					2650	3				5150					7650				
200					2700	4				5200					7700				
250					2750	5				5250					7750				
300					2800	5				5300					7800				
350					2850	5				5350					7850				
400					2900	6				5400					7900				
450					2950	7				5450					7950				
500					3000	6				5500					8000				
550					3050	7				5550					8050				
600					3100	7				5600					8100				
650					3150	6				5650					8150				
700					3200	6				5700					8200				
750					3250	5				5750					8250				
800					3300	10				5800					8300				
850					3350	9				5850					8350				
900					3400	9				5900					8400				
950					3450	7				5950					8450				
1000					3500	8				6000					8500				
1050					3550	7				6050					8550				
1100					3600	7				6100					8600				
1150					3650	10				6150					8650				
1200					3700	11				6200					8700				
1250					3750	11				6250					8750				
1300					3800					6300					8800				
1350					3850					6350					8850				
1400					3900					6400					8900				
1450					3950					6450					8950				
1500					4000					6500					9000				
1550					4050					6550					9050				
1600					4100					6600					9100				
1650					4150					6650					9150				
1700					4200					6700					9200				
1750					4250					6750					9250				
1800					4300					6800					9300				
1850					4350					6850					9350				
1900					4400					6900					9400				
1950					4450					6950					9450				
2000					4500					7000					9500				
2050					4550					7050					9550				
2100					4600					7100					9600				
2150					4650					7150					9650				
2200					4700					7200					9700				
2250	1				4750					7250					9750				
2300	1				4800					7300					9800				
2350	1				4850					7350					9850				
2400	1				4900					7400					9900				
2450	1				4950					7450					9950				
2500	1				5000					7500					10000				

EXISTING LOT 37

5437 M2

DP 127389

PROPOSED LOT 1

AREA = 3184 M2

NOTE TWO OPTIONS FOR STORMWATER ATTENUATION
OPTION 1 ATTENUATE HOUSE AND DRIVE TOGETHER
OPTION 2 ATTENUATE HOUSE AND DRIVE SEPERATELY
ALLOWS FOR SOME POTABLE WATER

OPTION 2

OPTION 1

WATER COARSE

25,000ltr HOUSE AND DRIVE ATTENUATION TANK DISCHARGING TO SUITABLE DISPERSAL SYSTEM

FORMED SWALE DRAIN CATCHING DRIVEWAY RUN-OFF

Ø 300mm CULVERT EXIT

10,000ltr UG TANK TO ATTENUATE DRIVEWAY FLOWS

79.33

130° 55 ' 30"

Ø150mm uPVC PIPE

Ø100mm uPVC PIPE

Ø100mm uPVC PIPE

CESS PIT CATCHING DRIVEWAY SW FLOWS DISCHARGING TO EITHER OPTION 1 OR OPTION 2

PROPOSED DRIVEWAY & TURNAROUND

PROPOSED LOT 2

AREA = 2253 M2

25,000ltr HOUSE ROOF TANK FOR POTABLE WATER AND ATTENUATION PURPOSES. OVERFLOW DISCHARGING TO DISPERSAL SYSTEM.

PROPOSED HOUSE

AH1

AH2

AH3

AH4

AH5

SEWER CONNECTION
FGL = 28.55
IL = 28.10

TANK

LOT 25 (LEGAL ACCESS)

EXISTING DRIVEWAY

REEF VIEW ROAD

HIGHFIELDS DR

OPEN DRAIN

NORTH

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REV:	DESCRIPTION:	BY:	DATE:

STATUS: ISSUED TO CLIENT

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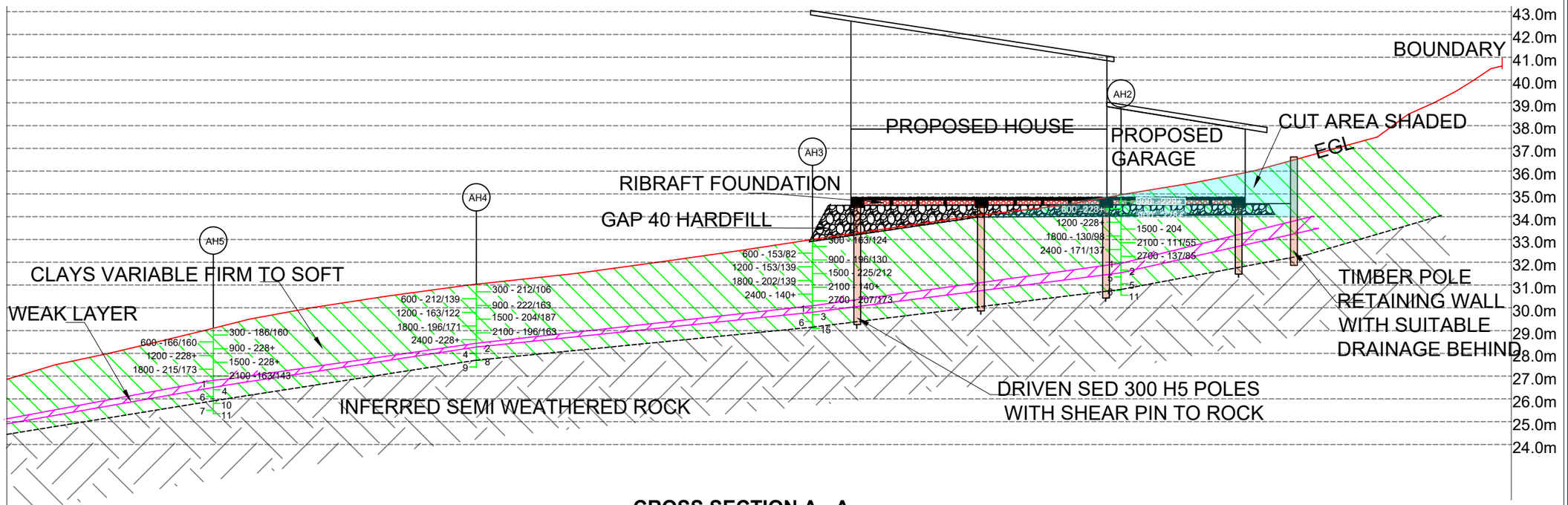
Phone Number: 09 407 3255
Email: teampk@pkengin.co.nz

CLIENT: TERRY & TAWA TRETHEWEY
38 REEF VIEW ROAD
AHIPARA
LOT 37 DP127389

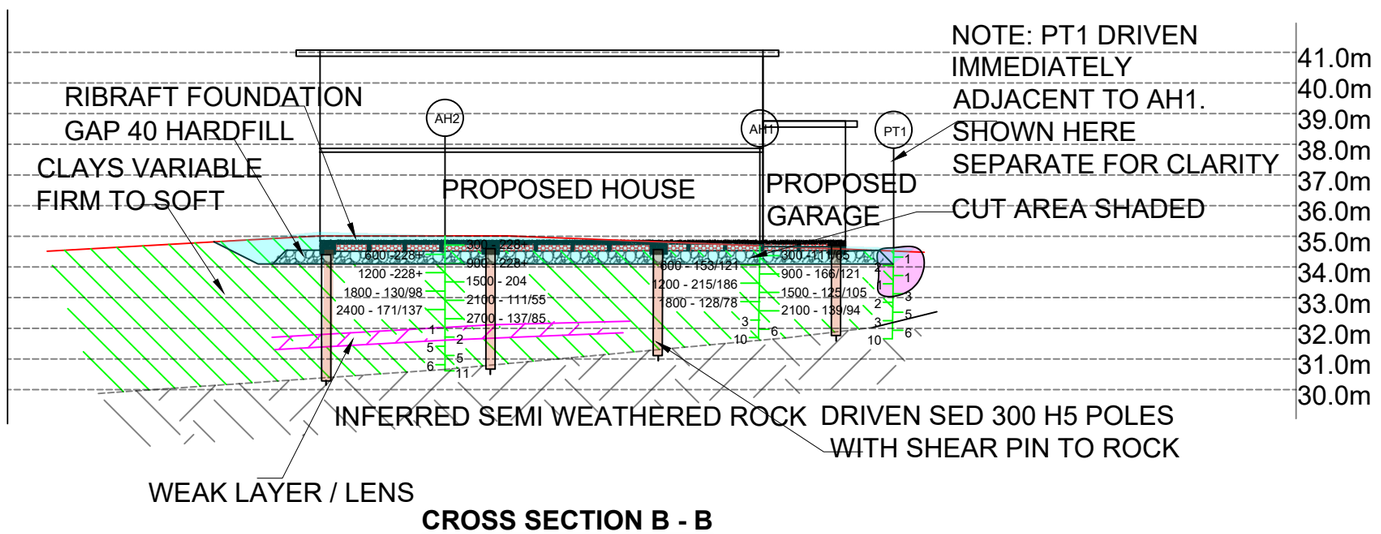
SITE: PROPOSED LOT 2,
38 REEF VIEW ROAD

TITLE: SITE PLAN

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:250	SEPT. 2023	RD	PK
PROJECT NO:	DRAWING NO:		REVISION:
23-034	SG1		0



CROSS SECTION A - A



CROSS SECTION B - B

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STATUS:	ISSUED TO CLIENT		

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CLIENT: TERRY & TAWA TRETHEWEY
38 REEF VIEW ROAD
AHIPARA
LOT 37 DP127389

SITE: PROPOSED LOT 2,
38 REEF VIEW ROAD

TITLE: CROSS SECTION A- A & B - B

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:200	SEPT. 2023	RD	PK
PROJECT NO:	DRAWING NO:		REVISION:
23-034	SG2		0

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CLIENT: TERRY & TAWA TRETHEWEY
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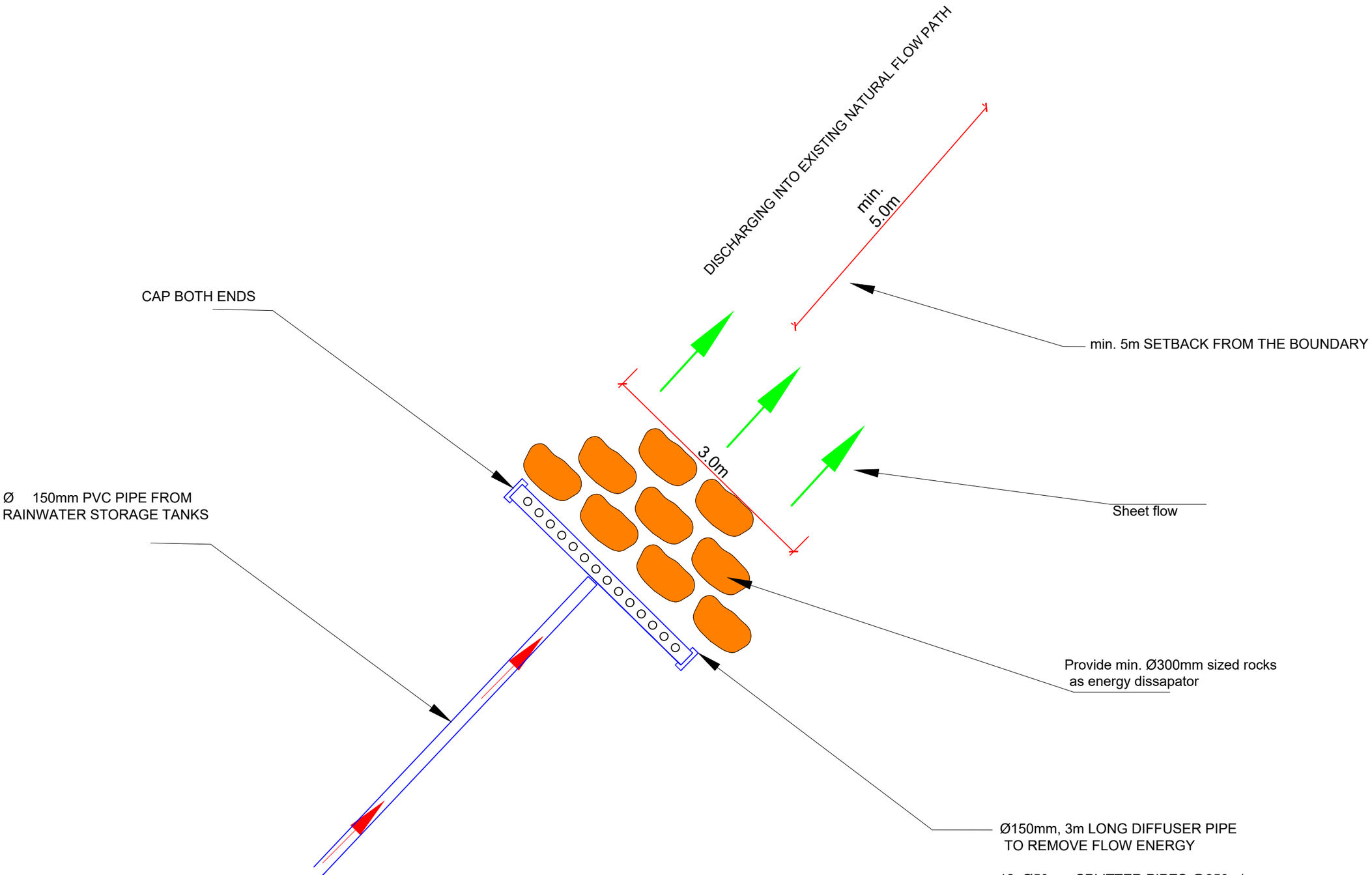
AHIPARA
LOT 37 DP127389

SITE: PROPOSED LOT 2,
38 REEF VIEW ROAD

TITLE: NATURAL HAZARDS

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:1000	SEPT. 2023	RD	PK
PROJECT NO:	DRAWING NO:		REVISION:
23-034	SG3		0



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4. IN THE EVENT THAT THERE IS ANY CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATION THEN THE REQUIREMENTS OF THE DRAWINGS SHALL TAKE PRECEDENCE, WITH THE DETAIL DRAWINGS TAKING PRECEDENCE OVER THE GENERAL NOTES.

REV:	DESCRIPTION:	BY:	DATE:
STATUS:	ISSUED TO CLIENT		

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CLIENT: TERRY & TAWA TRETHEWEY
38 REEF VIEW ROAD
AHIPARA
LOT 37 DP127389

SITE: PROPOSED LOT 2,
38 REEF VIEW ROAD

TITLE: DISPERSAL SYSTEM DETAIL
NTS

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
1:1000	SEPT. 2023	RD	PK
PROJECT NO:	DRAWING NO:		REVISION:
23-034	SG3		0

10yr

1 **Rational method** 48hr

Pre – Development water flow

(Original water flow) Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	319.00	0	0	0	0	319	0
Runoff coefficent		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.65	0.59	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		3.20	3.20	3.20	3.20	3.20	3.20
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000

Pre – development flow of developed area	Qp (m^3/sec)	Qp (L/sec)
	0.0002	0.17

Post – Development water flow

Any area where there is a change in the impermiablity values

Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Vegetation 4 (m^2)
	319.00	319	0	0	0
OK					
Use "C" values from FNDC TR55 chart		Ci (coefficient) 0.96	Ci (coefficient) FALSE	Ci (coefficient) FALSE	Ci (coefficient) FALSE
Generally do not use slope adjustment Ci factor if using TR5		0.96	0.96	0.9	0.59
Rainfall intensity rat		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-210		3.57	3.57	3.57	3.57
Use an appropiate event for the situatic					
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000
		Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)
		0.30	0.00	0.00	0.00

Pre-development area where there is a change in impermeable surfaces but not collected in atenuation system

	Concrete & smooth seal 5 (m^2)	Metaled area or vegetation 6 (m^2)
	0	0
Ci (coefficient)	0.2	0.3
"C" value difference between Pre & Pos	Maximum value 0.2 (at the moment)	
I (mm/hr)	3.20	3.20
Qc (m^3/sec)	0.000	0.000
Qc (L/sec)	0.00	0.00

Any area where there to the impermiablity v

Metaled area or seal 7 (m^2)	
0	
Ci (coefficient)	FALSE
	0.96
I (mm/hr)	3.20
Qc (m^3/sec)	0.000
Qc (L/sec)	0.00

Total included in attenuation system calc post – development flow	Qa (m^3/sec)	Qa (L/sec)
	0.000	0.14

Total impermeable excluded from attenuation system collectio	Qby (m^3/sec)	Qby (L/sec)
	0.000	0.00

Total no change, excl attenuation system ca	Qby (m^3/sec)
	0.000

Post – Pre development flow	Qtpp (m^3/sec)	Qtpp (L/sec)
	0.0001	0.14

Total post development flow Developed flow + undeveloped flow	Qatt (m^3/sec)	Qatt (L/sec)
	0.0003	0.30

0 to 10min

1b **Rational method** 48hr

Total catchment pre-development flow

Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	319.00	0	0	0	0	319	0
Runoff coefficent		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.8	0.59	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		3.20	3.20	3.20	3.20	3.20	3.20
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000

Catchment area pre – development flow	Qcap (m^3/sec)	Qcap (L/sec)
	0.0002	0.17

312.1019108

2

	Round	Square		Calculation (initial) Total tank area	Calculation (initial) Total tank volume	Calculation (initial) usable height hmax (m)	Calculation (final) Additional area
Select 1 for type of tank/area, 0 for other		1		m^2	m^3	0.8	Nil
Estimate storage volume			Tank radius	13.13	10.50	OK	Total area
Adjust to match max Vstored	Num. Of tanks		r (m)		Initial calculation	OK	Same as initial
Round area	0		1.8	0.00	hstor max.	0.793	Final volume
	Num. Of tanks	Width	Length	m^2	Vstored max.	10.41	Same as initial
Square/rectangular area	1	1.25	10.5	13.13	Vstored min.	0.050	
					0.05 to3.5% left @ 48hr	0.48	
Short tube, 0.76	Orifice type "u"	g				OK	Same as initial
Thin sharp, 0.62	0.76	9.8067			Graph, 24hr Vstored 2520m	0.138	Not used
					Max.10% left @ 24hr from initial calc.	1.32	1.32
					or add extra volume		

	48hr	24hr	12hr	6hr	2hr	60	30
Pre – development flow	C20	L20	U20	A020	AM20	AV20	BE20
3 of developed area	0.00017	0.00028	0.00047	0.00074	0.00143	0.00207	0.00288

Pre–development flow matches 2hr 40min. Intensity	Qp (m^3/sec)	Qp (L/sec)		Qin max.			Slope factor adjustment at
Uses (80min.crossover O126) as a source value	0.0012	1.2350		0.00439		48hr program	Min.crossover
Do not change	OK					Min.crossover	Chart point (min.)
For calculation purposes this section changes	Dia check	Dia	Area	Qout 1520 (L/sec)	Qout (m^3/sec)	Chart point (min.)	0.91
the dia only and thereby the area	0.0229	0.02285	0.0004	1.196	0.00120	1520	peak flow
The information is not used for anything else		22.85		0		1520	Chart point (max.)
	If additional storage is required use the original/inital orifice size and calc. height						0.15

4

Calculate maximum storage volume

Chart intensity hr values	Chart intensity accumulated	Storm duration- THR	Storm duration- Event data, TMINS	Attenuation calc. tota Direct to Atten.	Catchment pre-devel. plus orifice flow out	For period 2081-2100 CC (RCP6) Intensity. Post-devel I, (mm/hr)	Ahipara Current(0 deg) Pre-devl I, (mm/hr)
steps used	minute steps	(hr)	mins	Qa (L/sec)	Qtin (L/sec)	10 yr	10 yr
48	720	12.00	720	0.14	0.25	3.57	3.2
24	1080	6.00	360	0.2	0.5	6.16	5.45
12	1260	3.00	180	0.4	0.8	10.3	8.94
6	1380	2.00	120	0.7	1.2	16.7	14.2
2	1410	0.50	30	1.4	2.0	32.9	27.3
1	1425	0.25	15	2.0	2.8	47.9	39.5
30	1430	0.08	5	2.8	3.7	66.8	55.1
20	1435	0.08	5	3.4	4.3	79.9	65.8
10	1440	0.08	5	4.4	5.5	105	86.8
10	1445	0.08	5	4.4	5.5	105	86.8
20	1450	0.08	5	3.4	4.6	79.9	65.8
30	1455	0.08	5	2.8	4.0	66.8	55.1
	1470	0.25	15	2.0	3.3	47.9	39.5
2	1500	0.50	30	1.4	2.7	32.9	27.3
6	1620	2.00	120	0.7	1.8	16.7	14.2
12	1800	3.00	180	0.4	1.1	10.3	8.94
24	2160	6.00	360	0.2	0.5	6.16	5.45
48	2880	12.00	720	0.1	0.3	3.57	3.2

Catchment flow Qpat (cell MAX(P109:P130)	Qcap max.	Qp (m^3/sec)	Qp (L/sec)	Qout max. (m^3/sec)	Qout max. (L/sec)	Vstored max. Vol. stored, (m^3)
Catchment flow = orifice flow out + catchment pre-development flow	2.530	0.0025	2.5	0.00252	2.52	10.381
						OK
For calculation purposes this section changes	Dia check	Dia	Area			OK
the dia only and thereby the area	0.0328	0.03271	0.0008			
The information is not used for anything else		32.71				
		Use this orifice size for final design				

100yr

1 **Rational method** 48hr

Pre – Development water flow

(Original water flow) Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	319.00	0	0	0	0	319	0
Runoff coefficien		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.53	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.65	0.53	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		4.96	4.96	4.96	4.96	4.96	4.96
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000
Pre – development flow		Qp (m^3/sec)	Qp (L/sec)				
of developed area		0.0002	0.23				

Post – Development water flow

Any area where there is a change in the impermiablity values

Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Tanks Or rough seal 3 (m^2)	Vegetation 4 (m^2)
	319.00	319	0		0
OK					
		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		0.96	FALSE	FALSE	FALSE
Generally do not use slope adjustment Ci factor if using TR5		0.96	0.96	0.9	0.59
Rainfall intensity rat		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-210		5.57	5.57	5.57	5.57
Use an appropiate event for the situatic					
Flow rate of surface wate		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000
		Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)
		0.47	0.00	0.00	0.00

Pre-development area where there is a change in impermeable surfaces but not collected in atenuation system

Concrete & smooth seal 5 (m^2)	Metaled area or vegetation 6 (m^2)
0	0
Ci (coefficient)	Ci (coefficient)
0.2	0.3
"C" value difference between Pre & Po	
Maximum value 0.2 (at the moment)	
I (mm/hr)	I (mm/hr)
4.96	4.96
Qc (m^3/sec)	Qc (m^3/sec)
0.000	0.000
Qc (L/sec)	Qc (L/sec)
0.00	0.00

Any area where there to the impermiablity v

Metaled area or seal 7 (m^2)
0
Ci (coefficient)
0.96
I (mm/hr)
4.96
Qc (m^3/sec)
0.000
Qc (L/sec)
0.00

Total included in attenuation system calc	Qa (m^3/sec)	Qa (L/sec)
post – development flow	0.000	0.24

Post – Pre development flow	Qtpp (m^3/sec)	Qtpp (L/sec)
	0.0002	0.24

Total post development flow Developed flow + undeveloped flow	Qatt (m^3/sec)	Qatt (L/sec)
	0.0005	0.47

0 to 10min

Total impermeable excluded from attenuation system collectio

Qby (m^3/sec)	Qby (L/sec)
0.000	0.00

Total no change, exclu attenuation system ca

Qby (m^3/sec)
0.000

1b **Rational method** 48hr

Total catchment pre-development flow

Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	319.00	0	0	0	0	319	0
Runoff coefficien		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.8	0.59	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		4.96	4.96	4.96	4.96	4.96	4.96
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000
Catchment area pre – development flow		Qcap (m^3/sec)	Qcap (L/sec)				
		0.0003	0.26				

2

	Round	Square		Calculation (initial) Total tank area m^2	Calculation (initial) Total tank volume m^3	Calculation (initial) usable height hmax (m)	Calculation (final) Additional area m^2
Select 1 for type of tank/area, 0 for other		1				1.64	Nil
Estimate storage volume			Tank radius	13.13	21.53	OK	Total area
Adjust to match max Vstored	Num. Of tanks		r (m)		Initial calculation	OK	Same as initial
Round area			0.95	0.00	hstor max.	1.631	Final volume
	Num. Of tanks	Width	Length	m^2	Vstored max.	21.41	Same as initial
Square/rectangular area	1	1.25	10.5	13.13	Vstored min.	0.173	
					0.05 to3.5% left @ 48hr	0.81	
Short tube, 0.76	Orifice type "u"	g				OK	Same as initial
Thin sharp, 0.62	0.76	9.8067			Graph, 24hr Vstored 2520m	0.489	Not used
					Max.10% left @ 24hr from initial calc. or add extra volume	2.28	2.28

	48hr	24hr	12hr	6hr	2hr	60	30
Pre – development flow	C20	L20	U20	AD20	AM20	AV20	BE20
of developed area	0.00023	0.00039	0.00065	0.00102	0.00196	0.00282	0.00393

3

	Qp (m^3/sec)	Qp (L/sec)		Qin max.			Slope factor adjustment at
Pre–development flow matches 2hr 40min. Intensity							
Uses (80min.crossover O126) as a source value	0.0017	1.7314		0.00746			Min.crossover
Do not change	OK					48hr program	Chart point (min.)
For calculation purposes this section changes	Dia check	Dia	Area	Qout 1520 (L/sec)	Qout (m^3/sec)	Min.crossover Chart point (min.)	0.91
the dia only and thereby the area	0.0226	0.02262	0.0004	1.710	0.00171	1520	peak flow
The information is not used for anything else		22.62		0		1520	Chart point (max.)
		If additional storage is required use the original/inital orifice size and calc. height					0.15

4

Calculate maximum storage volume

Chart intensity hr values	Chart intensity accumulated	Storm duration- THR	Storm duration- Event data, TMINS	Attenuation calc. tota Direct to Atten.	Catchment pre-devel. plus orifice flow out	For period 2081-2100 CC (RCP6) Intensity. Post-devel I, (mm/hr)	Ahipara Current(0 deg) Pre-devl I, (mm/hr)
steps used	minute steps	(hr)	mins	Qa (L/sec)	Qtin (L/sec)	100 yr	100 yr
48	720	12.00	720	0.24	0.40	5.57	4.96
24	1080	6.00	360	0.4	0.8	9.59	8.41
12	1260	3.00	180	0.7	1.2	16	13.8
6	1380	2.00	120	1.2	1.8	25.8	21.7
2	1410	0.50	30	2.3	3.1	50.6	41.7
1	1425	0.25	15	3.4	4.2	73.4	60.1
30	1430	0.08	5	4.8	5.6	102	83.6
20	1435	0.08	5	5.7	6.5	122	99.7
10	1440	0.08	5	7.5	8.2	160	131
10	1445	0.08	5	7.5	8.2	160	131
20	1450	0.08	5	5.7	6.8	122	99.7
30	1455	0.08	5	4.8	6.0	102	83.6
	1470	0.25	15	3.4	4.8	73.4	60.1
2	1500	0.50	30	2.3	3.9	50.6	41.7
6	1620	2.00	120	1.2	2.7	25.8	21.7
12	1800	3.00	180	0.7	1.9	16	13.8
24	2160	6.00	360	0.4	0.9	9.59	8.41
48	2880	12.00	720	0.2	0.4	5.57	4.96

Catchment flow Qpat (cell MAX(P109:P130)	Qcap max.	Qp (m^3/sec)	Qp (L/sec)	Qout max. (m^3/sec)	Qout max. (L/sec)	Vstored max. Vol. stored, (m^3)
Catchment flow = orifice flow out + catchment pre-development flow	3.110	0.0031	3.1	0.00310	3.10	21.392
						OK
For calculation purposes this section changes		Dia	Area			OK
the dia only and thereby the area	0.0303	0.03031	0.0007			
The information is not used for anything else		30.31				
		Use this orifice size for final design				

	Fixed value	100yr	10yr	
u	g	Desc hrs	Desc hrs	
0.76	9.8067	1.5	1.6	**Adjust until orifices are closest to the values of tab 10yr & 100yr "cell D136"**

Change orifice factor "u" to suit, short tube 0.76 & thin sharp edge 0.62

	Va100yr	Qav	**ho100yr**	hav	Or100yr
100yr	21.41	0.0040	1.64	0.82	**0.0407**
100yr tab	***Cell H86***		***Cell H82***		**30.3**

	Va10yr	Qav	**ho10yr**	hav	**Or10yr**
10yr	10.41	0.0018	0.8	0.40	**0.0329**
10yr tab	***Cell H86***		***Cell H82***		**32.7**

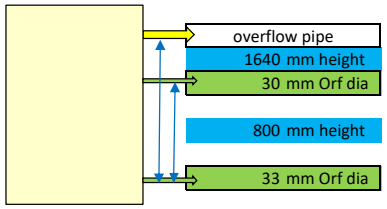
	Vdet	Qav	htop	hhalf	
100 - 10yr	11.00	0.0020	0.84	0.42	0.4200

	Vocomb	Qav	hchart	hav	OK	
10yr cor.	12.85	0.0022	1.22	0.61	0.0329	0.0008
	Adjust c21 until G20 get Ok					Area

	Vtop	Qav	htop	hav	**Ortop**
100-10yrcor	8.56	0.0016	0.84	0.42	0.0304

1.64	**ho100yr**	Total storage height required
0.033	**Or10yr**	Size of lower orifice (fitted 150mm above bottom/base if tank for attenuation only)
0.80	**ho10yr**	Storage height at which Ortop is fitted
0.030	**Ortop**	Size of second orifice (fitted at ho10yr above lower orifice Or10yr)

0.84 Height from overflow outlet invert to Ortop invert



Attenuation System Parameters

	Orifice diameter	**Orifice invert location**		
ARI 10	**33 mm**	**1640 mm** below overflow invert		
ARI 100	**30 mm**	**840 mm** below overflow invert		
Tank Size	**1 x**	**25,000**	**litres @**	**3.0 m Ø**
ARI 10		**10,409.3 litres**		
ARI 100		**21,405.6 litres**		
Reuse		**3,594.4 litres**		

0

10yr

1 **Rational method** 48hr

Pre – Development water flow

(Original water flow) Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	128.00	0	0	0	0	128	0
Runoff coefficent		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.65	0.59	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		3.20	3.20	3.20	3.20	3.20	3.20
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000

Pre – development flow of developed area	Qp (m^3/sec)	Qp (L/sec)
	0.0001	0.07

Post – Development water flow

Any area where there is a change in the impermiablity values

Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Vegetation 4 (m^2)
	128.00	128	0	0	0
OK					
Use "C" values from FNDC TR55 chart		Ci (coefficient) 0.96	Ci (coefficient) FALSE	Ci (coefficient) FALSE	Ci (coefficient) FALSE
Generally do not use slope adjustment Ci factor if using TR5		0.96	0.96	0.9	0.59
Rainfall intensity rat		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-210		3.57	3.57	3.57	3.57
Use an appropiate event for the situatic					
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000
		Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)
		0.12	0.00	0.00	0.00

Pre-development area where there is a change in impermeable surfaces but not collected in atenuation system

Concrete & smooth seal 5 (m^2)	Metaled area or vegetation 6 (m^2)
0	0
Ci (coefficient) 0.2	Ci (coefficient) 0.3
"C" value difference between Pre & Pos	
Maximum value 0.2 (at the moment)	
I (mm/hr) 3.20	I (mm/hr) 3.20
Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000
Qc (L/sec) 0.00	Qc (L/sec) 0.00

Any area where there to the impermiablity v

Metaled area or seal 7 (m^2)
0
Ci (coefficient) 0.96
I (mm/hr) 3.20
Qc (m^3/sec) 0.000
Qc (L/sec) 0.00

Total included in attenuation system calc post – development flow	Qa (m^3/sec)	Qa (L/sec)
	0.000	0.05

Total impermeable excluded from attenuation system collectio	Qby (m^3/sec)	Qby (L/sec)
	0.000	0.00

Total no change, excl attenuation system ca	Qby (m^3/sec)
	0.000

Post – Pre development flow	Qtpp (m^3/sec)	Qtpp (L/sec)
	0.0001	0.05

Total post development flow Developed flow + undeveloped flow	Qatt (m^3/sec)	Qatt (L/sec)
	0.0001	0.12

0 to 10min

1b **Rational method** 48hr

Total catchment pre-development flow

Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	128.00	0	0	0	0	128	0
Runoff coefficent		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.8	0.59	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		3.20	3.20	3.20	3.20	3.20	3.20
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000

Catchment area pre – development flow	Qcap (m^3/sec)	Qcap (L/sec)
	0.0001	0.07

312.1019108

2

	Round	Square		Calculation (initial) Total tank area	Calculation (initial) Total tank volume	Calculation (initial) usable height	Calculation (final) Additional area
				m^2	m^3	hmax (m)	m^2
Select 1 for type of tank/area, 0 for other		1				0.36	Nil
Estimate storage volume			Tank radius	11.15	4.01	OK	Total area
Adjust to match max Vstored	Num. Of tanks		r (m)		Initial calculation	OK	Same as initial
Round area			1.8	0.00	hstor max.	0.369	Final volume
	Num. Of tanks	Width	Length	m^2	Vstored max.	4.11	Same as initial
Square/rectangular area	1	1.115	10	11.15	Vstored min.	0.019	
					0.05 to3.5% left @ 48hr	0.46	
Short tube, 0.76	Orifice type "u"	g				OK	Same as initial
Thin sharp, 0.62	0.76	9.8067			Graph, 24hr Vstored 2520m	0.052	Not used
					Max.10% left @ 24hr from initial calc.	1.28	1.28
					or add extra volume		

	48hr	24hr	12hr	6hr	2hr	60	30
Pre – development flow	C20	L20	U20	A020	AM20	AV20	BE20
3 of developed area	0.00007	0.00011	0.00019	0.00030	0.00057	0.00083	0.00116

Pre–development flow matches 2hr 40min. Intensity	Qp (m^3/sec)	Qp (L/sec)		Qin max.			Slope factor adjustment at
Uses (80min.crossover O126) as a source value	0.0005	0.4956		0.00176		48hr program	Min.crossover
Do not change	OK					Min.crossover	Chart point (min.)
For calculation purposes this section changes	Dia check	Dia	Area	Qout 1520 (L/sec)	Qout (m^3/sec)	Chart point (min.)	0.91
the dia only and thereby the area	0.0177	0.01768	0.0002	0.486	0.00049	1520	peak flow
The information is not used for anything else		17.68		0		1520	Chart point (max.)
		If additional storage is required use the original/inital orifice size and calc. height					0.15

4

Calculate maximum storage volume

Chart intensity hr values	Chart intensity accumulated	Storm duration- THR	Storm duration- Event data, TMINS	Attenuation calc. tota Direct to Atten.	Catchment pre-devel. plus orifice flow out	For period 2081-2100 CC (RCP6) Intensity. Post-devel I, (mm/hr)	Ahipara Current(0 deg) Pre-devl I, (mm/hr)
steps used	minute steps	(hr)	mins	Qa (L/sec)	Qtin (L/sec)	10 yr	10 yr
48	720	12.00	720	0.05	0.10	3.57	3.2
24	1080	6.00	360	0.1	0.2	6.16	5.45
12	1260	3.00	180	0.2	0.3	10.3	8.94
6	1380	2.00	120	0.3	0.5	16.7	14.2
2	1410	0.50	30	0.6	0.8	32.9	27.3
1	1425	0.25	15	0.8	1.1	47.9	39.5
30	1430	0.08	5	1.1	1.5	66.8	55.1
20	1435	0.08	5	1.3	1.7	79.9	65.8
10	1440	0.08	5	1.8	2.2	105	86.8
10	1445	0.08	5	1.8	2.2	105	86.8
20	1450	0.08	5	1.3	1.8	79.9	65.8
30	1455	0.08	5	1.1	1.6	66.8	55.1
	1470	0.25	15	0.8	1.3	47.9	39.5
2	1500	0.50	30	0.6	1.1	32.9	27.3
6	1620	2.00	120	0.3	0.7	16.7	14.2
12	1800	3.00	180	0.2	0.4	10.3	8.94
24	2160	6.00	360	0.1	0.2	6.16	5.45
48	2880	12.00	720	0.1	0.1	3.57	3.2

Catchment flow Qpat (cell MAX(P109:P130)	Qcap max.	Qp (m^3/sec)	Qp (L/sec)	Qout max. (m^3/sec)	Qout max. (L/sec)	Vstored max. Vol. stored, (m^3)
Catchment flow = orifice flow out + catchment pre-development flow	1.010	0.0010	1.0	0.00102	1.02	4.118
						OK
						OK
For calculation purposes this section changes	Dia check	Dia	Area			
the dia only and thereby the area	0.0253	0.02523	0.0005			
The information is not used for anything else		25.23				
		Use this orifice size for final design				

100yr

1 **Rational method** 48hr

Pre – Development water flow

(Original water flow) Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
128.00	0	0	0	0	128	0
Runoff coefficient	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	FALSE	FALSE	FALSE	FALSE	0.53	FALSE
Generally do not use slope adjustment Ci factor if using TR55	0.96	0.96	0.8	0.65	0.53	0.59
Rainfall intensity	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100	4.96	4.96	4.96	4.96	4.96	4.96
Use an appropiate event for the situation						
Flow rate of surface water	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000	0.000	0.000

Pre – development flow of developed area	Qp (m^3/sec)	Qp (L/sec)
	0.0001	0.09

Post – Development water flow

	Any area where there is a change in the impermiablity values				Pre-development area where there is a change in impermeable surfaces but not collected in atenuation system		Any area where there to the impermiablity v
Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Tanks Or rough seal 3 (m^2)	Vegetation 4 (m^2)	Concrete & smooth seal 5 (m^2)	Metaled area or vegetation 6 (m^2)	Metaled area or seal 7 (m^2)
128.00	128	0	0	0	0	0	0
OK							
Use "C" values from FNDC TR55 chart	Ci (coefficient) 0.96	Ci (coefficient) FALSE	Ci (coefficient) FALSE	Ci (coefficient) FALSE	Ci (coefficient) 0.2	Ci (coefficient) 0.3	Ci (coefficient) FALSE
Generally do not use slope adjustment Ci factor if using TR5	0.96	0.96	0.9	0.59	"C" value difference between Pre & Po Maximum value 0.2 [at the moment]		0.96
Rainfall intensity rat	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-210	5.57	5.57	5.57	5.57	4.96	4.96	4.96
Use an appropiate event for the situatic							
Flow rate of surface wate	Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000	Qc (m^3/sec) 0.000
	Qc (L/sec) 0.19	Qc (L/sec) 0.00	Qc (L/sec) 0.00	Qc (L/sec) 0.00	Qc (L/sec) 0.00	Qc (L/sec) 0.00	Qc (L/sec) 0.00

Total included in attenuation system calc post – development flow	Qa (m^3/sec)	Qa (L/sec)
	0.000	0.10

Total impermeable excluded fron attenuation system collectio	Qby (m^3/sec)	Qby (L/sec)
	0.000	0.00

Total no change, exclu attenuation system ca	Qby (m^3/sec)
	0.000

Post – Pre development flow	Qtpp (m^3/sec)	Qtpp (L/sec)
	0.0001	0.10

Total post development flow Developed flow + undeveloped flow	Qatt (m^3/sec)	Qatt (L/sec)
	0.0002	0.19

0 to 10min

1b **Rational method** 48hr

Total catchment pre-development flow

Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
128.00	0	0	0	0	128	0
Runoff coefficient	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55	0.96	0.96	0.8	0.8	0.59	0.59
Rainfall intensity	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100	4.96	4.96	4.96	4.96	4.96	4.96
Use an appropiate event for the situation						
Flow rate of surface wate	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000	0.000	0.000

Catchment area pre – development flow	Qcap (m^3/sec)	Qcap (L/sec)
	0.0001	0.10

2

	Round	Square		Calculation (initial) Total tank area	Calculation (initial) Total tank volume	Calculation (initial) usable height hmax (m)	Calculation (final) Additional area
				m^2	m^3	0.75	m^2
Select 1 for type of tank/area, 0 for other	0	1					Nil
Estimate storage volume			Tank radius	11.15	8.36	OK	Total area
Adjust to match max Vstored	Num. Of tanks		r (m)		Initial calculation	OK	Same as initial
Round area	0		1.8	0.00	hstor max.	0.763	Final volume
	Num. Of tanks	Width	Length	m^2	Vstored max.	8.50	Same as initial
Square/rectangular area	1	1.115	10	11.15	Vstored min.	0.067	
					0.05 to3.5% left @ 48hr	0.79	
Short tube, 0.76	Orifice type "u"	g				OK	Same as initial
Thin sharp, 0.62	0.76	9.8067			Graph, 24hr Vstored 2520m	0.188	Not used
					Max.10% left @ 24hr from initial calc. or add extra volume	2.21	2.21

	48hr	24hr	12hr	6hr	2hr	60	30
Pre – development flow	C20	L20	U20	AQ20	AM20	AV20	BE20
3 of developed area	0.00009	0.00016	0.00026	0.00041	0.00079	0.00113	0.00158

Pre–development flow matches 2hr 40min. Intensity	Qp (m^3/sec)	Qp (L/sec)		Qin max.			Slope factor adjustment at
Uses (80min.crossover O126) as a source value	0.0007	0.6947		0.00299		48hr program	Min.crossover
Do not change	OK					Min.crossover	Chart point (min.)
For calculation purposes this section changes	Dia check	Dia	Area	Qout 1520 (L/sec)	Qout (m^3/sec)	Chart point (min.)	0.91
the dia only and thereby the area	0.0174	0.01742	0.0002	0.693	0.00069	1520	peak flow
The information is not used for anything else		17.42		0		1520	Chart point (max.)
				If additional storage is required use the original/inital orifice size and calc. height			0.15

4

Calculate maximum storage volume

Chart intensity hr values steps used	Chart intensity accumulated minute steps	Storm duration- THR (hr)	Storm duration- Event data, TMINS	Attenuation calc. tota Direct to Atten. Qa (L/sec)	Catchment pre-devel. plus orifice flow out Qtin (L/sec)	For period 2081-2100 CC (RCP6) Intensity. Post-devel I, (mm/hr) 100 yr	Ahipara Current(0 deg) Pre-devl I, (mm/hr) 100 yr
48	720	12.00	720	0.10	0.16	5.57	4.96
24	1080	6.00	360	0.2	0.3	9.59	8.41
12	1260	3.00	180	0.3	0.5	16	13.8
6	1380	2.00	120	0.5	0.7	25.8	21.7
2	1410	0.50	30	0.9	1.2	50.6	41.7
1	1425	0.25	15	1.4	1.7	73.4	60.1
30	1430	0.08	5	1.9	2.2	102	83.6
20	1435	0.08	5	2.3	2.6	122	99.7
10	1440	0.08	5	3.0	3.3	160	131
10	1445	0.08	5	3.0	3.3	160	131
20	1450	0.08	5	2.3	2.7	122	99.7
30	1455	0.08	5	1.9	2.4	102	83.6
	1470	0.25	15	1.4	1.9	73.4	60.1
2	1500	0.50	30	0.9	1.6	50.6	41.7
6	1620	2.00	120	0.5	1.1	25.8	21.7
12	1800	3.00	180	0.3	0.8	16	13.8
24	2160	6.00	360	0.2	0.4	9.59	8.41
48	2880	12.00	720	0.1	0.2	5.57	4.96

Catchment flow Qpat (cell MAX(P109:P130)	Qcap max.	Qp (m^3/sec)	Qp (L/sec)	Qout max. (m^3/sec)	Qout max. (L/sec)	Vstored max. Vol. stored, (m^3)
Catchment flow = orifice flow out + catchment	1.250	0.0013	1.3	0.00126	1.26	8.491
pre-development flow						OK
For calculation purposes this section changes	Dia check	Dia	Area			OK
the dia only and thereby the area	0.0234	0.02337	0.0004			
The information is not used for anything else		23.37				
		Use this orifice size for final design				

	Fixed value	100yr	10yr	
u	g	Desc hrs	Desc hrs	
0.76	9.8067	1.6	1.6	**Adjust until orifices are closest to the values of tab 10yr & 100yr "cell D136"**

Change orifice factor "u" to suit, short tube 0.76 & thin sharp edge 0.62

	Va100yr	Qav	**ho100yr**	hav	Or100yr
100yr	8.50	0.0015	0.75	0.38	**0.0302**
100yr tab	***Cell H86***		***Cell H82***		**23.4**

	Va10yr	Qav	**ho10yr**	hav	**Or10yr**
10yr	4.11	0.0007	0.36	0.18	**0.0252**
10yr tab	***Cell H86***		***Cell H82***		**25.2**

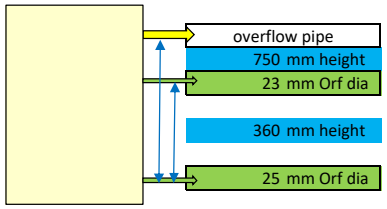
	Vdet	Qav	htop	hhalf	
100 - 10yr	4.40	0.0008	0.39	0.20	0.1950

	Vocomb	Qav	hchart	hav	OK	
10yr cor.	5.10	0.0009	0.56	0.28	0.0252	0.0005
	Adjust c21 until G20 get Ok					Area

	Vtop	Qav	htop	hav	**Ortop**
100-10yrcor	3.40	0.0006	0.39	0.195	0.0225

0.75	**ho100yr**	Total storage height required
0.025	**Or10yr**	Size of lower orifice (fitted 150mm above bottom/base if tank for attenuation only)
0.36	**ho10yr**	Storage height at which Ortop is fitted
0.023	**Ortop**	Size of second orifice (fitted at ho10yr above lower orifice Or10yr)

0.39 Height from overflow outlet invert to Ortop invert



Attenuation System Parameters

	Orifice diameter	**Orifice invert location**		
ARI 10	**25 mm**	**750 mm** below overflow invert		
ARI 100	**23 mm**	**390 mm** below overflow invert		
Tank Size	**1 x**	**10,000**	**litres**	**1.115*10 m**
ARI 10		**4,109.2**	**litres**	
ARI 100		**8,504.4**	**litres**	
Reuse		**1,495.6**	**litres**	

0

10yr

1 **Rational method** 48hr

Pre – Development water flow

(Original water flow) Total area.	Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
	191.00	0	0	0	0	191	0
Runoff coefficient		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart		FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55		0.96	0.96	0.8	0.65	0.59	0.59
Rainfall intensity		I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100		3.20	3.20	3.20	3.20	3.20	3.20
Use an appropiate event for the situation							
Flow rate of surface water		Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
		0.000	0.000	0.000	0.000	0.000	0.000

Pre – development flow of developed area	Qp (m^3/sec)	Qp (L/sec)
	0.0001	0.10

Post – Development water flow

	Any area where there is a change in the impermiablity values				Pre-development area where there is a change in impermeable surfaces but not collected in atenuation system		Any area where there to the impermiablity v
Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Vegetation 4 (m^2)	Concrete & smooth seal 5 (m^2)	Metaled area or vegetation 6 (m^2)	Metaled area or seal 7 (m^2)
191.00	191	0		0	0	0	0
OK							
	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	0.96	FALSE	FALSE	FALSE	0.2	0.3	FALSE
Generally do not use slope adjustment Ci factor if using TR5	0.96	0.96	0.9	0.59	"C" value difference between Pre & Pos Maximum value 0.2 (at the moment)		0.96
Rainfall intensity rat	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-210	3.57	3.57	3.57	3.57	3.20	3.20	3.20
Use an appropiate event for the situatic							
Flow rate of surface water	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)
	0.18	0.00	0.00	0.00	0.00	0.00	0.00

Total included in attenuation system calc post – development flow	Qa (m^3/sec)	Qa (L/sec)
	0.000	0.08

Total impermeable excluded from attenuation system collectio	Qby (m^3/sec)	Qby (L/sec)
	0.000	0.00

Total no change, excl attenuation system ca	Qby (m^3/sec)
	0.000

Post – Pre development flow	Qtpp (m^3/sec)	Qtpp (L/sec)
	0.0001	0.08

Total post development flow Developed flow + undeveloped flow 0 to 10min	Qatt (m^3/sec)	Qatt (L/sec)
	0.0002	0.18

1b **Rational method** 48hr

Total catchment pre-development flow

Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
191.00	0	0	0	0	191	0
Runoff coefficient	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55	0.96	0.96	0.8	0.8	0.59	0.59
Rainfall intensity	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100	3.20	3.20	3.20	3.20	3.20	3.20
Use an appropiate event for the situation						
Flow rate of surface water	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000	0.000	0.000

Catchment area pre – development flow	Qcap (m^3/sec)	Qcap (L/sec)
	0.0001	0.10

312.1019108

2

	Round	Square		Calculation (initial) Total tank area	Calculation (initial) Total tank volume	Calculation (initial) usable height	Calculation (final) Additional area
				m^2	m^3	hmax (m)	m^2
Select 1 for type of tank/area, 0 for other	1	0				0.6	Nil
Estimate storage volume			Tank radius	10.52	6.31	OK	Total area
Adjust to match max Vstored	Num. Of tanks		r (m)		Initial calculation	OK	Same as initial
Round area	1		1.83	10.52	hstor max.	0.593	Final volume
	Num. Of tanks	Width	Length	m^2	Vstored max.	6.24	Same as initial
Square/rectangular area				0.00	Vstored min.	0.030	
					0.05 to3.5% left @ 48hr	0.48	
Short tube, 0.76	Orifice type "u"	g				OK	Same as initial
Thin sharp, 0.62	0.76	9.8067			Graph, 24hr Vstored 2520m	0.083	Not used
					Max.10% left @ 24hr from initial calc.	1.33	1.33
					or add extra volume		

	48hr	24hr	12hr	6hr	2hr	60	30
Pre – development flow	C20	L20	U20	A020	AM20	AV20	BE20
3 of developed area	0.00010	0.00017	0.00028	0.00044	0.00085	0.00124	0.00172

Pre–development flow matches 2hr 40min. Intensity	Qp (m^3/sec)	Qp (L/sec)		Qin max.			Slope factor adjustment at
Uses (80min.crossover O126) as a source value	0.0007	0.7395		0.00263		48hr program	Min.crossover
Do not change	OK					Min.crossover	Chart point (min.)
For calculation purposes this section changes	Dia check	Dia	Area	Qout 1520 (L/sec)	Qout (m^3/sec)	Chart point (min.)	0.91
the dia only and thereby the area	0.0190	0.01900	0.0003	0.715	0.00072	1520	peak flow
The information is not used for anything else		19.00		0		1520	Chart point (max.)
	If additional storage is required use the original/inital orifice size and calc. height						0.15

4

Calculate maximum storage volume

Chart intensity hr values	Chart intensity accumulated	Storm duration- THR	Storm duration- Event data, TMINS	Attenuation calc. tota Direct to Atten.	Catchment pre-devel. plus orifice flow out	For period 2081-2100 CC (RCP6) Intensity. Post-devel I, (mm/hr)	Ahipara Current(0 deg) Pre-devl I, (mm/hr)
steps used	minute steps	(hr)	mins	Qa (L/sec)	Qtin (L/sec)	10 yr	10 yr
48	720	12.00	720	0.08	0.15	3.57	3.2
24	1080	6.00	360	0.1	0.3	6.16	5.45
12	1260	3.00	180	0.2	0.5	10.3	8.94
6	1380	2.00	120	0.4	0.7	16.7	14.2
2	1410	0.50	30	0.8	1.2	32.9	27.3
1	1425	0.25	15	1.2	1.7	47.9	39.5
30	1430	0.08	5	1.7	2.2	66.8	55.1
20	1435	0.08	5	2.0	2.6	79.9	65.8
10	1440	0.08	5	2.6	3.3	105	86.8
10	1445	0.08	5	2.6	3.3	105	86.8
20	1450	0.08	5	2.0	2.7	79.9	65.8
30	1455	0.08	5	1.7	2.4	66.8	55.1
	1470	0.25	15	1.2	2.0	47.9	39.5
2	1500	0.50	30	0.8	1.6	32.9	27.3
6	1620	2.00	120	0.4	1.1	16.7	14.2
12	1800	3.00	180	0.2	0.7	10.3	8.94
24	2160	6.00	360	0.1	0.3	6.16	5.45
48	2880	12.00	720	0.1	0.2	3.57	3.2

Catchment flow Qpat (cell MAX(P109:P130)	Qcap max.	Qp (m^3/sec)	Qp (L/sec)	Qout max. (m^3/sec)	Qout max. (L/sec)	Vstored max. Vol. stored, (m^3)
Catchment flow = orifice flow out + catchment pre-development flow	1.510	0.0015	1.5	0.00150	1.50	6.243
						OK
						OK

For calculation purposes this section changes	Dia check	Dia	Area
the dia only and thereby the area	0.0272	0.02716	0.0006
The information is not used for anything else		27.16	

Use this orifice size for final design

100yr

1 **Rational method** 48hr

Pre – Development water flow

(Original water flow)

Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
191.00	0	0	0	0	191	0
Runoff coefficien:	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	FALSE	FALSE	FALSE	FALSE	0.53	FALSE
Generally do not use slope adjustment Ci factor if using TR55	0.96	0.96	0.8	0.65	0.53	0.59
Rainfall intensity	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100	4.96	4.96	4.96	4.96	4.96	4.96
Use an appropiate event for the situation						
Flow rate of surface water	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000	0.000	0.000

Pre – development flow	Qp (m^3/sec)	Qp (L/sec)
of developed area	0.0001	0.14

Post – Development water flow

Any area where there is a change in the impermiablity values

Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Tanks Or rough seal 3 (m^2)	Vegetation 4 (m^2)
191.00	191	0		0
OK				
	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	0.96	FALSE	FALSE	FALSE
Generally do not use slope adjustment Ci factor if using TR5	0.96	0.96	0.9	0.59
Rainfall intensity rat	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-210	5.57	5.57	5.57	5.57
Use an appropiate event for the situatic				
Flow rate of surface wate	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000
	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)
	0.28	0.00	0.00	0.00

Pre-development area where there is a change in impermeable surfaces but not collected in atenuation system

Concrete & smooth seal 5 (m^2)	Metaled area or vegetation 6 (m^2)
0	0
Ci (coefficient)	Ci (coefficient)
0.2	0.3
"C" value difference between Pre & Po	
Maximum value 0.2 (at the moment)	
I (mm/hr)	I (mm/hr)
4.96	4.96
Qc (m^3/sec)	Qc (m^3/sec)
0.000	0.000
Qc (L/sec)	Qc (L/sec)
0.00	0.00

Any area where there to the impermiablity v

Metaled area or seal 7 (m^2)
0
Ci (coefficient)
0.96
I (mm/hr)
4.96
Qc (m^3/sec)
0.000
Qc (L/sec)
0.00

Total included in attenuation system calc	Qa (m^3/sec)	Qa (L/sec)
post – development flow	0.000	0.14

Total impermeable excluded from attenuation system collectio	Qby (m^3/sec)	Qby (L/sec)
	0.000	0.00

Total no change, exclu attenuation system ca	Qby (m^3/sec)
	0.000

Post – Pre development flow	Qtpp (m^3/sec)	Qtpp (L/sec)
	0.0001	0.14

Total post development flow

Developed flow + undeveloped flow	Qatt (m^3/sec)	Qatt (L/sec)
	0.0003	0.28

0 to 10min

1b **Rational method** 48hr

Total catchment pre-development flow

Total area. Area (m^2)	Roof & decks 1 (m^2)	Concrete & smooth seal 2 (m^2)	Metaled area Or rough seal 3 (m^2)	Other Impervious 4 (m^2)	Vegetation 5 (m^2)	Bush 6 (m^2)
191.00	0	0	0	0	191	0
Runoff coefficien:	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)
Use "C" values from FNDC TR55 chart	FALSE	FALSE	FALSE	FALSE	0.59	FALSE
Generally do not use slope adjustment Ci factor if using TR55	0.96	0.96	0.8	0.8	0.59	0.59
Rainfall intensity	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)	I (mm/hr)
Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100	4.96	4.96	4.96	4.96	4.96	4.96
Use an appropiate event for the situation						
Flow rate of surface water	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)	Qc (m^3/sec)
	0.000	0.000	0.000	0.000	0.000	0.000

Catchment area pre – development flow	Qcap (m^3/sec)	Qcap (L/sec)
	0.0002	0.16

2

	Round	Square		Calculation (initial) Total tank area m^2	Calculation (initial) Total tank volume m^3	Calculation (initial) usable height hmax (m)	Calculation (final) Additional area m^2
Select 1 for type of tank/area, 0 for other	1	0				1.2	Nil
Estimate storage volume			Tank radius	10.52	12.63	OK	Total area
Adjust to match max Vstored	Num. Of tanks		r (m)		Initial calculation	OK	Same as initial
Round area	1		1.83	10.52	hstor max.	1.211	Final volume
	Num. Of tanks	Width	Length	m^2	Vstored max.	12.74	Same as initial
Square/rectangular area				0.00	Vstored min.	0.101	
					0.05 to3.5% left @ 48hr	0.79	
Short tube, 0.76	Orifice type "u"	g				OK	Same as initial
Thin sharp, 0.62	0.76	9.8067			Graph, 24hr Vstored 2520m	0.285	Not used
					Max.10% left @ 24hr from initial calc.	2.24	2.24
					or add extra volume		

	48hr	24hr	12hr	6hr	2hr	60	30
Pre – development flow	C20	L20	U20	AD20	AM20	AV20	BE20
3 of developed area	0.00014	0.00024	0.00039	0.00061	0.00117	0.00169	0.00235

Pre–development flow matches 2hr 40min. Intensity	Qp (m^3/sec)	Qp (L/sec)		Qin max.			Slope factor adjustment at
Uses (80min.crossover O126) as a source value	0.0010	1.0367		0.00447			Min.crossover
Do not change	OK					48hr program Min.crossover	Chart point (min.)
For calculation purposes this section changes	Dia check	Dia	Area	Qout 1520 (L/sec)	Qout (m^3/sec)	Chart point (min.)	0.91
the dia only and thereby the area	0.0189	0.01892	0.0003	1.031	0.00103	1520	peak flow
The information is not used for anything else		18.92		0		1520	Chart point (max.)
				If additional storage is required use the original/inital orifice size and calc. height			0.15

4

Calculate maximum storage volume

Chart intensity hr values steps used	Chart intensity accumulated minute steps	Storm duration- THR (hr)	Storm duration- Event data, TMINS mins	Attenuation calc. tota Direct to Atten. Qa (L/sec)	Catchment pre-devel. plus orifice flow out Qtin (L/sec)	For period 2081-2100 CC (RCP6) Intensity. Post-devel I, (mm/hr) 100 yr	Ahipara Current(0 deg) Pre-devl I, (mm/hr) 100 yr
48	720	12.00	720	0.14	0.24	5.57	4.96
24	1080	6.00	360	0.3	0.5	9.59	8.41
12	1260	3.00	180	0.4	0.7	16	13.8
6	1380	2.00	120	0.7	1.1	25.8	21.7
2	1410	0.50	30	1.4	1.9	50.6	41.7
1	1425	0.25	15	2.0	2.5	73.4	60.1
30	1430	0.08	5	2.8	3.3	102	83.6
20	1435	0.08	5	3.4	3.9	122	99.7
10	1440	0.08	5	4.5	4.9	160	131
10	1445	0.08	5	4.5	4.9	160	131
20	1450	0.08	5	3.4	4.1	122	99.7
30	1455	0.08	5	2.8	3.6	102	83.6
	1470	0.25	15	2.0	2.9	73.4	60.1
2	1500	0.50	30	1.4	2.3	50.6	41.7
6	1620	2.00	120	0.7	1.6	25.8	21.7
12	1800	3.00	180	0.4	1.2	16	13.8
24	2160	6.00	360	0.3	0.6	9.59	8.41
48	2880	12.00	720	0.1	0.3	5.57	4.96

Catchment flow Qpat (cell MAX(P109:P130)	Qcap max.	Qp (m^3/sec)	Qp (L/sec)	Qout max. (m^3/sec)	Qout max. (L/sec)	Vstored max. Vol. stored, (m^3)
Catchment flow = orifice flow out + catchment	1.860	0.0019	1.9	0.00187	1.87	12.744
pre-development flow						OK
For calculation purposes this section changes	Dia check	Dia	Area			OK
the dia only and thereby the area	0.0254	0.02534	0.0005			
The information is not used for anything else		25.34				
		Use this orifice size for final design				

	Fixed value	100yr	10yr
u	g	Desc hrs	Desc hrs
0.76	9.8067	1.7	1.7

Adjust until orifices are closest to the values of tab 10yr & 100yr "cell D136"

Change orifice factor "u" to suit, short tube 0.76 & thin sharp edge 0.62

	Va100yr	Qav	**ho100yr**	hav	Or100yr
100yr	12.74	0.0021	1.2	0.60	**0.0319**
100yr tab	***Cell H86***		***Cell H82***		**25.3**

	Va10yr	Qav	**ho10yr**	hav	**Or10yr**
10yr	6.24	0.0010	0.6	0.30	**0.0265**
10yr tab	***Cell H86***		***Cell H82***		**27.2**

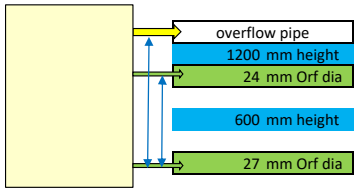
	Vdet	Qav	htop	hhalf	
100 - 10yr	6.49	0.0011	0.60	0.30	0.3000

	Vocomb	Qav	hchart	hav	OK	
10yr cor.	7.65	0.0013	0.90	0.45	0.0265	0.0006
	Adjust c21 until G20 get Ok					Area

	Vtop	Qav	htop	hav	**Ortop**
100-10yrcor	5.09	0.0008	0.6	0.3	0.0240

1.20	**ho100yr**	Total storage height required
0.027	**Or10yr**	Size of lower orifice (fitted 150mm above bottom/base if tank for attenuation only)
0.60	**ho10yr**	Storage height at which Ortop is fitted
0.024	**Ortop**	Size of second orifice (fitted at ho10yr above lower orifice Or10yr)

0.60 Height from overflow outlet invert to Ortop invert



Attenuation System Parameters

	Orifice diameter	**Orifice invert location**
ARI 10	**27 mm**	**1200 mm** below overflow invert
ARI 100	**24 mm**	**600 mm** below overflow invert
Tank Size	**1 x**	**25,000 litres @ 3 m Ø**
ARI 10	**6,241.1 litres**	
ARI 100	**12,735.8 litres**	
Reuse	**12,264.2 litres**	

0

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

3 November 2023

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PH +64 (0)9 401 5440
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Sheryl Hansford
Northland Planning & Development

Email: info@northplanner.co.nz

To Whom It May Concern:

RE: PROPOSED SUBDIVISION
Terence Tretheway, 38 Reef View Road, Ahipara. Lot 37 DP 127889.

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

Top Energy's requirement is that power be made available for the additional lot.
Top Energy advises that proposed Lot 1 has an existing power supply. Costs to supply power to proposed Lot 2 would be provided after application and an on-site survey have been completed.

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

[redacted]

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

Chorus New Zealand Limited

02 November 2023

Chorus reference: 10648753

Attention: Sheryl Hansford

Quote: New Property Development

1 connections at 38 Reef View Road , Ahipara, Far North District, 0481

Your project reference: N/A

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

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

Fibre network	$0.00

The total contribution we would require from you is **$0.00 (including GST)**. This fee is a contribution towards the overall cost that Chorus incurs to link your development to our network. This quote is valid for 90 days from 02 November 2023. This quote is conditional on you accepting a New Property Development Contract with us for the above development.

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

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

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

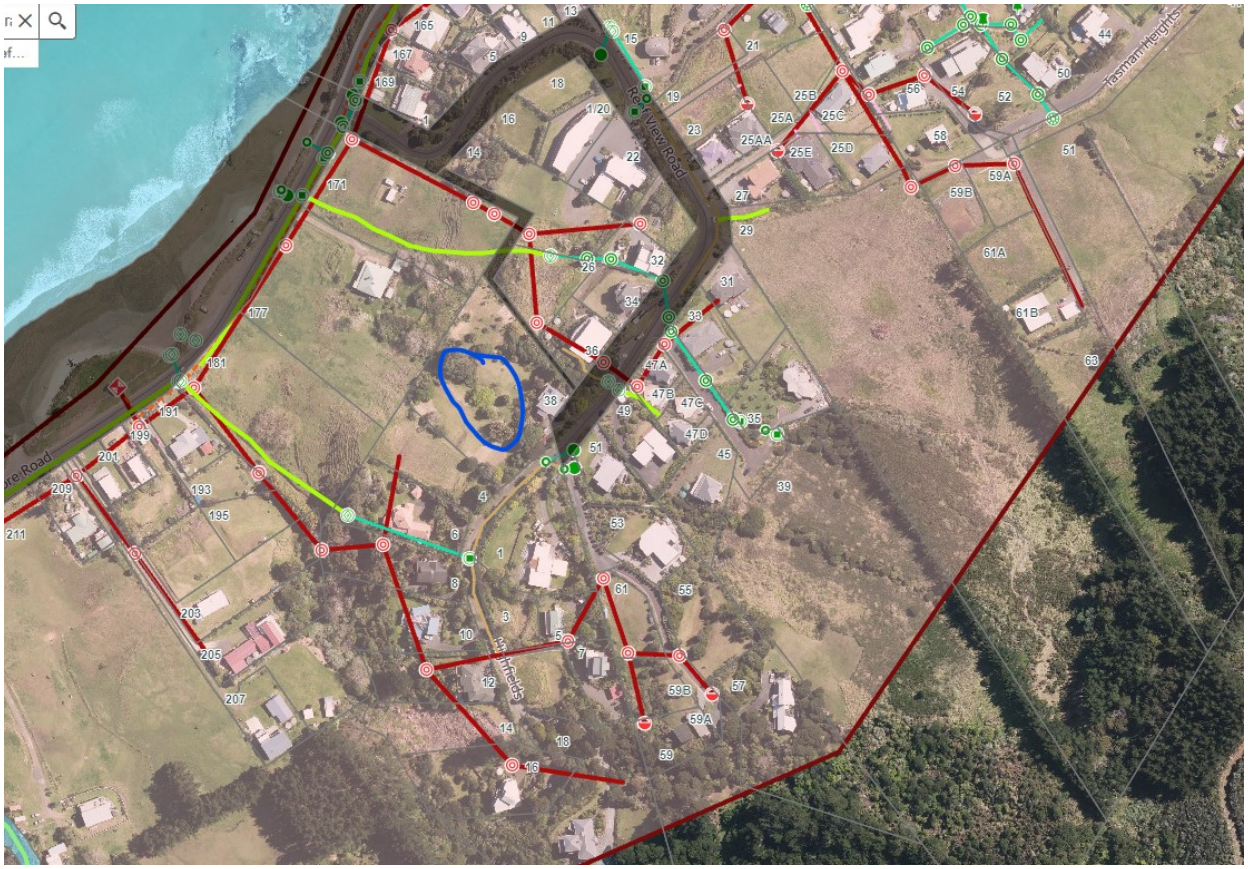
Kind Regards

Chorus New Property Development Team

Northland Planning Development

From: Sujeet Tikaram <Sujeet.Tikaram@fndc.govt.nz>
Sent: Wednesday, 17 May 2023 8:35 am
To: Northland Planning Development
Subject: RE: Proposed subdivision - 38 Reef View Road

Hi Sheryl,
In principle Lot 2 can connect to the Council wastewater scheme as it falls within the sewer area of benefit.
Would be good to have an easement created over the existing line.



Cheers

Sujeet Tikaram
Development Engineer
Far North Waters Alliance, Far North District Council | **24-hour Contact Centre** 0800 920 029
DDI 6494015376 | **M** 027 566 1191 | Sujeet.Tikaram@fndc.govt.nz
Website | Facebook | LinkedIn | Careers

From: Northland Planning Development <info@northplanner.co.nz>
Sent: Monday, 15 May 2023 11:32 am
To: Sujeet Tikaram <Sujeet.Tikaram@fndc.govt.nz>
Subject: Proposed subdivision - 38 Reef View Road

Good Morning Sujeet,

I have attached a proposed subdivision proposal to create one additional allotment at 38 Reef View Road, Ahipara [Lot 37 DP 127889]

The existing house is connected to Council's Reticulated system as is the adjoining house located at Lot 2 DP 569907. The surveyors have picked up the existing sewer manhole and line on the plan attached. The owner of Lot 2 DP 569907 is happy for an easement to be shown over this line as there is currently nothing on their title.

Can you please provide your comments for the resource consent application.

If you have any questions please contact me.

Regards,

NORTHLAND
PLANNING & DEVELOPMENT

Sheryl Hansford
Director / Senior Planner

Offices in Kaitaia & Kerikeri
09 408 1866 | 021 498 813
Northland Planning & Development 2020 Limited