

Application for resource consent or fast-track resource consent

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

1. Pre-Lodgement Meeting

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

☐ Yes ☒ No

2. Type of consent being applied for

(more than one circle can be ticked):

- | | |
|---|---|
| ☒ Land Use | ☐ Discharge: Total volume = <input type="text" value=""/> m ³
<i>Note; volumes >3m³ requires NRC Consent.</i> |
| ☐ Fast Track Land Use* | ☐ Subdivision |
| ☐ Change of Consent Notice (s.221(3)) | ☐ Existing Use Certificate (s.139A) |
| ☐ Certificate of Compliance (s.139) | ☐ Consent under National Environmental Standard
(e.g. Assessing and Managing Contaminants in Soil) |
| ☐ Extension of time (s.125) | |
| ☐ Other (please specify) <input type="text"/> | |

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

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

☐ Yes ☒ No

4. Consultation

Have you consulted with iwi/hapū? ☐ Yes ☒ No

If yes, which groups have you consulted with?

Ngati Rehia on 16/7/2026. No objection to proposal. Will submit confirmation to council when notified that resource consent lodged.

Who else have you consulted with?

For any questions or information regarding iwi/hapū consultation, please contact:
The Resource Consents Planning Technicians, planning_technicians@fndc.govt.nz

5. Applicant details

Name/s:

Terrence Richard Rodgers

Email:

Phone number:

Postal address:

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

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

If yes, please provide details.

6. Address for correspondence

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

Name/s:

Terry Rodgers

Email:

Phone number:

Postal address:

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

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

7. Details of property owner/s and occupier/s

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

Name/s:

Terrence Richard and Philippa Beryl Rodgers

Property address/
location:

8. Application site details

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

Name/s:	Terrence Richard and Philippa Beryl Rodgers		
Site address/ location:	201 Rangitane Road		
	RD 1 Kerikeri		
	Postcode 0294		
Legal description:	Lot 7 DP 140705	Val Number:	00213-67500
Certificate of title:	NA83C/338		

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.

9. Description of the proposal

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

To site a relocatable dwelling of 58sqm with associated access and parking area on the property at 201 Rangitane Rd.
The project has conditional approval under the Granny Flat (DRMU) regulations (PIM P70-2026-41 issued on 8/7/2026)
A resource consent relating to impermeable surface coverage/ stormwater management is required for final approval.

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

The proposal has been prepared in accordance with the following version of the FNDC Engineering Standards:

☐ 2009 ☐ 2023

10. Would you like to request public notification?

☐ Yes ☒ No

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

(more than one circle can be ticked):

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

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

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

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

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

☐ Subdividing land

☐ Disturbing, removing or sampling soil

☐ Changing the use of a piece of land

☐ Removing or replacing a fuel storage system

13. Natural hazards (National Policy Statement for Natural Hazards 2025)

Is the site subject to known or potential natural hazards (for example, flooding, coastal inundation, erosion, or unstable land), as contemplated by the National Policy Statement for Natural Hazards 2025? ☐ Yes ☒ No

If yes, please identify the relevant natural hazard(s) by ticking the applicable box(es) below:

☐ Flooding

☐ Active Faults

☐ Landslips

☐ Liquefaction

☐ Coastal Erosion

☐ Tsunami

☐ Coastal Inundation

Please ensure all relevant technical reports are submitted with the application.

14. Assessment of environmental effects:

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

Your AEE is attached to this application ☒ Yes

15. Draft conditions:

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

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

16. Billing Details:

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

Name/s: (please write in full)	Terrence Richard Rodgers
Email:	
Phone number:	
Postal address: (or alternative method of service under section 352 of the act)	

Fees Information

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

Declaration concerning Payment of Fees

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

Name: (please write in full)	Terrence Richard Roddaers
Signature: (signature of bill payer)	Date 18-Aug-2026

17. 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.

18. Declaration

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

Name (please write in full)	Terrence Richard Rodgers
Signature	Date 18-Aug-2026

See overleaf for a checklist of your information...

Checklist of your information

Please tick if information is provided

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

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

Assessment of Environmental Effects

Project: Siting of a transportable dwelling of 58sqm approved under the Granny Flat (DRMU) regulations, conditional to resource consent approval.

Site address: 201 Rangitane Road, Kerikeri

Applicant: Terry Rodgers

Prepared by: Terry Rodgers

Date: 23 July 2026

Council reference: P70-2026-41

1. Executive Summary

This Assessment of Environmental Effects has been prepared to support an application for resource consent for the siting of a transportable dwelling of 58sqm (approved under the Granny Flat (DRMU) regulations) at 201 Rangitane Road, Kerikeri/ Lot 7 DP 140705. The project increases the impermeable coverage of the site by an estimated 238sqm with the building roof area and the extension of existing metalled driveway access and provision of a metalled parking area. This work increases the site coverage beyond the permitted amounts relating to impermeable surface coverage and storm water management under the National Environmental Standards (NES-DRMU), and the applicable Far North District Council (FNDC) District Plans. This report identifies the actual and potential effects of the proposal on the environment and describes the measures proposed to avoid, remedy, or mitigate adverse effects.

Overall, the assessment concludes that, subject to the mitigation and management measures described in this report, the environmental effects of the proposal are expected to be minor and manageable.

2. Applicant and Property Details

Applicant Name	Terrence (Terry) Rodgers
Applicant contact details	
Owner name, if different	
Site address	
Legal description	
Record of Title	
District/Regional plan zone or overlay	
Existing consents or designations	Project Information Memorandum (PIM) P70-2026-41

3. Description of the Proposal

The works covered under the PIM P70-2026-41 issued by the FNDC on the 8th July 2026 involve the siting of a transportable dwelling of 58sqm floor area at the rear of the site at 201 Rangitane Road. The new dwelling is planned to have a metalled parking area and an access driveway that connects to an existing access driveway on the property. The estimated coverage area of the new driveway and parking is 180sqm. The layout of the building and metalled areas is included in the attached PIM approved Concept plan and Geotechnical report.

The new dwelling will be constructed offsite by Modular Dwellings limited, Kerikeri, as transportable modular components. These are delivered to site, connected and installed on foundations piles. Planned deck areas will be added on site. The dwelling is to be connected to on-site water and wastewater facilities as specified in the Geotechnical report. The report also provides plans for the management and attenuation of stormwater associated with this project. The Granny Flat PIM provides a two-year maximum timeframe for the completion of this development

Some initial site preparation work has been carried out. This has been put on hold on receipt of the resource consent requirement. The work included minor earthworks to prepare a level house site and provide vehicle access. It also included the cutting back, and a small amount of removal, of hedges near the western boundary to improve access, and the removal of a pin oak tree near the house site.

4. Site and Receiving Environment

The property at 201 Rangitane Road is 4164 sqm in area with the main part of the property connected to Rangitane Road by a private right of way (RoW) approximately 120m long. The RoW has a metalled driveway of about 3m width. Near the centre of the main site is a consented principal dwelling built in 1991 with floor area 189 sqm. To the western side of the garages is an attached roofed carport with a floor area of just less than 20sqm. This carport was added on in 2019 as a structure exempt from a building consent. The principal dwelling has a driveway/turning circle that extends from the RoW to the house. There are concreted parking and entrance areas in front of the garages and the house front door. The estimated area of these existing impermeable surfaces is 800sqm. Existing site layout and coverage estimates are contained in the attached Concept plan and Geotechnical report.

The property sits within a subdivision established in 1990. Housing within the subdivision is mainly single dwellings on similar sized sections. These have been constructed as individual private developments over a period of about 20 years from the formation of the subdivision.

The main part of the property slopes toward the southern (rear) boundary. There is a 5.09m wide access reserve along the length of rear boundary which is at the higher end of an accessway and drainage easement system in the subdivision.

The area where the proposed granny flat is sited is fairly level with slight slopes to each rear corner of the section. It is visually screened by plantings and a timber fence on part of the western boundary. The site is about 50m from the closest neighbouring residence.

The Granny flat is sited about 11m at closest from the rear of the principal residence and about 1m lower level as the main house site and surroundings were levelled before construction. A concrete retaining wall 1m high separates two house site areas. The retaining wall replaces a sloping bank of gardens and lawns. It is over 9m from the principal house site and has groundwater drainage. The driveway access to the granny flat site extends from the existing driveway and slopes down the western side of the property.

The Granny Flat site drains well through natural soakage and some runoff toward the drainage easement at the rear boundary. Details of soil composition are contained in the accompanying Geotechnical report. Any increased stormwater runoff from the proposed development will be managed by processes set out in the attached Geotechnical report.

Vegetation on the property has been planted by current or previous owners and consists mainly of boundary hedges/visual screens of a mix of native and non-native varieties. In the southeast corner of the property is a planted area of native shrubs and small trees. These areas increase the habitats for native birds including kiwi who move through the wider area. There are a few specimen trees and shrubs on the section around the granny flat site. Several non-native ones have been recently removed. Other garden areas and fruit trees on the property are not affected by the granny flat siting project.

There are no natural waterways or wetlands on or near the property. Two large properties beyond the rear boundary extend down to stream and coastal waterways.

5. Statutory Context

5.1 Resource Consents Required

Plan/Rule	Activity	Reason consent is required	Activity status
Operative District Plan – Coastal Living Zone	Impermeable surface coverage	Exceeds the permitted 10% threshold for site	Restricted Discretionary
10.7.5.1.6 STORMWATER MANAGEMENT rule		Exceeds the permitted 15% threshold for site	Discretionary
Proposed District Plan – Decisions Version Rural Lifestyle Zone	Impermeable surface coverage	Exceeds the 12.5% threshold permitted for site	Restricted Discretionary
RLZ-R2 Impermeable surface coverage rule			

5.2 Relevant Objectives, Policies, and Assessment Criteria

The Buildings and Construction (Small Stand-alone Dwellings) Amendment Act 2025 provided a pathway to allowing a detached minor residential unit (DMRU) to be sited on properties, with an existing principal dwelling, including those in rural zones. Developments using this pathway also must comply with the associated National Environmental Standards (NES-DRMU) 2025.

The FNDC advised, in the PIM issued on 8th July 2026 (PIM P70-2026-41), that this project complies with the National Environmental Standards for a Detached Minor Residential Units (NES:DMRU) part 5 Permitted activity rule and part 6 Permitted activity standards; and, the Schedule 1A of Building Act 2004 s1 Characteristics of small stand-alone dwelling. It also notified that Resource Consent approval was required for non-compliance of the NES-DMRU part 7(3)(b)(iii) that state:

7 District plan rules and standards

- (3) a DRMU must comply with the rules and standards in a district plan that—
- (b) manage effects relating to health and safety, including those relating to—
- (iii) site-specific infrastructure requirements (for example, infrastructure requirements associated with drinking water, wastewater, and stormwater).

Both the zones relevant to this project (Coastal Living and Rural Lifestyle) are classes of rural zones. These zones set out the objectives, policies and rules for low density rural housing development on relatively small lots. The project is consistent with these except for the rule breach requiring resource consent application. The specific district plan rules that are breached by the project are stated in section 5.1 above and relate to impermeable surface coverage and its impact on stormwater management.

The FNDC is in the process of moving from the 2009 Operative District Plan (ODP) to the Proposed District Plan Decisions-Version (DPDV). The rules criteria for this resource consent application differ between the two versions with the ODP applying the discretionary category and the DPDV applying the restricted Discretionary category. This application sets out to respond to the rules criteria in both plans. The matters of discretion and assessment criteria relating to these rules under both the plans are contained in Appendix E: *Relevant planning rules and assessment criteria*.

Section 6 of this application explains how the proposal addresses the impact on the environment relating to the assessment criteria. The FNDC website guidance sets out a transition process which may change the assessment process depending on when the application is considered.

6. Assessment of Environmental Effects

This assessment identifies the actual and potential effects of the proposal, including positive and adverse effects, temporary and permanent effects, cumulative effects, and any effects of low probability but high potential impact.

6.1 Summary Effects Matrix

Effect category	Potential effect	Proposed mitigation	Residual level of effect
Construction effects	Construction noise	Offsite construction of transportable dwelling eliminates major part of building noise. Onsite finishing construction and associated site work to be done in normal work hours. Site distance from surrounding residences and existing visual screening	Minor
Operational effects	Covered in sections 6.8 and 6.10 below	Approved DRMU project with low impact residential effects sited well away from neighbouring properties	Less than minor
Ecological effects	Covered in sections 6.3, 6.4 and 6.5 below	Attenuation plan for increased stormwater in Geotechnical Report (Appendix D) Retention of areas of planting that provide habitat for native birds	Less than minor
Landscape and visual effects	Covered in 6.6 below	DRMU designed and sited to meet required DRMU standards. Also designed and sited to minimise visual impact and effect. Neighbours consulted in process	Less than minor
Traffic and access effects	Covered in 6.8 below	Traffic management as required during delivery to site of modular dwelling components	Minor
Cultural effects	Covered in 6.9 below	Consultation with mana whenua (Ngāti Rehia). Checking of property records to see that no known significant areas on site. Council have provided Accidental Discovery protocols	Minimal
Natural hazards and climate resilience	Covered in 6.11 below	Follow mitigation strategies in Geotechnical report	Minimal

6.2 Construction Effects

Offsite construction of transportable dwelling eliminates major part of building noise.

Delivery and siting of modular components, finishing construction and associated site work to be done in normal work hours.

DRMU site position and distance from surrounding residences (closest approx. 50m), and existing visual screening mitigate construction effects.

6.3 Landform, Soils, and Earthworks Effects

Minor earthworks involved in preparing DRMU site and providing access and parking area. Soil displaced will be reused on site. Section 4 of Geotechnical report provides an assessment of soil conditions and methods for managing exposed soils where applicable.

6.4 Freshwater, Stormwater, and Coastal Effects

The Granny Flat project only extends the impermeable surface coverage on the property. Most of the coverage (1054sqm, 25.3%) is associated with the existing principal dwelling and its access driveway and parking area. The FNDC Duty planner confirmed this as 'Existing Use' and therefore not considered in the resource consent requirements. Section 8 of the appended Geotechnical report sets out a process for the attenuation of stormwater associated with the Granny Flat development (238sqm, 5.7% coverage). The plan shows the stormwater flow path, and collection and discharge points.

In addition to the attenuation process, stormwater from the roof areas of both the new Granny Flat and the existing principal dwelling is diverted into three interconnected 25000L water tanks for household supply. This significantly reduces stormwater volume and flow.

The assessed effect of increased stormwater from the development is less than minor.

6.5 Ecology and Indigenous Biodiversity Effects

Minimal effect. The site does not contain and is not close to sensitive or protected habitats. Most areas of planted native and non-native vegetation on the property is not affected by the project and continues to provide shelter and food for birds and insects. Ongoing vermin pest control strategies in place on the property help protect native wildlife.

6.6 Landscape, Natural Character, and Visual Effects

The DRMU is sited to the rear of the principal residence will not be visible from the road or the front of the property. It is also sited low on the site and is only from three neighbouring properties. The boundary to each of these properties is well screened by vegetation and/or timber fencing.

The Granny Flat dwelling would be painted/stained in similar colours to the principal dwelling and would have open wooden decks of a similar style to the principal dwelling

6.7 Transport, Access, and Parking Effects

The project is a minor residential unit development and would not increase the traffic intensity factor beyond that allowable for a standard residential unit. (10 per day). It also would have minimal effect

on local traffic and roading network. The delivery of the modular components to the site would be done by a local company with the appropriate traffic management expertise. The delivery and siting would be a single event during normal working hours.

There is visibility to oncoming traffic along the length of the property's right of way and areas to allow passing if necessary. The principal residence has turning and parking areas separate to the new DRMU.

6.8 Noise, Vibration, Lighting, and Amenity Effects

The project is a minor residential unit development and sited well within the existing property. It is approximately 50m from the nearest neighbouring residence and visually screened by vegetation and/or timber fences. It does not shade or block the outlook of any neighbours. There would be minimal noise or other negative impacts from this residential project.

6.9 Cultural, Heritage, and Archaeological Effects

Consultation with mana whenua (Ngāti Rehia) on 16/7/2026 at Te Runanga o Ngāti Rehia Trust office. No concerns with project and will support resource consent application.

Property records checked to confirm that there are no known significant areas on site.

Council have provided Accidental Discovery protocols. Risk is minimal as development taking place on an existing residential site.

6.10 Infrastructure and Servicing Effects

No council water, wastewater or stormwater infrastructure to connect to. All managed through on-site infrastructure. A Geotechnical Report (Appendix D) has plans for upgrade of the wastewater drainage field to cater for increased volume. Also, for the connection of the DRMU to the existing septic system. Relevant capacity calculations are provided. The property owners will maintain the septic tank cleaning schedule

The site has existing rainwater collection and storage capacity of 75,000L, and this will be extended by a further 15000L tank. The DRMU roof water will be connected to this storage. This will provide adequate water supply for household use and first response firefighting supply. It also provides an attenuation system for the increased impermeable surface effect of the project (see section 6.4)

A separate power connection to the DRMU via the principal residence supply is to be made by an electrician with Top Energy approval.

6.11 Natural Hazards and Climate Change Effects

The Geotechnical Report sections 2 to 4 report on and assess natural hazard risks related to the site. Not in any natural hazard risk zones and low level of land associated risks on site. Stormwater attenuation and management plan provided to minimise effects in extreme rainfall events.

6.12 Positive Effects

The project provides benefits to the current occupiers of the principal residence and the proposed related family occupiers of the DRMU. It provides an affordable housing option for a young family

looking to relocate to this area and live close to parents. This provides the property-owning parents with support to maintain the large property and have supportive family connections.

It also fits with the positive intents of the recently introduced legislation relating to DRMUs/Granny Flats.

7. Alternatives Considered

While the project is unlikely to result in any significant adverse effects, the choice of a modular transportable dwelling is intentional. It allows the removal of the building from the site if housing plans or circumstances change

8. Proposed Consent Conditions

Set out any conditions volunteered by the applicant to manage effects. These may be refined following council review.

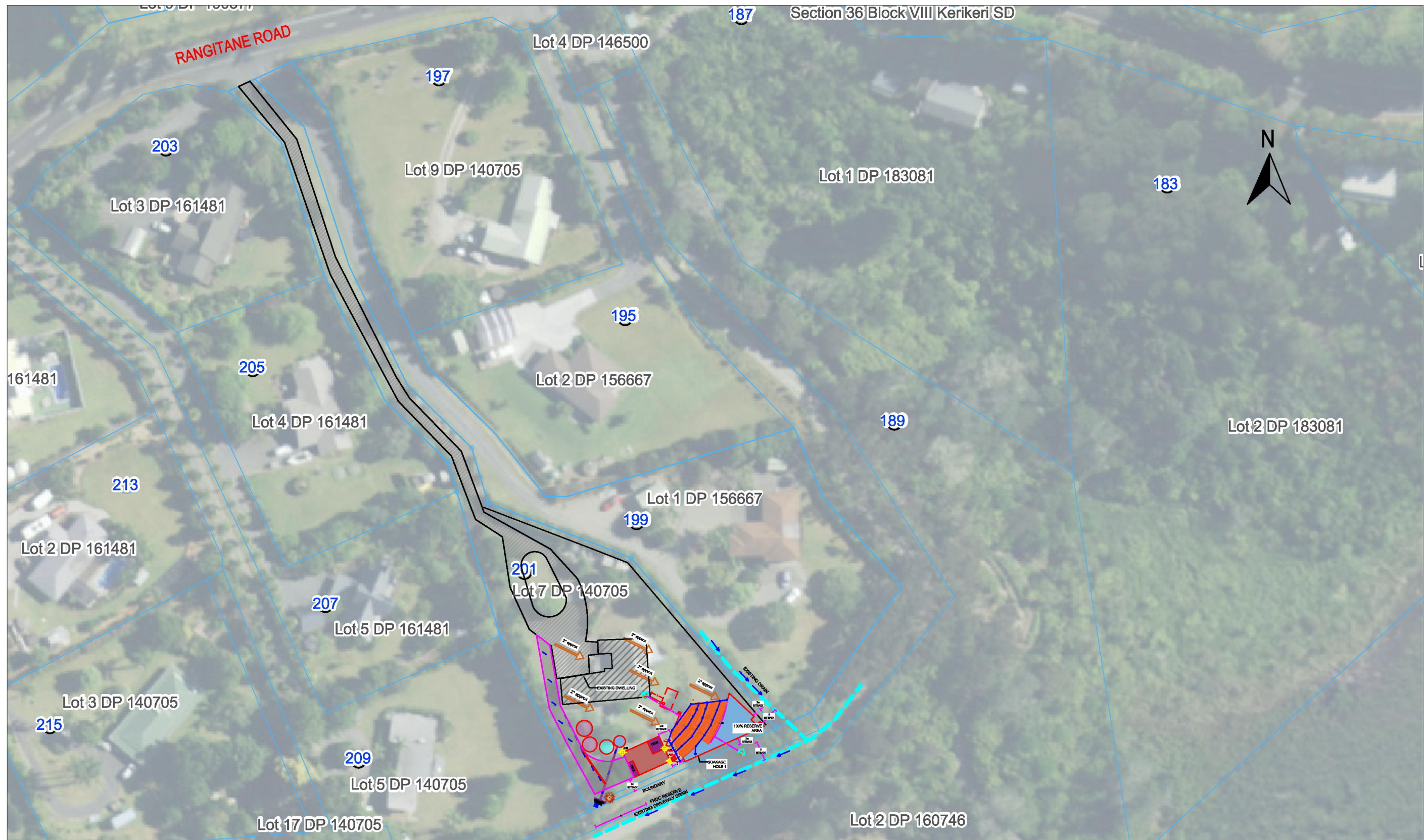
1. The activity shall be undertaken in general accordance with the approved plans and geotechnical report submitted with the application.
2. After the completion of works, the consent holder shall provide certification records required to FNDC as per the PIM requirements.
3. On site construction works shall occur only between 7am and 7pm unless otherwise approved by Council.
4. The consent holder shall implement the mitigation and monitoring measures described in this AEE.

9. Conclusion

This Assessment of Environmental Effects has considered the actual and potential effects of the proposed activity on the environment. The assessment has identified relevant effects and proposed measures to avoid, remedy, or mitigate adverse effects. On this basis, the proposal is appropriate for the site and consistent with the relevant planning framework, subject to the mitigation, management, and monitoring measures identified in this report.

10. Appendices

- Appendix A: Site location plan
- Appendix B: Certificate of Title
- Appendix C: Proposal plans and drawings (Modular Dwellings Ltd)
- Appendix D: Geotechnical Report (PK Engineering)
- Appendix E: Relevant planning rules and assessment criteria



Notes:

1. THE COPYRIGHT OF THIS DRAWING IS VESTED IN PK ENGINEERING AND IT MAY NOT BE REPRODUCED IN WHOLE OR PART OR USED FOR THE MANUFACTURE OF ANY ARTICLE WITHOUT THE EXPRESS PERMISSION OF THE COPYRIGHT HOLDERS.
2. VERIFY ALL DIMENSIONS AND LEVELS ON SITE BEFORE COMMENCING WORK. USE WRITTEN DIMENSIONS IN PREFERENCE TO SCALING THESE DRAWINGS.

CLIENT: RODGERS, TERRY			
SITE: 201 RANGITANE ROAD KERIKERI			
TITLE: PROPOSED MINOR DWELLING LOCALITY PLAN			
SCALE AT A3: 1:1000	DATE: JUNE 26	DRAWN: JW	CHECKED: PK
PROJECT NO: 26-018	DRAWING NO: A3/SG0	REVISION: BC0	

REV:	DESCRIPTION:	BY:	DATE:
ISSUED FOR CONSENT			
LEVEL 1, ANZ BANK 90 KERIKERI ROAD, KERIKERI PO BOX 464, KERIKERI Phone Number: 09 407 3255 Email: teampk@pkengin.co.nz			



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

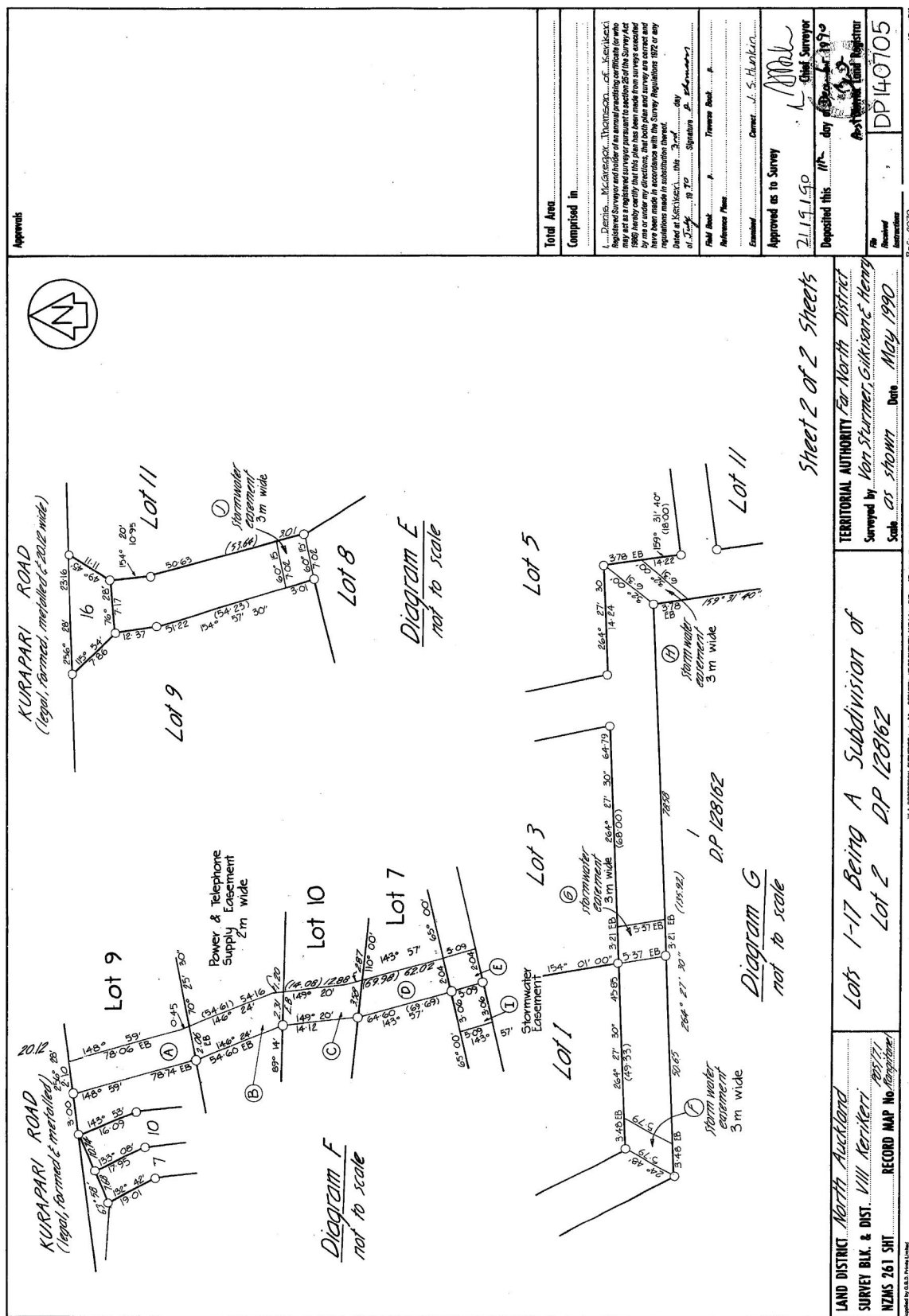


R.W. Muir
Registrar-General
of Land

Identifier **NA83C/338**
Land Registration District **North Auckland**
Date Issued 11 December 1990
Prior References
 NA74D/160

Estate Fee Simple
Area 4164 square metres more or less
Legal Description Lot 7 Deposited Plan 140705
Registered Owners
 Terrence Richard Rodgers and Philippa Beryl Rodgers

Interests
 Appurtenant hereto is a water supply right specified in Easement Certificate B992969.3
 The easements specified in Easement Certificate B992969.3 are subject to Section 309 (1) (a) Local Government Act 1974
 Appurtenant hereto is a stormwater right specified in Easement Certificate C221810.3 - 11.12.1990 at 9.49 am
 Subject to are power and telephone supply rights over part marked D on DP 140705 specified in Easement Certificate C221810.3 - 11.12.1990 at 9.49 am
 The easements specified in Easement Certificate C221810.3 are subject to Section 309 (1) (a) Local Government Act 1974
 Fencing Covenant in Transfer C248375.2 - 19.3.1991 at 2.19 pm
 Land Covenant in Transfer C248375.2 - 19.3.1991 at 2.19 pm



PROPOSED DEVELOPMENT SCHEDULE

Legal Description: Lot 7 DP 140705
Site Area: 4164m²
Location: 201 Rangitane Road
, Kerikeri

Wind Zone: Very High
Corrosion Zone: D

Territorial Authority: Far North District Council
Zone: Coastal Living

AREAS

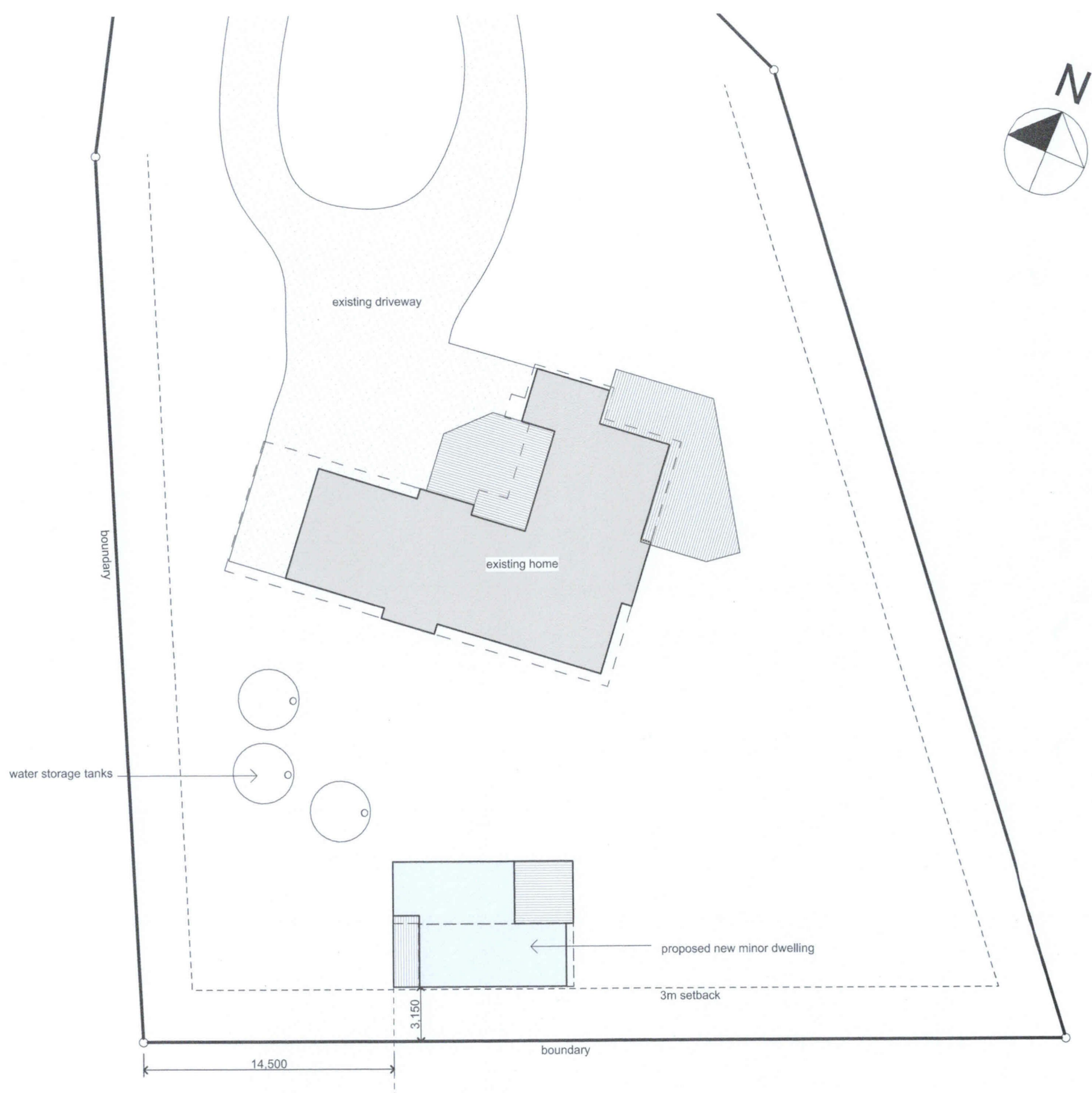
Site Area 4164m²

Floor area (over frame) 55m²
Roof area 58m²

Stormwater Management

Existing Roof area 254m²
New Roof area 58m²

Driveway area (outside roofline) 1000m²
Total Impermeable area 1312m² (32%)



Site Plan

Scale 1:250



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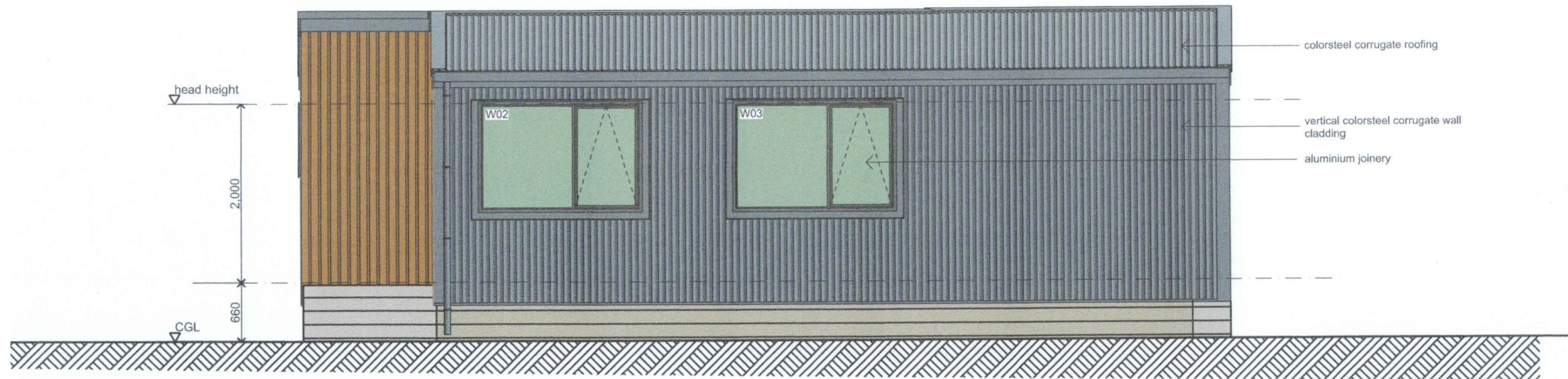
CONCEPT

29/04/2026
NOT FOR CONSTRUCTION

New Transportable Dwelling at 201 Rangitane Road
for Rodgers

Site Plan scale 1:250
Rev. B 29/04/2026

Floor Plan scale 1:50
Rev. B 29/04/2026

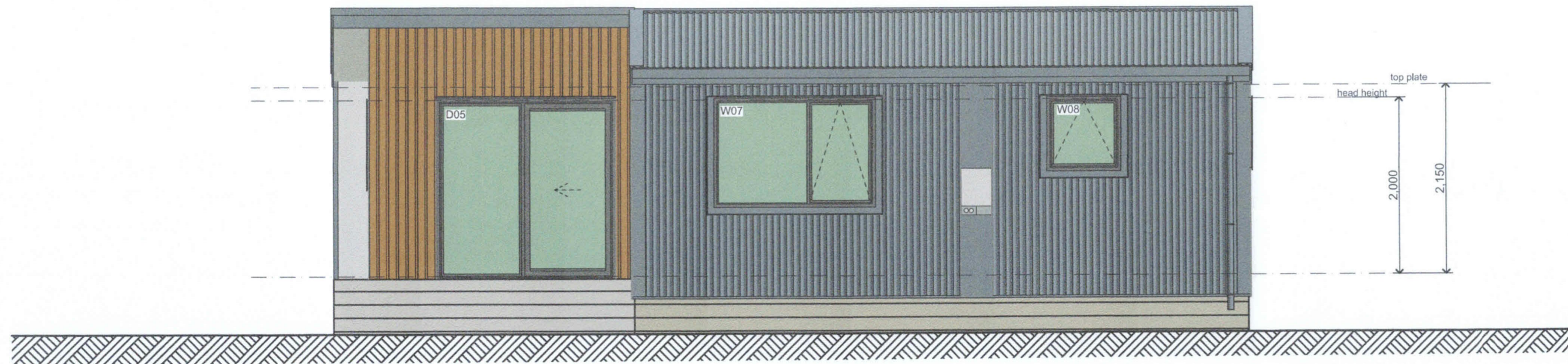


01 Elevation Scale 1:50



02 Elevation Scale 1:50





03

Elevation

Scale 1:50



04

Elevation

Scale 1:50

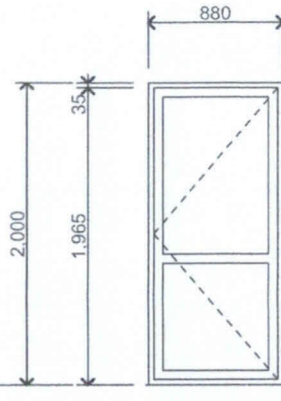
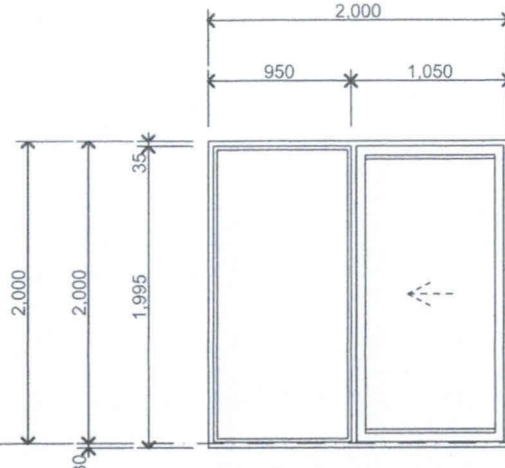
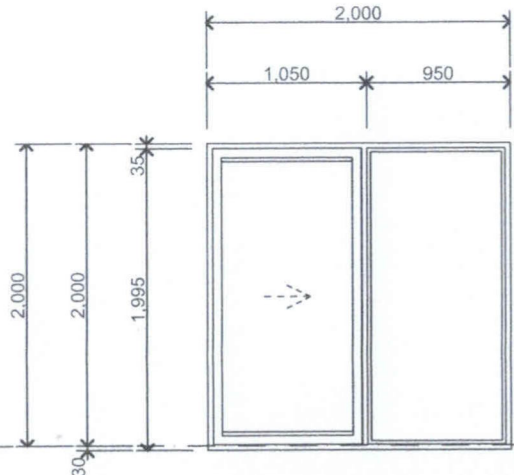
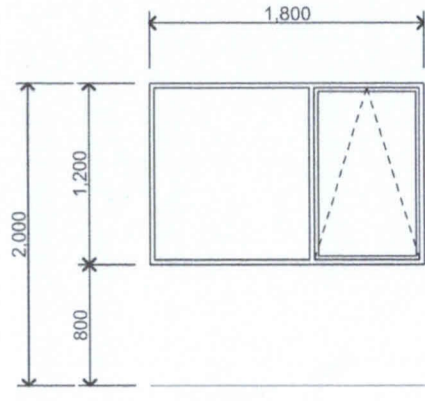
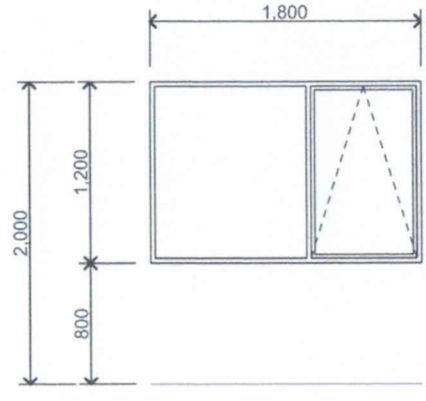
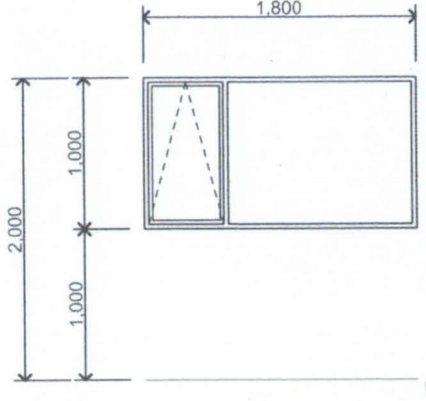


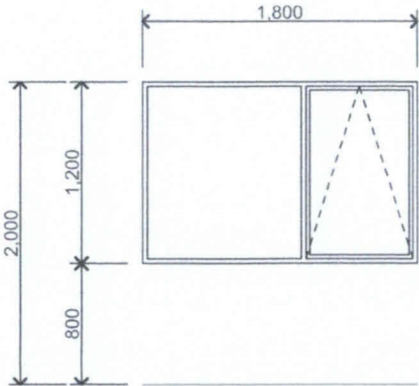
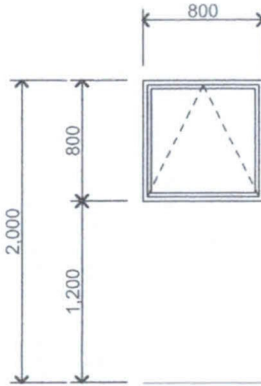
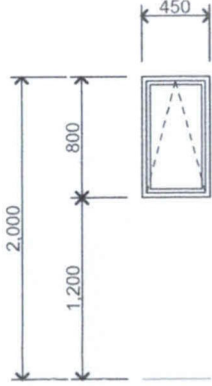
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CONCEPT
29/04/2026
NOT FOR CONSTRUCTION

New Transportable Dwelling at 201 Rangitane Road
for Rodgers

Elevations scale 1:50
Rev. B 29/04/2026

 1 item (D01) <table><tr><td>LOCATION</td><td>Entry</td></tr><tr><td>JOINERY TYPE</td><td>PC Aluminium</td></tr><tr><td>HARDWARE</td><td>Refer to Manufacturers Schedule</td></tr><tr><td>GLASS</td><td>Double Glazed Toughened Safety Glass</td></tr><tr><td>REVEAL</td><td>19mm FJ H3.1 PINE</td></tr><tr><td>CALCULATIONS</td><td>Area 1.76 R-value 0.42</td></tr></table>	LOCATION	Entry	JOINERY TYPE	PC Aluminium	HARDWARE	Refer to Manufacturers Schedule	GLASS	Double Glazed Toughened Safety Glass	REVEAL	19mm FJ H3.1 PINE	CALCULATIONS	Area 1.76 R-value 0.42	 1 item (D05) <table><tr><td>LOCATION</td><td>Kitchen</td></tr><tr><td>JOINERY TYPE</td><td>PC Aluminium</td></tr><tr><td>HARDWARE</td><td>Refer to Manufacturers Schedule</td></tr><tr><td>GLASS</td><td>Double Glazed Toughened Safety Glass</td></tr><tr><td>REVEAL</td><td>19mm FJ H3.1 PINE</td></tr><tr><td>CALCULATIONS</td><td>Area 4.06 R-value 0.42</td></tr></table>	LOCATION	Kitchen	JOINERY TYPE	PC Aluminium	HARDWARE	Refer to Manufacturers Schedule	GLASS	Double Glazed Toughened Safety Glass	REVEAL	19mm FJ H3.1 PINE	CALCULATIONS	Area 4.06 R-value 0.42	 1 item (D06) <table><tr><td>LOCATION</td><td>Bedroom</td></tr><tr><td>JOINERY TYPE</td><td>PC Aluminium</td></tr><tr><td>HARDWARE</td><td>Refer to Manufacturers Schedule</td></tr><tr><td>GLASS</td><td>Double Glazed Toughened Safety Glass</td></tr><tr><td>REVEAL</td><td>19mm FJ H3.1 PINE</td></tr><tr><td>CALCULATIONS</td><td>Area 4.06 R-value 0.42</td></tr></table>	LOCATION	Bedroom	JOINERY TYPE	PC Aluminium	HARDWARE	Refer to Manufacturers Schedule	GLASS	Double Glazed Toughened Safety Glass	REVEAL	19mm FJ H3.1 PINE	CALCULATIONS	Area 4.06 R-value 0.42
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 1 item (W02) <table><tr><td>LOCATION</td><td>Bedroom</td></tr><tr><td>JOINERY TYPE</td><td>PC Aluminium</td></tr><tr><td>HARDWARE</td><td>Refer to Manufacturers Schedule</td></tr><tr><td>GLASS</td><td>Double Glazed Clear Float</td></tr><tr><td>REVEAL</td><td>19mm FJ H3.1 PINE</td></tr><tr><td>CALCULATIONS</td><td>Area 2.16 R-value 0.42</td></tr></table>	LOCATION	Bedroom	JOINERY TYPE	PC Aluminium	HARDWARE	Refer to Manufacturers Schedule	GLASS	Double Glazed Clear Float	REVEAL	19mm FJ H3.1 PINE	CALCULATIONS	Area 2.16 R-value 0.42	 1 item (W03) <table><tr><td>LOCATION</td><td>Living</td></tr><tr><td>JOINERY TYPE</td><td>PC Aluminium</td></tr><tr><td>HARDWARE</td><td>Refer to Manufacturers Schedule</td></tr><tr><td>GLASS</td><td>Double Glazed Clear Float</td></tr><tr><td>REVEAL</td><td>19mm FJ H3.1 PINE</td></tr><tr><td>CALCULATIONS</td><td>Area 2.16 R-value 0.42</td></tr></table>	LOCATION	Living	JOINERY TYPE	PC Aluminium	HARDWARE	Refer to Manufacturers Schedule	GLASS	Double Glazed Clear Float	REVEAL	19mm FJ H3.1 PINE	CALCULATIONS	Area 2.16 R-value 0.42	 1 item (W04) <table><tr><td>LOCATION</td><td>Kitchen</td></tr><tr><td>JOINERY TYPE</td><td>PC Aluminium</td></tr><tr><td>HARDWARE</td><td>Refer to Manufacturers Schedule</td></tr><tr><td>GLASS</td><td>Double Glazed Clear Float</td></tr><tr><td>REVEAL</td><td>19mm FJ H3.1 PINE</td></tr><tr><td>CALCULATIONS</td><td>Area 1.80 R-value 0.42</td></tr></table>	LOCATION	Kitchen	JOINERY TYPE	PC Aluminium	HARDWARE	Refer to Manufacturers Schedule	GLASS	Double Glazed Clear Float	REVEAL	19mm FJ H3.1 PINE	CALCULATIONS	Area 1.80 R-value 0.42
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CALCULATIONS	Area 1.80 R-value 0.42																																					

		
1 item (W07)	1 item (W08)	1 item (W09)
LOCATION Bedroom	LOCATION Bathroom	LOCATION Laundry
JOINERY TYPE PC Aluminium	JOINERY TYPE PC Aluminium	JOINERY TYPE PC Aluminium
HARDWARE Refer to Manufacturers Schedule	HARDWARE Refer to Manufacturers Schedule	HARDWARE Refer to Manufacturers Schedule
GLASS Double Glazed Clear Float	GLASS Double Glazed Obscure Etchlite Toughened Safety Glass	GLASS Double Glazed Obscure Etchlite Toughened Safety Glass
REVEAL 19mm FJ H3.1 PINE	REVEAL 19mm FJ H3.1 PINE	REVEAL 19mm FJ H3.1 PINE
CALCULATIONS Area 2.16 R-value 0.42	CALCULATIONS Area 0.64 R-value 0.42	CALCULATIONS Area 0.36 R-value 0.42

Rural Lifestyle Zone

RLZ-R2

Impermeable surface coverage

Rural Lifestyle zone

Activity status: Permitted

Where

PER-1

The impermeable surface coverage of any site is no more than 12.5% or 2,500m², which ever is lesser.

Activity status where compliance not achieved with PER-1: Restricted discretionary

Matters of discretion are restricted to:

- the extent to which **landscaping** or vegetation may reduce adverse **effects** of run-off;
- the effectiveness of the proposed method for controlling **stormwater** on **site**;
- the availability of **land** for disposal of effluent and **stormwater** on the **site** without adverse **effects** on adjoining **waterbodies** (including **groundwater** and **aquifers**) or on adjoining **sites** or downstream **sites**; and
- whether **water** sensitive design methods and use of green spaces can be used;
- any cumulative **effects** on total catchment impermeability;
- natural hazard** mitigation and **site** constraints; and
- extent of potential adverse **effects** on cultural, spiritual, heritage and/or **amenity values** of any affected **waterbodies**.

Coastal living Zone

10.7.5.1 PERMITTED ACTIVITIES

10.7.5.1.6

STORMWATER MANAGEMENT

The maximum proportion or amount of the **gross site area** which may be covered by buildings and other impermeable surfaces shall be 10% or 600m² whichever is the lesser.

10.7.5.3

RESTRICTED DISCRETIONARY ACTIVITIES

An activity is a restricted discretionary activity in the Coastal Living Zone if:

- a. it does not comply with any one of the following **Rules** [10.7.5.1.1 Visual Amenity](#); [10.7.5.1.3 Scale of Activities](#); [10.7.5.1.4 Building Height](#); [10.7.5.1.5 Sunlight](#); [10.7.5.1.6 Stormwater Management](#); [10.7.5.1.7 Setback from Boundaries](#); [10.7.5.1.9 Transportation](#); [10.7.5.1.12 Noise](#) and/or [10.7.5.2.2 Visual Amenity](#) as set out above; but
- b. it complies with all of the other rules for permitted and controlled activities under **Rules** [10.7.5.1](#) and [10.7.5.2](#); and
- c. it complies with **Rules** [10.7.5.3.1 Visual Amenity](#); [10.7.5.3.2 Building Height](#); [10.7.5.3.3 Sunlight](#); [10.7.5.3.4 Transportation](#); [10.7.5.3.5 Scale of Activities](#); [10.7.5.3.6 Setback from Boundaries](#); [10.7.5.3.7 Noise](#) and [10.7.5.3.8 Stormwater Management](#) below; and
- d. it complies with the relevant standards for permitted, controlled or restricted discretionary activities set out in **Part 3 of the Plan - District Wide Provisions**.

The [Council](#) may approve or refuse an application for a restricted discretionary activity, and it may impose conditions on any consent.

In assessing an application for a restricted discretionary activity, the [Council](#) will restrict the exercise of its discretion to the specific matters listed for each rule below, or where there is no rule, to the specific matters listed below under the appropriate heading.

STORMWATER MANAGEMENT

The maximum proportion or amount of the [gross site area](#) covered by buildings and other impermeable surfaces shall be 15% or 1,500m², whichever is the lesser.

In assessing an application under this provision the [Council](#) will restrict the exercise of its discretion to:

- a. the extent to which [building site](#) coverage and Impermeable Surfaces contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment;
- b. the extent to which Low Impact Design principles have been used to reduce [site](#) impermeability;
- c. any cumulative effects on total catchment impermeability;
- d. the extent to which [building site](#) coverage and Impermeable Surfaces will alter the natural contour or drainage patterns of the [site](#) or disturb the ground and alter its ability to absorb water;
- e. the physical qualities of the soil type;
- f. any adverse effects on the life supporting capacity of soils;
- g. the availability of [land](#) for the disposal of effluent and stormwater on the [site](#) without adverse effects on the water quantity and water quality of water bodies (including groundwater and aquifers) or on adjacent sites;

- h. the extent to which paved, Impermeable Surfaces are necessary for the proposed activity;
- i. the extent to which [landscaping](#) and vegetation may reduce adverse effects of run-off;
- j. any recognised standards promulgated by industry groups;
- k. the means and effectiveness of mitigating stormwater runoff to that expected by [permitted activity](#) threshold;
- l. the extent to which the proposal has considered and provided for climate change.

10.7.5.4 DISCRETIONARY ACTIVITIES

An activity is a discretionary activity in the Coastal Living Zone if:

- a. it complies with **Rules 10.7.5.4.1 Residential Intensity; 10.7.5.4.4 Helicopter Landing Area** and/or **10.7.5.4.3 Integrated Development** below; and
- b. it complies with the relevant standards for permitted, controlled, restricted discretionary or discretionary activities set out in **Part 3 of the Plan - District Wide Provisions**; but
- c. it does not comply with one or more of the other standards for permitted, controlled or restricted discretionary activities in this zone as set out under **Rules 10.7.5.1, 10.7.5.2 and 10.7.5.3** above.

The [Council](#) may impose conditions of consent on a discretionary activity or it may refuse consent to the application. When considering a discretionary activity application, the [Council](#) will have regard to the assessment criteria set out under [Chapter 11](#).

If an activity does not comply with the standards for a discretionary activity, it will be a non-complying activity in this zone.

11.3

STORMWATER MANAGEMENT

- a. The extent to which [building site](#) coverage and impermeable surfaces result in increased stormwater runoff and contribute to total catchment impermeability and the provisions of any catchment or drainage plan for that catchment.
- b. The extent to which Low Impact Design principles have been used to reduce [site](#) impermeability.
- c. Any cumulative effects on total catchment impermeability.
- d. The extent to which [building site](#) coverage and impermeable surfaces will alter the natural contour or drainage patterns of the [site](#) or disturb the ground and alter its ability to absorb water.
- e. The physical qualities of the soil type.
- f. Any adverse effects on the life supporting capacity of soils.

- g. The availability of **land** for the disposal of effluent and stormwater on the **site** without adverse effects on the water quantity and water quality of water bodies (including groundwater and aquifers) or on adjacent sites.
- h. The extent to which paved, impermeable surfaces are necessary for the proposed activity.
- i. The extent to which **landscaping** may reduce adverse effects of run-off.
- j. Any recognised standards promulgated by industry groups.
- k. The means and effectiveness of mitigating stormwater run-off to that expected by the **permitted activity** threshold.
- l. The extent to which the proposal has considered and provided for climate change.
- m. The extent to which stormwater detention ponds and other engineering solutions are used to mitigate any adverse effects.

When considering a discretionary activity application, the **Council** will have regard to the assessment criteria set out under **Chapter 11**.

1. 11 ASSESSMENT CRITERIA

https://www.fndc.govt.nz/_data/assets/pdf_file/0023/8681/11.-Assessment-criteria.PDF



GEOTECHNICAL REPORT

FOR

PROPOSED NEW MINOR DWELLING (GRANNY FLAT)

AT

LOT 7 DP 140705

201 RANGITANE ROAD, KERIKERI

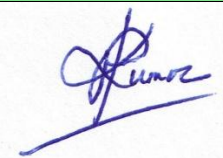
FOR

TERRY RODGERS

Job No:	26-018
Date: BC0	18/06/2026

Level 1 ANZ Bank Building 90 Kerikeri Road, Kerikeri, New Zealand
Telephone: 09 407 3255 Email: teampk@pkengin.co.nz

Revision	Date of issue	Description
BC0	18/06/2026	First Issue

Prepared By: Jonty White	Reviewed By: Rahul Chandrashekar	Authorized By: Pradeep Kumar
		
Engineering Geologist (BSc, Geology)	Structural Engineer BE (Civil), ME (Civil – Structural), MEngNZ	BE Hons (Civil), CPEng, CMEngNZ (203058) (Structural, Geotechnical)

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APPENDIX A – Augerhole, Scala Penetrometer Data & Soakage Test locations

APPENDIX B – Drawings

APPENDIX C – TP58 and PS1

APPENDIX D – Stormwater Calculations

1. INTRODUCTION

This report was requested by Terry Rodgers and has been prepared to assess the geotechnical and site suitability aspects of LOT 7 DP 140705, 201 Rangitane Rd, Kerikeri for the proposed minor dwelling (granny flat).

This report assesses the site regarding, land stability, foundation requirements, earthworks, drainage, stormwater and wastewater disposal and can be used to support resource and building consent applications to the local territorial authority. It has been prepared for the sole use of our client. It shall not be used, reproduced or copied in any manner or form without the permission of PK Engineering Ltd.

2. DESKTOP STUDY

2.1 GENERAL SITE DESCRIPTION

The lot encompasses a land area of approximately 0.4 hectares gently sloping towards the southeast, with an existing dwelling and garage parking area directly off Rangitane road. The existing building is approximately 250m² and sits in the centre of the site. The location for the proposed minor dwelling (granny flat) is to be placed at the most southern end of the site approximately 20 metres south of the main dwelling. The granny flat will be accessed by the western boundary where the existing access will be extended to create a parking area. Reference should be made to the Locality plan and Site plan on Sheets SG0 & SG1 in Appendix B.

The locations of features and dimensions of all features as shown on the accompanying plans and discussed in this report are from FNDC maps and onsite measurements. These measurements should be verified on site prior to construction.

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 this site. During construction should ground conditions be found to vary significantly from those described in this report PK Engineering Ltd. is to be notified immediately.

2.2 COUNCIL NATURAL HAZARDS

No Natural Hazards have been identified by Northland Regional Council.

2.3 GEOLOGICAL MAPPING

The soil in the area is classified as Waiotu friable clay from the weathering down of the basaltic volcanic rock. The Underlying geology is described as Kerikeri volcanic group late Miocene basalt of Kaikohe- Bay of Islands volcanic field as mapped by GNS web maps.

2.4 PREVIOUS REPORTING

No previous reporting has been identified for this site.

3. SITE INVESTIGATIONS AND SOIL CLASSIFICATION

3.1 VISUAL INVESTIGATION

A thorough walkover of the site was undertaken, and geotechnical features related to site stability and stormwater flows and wastewater disposal were noted.

3.2 SUBSURFACE INVESTIGATIONS.

We undertook three subsurface exploratory auger holes labelled on the site plan as AH1 – AH3 have been drilled on the site to establish the foundation requirements. All auger hole locations are shown on the attached site plan. In situ undrained shear strength readings were taken at 300mm intervals in each hole. These holes were drilled with a 50mm hand auger to a target depth of 3.0 metres or until refusal. Scala penetrometer tests were carried out in the base of the auger holes and readings were taken as blows per/50mm increment until sufficient depth or refusal into highly weathered rock.

A table has been provided below to summarise the subsurface auger hole data (Table 2)

Table 2: Subsurface data

Item	Auger Depth (m)	Rock Intercept (m)	Scala Depth (m)	GWL
AH1/PT1	1.35	2.65	2.7	-
AH2	1.1	-	-	-
AH3	0.97	-	-	-

All Auger holes AH1 – AH3 intercepted very stiff silty clays with undrained shear strengths exceeding 100kPa. Beyond the upper 0.9m the soils became less clayey with higher sand content and denser compaction. It was too difficult to hand auger past the depth of approximately 1.0m in each location. Scala penetrometer testing was undertaken in AH1 to a depth of 2.7m where refusal was found in the inferred highly weathered rock layers. A 100mm weak layer was found in AH1 at 1.5m below ground level. No ground water was encountered in any of the test locations. In AH1 the tip of the scala rod was wet after testing, therefore it can be assumed a ground water table may be close to 3.0 metres at the time of this investigation.

The auger hole inferred subsoil profiles have been illustrated on cross section A-A. Reference should be made to Appendix A and the auger hole logs and scala penetrometer sheets in appendix A.

3.3 GROUND WATER AND MOISTURE CONDITIONS

At the time of the investigation soils were found to be in a reasonably moist condition. The Scala penetrometer in AH1 intercepted some standing water which may be the ground water table at approximately 2.7m below the existing ground level.

3.4 LABORATORY TESTING

No Laboratory testing was undertaken as part of this investigation.

3.5 SEISMIC SUBSOIL CLASS

This site is considered Subsoil Class C – Shallow soil site as defined by NZS 1170.5 (2004) “Structural Design Actions) Part 5: Earthquake actions – New Zealand “based on the greater than 3 metres of soil encountered on the site.

4. GEOTECHNICAL HAZARDS/SITE STABILITY

4.1 DEFINITION AND LEGISLATION

This section provides information that relates to section 71 (3) of the Building Act (2004), which in purpose is set out to assess the geotechnical hazards and their limitations and restrictions on buildings on land subject to natural hazards. Those hazards are:

- Erosion (including coastal erosion, bank erosion, and sheet erosion)
- Falling debris (including soil, rock, snow and ice)
- Subsidence
- Inundation (including flooding, overland flow, storm surge, tidal effects, and ponding).
- Slippage.

The relevant hazards and their relationship to the site and buildings are outlined in the remainder of this section below.

4.2 EARTHQUAKE AND TSUNAMI HAZARDS

This site is located in the low-risk zone for earthquakes due to its distance from known active faults and the Hikurangi subduction zone. Earthquake design criteria is not considered necessary for the proposed development. Likewise, the risk of inundation is negligible on this site due to its elevation of >20 metres above the mean sea level datum.

4.3 FLOOD HAZARD/COASTAL HAZARD AND INUNDATION RISKS

No flood risks are present for this site due to its location on a ridgeline set well above any low-lying flood prone areas.

4.4 LIQUEFACTION

This site has low risk of liquefaction due to the known properties of the soil type encountered. The significant cohesive clay fraction ensures that the critical property of a soil that leads to liquefaction has a very low probability of occurring on this site. Liquefaction prone soils are largely granular in nature and have elevated groundwater tables.

4.5 GROUND DEFORMATION OR SETTLEMENT

The soils on this site generally exhibit high strength and low compressibility.

4.6 SOIL EXPANSIVITY.

The soils on this site can be classified as “**moderately expansive**” based on tactile descriptions made on site and experience in the locality. moderately expansive soils as per the classification are expected to have an I_{ss} range of 2.0-3.7% and a 500-year design characteristic surface movement return (Y_s) of 44mm as stated in the NZ Building Code, clause 7.5.13

It is recommended to limit the exposure of any cut surfaces to excessive wetting and drying over the seasons. This can lead to desiccation cracking and instability. Any cut faces should be vegetated with plants such as vetiver grass or any locally hard-wearing deep-rooted plant known to provide erosion control. A suitable geomesh such as CIRTEX BIOCOIR Coconut Matting (0800 247 839) may also be used to prevent excessive drying of exposed cut faces.

4.7 LANDSCAPING INFLUENCES

Care should be taken as to the landscaping aspects of the site and the influences of large trees on the long-term performance of shallow foundations. Generally, trees can influence the foundations when planted near enough to cause volumetric changes in the soil structure due to moisture content changes from trees ability to suck the moisture out of the soil. These volumetric changes in the soil around foundations can be especially problematic when the upper soil layers are moderately to highly expansive in nature, and when the foundations are shallow in nature such as slab on grade or rib raft type foundations. The foundations on this site are expected to be embedded just below the expansive layers therefore the risks stated above are considered of medium risk to the foundation and structure. Planting should still be chosen carefully so to improve the stability of the site and not to increase wetting and drying (shrink swell effects) of the expansive soils.

4.8 UNCONTROLLED FILL

Our investigation did not encounter any uncontrolled fill.

4.9 EROSION AND DRAINAGE

No signs of surface erosion or slipping has appeared on the site within the vicinity of the proposed building platform and it appears that stormwater drainage measures are currently controlled adequately. It should be understood that all drainage measures are required to be utilized effectively during and after construction in order to limit erosion that may lead to desiccation and erosion of the upper soil layers.

4.10 MASS MOVEMENT, LANDSLIDE RISK

There are no known mass movement areas within the vicinity of this site, the site is well away from any steep slopes.

4.11 SLOPE STABILITY

The site is relatively flat and is not subject to slope stability issues.

5. ENGINEERING RECOMMENDATIONS

5.1 BUILDING FOUNDATIONS

The site soils conditions require engineering consideration due to the Class M (moderately expansive) nature of the upper 1.0 metres of residual silty Clay soils. If a concrete encased timber post NZ3604:2011 type foundation is preferred for the granny flat on this site, then all foundations should account for the moderately expansive soils by utilizing a total embedment of 0.9m into natural ground would be sufficient for this site.

If a NZS3604 type concrete slab on grade foundation is preferred, then all perimeter footings should be embedded minimum 525mm into natural ground to account for the Class M soils.

5.3 RETAINING WALLS.

Any retaining greater than 1.0 metre high or subject to surcharge loading (buildings, driveways, or backslope exceeding 15 degrees) should be designed by a suitably experienced chartered professional engineer. Where applicable retaining walls are to provide support to cut faces. All retaining wall heights should be verified prior to structural design.

5.4 ACCESS AND PARKING

Suitable access can be created as shown on the site plan SG1 in appendix B. Surface water can be collected in a cesspit at a low point and dispersed to the boundary via the dispersal system provided in the engineering drawings.

6. EARTHWORKS RECOMMENDATIONS

6.1 SITE PREPARATION AND EARTHWORKS

Care should be taken to protect the site during construction, although very minimum cutting is required, adequate protection of the cut should be undertaken in order to protect the clays from excessive desiccation and erosion. A geotextile blanket or similar protective blanket should be utilized in the short term to protect all exposed cut faces.

6.1.1 CUT BATTER SLOPES

Maximum cut batters up to 1.0m may be used in developing this site provided they have a maximum slope of 1 vertical to 2 horizontal (Approx 26 degrees). All cut batter slopes should be planted in vegetation (e.g Vetiver grass) or covered by a suitable geofabric following excavation.

6.1.2 ENGINEERED FILL

No engineered fill is required as part of these plans.

6.1.3 SITE DRAINAGE

Drainage measures should be in place so that no pooling or concentrated water is on or around the building platform, this includes short term and long-term drainage measures.

6.1.4 FOUNDATION PREPARATION

All foundations should be free of excessive soil spoils or water and must be approved by an engineer prior to concrete pour. Excavated foundations should be protected against direct rainfall and ingress of stormwater runoff. Care should be taken to cover excavated foundations against impending rainfall events, prior to concrete pour.

7. POTABLE WATER SUPPLY

A far north district council approved inline filter should be fitted to the water supply for the granny flat.

7.1 FIRE FIGHTING SUPPLY.

Not part of this report.

8. STORMWATER

The site is zoned '*Coastal Living*' under the district plan. In order to constitute a permitted activity a maximum of 10% of the total site area may be used for impermeable surfaces (Roof, driveways and sealed areas).

Post development site coverage:

Granny flat – 58m²
Driveway - 180m²

Total = 238m²

Pre development site coverage:

Existing dwelling - 254m²
Existing gravel driveway – 800m²

Total = 1054m²

In order to comply with the objectives of the proposed district plan it is proposed to reduce stormwater runoff from the proposed development by attenuating the total post development site coverage and effectively reducing runoff in a 1 in 100-year (1%AEP) and 1 in 10 year (10% AEP) storm event scenarios to pre development levels.

This attenuation has been achieved by connecting the roof water from the existing house and the proposed granny flat water tanks in series to a separate 15,000L water tank with carefully calibrated outflow orifice diameters.

The volume of stormwater attenuated during a 1% AEP storm events is 14.6m³ and during 10% AEP storm events is 9.3m³. A summary of the attenuation design is provided in figure 1 below. An attenuation tank detail has been provided on sheet SG5 of the drawing sin appendix B.

	Orifice diameter	Orifice invert location
ARI 10	24 mm	2030 mm below overflow invert
ARI 100	26 mm	730 mm below overflow invert
Tank Size	1 x	15,000 litres @ 3 m Ø
ARI 10		9,376.6 litres
ARI 100		14,461.2 litres
Reuse		538.8 litres

Figure 1: Attenuation design

The overflow from the 15,00L tank is to consist of a 150 Upvc at minimum 1 in 100 fall to the spreader bar as shown on the site plan which returns overflow stormwater to sheet flow. Including surface water picked by the cesspit.

9. WASTEWATER

We undertook two percolation tests on site labelled as SH1 and SH2 within the proposed wastewater disposal area, along with a nearby auger hole. The information from this testing has allowed us to establish that the soils that exist on this site exhibit moderate to slow drainage rates. It has been classified as a category type 5 soil as per Technical Publication No. TP58 and Category 4 type soils as per ASNZS 1547/2012.

A TP58 Report has been provided in Appendix C.

The design of the wastewater disposal is based on the following:

- Existing Dwelling 3 Bedrooms
- Proposed Granny Flat 2 bedrooms

A total population of 8 persons. Using 160 Litres per day, giving a total daily wastewater production of 1300 litres.

The recommended type of treatment makes use of the existing septic tank which is to comply with ASNZ 1547 to be a minimum of 4,000 litre capacity for the 8 person's design. The quality of the effluent is deemed as treated to a primary level and would be disposed of in a series of soakage trenches gravity assisted distribution evenly spread into each trench. The location of this wastewater field is provided in the drawings to meet the relevant council setbacks.

The wastewater disposal field design is as follows:

- A dozing rate of 12mm per day has been utilized in accordance with the table 5.3 of the ASNZS 1547 for the category 4 type soils.
- The total disposal area required is 108m². Within this area a series of soakage trenches 0.6m wide x 450mm deep placed 2.0m apart, will evenly distribute the effluent to the subsoils.
- A 100% reserve area is made available as shown on the drawings, also to comply with the relevant council setbacks.
- It is important to provide a surface runoff interceptor swale drain to divert water away from the soakage area.

Due to the raised elevation of the existing septic tank, a low-pressure macerator pump will be required to pump all wastewater from the minor dwelling to the septic tank. An indicative location for this pump has been shown on the site plan on sheet SG1.

If the wastewater design is carried out as per the design details within the drawings, by a qualified council approved drainlayer then the wastewater disposal on this site can be disposed of in a sustainable manner.

10. RECOMMENDATIONS

I recommend the following:

- NZ3604:2011 type foundations may be utilized for this site provided a minimum embedment depth of 0.9m is provided for all 125 x 125 piles.
- An engineer must check and verify all pile excavations prior to concrete pour.
- Stormwater disposal be carried out as per section 8 of this report
- Wastewater disposal be carried out as per section 9 of this report.

11. CONCLUSION

After carrying out our geotechnical study, we conclude that the construction of the proposed granny flat development; stormwater/wastewater disposal, and foundations can be sustainably undertaken to meet the relevant local and national codes and standards, provided the recommendations and plans within this report are followed diligently with engineering supervision.

12. LIMITATIONS

This report should be read and produced in its entirety including the limitations to understand the context of the opinions and recommendations given.

This report has been prepared exclusively for Terry Rodgers in accordance with the brief given to us and the agreed scope and will be deemed exclusive to the owner. Information, opinions, and recommendations contained in this report can only be used for the purposes with which it was intended. PK Engineering Ltd accepts no liability or responsibility for any use or reliance on this report by any party other than the owner or parties working for or on behalf of the owner, such as local authorities. This report is not to be used for purposes beyond those for which it was intended for. This report was prepared in general accordance with current standards, codes and best practice at the time of this report. These may be subject to change.

The description of soils and analysis is based upon soil mapping in set locations on the site. It has been assumed that soil conditions are consistent with the discoveries in their location - there may be unforeseen variation in between. If any variation is found during the construction phase, then PK Engineering Ltd must be notified as soon as possible to advise on any changes to foundations that may be necessary.

APPENDIX A – Augerhole, Scala Penetrometer Data & Soakage Test locations

APPENDIX B – Drawings

APPENDIX C – TP58 and PS1

APPENDIX D – Stormwater Calculations



APPENDIX A

Geotechnical investigation Soil logs, Scala Penetrometer results and
Soakage Results

BOREHOLE LOG NO - AH1		Location of Borehole		PK ENGINEERING CHARTERED PROFESSIONAL ENGINEERS			
Project: Minor Dwelling 201 Rangitane Rd		Client: Terry Rodgers		Job No: 26-018			
Graphic Symbol @@@ #### 000 DDDDD		FILLCLAYSILT SAND ROCK TOP SOIL Organic Soil		In situ shear vane reading Remoulded shear vane reading Scale Penetrometer			
Soil /Rock Graphical Log		GEOLOGY	LAYERS	Field Description	GWL	Undrained Shear Strength (kPa)	Scala Penetrometer (blows/50mm)
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990		Kerikeri Volcanic Group (10 ma)		~200mm Topsoil Silty CLAY, light brown, stiff, moist, very stiff, moist, moderately to highly plastic. (Natural Residual Soil layer) (0.9m) SILT, some clay, trace coarse sand, old quartz, moist, hard, non plastic (1.1) Sandy SILT, moist to wet, firm. (1.3) Hard (Rocky) Unable to Auger. E.O.H @ 1.35m (Unable to penetrate) Scala Penetrometer from the base	Ground water level not encountered		0 5 10 15 20 0 100 200 300 600 900 1200 1500 1800 2100 2400 2700 3000 3300 3600 3900 4200 4500 4800 5100 5400 UTP 26 132 UTP 0 5 10 15 20 0 300 600 900 1200 1500 1800 2100 2400 2700 3000 3300 135 135 132 26 1500 1550 1600 1650 1700 1750 1800 1850 1900 1950 2000 2050 2100 2150 2200 2250 2300 2350 2400 2450 2500 2550 2600 2650 2700 2750 2800 2850 2900 2950 3000 3050 3100 3150 3200 3250 3300

Drill Methods	50 mm hand auger	Note: All field logging made as per NZGS Guideline "Soil and Rock Field Descriptions" 1. The subsurface data described above has been determined at a specific borehole location. The data will not identify any variations away from the location. 2. UTP - Unable to penetrate.
Test Location	Refer to site plan	
Test Date	12/05/2026	
Drilled By	JW	
Level 1 ANZ Bank Building 90 Kerikeri Road, Kerikeri New Zealand, Telephone: 09 4073255 Email: TeamPK@pkengin.co.nz		

BOREHOLE LOG NO - AH2

Location of Borehole

Project: Minor Dwelling 201 Rangitane Rd

Client: Terry Rodgers

Job No: 26-018

PKENGINEERING

CHARTERED PROFESSIONAL ENGINEERS

In situ shear vane reading

Remoulded shear vane reading

Scale Penetrometer

@@@

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||||

DDDDD

FILL

CLAY

SILT

SAND

ROCK

TOP SOIL

Organic Soil

Graphic Symbol

Soil /Rock Graphical Log

GEOLOGY

LAYERS

Field Description

GWL

Undrained Shear Strength (kPa)

Scala Penetrometer (blows/50mm)

0

100

200

300

600

900

1200

1500

1800

2100

2400

2700

3000

3300

3600

3900

4200

4500

4800

5100

5400

185

185

185

UTP

15

20

0

300

600

900

1200

1500

1800

2100

2400

2700

3000

3300

Topsoil Stripped

Silty CLAY, light brown, , moist, very stiff, moist, moderately to highly plastic. (Natural Residual Soil layer)

(0.9m) SILT, some clay, crumbly, reddish orange, race coarse sand, low plasticity.

(1.1) To dense to drill

E.O.H @ 1.1m (Unable to penetrate)

Ground water level not encountered

Kerikeri Volcanic Group (10 ma)

Residual Soils

Drill Methods

Test Location

Test Date

Drilled By

50 mm hand auger

Refer to site plan

12/05/2026

JW

Note: All field logging made as per NZGS Guideline "Soil and Rock Field Descriptions"

1. The subsurface data described above has been determined at a specific borehole location.

The data will not identify any variations away from the location.

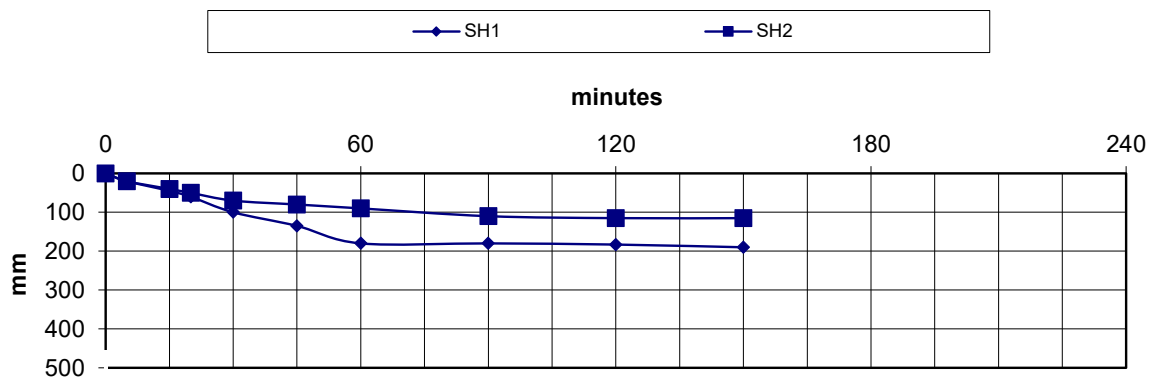
2. UTP - Unable to penetrate.

BOREHOLE LOG NO - AH3		Location of Borehole		PKENGINEERING CHARTERED PROFESSIONAL ENGINEERS			
Project: Minor Dwelling 201 Rangitane Rd							
Client: Terry Rodgers							
Job No: 26-018							
				In situ shear vane reading Remoulded shear vane reading			
				Scale Penetrometer			



Location: 201 Rangitane Road													
Client: Terry Rodgers													
Job No: 26-018										Tested by: JW			
GWL: NE										Date: 12/05/2026			
Soak hole No:	Start	(mins)											
	0	5	15	20	30	45	60	90	120	150	180	210	240
SH1	0												
		20	45	60	100	135	180	180	183	190			
SH2	0												
		20	40	50	70	80	90	110	115	115			

TP58 SOAKAGE TEST





CHARTERED PROFESSIONAL ENGINEERS

APPENDIX B

PROJECT:

CIVIL DRAWINGS
FOR PROPOSED NEW GRANNY FLAT
FOR TERRY RODGERS

PROJECT ADDRESS:

201 RANGITANE ROAD
KERIKERI

LEGAL DESCRIPTION

LOT 7 DP 140705

JOB NO:

26-018

DATE:

18TH JUNE 2026

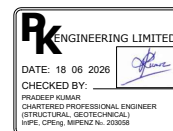
REVISION BC0: ISSUED FOR CONSENT

DRAWING INDEX:

SG0	LOCALITY PLAN
SG1	SITE PLAN
SG2	CROSS SECTION A-A
SG3	WASTEWATER FIELD SCHEMATIC
SG4	STORMWATER DISPERSAL DETAIL
SG5	ATTENUATION TANK DETAIL

BC0

LEVEL 2
ANZ Bank Building
90 Kerikeri road,
P.O.Box 464
KERIKERI
Tel. (09) 4073255
E-mail. teampk@pkengin.co.nz

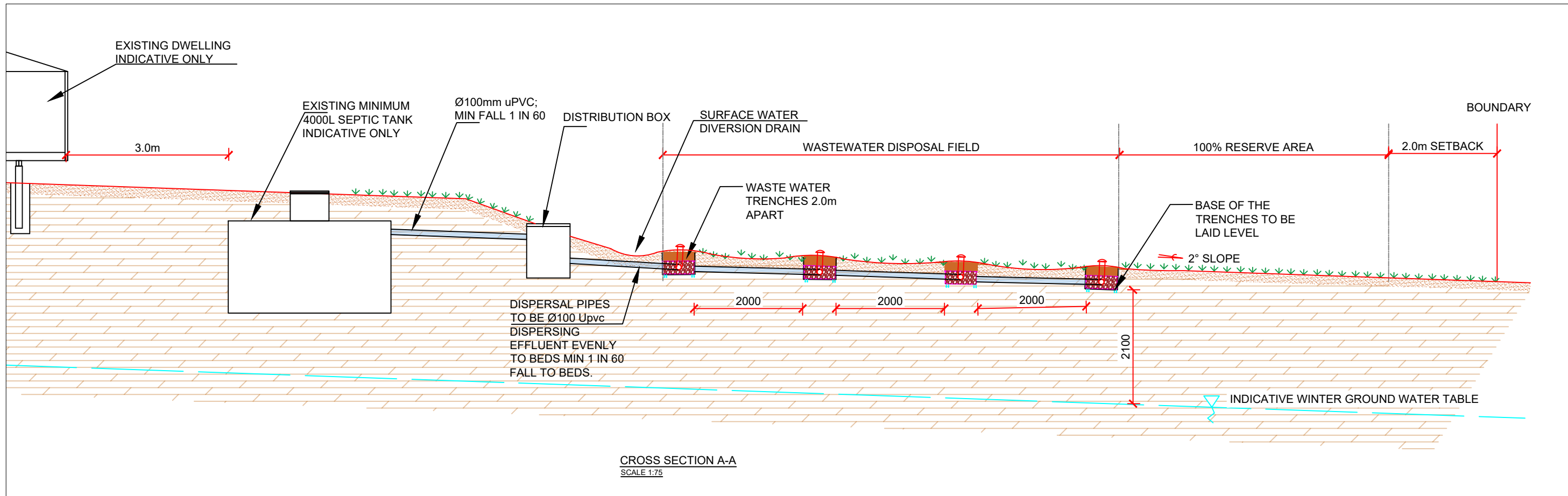
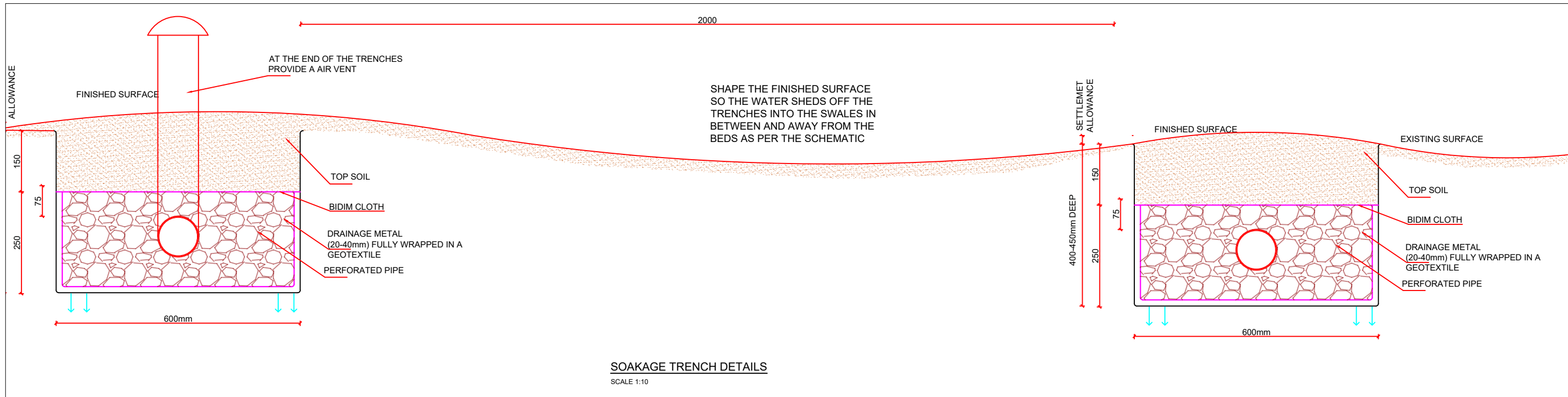


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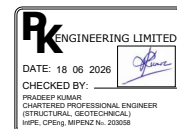
CLIENT: RODGERS, TERRY			
SITE: 201 RANGITANE ROAD KERIKERI			
TITLE: PROPOSED MINOR DWELLING LOCALITY PLAN			
SCALE AT A3: 1:1000	DATE: JUNE 26	DRAWN: JW	CHECKED: PK
PROJECT NO: 26-018	DRAWING NO: A3/SG0	REVISION: BC0	

REV:	DESCRIPTION:	BY:	DATE:
STATUS: ISSUED FOR CONSENT			
LEVEL 1, ANZ BANK 90 KERIKERI ROAD, KERIKERI PO BOX 464, KERIKERI Phone Number: 09 407 3255 Email: teampk@pkengin.co.nz			



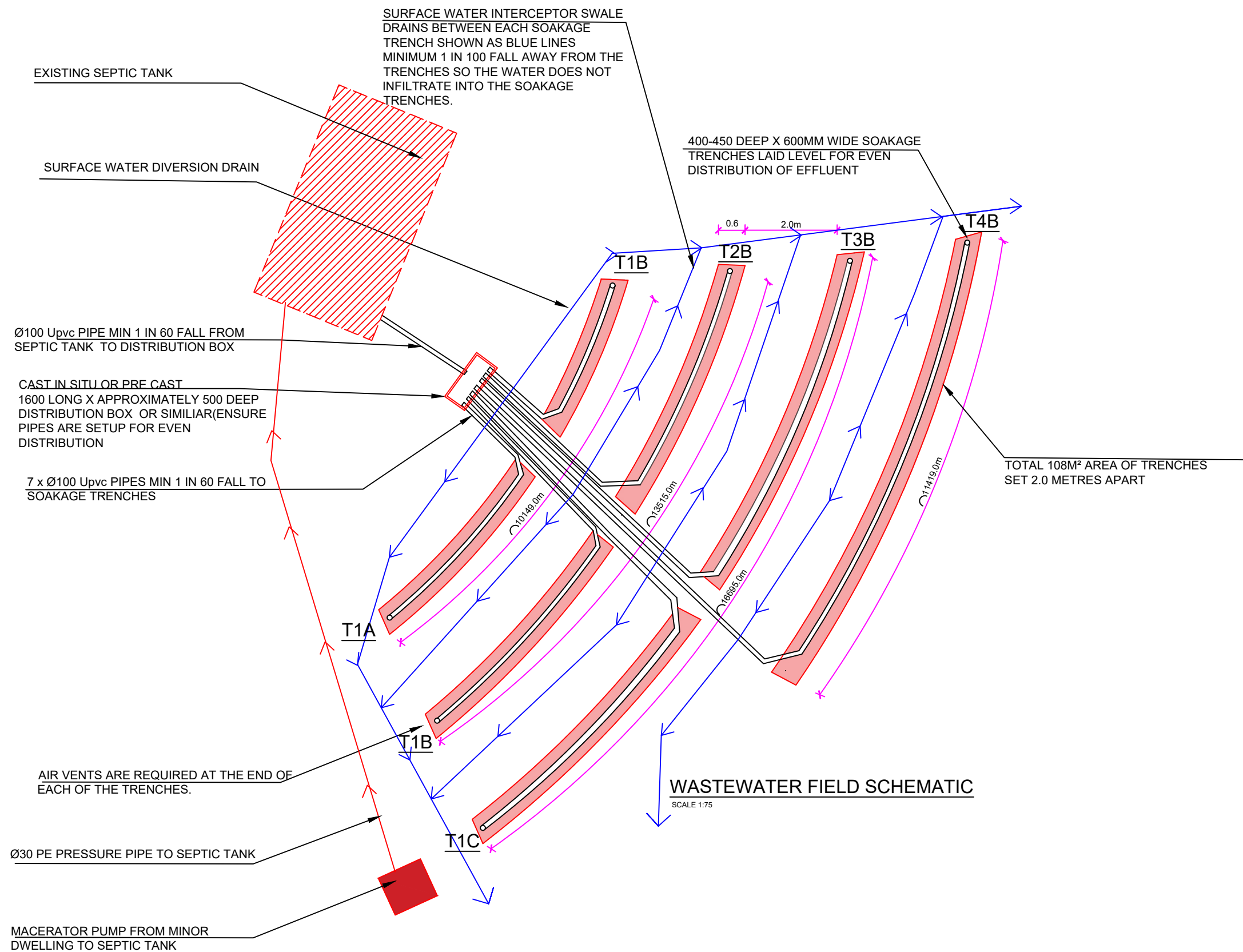
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CLIENT: RODGERS, TERRY			
SITE: 201 RANGITANE ROAD KERIKERI			
TITLE: PROPOSED MINOR DWELLING CROSS SECTION - AA			
SCALE AT A3: AS SHOWN	DATE: JUNE 26	DRAWN: JW	CHECKED: PK
PROJECT NO: 26-018	DRAWING NO: A3/SG2	REVISION: BC0	

REV:	DESCRIPTION:	BY:	DATE:
STATUS: ISSUED FOR CONSENT			
LEVEL 1, ANZ BANK 90 KERIKERI ROAD, KERIKERI PO BOX 464, KERIKERI Phone Number: 09 407 3255 Email: teampk@pkengin.co.nz			

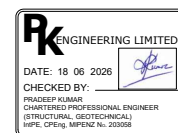


DRAIN LAYERS NOTES

- ALL PIPES TO BE LAID AT MINIMUM 1 IN 60 FALL
- ENSURE ALL PIPE ARE MINIMUM Ø100 uPVC
- ALL PIPES ARE TO BE CALIBRATED TO DISPOSE OF EFFLUENT EVENLY VIA A DISTRIBUTION BOX.
- ALL PIPE BENDS TO NOT EXCEED AN ANGLE OF 135°
- ALL RELEVANT SETBACKS TO BE VERIFIED ONSITE.
- ENGINEER TO BE CONTACTED IF THERE IS A DISCREPANCY WITH THIS PLAN.
- DRAIN LAYER TO PROVIDE PS3 FOR ALL WORK COMPLETED

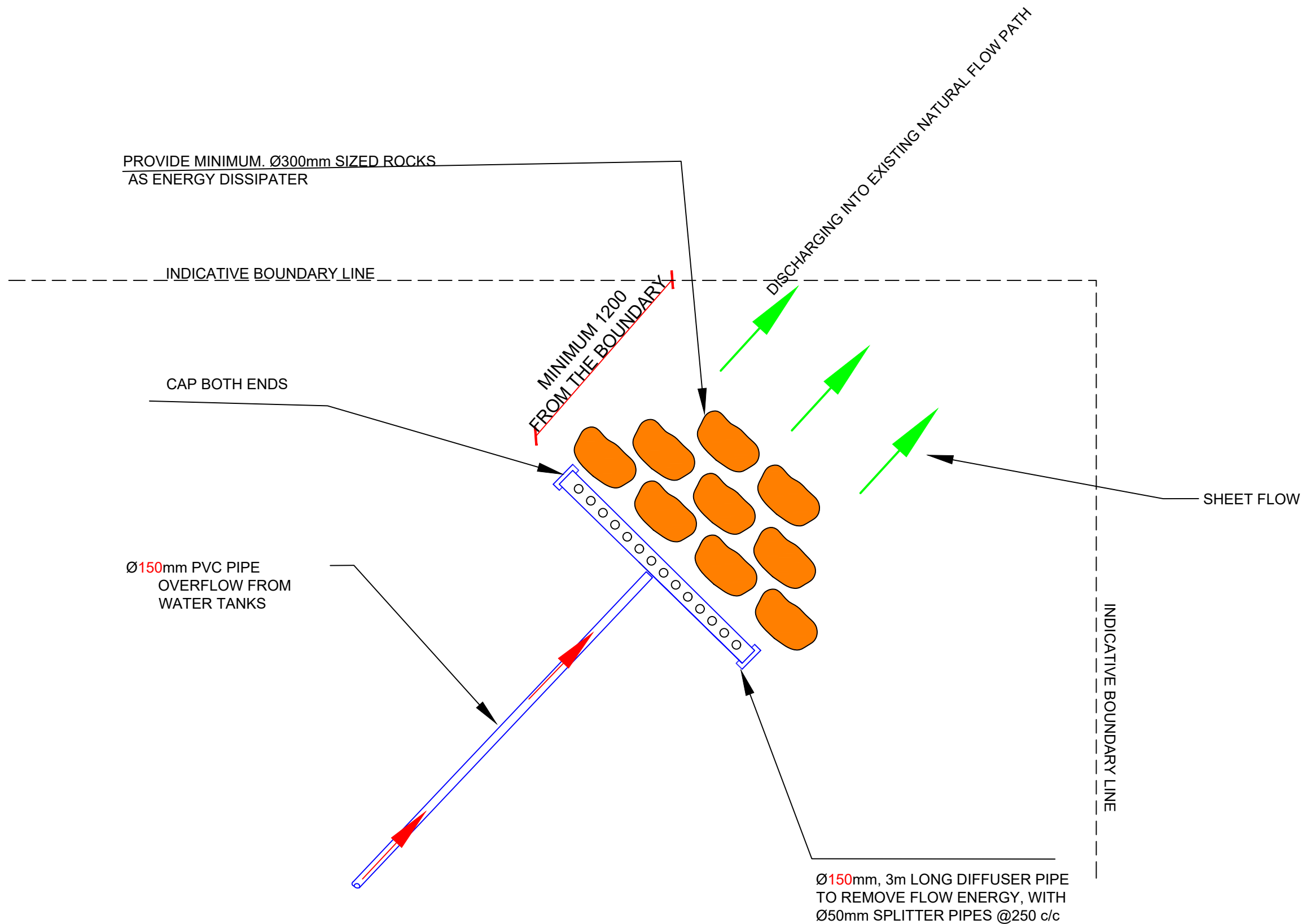
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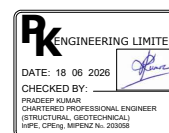
CLIENT: RODGERS, TERRY			
SITE: 201 RANGITANE ROAD KERIKERI			
TITLE: PROPOSED MINOR DWELLING WASTEWATER FIELD SCHEMATIC			
SCALE AT A3: 1:100	DATE: JUNE 26	DRAWN: JW	CHECKED: PK
PROJECT NO: 26-018	DRAWING NO: A3/SG3	REVISION: BC0	

REV:	DESCRIPTION:	BY:	DATE:
STATUS: ISSUED FOR CONSENT			
LEVEL 1, ANZ BANK 90 KERIKERI ROAD, KERIKERI PO BOX 464, KERIKERI Phone Number: 09 407 3255 Email: teampk@pkengin.co.nz			



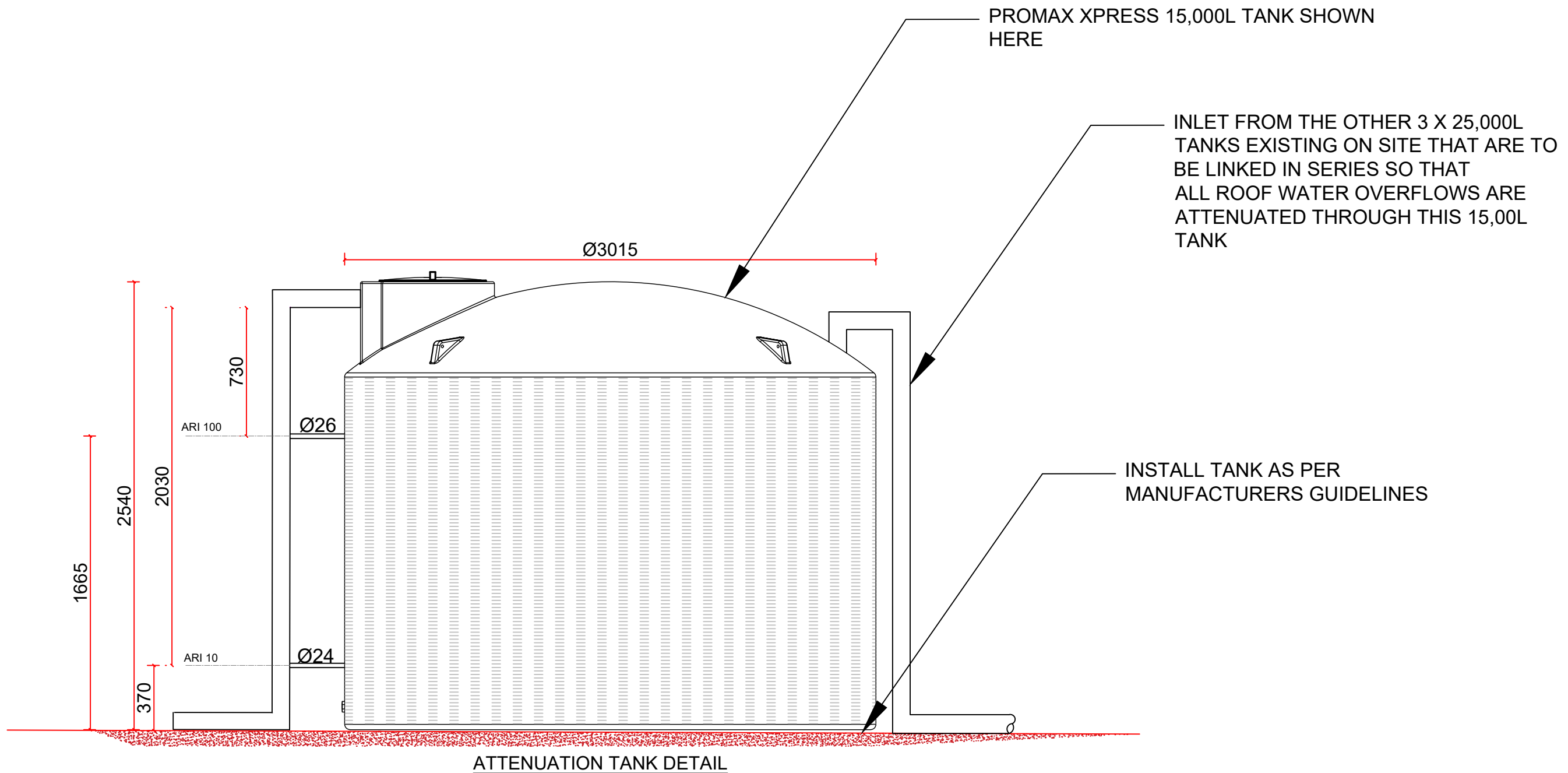
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CLIENT: RODGERS, TERRY			
SITE: 201 RANGITANE ROAD KERIKERI			
TITLE: PROPOSED MINOR DWELLING STORMWATER DISPERSAL DETAIL			
SCALE AT A3: 1:50	DATE: JUNE 26	DRAWN: JW	CHECKED: PK
PROJECT NO: 26-018	DRAWING NO: A3/SG3	REVISION: BC0	

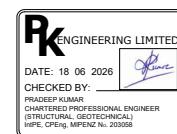
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STATUS:	ISSUED FOR CONSENT		
			
LEVEL 1, ANZ BANK 90 KERIKERI ROAD, KERIKERI PO BOX 464, KERIKERI Phone Number: 09 407 3255 Email: teampk@pkengin.co.nz			



	Orifice diameter	Orifice invert location
ARI 10	24 mm	2030 mm below overflow invert
ARI 100	26 mm	730 mm below overflow invert
Tank Size	1 x	15,000 litres @ 3 m Ø
ARI 10	9,376.6 litres	
ARI 100	14,461.2 litres	
Reuse	538.8 litres	

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CLIENT: RODGERS, TERRY			
SITE: 201 RANGITANE ROAD KERIKERI			
TITLE: PROPOSED MINOR DWELLING ATTENUATION TANK DETAIL			
SCALE AT A3: 1:25	DATE: JUNE 26	DRAWN: JW	CHECKED: PK
PROJECT NO: 26-018	DRAWING NO: A3/SG5	REVISION: BC0	

REV:	DESCRIPTION:	BY:	DATE:
STATUS: ISSUED FOR CONSENT			
LEVEL 1, ANZ BANK 90 KERIKERI ROAD, KERIKERI PO BOX 464, KERIKERI Phone Number: 09 407 3255 Email: teampk@pkengin.co.nz			



**Far North
District Council**

**ON SITE WASTEWATER DISPOSAL SYSTEM DESIGNER GUIDELINES FOR
FNDC ASSESSMENT**

All Writers shall comply with the following to be duly assessed by FNDC:-

- Shall be qualified Engineer with current registered IPENZ membership or a Certifying licensed Drainlayer or an appropriately qualified professional deemed to be competent in design of Onsite wastewater disposal systems (such as Architect, designer or licensed building practitioner).
- Shall have attended and passed a Council approved course on Onsite Wastewater Disposal Systems. The assessment must be provided by the course provider.
- Shall demonstrate through an actual test scenario to Council that they have adequate experience in designing Onsite Wastewater Disposal Systems in accordance with Auckland Regional Council's TP58 requirements.
- FNDC shall review and verify previous projects designed by the Writers and establish referee checks.
- All credentials of the Writers shall be evaluated by FNDC and sources of evidence will be established.
- Qualifications of the Writers shall be recorded by FNDC with the right to review on an annual basis.
- Writers shall submit to FNDC a minimum of their 5 design works peer reviewed by a Registered Chartered Professional Engineer of IPENZ with a producer statement (PS2 – Design Review) in a given year.
- Writers shall submit to FNDC a copy of their current valid Indemnity Insurance certificate with details of insurance coverage (note: this must be appropriate for the value of work).
- FNDC holds the exclusive right to assess writers and withdraw if necessary at its discretion.

PRODUCER STATEMENT

DESIGN: ON-SITE EFFLUENT DISPOSAL SYSTEMS (T.P.58)

ISSUED BY: Pradeep Kumar.....(approved qualified design professional)

TO: Terry Rodgers.....(owner)

TO BE SUPPLIED TO:Far North District Council.....

PROPERTY LOCATION: 201 Rangitane Road, Kerikeri.....

LOT 7.....DP 140705.....VALUATION NUMBER.....

TO PROVIDE : Design an on-site effluent disposal system in accordance with Technical paper 58 and provide a schedule to the owner for the systems maintenance.

THE DESIGN: Has been in accordance with G13 (Foul Water) G14 (Industrial Liquid Waste) B2 (durability 5 years) of the Building Regulations 1992.

As an independent approved design professional covered by a current policy of Professional Indemnity Insurance (Design) to a minimum value of \$200,000.00, I BELIEVE ON REASONABLE GROUNDS that subject to:

- 1) The site verification of the soil types.
- 2) All proprietary products met the performance requirements.

The proposed design will met the relevant provisions of the Building Code and 5.3.11 of The Far North District Council Engineering Standards.

.....(Signature of approved design professional)

BEng, NZCE, MIPENZ, intPE, CPEng.....(Professional qualifications)

PENZ No. 203058.....(Licence Number or professional Registration number)

Address Level 1 ANZ Building, 90 Kerikeri Road, Kerikeri, New Zealand.....

Phone Number 09 407 3255.....

Fax Number

Cell Phone

Date 18/06/2026.....

Note: This form is to accompany every application for a Building Consent incorporating a T.P.58. Approval as a design professional is at Councils discretion.

FAR NORTH DISTRICT COUNCIL

Appendix E

TP58

On-site Wastewater Disposal Site Evaluation Investigation Checklist

Part A –Owners Details

1. Applicant Details:

Applicant Name	Terry Rodgers		
Company Name			
	First Name(s)	Surname	
Property Owner Name(s)	Terry	Rodgers	

Nature of Applicant* **Owner**

(*i.e. Owner, Leasee, Prospective Purchaser, Developer)

2. Consultant / Site Evaluator Details:

Consultant/Agent Name	PK Engineering Ltd			
Site Evaluator Name	Jonty White			
Postal Address	PO BOX 464, Kerikeri			
Phone Number	Business	09 407 3255	Private	
	Mobile		Fax	
Name of Contact Person	Pradeep Kumar			
E-mail Address	teampk@pkengin.co.nz			

3. Are there any previous existing discharge consents relating to this proposal or other waste discharge on this site?

Yes		No	☒	(Please tick)
If yes, give Reference Numbers and Description				

4. List any other consent in relation to this proposal site and indicate whether or not they have been applied for or granted

If so, specify Application Details and Consent No.

(eg. LandUse, Water Take, Subdivision, Earthworks Stormwater Consent)

None

Part B- Property Details

1. Property for which this application relates:

Physical Address of Property	201 Rangitane Road, Kerikeri
Territorial Local Authority	FAR NORTH DISTRICT COUNCIL
Regional Council	NORTHLAND REGIONAL COUNCIL
Legal Status of Activity	Permitted: ☒ Controlled: ☐ Discretionary: ☐
Relevant Regional Rule(s) (Note 1)	Permitted activity C.6.1.3
Total Property Area (m²)	4,164m²
Map Grid Reference of Property If Known	

2. Legal description of land (as shown on Certificate of Title)

Lot No.	7	DP No.	140705	CT No.	
Other (specify)					

Please ensure copy of Certificate of Title is attached

PART C: Site Assessment - Surface Evaluation

(Refer TP58 - Sn 5.1 General Purpose of Site Evaluation and Sn 5.2.2(a) Site Surface Evaluation)

Note: Underlined terms defined in Table 1, attached

Has a relevant property history study been conducted?

Yes	☒	No	☐	(Please tick one)
-----	-------------------------------------	----	--------------------------	-------------------

If yes, please specify the findings of the history study, and if not please specify why this was not considered necessary.

The site is developed with an onsite septic tank with an unverified disposal system.
No issues have been noticed from our investigation. The existing septic tank appears to be in good working order.

1. Has a Slope Stability Assessment been carried out on the property?

Yes		No	☒	Please tick
-----	--	----	-------------------------------------	-------------

If No, why not?

Relatively flat site

If Yes, please give details of report (and if possible, please attach report):

Author	
Company/Agency	
Date of Report	
Brief Description of Report Findings:-	

2. Site Characteristics (See Table 1 attached):

Provide descriptive details below:

Performance of Adjacent Systems:

Unknown

Estimated Rainfall and Seasonal Variation:

Information available from **N.I.W.A MET RESEARCH**

Annual Rainfall: 800-2500mm	Annual Potential Evapotranspiration: 1200mm
-----------------------------	---

Vegetation / Tree Cover:

0% tree cover, grassed area

Slope Shape: (Please provide diagrams)

Relatively flat less than 2 degrees.

Slope Angle:

2 degrees + or - 2 degree s

Surface Water Drainage Characteristics:

Sheet flow, towards the south east.

Flooding Potential: YES/NO

No

If yes, specify relevant flood levels on appended site plan, I.e. one in 5 years and/or 20 year and/or 100 year return period flood level, relative to disposal area.

Surface Water Separation:

More than 30m from any surface water, rivers, lakes, ocean.

Site Characteristics: or any other limitation influencing factors

3. Site Geology

Check Rock Maps

Waioitu friable clay loam, derived from the weathering down of the volcanic rocks.

Geological Map Reference Number

NZMS 290 SHEET P04/05

4. What Aspect(s) does the proposed disposal system face? (please tick)

North	☒	West	☒
North-West	☒	South-West	☒
North-East	☒	South-East	☒
East	☒	South	☒

5. Site clearances,(Indicate on site plan where relevant)

Separation Distance from	Treatment Separation Distance (m)	Disposal Field Separation Distance (m)
Boundaries	2m	Check Council requirements
Surface water, rivers Creeks drains etc	30m minimum	30m minimum
Groundwater	2.1m	
Stands of Trees/Shrubs	2	
Wells, water bores	-	
Embankments/retaining walls	-	
Buildings	3m	
Other (specify):		

PART D: Site Assessment - Subsoil Investigation

(Refer TP58 - Sn 5.1 General Purpose of Site Evaluation, and Sn 5.2.2(a) Site Surface Evaluation and Sn 5.3 Subsurface Investigations)

Note: Underlined terms defined in Table 2, attached

1. Please identify the soil profile determination method:

Test Pit	(Depth_____m	No of Test Pits	
Bore Hole	(Depth <u>1.5</u> m	No of Bore Holes	3
Other (specify):			

Soil Report attached?

Yes	☒	No	☐	Please tick
-----	-------------------------------------	----	--------------------------	-------------

2. Was fill material intercepted during the subsoil investigation?

Yes	☐	No	☒	Please tick
-----	--------------------------	----	-------------------------------------	-------------

If yes, please specify the effect of the fill on wastewater disposal

3. percolation testing (mandatory and site specific for trenches in soil type 4 to 7)

Please specify the method

Percolation testing as per the TP58 guidelines

--

Test Report Attached?	Yes	☒	No	☐	Please tick
-----------------------	-----	-------------------------------------	----	--------------------------	-------------

4. Are surface water interception/diversion drains required?

Yes	☒	No	☐	Please tick
-----	-------------------------------------	----	--------------------------	-------------

If yes, please show on site plan

4a Are subsurface drains required

If yes enter details

5. Please state the depth of the seasonal water table:

Winter	3	m	Measured	☐	Estimated	☒
Summer	3m+	m	Measured	☐	Estimated	☒

6. Are there any potential storm water short circuit paths?

Yes	☐	No	☒	Please tick
-----	--------------------------	----	-------------------------------------	-------------

If the answer is yes, please explain how these have been addressed

7. Based on results of subsoil investigation above, please indicate the disposal field soil category (Refer TP58 Table 5.1)

Is Topsoil Present?	If so, Topsoil Depth? (m)
---------------------	---------------------------

Soil Category	Description	Drainage	Tick One
1	Gravel, coarse sand	Rapid draining	☐
2	Coarse to medium sand	Free draining	☐
3	Medium-fine & loamy sand	Good drainage	☐
4	Sandy loam, loam & silt loam	Moderate drainage	☐
5	Sandy clay-loam, clay loam & silty clay-loam	Moderate to slow drainage	☒
6	Sandy clay, non-swelling clay & silty clay	Slow draining	☐
7	Swelling clay, grey clay, hardpan	Poorly or non-draining	☐

Reasons for placing in stated category

Results of boreholes and percolation tests

PART E: Discharge Details

1. Water supply source for the property (please tick):

Rainwater (roof collection)	☒
Bore/well	☐
Public supply	☐

2. Calculate the maximum daily volume of wastewater to be discharged, unless accurate water meter readings are available

(Refer TP58 Table 6.1 and 6.2)

Number of Bedrooms	2 - 3 - 4	5	
Design Occupancy	8		(Number of People)
Per capita Wastewater Production	140	160	180 (tick) (Litres per person per day)
Other - specify	200	220	
Total Daily Wastewater Production	1300		(litres per day)

3. Do any special conditions apply regarding water saving devices

a) Full Water Conservation Devices?	Yes		No	☒	(Please tick)
b) Water Recycling - what %?		%			(Please tick)

If you have answered yes, please state what conditions apply and include the estimated reduction in water usage

11/ 5.5 Litre or 6/3 Litre Dual flush toilets with otherwise standard fixtures.

4. Is Daily Wastewater Discharge Volume more than 2000 litres:

Yes	☒	(Please tick)
No		(Please tick)

Note if answer to the above is yes, an N.R.C wastewater discharge permit may be required

5. Gross Lot Area to Discharge Ratio:

Gross Lot Area	4,164m ²	M
Total Daily Wastewater Production	1300	(Litres per day)(from above)
Lot Area to Discharge Ratio	3.2	

7. Does this proposal comply with the Northland Regional Council Gross Lot Area to Discharge Ratio of greater than 3?

Yes		No	☒	Please tick
-----	--	----	-------------------------------------	-------------

8. Is a Northland Regional Council Discharge Consent Required?

Yes		No		(Please tick)
-----	--	----	--	---------------

PART F: Primary Treatment (Refer TP58 Section 7.2)

1. Please indicate below the no. and capacity (litres) of all septic tanks including type (single/dual chamber grease traps) to be installed or currently existing: If not 4500 litre, dual chamber explain why not

Number of Tanks	Type of Tank	Capacity of Tank (Litres)
1	Septic tank	4,000L minimum
	Total Capacity	4,000L

2. Type of Septic Tank Outlet Filter to be installed?

PART G: Secondary and Tertiary Treatment

(Refer TP58 Section 7.3, 7.4, 7.5 and 7.6)

1. Please indicate the type of additional treatment, if any, proposed to be installed in the system: (please tick)

Secondary Treatment	
Home aeration plant	
Commercial aeration plant	
Intermediate sand filter	
Recirculating sand filter	
Recirculating textile filter	
Clarification tank	
Tertiary Treatment	
Ultraviolet disinfection	
Chlorination	
Other	Specify

PART H: Land Disposal Method

(Refer TP58 Section 8)

1. Please indicate the proposed loading method: (please tick)

Gravity	☒
Dosing Siphon	☐
Pump	☐

2. High water level alarm to be installed in pump chambers

Yes ☐ no ☐

If not to be installed, explain why

3. If a pump is being used, please provide the following information:

Total Design Head		(m)
Pump Chamber Volume		(Litres)
Emergency Storage Volume		(Litres)

4. Please identify the type(s) of land disposal method proposed for this site: (please tick)
(Refer TP58 Sections 9 and 10)

Surface Dripper Irrigation		
Sub-surface Dripper irrigation		
Standard Trench	✓	
Deep Trench		
Mound		
Evapo-transpiration Beds		
Other		Specify

5. Please identify the loading rate you propose for the option selected in Part H, Section 4 above, stating the reasons for selecting this loading rate:

Loading Rate	12	(Litres/m2/day)
Disposal Area	Design	108 (m2)
	reserve	108 (m2)

Explanation (Refer TP58 Sections 9 and 10)

A loading rate of 12mm/m2/day is considered sufficient due to the site exposure and potential evaporation rates. The AS/NZS 1547:2012 manual table 5.2 for the soil category allows rates upto 15mm/m2/day for these types of moderate to highly structured clay loams.

6. What is the available reserve wastewater disposal area (Refer TP58 Table 5.3)

Reserve Disposal Area (m²)	108
Percentage of Primary Disposal Area (%)	100

7. Please provide a detailed description of the design and dimensions of the disposal field and attach a detailed plan of the field relative to the property site:

Description and Dimensions of Disposal Field:

108m2 of discharge area consisting of 52m length of disposal trenches with dimensions 0.4-0.45 deep by 0.6m wide.

Plan Attached?	Yes	☒	No	☐	(Please tick)

If not, explain why not

PART I: Maintenance & Management*(Refer TP58 Section 12.2)***1. Has a maintenance agreement been made with the treatment and disposal system suppliers?**

Yes		No	
-----	--	----	--

(Please tick)

Name of Suppliers

--

PART J: Assessment of Environmental Effects**1. Is an assessment of environmental effects (AEE) included with application?***(Refer TP58 section 5. Ensure all issues concerning potential effects addressed)*

Yes		No	
-----	--	----	--

(Please tick)

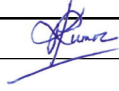
If Yes, list and explain possible effects

PART K: Is Your Application Complete?**1. In order to provide a complete application you have remembered to:**

Fully Complete this Assessment Form	
Include a <i>Location Plan</i> and <i>Site Plan</i> (with Scale Bars)	
Attach an Assessment of Environmental Effects (AEE)	

1. Declaration

I hereby certify that, to the best of knowledge and belief, the information given in this application is true and complete.

Name Pradeep Kumar	Signature	
Position Principal Chartered Engineer	Date	18/06/2026

Note

Any alteration to the site plan or design after approval will result in non compliance.



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APPENDIX D

STORMWATER CALCULATIONS

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

Telephone: 09 407 3255, Email: TeamPK@pkengin.co.nz



CHARTERED PROFESSIONAL ENGINEERS



New Zealand
Institute of Architects
Incorporated



Building Code Clause(s) E1

PRODUCER STATEMENT – PS1 – DESIGN

(Guidance on use of Producer Statements (formerly page 2) is available at www.engineeringnz.org)

ISSUED BY: Pk Engineering Ltd
(Design Firm)

TO: Terry Rodgers
(Owner/Developer)

TO BE SUPPLIED TO: Far North District Council
(Building Consent Authority)

IN RESPECT OF: Proposed Granny Flat
(Description of Building Work)

AT: 201 Rangitane Road
(Address)

Town/City: Kerikeri LOT 7 DP 140705 SO
(Address)

We have been engaged by the owner/developer referred to above to provide:

Attenuation calculations and orifice design

(Extent of Engagement)

services in respect of the requirements of Clause(s) E1 of the Building Code for:

☐ All or ☒ Part only (as specified in the attachment to this statement), of the proposed building work.

The design carried out by us has been prepared in accordance with:

☒ Compliance Documents issued by the Ministry of Business, Innovation & Employment E1-E1.3 of
(verification method/acceptable solution)

☐ Alternative solution as per the attached schedule

The proposed building work covered by this producer statement is described on the drawings titled:

Civil Drawings for proposed granny flat and numbered SG0- SG5
together with the specification, and other documents set out in the schedule attached to this statement.

On behalf of the Design Firm, and subject to:

- (i) Site verification of the following design assumptions As per attached geotechnical report.
(ii) All proprietary products meeting their performance specification requirements;

I believe on reasonable grounds that a) the building, if constructed in accordance with the drawings, specifications, and other documents provided or listed in the attached schedule, will comply with the relevant provisions of the Building Code and that b), the persons who have undertaken the design have the necessary competency to do so. I also recommend the following level of construction monitoring/observation:

☐ CM1 ☒ CM2 ☐ CM3 ☐ CM4 ☐ CM5 (Engineering Categories) or ☐ as per agreement with owner/developer (Architectural)

I, Pradeep Kumar am: ☒ CPEng 203058 # ☐ Reg Arch #
(Name of Design Professional)

I am a member of: ☒ Engineering New Zealand ☐ NZIA and hold the following qualifications: BE (Hons) IntPE, CPEng

The Design Firm issuing this statement holds a current policy of Professional Indemnity Insurance no less than \$200,000*.

The Design Firm is a member of ACENZ: ☐

SIGNED BY: Pradeep Kumar (Signature) [Signature]
(Name of Design Professional)

ON BEHALF OF Pk Engineering Ltd Date: 18/06/2026
(Design Firm)

Note: This statement shall only be relied upon by the Building Consent Authority named above. Liability under this statement accrues to the Design Firm only. The total maximum amount of damages payable arising from this statement and all other statements provided to the Building Consent Authority in relation to this building work, whether in contract, tort or otherwise (including negligence), is limited to the sum of \$200,000.*

This form is to accompany **Form 2 of the Building (Forms) Regulations 2004** for the application of a Building Consent.
THIS FORM AND ITS CONDITIONS ARE COPYRIGHT TO ACENZ, ENGINEERING NEW ZEALAND AND NZIA



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GUIDANCE ON USE OF PRODUCER STATEMENTS

Producer statements were first introduced with the Building Act 1991. The producer statements were developed by a combined task committee consisting of members of the New Zealand Institute of Architects, Institution of Professional Engineers New Zealand (now Engineering New Zealand), Association of Consulting Engineers New Zealand in consultation with the Building Officials Institute of New Zealand. The original suit of producer statements has been revised at the date of this form as a result of enactment of the Building Act (2004) by these organisations to ensure standard use within the industry.

The producer statement system is intended to provide Building Consent Authorities (BCAs) with reasonable grounds for the issue of a Building Consent or a Code Compliance Certificate, without having to duplicate design or construction checking undertaken by others.

PS1 Design Intended for use by a suitably qualified independent design professional in circumstances where the BCA accepts a producer statement for establishing reasonable grounds to issue a Building Consent;

PS2 Design Review Intended for use by a suitably qualified independent design professional where the BCA accepts an independent design professional's review as the basis for establishing reasonable grounds to issue a Building Consent;

PS3 Construction Forms commonly used as a certificate of completion of building work are Schedule 6 of NZS 3910:2013 or Schedules E1/E2 of NZIA's SCC 2011²

PS4 Construction Review Intended for use by a suitably qualified independent design professional who undertakes construction monitoring of the building works where the BCA requests a producer statement prior to issuing a Code Compliance Certificate.

This must be accompanied by a statement of completion of building work (Schedule 6).

The following guidelines are provided by ACENZ, Engineering NZ and NZIA to interpret the Producer Statement.

Competence of Design Professional

This statement is made by a Design Firm that has undertaken a contract of services for the services named, and is signed by a person authorised by that firm to verify the processes within the firm and competence of its designers.

A competent design professional will have a professional qualification and proven current competence through registration on a national competence based register, either as a Chartered Professional Engineer (CPEng) or a Registered Architect.

Membership of a professional body, such as Engineering New Zealand (formerly IPENZ) or the New Zealand Institute of Architects (NZIA), provides additional assurance of the designer's standing within the profession. If the design firm is a member of the Association of Consulting Engineers New Zealand (ACENZ), this provides additional assurance about the standing of the firm.

Persons or firms meeting these criteria satisfy the term "suitably qualified independent design professional".

*Professional Indemnity Insurance

As part of membership requirements, ACENZ requires all member firms to hold Professional Indemnity Insurance to a minimum level.

The PI Insurance minimum stated on the front of this form reflects standard, small projects. If the parties deem this inappropriate for large projects the minimum may be up to \$500,000.

Professional Services during Construction Phase

There are several levels of service which a Design Firm may provide during the construction phase of a project (CM1-CM5 for Engineers³). The Building Consent Authority is encouraged to require that the service to be provided by the Design Firm is appropriate for the project concerned.

Requirement to provide Producer Statement PS4

Building Consent Authorities should ensure that the applicant is aware of any requirement for producer statements for the construction phase of building work at the time the building consent is issued as no design professional should be expected to provide a producer statement unless such a requirement forms part of the Design firm's engagement.

Attached Particulars

Attached particulars referred to in this producer statement refer to supplementary information appended to the producer statement.

Refer Also:

- ¹ Conditions of Contract for Building & Civil Engineering Construction
NZS 3910: 2013
- ² NZIA Standard Conditions of Contract SCC 2011
- ³ Guideline on the Briefing & Engagement for Consulting Engineering Services
(ACENZ/IPENZ 2004)
- ⁴ PN Guidelines on Producer Statements

www.acenz.org.nz
www.engineeringnz.org
www.nzia.co.nz





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1 IN 10 YEAR ATTENUATION DESIGN SHEETS

1		Rational method						48hr
Pre – Development water flow								
(Original water flow)		Roof & decks	Concrete & smooth seal	Metaled area Or rough seal	Other Impervious	Vegetation	Bush	
Total area.		1(m ²)	2(m ²)	3(m ²)	4(m ²)	5(m ²)	6(m ²)	
238.00		0	0	0	0	238	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 TR5		0.96	0.96	0.8	0.65	0.53	0.53	
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		4.13	4.13	4.13	4.13	4.13	4.13	
Use an appropriate 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	0.14					
Post – Development water flow		Any area where there is a change in the impermeability values				Pre-development area where there is a change in impermeable surfaces but not collected in attenuation system		
		Roof & decks	Concrete & smooth seal	Metaled area Or rough seal	Vegetation	Concrete & smooth seal	Metaled area or vegetation	
Total area.		1(m ²)	2(m ²)	3(m ²)	4(m ²)	5(m ²)	6(m ²)	
238.00		58	0	180	0	0	0	
OK								
Use "C" values from FNDC TR55 chart		Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	Ci (coefficient)	
Generally do not use slope adjustment Ci factor if using TR5		0.96	FALSE	0.90	FALSE	0.2	0.3	
		0.96	0.96	0.9	0.59	"C" value difference between Pre & Post Maximum value 0.2 (at the moment)		
Rainfall intensity rate		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		4.60	4.60	4.60	4.60	4.13	4.13	
Use an appropriate 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	
		Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	Qc (L/sec)	
		0.07	0.00	0.21	0.00	0.00	0.00	
Total included in attenuation system calc's post – development flow		Qa (m ³ /sec)	Qa (L/sec)					
		0.000	0.13					
Post – Pre development flow		Qpp (m ³ /sec)	Qpp (L/sec)					
		0.0001	0.13					
Total post development flow								
Developed flow + undeveloped flow		Qatt (m ³ /sec)	Qatt (L/sec)					
0 to 10min		0.0003	0.28					
Total impermeable excluded from attenuation system collection		Qby (m ³ /sec)	Qby (L/sec)					
		0.000	0.00					

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

Telephone: 09 407 3255, Email: TeamPK@pkengin.co.nz

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Total catchment pre-development flow		Rational method						48hr		Pre-development Slope %	
Total area.	Area (m ²)	Road & deck 1(m ²)	Concrete & smooth seal 2(m ²)	Motiled area or rough seal 3(m ²)	Other impervious 4(m ²)	Vegetation 5(m ²)	Bark 6(m ²)				
	238.00	0	0	0	0	238	0			10	
Runoff coefficient Use "C" values from FNDC TR55 chart Generally do not use slope adjustment Ci factor if using TF		Ci (coefficient) FALSE 0.96	Ci (coefficient) FALSE 0.96	Ci (coefficient) FALSE 0.8	Ci (coefficient) FALSE 0.8	Ci (coefficient) 0.59 0.59	Ci (coefficient) FALSE 0.59			Ci correction 0.09	
Rainfall intensity Infall Data from NIVA. Hirds 4, RCP6, 2081-2100 Use an appropriate event for the situation		I (mm/hr) 4.13	I (mm/hr) 4.13	I (mm/hr) 4.13	I (mm/hr) 4.13	I (mm/hr) 4.13	I (mm/hr) 4.13			Slope % 10	
Flow rate of surface water		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			Ci correction 0.09	
Catchment area pre - development flow		Qcap (m ³ /sec) 0.0002	Qcap (L/sec) 0.16								

312.101308 17.66640628

Select I for type of tank/area, 0 for other	Round	Square	Tank radius r (m)	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	Num. Of tanks
Estimate storage volume	1	0		7.14	3.28	1.3	N/A	1.01
Adjust to match max Vstored	Num. Of tanks	Vstored	1.5075	7.14	Initial calculation	OK	Total area	m ² for fixed H68 height
Round area	1				Vstored max.	1.313	Final volume	Not used
Square/rectangular area	Num. Of tanks	Width	Length	m ²	Vstored min.	3.38	Same as initial	Trench width
				0.00	0.05 to 3.5% left @ 48hr	0.085	Same as initial	5
Short tube, 0.76	Orifice type "g"	g				0.30	Trench length	
Thin sharp, 0.62	0.76	3.8067				OK	Same as initial	20.6
					Graph, 24hr Vstored 2520m	0.237	Not used	m ² for fixed H68 height
					Max. 10% left @ 24hr from initial calc.	2.52	2.52	105.00
					or add extra volume			Not used
Pre - development flow of developed area	48hr C20 0.00014	24hr L20 0.00024	12hr U20 0.00037	6hr AD20 0.00056	2hr AM20 0.00100	60 AY20 0.00142	30 BE20 0.00200	20 BN20 0.00245

-development flow matches 2hr 40min. Intensity Uses (80min.crossover QI26) as a source value
Do not change
For calculation purposes this section changes the dia only and thereby the area
The information is not used for anything else

Qp (m ³ /sec) 0.0003 OK	Qp (L/sec) 0.8313	Dia max. 0.00387	48hr program Min.crossover Chart point (min.) 1520	Slope factor adjustment at Min.crossover Chart point (min.) 0.31	1080min (K2395) Gout (L/sec) 0.26203
Dia check 0.0112	Dia 0.01720	Area 0.0002	Gout (m ³ /sec) 0.00088	Chart point (min.) 1520	peak flow 0.11978
					Chart point (max.) 0.15

If additional storage is required use the original/initial orifice size and calc. height

Calculate maximum storage volume						For period 2081-210 CC (RCP6) Intensity.		Kerikeri Current(0 deg)	Chart step factor
Chart intensity hr values steps used	Chart intensity accumulated minute steps (hr)	Storm duration THIR (hr)	Storm duration Event date, TMIN: Direct to Atten. min	Attenuation calc. to Catchment pre-dev. plus orifice flow out Qs (L/sec)	Qs (L/sec)	Post-devel I _p (mm/hr)	Pre-devel I _p (mm/hr)		
48	720	12.00	720	0.13	0.25	4.6	4.13	1.4	
24	1080	6.00	360	0.2	0.5	7.68	6.78	1	
12	1260	3.00	180	0.4	0.7	12.2	10.6	0.55	
6	1380	2.00	120	0.6	1.0	18.7	15.9	0.56	
2	1410	0.50	30	1.1	1.6	34.4	28.5	0.9	
1	1425	0.25	15	1.5	2.1	43	40.4	0.8	
30	1430	0.08	5	2.2	2.8	69.2	57	0.04	
20	1435	0.08	5	2.7	3.4	84.9	70	1.0	
10	1440	0.08	5	3.3	4.6	122	100	1.0	
10	1445	0.08	5	3.3	4.6	122	100	1.5	
20	1450	0.08	5	2.7	3.6	84.9	70	1.0	
30	1455	0.08	5	2.2	3.1	69.2	57	0.9	
1	1470	0.25	15	1.5	2.5	43	40.4	0.8	
2	1500	0.50	30	1.1	2.0	34.4	28.5	1.1	

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1b		Rational method					
Total catchment pre-development flow		48hr					
Total area.	Area (m ²)	Roof & decks 1 (m ²)	Concrete & smooth seal 2 (m ²)	Metalled area Or rough seal 3 (m ²)	Other Impervious 4 (m ²)	Vegetation 5 (m ²)	Bush 6 (m ²)
	238.00	0	0	0	0	238	0
Runoff coefficient Use "C" values from FNDC TR55 chart Generally do not use slope adjustment Ci factor if using TR55		Ci (coefficient) FALSE 0.36	Ci (coefficient) FALSE 0.36	Ci (coefficient) FALSE 0.8	Ci (coefficient) FALSE 0.8	Ci (coefficient) 0.59	Ci (coefficient) FALSE 0.59
Rainfall intensity Rainfall Data from NIWA. Hirds 4, RCP6, 2081-2100 Use an appropriate event for the situation		I (mm/hr) 6.32	I (mm/hr) 6.32	I (mm/hr) 6.32	I (mm/hr) 6.32	I (mm/hr) 6.32	I (mm/hr) 6.32
Flow rate of surface water		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
Catchment area pre - development flow		Qcsp (m ³ /sec) 0.0002	Qcsp (L/sec) 0.25				

2		Calculation (initial)					
Select 1 for type of tank/area, 0 for other		Round	Square	Calculation (initial) Total tank area m ²	Calculation (initial) Total tank volume m ³	usable height hmax (m)	
Estimate storage volume	1	0		7.14	14.49	2.03	
Adjust to match max Vstored	Num. Of tanks		Tank radius r (m) 1.5015			OK	
Round area	1			7.14		OK	
Square/rectangular area	Num. Of tanks		Width			Initial calculation hstor max. 2.026	
			Length			Vstored max. 14.46	
				0.00		Vstored min. 0.142	
Short tube, 0.76	Orifice type "u"	g				0.98	
Thin sharp, 0.62	0.76	3.8067				OK	
						Graph, 24hr Vstored 2520m Max.10% left @ 24hr from initial calc. 2.75	
						or add extra volume	
Pre - development flow	48hr	24hr	12hr	6hr	2hr	60	
of developed area	C20	L20	U20	AD20	AM20	AV20	
	0.00022	0.00036	0.00056	0.00084	0.00150	0.00212	

3		Pre-development flow matches 2hr 40min. Intensity Uses (80min. crossover Q126) as a source value Do not change					
		Qp (m ³ /sec)	Qp (L/sec)	Qin max.	48hr program Min. crossover Chart point (min.)		
		0.0013	1.3431	0.00578			
		OK					
For calculation purposes this section changes the dia only and thereby the area The information is not used for anything else		Dia check	Dia	Area	1out 1520 (L/sec)	Qout (m ³ /sec)	
		0.0189	0.01888	0.0003	1.324	0.00132	
			18.88		0	1520	

If additional storage is required use the original/initial orifice size and calc. height



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Calculate maximum storage volume

Chart intensity hr values steps used	Chart intensity accumulated minute steps	Storm duration- THR (hr)	Storm duration- event data, TMIN mins	Attenuation calc. Direct to Atten. Qa (L/sec)	Catchment pre-level plus orifice flow out Qtin (L/sec)	For period 2001-2100		Kerikeri		Chart step factor
						CC (RCP6)	Intensity	Current(0 deg)	Pre-dev L (mm/hr)	
						Post-dev L (mm/hr)	Pre-dev L (mm/hr)			
48	720	12.00	720	0.21	0.38	7.09	6.32		1.4	
24	1080	6.00	360	0.4	0.7	11.8	10.3		1	
12	1260	3.00	180	0.6	1.0	18.8	16.1		0.55	
6	1380	2.00	120	0.9	1.5	28.6	24		0.56	
2	1410	0.50	30	1.6	2.4	52	42.9		0.9	
1	1425	0.25	15	2.3	3.2	73.9	60.5		0.8	
30	1430	0.08	5	3.3	4.3	104	85.1		0.04	
20	1435	0.08	5	4.0	5.0	127	104		1.0	
10	1440	0.08	5	5.8	6.9	182	149		1.0	
10	1445	0.08	5	5.8	6.9	182	149		1.5	
20	1450	0.08	5	4.0	5.3	127	104		1.0	
30	1455	0.08	5	3.3	4.6	104	85.1		0.9	
	1470	0.25	15	2.3	3.7	73.9	60.5		0.8	
2	1500	0.50	30	1.6	3.0	52	42.9		1.1	
6	1620	2.00	120	0.9	2.1	28.6	24		1	
12	1800	3.00	180	0.6	1.5	18.8	16.1		1	
24	2160	6.00	360	0.4	0.8	11.8	10.3		0.8	
48	2880	12.00	720	0.2	0.4	7.09	6.32		0.8	

Catchment flow Qpat (cell MAX(P103:P130))	Qcap max.	Qp (m³/sec)	Qp (L/sec)	Qout max.	Qout max.	Vstored max.
Catchment flow = orifice flow out + catchment pre-development flow	2.680	0.0027	2.7	0.00268	2.68	14.447
For calculation purposes this section changes the dia only and thereby the area	1.3	Dia	Area			OK
The information is not used for anything else	0.0267	0.02667	0.0006			OK
		26.67				

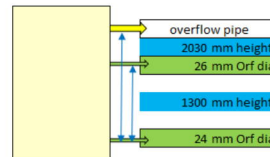
Use this orifice size for final design

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

	Va100yr	Qav	ho100yr	hav	Or100yr
100yr tab	14.46	0.0040	2.03	1.02	0.0388
Cell H86					26.7
	Va10yr	Qav	ho10yr	hav	Or10yr
10yr tab	9.38	0.0012	1.3	0.65	0.0241
Cell H86					24.4
	Vdet	Qav	htop	hhalf	
100 - 10yr	5.08	0.0009	0.73	0.37	0.3650
	Vocomb	Qav	hchart	hav	Area
10yr cor.	10.60	0.0014	1.67	0.83	0.0241
100-10yrcor	3.86	0.0011	0.73	0.365	0.0259

2.03
0.024
1.30
0.026

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



Attenuation System Parameters

	Orifice diameter	Orifice invert location
ARI 10	24 mm	2030 mm below overflow invert
ARI 100	26 mm	730 mm below overflow invert
Tank Size	1 x	15,000 litres @ 3 m Ø
ARI 10		9,376.6 litres
ARI 100		14,461.2 litres
Reuse		538.8 litres

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