THOMSON SURVEY LIMITED

SURVEYORS AND RESOURCE PLANNERS

Our Reference: 10727.1 (FNDC)

4 June 2025

Resource Consents Department
Far North District Council
JB Centre
KERIKERI

Dear Sir/Madam

RE: Proposed Shed at 17 Edmonds Road, Kerikeri – Adam Franklin

I am pleased to submit application on behalf of Adam Franklin, for a proposed shed on land at Edmonds Road, Kerikeri, zoned Coastal Living. The application is a restricted discretionary activity.

The application fee of $2,558 has been paid separately via direct credit.

Regards

Lynley Newport
Senior Planner
THOMSON SURVEY LTD

315 Kerikeri Road, Kerikeri
P.O. Box 372, Kerikeri 0245, New Zealand.
Email: Kerikeri@tsurvey.co.nz
denis@tsurvey.co.nz, sam@tsurvey.co.nz

Telephone: **09 4077360**
Facsimile: **09 4077322**
After Hours: Director: Denis Thomson 09 4071372
After Hours: Office Manager: Sam Lee 021 1370060

Background picture represents a New Zealand surveying trig station, used to beacon control survey marks

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

Office Use Only
Application Number:

Application for resource consent or fast-track resource consent

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

1. Pre-Lodgement Meeting

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

2. Type of Consent being applied for

(more than one circle can be ticked):

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

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

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

✓ **Yes** ◯ **No**

4. Consultation

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

If yes, which groups have you consulted with?

Who else have you consulted with?

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

5. Applicant Details

Name/s: Adam Franklin

Email: [redacted]

Phone number:

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

6. Address for Correspondence

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

Name/s: Lynley Newport

Email: [redacted]

Phone number:

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

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

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

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

Name/s: As per item 5

Property Address/ Location:

Postcode

8. Application Site Details

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

Name/s: Adam Franklin and Janette Neilson

Site Address/ Location: As per Item 5

Postcode

Legal Description: Lot 5 DP 352467 **Val Number:**

Certificate of title: 215069

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

Site visit requirements:

Is there a locked gate or security system restricting access by Council staff? ◯ **Yes** ✓ **No**

Is there a dog on the property? ◯ **Yes** ✓ **No**

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

Please call or email owner to arrange a time for any visits

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 construct a shed in excess of 50m2 in the Coastal Living Zone resulting in breaches of the zone's Visual Amenity and Stormwater Management rules. The activity is a restricted discretionary activity.

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

10. Would you like to request Public Notification?

◯ **Yes** ✓ **No**

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

(more than one circle can be ticked):

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

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

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

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

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

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

13. Assessment of Environmental Effects:

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

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

13. Draft Conditions:

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

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

14. Billing Details:

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

Name/s: (please write in full) Adam Franklin

Email: [redacted]

Phone number: [redacted]

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

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

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

Name: (please write in full) Adam Franklin

Signature: [redacted]
(signature of bill payer

Date 3/6/25

MANDATORY

15. Important Information:

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

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

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

15. Important information continued...

Declaration

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

Name: (please write in full) [redacted] ADAM FRANKLIN

Signature:

Date 3/6/25

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

Checklist (please tick if information is provided)

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

Adam Franklin

CONSTRUCTION OF A SHED IN THE COASTAL LIVING ZONE

17 Edmonds Road, Kerikeri

PLANNING REPORT & ASSESSMENT OF ENVIRONMENTAL EFFECTS

Thomson Survey Ltd
Kerikeri

1.0 INTRODUCTION

1.1 The Proposal

The applicant seeks to construct a 120m^2 boat shed on their property at 17 Edmonds Road. It is a basic structure, rectangular in shape, measuring 15m x 8m, with pitched roof and 4.876m high at its apex. It features a roller door entry at eastern end with side door and small window on north facing aspect. The other side, and rear are solid cladding.

The total post development impermeable surface coverage on the site is estimated to come to 780m^2 or 9.7% of the site area. The proposed shed and access equates to 200m^2 of that figure.

An assessment of compliance against the zone rules is contained in section 5 of this report.

A site plan; floor plan and elevations; Stormwater Mitigation Report and Geotechnical Report are attached in support of this application – see Appendices 1, 4 & 5 respectively. A location map and copy of the record of title & relevant instruments are attached in Appendices 2 & 3 respectively.

1.2 Scope of this Report

This assessment and report accompanies the Resource Consent Application, and is provided in accordance with Section 88 and Schedule 4 of the Resource Management Act 1991. The application seeks consent to construct a 120m^2 shed on land in the Coastal Living Zone, as a restricted discretionary activity.

The information provided in this assessment and report is considered commensurate with the scale and intensity of the activity for which consent is being sought. The name and address of the owner of the property is contained in the Form 9 Application form. There are no other activities that are part of the proposal to which the application relates, and no other resource consents required other than those addressed in this application.

2.0 PROPERTY DETAILS

Location:	17 Edmonds Road, Kerikeri
Legal description:	Lot 5 DP 352467, contained in Record of Title 215069 8041m^2 in area.

3.0 SITE DESCRIPTION

3.1 Physical characteristics

The site is accessed off Edmonds Road not far from that road's intersection with Kerikeri Inlet Road. Access into the building area within the lot is via the existing driveway, where new metalled driveway will be extended to access the proposed shed.

The property supports a modestly sized existing dwelling near the back of the site. Adjacent properties to the west and south support buildings, none of which can be seen from the proposed shed location.

The site is reasonably heavily vegetated with the area proposed for the shed in grass. The site is gently sloping in the vicinity of the shed location, with the ground rising upwards in a southerly direction.

Looking west across the proposed building site

The property is not connected to any Council reticulated system (3 waters). The property has an existing functioning on-site wastewater system.

The property is zoned Coastal Living in the Operative District Plan and Rural Lifestyle in the Proposed District Plan. It is not within the coastal environment as mapped in the Regional Policy Statement and the Proposed District Plan.

The site is not mapped as containing any natural hazard; significant indigenous vegetation; heritage or cultural values or archaeological site.

The Geotechnical and Stormwater Reports attached provide information on ground conditions within the property.

3.2 Legal Interests

The property is subject to Consent Notice 6567080.4, and to a right to drain water (over area marked C on the site plan attached to the application). Both instruments are attached as part of Appendix 3.

3.3 Consent History

The property file shows BP63409, issued in 1979 for a new dwelling.

Resource consent history consists of RC 2040648-RMASUB, issued in May 2004, creating the application site and several others. This was varied in RC 2050324, issued in October 2004, to provide for staging of the subdivision.

4.0 SCHEDULE 4 – INFORMATION REQUIRED IN AN APPLICATION

Clauses 2 & 3: Information required in all applications

(1) An application for a resource consent for an activity must include the following:	
(a) a description of the activity: .	Refer Section 1.0 of this Planning Report.
(b) an assessment of the actual or potential effect on the environment of the activity:	Refer to Section 6.0 of this Planning Report.
(b) a description of the site at which the activity is to occur:	Refer to Section 3.0 of this Planning Report.
(c) the full name and address of each owner or occupier of the site:	This information is contained in the Form 9 attached to the application.
(d) a description of any other activities that are part of the proposal to which the application relates:	Refer to Sections 3.0 & 5.0 of this Planning Report.
(e) a description of any other resource	None required.

consents required for the proposal to which the application relates:	
(f) an assessment of the activity against the matters set out in Part 2:	Refer to Section 7.0 of this Planning Report.
(g) an assessment of the activity against any relevant provisions of a document referred to in section 104(1)(b), including matters in Clause (2): (*a) any relevant objectives, policies, or rules in a document; and* *(b) any relevant requirements, conditions, or permissions in any rules in a document; and* *(c) any other relevant requirements in a document (for example, in a national environmental standard or other regulations).*	Refer to Sections 6.0 & 7.0 of this Planning Report.
(3) An application must also include any of the following that apply:	
(a) if any permitted activity is part of the proposal to which the application relates, a description of the permitted activity that demonstrates that it complies with the requirements, conditions, and permissions for the permitted activity (so that a resource consent is not required for that activity under section 87A(1)):	There is an existing permitted/consented dwelling on the site, established in 1979.
(b) if the application is affected by section 124 or 165ZH(1)(c) (which relate to existing resource consents), an assessment of the value of the investment of the existing consent holder (for the purposes of section 104(2A)):	There is no existing resource consent. Not applicable.
(c) if the activity is to occur in an area within the scope of a planning document prepared by a customary marine title group under section 85 of the Marine and Coastal Area (Takutai Moana) Act 2011, an assessment of the activity against any resource management matters set out in that planning document (for the purposes of section 104(2B)).	The site is not within an area subject to a customary marine title group. Not applicable.

Clause 6: Information required in assessment of environmental effects

(1) An assessment of the activity's effects on the environment must include the following information:

(a) if it is likely that the activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:	Refer to Section 6.0 of this planning report. The activity will not result in any significant adverse effect on the environment.
(b) an assessment of the actual or potential effect on the environment of the activity:	Refer to Section 6.0 of this planning report.
(c) if the activity includes the use of hazardous installations, an assessment of any risks to the environment that are likely to arise from such use:	Not applicable as the application does not involve hazardous installations.
(d) if the activity includes the discharge of any contaminant, a description of— *(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects; and* *(ii) any possible alternative methods of discharge, including discharge into any other receiving environment:*	The proposal does not involve any discharge of contaminant.
(e) a description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:	Refer to Section 6.0 of this planning report.
(f) identification of the persons affected by the activity, any consultation undertaken, and any response to the views of any person consulted:	Refer to Section 8.0 of this planning report. No affected persons have been identified.
g) if the scale and significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved:	No monitoring is required as the scale and significance of the effects do not warrant it.
(h) if the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).	No protected customary right is affected.

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

(1) An assessment of the activity's effects on the environment must address the following matters:	
(a) any effect on those in the neighbourhood and, where relevant, the wider community, including any social, economic, or cultural effects:	Refer to Sections 6.0 and 8.0 of this planning report and also to the assessment of objectives and policies in Section 7.0.
(b) any physical effect on the locality, including any landscape and visual effects:	Refer to Section 6.0.
(c) any effect on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:	Refer to Section 6.0. The proposal has no effect on ecosystems or habitat.
(d) any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:	Refer to Section 6.0.
(e) any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:	The proposal will not result in the discharge of contaminants, nor any unreasonable emission of noise.
(f) any risk to the neighbourhood, the wider community, or the environment through natural hazards or hazardous installations.	The application site is not subject to natural hazards and does not involve hazardous installations.

5.0 COMPLIANCE ASSESSMENT

5.1 Operative District Plan

The property is zoned Coastal Living in the Far North District Plan. There is no outstanding landscape or natural feature overlay in the Operative District Plan. A brief assessment of the proposal against relevant rules in Chapter 10.7 Coastal Living Zone and any relevant District Wide rules, is contained in the following Table:

Table 1:
Far North Operative District Plan:

COASTAL LIVING ZONE RULES:		
Permitted Standards	**Comment**	**Compliance Assessment**
10.7.5.1.1 VISUAL AMENITY The following are permitted	The shed is greater than 50m^2 in	**Cann** **Cannot comply.**

activities in the Coastal Living Zone: (a) any new building(s), provided that the gross floor area of any new building(s) permitted under this rule does not exceed 50m²; or (b) any alteration/addition to an existing building which does not exceed 30% of the gross floor area of the building which is being altered or added to, provided that any alteration/addition does not exceed the height of the existing building and that any alteration/addition is to a building that existed at 28 April 2000. (c) replacement of any building so long as the replacement does not exceed the building envelope occupied by the previous building; or (d) renovation or maintenance of any building.	area so cannot comply with part (a).	
10.7.5.1.2 RESIDENTIAL INTENSITY	The site has only one existing residential unit.	Permitted.
10.7.5.1.3 SCALE OF ACTIVITIES	N/A – the shed is for own use (non commercial).	N/A
10.7.5.1.4 BUILDING HEIGHT The maximum height of any building shall be 8m.	The shed building is less than 5m in height at its apex.	Permitted.
10.7.5.1.5 SUNLIGHT No part of any building shall project beyond a 45 degree recession plane as measured inwards from any point 2m vertically above ground level on any site boundary ….	The shed is at least10m from all boundaries (to the south) and less than 5m at its highest point. It readily complies with the specified sunlight angle.	Permitted.
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.	The post development impermeable coverage is estimated at 780m^2, which is more than the 600m^2 permitted.	**Cannot comply.**

10.7.5.1.7 SETBACK FROM BOUNDARIES Buildings shall be set back a minimum 10m from any site boundary, except that on any site with an area less than 5,000m² this set back shall be 3m from any site boundary.	The shed is more than 10m from any boundary.	Permitted.
10.7.5.1.8 SCREENING FOR NEIGHBOURS NON-RESIDENTIAL ACTIVITIES Except along boundaries adjoining a Commercial or Industrial zone, outdoor areas providing for activities such as parking, loading, outdoor storage and other outdoor activities associated with non-residential activities on the site shall be screened from adjoining sites by landscaping, wall/s, close boarded fence/s or trellis/es or a combination thereof.....	The shed is associated with residential activities.	N/A.
10.7.5.1.10 HOURS OF OPERATION NON-RESIDENTIAL ACTIVITIES	Part of a residential activity	N/A
10.7.5.1.11 KEEPING OF ANIMALS	N/A – the proposal does not involve the keeping of animals.	N/A
10.7.5.1.12 NOISE All activities shall be so conducted as to ensure that noise from the site shall not exceed the following noise limits as measured at or within the boundary of any other site in this zone, or at any site in the Residential, Russell Township or Coastal Residential Zones, or at or within the notional boundary at any dwelling in any other rural or coastal zone: 0700 to 2200 hours 55 dBA L10 2200 to 0700 hours 45 dBA L10 and 70 dBA Lmax	The shed is to accommodate a boat. Unlikely to breach the noise rule.	Permitted
10.7.5.1.13 HELICOPTER LANDING AREA	No helicopter landing area proposed.	N/A

Controlled Activity Standards		
10.7.5.2.2 VISUAL AMENITY Any new building(s) or alteration/additions to an existing building that does not meet the permitted activity standards in ***Rule 10.7.5.1.1*** are a controlled activity where the new building or building alteration/addition is located entirely within a building envelope that has been approved under a resource consent.	There is no building envelope that has been approved under a resource consent.	**Does not meet controlled activity standard.**
Restricted Discretionary Activity Standards		
10.7.5.3.1 VISUAL AMENITY The following are restricted discretionary activities in the Coastal Living Zone: (a) any new building(s); or (b) any alteration/addition to an existing building that do not meet the permitted activity standards in ***Rule 10.7.5.1.1*** where the new building or building alteration/addition is located partially or entirely outside a building envelope that has been approved under a resource consent.	The shed building and additions to the dwelling are entirely outside of any pre approved building envelopes.	**Meets restricted discretionary activity rule.**
10.7.5.3.8 STORMWATER MANAGEMENT The maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 15% or 1,500m^2, whichever is the lesser	Impermeable surface coverage is less than 1,500m^2.	**Complies.**
DISTRICT WIDE RULES		
12.3 SOILS AND MINERALS 12.3.6.1.2 EXCAVATION AND/OR FILLING, INCLUDING OBTAINING ROADING MATERIAL BUT EXCLUDING MINING AND QUARRYING, IN THE ..... GENERAL COASTAL ..... ZONES Excavation and/or filling, excluding mining and	The site is reasonably level where it is proposed to place the shed. It is unlikely to require a cut face in excess of 1.5m or require more than 300m^3 of excavation / filling.	Permitted.

quarrying, on any site in the ...., General Coastal ..... Zones is permitted, provided that: (a) it does not exceed 300m³ in any 12 month period per site; and (b) it does not involve a cut or filled face exceeding 1.5m in height i.e. the maximum permitted cut and fill height may be 3m.		
12.4 NATURAL HAZARDS 12.4.6.1.2 FIRE RISK TO RESIDENTIAL UNITS	The building is not a residential unit.	N/A.
15.1 TRAFFIC, PARKING and ACCESS	The site supports no other activity and as far as I am aware will not be associated with any commercial activity. The permitted TIF in the zone is 20 daily one way movements.	Permitted.

In summary, in terms of Part 2 Zone rules, and Part 3 District Wide rules, the proposal breaches permitted and controlled activity standards for Visual Amenity, and permitted activity standard for stormwater management. It is therefore a **restricted discretionary** activity. I have not identified any other rule breaches and no consent is required under any Regional Plan.

5.2 Proposed District Plan

The FNDC publicly notified its PDP on 27th July 2022. Decisions on submissions have yet to be notified so only specific rules identified as such have legal effect at the time of this application being lodged.

Rules identified by the Council as having legal effect include:

Rules HS-R2, R5, R6 and R9 in regard to hazardous substances on scheduled sites or areas of significance to Maori, significant natural areas or a scheduled heritage resource.
The property does not contain a scheduled site or area of significance to Maori, a scheduled heritage resource, or any significant natural area.
Not Applicable.

Heritage Area Overlays – the property is not within any Heritage Area overlay
Not applicable.

Historic Heritage rules and Schedule 2 – the property is not listed in Schedule 2 (Historic sites, buildings and objects)
Not applicable.

Notable Trees – none
Not applicable

Sites and Areas of Significance to Maori – none
Not applicable.

Ecosystems and Indigenous Biodiversity – Rules IB-R1 to R5 inclusive.
The proposal does not involve any clearance of vegetation or habitat, and no breach of these rules has been identified.

Subdivision (specific parts) –
Not applicable.

Activities on the surface of water –
Not applicable.

Earthworks – Only some rules and standards have legal effect. These are Rules EW-R12 and R13 and related standards EW-S3 and ES-S5 respectively. EW-R12 and associated EW-S3 relate to the requirement to abide by Accidental Discovery Protocol (ADP) if carrying out earthworks and any artefacts are discovered. EW-R13 and associated EW-S5 relate to earthworks being done in accordance with industry standard Erosion and Sediment Control measures. Both aspects can be covered in conditions of resource consent or Advice Notes.

Signs –
Not applicable.

Orongo Bay Zone –
Not applicable.

In summary there are no zone rules in the PDP breached.

5.3 Consent Notice 6567080.4

The property is subject to the above consent notice. Compliance with that instrument is assessed below:

- *No buildings shall be constructed within the building line restrictions shown on the survey plan*

The proposed shed is outside of the building line restriction – shown area "W" on the site plan in Appendix 1 – complies.

- *In the event that any unrecorded archaeological remains are uncovered during earthworks, all works shall cease and Northern Archaeological research and the New Zealand Historic Places Trust shall be notified.*
- *There shall be no development or landscaping within 2.5m of any historic stone wall.*
- *Any removal of stone walls or parts of stone walls will require an authority from the New Zealand Historic Places Trust prior to any such work being undertaken.*

Noted and will be complied with.

6.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

The application is a restricted discretionary activity for breaches of two rules – Visual Amenity and Stormwater Management. The Operative District Plan sets out the matters to which the Council will restrict its discretion for each breach.

6.1 Visual Amenity Assessment

(i) the location of the building;

Refer to the Plans attached as part of Appendix 1. The proposed shed is to be constructed within a cleared area at the lower / northern end of the property. The views into the site from the road are limited due to roadside vegetation and additional vegetation within the site itself. The shed site cannot be seen from adjacent properties because of vegetative screening along boundaries.

The proposed shed complies with setback and height to boundary permitted standards and is outside of the building line restriction imposed by way of consent notice. I consider the location of the shed building within the site and in relation to the surrounding area, to be appropriate and to not cause adverse effects.

(ii) the size, bulk, and height of the building or utility services in relation to ridgelines and natural features;

The shed is to be located on the lower portion of the site. It is 120m^2 in size and less than 5m in height. The site is not identified as having any high or outstanding landscape or natural features, neither are there any nearby. Neither is the site within the coastal environment. The shed cannot be seen from the coastal marine area.

(iii) the colour and reflectivity of the building;

The proposed colour scheme for the shed has not yet been finalised. The intent is that it will be in dark recessive shades such as *karaka green*. The zone rules do not specify a maximum LRV. The shed's colour and reflectivity will be designed to blend in with surrounding landscape and vegetation.

(iv) the extent to which planting can mitigate visual effects;

There is substantial existing plantings within the site. An additional short row of plantings has been established between the road entrance and shed location. The proposed shed will be nestled into an already landscaped terraced area and, in my opinion, no additional planting is required to mitigate visual effects.

(v) any earthworks and/or vegetation clearance associated with the building;

The creation of a level building platform for the proposed shed will require some earthworks, but because the site is only slightly sloping in the location for the shed, this should be minimal and within ODP permitted thresholds. Any area of earthworks not covered by building or impermeable surface will be grassed or planted such that there are no areas of bare earth left uncovered. No vegetation clearance is required.

(vi) the location and design of associated vehicle access, manoeuvring and parking areas;

The proposed shed will be located such that it does not impact on access or visibility for users of the existing internal driveway. It is intended to construct an additional metal driveway to come off the existing driveway, leading to the shed. This arrangement will not negatively impact on the existing internal access and creates no adverse effects in terms of access to Edmonds Road or users of that road.

(vii) the extent to which the building will be visually obtrusive;

See earlier comments. There is no public viewing point that can see the proposed shed as far as I can ascertain. It is nestled into a lower part of the property, below the dwelling (which cannot seen from the shed location other than portions of building screened by vegetation). I believe the proposed shed will not be visually obtrusive.

The existing planting and landscaping of the site will assist in mitigating visual effects of the building.

(viii) the cumulative visual effects of all the buildings on the site;

The dwelling on the site is higher up and further into the property. It cannot be seen from the road. There is substantial vegetative screening between the dwelling and the shed, i.e. when looking into the site one will not be able to clearly discern two separate buildings. There are no adverse cumulative visual effects.

(ix) the degree to which the landscape will retain the qualities that give it its naturalness, visual and amenity values;

See earlier comments. The surrounding landscape has minimal 'naturalness' remaining given the level of development that has occurred. There are no outstanding natural landscape values associated with the site. The shed is typical of ancillary buildings associated with

residential use of sites in the area and the development is in keeping with the area's amenity values and character.

(x) the extent to which private open space can be provided for future uses;

The location of the shed is such that it will not impose on the private open space of the occupiers of the dwelling. There will be abundant private open space remaining within the site.

(xi) the extent to which the siting, setback and design of building(s) avoid visual dominance on landscapes, adjacent sites and the surrounding environment; and (xii) the extent to which non-compliance affects the privacy, outlook and enjoyment of private open spaces on adjacent sites.

These matters have been addressed earlier. The shed complies with setback requirements and will not be visually dominant or obtrusive. The shed will not impact on the privacy, outlook or enjoyment of private open spaces on adjacent sites.

In summary, I am of the opinion that overall, the adverse effects on visual amenity, are less than minor on both the wider environment and on adjacent sites.

6.2 Effects of Stormwater

The application is supported by a Stormwater Mitigation Report and a Geotechnical Assessment Report – refer Appendices 4 & 5. The stormwater report estimates a post development impermeable surface coverage as follows:

- Buildings 245m^2 (dwelling and proposed shed);
- Hardstand 535m^2

The size of the site means that the permitted threshold is 600m^2 coverage. Post development coverage will be 780m^2 (or 9.7% of total site area). This complies with the restricted discretionary threshold of 1,500m^2 coverage.

When assessing the breach of the Stormwater Management rule, the matters of discretion are restricted to those laid out in 10.7.5.3.8. The Stormwater Mitigation Report assesses the stormwater management proposed against those criteria – refer to section 7 of the Stormwater Mitigation Report. Stormwater Mitigation is outlined in the report's section 6. In summary I believe the additional stormwater runoff can be appropriately managed and mitigation such there will be no off-site adverse effects.

6.3 Ground stability and foundation design

A Geotechnical Assessment Report, prepared primarily for the pending building consent application, is attached to this application. The report authors investigated the site to assess the suitability of potential foundation options. They found no obvious evidence of any deep-seated instability that would impact on the building site.

7.0 STATUTORY ASSESSMENT

7.1 District Plan Objectives and Policies

Objectives and policies relevant to this proposal are predominantly those listed in Chapter 10.7 Coastal Living Zone.

The zone is stated as applying to areas already developed, but which maintain a high level of amenity associated with the coast. In the case of this site, it is within an area already developed. It has amenity values because of vegetative cover and landscaping, but is not within the coastal environment. There is a very limited viewing audience into the site.

The zoning applies to areas believed to have the 'ability to absorb further low density [development]....' The proposed development does not extend the use of the site beyond that of a single residential unit, with the shed being a typical ancillary building associated with residential use. I believe the site is capable of visually absorbing the proposed density of buildings. The proposed development is in keeping with the surrounding area's character. Relevant objectives and policies are discussed below. I regard the proposal as being consistent with the zone's objectives and policies.

10.7.3.1 To provide for the well being of people by enabling low density residential development to locate in coastal areas where any adverse effects on the environment of such development are able to be avoided, remedied or mitigated.

10.7.3.2 To preserve the overall natural character of the coastal environment by providing for an appropriate level of subdivision and development in this zone.

I believe the proposal to be consistent with both the above objectives. It enables the owners of the property to develop the site for their enjoyment and well being. Effects of the proposed development can be adequately remedied or mitigated through building location, orientation, size, bulk, design and colour. Commentary on the overall character of the vicinity has been provided earlier in this report.

10.7.4.1 That the adverse effects of subdivision, use, and development on the coastal environment are avoided, remedied or mitigated.

10.7.4.2 That standards be set to ensure that subdivision, use or development provides adequate infrastructure and services and maintains and enhances amenity values and the quality of the environment.

10.7.4.3 Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the zone in regards to s6 matters, and shall avoid adverse effects as far as practicable by using techniques including:
(a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns;
(b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as seen from public land and the coastal marine area;
(c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas;
(d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Maori with their culture, traditions and taonga including concepts of mauri, tapu, mana, wehi and karakia and the important contribution Maori culture makes to the character of the District (refer Chapter 2, and in particular Section 2.5, and Council's "Tangata Whenua Values and Perspectives (2004)");
(e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests;
(f) protecting historic heritage through the siting of buildings and development and design of subdivisions.

The shed is to be separate from existing buildings rather than within the same 'cluster'. The shed is located at lower elevations to the house and will not be visually obtrusive. It will be in dark colours that blend with the back drop of vegetation.

Stormwater management from increased roof runoff and metalled areas is achievable without offsite effects. The site has no known cultural sites of significance. The site is one of several lots created in a subdivision that was subject to extensive archaeological survey and assessment. No sites were discovered within the application site and the title is subject to a consent notice in regard to the accidental discovery of any unrecorded archaeological remains.

7.2 Proposed District Plan Objectives and Policies

The property is proposed to be zoned Rural Lifestyle in the PDP

Objectives:

RLZ-O1
The Rural Lifestyle zone is used predominantly for low density residential activities and small scale farming activities that are compatible with the rural character and amenity of the zone.

RLZ-O2
The predominant character and amenity of the Rural Lifestyle Zone is characterised by:
a. low density residential activities;
b. small-scale farming activities with limited buildings and structures;
c. smaller lot sizes than anticipated in the Rural Production Zone;
d. a general absence of urban infrastructure;
e. rural roads with low traffic volumes;
f. areas of vegetation, natural features and open space.

RLZ-O3 *The role, function and predominant character and amenity of the Rural Lifestyle zone is not compromised by incompatible activities.*

RLZ-O4
Land use and subdivision in the Rural Lifestyle zone does not compromise the effective and efficient operation of primary production activities in the adjacent Rural Production Zone.

The site is low density residential and compatible with the rural character and amenity of the zone (RLZ-O1 & RLZ-O2). The site and the proposal are consistent with the characteristics outlined in RLZ-O2. The proposal is not incompatible with rule, function and predominant character and amenity of the zone (RLZ-O3). There is no land zoned Rural Production adjacent to the site (RLZ-O4).

RLZ-P1 *Enable activities that will not compromise the role, function and predominant character and amenity of the Rural Lifestyle Zone, while ensuring their design, scale and intensity is appropriate to manage adverse effect in the zone, including:*
a. low density residential activities;
b. small-scale farming activities;
c. home business activities;
d. visitor accommodation; and
e. small-scale education facilities.

RLZ-P2 *Avoid activities that are incompatible with the role, function and predominant character and amenity of the Rural Lifestyle Zone because they are:*
a. contrary to the density anticipated for the Rural Lifestyle Zone;
b. predominantly of an urban form or character;
c. primary production activities, such as intensive indoor primary production, that generate adverse amenity effects that are incompatible with rural lifestyle living; and
c. commercial , rural industry or industrial activities that are more appropriately located in a Settlement zone or an urban zone.

RLZ-P3 *Avoid where possible, or otherwise mitigate, reverse sensitivity effects from sensitive and other non-productive activities on primary production activities in the adjacent Rural Production Zone.*

RLZ-P4 *Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application:*
a. consistency with the scale and character of the rural lifestyle environment;
b. location, scale and design of buildings or structures;
c. at zone interfaces:
i. any setbacks, fencing, screening or landscaping required to address potential conflicts;
ii. the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable;
d. the capacity of the site to cater for on-site infrastructure associated with the proposed activity;
e. the adequacy of roading infrastructure to service the proposed activity;
f. managing natural hazards;
g. any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity; and
h. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

The land use on the site is residential, and will remain residential. This is an activity expected in the zone (RLZ-P1). The existing and future land use is/will be compatible with the role, function and predominant character and amenity of the zone (RLZ-P2). Reverse sensitivity effects are not added to (RLZ-P3). All of the matters in RLZ-P4, where relevant, have been considered

and the proposal is considered consistent with the policy, albeit this policy is of limited relevance given that no consent is required pursuant to the PDP.

The property is outside of the coastal environment as mapped in the PDP. The property is not subject to any hazards. No indigenous vegetation clearance will occur, other than very minor vegetation removal that might required for the creation of the building platform. The site has no mapped or scheduled heritage/cultural resources. No other objectives and policies in the PDP are therefore relevant to the proposal.

7.3 Part 2 Matters

5 Purpose

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

(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while—

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

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

6 Matters of national importance

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

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

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

(c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:

(d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:

(e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:

(f) the protection of historic heritage from inappropriate subdivision, use, and development:

(g) the protection of protected customary rights:

(h) the management of significant risks from natural hazards.

The application site is in an area zoned (and developed) for low density housing. As such 'natural character' is less than that found on open and pristine coastlines and headlands. The proposal is appropriate for the site. There is no requirement for public access and I do not believe the proposal affects the relationship of Maori with their culture and traditions with water. Heritage values are not adversely affected. There is no significant risk of hazard.

7 Other matters

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

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

Regard has been had to any relevant parts of Section 7 of the RMA, "Other Matters". These include 7(b), (c), (d) and (f). It is considered that the proposal represents efficient use and development of a site. Amenity values will be maintained as will the quality of the environment. The proposal has had regard to the values of ecosystems.

8 Treaty of Waitangi

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

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

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

7.4 National Policy Statements and Environmental Standards

The proposal is a shed in support of existing residential development. I have not identified any NES relevant to the proposal.

7.5 Regional Policy Statement for Northland

As part of residential use of a property, presenting no intensification of use, I consider the proposal to be consistent with the RPS for Northland. The site is not at risk of sea level rise and not mapped as being subject to any coastal flood hazard or erosion hazard.

7.6 Regional Plans

The proposal does not require any consent under any Regional Plan.

8.0 CONSULTATION & s95A-E ASSESSMENT

8.1 S95A Public Notification Assessment

A consent authority must follow the steps set out in s95A to determine whether to publicly notify an application for a resource consent. Step 1 specifies when public notification is mandatory in certain circumstances. No such circumstances exist. Step 2 of s95A specifies the circumstances that preclude public notification. No such circumstance exists and Step 3 of s95A must be considered. This specifies that public notification is required in certain circumstances. No such circumstances exist. Public notification is not required pursuant to Step 3 of s95A.

8.2 S95B Limited Notification Assessment

A consent authority must follow the steps set out in s95B to determine whether to give limited notification of an application for a resource consent, if the application is not publicly notified pursuant to s95A. Step 1 identifies certain affected groups and affected persons that must be notified. None exist in this instance. Step 2 of s95B specifies the circumstances that preclude limited notification. No such circumstance exists and Step 3 of s95B must be considered. This specifies that certain other affected persons must be notified. I have not identified any affected persons. Refer to section 8.4 below.

8.3 S95D Level of Adverse Effects

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

8.4 S95E Affected Persons

A person is an 'affected person' if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor). A person is not an affected person if they have provided written approval for the proposed activity. In this instance effects on adjacent properties are less than minor, for the reasons outlined in section 6 of this report.

9.0 CONCLUSION

The site is considered suitable for the proposal, and effects on the wider environment are less than minor. The proposal is consistent with the relevant objectives and policies of the Operative and Proposed District Plans, and the Regional Policy Statement, as well as Part 2 of the Resource Management Act.

There is no District Plan rule or national environmental standard that requires the proposal to be publicly notified and no persons have been identified as adversely affected by the proposal. No special circumstances have been identified that would suggest notification is required.

It is therefore requested that the Council grant approval on a non-notified basis, subject to appropriate conditions.

Lynley Newport Date 4th June 2025
Senior Planner
Thomson Survey Ltd

10.0 APPENDICES

Appendix 1 Site, Floor and Elevation Plans

Appendix 2 Location Map

Appendix 3 Record of Title & Easement Instruments

Appendix 4 Stormwater Mitigation Report

Appendix 5 Geotechnical Assessment Report

Appendix 1

Site, Floor and Elevation Plans

0 5 25 50m

Bar Scale 1:500 @ A3

SCHEDULE OF EXISTING EASEMENTS			
PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT TO DRAIN WATER	Ⓒ	LOT 5	LOT 6

AREAS SHOWN Ⓦ ARE SUBJECT TO A LAND COVENANT (NO BUILDINGS)

THOMSON SURVEY LIMITED
315 Kerikeri Rd
P.O. Box 372 Kerikeri
Email: kerikeri@tsurvey.co.nz
Ph: (09) 4077360
www.tsurvey.co.nz
REGISTERED SURVEYORS, PLANNERS & LAND DEVELOPMENT CONSULTANTS

Proposed Shed, Site Plan

17 Edmonds Rd, Kerikeri

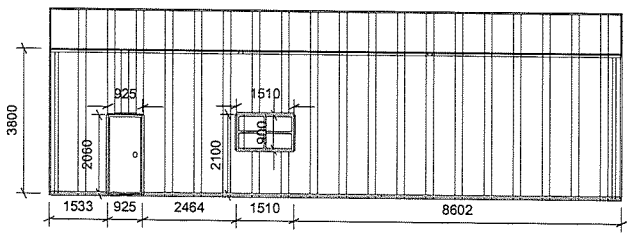
PREPARED FOR: A, Franklin

	Name	Date
Survey		
Design		
Drawn	EM	17.01.25
Approved		
Rev	KY	30.05.25

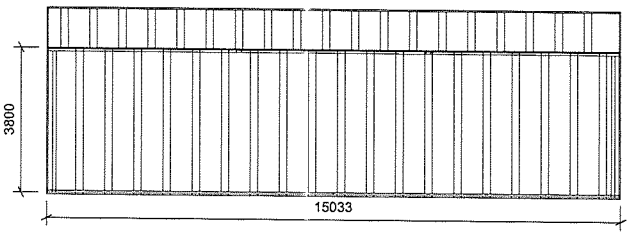
10727 Site Plan 20250530

ORIGINAL SCALE 1:500 SHEET SIZE A3

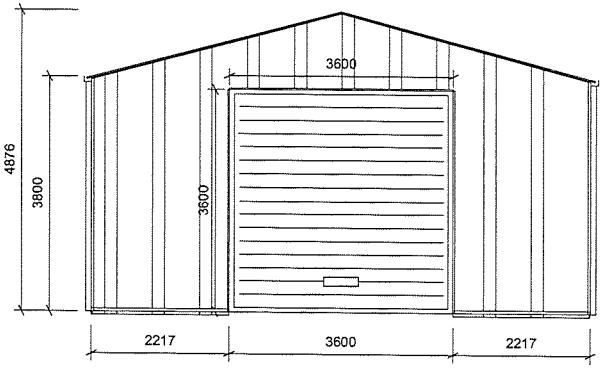
Surveyors Ref. No: 10727



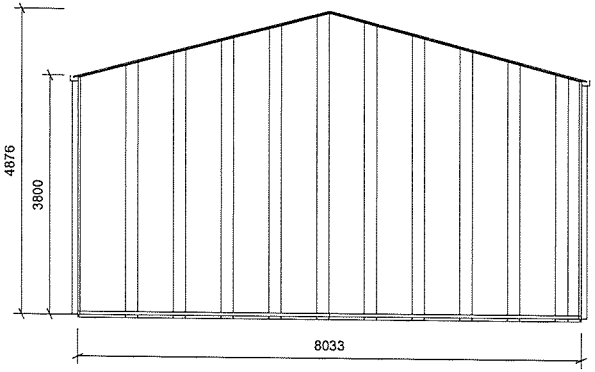
FRONT VIEW



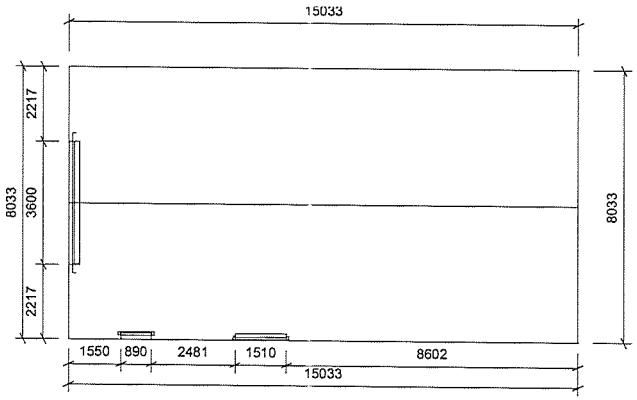
BACK VIEW



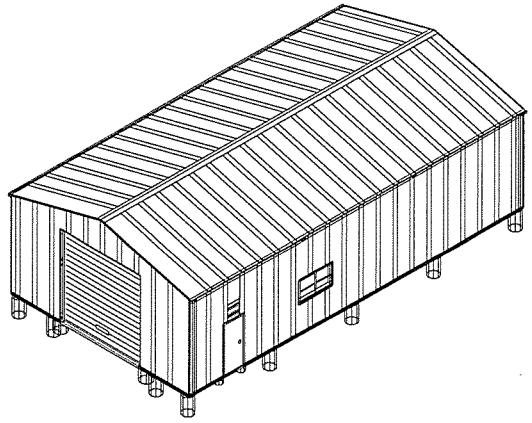
LEFT VIEW



RIGHT VIEW



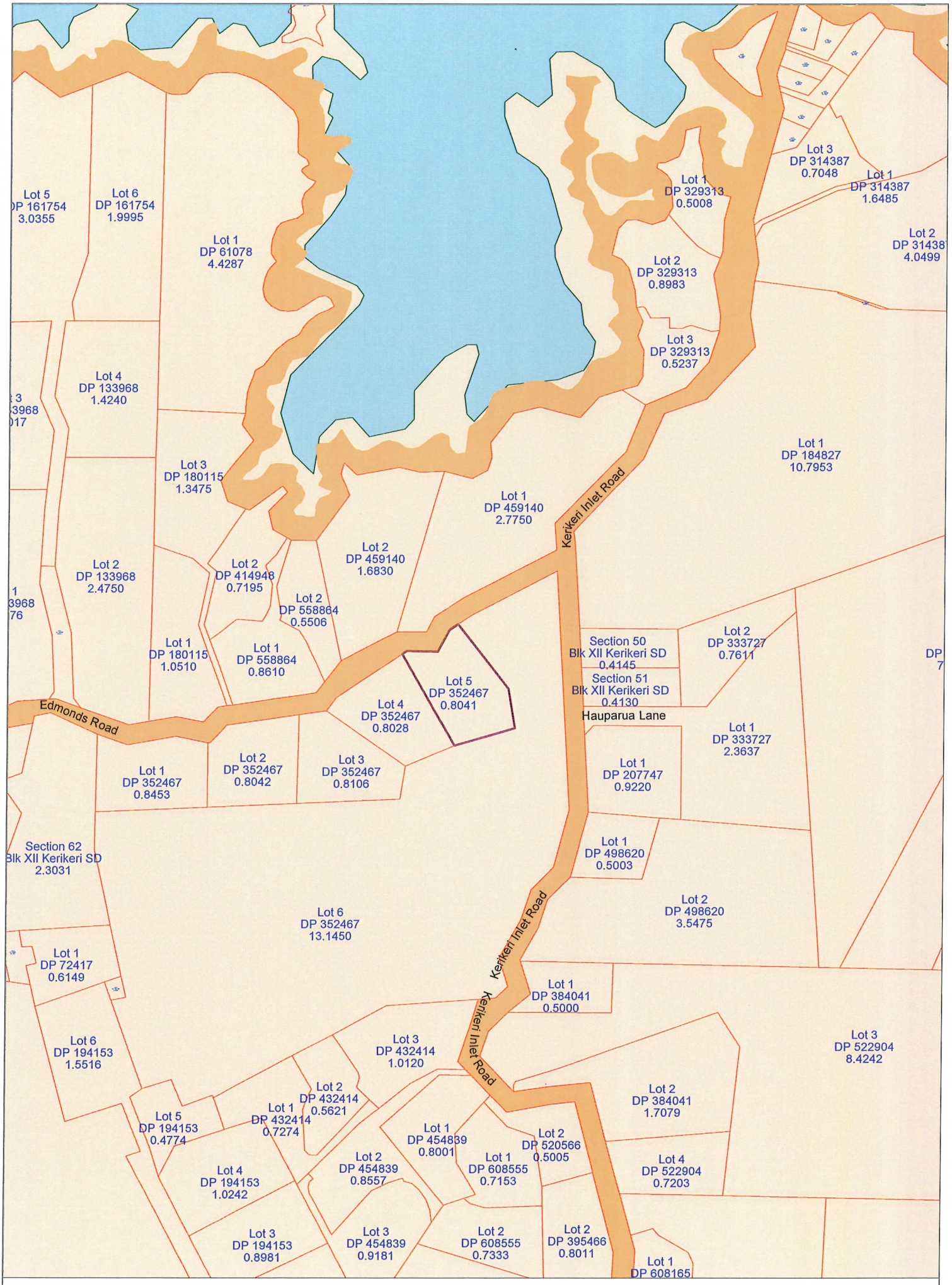
PLAN VIEW



ISO FRONT LEFT VIEW

		Signed	Dwg No 2 of 5	Project No. sdl01_257797: 1
			Elevation Multiview	Adam Franklin
Elevation Multiview			17 Edmonds Road Kerikeri 293, NL	28/1/2025

Appendix 2
Location Map



QuickMap
Custom Software Ltd

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

Scale 1:5000 Topographical and Cadastral map derived from LINZ data. Printed: 30-May-2025 12:27.

Appendix 3

Record of Title & Easement Instruments

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

Search Copy

R.W. Muir
Registrar-General
of Land

Identifier	**215069**
Land Registration District	**North Auckland**
Date Issued	09 September 2005

Prior References
NA10D/39

Estate	Fee Simple
Area	8041 square metres more or less
Legal Description	Lot 5 Deposited Plan 352467

Registered Owners
Adam Franklin as to a 1/2 share
Janette Lindsay Neilson as to a 1/2 share

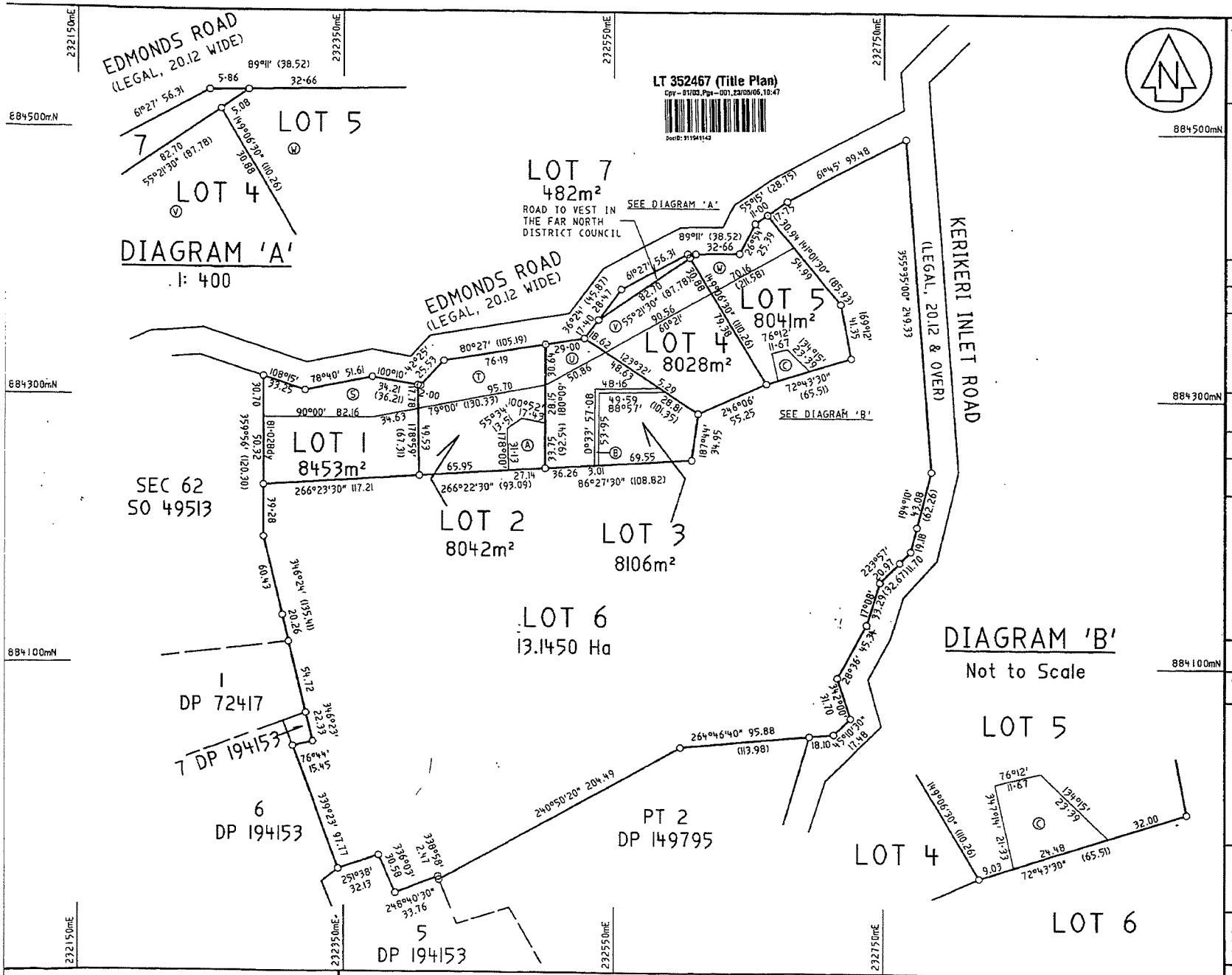
Interests

6567080.4 Consent Notice pursuant to Section 221 Resource Management Act 1991 - 9.9.2005 at 9:00 am

Subject to a right to drain water over part marked C on DP 352467 created by Easement Instrument 6567080.6 - 9.9.2005 at 9:00 am

Fencing Covenant in Transfer 8554879.1 - 13.8.2010 at 12:17 pm

13133748.3 Mortgage to Bank of New Zealand - 18.10.2024 at 1:58 pm



Approvals

R B Powell B J Purnell

REGISTERED PROPRIETORS

I hereby certify that this plan was approved by the Far North District Council pursuant to section 223 of the Resource Management Act 1991 on the 21st day of April 2005

P J Killalea
Authorised Officer
RC 2041111 , RC 2040648, & RC2050324

SCHEDULE OF PROPOSED EASEMENTS

PURPOSE	SHOWN	SERVIENT TENEMENT	DOMINANT TENEMENT
RIGHT TO DRAIN WATER	(A)	LOT 2 HEREON	LOT 6 HEREON
	(B)	LOT 3 HEREON	
	(C)	LOT 5 HEREON	

SCHEDULE OF PROPOSED EASEMENTS IN GROSS

PURPOSE	SHOWN	SERVIENT TENEMENT	GRANTEE
RIGHT TO DRAIN WATER	(B)	LOT 3 HEREON	FAR NORTH DISTRICT COUNCIL

Areas shown (S) (T) (U) (V) & (W) are to be subject to a Land Covenant (No buildings)

NEW Cs.T ALLOCATED:
- LOT 1: 215065
- LOT 2: 215066
- LOT 3: 215067
- LOT 4: 215068
- LOT 5: 215069
- LOT 6: 215070
- LOT 7: 215071
- CLASS OF SURVEY: LOTS 1-5 & 7 CLASS II, LOT 6 CLASS III

Total Area 17.2602 Ha

Comprised in C.T 10D/39 (All)

I, Denis McGregor Thomson being a person entitled to practise as a licensed cadastral surveyor, certify that-
(a) The Surveys to which this dataset relates are accurate, and were undertaken by me or under my direction in accordance with the Cadastral Survey Act 2002 and the Surveyor General's Rules for Cadastral Survey 2002/2:
(b) This dataset is accurate, and has been created in accordance with that Act and those Rules.

(Signature) D Thomson

(Date) 5.05.05

Field Book ..... p ..... Traverse Book ..... p .....
Reference Plans .....
Examined ..... Correct .....

Approved as to Survey by Land Information NZ on 2/6/2005

Deposited by Land Information NZ on 9/9/2005

File REF: 6915 POWELL
Received 23 MAY 2005
Instructions .....

DP 352467

Approved AKLM 00702 CAD: TKL\ 6915d1 EPC

LAND DISTRICT: NORTH AUCKLAND
SURVEY BLK & DIST: XII KERIKERI
NZMS SHEET No.

LOTS 1-7 BEING A SUBDIVISION OF PT SECTION 3 BLK XII KERIKERI S.D

LOCAL AUTHORITY: Far North District
Surveyed by: Thomson Survey Ltd
Scale: 1: 2000 Date: JAN 2005

Far North District Council

CONO 6567080.4 Cons
Cpy-01/01,Pgs-001,08/09/05,15:16
DocID: 312107200

Private Bag 752, Memorial Ave
Kaikohe 0400, New Zealand
Freephone: 0800 920 029
Phone: (09) 405 2750
Fax: (09) 401 2137
Email: ask.us@fndc.govt.nz
Website: www.fndc.govt.nz

THE RESOURCE MANAGEMENT ACT 1991

SECTION 221 : CONSENT NOTICE

REGARDING RC 2040648
the Subdivision of Pt Sec 3 Block XI Kerikeri SD
North Auckland Registry

PURSUANT to Section 221 for the purpose of Section 224 of the Resource Management Act 1991, this Consent Notice is issued by the **FAR NORTH DISTRICT COUNCIL** to the effect that conditions described in the schedule below are to be complied with on a continuing basis by the subdividing owner and the subsequent owners after the deposit of the survey plan, and is to be registered on the title of the affected allotments.

SCHEDULE

Lots 1 – 5

- No buildings shall be constructed within the building line restrictions shown on the survey plan.

Lots 1 – 5

- In the event that any unrecorded archaeological remains are uncovered during earthworks, all works shall cease and Northern Archaeological Research and the New Zealand Historic Places Trust shall be notified.
- There shall be no development or landscaping within 2.5 metres of any historic stone wall.
- Any removal of stone walls or parts of stone walls will require an authority from the New Zealand Historic Places Trust prior to any such work being undertaken.

SIGNED: P.J. Killalea Mr Pat Killalea
By the FAR NORTH DISTRICT COUNCIL
Under delegated authority:
RESOURCE CONSENTS MANAGER

DATED at **KAIKOHE** this 8th day of August 2005

Approved by Registrar-General of Land under No. 2002/6055

Easement instrument to grant easement or *profit à prendre*, or create land covenant

Sections 90A and 90F, Land Transfer Act 1952

Registrar-General of Land Approval 02/6055EF A.D.L.S.

EI 6567080.6 Easemen
Cpy – 01/01, Pgs – 002, 08/09/05, 15:17
DocID: 312107206

Land registration district

NORTH AUCKLAND

Grantor *Surname(s) must be underlined or in CAPITALS.*

Roy Baden POWELL and Iris Jewel POWELL

Grantee *Surname(s) must be underlined or in CAPITALS.*

Roy Baden POWELL and Iris Jewel POWELL

Grant* of easement or *profit à prendre* or creation or covenant

The Grantor, being the registered proprietor of the servient tenement(s) set out in Schedule A, **grants to the Grantee** (and, if so stated, in gross) the easement(s) or *profit(s) à prendre* set out in Schedule A, **or creates** the covenant(s) **set out** in Schedule A, with the rights and powers or provisions set out in the Annexure Schedule(s).

Dated this 1st day of August **2005**

Attestation

R B Powell I J Powell **Signature [common seal] of Grantor**	**Signed in my presence by the Grantor** Verna Carr *Signature of witness* *Witness to complete in BLOCK letters (unless legibly printed)* **Witness name** Verna Carr **Occupation** Caregiver **Address** 893 Inlet RD3 Kerikeri
R B Powell I J Powell **Signature [common seal] of Grantee**	**Signed in my presence by the Grantee** Verna Carr *Signature of witness* *Witness to complete in BLOCK letters (unless legibly printed)* **Witness name** VERNA CARR **Occupation** Caregiver **Address** 893 Inlet Rd, RD3 Kerikeri

Certified correct for the purposes of the Land Transfer Act 1952.

[Solicitor for] the Grantee

*If the consent of any person is required for the grant, the specified consent form must be used.

REF: 7003 – AUCKLAND DISTRICT LAW SOCIETY

Approved by Registrar-General of Land under No. 2002/6055

Annexure Schedule 1

Registrar-General of Land Approval 02/6055EF A.D.L.S.

Easement instrument Dated 1st August 2005 Page 1 of 3 pages

Schedule A *(Continue in additional Annexure Schedule if required.)*

Purpose (nature and extent) of easement, *profit*, or covenant	Shown (plan reference)	Servient tenement (Identifier/CT)	Dominant tenement (Identifier/CT *or* in gross)
Right to drain water	**A on DP 352467**	**CT215066**	**CT215070**
Right to drain water	**B on DP 352467**	**CT215067**	**CT215070**
Right to drain water	**C on DP 352467**	**CT215069**	**CT215070**

Easements or *profits à prendre* rights and powers (including terms, covenants, and conditions)

Delete phrases in [ ] and insert memorandum number as required.
Continue in additional Annexure Schedule if required.

Unless otherwise provided below, the rights and powers implied in specific classes of easement are those prescribed by the Land Transfer Regulations 2002 and/or the Ninth Schedule of the Property Law Act 1952.

The implied rights and powers are ~~[varied]~~ ~~[negatived]~~ ~~[added to]~~ or ~~[substituted]~~ by:

~~[Memorandum number , registered under section 155A of the Land Transfer Act 1952]~~.

~~[the provisions set out in Annexure Schedule 2]~~.

Covenant provisions
Delete phrases in [ ] and insert memorandum number as required.
Continue in additional Annexure Schedule if required.

The provisions applying to the specified covenants are those set out in:

~~[Memorandum number , registered under section 155A of the Land Transfer Act 1952]~~

~~[Annexure Schedule 2]~~.

All signing parties and either their witnesses or solicitors must sign or initial in this box

C. RBP

Appendix 4

Stormwater Mitigation Report

Wilton Joubert Limited
09 527 0196
PO BOX 11-381
Ellerslie
Auckland 1524

SITE	17 Edmonds Road, Kerikeri
LEGAL DESCRIPTION	Lot 5 DP 352467
PROJECT	Proposed Shed
CLIENT	Adam Franklin
REFERENCE NO.	140373
DOCUMENT	Stormwater Mitigation Report
STATUS/REVISION No.	01
DATE OF ISSUE	20th May 2025

Report Prepared For	Email
Adam Franklin	Adam.franklin@me.com

Authored by	**G.Brant** *(BE(Hons) Civil)*	Civil Engineer	Gustavo@wjl.co.nz	
Reviewed by	**P. McSweeney** *(BE(Hons) Civil)*	Civil Engineer	Patrick@wjl.co.nz	
Approved by	**B. Steenkamp** *(CPEng, BEng Civil, CMEngNZ, BSc (Geology))*	Senior Civil Engineer	BenS@wjl.co.nz	

1. EXECUTIVE SUMMARY

The following table is intended to be a concise summary which must be read in conjunction with the relevant report sections as referenced herein.

Legal Description:	Lot 5 DP 352467
Site Area:	8,041m²
Development Type:	Proposed Shed
Development Proposals Supplied:	Site Plan by Thomson Survey Limited (Ref No: 10727, dated: 17.01.2025) Project Proposal by ShedEx (Ref No: 14947-1, dated: 17.09.2024)
District Plan Zone:	Coastal Living
Permitted Activity Coverage:	600m²
Impermeable Coverage:	**Post-Development Impermeable Areas** Total Roof Area 245m² Total Hardstand 535m² Total impermeable area = 780m² or 9.7% of the site area Total increase in impermeable area = 200m²
Activity Status:	Restricted Discretionary Activity
Roof Attenuation:	Attenuation is to be provided in accordance with the requirements outlined in Section 5 via the proposed dual-purpose rainwater tanks. **Proposed Tank** – 1 x 30,000 litre Rainwater Tank (or similar) **Dimensions** – 3850mmØ x 3050mm high (or greater) **WQV Control Orifice** – 15mmØ orifice; located >470mm below the overflow outlet **Overflow** – 100mmØ at the top of the tank
Driveway Mitigation:	It is recommended to shape the proposed metal driveway to shed runoff to lower-lying lawn / planted areas via even sheet flow as passive mitigation, away from structures and wastewater disposal. Runoff passed through grassed areas will be naturally filtered of entrained pollutants and will act to mitigate runoff by way of ground recharge and evapotranspiration. Alternatively, where even sheet flow is not practicable, the proposed metal driveway is to be shaped to shed runoff to a **minimum** 150mm deep x 300mm wide grassed v-channel swale (minimum 1% grade). The proposed swale is to have a silt trap(s) with a scruffy dome or grated inlet located at a low point(s) away from the proposed shed. The ground around the low point is to be formed to allow >30mm of ponding above the catchpit inlet. The silt trap(s) is to be fitted with a 100mmØ outlet pipe discharging runoff to the dispersal device.
Point of Discharge:	To 6m long aboveground spreader bar.

2. SCOPE OF WORK

Wilton Joubert Ltd. (WJL) was engaged by the client to produce an on-site stormwater management assessment at the above site for the proposed shed.

At the time of report writing, we have been supplied the following documents:

- Site Plan by Thomson Survey Limited (Ref No: 10727, dated: 17.01.2025)
- Project Proposal by ShedEx (Ref No: 14947-1, dated: 17.09.2024)

Should any changes be made to the provided plans with stormwater management implications, WJL must be contacted for review.

3. SITE DESCRIPTION

The subject 8,041m² property is located off the southern side of Edmonds Road, accessed 160m southwest of the Kerikeri Inlet Road intersection, in the northeastern outskirts of the Kerikeri District. The Lot is legally titled Lot 5 DP 352467 and is situated within a Coastal Living Zone.

The Lot is accessed at the north-eastern boundary via an aggregate driveway that traverses towards an existing residential development present in the southeastern portion of the site.

Topographically speaking, the property is set around a minor volcanic knoll feature across the southern portion of the site that rolls moderately towards less inclined land across the northern portion. Massive rock beds and surficial basalt boulders, including basalt gravity walls, are evident across the entire site. The Lot is largely covered in bush with some exposed areas of lawn.

The shed is proposed to be constructed across a gently sloping lawn area in the northwestern portion of the property. Inclinations across the building site average less than 7° and descend at similar grades for a considerable distance downslope.

The Far North District Council (FNDC) GIS Water Services Map indicates that the property is not serviced by public stormwater, wastewater or potable water reticulation.

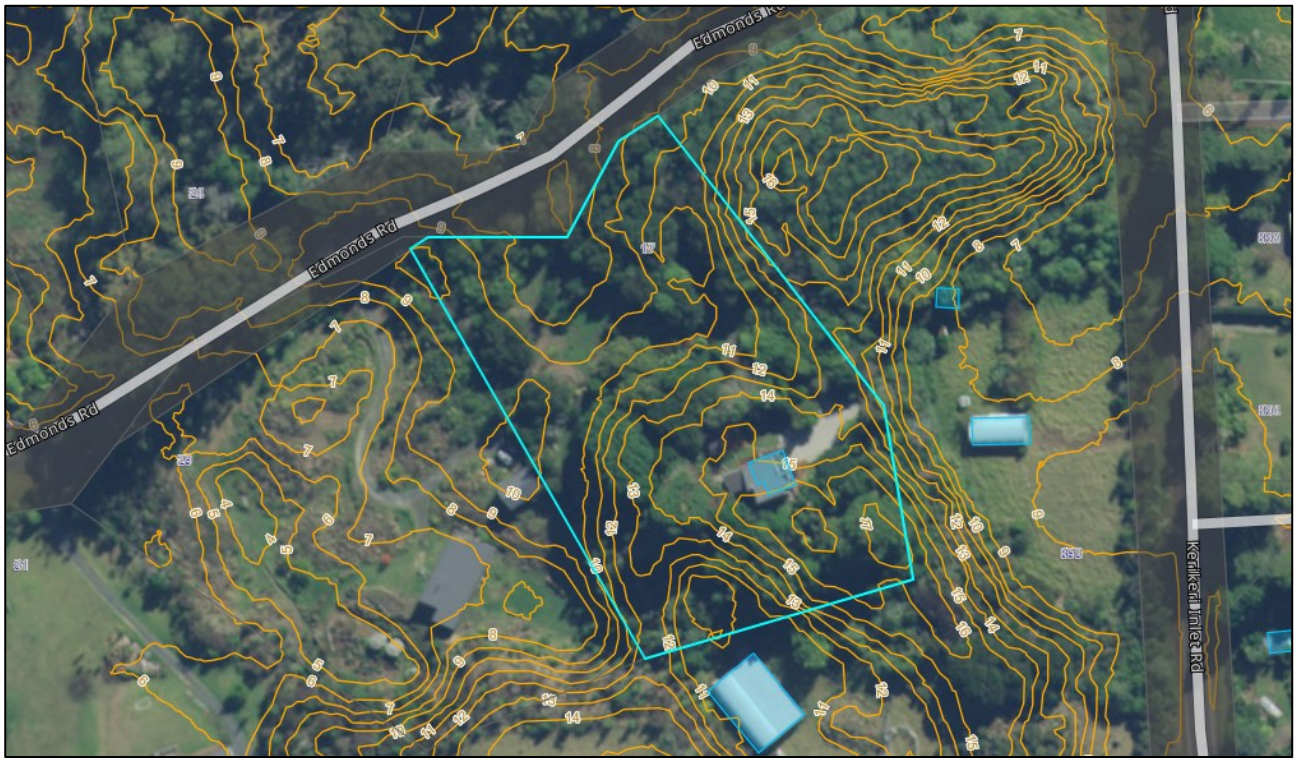


Figure 1: Aerial Snip from FNDC Maps Showing Parent Site Boundaries (cyan) & 1m Contours (yellow)

4. DEVELOPMENT PROPOSALS

The development proposal, obtained from the client, is to construct a shed and a metalled accessway / parking area, as depicted in the site plan by Thomson Survey Limited (Ref No: 10727, dated: 17.01.2025) and as confirmed by the client.

Figure 2: Snip of Proposed Site Plan by Thomson Survey Limited (Ref No: 10727, dated: 17.01.2025)

The principal objective of this assessment is to provide an indicative stormwater disposal design which will manage runoff generated from the proposed impermeable areas resulting from the development.

5. ASSESSMENT CRITERIA

Impermeable Areas

The calculations for the stormwater system for the development are based on a gross site area of 8,041m² and the below areas *extracted from the supplied plans*:

	Pre-Development	Post-Development	Total Change
Total Roof Areas	**125 m²**	**245 m²**	120 m²
Existing Dwelling	125 m²	125 m²	
Proposed Shed	0 m²	120 m²	
Total Hardstand	**455 m²**	**535 m²**	80 m²
Existing Concrete Driveway	296 m²	296 m²	
Existing Metal Driveway	159 m²	159 m²	
Proposed Metal Driveway	0 m²	80 m²	
Pervious	7,461 m²	7,261 m²	-200 m²

The total amount of impermeable area on site, post-development, equates to 780m² or 9.7% of the site area. The total increase in impermeable area post-development amounts to 200m². Should any changes be made to the current proposal, the on-site stormwater mitigation design must be reviewed.

District Plan Rules

The site is zoned Coastal Living. The following rules apply under the FNDC District Plan:

10.7.5.1.6 – **Permitted Activities – 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.

10.7.5.3.8 – **Restricted Discretionary Activities – 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.

The total proposed impermeable area exceeds 600m² and therefore does not comply with Permitted Activity Rule (10.7.5.1.6). Therefore, the proposal is considered a Restricted Discretionary Activity. Additional considerations for stormwater management as outlined in the Far North District Council District Plan Section 10.7.5.3.8 are required. A District Plan Assessment has been included in Section 7 of this report.

Design Requirements

The site is under the jurisdiction of the Far North District Council. The design has been completed in accordance with the recommendations and requirements contained within the Far North District Council Engineering Standards, the Far North District Council District Plan and Clause E1 of the New Zealand Building Code.

The total impermeable area in exceedance of Permitted Activity Rule (10.7.5.1.6) is **180m²**. In accordance with Table 4-1 of the Engineering Standards, Water Quality Volume (WQV) Control will be provided for the 90th percentile of the 24-hour storm event for the existing / proposed roof areas (total 245m²). TP108 methodology has been utilised in WQV Control calculations with a pre-development 90th percentile rainfall value of 25mm being adopted in accordance with Table 4-1 of the FNDC standards.

The subject site borders the Kerikeri Inlet which is a coastal environment subject to coastal inundation as per the NRC Natural Hazards map. Due to the site's position in the larger catchment, we believe that at best Flow Control attenuation measures implemented on-site will have little to no beneficial effects, and at worst may worsen local flood hazards by modifying the peak flow occurrence to coincide with those of other properties located upstream within the larger catchment.

While the provision of Flow Control attenuation for impermeable areas exceeding the permitted activity threshold would normally apply for a development exceeding the permitted activity threshold, we do not believe that Flow Control attenuation is appropriate for the proposed development due to the factors above.

The Type IA storm profile was utilised for stormwater management calculations in accordance with TR-55. HydoCAD® software has been utilised in design for a 20% AEP rainfall value of 161mm with a 24-hour duration. Rainfall data was obtained from HIRDS and increased by 20% to account for climate change.
Provided that the recommendations within this report are adhered to, the effects of stormwater runoff resulting from the unattenuated proposed impermeable areas (600m² total) are considered to have less than minor effects on the receiving environment, equivalent to conditions that would result from development proposals falling within the Permitted Activity coverage threshold.

6. STORMWATER MITIGATION ASSESSMENT

To meet the requirements outlined in Section 5, the following must be provided:

Potable Water Supply

It is our understanding that potable water tanks currently provide the existing dwelling with a potable water supply. It is recommended that the existing potable water tanks continue to be utilised for the proposed dwelling. Overflow from the existing rainwater tanks is to be redirected via a minimum 100mmØ drainage line at a >1% grade to a new rainwater tank which is to provide a potable water supply to the proposed shed.

A proprietary guttering system is required to collect roof runoff from the proposed shed and direct runoff to the new rainwater tank. A first flush diverter and/or leaf filters may be installed in-line between the gutters and the tank inlet. The tank inlet level should be at least 600mm below the gutter inlet and any in-line filters. Any filters will require regular inspection and cleaning to ensure the effective operation of the system. The frequency of cleaning will depend on current and future plantings around the existing / proposed roof areas. Provision should be made by the homeowner for top-up of the tanks via water tankers in periods of low rainfall.

Due to inadequate water quality concerns, runoff from hardstand areas should not be allowed to drain to the potable water tanks.

The upper section of the new potable water tank is to act as a detention volume to achieve WQV Control for the existing / proposed roof areas. The tank is to be fitted with a 100mmØ overflow outlet with a flow attenuation outlet as specified below.

Potable Tanks Detention Volume

As per the attached design calculations, the design elements of the detention volume are as follows:

Proposed Tank	1 x 30,000 litre Rainwater Tank (or similar)
Tank dimensions	3850mmØ (or greater) x 3050mm high (or greater)
Outlet Orifice (WQV Control)	**15mm diameter orifice**; located >470mm below the overflow outlet - 5.37m³ storage

Overflow Outlet	100mm diameter; located at the top of the tank

Discharge from the potable water / detention tanks must be transported via sealed pipes to the dispersal device below. The tank must be installed in accordance with the tank suppliers' details and specifications. Levels are to be confirmed by the contractor on-site prior to construction. Adequate fall (minimum 2% grade) from the tank's outlet to the discharge point is required. If this is not achievable, WJL must be contacted for review of the design. Refer to the appended Site Plan (140373-C200), Tank Detail (140373-C201) and calculation set for clarification.

A minimum orifice size of 15mmØ has been adopted to avoid blockages in the potable water / detention tank.

Stormwater Mitigation – Metal Driveway

It is recommended to shape the proposed metal driveway to shed runoff to lower-lying lawn / planted areas via even sheet flow as passive mitigation, away from structures and wastewater disposal. Runoff passed through grassed areas will be naturally filtered of entrained pollutants and will act to mitigate runoff by way of ground recharge and evapotranspiration.

Alternatively, where even sheet flow is not practicable, the proposed metal driveway is to be shaped to shed runoff to a **minimum** 150mm deep x 300mm wide grassed v-channel swale (minimum 1% grade). The proposed swale is to have a silt trap(s) with a scruffy dome or grated inlet located at a low point(s) away from the proposed shed. The ground around the low point is to be formed to allow >30mm of ponding above the catchpit inlet. The silt trap(s) is to be fitted with a 100mmØ outlet pipe discharging runoff to the dispersal device specified below. Refer to the appended Site Plan (140373-C200) and calculation set for clarification.

Stormwater catchpits and drainage piping should be in accordance with E1 Surface Water of the NZBC. The catchpit(s) must have a suitable sump to serve as a pre-treatment device prior to discharging to the discharge point.

Stormwater Mitigation – Dispersal Device

It is recommended that discharge from the potable water tank and any hardstand silt trap(s) be directed via sealed pipes to a dispersal device to the north of the proposed shed. Refer to the appended Site Plan (140373-C200), Tank Detail (140373-C201), Dispersal Device Detail (140373-C202) and calculation set for clarification. The dispersal device is to have the following specifications:

- Minimum 6m dispersal bar length and 100mm bar diameter,
- Dispersal bar to be installed parallel to property's topography where steep slopes are encountered,
- The dispersal bar is to be installed well clear and downslope of wastewater effluent fields,
- Dispersal bar installed maximum 150mm above ground level via waratah standards & wire ties,
- 15mmØ outlet holes drilled at 100mm centres along the bar,
- One end of dispersal bar fitted with open 90° bend with mesh/grated cover to serve as emergency overflow,
- Other end of dispersal bar fitted with screw cap installed for maintenance / cleaning access.

7. DISTRICT PLAN ASSESSMENT

As the proposed development is not compliant with Permitted Activity Rule 10.7.5.1.6, it is therefore regarded as a Restricted Discretionary Activity.

In assessing an application under this provision, the Council will exercise its discretion to review the following matters below, (a) through (l) of FNDCDP Section 10.7.5.3.8.

In respect of matters (a) through (l), we provide the following comments:

(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;	Impermeable surfaces resulting from the development increase site impermeability by 200m². WQV Control provided for existing / proposed roof areas (245m²) via tank attenuation.
(b) the extent to which Low Impact Design principles have been used to reduce site impermeability;	Impermeable surfaces resulting from the development increase site impermeability by 200m². WQV Control provided for existing / proposed roof areas (245m²) via tank attenuation.
(c) any cumulative effects on total catchment impermeability;	Impervious coverage will increase by 200m².
(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;	Runoff from the proposed impermeable roof areas is to be collected and directed to the discharge point via sealed pipes. Ponding is not anticipated to occur provided the recommendations within this report are adhered to, mitigating interference with natural water absorption.
(e) the physical qualities of the soil type;	Kerikeri Volcanic – moderate drainage
(f) any adverse effects on the life supporting capacity of soils;	Stormwater runoff from the existing / proposed impermeable roof area is to be collected and directed to stormwater management devices via sealed pipes and directed to appropriately sized & located dispersal device, mitigating the potential for contamination of surrounding soils and harm to 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;	Stormwater runoff from the existing / proposed impermeable roof area is to be collected and directed to stormwater management devices via sealed pipes and directed to appropriately sized & located dispersal device, mitigating the potential for runoff to pass over / saturate surrounding soils. The site is large enough for on-site stormwater and effluent disposal (i.e. setbacks between water sources and effluent disposal comply with Table 9 of the PRPN).
(h) the extent to which paved, Impermeable Surfaces are necessary for the proposed activity;	The proposed driveway is necessary for access to the shed and is not considered excessive.
(i) the extent to which land scaping and vegetation may reduce adverse effects of run-off;	Existing vegetation and any plantings introduced by the owner during occupancy will aid in reducing surface water velocity and providing treatment. No specific landscaping scheme is proposed as part of the stormwater management system described herein.
(j) any recognised standards promulgated by industry groups;	Not applicable.
k) the means and effectiveness of mitigating stormwater runoff to that expected by permitted activity threshold;	The post-development impermeable surfaces will exceed Permitted Activity Rule 10.7.5.1.6 by 180m². WQV Control provided for existing / proposed roof areas (245m²) via tank attenuation.
(l) the extent to which the proposal has considered and provided for climate change;	Rainfall data was obtained from HIRDS and increased by 20% to account for climate change.

8. NOTES

If any of the design specifications mentioned in the previous sections are altered or found to be different than what is described in this report, Wilton Joubert Ltd will be required to review this report. Indicative system details have been provided in the appendices of this report (140373-C200, 140373-C201 & 140373-C202).

Care should be taken when constructing the discharge point to avoid any siphon or backflow effect within the stormwater system.

Subsequent to construction, a programme of regular inspection / maintenance of the system should be initiated by the Owner to ensure the continuance of effective function, and if necessary, the instigation of any maintenance required.

Wilton Joubert Ltd recommends that all contractors keep a photographic record of their work.

9. LIMITATIONS

The recommendations and opinions contained in this report are based on information received and available from the client at the time of report writing.

This assignment only considers the primary stormwater system. The secondary stormwater system, Overland Flow Paths (OLFP), vehicular access and the consideration of road/street water flooding is all assumed to be undertaken by a third party.

All drainage design is up to the connection point for each building face of any new structures/slabs; no internal building plumbing or layouts have been undertaken.

During construction, an engineer competent to judge whether the conditions are compatible with the assumptions made in this report should examine the site. In all circumstances, if variations occur which differ from that described or that are assumed to exist, then the matter should be referred to a suitably qualified and experienced engineer.

The performance behaviour outlined by this report is dependent on the construction activity and actions of the builder/contractor. Inappropriate actions during the construction phase may cause behaviour outside the limits given in this report.

This report has been prepared for the particular project described to us and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Wilton Joubert Ltd.

Gustavo Brant
Civil Engineer
BE(Hons)

REPORT ATTACHMENTS

- Site Plan - C200 (1 sheet)
- Tank Detail – C201 (1 sheet)
- Dispersal Device Detail – C202 (1 sheet)
- Calculation Set

NOTES:

1. SITE PLAN IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.
5. IMPERVIOUS SURFACES FOR MITIGATION:
   SITE AREA = 8,041m²
   TOTAL ROOF COVER = 245m²
   TOTAL HARDSTAND = 535m²

02 C202

6m LONG ABOVEGROUND SPREADER BAR INSTALLED LEVEL WITH TOPOGRAPHY

DRAINAGE LINE FROM TANK TO DISPERSAL DEVICE. 100Ø uPVC @ >2%

INDICATIVE DRAINAGE LINE FROM GUTTERS TO TANK

PROPOSED SHED ROOF COVERAGE 120m²

INDICATIVE PROPOSED METAL DRIVEWAY 80m²

PROPOSED METAL DRIVEWAY TO BE SHAPED TO SHED RUNOFF TO LOWER-LYING LAWN / PLANTED AREAS VIA EVEN SHEET FLOW AS PASSIVE MITIGATION

01 C201

DP

SW

1 x 30,000L RAINWATER TANK FOR POTABLE WATER / DETENTION

DRAINAGE LINE FROM EXISTING TANK TO NEW RAINWATER TANK. 100Ø uPVC @ >1%

INDICATIVE EXISTING DRIVEWAY ~535m² (~296 CONCRETE & ~159m² METAL)

EXISTING DWELLING ROOF COVERAGE 125m²

INDICATIVE DRAINAGE LINE FROM GUTTERS TO TANK

INDICATIVE EXISTING POTABLE WATER TANK(S). OVERFLOW TO BE REDIRECTED TO NEW POTABLE WATER / DETENTION TANK

WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
Christchurch: 021 824 063 Wanaka: 03 443 6209
www.wiltonjoubert.co.nz

ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
01	MAY '25	GMB	STORMWATER MITIGATION REPORT

DESIGNED BY: GMB
DRAWN BY: GMB
CHECKED BY: BGS
SURVEYED BY: N/A

SERVICES NOTE

WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

BUILDING CONSENT

DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **STORMWATER MITIGATION REPORT**

PROJECT TITLE: **LOT 5 DP 352467 17 EDMONDS ROAD KERIKERI NORTHLAND**

ORIGINAL DRAWING SIZE: A3
OFFICE: **OREWA**
DRAWING SCALE: **1:350**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **140373-C200**
ISSUE: **01**

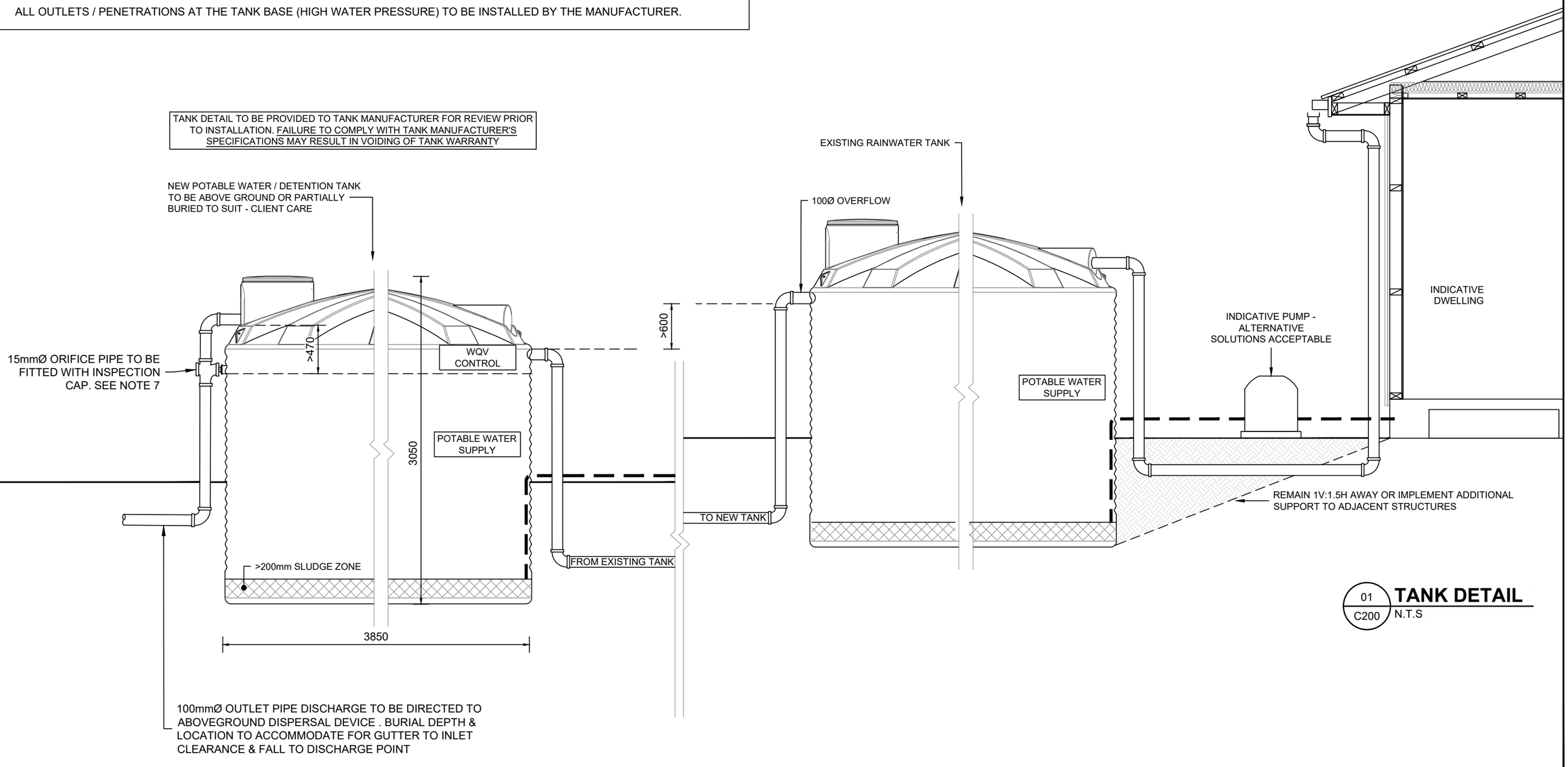
NOTES:

1. NOT TO SCALE. DRAWN INDICATIVELY ONLY.
2. ALL LEVELS & DIMENSIONS TO BE CONFIRMED ON SITE & ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
3. TANK TO BE INSTALLED AS PER MANUFACTURERS SPECIFICATIONS & RELEVANT COUNCIL STANDARDS.
4. REGULAR INSPECTION & CLEANING IS REQUIRED TO ENSURE THE EFFECTIVE OPERATION OF THE SYSTEM.
5. ALL ORIFICE OUTLETS TO BE COVERED WITH STAINLESS STEEL OR NYLON MESH.
6. ASSUMED USE OF A NEW 1 x 30,000 LITRE PLASTIC PROMAX WATER TANK OR SIMILARLY APPROVED.

PLASTIC TANKS NOTES:

7. ALL OUTLETS / PENETRATIONS AT THE TANK BASE (HIGH WATER PRESSURE) TO BE INSTALLED BY THE MANUFACTURER.

TANK DETAIL TO BE PROVIDED TO TANK MANUFACTURER FOR REVIEW PRIOR TO INSTALLATION. FAILURE TO COMPLY WITH TANK MANUFACTURER'S SPECIFICATIONS MAY RESULT IN VOIDING OF TANK WARRANTY



01 / C200 **TANK DETAIL** N.T.S

WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
Christchurch: 021 824 063 Wanaka: 03 443 6209
www.wiltonjoubert.co.nz

ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
01	MAY '25	GMB	STORMWATER MITIGATION REPORT

DESIGNED BY: GMB
DRAWN BY: GMB
CHECKED BY: BGS
SURVEYED BY: N/A

SERVICES NOTE
WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

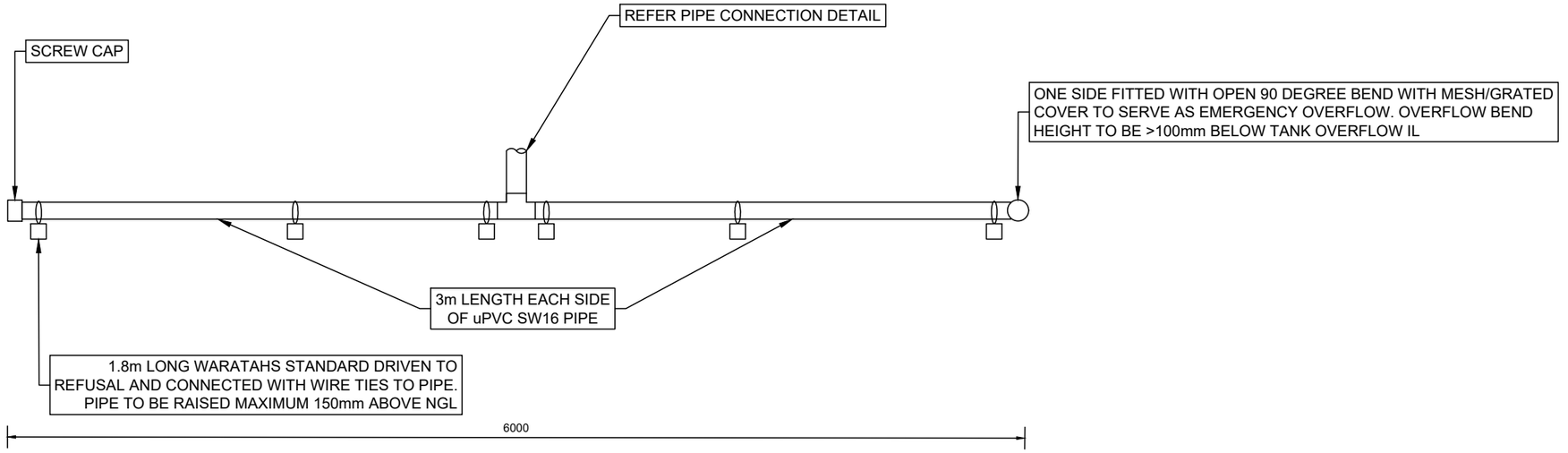
BUILDING CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **TANK DETAIL**

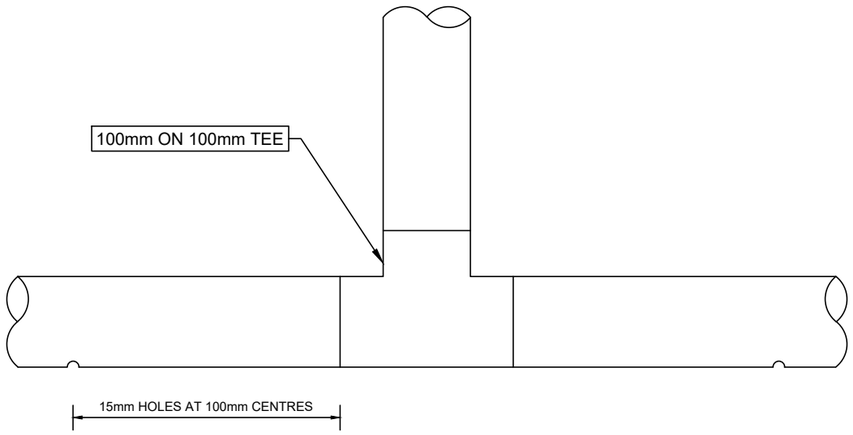
PROJECT DESCRIPTION: **STORMWATER MITIGATION REPORT**

PROJECT TITLE: **LOT 5 DP 352467 17 EDMONDS ROAD KERIKERI NORTHLAND**

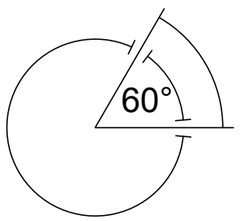
ORIGINAL DRAWING SIZE: A3
OFFICE: **OREWA**
DRAWING SCALE: **N.T.S**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **140373-C201**
ISSUE: **01**

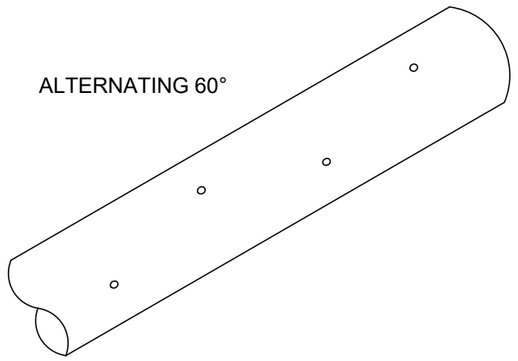


PLAN



PIPE CONNECTION DETAIL





PIPE OUTLET HOLE ARRANGEMENT DETAIL

02 / C200 **DISPERSAL DEVICE DETAIL**

N.T.S

WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
Christchurch: 021 824 063 Wanaka: 03 443 6209
www.wiltonjoubert.co.nz

ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
01	MAY '25	GMB	STORMWATER MITIGATION REPORT

DESIGNED BY: GMB
DRAWN BY: GMB
CHECKED BY: BGS
SURVEYED BY: N/A

SERVICES NOTE
WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

BUILDING CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **DISPERSAL DEVICE DETAIL**

PROJECT DESCRIPTION: **STORMWATER MITIGATION REPORT**

PROJECT TITLE: **LOT 5 DP 352467
17 EDMONDS ROAD
KERIKERI
NORTHLAND**

ORIGINAL DRAWING SIZE:	OFFICE:
A3	OREWA
DRAWING SCALE:	CO-ORDINATE SYSTEM:
N.T.S	NOT COORDINATED
DRAWING NUMBER:	ISSUE:
140373-C202	01

WILTON JOUBERT
Consulting Engineers

Volume Control Calculations

Job Number	140373	Date:	20.05.2025
Address	17 Edmonds Road	Initials:	GMB
	Kerikeri	Revision	1

Catchment Information For Pre-Development Conditions

245	m²	0.000245	km^2	
Group C	soil type		see TP108 page 8 section 3.2 for soil designations	
25.00	P_{24}		90th Percentile Rainfall - Table 4-1 FNDC EES	
		CN		
245	m²	74	Pervious	
0	m²	98	Sealed roof(s)	
0	m²	98	Sealed conrete	
0	m²	0		
245	m² tot	74.00	CN -mean	TP108 Eq3.4

5.00	Ia (mm)	Weighted initial abstraction - Ia (mm)
0.03	Tc (hrs)	TP108 Eq 4.3 - pg 12
0.02	Tp (hrs)	Time to peak
89.24	S (mm)	Soil Storage parameter see TP108 eq 3.2 pg 6
3.662	Q_{24} (mm)	Run-Off Depth
0.90	m^3	Volume

Catchment Information For Post-Development Conditions

245	m²	0.000245	km^2	
Group C	soil type		see page 8 section 3.2 for soil designations	
30.00	P_{24}		90th Percentile + 20% CCF - Table 4-1 FNDC EES	
		CN		
0	m²	74	Pervious	
245	m²	98	Sealed roof(s)	
0	m²	98	Sealed conrete	
0	m²	89	Metal/Gravel	
245	m² tot	98.00	CN -mean	TP108 Eq3.4

0.00	Ia (mm)	Weighted initial abstraction - Ia (mm)
0.02	Tc (hrs)	TP108 Eq 4.3 - pg 12
0.01	Tp (hrs)	Time to peak
5.18	S (mm)	Soil Storage parameter see TP108 eq 3.2 pg 6
25.580	Q_{24} (mm)	Run-Off Depth
6.27	m^3	Volume

Total Detention Volume Required: **5.37** m^3

WILTON JOUBERT
Consulting Engineers

ADDRESS	17 Edmonds Road, Kerikeri
REFERENCE	WQV Control

JOB NO	140373
DATE	20.05.2025
DESIGNER	GMB
CHECKER	BGS

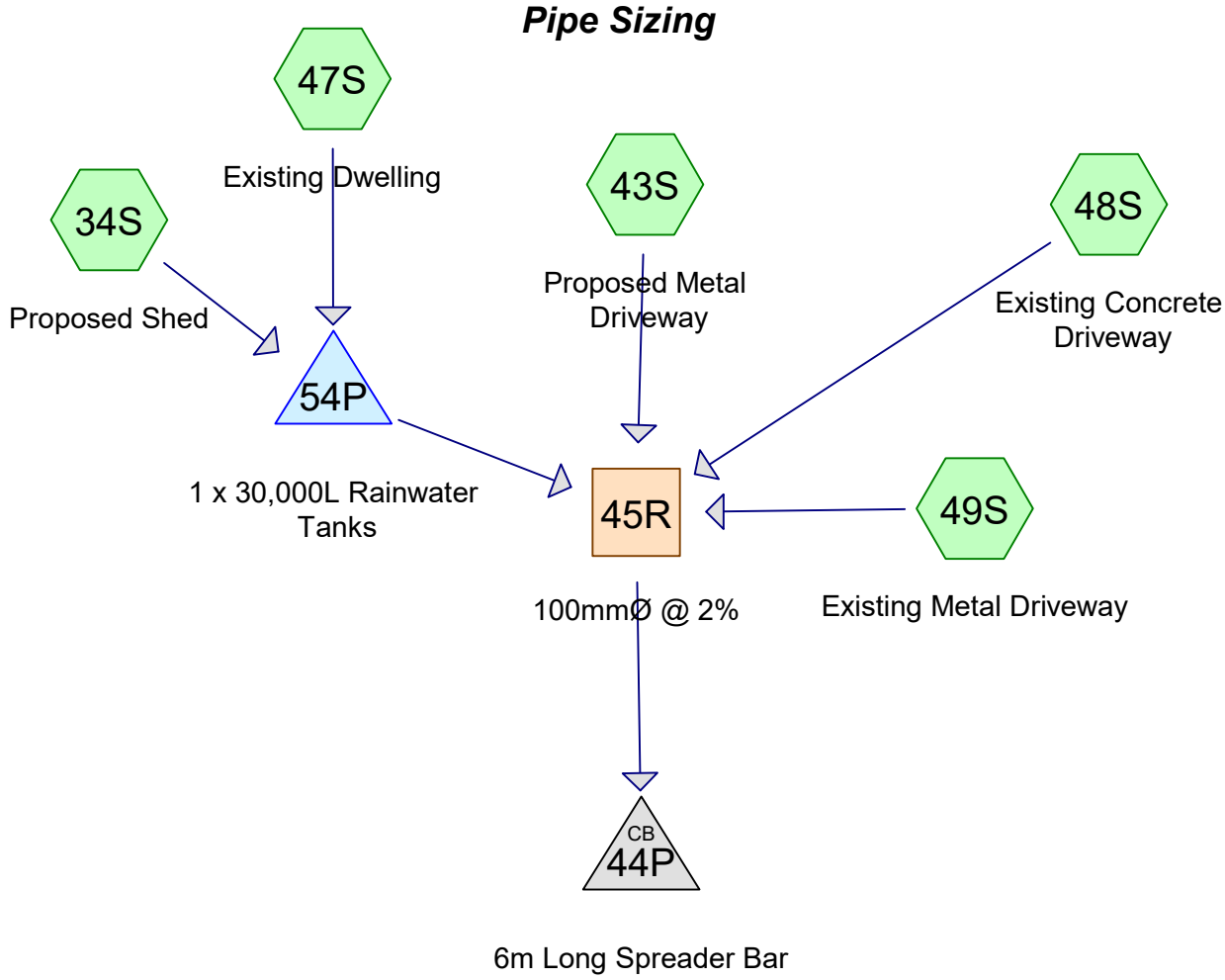
Outlet Orifice: 24-hour release

Q=(C)(A)(2gh)^0.5	Q = orifice discharge capacity (m3/s)
	C = orifice constant (0.9), value considered conservative
	A = orifice area (m2)
	g = acceleration due to gravity9.8m/s2
	h = head on orifice (m)

Select orifice size (D)	0.005000			
Orifice Area (A)	0.000020			
Select hydraulic height	0.470000			
Flow from tank	0.054	*l/s*	0.19	m^3/h

Flow Required

Tank Size	5.37	m^3		
24-hr release	0.062	*l/s*	0.22	m^3/h



Subcat Reach Pond Link

Routing Diagram for 140373
Prepared by Wilton Joubert Limited, Printed 19/05/2025

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind method - Pond routing by Stor-Ind method

Subcatchment 34S: Proposed Shed Runoff Area=120.0 m² 100.00% Impervious Runoff Depth>155 mm
Tc=10.0 min CN=98 Runoff=1.27 L/s 18.5 m³

Subcatchment 43S: Proposed Metal Runoff Area=80.0 m² 0.00% Impervious Runoff Depth>128 mm
Tc=10.0 min CN=89 Runoff=0.74 L/s 10.3 m³

Subcatchment 47S: Existing Dwelling Runoff Area=125.0 m² 100.00% Impervious Runoff Depth>155 mm
Tc=10.0 min CN=98 Runoff=1.32 L/s 19.3 m³

Subcatchment 48S: Existing Concrete Runoff Area=296.0 m² 100.00% Impervious Runoff Depth>155 mm
Tc=10.0 min CN=98 Runoff=3.13 L/s 45.7 m³

Subcatchment 49S: Existing Metal Runoff Area=159.0 m² 0.00% Impervious Runoff Depth>128 mm
Tc=10.0 min CN=89 Runoff=1.47 L/s 20.4 m³

Reach 45R: 100mmØ @ 2% Avg. Flow Depth=0.08 m Max Vel=1.25 m/s Inflow=7.89 L/s 109.9 m³
100 mm Round Pipe n=0.011 L=10.00 m S=0.0200 m/m Capacity=8.63 L/s Outflow=7.89 L/s 109.8 m³

Pond 44P: 6m Long Spreader Bar Peak Elev=-0.409 m Inflow=7.89 L/s 109.8 m³
Outflow=7.89 L/s 109.8 m³

Pond 54P: 1 x 30,000L Rainwater Tanks Peak Elev=0.529 m Storage=6.2 m³ Inflow=2.59 L/s 37.9 m³
Outflow=2.57 L/s 33.5 m³

Summary for Subcatchment 34S: Proposed Shed

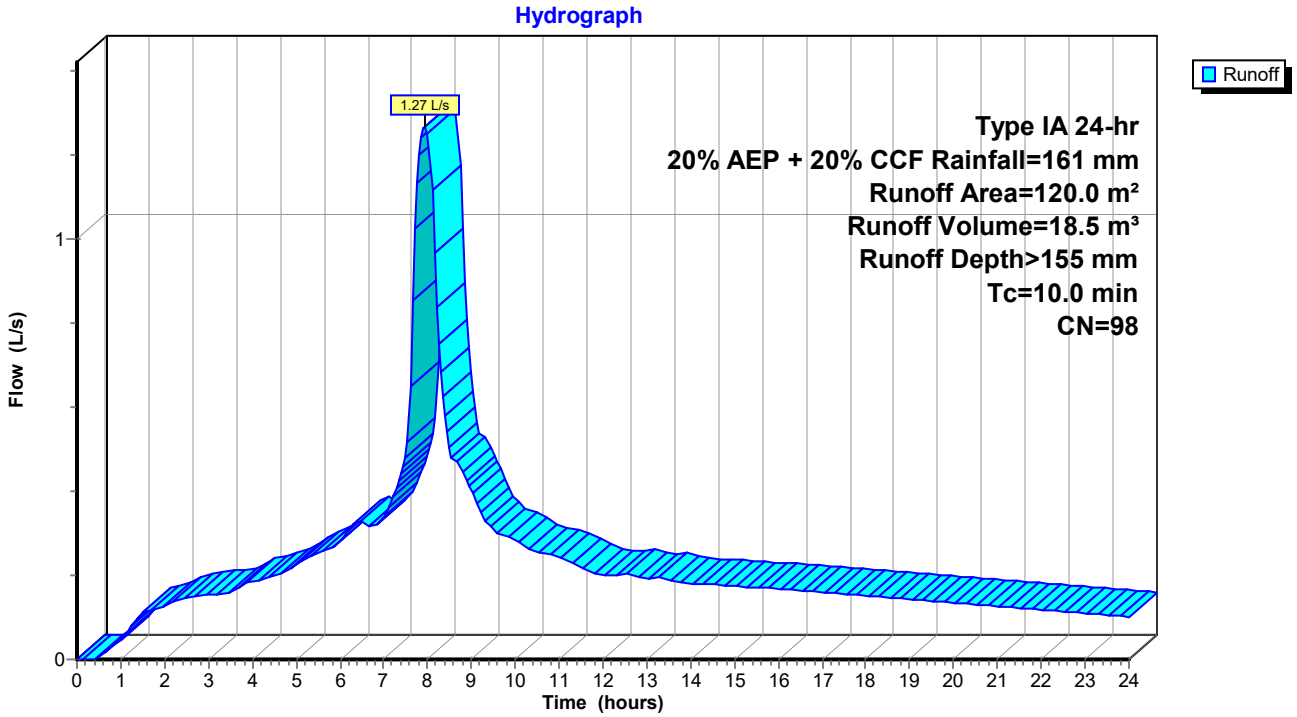
Runoff = 1.27 L/s @ 7.94 hrs, Volume= 18.5 m³, Depth> 155 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP + 20% CCF Rainfall=161 mm

Area (m²)	CN	Description
120.0	98	Roofs, HSG C
120.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 34S: Proposed Shed



Summary for Subcatchment 43S: Proposed Metal Driveway

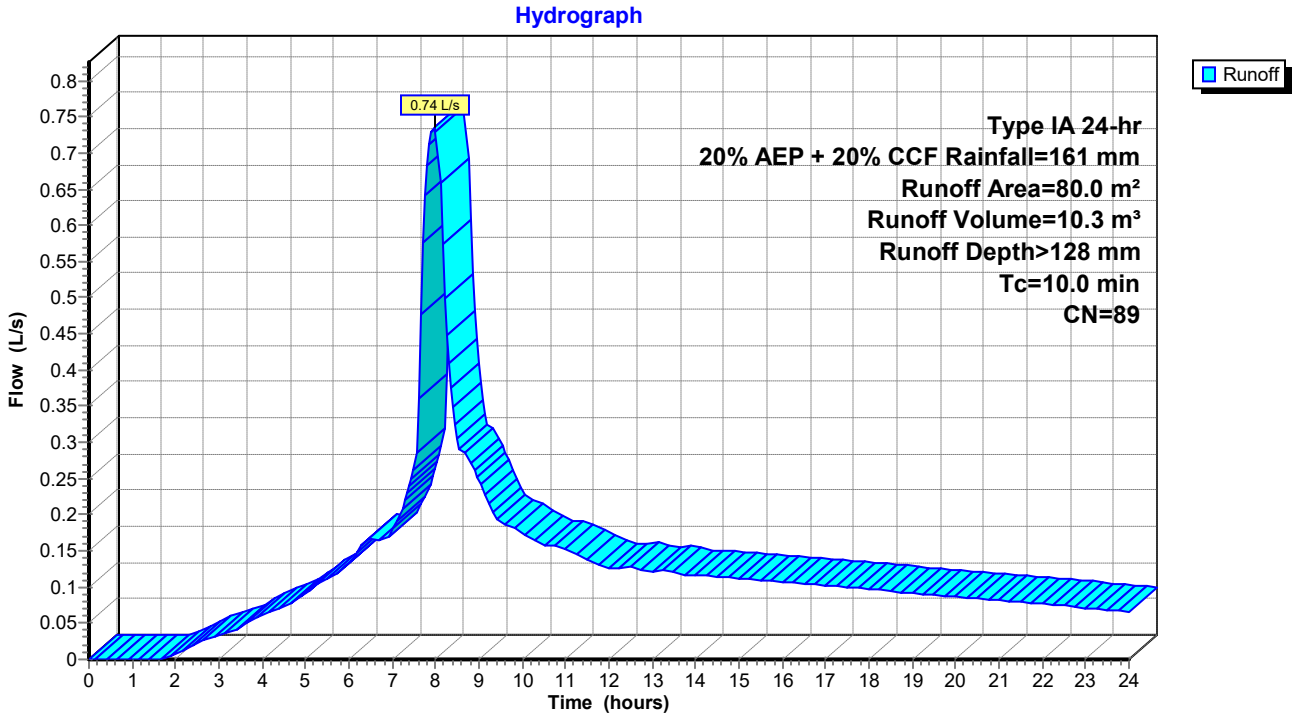
Runoff = 0.74 L/s @ 7.96 hrs, Volume= 10.3 m³, Depth> 128 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP + 20% CCF Rainfall=161 mm

Area (m²)	CN	Description
80.0	89	Gravel roads, HSG C
80.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 43S: Proposed Metal Driveway



Summary for Subcatchment 47S: Existing Dwelling

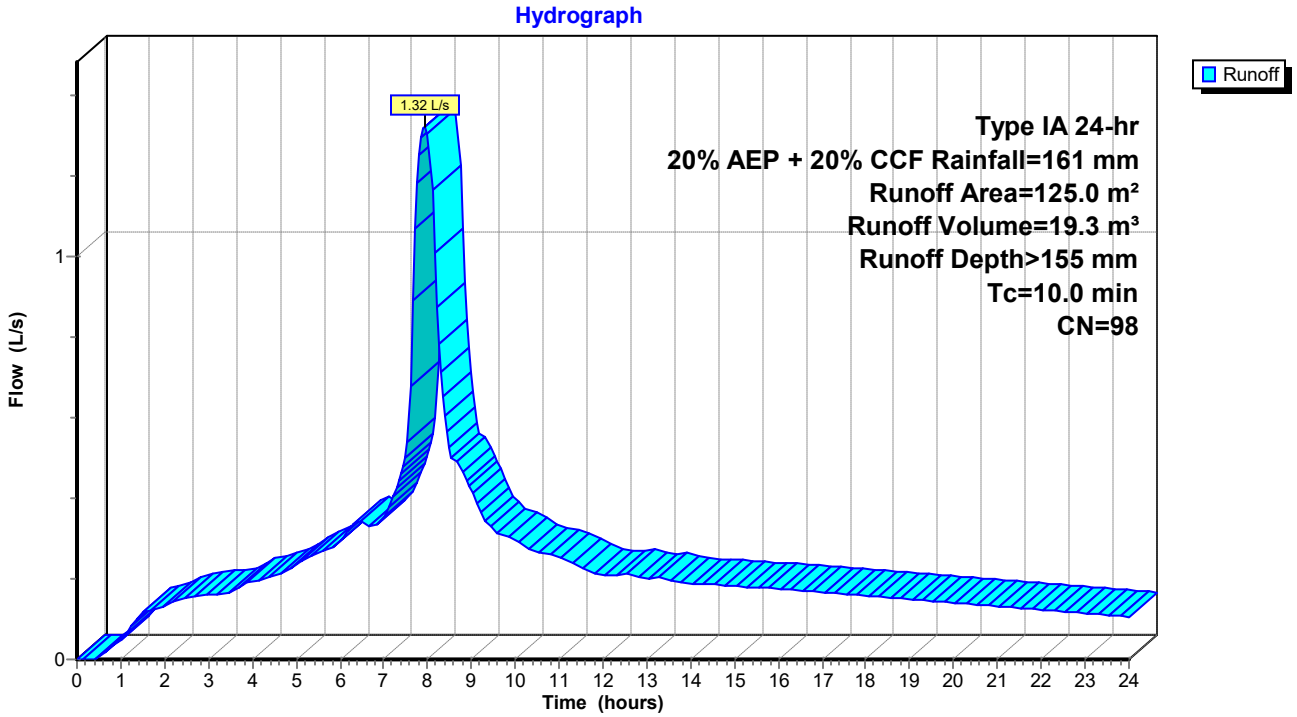
Runoff = 1.32 L/s @ 7.94 hrs, Volume= 19.3 m³, Depth> 155 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP + 20% CCF Rainfall=161 mm

Area (m²)	CN	Description
125.0	98	Roofs, HSG C
125.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 47S: Existing Dwelling



Summary for Subcatchment 48S: Existing Concrete Driveway

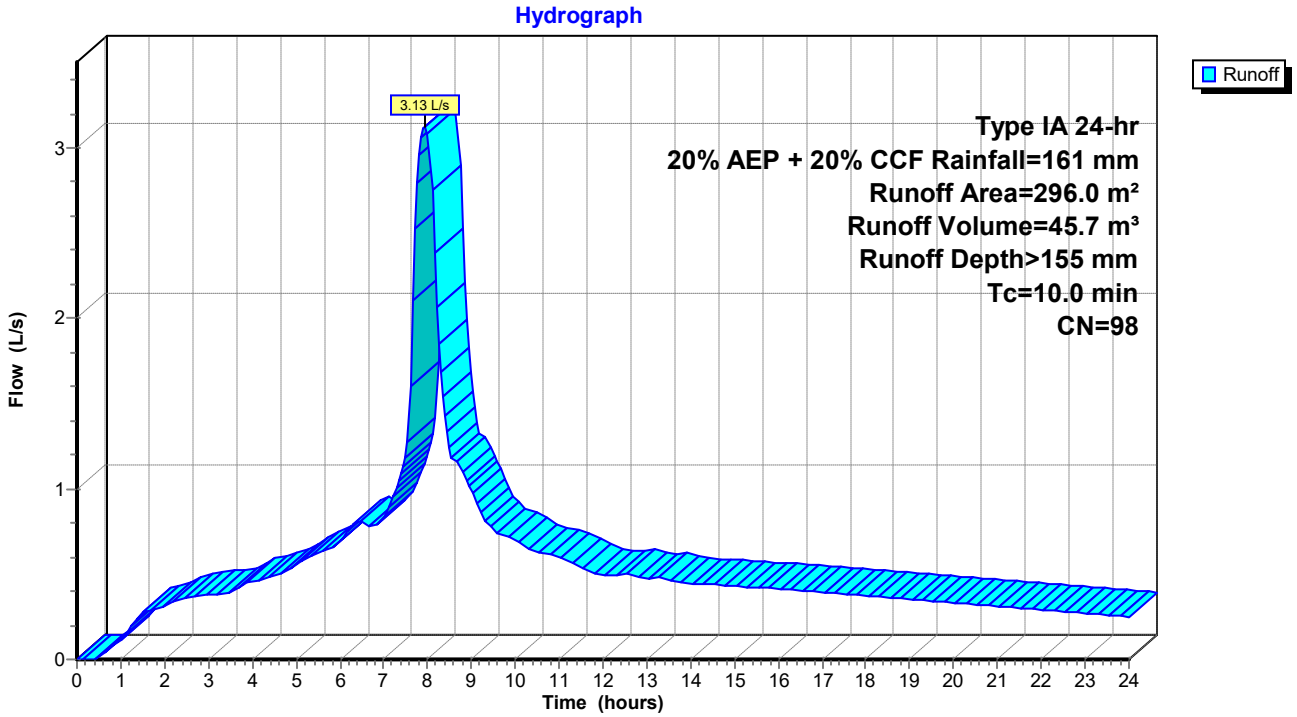
Runoff = 3.13 L/s @ 7.94 hrs, Volume= 45.7 m³, Depth> 155 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP + 20% CCF Rainfall=161 mm

Area (m²)	CN	Description
296.0	98	Roofs, HSG C
296.0		100.00% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 48S: Existing Concrete Driveway



Summary for Subcatchment 49S: Existing Metal Driveway

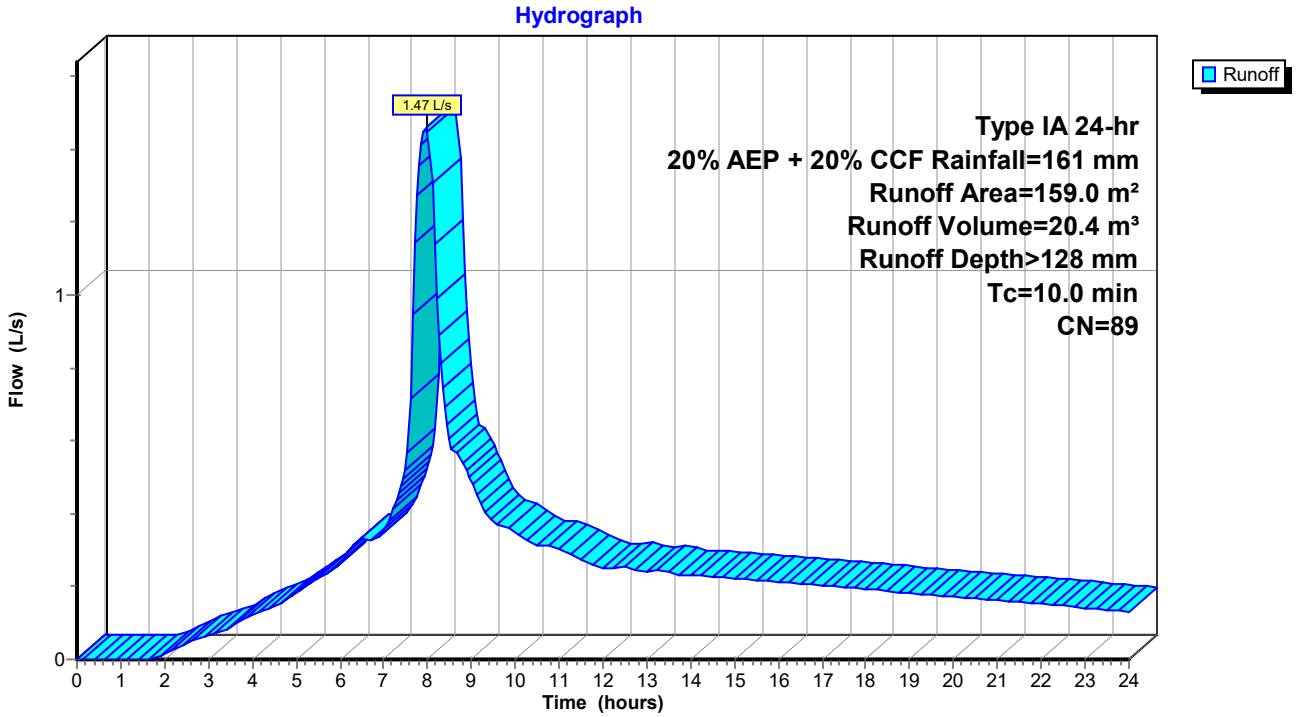
Runoff = 1.47 L/s @ 7.96 hrs, Volume= 20.4 m³, Depth> 128 mm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type IA 24-hr 20% AEP + 20% CCF Rainfall=161 mm

Area (m²)	CN	Description
159.0	89	Gravel roads, HSG C
159.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
10.0					**Direct Entry,**

Subcatchment 49S: Existing Metal Driveway



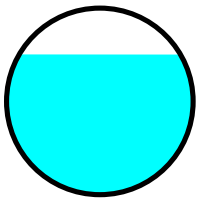
Summary for Reach 45R: 100mmØ @ 2%

Inflow Area = 780.0 m², 69.36% Impervious, Inflow Depth > 141 mm for 20% AEP + 20% CCF event
Inflow = 7.89 L/s @ 7.96 hrs, Volume= 109.9 m³
Outflow = 7.89 L/s @ 7.96 hrs, Volume= 109.8 m³, Atten= 0%, Lag= 0.0 min

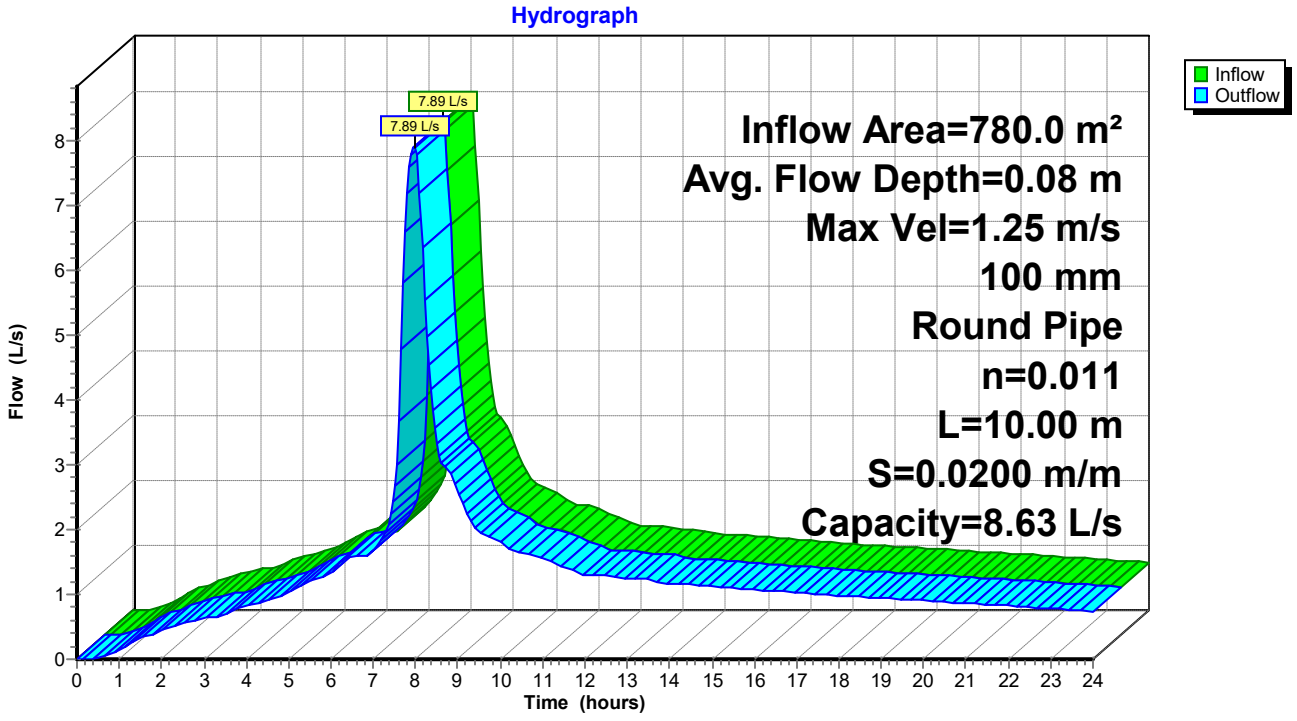
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.25 m/s, Min. Travel Time= 0.1 min
Avg. Velocity = 0.75 m/s, Avg. Travel Time= 0.2 min

Peak Storage= 0.1 m³ @ 7.96 hrs
Average Depth at Peak Storage= 0.08 m
Bank-Full Depth= 0.10 m Flow Area= 0.01 m², Capacity= 8.63 L/s

100 mm Round Pipe
n= 0.011 PVC, smooth interior
Length= 10.00 m Slope= 0.0200 m/m
Inlet Invert= -0.200 m, Outlet Invert= -0.400 m



Reach 45R: 100mmØ @ 2%



Summary for Pond 44P: 6m Long Spreader Bar

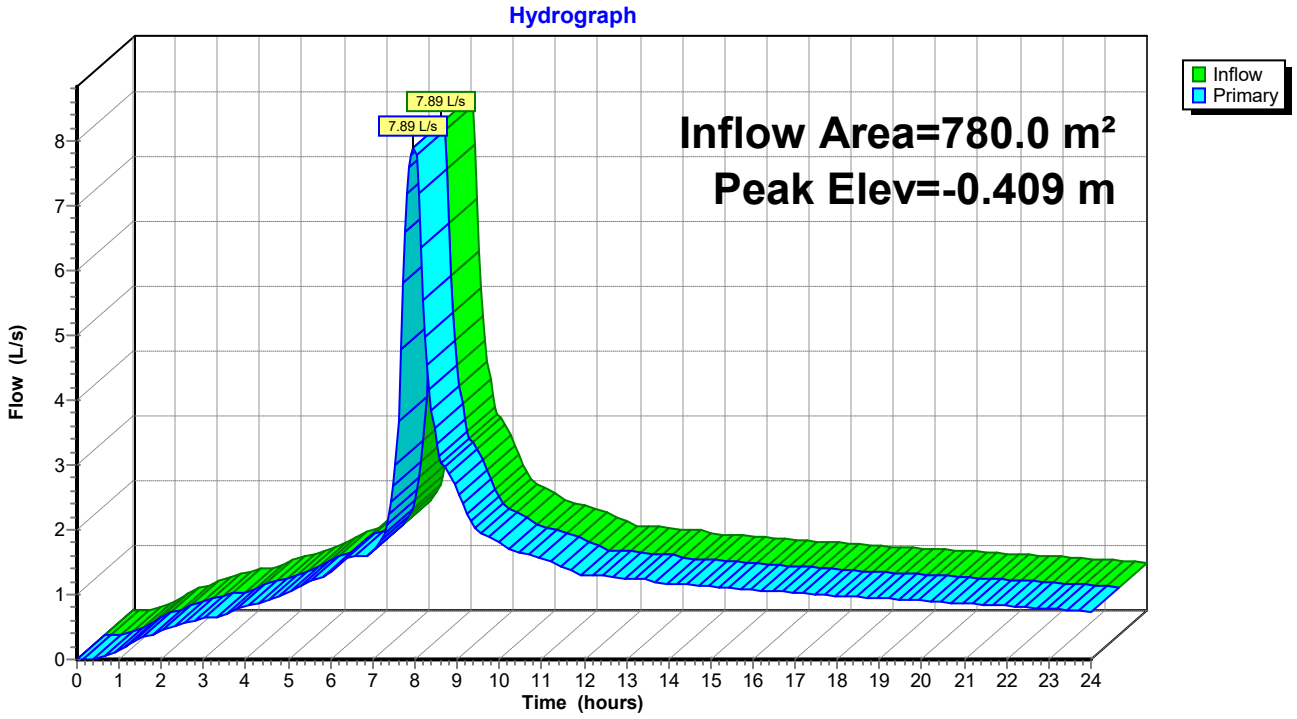
Inflow Area = 780.0 m², 69.36% Impervious, Inflow Depth > 141 mm for 20% AEP + 20% CCF event
Inflow = 7.89 L/s @ 7.96 hrs, Volume= 109.8 m³
Outflow = 7.89 L/s @ 7.96 hrs, Volume= 109.8 m³, Atten= 0%, Lag= 0.0 min
Primary = 7.89 L/s @ 7.96 hrs, Volume= 109.8 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= -0.409 m @ 7.96 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	-0.500 m	**15 mm Vert. Orifice/Grate X 58.00** C= 0.600

Primary OutFlow Max=7.88 L/s @ 7.96 hrs HW=-0.409 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 7.88 L/s @ 0.77 m/s)

Pond 44P: 6m Long Spreader Bar



Summary for Pond 54P: 1 x 30,000L Rainwater Tanks

Inflow Area = 245.0 m²,100.00% Impervious, Inflow Depth > 155 mm for 20% AEP + 20% CCF event
Inflow = 2.59 L/s @ 7.94 hrs, Volume= 37.9 m³
Outflow = 2.57 L/s @ 7.99 hrs, Volume= 33.5 m³, Atten= 1%, Lag= 3.1 min
Primary = 2.57 L/s @ 7.99 hrs, Volume= 33.5 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.529 m @ 7.99 hrs Surf.Area= 11.6 m² Storage= 6.2 m³

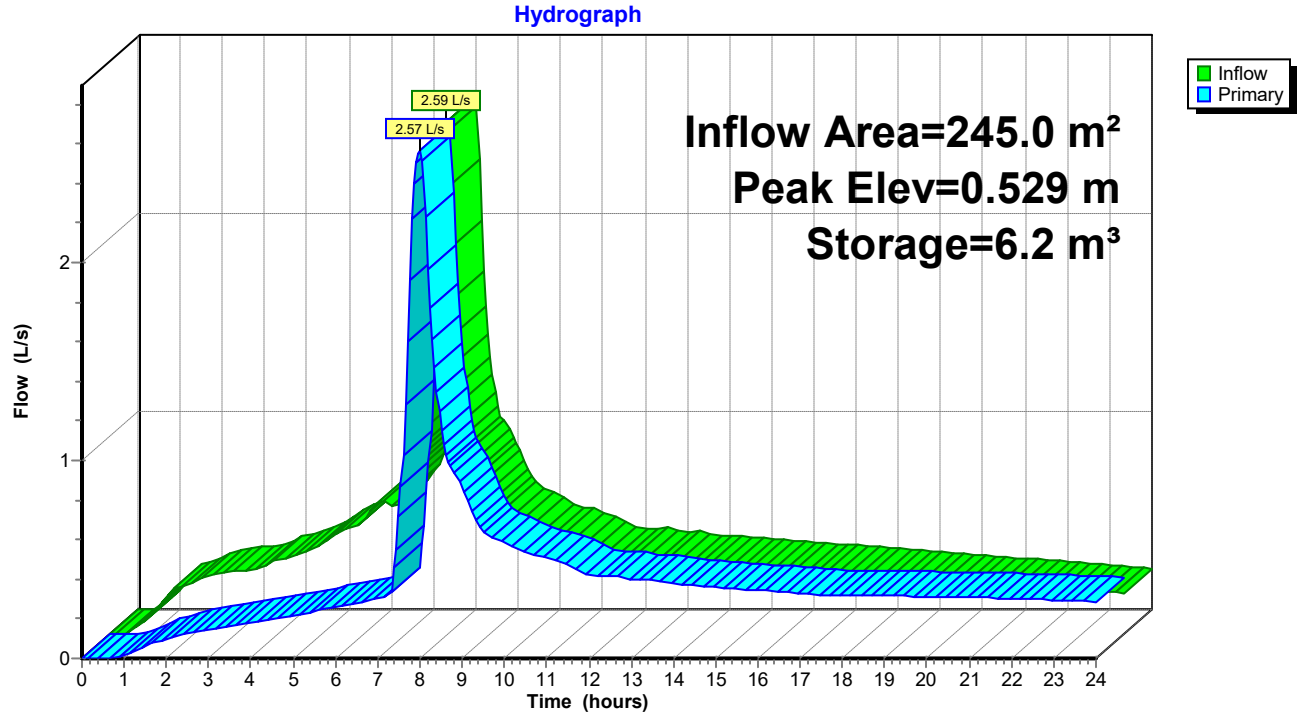
Plug-Flow detention time= 166.4 min calculated for 33.4 m³ (88% of inflow)
Center-of-Mass det. time= 83.3 min (735.6 - 652.3)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	35.5 m³	**3.85 mD x 3.05 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**15 mm Vert. Orifice/Grate** C= 0.600
#2	Primary	0.470 m	**100 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.53 L/s @ 7.99 hrs HW=0.529 m (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.34 L/s @ 1.92 m/s)
└**2=Orifice/Grate** (Orifice Controls 2.19 L/s @ 0.46 m/s)

Pond 54P: 1 x 30,000L Rainwater Tanks



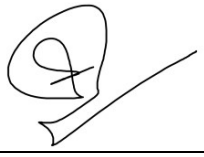
Appendix 5

Geotechnical Assessment Report

Wilton Joubert Limited
09 945 4188
185 Waipapa Road,
Kerikeri

SITE	**17 Edmonds Road, Kerikeri**
LEGAL DESCRIPTION	**Lot 5 DP 352467**
PROJECT	**New Shed**
CLIENT	**Adam Franklin**
REFERENCE NO.	**140271**
DOCUMENT	**Geotechnical Assessment Report**
STATUS/REVISION NO.	**FINAL – Development Review of Finalised Earthwork and Foundation Drawings Required Prior to Building Consent**
DATE OF ISSUE	**21 May 2025**

Report Prepared For	Email
Adam Franklin	adam.franklin@me.com

Authored by	**S. Page** *Pt NZDE (Civil)*	Engineering Technician	shaun@wjl.co.nz	
Reviewed by	**J. Mitchell** *Pt NZDE (Civil)*	Engineering Technician	justin@wjl.co.nz	
Approved by	**A. Asadi** *PhD (Geotech), CPEng, CMEngNZ*	Senior Geotechnical Engineer	afshin@wjl.co.nz	

1. EXECUTIVE SUMMARY

The following table is intended to be a concise summary which must be read in conjunction with the relevant report sections as referenced herein.

Development Type:	New shed.
Development Proposals Supplied:	Yes – Indicative.
Geology Encountered:	Kerikeri Volcanic Group deposits.
Surficial Topsoil Encountered:	Yes – Surficial layers of 0.10m to 0.30m thickness. No fill was detected.
Overall Site Gradient in Proximity to Development:	Gently inclined.
Site Stability Risk:	No perceivable risk of deep-seated global instability.
Liquefaction Risk:	Negligible risk of liquefaction susceptibility.
Suitable Foundation Type(s):	Slab-on-Grade with deepened perimeter strip and portal footings, or Reinforced, stiffened raft slab foundation system.
Soil Bearing Capacity:	Yes – Competent Natural Ground and Engineered Hardfill Only Geotechnical Ultimate Bearing Capacity = 300kPa.
NZBC B1 Expansive Soil Classification:	Class M – Moderately Expansive (y_s = 44mm). Refer report text for design guidance.
Minimum Footing Embedment Depth:	0.60m below finished ground levels but may be terminated on extremely strong basalt rock, provided there is an adequate connection via scabbled keying and/or drilled and grouted starter bars into the rock.
NZS1170.5:2004 Site Subsoil Classification:	Design for the building seismic response is expected to depend on the FFL relative to the depth to rock, as well as the presence or otherwise, of intervening ash soils. We therefore consider the proposed building site to be underlain with either Class A – Strong Rock per clause 3.1.3.2 of NZS1170, or Class C – Shallow soil, and the final designation should be made during development review. As a conservative approach, the structural engineer could adopt the more critical site subsoil classification that has the greater impact on the design, unless further investigation or assessment finds otherwise.
Earthworks:	An engineered cut-fill earthworks operation will be required to create suitable level building platform. LiDAR contours suggest a crossfall of approximately 1.5m is currently present across the proposed building site. Some clearance of bush and removal of surface boulders and massive rock may also be necessary. Refer report text for design guidance.
Consent Application Report Suitable for:	Once development drawings have been finalised, they should be referred to WJL for review and a supplementary memorandum will be issued to support a Building Consent application.

2. INTRODUCTION

2.1. SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by **Adam Franklin** (the client), to undertake a geotechnical assessment of ground conditions at the above site, where we understand, it is proposed to construct a new shed in the northwestern portion of the property.

The client has advised the shed is to be of proprietary-type design and will be portal framed with a concrete floor slab foundation.

2.2. SUPPLIED INFORMATION FOR ASSESSMENT

At the time of preparing this report, we were supplied with a topographical survey plan of the property, titled; '*Proposed Shed, Site Plan*', dated 17 January 2025 (Ref: 10727), prepared by Thomson Survey Ltd.

Additionally, the client supplied a set of proprietary type shed drawings however, advised that he is undecided on the final design. The proposed building site location was identified on-site with the client.

Once development drawings have been finalised, they should be referred to WJL for review and a supplementary memorandum will be issued to support a Building Consent application.

3. SITE DESCRIPTION

The subject 8,041m² property is located off the southern side of Edmonds Road, accessed 160m southwest of the Kerikeri Inlet Road intersection, in the northeastern outskirts of the Kerikeri District. The Lot is legally titled Lot 5 DP 352467 and is situated within a Coastal Living Zone.

The Lot is accessed at the north-eastern boundary via an aggregate driveway that traverses towards an existing residential development present in the southeastern portion of the site.

Topographically speaking, the property is set around a minor volcanic knoll feature across the southern portion of the site that rolls moderately towards less inclined land across the northern end. Massive rock beds and surficial basalt boulders, including gravity walls, are evident across the entire site. The Lot is largely covered in bush with some exposed areas of lawn.

The shed is proposed to be constructed across a gently sloping lawn area in the northwestern portion of the property. Inclinations across the building site average less than 7° and descend at similar grades for a considerable distance downslope. Existing ground level across the proposed building site will likely range between approximately RL8.0m (north) and RL10m (south) New Zealand Vertical Datum.

Adjoining properties are of similar land use and generally accommodate existing residential developments.

At the time of preparing this report, we note that the Far North District Council (FNDC) on-line GIS Water Services Map indicates that reticulated wastewater, and stormwater service connections are not available to the property.

The property and proposed building site locations are depicted on our appended Site Plan (Ref: 140271-G600) and in Figure 1 below.

Figure 1: Screenshot aerial view from the FNDC on-line GIS Property and Land Map. 1.0m LiDAR contours are overlaid. Property boundary is highlighted in cyan. Yellow ring approximately depicts proposed building site location.

Figure 2: Site photograph looking south-easterly towards the proposed dwelling location. Orange cones outline the building site.

Figure 3: Site photograph of a basalt gravity wall upslope of the proposed building site.

4. DEVELOPMENT PROPOSALS

It is our understanding that the shed is to contain a 15m x 8m footprint, resulting in a 120m² floor area. The shed is to be of proprietary type design and be found on a concrete floor slab, supporting steel portal frames and lightweight steel cladding and roofing.

The proposed finished floor level (FFL) is currently unknown. An engineered cut-fill earthworks operation will be required to create suitable level building platform. LiDAR contours suggest a crossfall of approximately 1.5m is currently present across the location. Some clearance of bush and removal of surface boulders and massive rock may also be necessary.

As a result, the principal objectives were to investigate and assess the suitability of potential foundation options for the site subsoils, not only primarily in terms of bearing capacity, but also for differential foundation movement.

5. GEOLOGY

Local geology across the property and wider surrounding land is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as; Kerikeri Volcanic Group Pleistocene Basalt of Kaikohe – Bay of Islands Volcanic Field. These deposits are up to approximately 1.4 million years in age and described as; "*Basalt lava and volcanic plugs.*"

Figure 4: Screenshot aerial view from the New Zealand Geology Web Map. Blue marker depicts property location.

6. GEOTECHNICAL INVESTIGATION

WJL undertook a Geotechnical investigation of the site on 14 May 2025, and included the following:

- Drilling four (no.) 50mm diameter hand auger boreholes (HA01 to HA04 inclusive) to refusal depths ranging between 0.45m and 1.1m below existing ground levels (BEGL). Dynamic cone – scala penetrometer tests (DCP's) were extended through the invert of each HA and all immediately terminated on a refusal blow count,
- Six additional DCP's were extended from existing ground surface to refusal blow count depths ranging between 0.20m and 0.80m BEGL

The soil sample arisings from the HA's were logged in accordance with the "Field Description of Soil and Rock", NZGS, December 2005.

In-situ undrained Vane Shear Strengths were measured at intervals of depth and then adjusted in accordance with the New Zealand Geotechnical Society (NZGS); Guidelines for Handheld Shear Vane Testing, August 2001, with strengths classified in accordance with the NZGS Field Classification Guidelines; Table 2.10, December 2005. The materials identified are described in detail on the appended records, together with the results of the various tests undertaken, plus the groundwater conditions as determined during time on site.

The HA and DCP locations are depicted on our appended Site Plan (Ref: 1400271-G600) and the logged results are appended to this report.

7. GEOTECHNICAL FINDINGS

The following is a summary of the ground conditions encountered in our investigation. Please refer to the appended logs for greater detail.

7.1. TOPSOIL

Surficial TOPSOIL layers of 0.10m to 0.30m thickness were overlying all four HA's.

7.2. NATURAL GROUND

The underlying natural deposits encountered on-site were consistent with our expectations of Kerikeri Volcanic Group deposits, generally comprising of a thin, 0.30m to 1.0m thick veneer of very stiff SILT, overlying shallow, extremely strong basalt rock. As noted in Section 3, exposures of massive surficial basalt boulders and gravity walls are clearly evident across the site, indicating the lava flow geological nature of the site.

Measured in-situ, BS1377 adjusted peak shear strengths within the silt veneer generally ranged between 127kPa and greater than 220kPa, the latter being where soil strength was in excess of the shear vane capacity, or the vane was not able to penetrate into the soil (UTP). An isolated shear strength of 82kPa was measured at a depth of 0.40m BEGL in HA01.

Where able to be determined, peak to remoulded vane shear strength values ranged between 2.9 and 3.4, indicating the underlying subgrade is 'Moderately Sensitive' to disturbance.

DCP's undertaken at the invert of each HA all immediately terminated on a greater than 20 blows per 0.10m ground penetration and were essentially bouncing on the apparatus. The additional six DCP's undertaken from existing ground surface all terminated similarly at shallow depths ranging between 0.30m and 0.80m BEGL.

Figure 5: Site photograph of the typical HA soil arisings encountered (HA04: 0.0m to 1.1m).

7.3. GROUNDWATER

Groundwater was not encountered within any of our four HA's which is to be expected due to the shallow nature of the basalt rock.

It should be noted that there is the potential for perched levels to be encountered during future development construction, depending on the contouring of the building site. It is imperative that any future building site be appropriately shaped to direct all stormwater run-off away from the area.

7.4. SUMMARY TABLE

The following table summarises our inferred stratigraphic profiling:

Investigation Hole ID	Termination Depth (m)	Depth to Base of Surficial Topsoil (m)	Vane Shear Strength Range (kPa) within Natural Ground	Standing Groundwater Depth (m)
HA01	0.45	0.15	82 - UTP	NE
HA02	1.1	0.10	220+ / UTP	NE
HA03	0.80	0.25	127 - UTP	NE
HA04	1.1	0.30	138 - 197+ / UTP	NE

Note: UTP = Unable to Penetrate, NE = Not Encountered

8. GEOTECHNICAL ASSESSMENTS

8.1. SITE STABILITY

On the basis of:

- No obvious evidence of deep-seated instability within the immediate vicinity of the proposed building site and surrounding influential land,
- Gently sloping nature of the proposed building site and surrounding influential land which averages less than 7°, as depicted on our appended cross-section A-A' (Ref: 140271-G610),
- The presence of shallow, very to extremely strong basalt rock within approximately 0.30m to 1.1m below existing ground surface, and
- Lack of groundwater evidence within our HA's,

we perceive no risk of deep-seated global slope instability impacting the proposed building site.

In the long-term, provided that all of the recommendations within this report, or subsequent revisions, are adhered to, then we do not anticipate any significant risk of instability either within, or immediately beyond, the proposed development areas.

8.2. LIQUEFACTION ASSESSMENT

Liquefaction is a natural phenomenon whereby prolonged seismic shaking induces an increase in pore water pressure, which in turn decreases the effective stress of silt/fine sand-like soil deposits. Excess pore water pressure (EPWP) can build to such an extent that the effective stress of the underlying soil is reduced to near zero, whereby the soils no longer carry shear strength and behave as a semi solid/fluid. In such a scenario, excess pore water pressures will follow the path of least resistance to eventual dissipation, which can lead to the migration of liquefied soils towards the surface, or laterally towards a free-face (edge of slope, riverbank, etc.) or layers that have not yet undergone liquefaction. Examples of these phenomena were experienced in Christchurch and the greater Canterbury Region during the Canterbury Earthquake Sequence between 2010-2011.

At the time of preparing this report, we note that the FNDC on-line GIS Liquefaction Vulnerability Map indicates that the property lies within an '*Unlikely*' and 'Undetermined' transition zone.

Figure 10: Screenshot aerial view from the FNDC on-line GIS Liquefaction Vulnerability Map. Property boundary is highlighted in cyan.

A screening procedure based on geological criteria was adopted to examine whether the proposed development might be susceptible to liquefaction, with observations as follows:

- There are no known active faults traversing through the property or wider surrounding land,
- There is no historical evidence of liquefaction at the property,
- The proposed building site is situated in an elevated location with good water-shedding characteristics down to the north,
- Most significantly, the presence of shallow extremely strong basalt rock within approximately 0.30m to 1.1m below the ground surface,
- Lack of groundwater evidence within our HA's, and
- The proposed building site is underlain by Kerikeri Volcanic Group deposits, being up to 1.4 million years in age, allowing for adequate consolidation in comparison to younger, Holocene age material (10,000 years).

Based on the above, we conclude that the subsoils beneath the proposed building sites have a negligible risk of liquefaction susceptibility and liquefaction damage is therefore considered to be unlikely.

9. CONCLUSIONS AND RECOMMENDATIONS

On the basis of the above findings, we consider that the risk of moderate to deep-seated slope instability impacting the proposed building site to be significantly low, provided all recommendations contained within our report are implemented in design and construction.

With regard to the Building Act 2004; Sections 71-72, we believe on reasonable grounds that:

i. The current proposed site development and associated building work within the relayed building platform should not accelerate, worsen, or result in slippage or subsidence on the land on which the building work is to be carried out or any other property, and

ii. The land beneath the building footprint and surrounding immediate amenity areas of the relayed building platform are neither subject nor likely to be subject to slippage or subsidence, provided the development is undertaken in accordance with the recommendations and guidance of this report.

9.1. FOUNDATIONS

At this preliminary stage, we have been advised that the shed is to be of proprietary type design and be found on a concrete floor slab, supporting steel portal frames and lightweight steel cladding and roofing. For the shed floor slab, either a slab-on-grade with perimeter strip footings or raft slab foundation system will be suitable.

Future foundations will need to consider the presence of shallow underlying basalt rock and the potential need to breakout rock in creating a suitable level building platform. Additionally, it is recommended all portal footings are founded on the underlying rock in providing a uniform bearing layer. This is due to the likely event that portal depths across the shed will vary and hence, a consistent founding material is recommended. However, achieving clean portal inverts may require the use of compressed air to air-blast the rock surface.

Additionally, it may not be possible to embed portal footings into the rock to achieve sufficient anchorage against lateral loads, in which case it may be necessary to utilise a specifically designed mix of diagonal subfloor bracing and bolting to the rock.

9.1.1. SHALLOW FOUNDATION BEARING CAPACITY

The following bearing capacity values are considered to be appropriate for the design of shallow foundations, subject to founding directly within or on competent natural ground or engineered hardfill, for which careful Geo-Professional inspections of the subgrade should be undertaken to check that underlying ground conditions are in keeping with our expectations:

Geotechnical Ultimate Bearing Capacity	300 kPa
ULS Dependable Bearing Capacity (Φ=0.5)	150 kPa

When finalising the development proposals, it should be checked that all foundations lie outside 45° envelopes rising from 0.50m below the invert of service trenches and the toe of adjacent retaining strictures, unless such foundation details are found by specific engineering design (SED) to be satisfactory. Deeper foundation embedment with piles may be required for any surcharging foundations.

9.1.2. SHALLOW FOUNDATIONS ON EXPANSIVE SOILS

Subsoils beneath the proposed building sites comprised of a thin, 0.30m to 1.1m thick veneer of very stiff silt, overlying shallow, dense, basalt rock. The silts encountered within our hand auger boreholes generally had no plasticity and considering the non-expansive nature of the underlying basalt rock, the surficial expansive ash soils are expected to have some potential differential effects on the foundations for the proposed shed.

In the absence of quantitative laboratory testing and specific building proposals, we have adopted a conservative primary classification estimate of:

- NZBC B1 Expansive Soil Class M
- Upper Limit of Characteristic surface movement (y_s) 44mm

Given that such soils are not considered to lie within the definition of "good ground", care must be taken to mitigate against the potential seasonal shrinkage and swelling effects of expansive foundation soils on both the superstructure and floor slab. We therefore recommend SED be undertaken by a structural engineer.

Soil expansivity effects on foundations can be aided in mitigation during design as follows:

- For Slab-on-Grade with Deepened Perimeter Strip & Portal Footings:
  - Where volcanic ash soils are encountered, perimeter strip or portal footings should extend to a minimum of 0.60m below finished ground levels but may be terminated on extremely strong basalt rock, provided there is an adequate connection via scabbled keying and/or drilled and grouted starter bars into the rock.

- For Raft Slab Foundation System:
  - Specifically designed reinforced, stiffened raft slab, designed for a Ys value of 44mm and founded on a minimum of 0.10m of engineered hardfill that extends a minimum of 1.0m beyond the building footprint.

9.1.3. NZS1170.5:2004 SITE SUBSOIL CLASSIFICATION

Design for the building seismic response is expected to depend on the FFL relative to the depth to rock, as well as the presence or otherwise, of intervening ash soils. We therefore consider the proposed building site to be underlain with either Class A – Strong Rock per clause 3.1.3.2 of NZS1170, or Class C – Shallow soil, and the final designation should be made during development review.

As a conservative approach, the structural engineer could adopt the more critical site subsoil classification that has the greater impact on the design, unless further investigation or assessment finds otherwise.

9.2. SITE EARTHWORKS

An engineered cut-fill earthworks operation will be required to create suitable level building platform. LiDAR contours suggest a crossfall of approximately 1.5m is currently present across the proposed building site. Some clearance of bush and removal of surface boulders and massive rock may also be necessary.

Any proposed retaining wall should be gravity designed in nature. Footing excavations for any proposed timber pole wall will likely encounter shallow basalt rock obstructions which will be a deterrent in achieving required embedment depths.

Generally, and as directed by a suitably experienced engineer, all earthworks should be undertaken in accordance with the following standards:

- NZS4431:2022 "Code of Practice for Earth Fill Residential Development",
- Section 2 "Earthworks & Geotechnical Requirements" of NZS4404:2010 "Land Development and Subdivision Infrastructure", and
- Chapter 2 "Site Development Suitability (Geotechnical and Natural Hazards" of the Far North District Council Engineering Standards, (Version 0.6 issued May 2023).

9.3. SITE PREPARATION

The competency of the exposed subgrade across the proposed building site should be confirmed by a Geo-Professional. In this regard, we recommend the stripping of all vegetation, topsoil, and any non-engineered fill deposits encountered, prior to requesting Geo-Professional inspection(s) of the stripped ground to confirm that the underlying natural subgrade conditions are in keeping with the expectations of this report. Without such inspections being undertaken, a Chartered Professional Geotechnical Engineer is unable to issue a Producer Statement - PS4 – Design Review which could result in the failure to meet Building Consent requirements as set by Council as conditions of consent.

9.4. SUBGRADE PROTECTION

The subgrade beneath the proposed building site should not be exposed for any prolonged period and should be covered with a 0.10m thick layer of granular fill such as GAP40 basecourse, as soon as possible.

If subgrade degradation occurs by:

- Excessive drying out resulting in desiccation shrinkage cracking, it will be necessary to either re-hydrate the subgrade or undercut the degraded material and replace with compacted hardfill, or
- Excessive subgrade softening after a period of wet weather resulting in weakened soils, it will be necessary to undercut the degraded material and replacement with compacted hardfill.

9.5. HARDFILL COMPACTION

Engineered hardfill should be used for all fills beneath both proposed building sites. The compaction of hardfill should be undertaken using either a heavy plate compactor or a steel wheeled roller with low frequency dynamic compaction. Hardfill layers should not exceed 0.15m at a time, and where the total depths exceed 0.60m, there is likely to be a Building Consent condition for observation/testing of the hardfill by a Geo-Professional. We recommend achieving the following compacted target values, with equivalence testing using either a Clegg Impact Hammer or DCP.

Foundation Support Type	CBR	Equivalent Clegg Impact Value (CIV)	Equivalent DCP-Scala Penetrometer Blows
Foundation Footings & Beams (Over a depth of no less than twice the foundation width)	≥ 10%	Minimum 20 Average 25	≥5 blows/100mm (NZS3604)
Floor Slabs	≥ 7%	Minimum 18 Average 20	≥3.5 blows/100mm (NZS3604)

9.6. TEMPORARY & LONG-TERM EARTHWORK BATTERS

We recommend that earthworks only be undertaken during prolonged periods of dry forecast conditions.

During times of inclement weather, earthwork sites should be shaped to assist in stormwater run-off. The toe of any batter excavations should be shaped to avoid ponding water.

All cuts should be battered no steeper than 1V:3H (18°). Any cuts outside these imposed limits should be referred to WJL for review.

All fills should be limited to a height of 1.0m and should be battered no steeper than 1V:4H (14°). Any fills outside these imposed limits should be referred to WJL for review.

The structural designer and building contractor should ensure that a satisfactory FoS against ground instability is available at all stages of the development.

9.7. GENERAL SITE WORKS

We stress that all works should be undertaken in a careful and safe manner so that Health & Safety is not compromised, and that suitable Erosion & Sediment control measures should be put in place. Any stockpiles placed should be done so in an appropriate manner so that land stability and/or adjacent structures are not compromised.

Furthermore:

- All works must be undertaken in accordance with the Health and Safety at Work Act 2015,
- Any open excavations should be fenced off or covered, and/or access restricted as appropriate,
- The location of all services should be verified at the site prior to the commencement of construction,
- The Contractor is responsible at all times for ensuring that all necessary precautions are taken to protect all aspects of the works, as well as adjacent properties, buildings and services, and
- Should the contractor require any site-specific assistance with safe construction methodologies, please contact WJL for further assistance.

9.8. LONG-TERM FOUNDATION CARE & MAINTENANCE

The recommendations given above to mitigate the risk of expansive soils do not necessarily remove the risk of external influences affecting the moisture in the subgrade supporting the foundations.

All owners should also be aware of the detrimental effects that significant trees can have on building foundation soils, viz:

- Their presence can induce differential consolidation settlements beneath foundations through localised soil water deprivation, or conversely, and
- Foundation construction too soon after their removal can result in soil swelling and raising foundations as the soil rehydrates.

To this end, care should be taken to avoid:

- Having significant trees positioned where their roots could migrate beneath the house foundations, and
- Constructing foundations on soils that have been differentially excessively desiccated by nearby trees, whether still existing, or recently removed.

We recommend that homeowners make themselves familiar with the appended Homeowners' Guide published by CSIRO, with particular emphasis on maintenance of drains, water pipes, gutters, and downpipes.

10. STORMWATER CONTROL

Uncontrolled stormwater flows must not be allowed to run onto or over site slopes, or to saturate the ground, so as to adversely affect soil strength.

Overland flows and similar runoff such as from any higher ground should be intercepted by means of shallow surface drains and/or small bunds and be directed away from the building footprint to protect the building platform from both saturation and erosion. Water collected in interceptor drains should be diverted away from the building site to an appropriate disposal point. All stormwater runoff from roofs and paved areas, should be collected in sealed pipes and also be discharged to a stable disposal point.

Under no circumstances should concentrated overflows from any source be discharged into or onto the ground in an uncontrolled fashion.

11. UNDERGROUND SERVICES

Underground services, public or private, mapped, or unmapped, of any type may be present, hence we recommend staying on the side of caution during the commencement of any work within the proposed development area.

12. FUTURE CONSTRUCTION MONITORING

The foregoing statements are Professional Opinion, based on a limited collection of information, some of which is factual, and some of which is inferred. Because soils are not a homogeneous, manufactured building component, there always exists a level of risk that inferences about soil conditions across the greater site, which have been drawn from isolated "pin-prick" locations, may be subject to localized variations. Generally, any investigation is deemed less complete until the applicability of its inferences and the Professional Opinions arising out of those are checked and confirmed during the construction phase, to an appropriate level.

It is increasingly common for the Building Consent Authorities to require a Producer Statement – Construction (PS4) which is an important document. The purpose of the PS4 is to confirm the Engineers' Professional Opinion to the BCA that specific elements of construction, such as the verification of design assumptions and soil parameters (NZBC clause B1/VM4 2.0.8), are in accordance with the approved Building Consent and its related documents, which should include the subject Geotechnical Report. Where site works will involve the placement of fill, the PS4 should reference NZBC clause B1/VM1 10.1.

For WJL to issue a PS4 to meet the above clauses of the NZBC, we will need to carry out the site inspections as per the Building Consent and Council requirements.

We require at least 48 hours' notice for site inspections.

Site inspections should be undertaken by a Chartered Professional Geotechnical Engineer or their Agent, who is familiar with both this site and the contents of this Geotechnical Report.

Prior to works commencement, the above Engineer should be contacted to confirm the construction methodologies, inspection, and testing frequency.

The primary purpose of the site inspections is to check that the conditions encountered are consistent with those expected from the investigations and adopted for the design as discussed herein. If anomalies or uncertainties are identified, then further Professional advice should be sought from the Geo-Professional, which will allow the timely provision of solutions and recommendations should any engineering problems arise.

Upon satisfactory completion of the above work aspects, WJL would then be in a position to issue the PS4 as required by Council.

At this time, the following Geotechnical site inspections and testing should include, but are not limited to:

- Site cut,
- Hardfill compaction testing, and
- Pre-pour strip (if required) and portal footing excavations.

13. LIMITATIONS

We anticipate that this report is to be submitted to Council in support of a Building Consent application.

This report has been commissioned solely for the benefit of our client, **Adam Franklin**, in relation to the project described herein, and to the limits of our engagement, with the exception that the local Territorial Authority may rely on it to the extent of its appropriateness, conditions and limitations, when issuing the subject consent. Any variations from the development proposals described herein as forming the basis of our appraisal should be referred to us for further evaluation. Copyright of Intellectual Property remains with WJL, and this report may NOT be used by any other entity, or for any other proposals, without our written consent. Therefore, no liability is accepted by this firm or any of its directors, servants, or agents, in respect of any other geotechnical aspects of this site, nor for its use by any other person or entity, and any other person or entity who relies upon any information contained herein does so entirely at their own risk. Where other parties may wish to rely on it, whether for the same or different proposals, this permission may be extended, subject to our satisfactory review of their interpretation of the report.

The recommendations provided in this geotechnical report are in accordance with the findings from our shallow investigation. However, it is important to acknowledge that additional refinement of the investigation and analysis may be necessary to meet the specific requirements set by the local council.

Although this report may be submitted to a local authority in connection with an application for a consent, permission, approval, or pursuant to any other requirement of law, this disclaimer shall still apply and require all other parties to use due diligence where necessary and does not remove the necessity for the normal inspection of site conditions and the design of foundations as would be made under all normal circumstances.

Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Yours faithfully,

WILTON JOUBERT LIMITED

Enclosures:

Site Plan (1 sheet)
Cross-section A-A' (1 sheet)
Hand Auger Borehole Records (4 sheets)
Dynamic Cone – Scala Penetrometer Test Records (1 sheet)
'Foundation Maintenance & Footing Performance' sheet BTF18: A Homeowner's Guide, published by CSIRO (4 sheets)
Construction Monitoring (1 sheet)

SITE LOCATION

IMAGE SOURCE:
FAR NORTH DISTRICT COUNCIL LOCAL MAPS

PROPOSED SHED
HA 01
HA 02
HA 03
HA 04
DCP01
DCP02
DCP03
DCP04
DCP05
DCP06
A
G610
A'
G610

SYMBOL KEY	
	HAND AUGER LOCATIONS
DCP01	SCALA PENETROMETER LOCATIONS
	CROSS SECTION LOCATION

GENERAL NOTES

1. SITE PLAN IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. BACKGROUND INFORMATION, CONTOURS & LOCAL SERVICES PROVIDED BY THE CLIENT & EXTRACTED FROM LOCAL COUNCIL GIS.
3. ALL DIMENSION AND LEVELS TO BE CHECKED ON SITE PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. ANY DISCREPANCIES TO BE REPORTED TO THE ENGINEER.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH THE RELEVANT STANDARDS AND MUST BE UNDERTAKEN IN ACCORDANCE WITH THE HEALTH AND SAFETY AT WORK ACT 2015.

WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
Christchurch: 021 824 063 Wanaka: 03 443 6209
www.wiltonjoubert.co.nz

ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	MAY '25	SJP	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY: SJP
DRAWN BY: GMB
CHECKED BY: SJP
SURVEYED BY: N/A

SERVICES NOTE

WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

GEOTECHNICAL

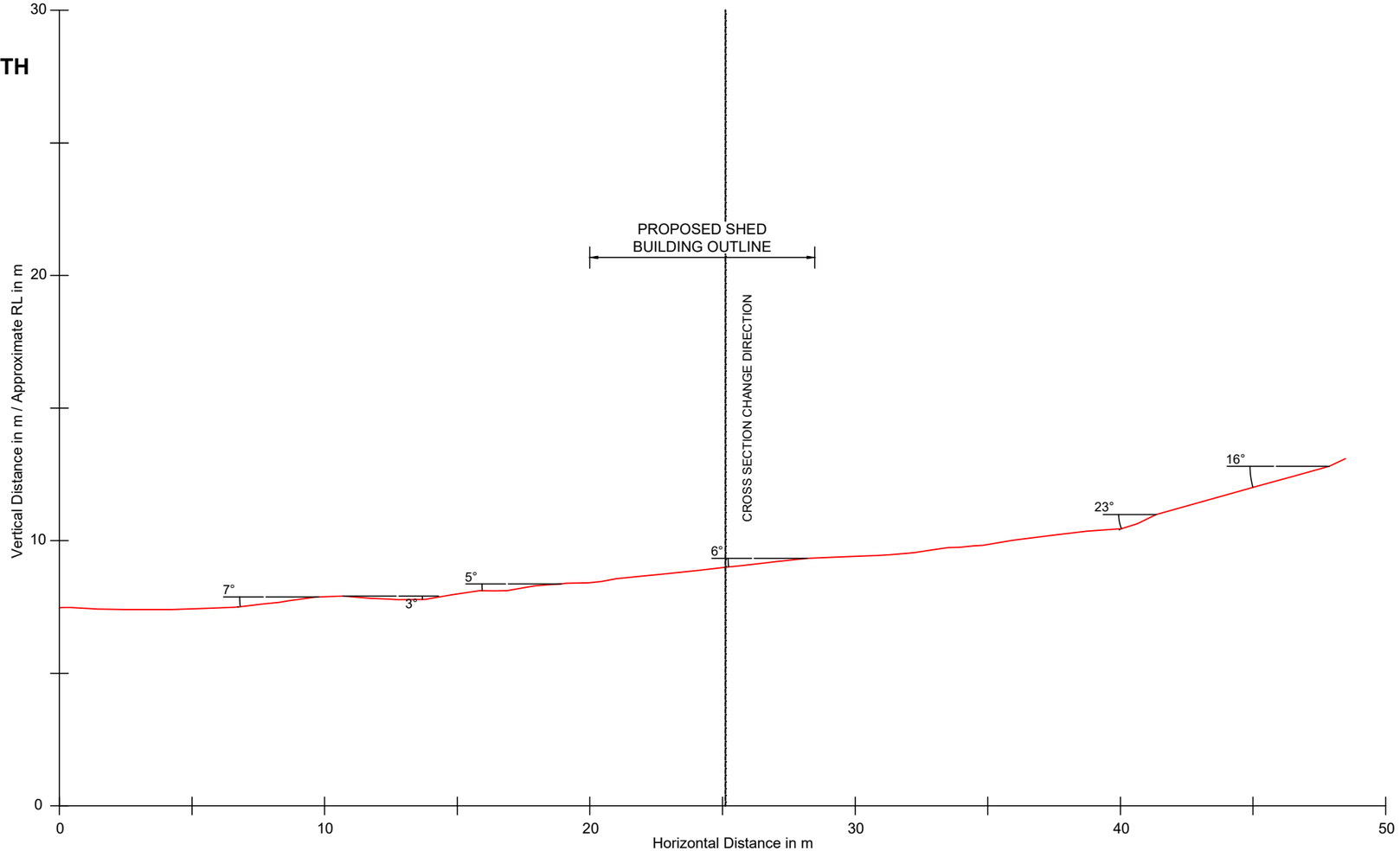
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **PROPOSED SHED**

PROJECT TITLE:
LOT 5 DP 352467
17 EDMONDS ROAD
KERIKERI
NORTHLAND

ORIGINAL DRAWING SIZE:	OFFICE:
A3	KERIKERI
DRAWING SCALE:	CO-ORDINATE SYSTEM:
1:350	NOT COORDINATED
DRAWING NUMBER:	ISSUE:
140271-G600	A



WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
Christchurch: 021 824 063 Wanaka: 03 443 6209
www.wiltonjoubert.co.nz

ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	MAY '25	SJP	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY: SJP
DRAWN BY: GMB
CHECKED BY: SJP
SURVEYED BY: N/A

SERVICES NOTE
WHERE EXISTING SERVICES ARE SHOWN, THEY ARE INDICATIVE ONLY AND MAY NOT INCLUDE ALL SITE SERVICES. WILTON JOUBERT LTD DOES NOT WARRANT THAT ALL, OR INDEED ANY SERVICES ARE SHOWN. IT IS THE CONTRACTORS RESPONSIBILITY TO LOCATE AND PROTECT ALL EXISTING SERVICES PRIOR TO AND FOR THE DURATION OF THE CONTRACT WORKS.

GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **CROSS SECTION A-A'**

PROJECT DESCRIPTION: **PROPOSED SHED**

PROJECT TITLE:
LOT 5 DP 352467
17 EDMONDS ROAD
KERIKERI
NORTHLAND

ORIGINAL DRAWING SIZE: A3
OFFICE: **KERIKERI**
DRAWING SCALE: **1:200**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **140271-G610**
ISSUE: **A**

HAND AUGER : HA01

CLIENT: Adam Franklin
PROJECT: New Shed
SITE LOCATION: 17 Edmonds Road, Kerikeri

JOB NO.: 140271 **SHEET:** 1 OF 1
START DATE: 14/05/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS		Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: SILT, trace clay, brown, stiff, moist, no plasticity, occasional rootlet inclusions.		0.2						
			0.4		82 UTP	28 -	2.9 -	20+	BOUNCING
	EOH: 0.45m - Refusal (Hard Basalt Inferred)		0.6						
			0.8						
			1.0						
			1.2						
			1.4						

SOIL DESCRIPTION: TOPSOIL, CLAY, SAND, PEAT, FILL, SILT, GRAVEL, ROCK

REMARKS
End of borehole @ 0.45m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP
CHECKED BY: ANA

▼ Standing groundwater level
▽ GW while drilling

WILTON JOUBERT Consulting Engineers
185 Waipapa Road, Kerikeri 0295
Phone: 09-945 4188
Email: jobs@wjl.co.nz
Website: www.wiltonjoubert.co.nz

HAND AUGER : HA02

CLIENT: Adam Franklin
PROJECT: New Shed
SITE LOCATION: 17 Edmonds Road, Kerikeri

JOB NO.: 140271 **SHEET:** 1 OF 1
START DATE: 14/05/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.57 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.0	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: SILT, trace clay, brown, very stiff, no plasticity, occasional rootlet inclusions.		0.2						
			0.4		220+	-	-		
	0.7m: Frequent grey weakly and strongly fused clast and gravel inclusions.		0.6						
			0.8		UTP	-	-		
			1.0						
	EOH: 1.10m - Refusal (Hard Basalt Inferred)		1.2		UTP	-	-	20+	BOUNCING
			1.4						

TOPSOIL FILL CLAY SILT SAND GRAVEL PEAT ROCK

REMARKS
End of borehole @ 1.10m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: SJP
CHECKED BY: ANA

▼ Standing groundwater level
▽ GW while drilling

WILTON JOUBERT Consulting Engineers
185 Waipapa Road, Kerikeri 0295
Phone: 09-945 4188
Email: jobs@wjl.co.nz
Website: www.wiltonjoubert.co.nz

HAND AUGER : HA03

CLIENT: Adam Franklin
PROJECT: New Shed
SITE LOCATION: 17 Edmonds Road, Kerikeri

JOB NO.: 140271 **SHEET:** 1 OF 1
START DATE: 14/05/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	NATURAL: SILT, trace clay, brown, very stiff, moist, no plasticity.		0.4		127	37	3.4		
			0.6						
			0.8		UTP	-	-	20+	BOUNCING
	EOH: 0.80m - Refusal (Hard Basalt Inferred)		1.0						
			1.2						
			1.4						

TOPSOIL FILL CLAY SILT SAND GRAVEL PEAT ROCK

REMARKS
End of borehole @ 0.80m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: JEM
CHECKED BY: JEM

▼ Standing groundwater level
▽ GW while drilling

WILTON JOUBERT Consulting Engineers
185 Waipapa Road, Kerikeri 0295
Phone: 09-945 4188
Email: jobs@wjl.co.nz
Website: www.wiltonjoubert.co.nz

HAND AUGER : HA04

CLIENT: Adam Franklin
PROJECT: New Shed
SITE LOCATION: 17 Edmonds Road, Kerikeri

JOB NO.: 140271 **SHEET:** 1 OF 1
START DATE: 14/05/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: 1994 **ELEVATION:** Ground
FACTOR: 1.41 **DATUM:**

SOIL DESCRIPTION: TOPSOIL, CLAY, SAND, PEAT, FILL, SILT, GRAVEL, ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL, dark brown, moist.	TS	0.2						
Kerikeri Volcanic Group	NATURAL: SILT, trace clay, brown, very stiff, moist, no plasticity.		0.4	Groundwater Not Encountered	138	42	3.3		
			0.6						
			0.8		197+	-	-		
	1.0m: Frequent grey weakly and strongly fused clast and gravel inclusions.		1.0						
	EOH: 1.10m - Refusal (Hard Basalt Inferred)		1.2		UTP	-	-	20+	BOUNCING
			1.4						

REMARKS
End of borehole @ 1.10m (Target Depth: 3.00m)

NZGS Definition of Relative Density for Coarse Grain soils: VL - Very Loose; L - Loose; MD - Medium Dense; D - Dense; VD - Very Dense

LOGGED BY: JEM
CHECKED BY: ANA

▼ Standing groundwater level
▽ GW while drilling

WILTON JOUBERT Consulting Engineers
185 Waipapa Road, Kerikeri 0295
Phone: 09-945 4188
Email: jobs@wjl.co.nz
Website: www.wiltonjoubert.co.nz

CLIENT:	Adam Franklin	DYNAMIC CONE PENETROMETER RESULTS SHEET					
LOCATION:	17 Edmonds Road, Kerikeri	Logged	SJP	Job No.	140271	Date:	14/05/2025
		Checked	ANA	Sheet:	1	of	2

Test Location:	DCP1	
Depth	No. Blows	Equiv CBR
100	1	2
200	20+	10+
300		
400		
500		
600		
700		
800		
900		
1000		
1100		

Notes:

1 Blow = 2 CBR 2 Blows = 3.5 3 Blows = 5.5

Test Location:	DCP2	
Depth	No. Blows	Equiv CBR
100	0.5	1
200	0.5	1
300	20+	10+
400		
500		
600		
700		
800		
900		
1000		
1100		

Notes:

Test Location:	DCP3	
Depth	No. Blows	Equiv CBR
100	2	3.5
200	2	3.5
300	2	3.5
400	2	3.5
500	3	5.5
600	5	10
700	5	10
800	20+	10+
900		
1000		
1100		

Notes:

Test Location:	DCP4	
Depth	No. Blows	Equiv CBR
100	2	3.5
200	2	3.5
300	2	3.5
400	2	3.5
500	4	7.5
600	20+	10+
700		
800		
900		
1000		
1100		

Notes:

Test Location:	DCP5	
Depth	No. Blows	Equiv CBR
100	2	3.5
200	3	5.5
300	3	5.5
400	2	3.5
500	4	7.5
600	3	5.5
700	20+	10+
800		
900		
1000		
1100		

Notes:

Test Location:	DCP6	
Depth	No. Blows	Equiv CBR
100	2	3.5
200	3	5.5
300	3	5.5
400	2	3.5
500	13	10+
600	14	10+
700	20+	10+
800		
900		
1000		
1100		

Notes:

WILTON JOUBERT
Consulting Engineers

Wilton Joubert Limited
PO BOX 11-381, Ellerslie, Auckland 1524
Phone: 09 527 0196

THOROUGH ANALYSIS • DEPENDABLE ADVICE

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

PUBLISHING

BTF 18-2011 replaces Information Sheet 10/91

Buildings can and often do move. This movement can be up, down, lateral or rotational. The fundamental cause of movement in buildings can usually be related to one or more problems in the foundation soil. It is important for the homeowner to identify the soil type in order to ascertain the measures that should be put in place in order to ensure that problems in the foundation soil can be prevented, thus protecting against building movement.

This Building Technology File is designed to identify causes of soil-related building movement, and to suggest methods of prevention of resultant cracking in buildings.

Soil Types

The types of soils usually present under the topsoil in land zoned for residential buildings can be split into two approximate groups – granular and clay. Quite often, foundation soil is a mixture of both types. The general problems associated with soils having granular content are usually caused by erosion. Clay soils are subject to saturation and swell/shrink problems.

Classifications for a given area can generally be obtained by application to the local authority, but these are sometimes unreliable and if there is doubt, a geotechnical report should be commissioned. As most buildings suffering movement problems are founded on clay soils, there is an emphasis on classification of soils according to the amount of swell and shrinkage they experience with variations of water content. The table below is Table 2.1 from AS 2870-2011, the Residential Slab and Footing Code.

Causes of Movement

Settlement due to construction

There are two types of settlement that occur as a result of construction:

- Immediate settlement occurs when a building is first placed on its foundation soil, as a result of compaction of the soil under the weight of the structure. The cohesive quality of clay soil mitigates against this, but granular (particularly sandy) soil is susceptible.
- Consolidation settlement is a feature of clay soil and may take place because of the expulsion of moisture from the soil or because of the soil's lack of resistance to local compressive or shear stresses. This will usually take place during the first few months after construction, but has been known to take many years in exceptional cases.

These problems are the province of the builder and should be taken into consideration as part of the preparation of the site for construction. Building Technology File 19 (BTF 19) deals with these problems.

Erosion

All soils are prone to erosion, but sandy soil is particularly susceptible to being washed away. Even clay with a sand component of say 10% or more can suffer from erosion.

Saturation

This is particularly a problem in clay soils. Saturation creates a bog-like suspension of the soil that causes it to lose virtually all of its bearing capacity. To a lesser degree, sand is affected by saturation because saturated sand may undergo a reduction in volume, particularly imported sand fill for bedding and blinding layers. However, this usually occurs as immediate settlement and should normally be the province of the builder.

Seasonal swelling and shrinkage of soil

All clays react to the presence of water by slowly absorbing it, making the soil increase in volume (see table below). The degree of increase varies considerably between different clays, as does the degree of decrease during the subsequent drying out caused by fair weather periods. Because of the low absorption and expulsion rate, this phenomenon will not usually be noticeable unless there are prolonged rainy or dry periods, usually of weeks or months, depending on the land and soil characteristics.

The swelling of soil creates an upward force on the footings of the building, and shrinkage creates subsidence that takes away the support needed by the footing to retain equilibrium.

Shear failure

This phenomenon occurs when the foundation soil does not have sufficient strength to support the weight of the footing. There are two major post-construction causes:

- Significant load increase.
- Reduction of lateral support of the soil under the footing due to erosion or excavation.

In clay soil, shear failure can be caused by saturation of the soil adjacent to or under the footing.

GENERAL DEFINITIONS OF SITE CLASSES

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes

Notes

1. Where controlled fill has been used, the site may be classified A to E according to the type of fill used.
2. Filled sites. Class P is used for sites which include soft fills, such as clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soil subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.
3. Where deep-seated moisture changes exist on sites at depths of 3 m or greater, further classification is needed for Classes M to E (M-D, H1-D, H2-D and E-D).

Tree root growth
Trees and shrubs that are allowed to grow in the vicinity of footings can cause foundation soil movement in two ways:

- Roots that grow under footings may increase in cross-sectional size, exerting upward pressure on footings.
- Roots in the vicinity of footings will absorb much of the moisture in the foundation soil, causing shrinkage or subsidence.

Unevenness of Movement

The types of ground movement described above usually occur unevenly throughout the building's foundation soil. Settlement due to construction tends to be uneven because of:

- Differing compaction of foundation soil prior to construction.
- Differing moisture content of foundation soil prior to construction.

Movement due to non-construction causes is usually more uneven still. Erosion can undermine a footing that traverses the flow or can create the conditions for shear failure by eroding soil adjacent to a footing that runs in the same direction as the flow.

Saturation of clay foundation soil may occur where subfloor walls create a dam that makes water pond. It can also occur wherever there is a source of water near footings in clay soil. This leads to a severe reduction in the strength of the soil which may create local shear failure.

Seasonal swelling and shrinkage of clay soil affects the perimeter of the building first, then gradually spreads to the interior. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Swelling gradually reaches the interior soil as absorption continues. Shrinkage usually begins where the sun's heat is greatest.

Effects of Uneven Soil Movement on Structures

Erosion and saturation
Erosion removes the support from under footings, tending to create subsidence of the part of the structure under which it occurs. Brickwork walls will resist the stress created by this removal of support by bridging the gap or cantilevering until the bricks or the mortar bedding fail. Older masonry has little resistance. Evidence of failure varies according to circumstances and symptoms may include:

- Step cracking in the mortar beds in the body of the wall or above/below openings such as doors or windows.
- Vertical cracking in the bricks (usually but not necessarily in line with the vertical beds or perpends).

Isolated piers affected by erosion or saturation of foundations will eventually lose contact with the bearers they support and may tilt or fall over. The floors that have lost this support will become bouncy, sometimes rattling ornaments etc.

Seasonal swelling/shrinkage in clay
Swelling foundation soil due to rainy periods first lifts the most exposed extremities of the footing system, then the remainder of the perimeter footings while gradually permeating inside the building footprint to lift internal footings. This swelling first tends to create a dish effect, because the external footings are pushed higher than the internal ones.

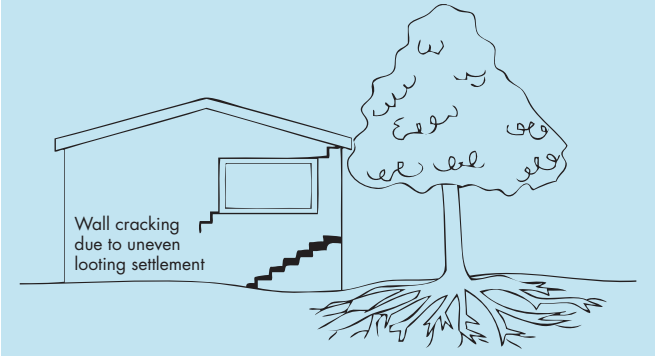
The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally there may be visible dishing of the hip or ridge lines.

As the moisture absorption process completes its journey to the innermost areas of the building, the internal footings will rise. If the spread of moisture is roughly even, it may be that the symptoms will temporarily disappear, but it is more likely that swelling will be uneven, creating a difference rather than a disappearance in symptoms. In buildings with timber flooring supported by bearers and joists, the isolated piers will rise more easily than the strip footings or piers under walls, creating noticeable doming of flooring.

As the weather pattern changes and the soil begins to dry out, the external footings will be first affected, beginning with the locations where the sun's effect is strongest. This has the effect of lowering the external footings. The doming is accentuated and cracking reduces or disappears where it occurred because of dishing, but other cracks open up. The roof lines may become convex.

Doming and dishing are also affected by weather in other ways. In areas where warm, wet summers and cooler dry winters prevail, water migration tends to be toward the interior and doming will be accentuated, whereas where summers are dry and winters are cold and wet, migration tends to be toward the exterior and the underlying propensity is toward dishing.

Trees can cause shrinkage and damage



Movement caused by tree roots
In general, growing roots will exert an upward pressure on footings, whereas soil subject to drying because of tree or shrub roots will tend to remove support from under footings by inducing shrinkage.

Complications caused by the structure itself
Most forces that the soil causes to be exerted on structures are vertical – i.e. either up or down. However, because these forces are seldom spread evenly around the footings, and because the building resists uneven movement because of its rigidity, forces are exerted from one part of the building to another. The net result of all these forces is usually rotational. This resultant force often complicates the diagnosis because the visible symptoms do not simply reflect the original cause. A common symptom is binding of doors on the vertical member of the frame.

Effects on full masonry structures
Brickwork will resist cracking where it can. It will attempt to span areas that lose support because of subsided foundations or raised points. It is therefore usual to see cracking at weak points, such as openings for windows or doors.

In the event of construction settlement, cracking will usually remain unchanged after the process of settlement has ceased.

With local shear or erosion, cracking will usually continue to develop until the original cause has been remedied, or until the subsidence has completely neutralised the affected portion of footing and the structure has stabilised on other footings that remain effective.

In the case of swell/shrink effects, the brickwork will in some cases return to its original position after completion of a cycle, however it is more likely that the rotational effect will not be exactly reversed, and it is also usual that brickwork will settle in its new position and will resist the forces trying to return it to its original position. This means that in a case where swelling takes place after construction and cracking occurs, the cracking is likely to at least partly remain after the shrink segment of the cycle is complete. Thus, each time the cycle is repeated, the likelihood is that the cracking will become wider until the sections of brickwork become virtually independent.

With repeated cycles, once the cracking is established, if there is no other complication, it is normal for the incidence of cracking to stabilise, as the building has the articulation it needs to cope with the problem. This is by no means always the case, however, and monitoring of cracks in walls and floors should always be treated seriously.

Upheaval caused by growth of tree roots under footings is not a simple vertical shear stress. There is a tendency for the root to also exert lateral forces that attempt to separate sections of brickwork after initial cracking has occurred.

The normal structural arrangement is that the inner leaf of brickwork in the external walls and at least some of the internal walls (depending on the roof type) comprise the load-bearing structure on which any upper floors, ceilings and the roof are supported. In these cases, it is internally visible cracking that should be the main focus of attention, however there are a few examples of dwellings whose external leaf of masonry plays some supporting role, so this should be checked if there is any doubt. In any case, externally visible cracking is important as a guide to stresses on the structure generally, and it should also be remembered that the external walls must be capable of supporting themselves.

Effects on framed structures
Timber or steel framed buildings are less likely to exhibit cracking due to swell/shrink than masonry buildings because of their flexibility. Also, the doming/dishing effects tend to be lower because of the lighter weight of walls. The main risks to framed buildings are encountered because of the isolated pier footings used under walls. Where erosion or saturation causes a footing to fall away, this can double the span which a wall must bridge. This additional stress can create cracking in wall linings, particularly where there is a weak point in the structure caused by a door or window opening. It is, however, unlikely that framed structures will be so stressed as to suffer serious damage without first exhibiting some or all of the above symptoms for a considerable period. The same warning period should apply in the case of upheaval. It should be noted, however, that where framed buildings are supported by strip footings there is only one leaf of brickwork and therefore the externally visible walls are the supporting structure for the building. In this case, the subfloor masonry walls can be expected to behave as full brickwork walls.

Effects on brick veneer structures
Because the load-bearing structure of a brick veneer building is the frame that makes up the interior leaf of the external walls plus perhaps the internal walls, depending on the type of roof, the building can be expected to behave as a framed structure, except that the external masonry will behave in a similar way to the external leaf of a full masonry structure.

Water Service and Drainage

Where a water service pipe, a sewer or stormwater drainage pipe is in the vicinity of a building, a water leak can cause erosion, swelling or saturation of susceptible soil. Even a minuscule leak can be enough to saturate a clay foundation. A leaking tap near a building can have the same effect. In addition, trenches containing pipes can become watercourses even though backfilled, particularly where broken rubble is used as fill. Water that runs along these trenches can be responsible for serious erosion, interstrata seepage into subfloor areas and saturation.

Pipe leakage and trench water flows also encourage tree and shrub roots to the source of water, complicating and exacerbating the problem. Poor roof plumbing can result in large volumes of rainwater being concentrated in a small area of soil:

- Incorrect falls in roof guttering may result in overflows, as may gutters blocked with leaves etc.
- Corroded guttering or downpipes can spill water to ground.
- Downpipes not positively connected to a proper stormwater collection system will direct a concentration of water to soil that is directly adjacent to footings, sometimes causing large-scale problems such as erosion, saturation and migration of water under the building.

Seriousness of Cracking

In general, most cracking found in masonry walls is a cosmetic nuisance only and can be kept in repair or even ignored. The table below is a reproduction of Table C1 of AS 2870-2011.

AS 2870-2011 also publishes figures relating to cracking in concrete floors, however because wall cracking will usually reach the critical point significantly earlier than cracking in slabs, this table is not reproduced here.

Prevention/Cure

Plumbing
Where building movement is caused by water service, roof plumbing, sewer or stormwater failure, the remedy is to repair the problem. It is prudent, however, to consider also rerouting pipes away from the building where possible, and relocating taps to positions where any leakage will not direct water to the building vicinity. Even where gully traps are present, there is sometimes sufficient spill to create erosion or saturation, particularly in modern installations using smaller diameter PVC fixtures. Indeed, some gully traps are not situated directly under the taps that are installed to charge them, with the result that water from the tap may enter the backfilled trench that houses the sewer piping. If the trench has been poorly backfilled, the water will either pond or flow along the bottom of the trench. As these trenches usually run alongside the footings and can be at a similar depth, it is not hard to see how any water that is thus directed into a trench can easily affect the foundation's ability to support footings or even gain entry to the subfloor area.

Ground drainage
In all soils there is the capacity for water to travel on the surface and below it. Surface water flows can be established by inspection during and after heavy or prolonged rain. If necessary, a grated drain system connected to the stormwater collection system is usually an easy solution.

It is, however, sometimes necessary when attempting to prevent water migration that testing be carried out to establish watertable height and subsoil water flows. This subject is referred to in BTF 19 and may properly be regarded as an area for an expert consultant.

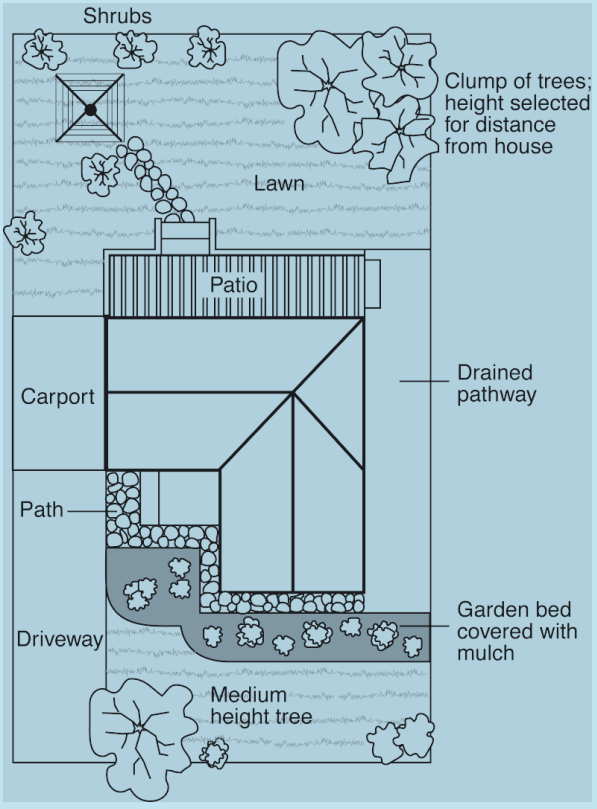
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

For this reason, particularly where problems exist or are likely to occur, it is recommended that an apron of paving be installed around as much of the building perimeter as necessary. This paving should

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

Description of typical damage and required repair	Approximate crack width limit (see Note 3)	Damage category
Hairline cracks	<0.1 mm	0
Fine cracks which do not need repair	<1 mm	1
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5 mm	2
Cracks can be repaired and possibly a small amount of wall will need to be replaced. Doors and windows stick. Service pipes can fracture. Weathertightness often impaired.	5–15 mm (or a number of cracks 3 mm or more in one group)	3
Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Window and door frames distort. Walls lean or bulge noticeably, some loss of bearing in beams. Service pipes disrupted.	15–25 mm but also depends on number of cracks	4

Gardens for a reactive site



extend outwards a minimum of 900 mm (more in highly reactive soil) and should have a minimum fall away from the building of 1:60. The finished paving should be no less than 100 mm below brick vent bases.

It is prudent to relocate drainage pipes away from this paving, if possible, to avoid complications from future leakage. If this is not practical, earthenware pipes should be replaced by PVC and backfilling should be of the same soil type as the surrounding soil and compacted to the same density.

Except in areas where freezing of water is an issue, it is wise to remove taps in the building area and relocate them well away from the building – preferably not uphill from it (see BTF 19).

It may be desirable to install a grated drain at the outside edge of the paving on the uphill side of the building. If subsoil drainage is needed this can be installed under the surface drain.

Condensation

In buildings with a subfloor void such as where bearers and joists support flooring, insufficient ventilation creates ideal conditions for condensation, particularly where there is little clearance between the floor and the ground. Condensation adds to the moisture already present in the subfloor and significantly slows the process of drying out. Installation of an adequate subfloor ventilation system, either natural or mechanical, is desirable.

Warning: Although this Building Technology File deals with cracking in buildings, it should be said that subfloor moisture can result in the development of other problems, notably:

- Water that is transmitted into masonry, metal or timber building elements causes damage and/or decay to those elements.
- High subfloor humidity and moisture content create an ideal environment for various pests, including termites and spiders.
- Where high moisture levels are transmitted to the flooring and walls, an increase in the dust mite count can ensue within the living areas. Dust mites, as well as dampness in general, can be a health hazard to inhabitants, particularly those who are abnormally susceptible to respiratory ailments.

The garden

The ideal vegetation layout is to have lawn or plants that require only light watering immediately adjacent to the drainage or paving edge, then more demanding plants, shrubs and trees spread out in that order.

Overwatering due to misuse of automatic watering systems is a common cause of saturation and water migration under footings. If it is necessary to use these systems, it is important to remove garden beds to a completely safe distance from buildings.

Existing trees

Where a tree is causing a problem of soil drying or there is the existence or threat of upheaval of footings, if the offending roots are subsidiary and their removal will not significantly damage the tree, they should be severed and a concrete or metal barrier placed vertically in the soil to prevent future root growth in the direction of the building. If it is not possible to remove the relevant roots without damage to the tree, an application to remove the tree should be made to the local authority. A prudent plan is to transplant likely offenders before they become a problem.

Information on trees, plants and shrubs

State departments overseeing agriculture can give information regarding root patterns, volume of water needed and safe distance from buildings of most species. Botanic gardens are also sources of information. For information on plant roots and drains, see Building Technology File 17.

Excavation

Excavation around footings must be properly engineered. Soil supporting footings can only be safely excavated at an angle that allows the soil under the footing to remain stable. This angle is called the angle of repose (or friction) and varies significantly between soil types and conditions. Removal of soil within the angle of repose will cause subsidence.

Remediation

Where erosion has occurred that has washed away soil adjacent to footings, soil of the same classification should be introduced and compacted to the same density. Where footings have been undermined, augmentation or other specialist work may be required. Remediation of footings and foundations is generally the realm of a specialist consultant.

Where isolated footings rise and fall because of swell/shrink effect, the homeowner may be tempted to alleviate floor bounce by filling the gap that has appeared between the bearer and the pier with blocking. The danger here is that when the next swell segment of the cycle occurs, the extra blocking will push the floor up into an accentuated dome and may also cause local shear failure in the soil. If it is necessary to use blocking, it should be by a pair of fine wedges and monitoring should be carried out fortnightly.

This BTF was prepared by John Lewer FAIB, MIAMA, Partner, Construction Diagnosis.

Distributed by

CSIRO PUBLISHING PO Box 1139, Collingwood 3066, Australia

Tel (03) 9662 7666 Fax (03) 9662 7555 www.publish.csiro.au

Email: publishing.sales@csiro.au

WILTON JOUBERT
Consulting Engineers

Construction Monitoring Services

Northland, Auckland-Waikato, Canterbury, Southern Lakes

Need a PS4?

- Please read the conditions of your Building Consent to determine which section of the works Council wants an engineer to sign off on.
- Book an inspection with Wilton Joubert Ltd or with a suitable qualified engineer.
- Have the Consent documents on site at the time of the inspection
- Be sure to verify both the grounding conditions (soil parameters) as well as the structural elements of works in question
- If in doubt what to get inspected please clarify with Council.

Producer Statements 4 - Construction Review Documents (PS4's) relates to Building Consents (BC) only, not Resource Consents (RC), unless there is an element of the RC which requires a BC, e.g. a retaining wall needed to develop a subdivision.
In soils, RC's are usually verified with a "Statement of Professional Opinion as to Suitability for Building Development", or variations on that title.

CONSTRUCTION MONITORING SERVICES

Construction monitoring refers to the physical inspection of selective components of the design or works as required by Council and as specified in the Consented documents. It is up to the Consent holder to read the special conditions set out by Council and arrange for the required inspections to be done. No PS4 can be issued without the physical inspection of works and sighting of Consented plans either by the design engineer, his representative, or another qualified engineer. (download PDF with more info via our website)

It is also important to note that, more often than not, there are two physical components that needs verification:

1. Geotechnical or grounding Conditions –referring to the strength or bearing capacity of the soil
2. Structural Components – verify that works are done as per design and in accordance with the consented plans.

To complicate matters there can be multiple engineers that might be engaged on the same site:

- Civil Engineer – To do storm water and wastewater designs
- Geotechnical Engineer – to do a Geotech report and specificity soil parameters as required
- Structural Engineer – to design structural components such as retaining walls, raft floors, beams and so on.

In cases where engineers from different companies are appointed it is important to make sure all the required boxes are ticked as not to complicate matters when it comes to the issuing of all the relevant PS4's.
Note: sites in the Auckland area might requires multiple PS4's for the same component (e.g. a raft floor requires a Geotechnical Engineer to verify the bearing capacity of the platform and a Structural engineer needs to verify the structural components are according to the design.
Not to mention a Council inspection is also required on the same floor to verify position, plumbing and so on.

In Summary:

- Read the conditions as laid out in the Consent documents to which elements of the design requires a PS4's from the design engineer.
- Have Consented plans on site during inspection time
- Book inspections ahead of time (a minimum of 48 hours in advanced)
- Ensure both grounding conditions as well as structural components are inspected. In some cases, this might mean two separate inspections if different engineers are involved.
- If you have any further questions, feel free to contact us at any time during business hours.

Construction Monitoring Enquiries
Email: *jobs@wjl.co.nz*
or scan QR code to visit our website