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 Form 9). Prior to, and during, completion of this application form, please refer to Resource Consent Guidance Notes and Schedule of Fees and Charges — both available on the Council's web page.

1. Pre-Lodgement Meeting

Have you met with a council Resource Covnsent 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: Adeline Knight

Email:

Phone number: Work | Home

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

PO Box 388 Kaitaia
0410
Postcode 410

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

If yes, please provide details.

6. Address for correspondence

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

Name/s: Nina Pivac C/- Logiplan Limited

Email:

Phone number: Work | Home

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

50-64 Commerce Street Kaitaia
Postcode 410

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: Adeline Knight and Karren OCarroll

Property address/
location:

44 Morey Road Cable Bay
Postcode

8. Application site details

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

Name/s: Adeline Knight

Site address/ location: 44 Morey Road Cable Bay

Postcode

Legal description: Lot 1 Deposited Plan 138219 **Val Number:**

Certificate of title: NA81D/654

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 contact applicant to arrange site visit

9. Description of the proposal

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

Staged subdivision in Rural Living Zone to create 3 additional allotments.

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**
- ◯ **Disturbing, removing or sampling soil**
- ◯ **Changing the use of a piece of land**
- ◯ **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**

14. Draft conditions:

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

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

15. 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)	As per applicant details
Email:	
Phone number:	Work / Home
Postal address: (or alternative method of service under section 352 of the act)	Postcode

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.

15. *Billing details* continued...

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) Adeline Knight

Signature: Date 1/12/25

(signature of bill payer) MANDATORY

16. 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.

17. Declaration

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

Name (please write in full) Adeline Knight

Signature Date 1/12/25

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

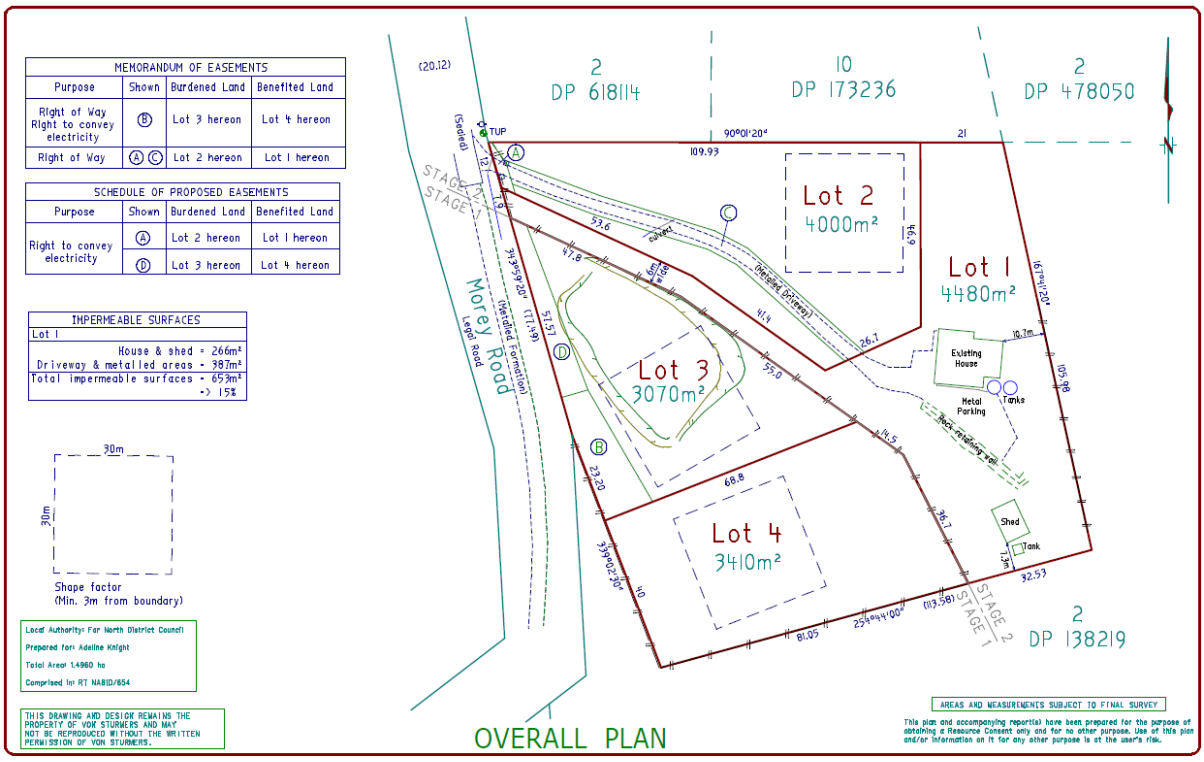
See overleaf for a checklist of your information...

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.



SUBDIVISION RESOURCE CONSENT APPLICATION

44 MOREY ROAD, CABLE BAY

LOT 1 DP 134288

ASSESSMENT OF ENVIRONMENTAL EFFECTS

PREPARED FOR:

ADELINE KNIGHT

2 December 2025

REV A

logiplan

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Appendices:

1.0 THE APPLICANT AND PROPERTY DETAILS

To:	Far North District Council
Site address:	44 Morey Road, Cable Bay
Applicant's name:	Adeline Knight
Address for service:	Logiplan Limited Attn: Nina Pivac 50-64 Commerce Street Kaitaia 0410
Legal description:	Lot 1 DP 138219
Site area:	1.496ha
Site owner:	Adeline Knight Karren Ann OCarroll
Operative District Plan zoning:	Rural Living Zone
Operative District Plan overlays/resource areas:	Nil
Proposed District Plan zoning:	Rural Residential Zone
Proposed District Plan overlays/resource areas:	Nil
Brief description of proposal:	Subdivision in the Rural Living Zone to create three additional allotments. The subdivision will be undertaken in two stages as follows: **Stage One:** Lot 3 – 3070m^2 Lot 4 – 3410m^2 **Stage Two:** Lot 1 (contains existing dwelling) – 4480m^2 Lot 2 – 4000m^2
Summary of reasons for consent:	Overall, the proposal is a Discretionary Activity

We attach an assessment of environmental effects that corresponds with the scale and significance of the effects that the proposed activity may have on the environment.

AUTHOR

Nina Pivac
Director l BAppSC l PGDipPlan l Assoc. NZPI
Date: 2 December 2025

2.0 PROPOSAL

The applicant, Adeline Knight, proposes to undertake a staged subdivision in the Rural Living Zone. The proposed subdivision will result in the following lot areas:

Stage One:

- Lot 3 – 3070m2
- Lot 4 – 3410m2

Stage Two:

- Lot 1 (contains existing dwelling) – 4480m2
- Lot 2 – 4000m2

As per the scheme plan attached as **Appendix A**, all necessary easements will be created.

Overall, the proposal is a Discretionary Activity under the Operative District Plan.

A Site Suitability Report has been prepared in support of this application, see **Appendix C.**

The following Assessment of Environmental Effects (AEE) has been prepared in accordance with the requirements of Section 88 of and Schedule 4 of the Resource Management Act 1991 (the Act) and is intended to provide the information necessary for a full understanding of the activity for which consent is sought and any actual or potential effects the proposal may have on the environment.

3.0 SITE CONTEXT

The subject site is situated at 44 Morey Road, Cable Bay, and is legally described as Lot 1 DP 138219 (NA81D/654). The site has a current land area of 1.496ha. A copy of the relevant Certificate of Title (CT) is attached as **Appendix B**. There are no relevant interests or encumbrances registered on the title.

Figure 1: Map showing subject site and surrounds (Premise)

The subject site is zoned Rural Living under the ODP, and Rural Residential under the PDP.

The site contains an exisitng dwelling and associated services, which will be located within proposed Lot 1.

Access to the site is currently gained via an existing vehicle crossing off Morey Road which has been formed to an adequate standard. The existing vehicle crossing will be used to access proposed Lots 1 and 2, while new vehicle crossings will be formed for proposed Lots 3 and 4.

All necessary easements will be created.

The subject site is located approximately 3km to the east of the Taipa township, and the immediate surrounding environment is largely characterised by residential and rural-lifestyle development. Adjacent properties to the west and south are similarly zoned Rural Living, while properties to the north are zoned Residential.

Council reticulated services are not available to the site.

NZAA has not mapped any archaeological sites in the area.

The site does not contain any areas of significant indigenous vegetation or fauna.

4.0 DISTRICT PLAN RULES ASSESSMENT

PROPOSED DISTRICT PLAN

SUBDIVISION:

Rural Living Zone	Relevant Standards	Compliance
Rule 13.7.2.1(v) Subdivision in the Residential Zone (minimum lot sizes)	Controlled: 4000m2 Discretionary: 3000m^2	With a minimum lot size of 3070m^2, the proposed subdivision is able to meet the discretionary activity standards. **Discretionary Activity**

Overall, the proposal requires resource consent as a **Discretionary Activity** under the operative Far North District Plan.

PROPOSED DISTRICT PLAN

The Proposed Far North District Plan (PDP) was notified on Wednesday 27 July 2022. Rules in a Proposed Plan have legal effect once the council makes a decision on submissions relating to that rule and publicly notified this decision, unless the rule has immediate legal effect in accordance with section 86(3) of the Resource Management Act 1991 (the Act).

As of Monday 4 September 2023, the further submission period on the PDP has closed. However, Council are yet to make a decision on submissions made and publicly notify this decision. Therefore, only rules in the PDP with immediate legal effect are relevant. These rules are identified with a 'hammer' in the plan. Rules that do not have immediate legal effect do not trigger the need for a resource consent under the PDP.

An assessment of the proposal against the rules with immediate legal effect has been undertaken. In this case there are none that are relevant to the proposal. Therefore, no consideration needs to be given to any of the rules under the PDP.

5.0 NATIONAL ENVIRONMENTAL STANDARDS FOR CONTAMINATED SOILS (NES CONTAMINATED SOILS)

All applications that involve subdivision, or an activity that changes the use of a piece of land, or earthworks are subject to the provisions of the NES Contaminated Soils. The regulation sets out the requirements for considering the potential for soil contamination, based on the HAIL (Hazardous Activities and Industries List) and the risk that this may pose to human health as a result of the proposed land use.

Based on a search of Council records, historic aerial images and archives, and the documentation provided in support of this application, there is no evidence to suggest that a HAIL activity is, has been, or is more than likely to not have been undertaken on any part of the site. Therefore, the NES Contaminated Soils is not applicable in this instance.

6.0 NATIONAL ENVIRONMENTAL STANDARDS FOR FRESHWATER (NES FRESHWATER)

A review of aerial images, including NRC's wetland maps, reveal no evidence to suggest that there are any wet areas that may be subject to the NES Freshwater provisions. Therefore, no further assessment is required under the NES Freshwater.

7.0 NATIONAL POLICY STATEMENT FOR HIGHLY PRODUCTIVE LAND (NPSHPL)

The subject site contains LUC 4 soils which are not deemed as 'highly productive' under the NPSHPL. Therefore, no further consideration needs to be given under the NPSHPL.

8.0 NATIONAL POLICY STATEMENT FOR INDIGENOUS BIODIVERSITY (NPS-IB)

The objective of the NPS-IB is to 'maintain indigenous biodiversity across Aotearoa New Zealand so that there is at least no overall loss in indigenous biodiversity after the commencement date'. The NPS-IB aims to achieve this in a number of ways including by protecting and restoring indigenous biodiversity as necessary to achieve the overall maintenance of indigenous biodiversity. The site does not contain any significant areas of indigenous vegetation or habitats for indigenous fauna.

9.0 PUBLIC NOTIFICATION ASSESSMENT (SECTIONS 95A, 95C TO 95D)

Step 1: Mandatory public notification is required in certain circumstances

Under Section 95A(3) an application must be publicly notified if:

a) the applicant has requested that the application be publicly notified;
b) public notification is required under Section 95C.

The applicant is not requesting public notification under clause (a). Clause (b) provisions relate to where an applicant does not provide further information formally requested under Section 92, which is not applicable in this case.

Public notification is not required and therefore Step 2 must be considered.

Step 2: If not required by Step 1, public notification precluded in certain circumstances

Under Section 95A (4) an application must not be publicly notified if:

a) the application is for a resource consent for 1 or more activities, and each activity is subject *to a rule or national environmental standard that precludes public notification;*
b) the application is for a resource consent for 1 or more of the following, but no other, activities:
   i. a controlled activity;
   ii. a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity:

None of the above apply, therefore public notification is not precluded.

Step 3 must be considered.

Step 3: Public notification required in certain circumstances

Public notification is precluded if:

a) the application is for a resource consent for 1 or more activities, and any of those activities is subject to a rule or national environmental standard that requires public notification;

b) the consent authority decides, in accordance with section 95D, that the activity will have or is likely to have adverse effects on the environment that are more than minor.

The proposal requires consideration under s95D of the Act. An assessment of environmental effects is provided in Section 8.0 below which concludes that any adverse effect will be less than minor.

Step 4: Public notification in special circumstances

Section 95A(9) sets out that the council is required to determine whether special circumstances exist that warrant it being publicly notified.

Special circumstances are those that are:

- exceptional or unusual, but something less than extraordinary; or
- outside of the common run of applications of this nature; or
- circumstances which make notification desirable, notwithstanding the conclusion that the adverse effects will be no more than minor.

If the answer is yes, then those persons are required to be notified.

In this case, the proposal is for a subdivision activity to accommodate future rural-lifestyle development on a Rural Production zoned site. As such, it is considered that this level of development is anticipated by the Far North District Plan and that there is nothing out of the ordinary that could give rise to special circumstances.

Public Notification Conclusion

Having undertaken the s95A public notification tests, the following conclusions are reached:

- Under step 1, public notification is not mandatory;
- Under step 2, public notification is not precluded;
- Under step 3, public notification is not required as effect will be less than minor; and
- Under step 4, there are no special circumstances.

Therefore, this application can be processed without public notification.

10.0 LIMITED NOTIFICATION ASSESSMENT (SECTIONS 95B, 95E TO 95G)

Step 1: Certain affected protected customary rights groups must be notified

Step 1 requires limited notification where there are any affected protected customary rights groups or customary marine title groups, or affected persons under a statutory acknowledgement affecting the land.

The above does not apply to this land.

Step 2: If not required by step 1, limited notification precluded in certain circumstances

Step 2 describes that limited notification is precluded where all applicable rules and NES preclude limited notification; or the application is for a controlled activity (other than the subdivision of land) or a prescribed activity under section 360H(1)(a)(ii).

The above does not apply to the proposal, and therefore limited notification is not precluded.

Step 3: If not precluded by step 2, certain other affected persons must be notified

Step 3 requires that where limited notification is not precluded under step 2 above, a determination must be made as to whether any of the following persons are affected persons:

- In the case of a boundary activity, an owner of an allotment with an infringed boundary;
- In the case of a prescribed activity under s360H(1(b), a prescribed person; and
- In the case of any other activity, a person affected in accordance with s95E.

The application is not for a boundary or prescribed activity as defined in the Act or a prescribed activity under s360H(1)(b), and therefore an assessment in accordance with S95E is required, of which is set out below.

Overall, it is considered that any adverse effects in relation to adjacent properties will be less than minor, and accordingly that no persons are adversely affected.

Step 4: Further notification in special circumstances

In addition to the findings of the previous steps, the council is also required to determine whether special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined as eligible for limited notification.

In this instance, having regard to the assessment above, special circumstances are not considered to apply to this proposal.

SECTION 95E STATUTORY MATTERS

If the application is not publicly notified, a council must decide if there are any affected persons and give limited notification to those persons. A person is affected if the effects of the activity on that person are minor or more than minor (but not less than minor).

The sections below set out an assessment in accordance with section 95E, and an assessment of potential adverse effects.

ASSESSMENT OF ENVIRONMENTAL EFFECTS

The matters to which Council shall restrict its discretion, as outlined in Sections 13.7.3 and 13.10 of the Far North District Plan, are addressed below:

ALLOTMENT SIZES AND DIMENSIONS

Proposed lot sizes range from 3070m2 to 4480m2. Proposed Lot 1 contains an existing building and associated services which will continue to meet setback requirements. Proposed Lots 2, 3 and 4 are able to accommodate a Both lots are anticipated for future residential use, and have the ability to accommocate 30 x 30m building envelope exclusive of setback requirements.

As concluded in the Site Suitability Report, each lot is able to accommodate adequate services whilst providing for operational and maintenance requirements.

The immediate surrouning environment is largely characterised by residential development. The proposal is therefore considered to be entirely compatible with existing development patterns in the area.

NATURAL AND OTHER HAZARDS

The site is not mapped as susceptible to any natural hazards.

INDIGENOUS FLORA AND FAUNA

The site does not contain any significant areas of indigenous vegetation or significant habitats of indigenous fauna. No vegetation clearance is required.

WATER SUPPLY

Water supply will be achieved by way of roofwater collection. The site suitability report concludes that the proposed allotments are able to accommodate adequate water supply.

STORMWATER DISPOSAL

As concluded in the site suitability report, existing stormwater disposal arrangements within Lot 1 are operating adequately. Proposed Lots 2 – 4 have the ability to accommodate adequate stormwater management.

SANITARY SEWAGE DISPOSAL

As concluded in the site suitability report, existing wastewater disposal arrangements within Lot 1 are operating adequately. Proposed Lots 2 – 4 have the ability to accommodate adequate wastewater disposal.

ENERGY SUPPLY

New electricity connections are available to the site and all necessary easements will be created.

TELECOMMUNICATIONS

Wireless telecommunication connnections are available to the site.

EASEMENTS FOR ANY PURPOSE

As per the scheme plan, all necessary easements will be created.

PROPERTY ACCESS

Access to the site is currently gained via an existing vehicle crossing off Morey Road which has been formed to an adequate standard. The existing vehicle crossing will be used to access proposed Lots 1 and 2 while new vehicle crossings will be formed for proposed Lots 3 and 4.

All necessary easements will be created.

EFFECTS OF EARTHWORKS AND UTILITIES

It is anticipated that minimal earthworks will be required as a result of new access construction.

PRESERVATION OF HERITAGE RESOURCES, VEGETATION, FAUNA AND LANDSCAPE, AND LAND SET ASIDE FOR CONSERVATION PURPOSES

The site has not been mapped as containing any such features.

ACCESS TO RESERVES AND WATERWAYS

No waterways will be affected by the proposal.

LAND USE COMPATIBILITY

The subject site is currently in residential use which will remain unchanged as a result of the proposal. The immediate surrounding environment is largely characterised by residential development with smaller allotments located to the north. On this basis, it is considered that the proposed development is entirely compatible with the immediate surrounding environment.

PROXIMITY TO AIRPORTS

The subject site is located at least 30km from the nearest airport. As such, this matter is not relevant to the proposal.

CONCLUSION

Taking the above into account, it is considered that there will be no adverse effects on the wider and localised environment. As such, no parties are considered to be adversely affected.

LIMITED NOTIFICATION CONCLUSION

Having undertaken the s95B limited notification tests, the following conclusions are reached:

- Under step 1, limited notification is not mandatory;
- Under step 2, limited notification is not precluded;
- Under step 3, limited notification is not required as it is considered that the activity will not result in any adversely affected persons; and
- Under step 4, there are no special circumstances.

Therefore, it is recommended that this application be processed without limited notification.

11.0 CONSIDERATION OF APPLICATIONS (SECTION 104)

Subject to Part 2 of the Act, when considering an application for resource consent and any submissions received, a council must, in accordance with section 104(1) of the Act have regard to:

- any actual and potential effects on the environment of allowing the activity;
- any relevant provisions of a national environmental standard, other regulations, national policy statement, a New Zealand coastal policy statement, a regional policy statement or proposed regional policy statement; a plan or proposed plan; and
- any other matter a council considers relevant and reasonably necessary to determine the application.

12.0 EFFECTS ON THE ENVIRONMENT (SECTION 104(1)(A))

An assessment of effects on adjacent properties has been provided and it was concluded that any adverse effects will be less than minor.

Further, it is considered that the proposal will result in positive effects including the following:

- Addressing the current housing crisis that the exponential growth that the Far North population is experiencing;
- Contributing to the local economy through the engagement of local contractors;
- Contributing to the social and economic well-being of the applicants.

Overall, it is considered that when taking into account the positive effects, any actual and potential adverse effects on the environment of allowing the activity are appropriate.

13.0 DISTRICT PLAN AND STATUTORY DOCUMENTS (SECTION 104(1)(B))

The following planning documents prepared under the RMA are considered relevant to this application.

Regional Policy Statement for Northland

The Northland Regional Policy Statement (RPS) covers the management of natural and physical resources across the Northland region. The provisions within the RPS give guidance at a higher planning level in terms of significant regional issues, therefore providing guidance to consent applications and the development of District Plans on a regional level. Given the nature and scale of the proposal, which will result in one additional residential allotment, it is considered that this level of development is compatible with the intent of the RPS.

Operative Far North District Plan – Objectives and Policies

Relevant ODP objectives and policies are those contained within the subdivision, transportation, Rural Living Zone chapters. All relevant objectives and policies have been assessed as follows:

RURAL LIVING ZONE OBJECTIVES	
Objective	**Comment**
8.7.3.1 To achieve a style of development on the urban periphery where the effects of the different types of development are compatible.	The surrounding environment is primarily characterised by residential and rural-lifestyle developmen. Properties to the west and south are similarly zoned Rural Living while properties to the north are zoned Residential. The proposed development is therefore considered to be consistent with the current level of development in the area.
8.7.3.2 To provide for low density residential development on the urban periphery, where more intense development would result in adverse effects on the rural and natural environment.	The surrounding environment is primarily characterised by residential and rural-lifestyle developmen. Properties to the west and south are similarly zoned Rural Living while properties to the north are zoned Residential. The proposed development is therefore considered to be consistent with the current level of development in the area.
8.7.3.3 To protect the special amenity values of the frontage to Kerikeri Road between SH10 and the urban edge of Kerikeri.	Not applicable
RURAL LIVING ZONE POLICIES	
Policy	**Comment**
8.7.4.1 That a transition between residential and rural zones is achieved where the effects of activities in the different areas are managed to ensure compatibility.	As discussed in the AEE, the proposed development is considered to be compatible with the immediate surrounding environment.
8.7.4.2 That the Rural Living Zone be applied to areas where existing subdivision patterns have led to a semi-urban character but where more	With a minimum lot size of 3070m2, it is considered that the proposed development provides an effective buffer between residential and rural production activities.

intensive subdivision would result in adverse effects on the rural and natural environment.	
8.7.4.3 That residential activities have sufficient land associated with each household unit to provide for outdoor space, and where a reticulated sewerage system is not provided, sufficient land for on site effluent disposal.	With a minimum lot size of 3070m2, each lot will have ample space for a 30x30m building envelope exclusive of the 3m setback requirement.
8.7.4.4 That no limits be placed on the types of housing and forms of accommodation in the Rural Living Zone, in recognition of the diverse needs of the community.	The proposed subdivision is anticipated for future residential development in the form of standalone dwellings which is consistent with surrounding development patterns.
8.7.4.5 That non-residential activities can be established within the Rural Living Zone subject to compatibility with the existing character of the environment.	Not applicable
8.7.4.6 That home-based employment opportunities be allowed in the Rural Living Zone.	Not applicable
8.7.4.7 That provision be made for ensuring that sites, and the buildings and activities which may locate on those sites, have adequate access to sunlight and daylight.	Proposed Lot 1 will continue to comply with sunlight and setback requirements. With a minimum lot size of 3070m2, Lots 2 – 4 have the ability to accommodate a 30x30m which is able to comply with setback and sunlight requirements.
8.7.4.8 That the scale and intensity of activities other than a single residential unit be commensurate with that which could be expected of a single residential unit.	The proposal anticipates that a single dwelling will be constructed on proposed Lots 2 to 4.
8.7.4.9 That activities with effects on amenity values greater than a single residential unit could be expected to have, be controlled so as to avoid, remedy or mitigate those adverse effects on adjacent activities.	Not applicable
8.7.4.10 That provision be made to ensure a reasonable level of privacy for inhabitants of buildings on adjoining sites.	With a minimum lot size of 3070m2, each lot will have ample space for a 30x30m building envelope exclusive of the 3m setback requirement which will help to maintain the outlook and privacy of neighbouring sites.
8.7.4.11 That the built form of development allowed on sites with frontage to Kerikeri Road between its intersection with SH10 and Cannon Drive be maintained as small in scale, set back from the road, relatively inconspicuous and in harmony with landscape plantings and shelter belts.	Not applicable
8.7.4.12 That the Council maintains discretion over new connections to a sewerage system to	Not applicable

ensure treatment plant discharge quality standards are not compromised (refer to Rule 13.7.3.5).	

PROPOSED FAR NORTH DISTRICT PLAN – OBJECTIVES AND POLICIES

As of Monday 4 September 2023, the further submission period on the PDP has closed. However, Council are yet to make a decision on submissions made and publicly notify this decision. Therefore, the application shall only 'have regard to' the relevant objectives and policies in the PDP.

Relevant objectives and policies in the PDP are contained within the Subdivision and Rural Residential Zone Chapters. Based on the AEE, it is considered that the proposal is largely consistent with the anticipated outcome of the relevant objectives and policies, particularly the following:

- SUB-01
- SUB-P1
- SUB-P3
- SUB-P8
- SUB-P11
- RRZ-01 to RRZ-04
- RRZ-P1 to RRZ-P5

14.0 PART 2 MATTERS

Section 5 of Part 2 identifies the purpose of the RMA as being the sustainable management of natural and physical resources. This means managing the use, development and protection of natural and physical resources in a way that enables people and communities to provide for their social, cultural and economic well-being and health and safety while sustaining those resources for future generations, protecting the life supporting capacity of ecosystems, and avoiding, remedying or mitigating adverse effects on the environment.

Section 6 of the Act sets out a number of matters of national importance including (but not limited to) the protection of outstanding natural features and landscapes and historic heritage from inappropriate subdivision, use and development.

Section 7 identifies a number of "other matters" to be given particular regard by Council and includes (but is not limited to) Kaitiakitanga, the efficient use of natural and physical resources, the maintenance and enhancement of amenity values, and maintenance and enhancement of the quality of the environment.

Section 8 requires Council to take into account the principles of the Treaty of Waitangi. Pre-consultation has been undertaken with the relevant iwi authority as per Appendix D.

Overall, as the effects of the proposal are considered to be less than minor, and the proposal accords with the relevant objectives and policies of the RPS, and the Operative District Plan provisions. Accordingly, it is considered that the proposal will not offend the general resource management principles set out in Part 2 of the Act.

15.0 OTHER MATTERS (SECTION 104(1)(C)

There are no other matters considered relevant to this proposal.

16.0 OVERALL CONCLUSION

This application seeks resource consent to undertake a staged subdivision in the Rural Living Zone, to create three additional allotments.

Based on the assessment of effects above, it is concluded that any potential adverse effects on the existing environment would be no more than minor and can be managed in terms of appropriate conditions of consent.

It is therefore concluded that the proposal satisfies all matters the consent authority is required to assess, and that the application for resource consent can be granted on a non-notified basis.

Prior to the issue of any decision for this consent, it is requested that all draft conditons are forwarded to the agent for review and comment.

AUTHOR

Nina Pivac
Director l BAppSC l PGDipPlan l Assoc. NZPI

Date: 2 December 2025

Appendices:

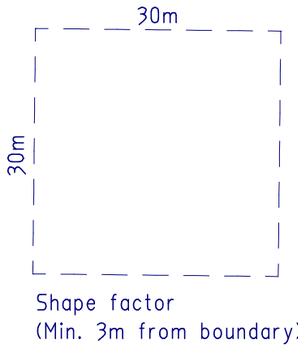
Appendix A – Scheme Plan
Appendix B – Certificate of Title
Appendix C – Site Suitability Report

Appendix A – Scheme Plan

MEMORANDUM OF EASEMENTS			
Purpose	Shown	Burdened Land	Benefited Land
Right of Way Right to convey electricity	(B)	Lot 3 hereon	Lot 4 hereon
Right of Way	(A) (C)	Lot 2 hereon	Lot 1 hereon

SCHEDULE OF PROPOSED EASEMENTS			
Purpose	Shown	Burdened Land	Benefited Land
Right to convey electricity	(A)	Lot 2 hereon	Lot 1 hereon
	(D)	Lot 3 hereon	Lot 4 hereon

IMPERMEABLE SURFACES	
Lot 1	
House & shed	= 266m²
Driveway & metalled areas	= 387m²
Total impermeable surfaces	= 653m²
	=> 15%



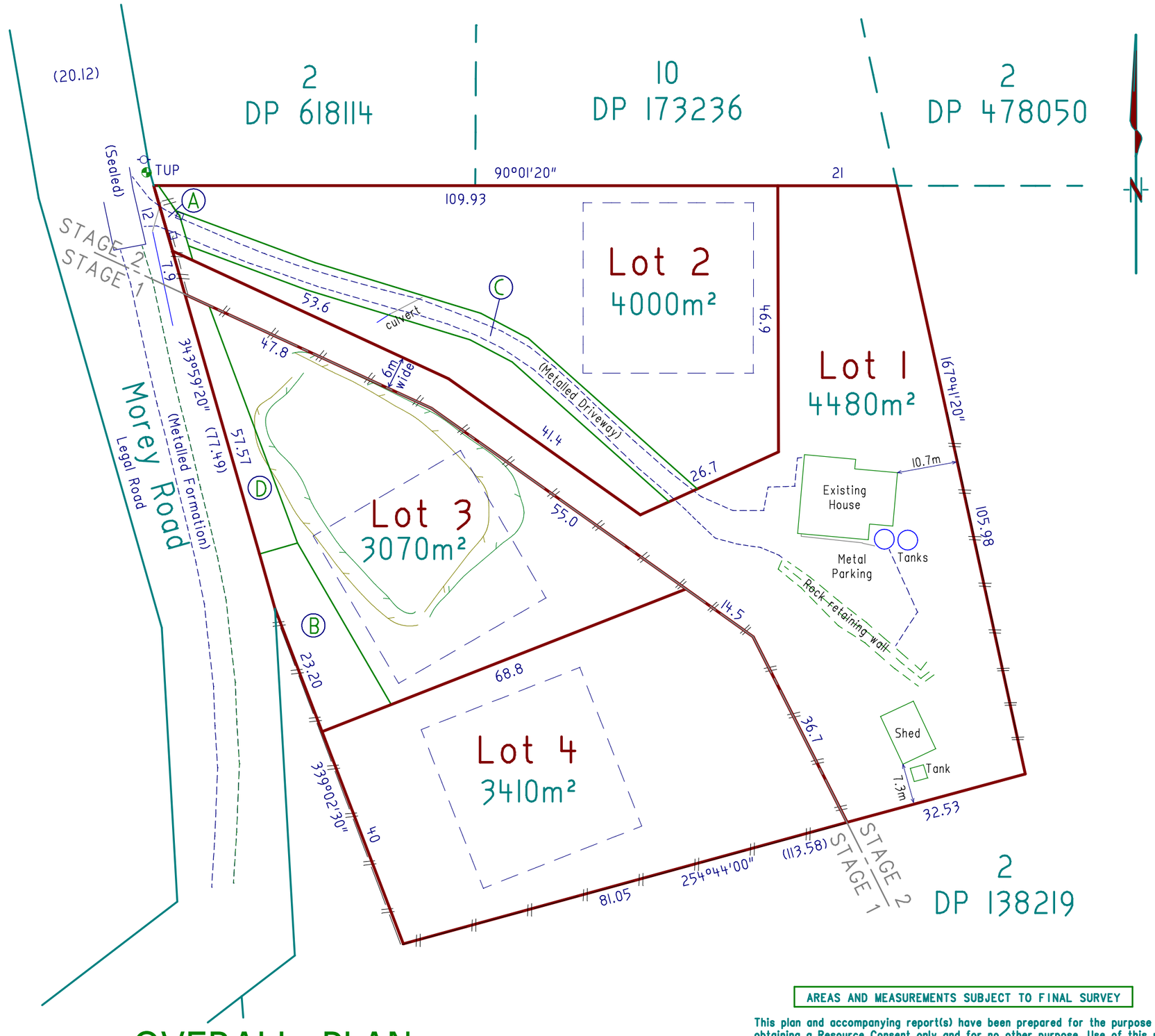
Shape factor
(Min. 3m from boundary)

Local Authority: Far North District Council

Prepared for: Adeline Knight

Total Area: 1.4960 ha

Comprised in: RT NA81D/654



OVERALL PLAN

AREAS AND MEASUREMENTS SUBJECT TO FINAL SURVEY

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

VON STURMERS
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 408 6000
Email: kaitaia@saps.co.nz
131 Commerce St
P.O. Box 128
Kaitaia

PROPOSED SUBDIVISION OF LOT 1 DP 138219

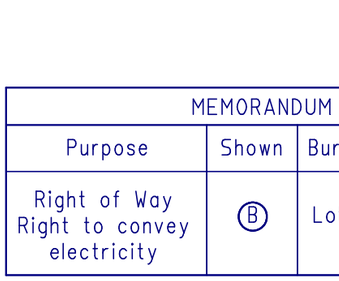
	Name	Date
Survey	MP	Aug 2025
Design		
Drawn	TY	Sept 2025
Rev	SH	Oct 2025
Rev	SH	Nov 2025

ORIGINAL
SCALE 1:750
SHEET SIZE A3

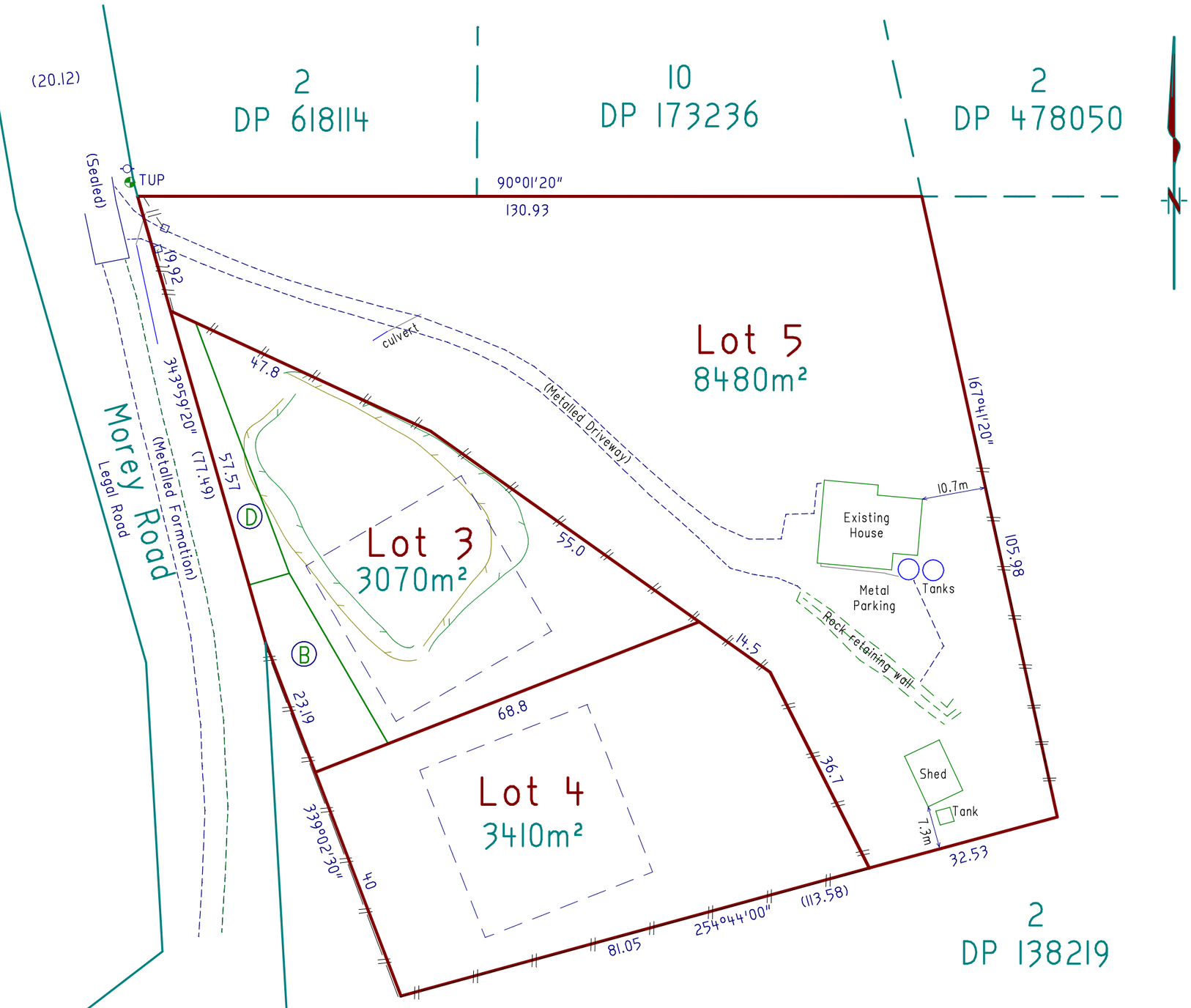
Surveyors Ref. No: 15552
Series
Sheet of

MEMORANDUM OF EASEMENTS			
Purpose	Shown	Burdened Land	Benefited Land
Right of Way Right to convey electricity	(B)	Lot 3 hereon	Lot 4 hereon

SCHEDULE OF PROPOSED EASEMENTS			
Purpose	Shown	Burdened Land	Benefited Land
Right to convey electricity	(D)	Lot 3 hereon	Lot 4 hereon



Shape factor
(Min. 3m from boundary)



Local Authority: Far North District Council

Prepared for: Adeline Knight

Total Area: 1.4960 ha

Comprised in: RT NA81D/654

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Ph: (09) 408 6000
Email: kaitaia@saps.co.nz
131 Commerce St
P.O. Box 128
Kaitaia

PROPOSED SUBDIVISION OF LOT 1 DP 138219

	Name	Date
Survey	MP	Aug 2025
Design		
Drawn	TY	Sept 2025
Rev	SH	Oct 2025
Rev	SH	Nov 2025

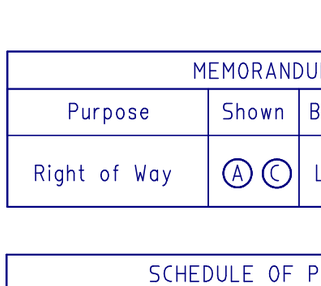
ORIGINAL
SCALE 1:750
SHEET SIZE A3

Surveyors Ref. No: 15552
Series
Sheet of

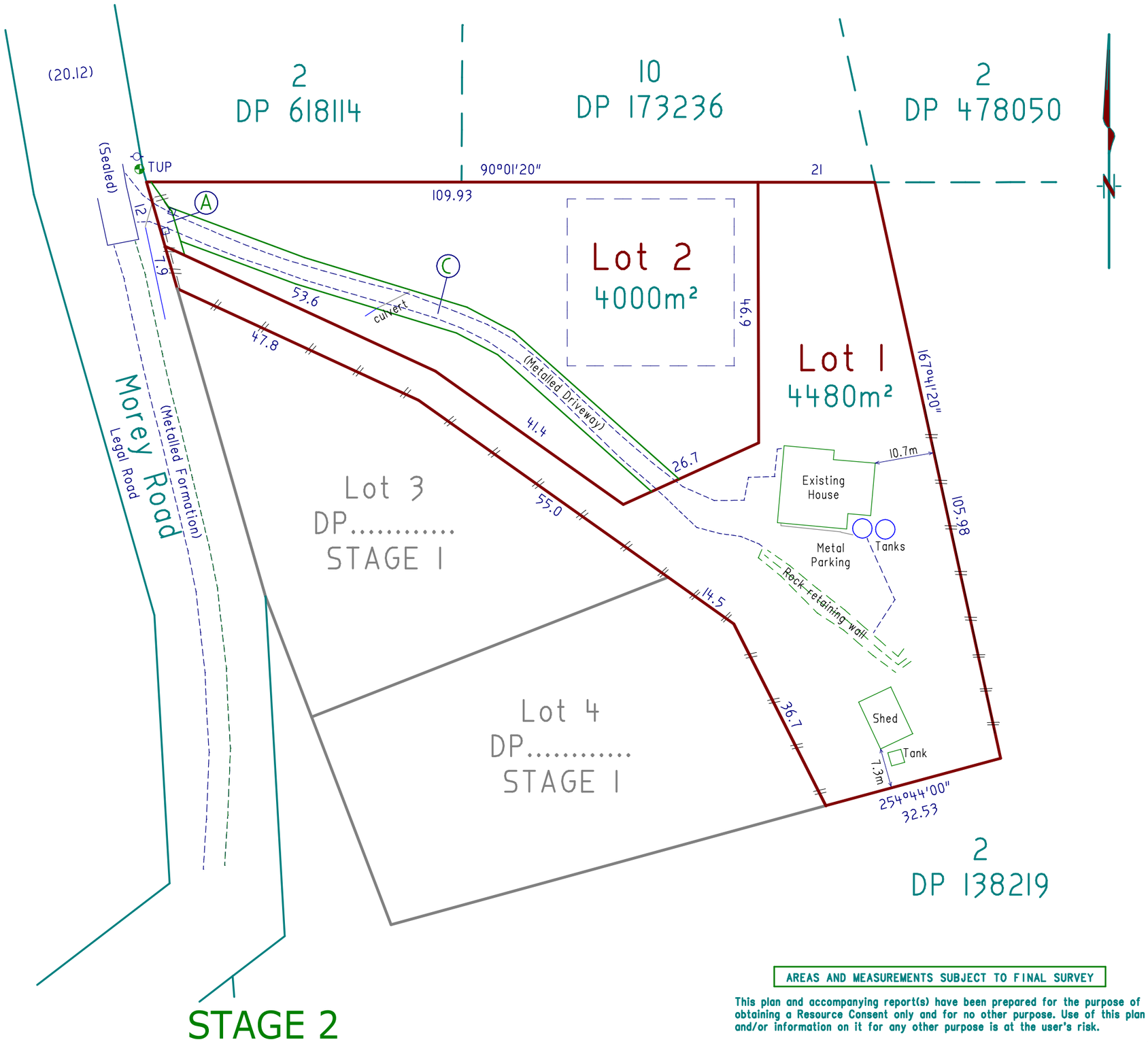
MEMORANDUM OF EASEMENTS			
Purpose	Shown	Burdened Land	Benefited Land
Right of Way	Ⓐ Ⓒ	Lot 2 hereon	Lot 1 hereon

SCHEDULE OF PROPOSED EASEMENTS			
Purpose	Shown	Burdened Land	Benefited Land
Right to convey electricity	Ⓐ	Lot 2 hereon	Lot 1 hereon

IMPERMEABLE SURFACES	
Lot 1	
House & shed	= 266m²
Driveway & metalled areas	= 387m²
Total impermeable surfaces	= 653m²
	=> 15%



Shape factor
(Min. 3m from boundary)



Local Authority: Far North District Council

Prepared for: Adeline Knight

Total Area: 1.4960 ha

Comprised in: RT NA81D/654

AREAS AND MEASUREMENTS SUBJECT TO FINAL SURVEY

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

VON STURMERS
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 408 6000
Email: kaitaia@saps.co.nz
131 Commerce St
P.O. Box 128
Kaitaia

PROPOSED SUBDIVISION OF LOT 5 DP .....(STAGE 1)

	Name	Date	ORIGINAL
Survey	MP	Aug 2025	SCALE 1:750 / SHEET SIZE A3
Design			
Drawn	TY	Sept 2025	
Rev	SH	Oct 2025	
Rev	SH	Nov 2025	

Surveyors Ref. No: 15552
Series
Sheet of

Appendix B – Certificate of Title

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD

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

R.W. Muir
Registrar-General
of Land

Identifier **NA81D/654**

Land Registration District **North Auckland**

Date Issued 01 March 1991

Prior References
NA30A/102

Estate Fee Simple

Area 1.4960 hectares more or less

Legal Description Lot 1 Deposited Plan 138219

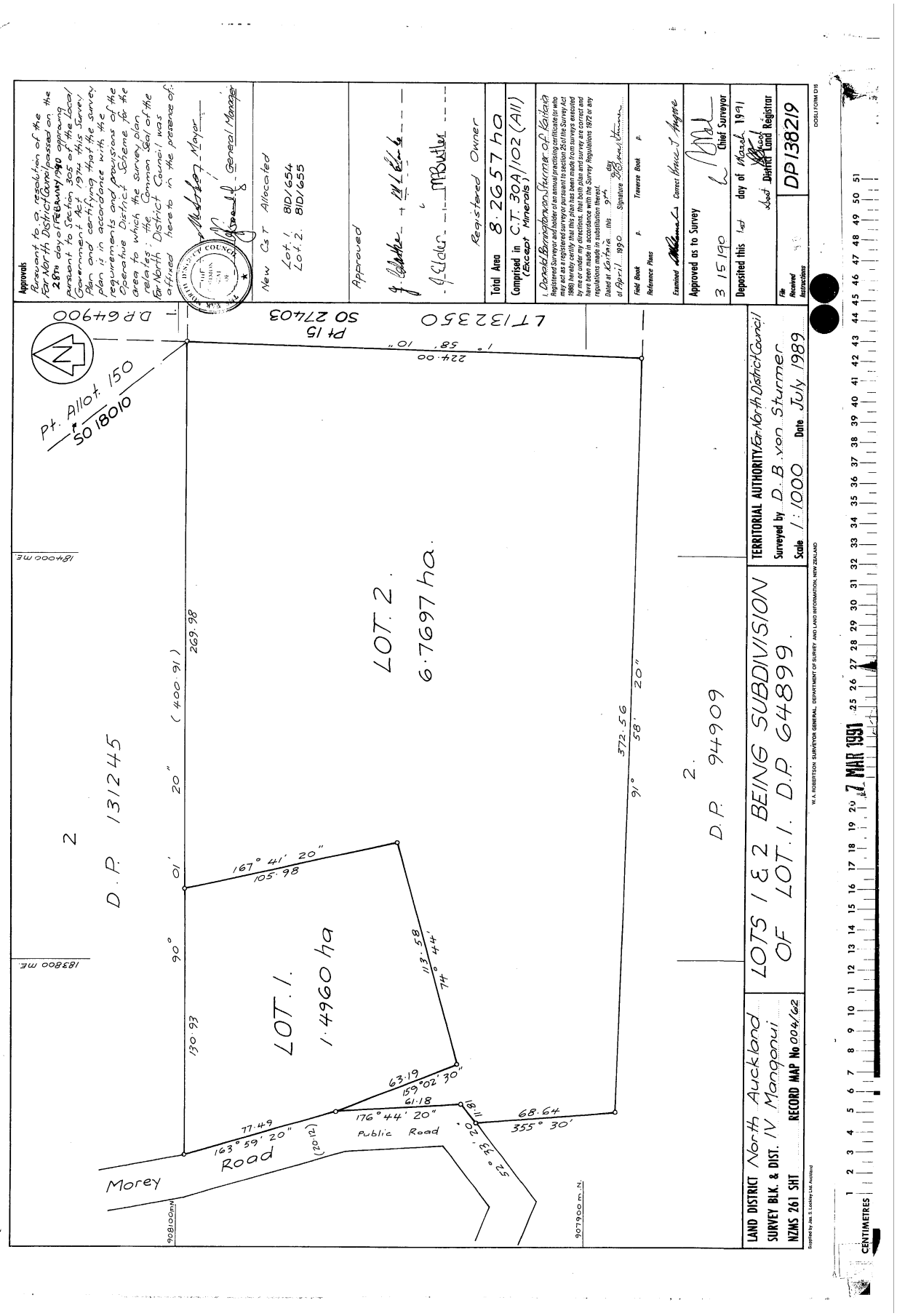
Registered Owners

Adeline Knight and Karren Ann O'Carroll

Interests

Saving and excepting all minerals within the meaning of the Land Act 1924 on or under the land and reserving always to Her Majesty the Queen and all persons lawfully entitled to work the said minerals a right of ingress egress and regress over the said land

13201636.3 Mortgage to ANZ Bank New Zealand Limited - 20.3.2025 at 2:22 pm


Approvals
Pursuant to a resolution of the Far North District Council passed on the 28th day of February 1990 approving pursuant to Section 305 of the Local Government Act 1974 this Survey Plan and certifying that the survey plan is in accordance with the requirements and provisions of the Operative District Scheme for the area to which the survey plan relates; the Common Seal of the Far North District Council was affixed here to in the presence of:
Mayor
General Manager
New Cst Allocated
Lot 1. 81D/654
Lot 2. 81D/655
Approved
Total Area 8.2657 ha
Comprised in C.T. 30A/102 (All) (Except Minerals)
Registered Owner
I, Donald Barrington Sturmer of Kaitaia Registered Surveyor and holder of an annual practising certificate for who may act as a registered surveyor pursuant to section 25 of the Survey Act 1986 hereby certify that this plan has been made from surveys executed by me or under my personal supervision; that the relevant surveys have been made in accordance with the Survey Regulations 1972 or any regulations made in substitution thereof.
Dated at Kaitaia this 9th day of April 1990
Signature
Field Book P. Traverse Book P.
Reference Plans
Examined Correct Knox T. Mayne
Approved as to Survey
3 15 190
Chief Surveyor
Deposited this 1st day of March 1991
District Land Registrar
File Received Instructions
DP 13819
DOSLI FORM D15
TERRITORIAL AUTHORITY Far North District Council
Surveyed by D.B. von Sturmer
Scale 1:1000 Date July 1989
W.A. ROBERTSON SURVEYOR-GENERAL, DEPARTMENT OF SURVEY AND LAND INFORMATION, NEW ZEALAND
LOTS 1 & 2 BEING SUBDIVISION OF LOT 1. D.P 64899.
LAND DISTRICT North Auckland
SURVEY BLK. & DIST. IV Mangonui
NZMS 261 SHT
RECORD MAP No 004/62
Supplied by Jan S. Lockley Ltd. Auckland
7 MAR 1991
CENTIMETRES
Pt. Allot. 150
SO 18010
D.P. 131245
2
LOT. 1. 1.4960 ha
LOT. 2. 6.7697 ha.
2. D.P. 94909
LT 132350
Pt 15 SO 27403
D.P. 64900
224.00
269.98
(400.91)
105.98
190.93
63.19
61.18
77.49
68.64
355° 30'
176° 44' 20"
Public Road
Morey Road
(20.12)
1838000 mE
1840000 mE
9081000 m.N.
9079000 m.N.

Appendix C – Site Suitability Report

Wilton Joubert Limited
09 527 0196
196 Centreway Road,
Orewa, Auckland, 0931

SITE	**44 Morey Road, Cable Bay**
LEGAL DESCRIPTION	**Lot 1 DP 138219**
PROJECT	**4-Lot Subdivision**
CLIENT	**Adeline Knight**
REFERENCE NO.	**142894**
DOCUMENT	**Civil Site Suitability Report**
STATUS/REVISION NO.	**01 – Resource Consent**
DATE OF ISSUE	**13 November 2025**

Report Prepared For	Email
Adeline Knight	knight.adeline@gmail.com

Authored by	**G.M. Brant** *(Be (Hons) Civil)*	Civil Engineer	gustavo@wjl.co.nz	
Reviewed & 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 1 DP 138219
Lot Sizes:	Proposed Lot 1 – 4,480m² (subdivided from Lot 5 in Stage 2) Proposed Lot 2 – 4,000m² (subdivided from Lot 5 in Stage 2) Proposed Lot 3 – 3,070m² (Stage 1) Proposed Lot 4 – 3,410m² (Stage 1) Proposed Lot 5 – 8,480m² (Stage 1)
Development Type:	**Stage 1:** 1-3-Lot Subdivision **Stage 2:** 1-2-Lot Subdivision **Total:** 1-5-Lot Subdivision
Scope:	Civil Site Suitability Investigation: - Wastewater Assessment - Stormwater Assessment - Potable Water - Access
Development Proposals Supplied:	Subdivision Scheme Plan supplied by the Von Sturmers (Ref No: 15552, dated: October 2025)
District Plan Zone:	Rural Living Zone
Wastewater:	Recommendations for wastewater are provided in Section 5.
Stormwater Management – District Plan Rules:	**Permitted Activity:** 8.7.5.1.5 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 12.5% or 3,000m², whichever is the lesser. **Controlled Activity:** 8.7.5.2.2 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other Impermeable Surfaces shall be 20% or 3300m², whichever is the lesser.
Stormwater Management:	To comply with the parameters of the Permitted Activity Rule (8.7.5.1.5), Lots 1, 2, 3, 4 & 5 must not exceed an impermeable area of 560m², 500m², 384m², 426m² & 1,060m² respectively. Future development of Lots 1, 2, 3 & 4 are expected to fall within the Permitted / Controlled / Discretionary Activity range. A stormwater attenuation report including a District Plan Assessment will be required for any future development within the lots that does not comply with Permitted Activity Rule (8.7.5.1.5) at Building Consent stage. Attenuation for the 1% AEP storm event should be provided for runoff resulting from existing / future proposed impermeable areas exceeding the Permitted Activity threshold to mitigate adverse effects of runoff on the downstream receiving environment.
Access:	- Vehicle Crossings to be in compliance with FNDC Engineering Standards (2023) Sheet 21 Type 1A – Light Vehicles. - Access point locations should be in compliance with FNDC sight distance requirements.

2 SCOPE OF WORK

Wilton Joubert Ltd (WJL) was engaged by the client to undertake a civil site suitability assessment (wastewater, stormwater, potable water and access) to support a two-stage subdivision of Lot 1 DP 138219. Where the first stage of the subdivision is a 1-into-3 lot subdivision of Lot 1 DP 138219, and the second stage of the subdivision is a 1-into-2 lot subdivision of proposed Lot 5. The proposed lots will be referred to as Lots 1 – 5 as per Figures 1, 2 & 3 below.

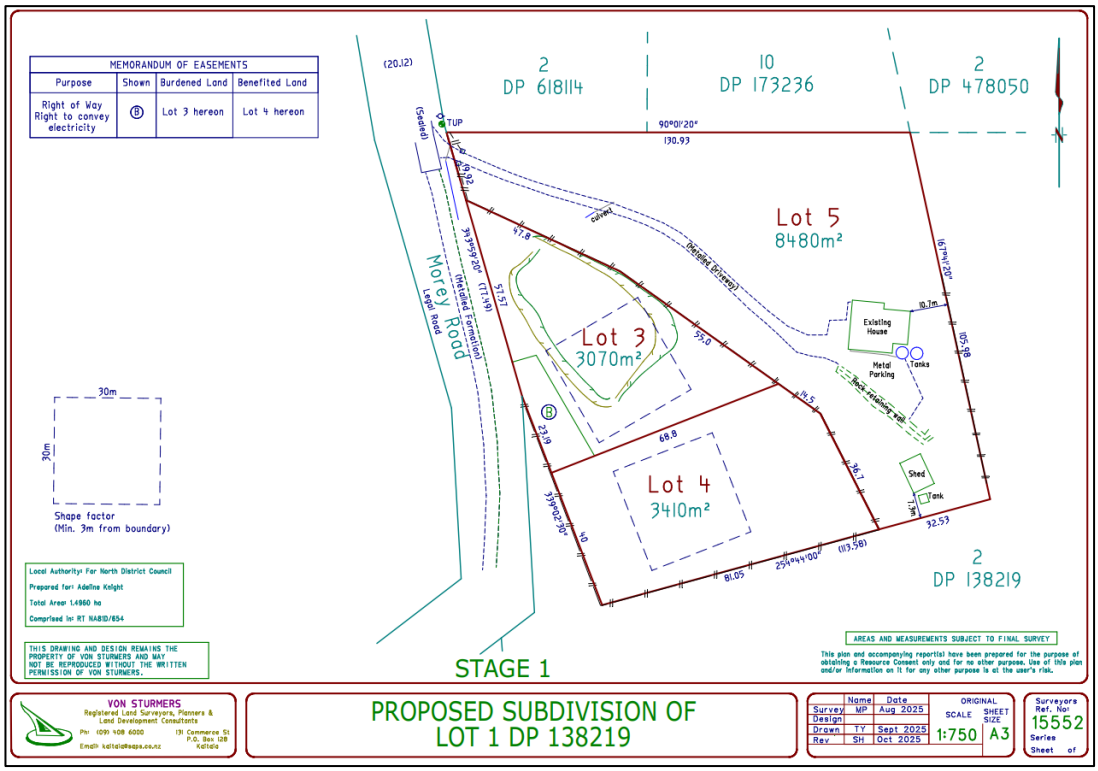


Figure 1: Stage 1 Scheme Plan prepared by Von Sturmers (Ref No: 15552, dated: October 2025)

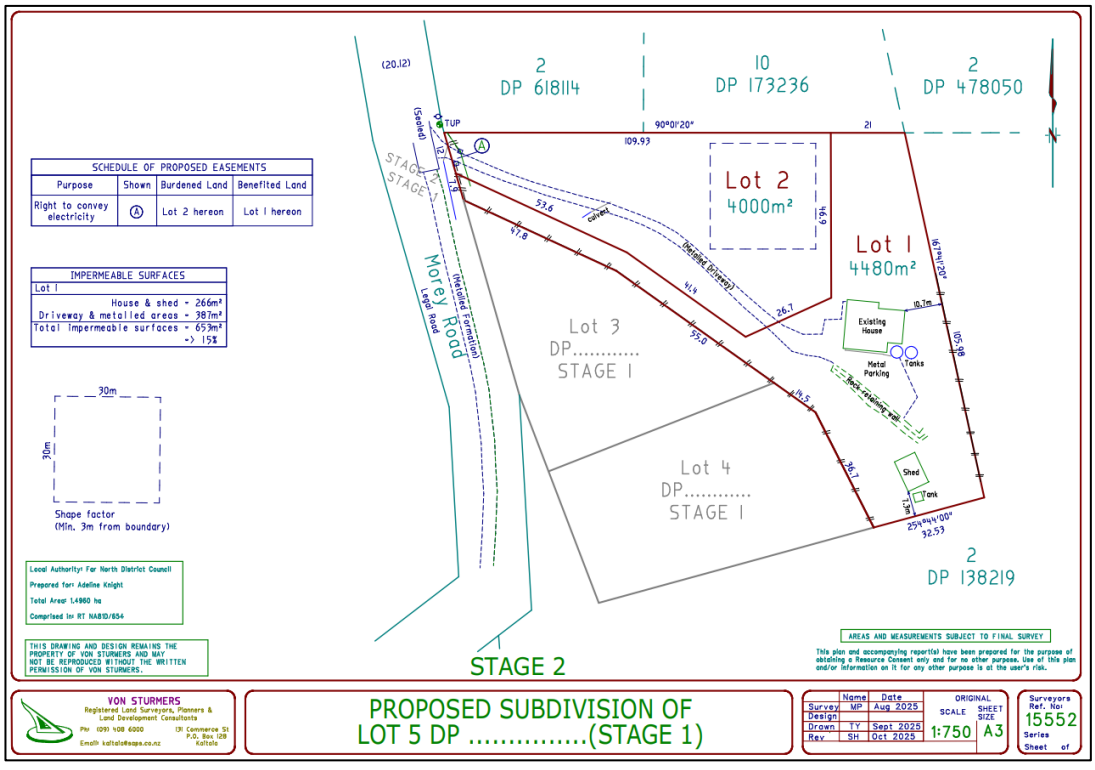


Figure 2: Stage 2 Scheme Plan prepared by Von Sturmers (Ref No: 15552, dated: October 2025)

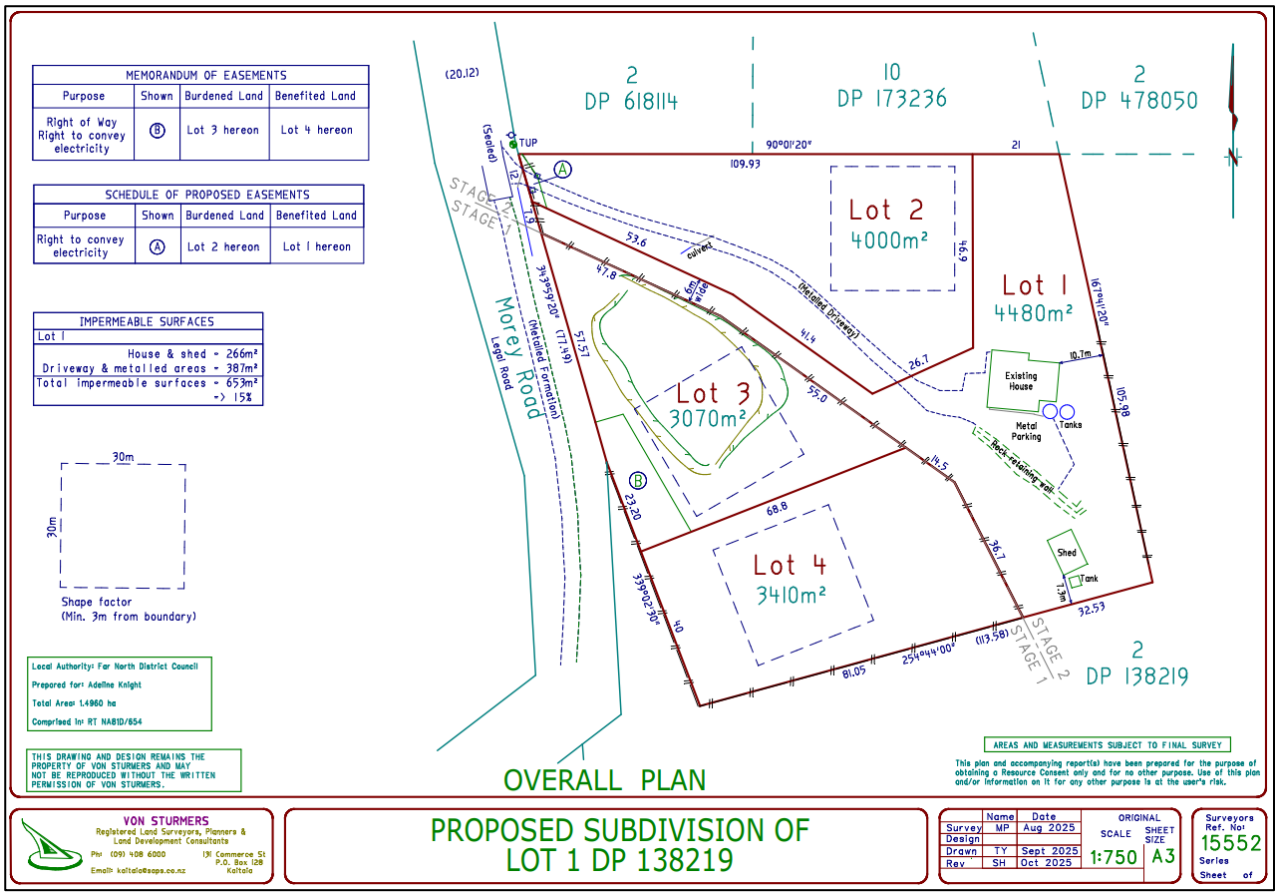


Figure 3: Overall Scheme Plan prepared by Von Sturmers (Ref No: 15552, dated: October 2025)

A geotechnical assessment (WJL Ref. 142947) has been completed for the proposed subdivision which should be read in conjunction with this report.

Any revision of the supplied drawings and/or development proposals with wastewater, stormwater, potable water and/or access implications should be referred back to us for review. This report is not intended to support Building Consent applications for the future proposed lots, and any revision of supplied drawings and/or development proposals including those for Building Consent, which might rely on wastewater stormwater, potable water and/or access assessments herein, should be referred to us for review.

3 SITE DESCRIPTION

The proposed development will be constructed within the following property (the site) which is located off the eastern side of Morey Road, in the southern outskirts of the Cable Bay urban environment:

- 44 Morey Road, Cable Bay, legally described as Lot 1 DP 138219.

Figure 4: Aerial view with the subject property highlighted in cyan (from Northland Regional Council online GIS database)

The surface area of the subject site is approximately 1.5ha and is accessed at the northwestern boundary corner via an aggregate driveway that traverses towards the southeastern boundary corner.

Built development on site comprises an existing dwelling near the eastern boundary and shed near the southeastern boundary corner. A small sized timber pole fence bounds the southwestern side of the driveway. Vegetation comprises mainly grass, with trees intermittently bordering the driveway.

Topographically speaking, the site is set around a gently sloping crest at the southeastern portion of the site. Slopes fall from the crest towards the north at gentle inclinations up to 8°, and towards the west up to approximately 11°.

A level horse arena has been formerly created across the western portion of the property. This has involved a cut-fill earthworks operation in the order of up to approximately 3.0m and 1.5m, respectively, and tapering to the north. The cut is battered at average grades of 1V:2.5H (22°) to 1V:2H (27°), whilst the fill has generally adopted a 1V:1.5H (34°) batter grade.

The Far North District Council (FNDC) on-line GIS Water Services Map indicates that public underground service connections are not available to the property.

4 PUBLISHED GEOLOGY

Local geology at the subject site falls within two geological boundaries according to the GNS Science New Zealand Geology Web Map, Scale 1:250,000. The central portion of the site (cream coloured overlay in figure below) is noted on the aforementioned map as; Awhitu Group alluvium, described as; "*Partly consolidated sandstone and mudstone of high terraces.*", while the land to the northeast and southwest of this (green overlay in figure below) is noted as; Undifferentiated Tangihua Complex basalt in Northland Allochthon, described as; "*Basaltic pillow lava and pillow breccia, with sills and dikes of basalt and dolerite.*". Refer to GNS Science Website.

Figure 5: Screenshot aerial view from the New Zealand Geology Web Map. Blue marker depicts property location.

In addition to the above, geotechnical testing was conducted by WJL within the subject site.

The subsoils encountered during WJL's fieldwork were varied, but consisted predominantly of Silty CLAY, Clayey SILT, Sandy SILT and SAND. Approximately 100mm-200mm of TOPSOIL was overlying the investigated area. Refer to the appended 'BH Logs'.

Given the above, the site's subsoils have been classified as Category 3-6 in accordance with the TP58 design manual. Site-specific subsoil testing at Building Consent stage should be completed to confirm the soil classification at the disposal location.

During WJL's field investigation, the presence of fill material was identified on-site. In accordance with the requirements of TP58, disposal of treated wastewater must not occur over areas containing fill due to potential risks to system performance and long-term stability. It is therefore recommended that the proposed wastewater disposal location be assessed for fill during the Building Consent stage to ensure compliance. Based on current site observations, it is anticipated that adequate areas exist within the lots that are underlain by undisturbed natural soils suitable for the effective disposal of treated effluent.

5 WASTEWATER

Lot 1

An existing on-site wastewater treatment system currently services Lot 1's residential dwelling.

If the existing on-site wastewater treatment system is functional, fit for the existing dwelling and located within Lot 1's proposed boundaries it may continue to operate.

If any part of the wastewater system, including any trenches or disposal fields are not located within proposed Lot 1, the system can either be relocated to Lot 1 and/or upgraded, or it can be decommissioned and replaced with a new on-site wastewater treatment system in accordance with the recommendations in Section 6.1 below.

Lots 2 - 4

No existing wastewater management system is present within proposed Lots 2 - 4. As such, a new site-specific design in accordance with the ASNZS: 1547 / TP58 design manual will be required by FNDC for any future development within the proposed lots.

5.1 DESIGN PARAMETERS

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

As no development proposals are available at this stage for the eventual residential development within Lots 2 - 4, our recommendations have been based on a moderate size dwelling containing 4 bedrooms.

Alternative designs to the below are also acceptable, including primary level treatment subject to specific design and site-specific subsoil testing at the disposal location at Building Consent stage.

5.1.1 Summary of Preliminary Design Parameters for a PCDI Secondary Treatment System

Development Type:	Residential Dwellings
Effluent Treatment Level:	Secondary (<BOD5 20 mg/L, TSS 30 mg/L)
Fill Encountered in Disposal Areas:	Fill encountered within lots – should be sufficient natural ground for disposal of treated effluent
Water Source:	Rainwater Collection Tanks
Site Soil Category (TP58):	**Lot 2:** Category 5 – SILT – Moderate Drainage **Lots 3 & 4:** Category 4 – Sandy SILT – Moderate/Good Drainage
Estimate House Occupancy:	6 Persons
Loading Rate:	**Lot 2:** PCDI System – 3mm/day **Lots 3 & 4:** PCDI System – 5mm/day
Estimated Total Daily Wastewater Production:	1,080L
Typical Wastewater Design Flow Per Person:	180L/pp/pd (Estimated – introduction of water conservation devices may enable lower design flows)
Application Method:	Surface Laid PCDI Lines

Loading Method:	Dosed
Minimum Tank size:	>1,080L
Emergency Storage:	24 hours
Estimated Min. Disposal Area Requirement:	**Lot 2:** 360m² **Lots 3 & 4:** 216m²
Required Min. Reserve Area:	30%
Buffer Zone:	Not anticipated to be required
Cut-off Drain:	Not anticipated to be required

5.2 REQUIRED SETBACK DISTANCES

The disposal and reserve areas must be situated outside the relevant exclusion areas and setbacks described within Table 9 of the PRPN: Exclusion areas and setback distances for on-site domestic wastewater systems:

Table 9 of the PRPN (Proposed Regional Plan for Northland)			
Feature	Primary treated domestic wastewater	Secondary treated domestic wastewater	Greywater
Exclusion areas			
Floodplain	5% AEP	5% AEP	5% AEP
Horizontal setback distances			
Identified stormwater flow paths (downslope of disposal area)	5 meters	5 meters	5 meters
River, lake, stream, pond, dam or wetland	20 meters	15 meters	15 meters
Coastal marine area	20 meters	15 meters	15 meters
Existing water supply bore	20 meters	20 meters	20 meters
Property boundary	1.5 meters	1.5 meters	1.5 meters
Vertical setback distances			
Winter groundwater table	1.2 meters	0.6 meters	0.6 meters

5.3 NORTHLAND REGIONAL PLAN ASSESSMENT

The existing wastewater disposal system servicing Lot 1 should meet the compliance points below, stipulated within Section C.6.1.1 of the Proposed Regional Plan for Northland:

C.6.1.1 Existing on-site domestic type wastewater discharge – permitted activity	
The discharge of domestic type wastewater into or onto land from an on-site system that was a permitted activity at the notification date of this Plan, and the associated discharge of any odour into air from the onsite system, are permitted activities, provided:	
#	Rule
1	the discharge volume does not exceed:
	a) three cubic metres per day, averaged over the month of greatest discharge, and
	b) six cubic metres per day over any 24-hour period, and
2	the following reserve disposal areas are available at all times:
	a) one hundred percent of the existing effluent disposal area where the wastewater has received primary treatment or is only comprised of greywater, or
	b) thirty percent of the existing effluent disposal area where the wastewater has received at least secondary treatment, and
3	the on-site system is maintained so that it operates effectively at all times and maintenance is undertaken in accordance with the manufacturer's specifications, and
4	wastewater irrigation lines are at all times either installed at least 50 millimetres beneath the surface of the disposal area or are covered by a minimum of 50 millimetres of topsoil, mulch, or bark, and
5	the discharge does not contaminate any groundwater supply or surface water, and
6	there is no surface runoff or ponding of wastewater, and
7	there is no offensive or objectionable odour beyond the property boundary.

We envision that there will be no issue meeting the Permitted Activity Status requirements as outlined above.

Any future wastewater disposal system should meet the compliance points below, stipulated within Section C.6.1.3 of the Proposed Regional Plan for Northland:

C.6.1.3 Other on-site treated domestic wastewater discharge– permitted activity	
The discharge of domestic type wastewater into or onto land from an on-site system and the associated discharge of odour into air from the on-site system are permitted activities, provided:	
#	Rule
1	The on-site system is designed and constructed in accordance with the Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012), and
2	The volume of wastewater discharged does not exceed two cubic metres per day, and
3	The discharge is not via a spray irrigation system or deep soakage system, and

4	The slope of the disposal area is not greater than 25 degrees, and
5	The wastewater has received secondary or tertiary treatment and is discharged via a trench or bed in soil categories 3 to 5 that is designed in accordance with Appendix L of Australian/New Zealand Standard. On-site Domestic Wastewater Management (AS/NZS 1547:2012); or is via an irrigation line system that is:
	a) dose loaded, and
	b) covered by a minimum of 50 millimetres of topsoil, mulch, or bark, and
6	For the discharge of wastewater onto the surface of slopes greater than 10 degrees:
	a) the wastewater, excluding greywater, has received at least secondary treatment, and
	b) the irrigation lines are firmly attached to the disposal area, and
	c) where there is an up-slope catchment that generates stormwater runoff, a diversion system is installed and maintained to divert surface water runoff from the up-slope catchment away from the disposal area, and
	d) a minimum 10 metre buffer area down-slope of the lowest irrigation line is included as part of the disposal area, and
	e) the disposal area is located within existing established vegetation that has at least 80 percent canopy cover, or
	f) the irrigation lines are covered by a minimum of 100 millimetres of topsoil, mulch, or bark, and
7	the disposal area and reserve disposal area are situated outside the relevant exclusion areas and setbacks in Table 9: Exclusion areas and setback distances for on-site domestic wastewater systems, and
8	for septic tank treatment systems, a filter that retains solids greater than 3.5 millimetres in size is fitted on the outlet, and
9	the following reserve disposal areas are available at all times:
	a) 100 percent of the existing effluent disposal area where the wastewater has received primary treatment or is only comprised of greywater, or
	b) 30 percent of the existing effluent disposal area where the wastewater has received secondary treatment or tertiary treatment, and
10	the on-site system is maintained so that it operates effectively at all times and maintenance is undertaken in accordance with the manufacturer's specifications, and
11	the discharge does not contaminate any groundwater water supply or surface water, and
12	there is no surface runoff or ponding of wastewater, and
13	there is no offensive or objectionable odour beyond the property boundary.

We envision that the lots will have no issue meeting the Permitted Activity Status requirements outlined above.

Based on current observations and topography, each lot contains sufficient undeveloped natural ground to accommodate both primary and reserve wastewater disposal areas in accordance with AS/NZS1547 and TP58. Final sizing and positioning will be confirmed at Building Consent stage following site-specific tests.

6 STORMWATER MANAGEMENT

6.1 ASSESSMENT CRITERIA

The site lies within the Far North District. The stormwater assessment has been completed in accordance with the recommendations and requirements contained within the Far North District Engineering Standards and the Far North District Council District Plan.

As below, the site resides in a Rural Living Zone.

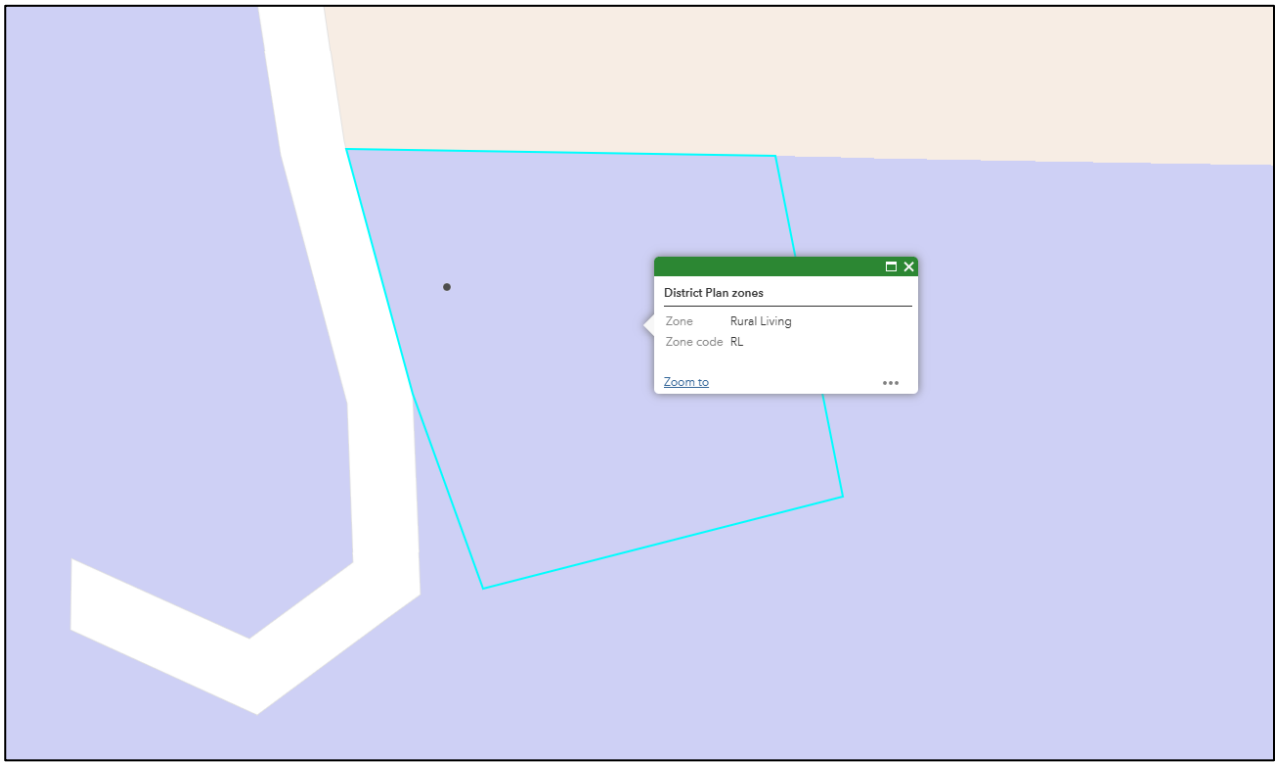


Figure 6: Snip of FNDC Maps showing site in Rural Living Zone.

The following Stormwater Management Rules Apply:

Permitted Activity: 8.7.5.1.5 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 12.5% or 3,000m², whichever is the lesser.

Controlled Activity: 8.7.5.2.2 STORMWATER MANAGEMENT – The maximum proportion or amount of the gross site area covered by buildings and other Impermeable Surfaces shall be 20% or 3300m², whichever is the lesser.

To comply with the parameters of the Permitted Activity Rule (8.7.5.1.5), Lots 1, 2, 3, 4 & 5 must not exceed an impermeable area of 560m², 500m², 384m², 426m² & 1,060m² respectively.

The existing development within Lot 5 does not exceed 12.5% of the site area and therefore complies with Permitted Activity Rule (8.7.5.1.5). The existing stormwater management system in place within Lot 5 may continue to operate as is until the lot is subdivided.

The existing development within Lot 1 exceeds 12.5% of the site area and therefore does not comply with Permitted Activity Rule (8.7.5.1.5) and is considered a Controlled Activity.

Future development of Lots 1, 2, 3 & 4 are expected to fall within the Permitted / Controlled / Discretionary Activity range. A stormwater attenuation report including a District Plan Assessment will be required for any future development within the lots that does not comply with Permitted Activity Rule (8.7.5.1.5) at Building Consent stage.

Attenuation for the 1% AEP storm event should be provided for runoff resulting from existing / future proposed impermeable areas exceeding the Permitted Activity threshold to mitigate adverse effects of runoff on the downstream receiving environment.

Indicative tank attenuation design parameters are given below to demonstrate the feasibility of implementing attenuation on-site. The Type IA storm profile was utilised in attenuation calculations in accordance with TR-55. HydroCAD® software has been utilised in calculations for a 1% AEP rainfall value of 258mm with a 24-hour duration. Rainfall data was obtained from HIRDS and increased by 20% to account for climate change.

To appropriately mitigate stormwater runoff from the existing and future proposed impermeable areas, we recommend utilising Low Impact Design Methods as a means of stormwater management. Design guidance should be taken from 'The Countryside Living Toolbox' design document, and where necessary, 'Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual' Auckland Regional Council (2003).

Stormwater management recommendations are provided below.

6.2 PRIMARY STORMWATER

6.2.1 Stormwater Runoff from Roof Areas

Stormwater runoff from the roof of any future buildings must be captured by a gutter system and conveyed to rainwater tanks on the corresponding lot.

Discharge and overflow from the rainwater tanks should be directed to a discharge point as specified below via sealed pipes.

6.2.2 Stormwater Runoff from Hardstand Areas

Where driveways are formed perpendicular to the slope of the topography, the driveway may shed runoff to lower-lying grassed areas via even sheet flow, well clear of any structures. 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.

Where even sheet flow is not practicable, concentrated flows must be managed with swales to prevent erosion/scouring. These should be sized to manage and provide capacity for secondary flows and mitigate flow velocity where appropriate. Swales are to direct runoff to silt traps with suitably sized grate / scruffy dome inlets, from which runoff may be piped to the discharge point.

Alternatively, if sealed, driveways may be formed to shed runoff to catchpits installed per E1 of the NZ Building Code. Runoff collected via catchpits is to be directed to an outlet as specified below via sealed pipes.

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

6.2.3 Lot 1 Attenuation Feasibility

It is recommended that attenuation be provided via a detention volume in the upper section of the existing dwelling's potable water tank (assumed to be 1 x 25,000L rainwater tanks).

Lot 1's existing impermeable area exceeds the permitted coverage threshold by 99m². On-site runoff attenuation in accordance with the criteria outlined in Section 6.1 of this report is required.

It is estimated that Lot 1's impermeable area will exceed the permitted coverage threshold by 415m² post-development (accounting for a 3m wide future driveway extending from Lot 1's proposed access point). To attenuate runoff back to the permitted activity peak flowrate, the existing dwelling's potable water tank is recommended to be fitted with a 65mmØ orifice located >170mm below the overflow outlet. Refer to the appended Site Plan (142894-C001), Lot 1 Tank Detail (142894-C201) and calculation set for clarification. The attenuation setup will differ if the proposed coverage breach differs to what is described above.

6.2.4 Lots 2 - 4 Attenuation Feasibility

Lots 2 - 4 may require attenuation in accordance with the criteria outlined in Section 6.1 of this report for future impermeable areas exceeding the permitted threshold.

It is recommended that the upper section of potable water tanks, or a separate detention tank(s) be used to attenuate runoff resulting from future impermeable areas back to the permitted peak flow for the 1% AEP storm event, adjusted for climate change.

6.2.5 Stormwater Runoff Discharge Point

Discharge and overflow from future potable water tanks / detention tank(s) and any hardstand catchpits / silt traps should be directed an appropriately sized dispersal device within each lot, unless discharge is directed to an open channel, where an appropriate riprap outlet is required for erosion protection. The dispersal device or discharge point should be positioned on/in stable ground downslope of any buildings and wastewater disposal, with setbacks as per the relevant standards.

If the existing outlet from Lot 1's/5's existing potable water tank is found not to be compliant with the above requirements, it is recommended that discharge from the existing potable water tanks be directed via sealed pipes to a minimum 6m long aboveground spreader bar as per the appended Site Plan (142894-C001) and Dispersal Device Detail (142894-C202). Alternative dispersal devices / discharge points may also be acceptable subject to specific design.

6.3 SECONDARY STORMWATER

Where required, overland flows and any concentrated runoff from higher ground should be intercepted by means of shallow surface drains or small bunds near structures to protect these from both saturation and erosion.

6.4 DISTRICT PLAN ASSESSMENT

This section has been prepared to demonstrate the likely effects of the activity on stormwater runoff and the means of mitigating runoff.

In assessing an application under this provision, the Council will exercise discretion to review the following matters below, (a) through (r). In respect of matters (a) through (r), we provide the following comments:

13.10.4 – Stormwater Disposal

(a) Whether the application complies with any regional rules relating to any water or discharge permits required under the Act, and with any resource consent issued to the District Council in relation to any urban drainage area stormwater management plan or similar plan.	No discharge permits are required. No resource consent issued documents stipulating specific requirements are known for the subject site or are anticipated to exist.
(b) Whether the application complies with the provisions of the Council's "Engineering Standards and Guidelines" (2004) - Revised March 2009 (to be used in conjunction with NZS 4404:2004).	The application is deemed compliant with the provisions of the Council's "Engineering Standards and Guidelines" (2004) - Revised March 2009
(c) Whether the application complies with the Far North District Council Strategic Plan - Drainage.	The application is deemed compliant with the Far North District Council Strategic Plan - Drainage

(d) The degree to which Low Impact Design principles have been used to reduce site impermeability and to retain natural permeable areas.	Stormwater management should be provided for the subject lot by utilising Low Impact Design Methods. Guidance for design should be taken from 'The Countryside Living Toolbox' design document, and where necessary, *"Technical Publication 10, Stormwater Management Devices – Design Guidelines Manual" Auckland Regional Council (2003).* All roof runoff will be collected by rainwater tanks for conveyance to a safe outlet point. Hardstand areas should either be shaped to shed to lower-lying lawn areas as passive mitigation, or to swales for runoff conveyance to a safe outlet location.
(e) The adequacy of the proposed means of disposing of collected stormwater from the roof of all potential or existing buildings and from all impervious surfaces.	As above. Runoff from new roof areas will be collected, directed to rainwater tanks and discharged in a controlled manner to a designated outlet, reducing scour and erosion. Hardstand areas should either be shaped to shed to lower-lying lawn areas as passive mitigation, or to swales for runoff conveyance to a safe outlet location.
(f) The adequacy of any proposed means for screening out litter, the capture of chemical spillages, the containment of contamination from roads and paved areas, and of siltation.	Runoff from roof areas is free of litter, chemical spillages, or contaminants from roads. Future proposed hardstand areas are best shaped to shed to large pasture areas via sheet flow to ensure that runoff does not concentrate. Large downslope pasture areas act as bio-filter strips to filter out entrained pollutants.
(g) The practicality of retaining open natural waterway systems for stormwater disposal in preference to piped or canal systems and adverse effects on existing waterways.	No alteration to waterways is proposed.
(h) Whether there is sufficient capacity available in the Council's outfall stormwater system to cater for increased run-off from the proposed allotments.	Not applicable.
(i) Where an existing outfall is not capable of accepting increased run-off, the adequacy of proposals and solutions for disposing of run-off.	Not applicable.
(j) The necessity to provide on-site retention basins to contain surface run-off where the capacity of the outfall is incapable of accepting flows, and where the outfall has limited capacity, any need to restrict the rate of discharge from the subdivision to the same rate of discharge that existed on the land before the subdivision takes place.	Not applicable.
(k) Any adverse effects of the proposed subdivision on drainage to, or from, adjoining properties and mitigation measures proposed to control any adverse effects.	Outlet locations are to be determined during detailed design and are to be located such that

	there are no adverse effects on adjacent properties.
(l) In accordance with sustainable management practices, the importance of disposing of stormwater by way of gravity pipe lines. However, where topography dictates that this is not possible, the adequacy of proposed pumping stations put forward as a satisfactory alternative.	Not applicable.
(m) The extent to which it is proposed to fill contrary to the natural fall of the country to obtain gravity outfall; the practicality of obtaining easements through adjoining owners' land to other outfall systems; and whether filling or pumping may constitute a satisfactory alternative.	Not applicable.
(n) For stormwater pipes and open waterway systems, the provision of appropriate easements in favour of either the registered user or in the case of the Council, easements in gross, to be shown on the survey plan for the subdivision, including private connections passing over other land protected by easements in favour of the user.	Not applicable.
(o) Where an easement is defined as a line, being the centre line of a pipe already laid, the effect of any alteration of its size and the need to create a new easement.	Not applicable.
(p) For any stormwater outfall pipeline through a reserve, the prior consent of the Council, and the need for an appropriate easement.	Not applicable.
(q) The need for and extent of any financial contributions to achieve the above matters.	Not applicable.
(r) The need for a local purpose reserve to be set aside and vested in the Council as a site for any public utility required to be provided.	Not applicable.

7 POTABLE WATER SUPPLY

It is recommended that potable water be provided for by rainwater tanks in accordance with the Countryside Living Toolbox requirements. It is recommended to provide at least 2 x 25,000L tanks for potable water usage new per dwelling / lot. The type of tank and volume is for the client to confirm.

8 ACCESS AND VEHICLE CROSSING

8.1 GENERAL

A basic access and vehicle crossing assessment has been completed for the proposed lots with recommendations provided in this section.

It is our understanding that it is proposed for Lots 1, 3 & 4 to utilise new individual vehicle access points from Morey Road. Lot 2 is proposed to utilise the existing access point currently utilised by the parent property and which will also be utilised by Lot 5.

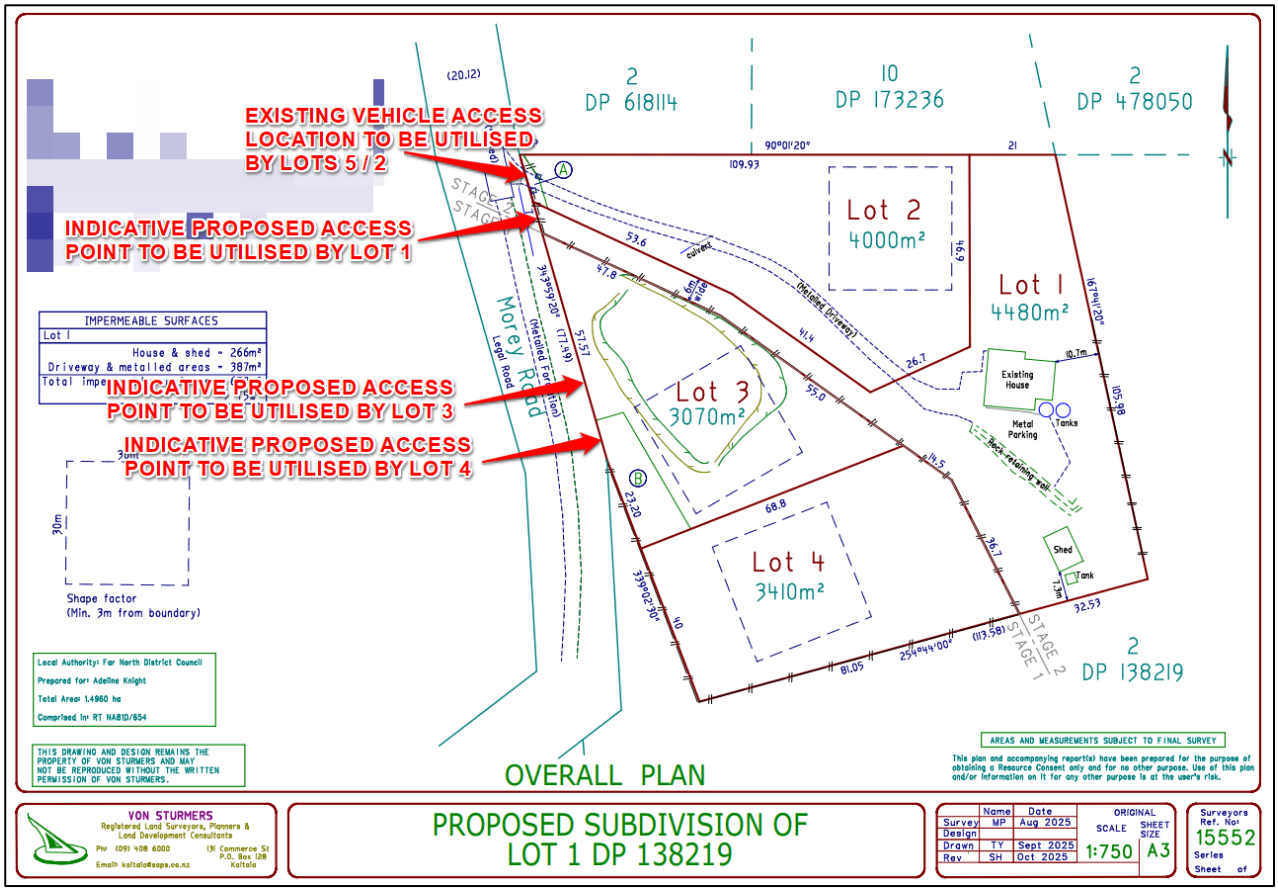


Figure 7: Snip of Scheme Plan Showing Existing & Proposed Access Points.

8.2 VEHICLE CROSSINGS

All new vehicle crossings shall be constructed in accordance with Far North District Council Engineering Standards (2023), Sheet 21 Type 1A – Light Vehicles. The existing crossing servicing Lot 1 / 5 is recommended for upgrade to meet the same standard.

The crossing shall not obstruct any drainage facilities within the berm. Where the drain is shallow and only carries low rain flow, the crossing can pass through the drain with no drainage culvert. Where the drain carries significant rain flow the drain shall be piped under the crossing. Pipes and end treatments shall be sized appropriately for the catchment intercepted but shall be a minimum 300mmØ.

8.3 SIGHT DISTANCES

Morey Road has a general operating speed of 50km/hr (NZTA National Speed Limits Register) and is considered an access road. The Far North District Council Engineering Standards (2023) – Sheet 4 notes that the minimum required sight distance is 60m.

In compliance with the above, the existing / proposed access points for Lots 1 – 5 allow for >60m of sight distance to the north and the south. Refer to the appended Sight Distances Overview (142894-C400) for clarification.

9 LIMITATIONS

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

This report has been commissioned solely for the benefit of our client, in relation to the project as 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. This report does not include a flood assessment or freeboard recommendations.

Any variations from the development proposals as described herein as forming the basis of our appraisal should be referred back to us for further evaluation. Copyright of Intellectual Property remains with Wilton Joubert Limited, and this report may NOT be used by any other entity, or for any other proposals, without our written consent. Therefore, no liability is accepted by this firm or any of its directors, servants, or agents, in respect of any other civil 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.

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.

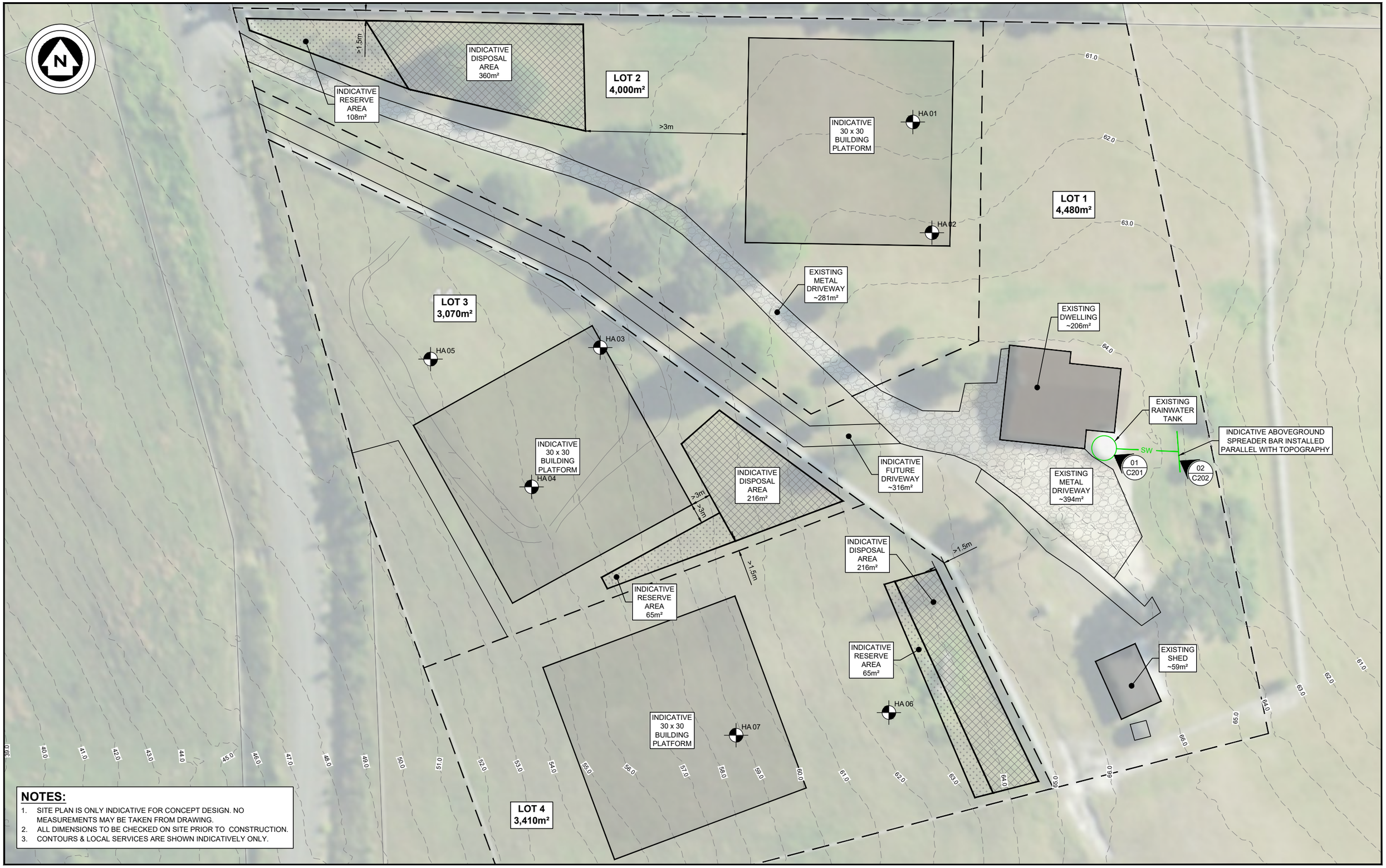
Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Yours faithfully,

WILTON JOUBERT LIMITED

Enclosures:

- Site Plan – C001 (1 sheet)
- Lot 1 Tank Detail – C201 (1 sheet)
- Dispersal Device Detail – C202 (1 sheet)
- Sight Distances Overview – C400 (1 sheet)
- Hand Auger Borehole Records (7 sheets)
- Calculation Set



NOTES:

1. SITE PLAN IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
2. ALL DIMENSIONS TO BE CHECKED ON SITE PRIOR TO CONSTRUCTION.
3. CONTOURS & LOCAL SERVICES ARE SHOWN INDICATIVELY ONLY.

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	NOV '25	GMB	CIVIL SITE SUITABILITY REPORT

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

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RESOURCE CONSENT

DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE:

SITE PLAN

PROJECT DESCRIPTION:

CIVIL SITE SUITABILITY REPORT

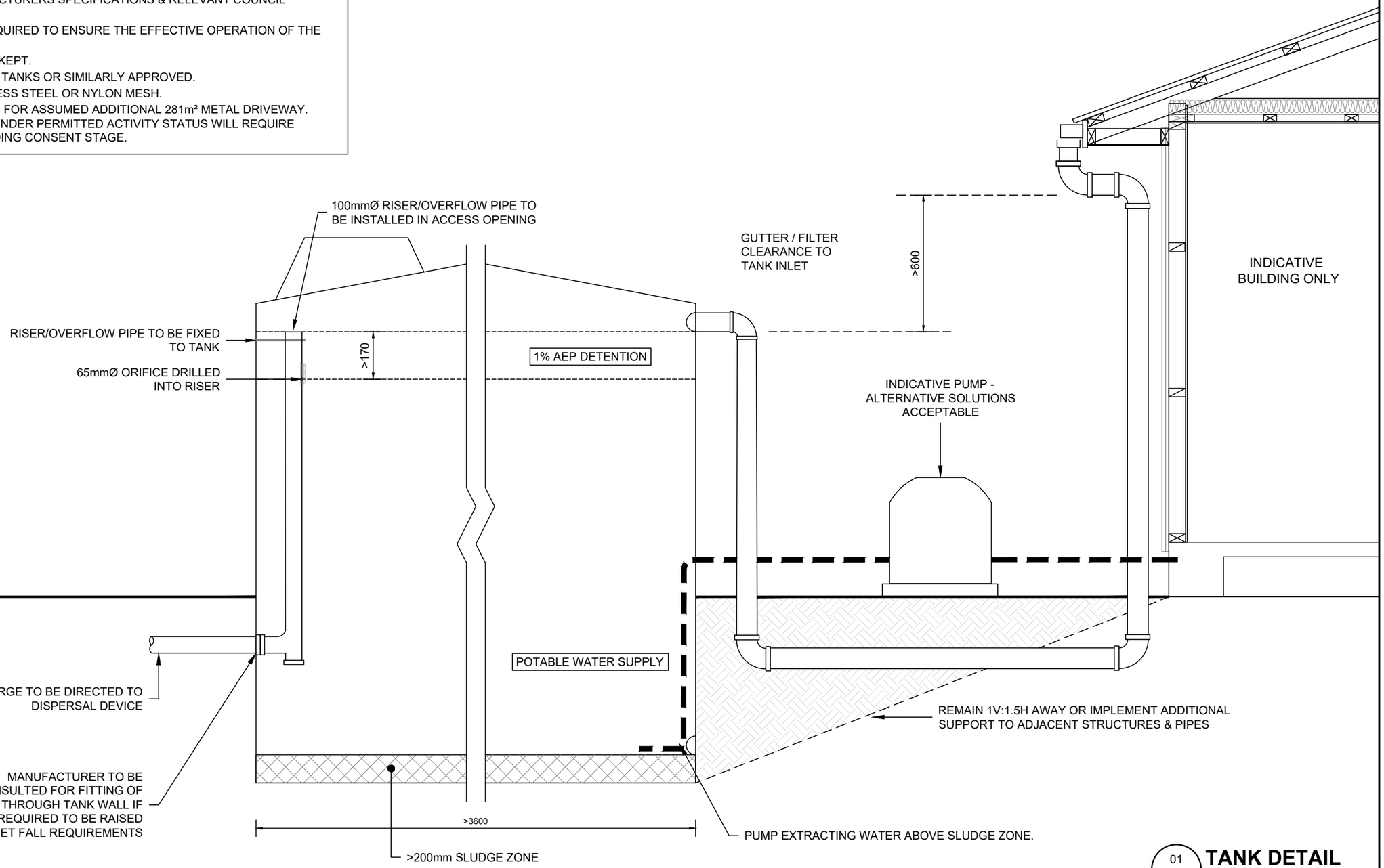
PROJECT TITLE:

SUBDIVISION OF LOT 1 DP 138219
44 MOREY ROAD
CABLE BAY
NORTHLAND

ORIGINAL DRAWING SIZE:	A3
OFFICE:	OREWA
DRAWING SCALE:	1:500
CO-ORDINATE SYSTEM:	NOT COORDINATED
DRAWING NUMBER:	142894-C001
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. TANKS 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. MINIMUM SLUDGE ZONE OF 200mm TO BE KEPT.
6. ASSUMED USE OF 1 x 25,000L RAINWATER TANKS OR SIMILARLY APPROVED.
7. ORIFICE(S) TO BE COVERED WITH STAINLESS STEEL OR NYLON MESH.
8. TANK DETAIL CONCEPTUAL ONLY, SHOWN FOR ASSUMED ADDITIONAL 281m² METAL DRIVEWAY. IMPERMEABLE COVERAGE NOT FALLING UNDER PERMITTED ACTIVITY STATUS WILL REQUIRE SPECIFIC STORMWATER DESIGN AT BUILDING CONSENT STAGE.



01 / C001 **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
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CHECKED BY: BGS
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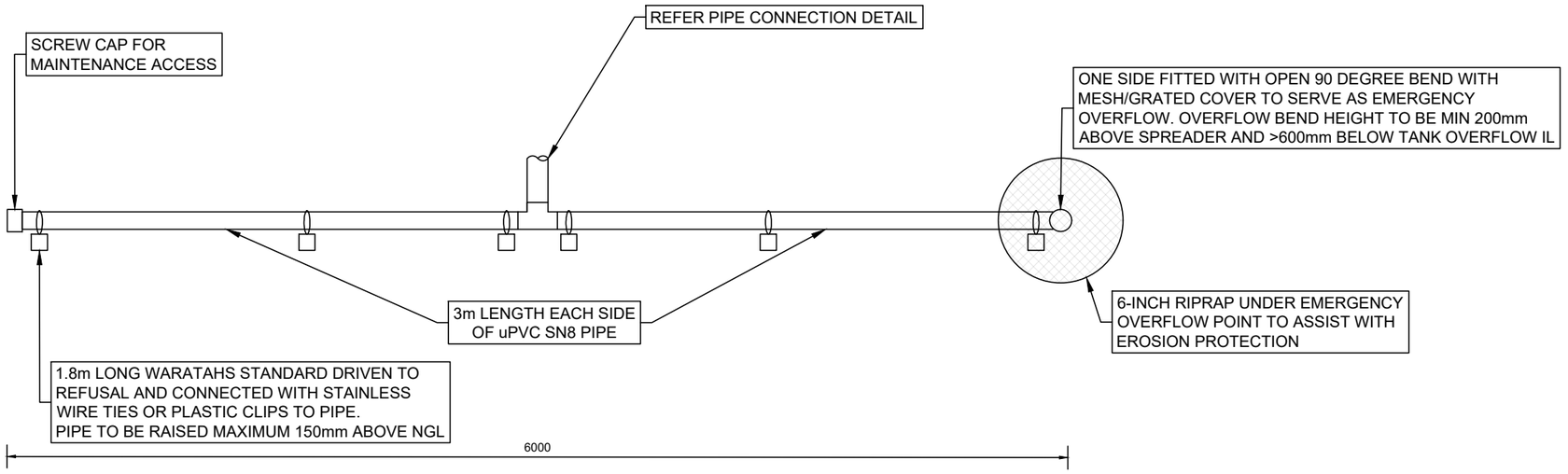
RESOURCE CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **LOT 1 TANK DETAIL**

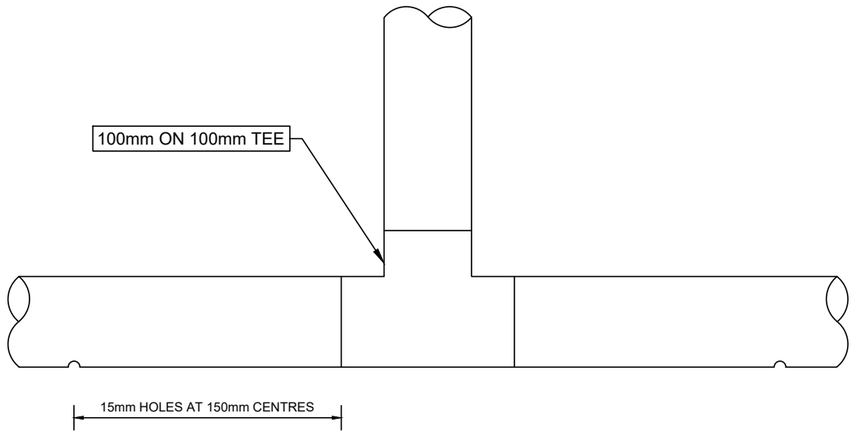
PROJECT DESCRIPTION: **CIVIL SITE SUITABILITY REPORT**

PROJECT TITLE: **SUBDIVISION OF LOT 1 DP 138219 44 MOREY ROAD CABLE BAY NORTHLAND**

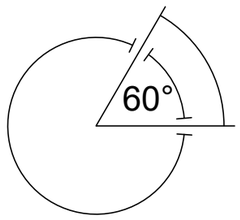
ORIGINAL DRAWING SIZE: A3
OFFICE: OREWA
DRAWING SCALE: N.T.S
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 142894-C201
ISSUE: 01

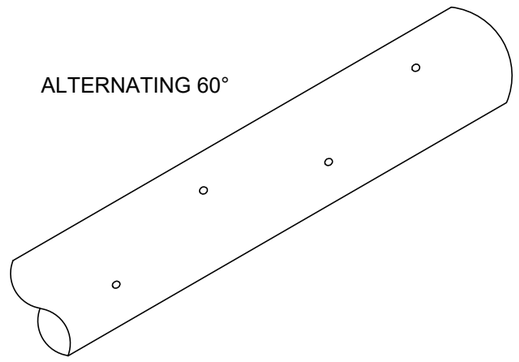


PLAN



PIPE CONNECTION DETAIL





PIPE OUTLET HOLE ARRANGEMENT DETAIL

02 / C001 **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

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No.	DATE	BY	DESCRIPTION
01	NOV '25	GMB	CIVIL SITE SUITABILITY REPORT

DESIGNED BY: GMB
DRAWN BY: GMB
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RESOURCE CONSENT

DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE: **DISPERSAL DEVICE DETAIL**

PROJECT DESCRIPTION: **CIVIL SITE SUITABILITY REPORT**

PROJECT TITLE: **SUBDIVISION OF LOT 1 DP 138219 44 MOREY ROAD CABLE BAY NORTHLAND**

ORIGINAL DRAWING SIZE: A3
OFFICE: **OREWA**
DRAWING SCALE: **N.T.S**
CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: **142894-C202**
ISSUE: **01**

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

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01	NOV '25	GMB	CIVIL SITE SUITABILITY REPORT

DESIGNED BY: GMB
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SURVEYED BY: N/A

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RESOURCE CONSENT
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

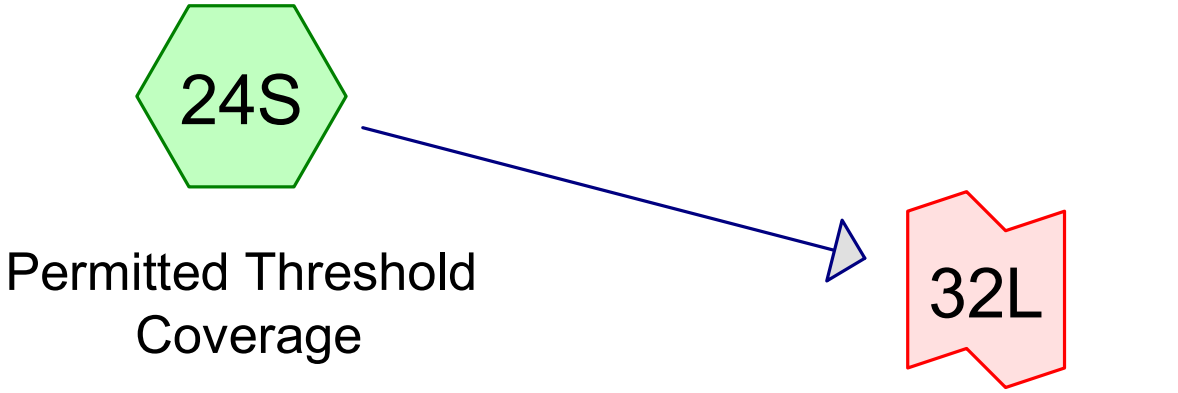
DRAWING TITLE:
SIGHT DISTANCES OVERVIEW

PROJECT DESCRIPTION:
CIVIL SITE SUITABILITY REPORT

PROJECT TITLE:
SUBDIVISION OF LOT 1 DP 138219 44 MOREY ROAD CABLE BAY NORTHLAND

ORIGINAL DRAWING SIZE: A3	OFFICE: OREWA
DRAWING SCALE: 1:750	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 142894-C400	ISSUE: 01

Lot 1 - Permitted Threshold



Permitted Threshold Coverage

Permitted Flows

Subcat Reach Pond Link

Routing Diagram for 142894
Prepared by Wilton Joubert Limited, Printed 11/11/2025

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 24S: Permitted Runoff Area=4,480.0 m² 12.50% Impervious Runoff Depth>184 mm
Tc=10.0 min CN=77 Runoff=58.94 L/s 826.2 m³

Link 32L: Permitted Flows Inflow=58.94 L/s 826.2 m³
Primary=58.94 L/s 826.2 m³

Summary for Subcatchment 24S: Permitted Threshold Coverage

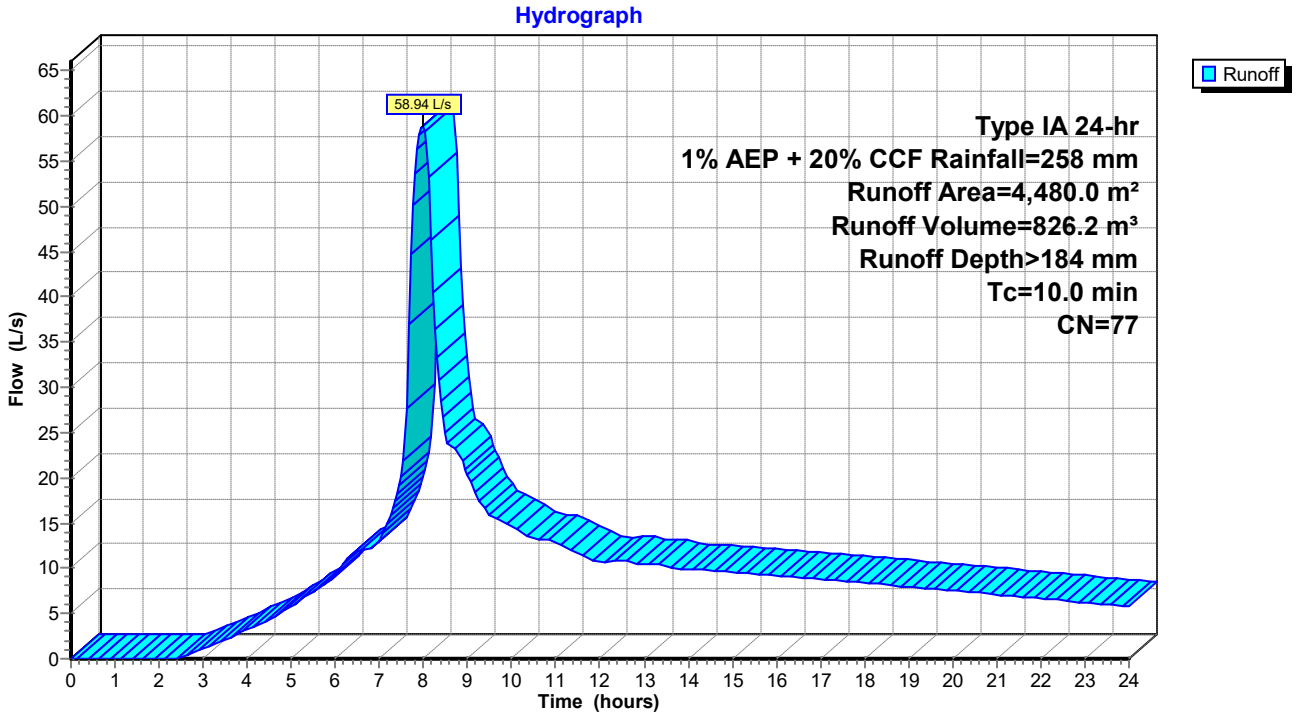
Runoff = 58.94 L/s @ 7.98 hrs, Volume= 826.2 m³, Depth> 184 mm

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 1% AEP + 20% CCF Rainfall=258 mm

Area (m²)	CN	Description
3,920.0	74	>75% Grass cover, Good, HSG C
560.0	98	Roofs, HSG C
4,480.0	77	Weighted Average
3,920.0		87.50% Pervious Area
560.0		12.50% Impervious Area

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

Subcatchment 24S: Permitted Threshold Coverage

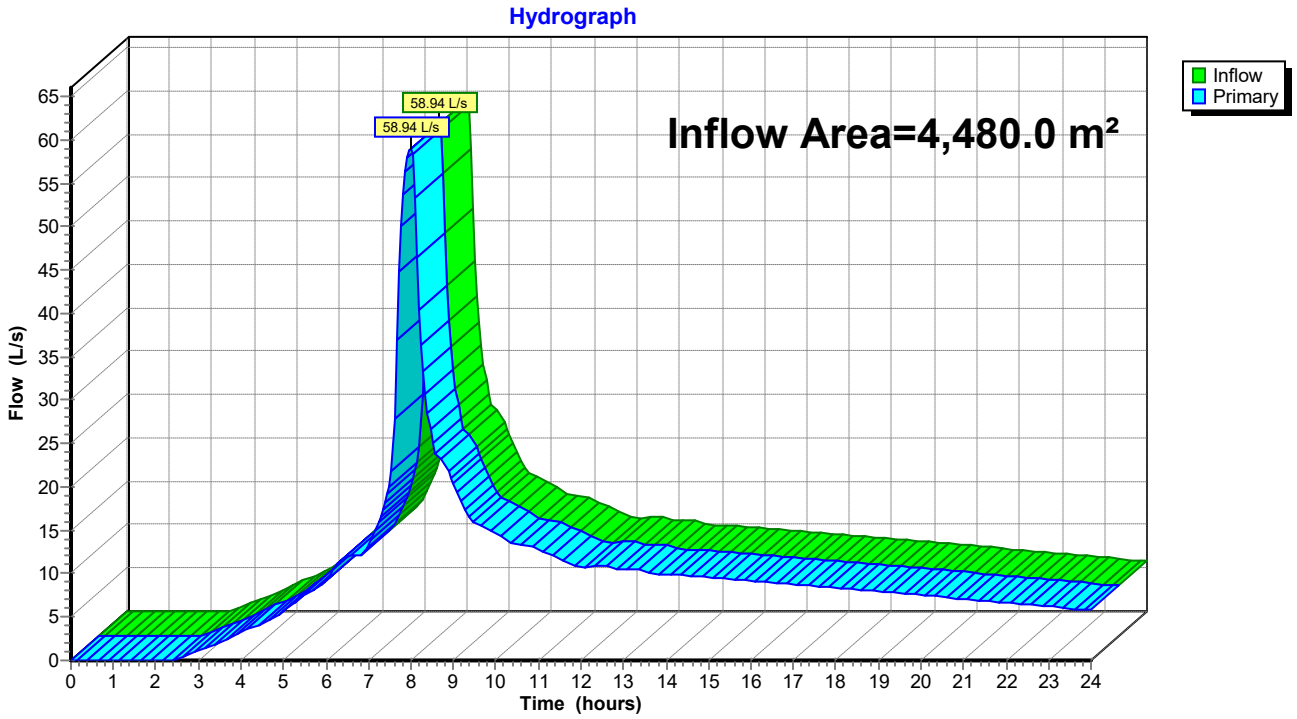


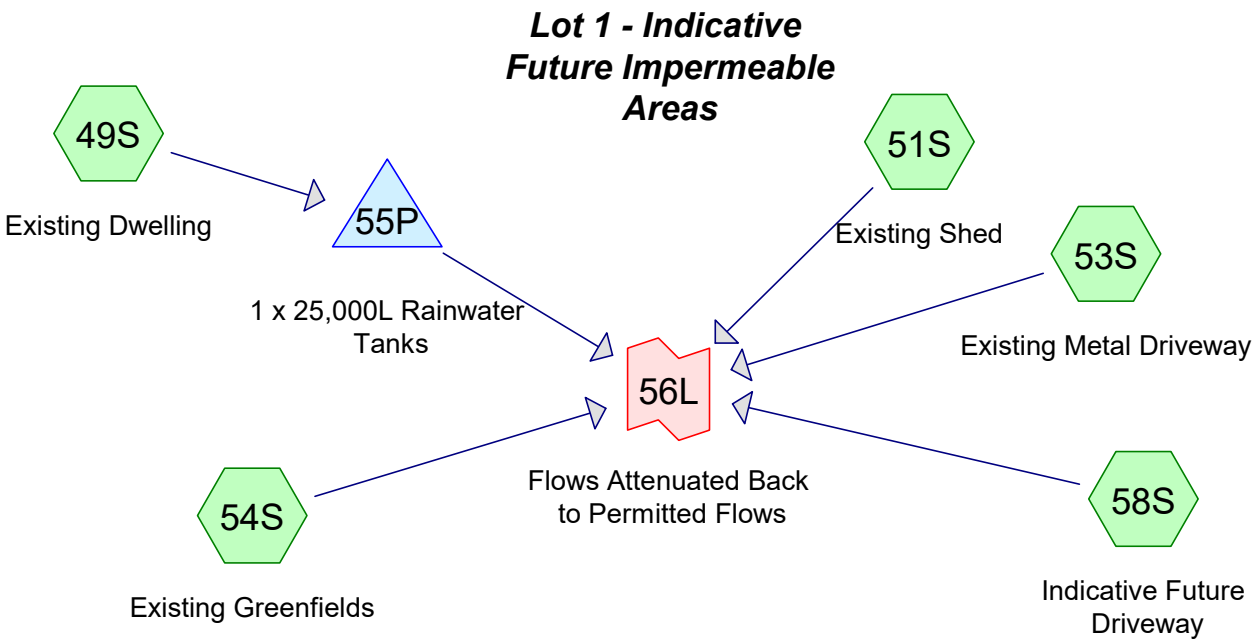
Summary for Link 32L: Permitted Flows

Inflow Area = 4,480.0 m², 12.50% Impervious, Inflow Depth > 184 mm for 1% AEP + 20% CCF event
Inflow = 58.94 L/s @ 7.98 hrs, Volume= 826.2 m³
Primary = 58.94 L/s @ 7.98 hrs, Volume= 826.2 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 32L: Permitted Flows





Subcat Reach Pond Link

Routing Diagram for 142894
Prepared by Wilton Joubert Limited, Printed 11/11/2025

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 49S: Existing Dwelling Runoff Area=206.0 m² 100.00% Impervious Runoff Depth>251 mm
Tc=10.0 min CN=98 Runoff=3.50 L/s 51.8 m³

Subcatchment 51S: Existing Shed Runoff Area=59.0 m² 100.00% Impervious Runoff Depth>251 mm
Tc=10.0 min CN=98 Runoff=1.00 L/s 14.8 m³

Subcatchment 53S: Existing Metal Runoff Area=394.0 m² 0.00% Impervious Runoff Depth>223 mm
Tc=10.0 min CN=89 Runoff=6.27 L/s 87.9 m³

Subcatchment 54S: Existing Runoff Area=3,505.0 m² 0.00% Impervious Runoff Depth>175 mm
Tc=10.0 min CN=74 Runoff=43.22 L/s 611.6 m³

Subcatchment 58S: Indicative Future Runoff Area=316.0 m² 0.00% Impervious Runoff Depth>223 mm
Tc=10.0 min CN=89 Runoff=5.03 L/s 70.5 m³

Pond 55P: 1 x 25,000L Rainwater Tanks Peak Elev=0.163 m Storage=1.7 m³ Inflow=3.50 L/s 51.8 m³
Outflow=3.18 L/s 51.6 m³

Link 56L: Flows Attenuated Back to Permitted Flows Inflow=58.58 L/s 836.5 m³
Primary=58.58 L/s 836.5 m³

Summary for Subcatchment 49S: Existing Dwelling

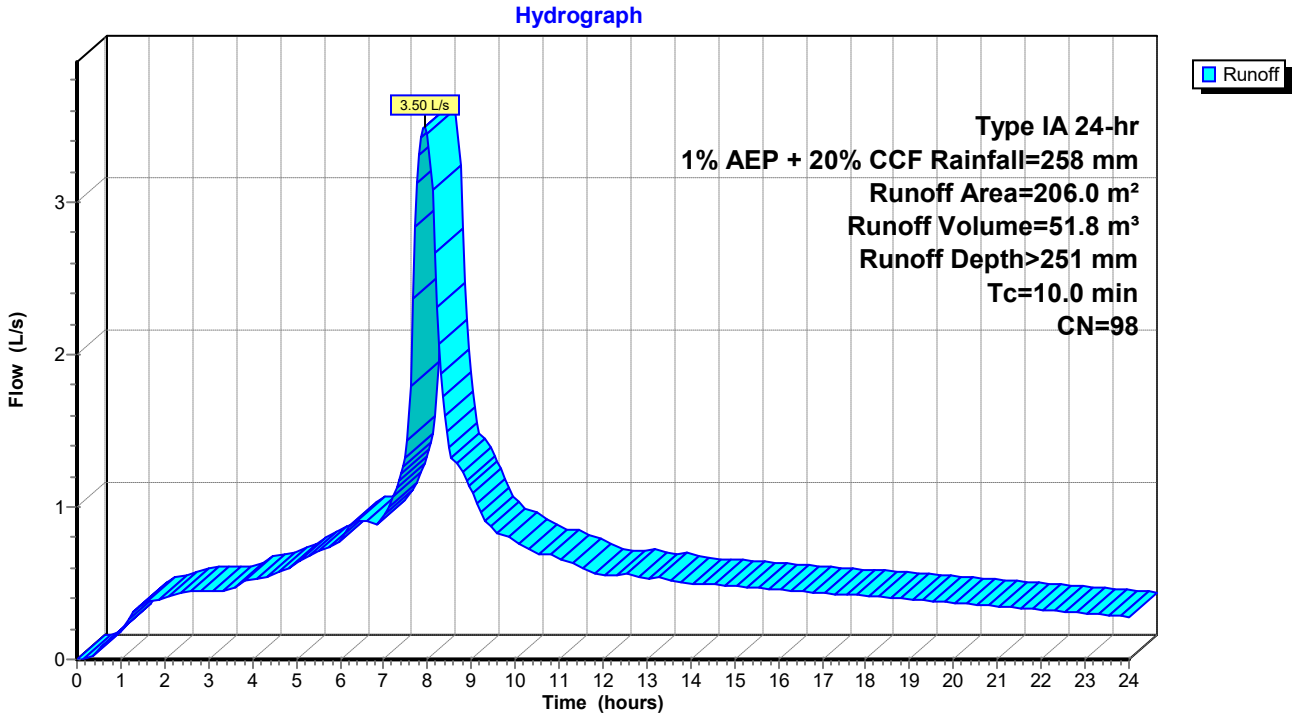
Runoff = 3.50 L/s @ 7.94 hrs, Volume= 51.8 m³, Depth> 251 mm

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 1% AEP + 20% CCF Rainfall=258 mm

Area (m²)	CN	Description
206.0	98	Roofs, HSG C
206.0		100.00% Impervious Area

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

Subcatchment 49S: Existing Dwelling



Summary for Subcatchment 51S: Existing Shed

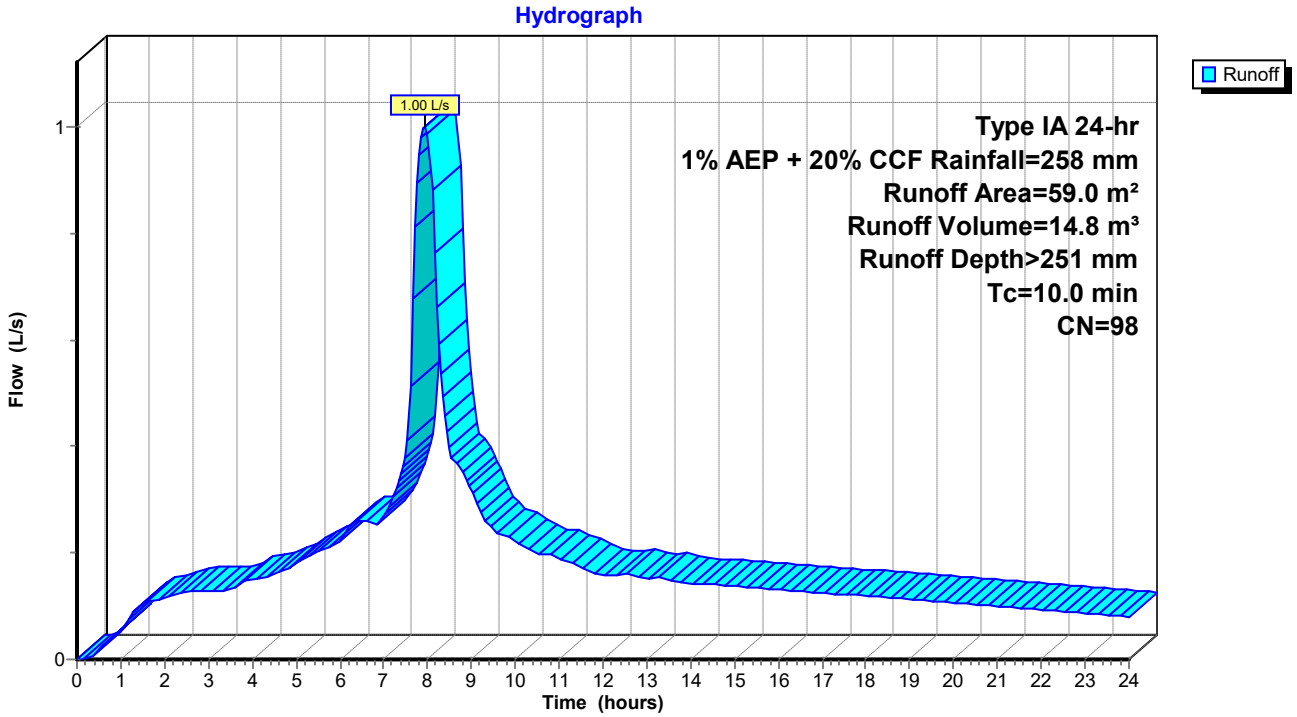
Runoff = 1.00 L/s @ 7.94 hrs, Volume= 14.8 m³, Depth> 251 mm

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 1% AEP + 20% CCF Rainfall=258 mm

Area (m²)	CN	Description
59.0	98	Roofs, HSG C
59.0		100.00% Impervious Area

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

Subcatchment 51S: Existing Shed



Summary for Subcatchment 53S: Existing Metal Driveway

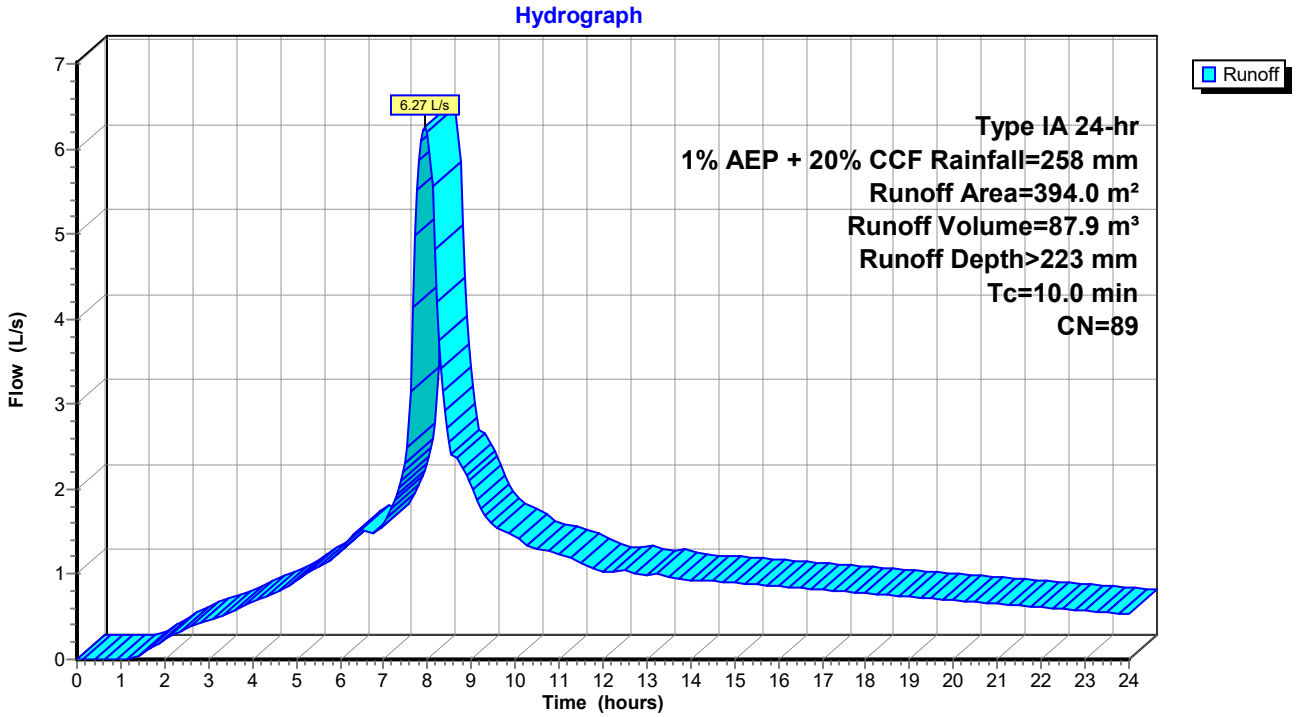
Runoff = 6.27 L/s @ 7.95 hrs, Volume= 87.9 m³, Depth> 223 mm

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 1% AEP + 20% CCF Rainfall=258 mm

Area (m²)	CN	Description
394.0	89	Gravel roads, HSG C
394.0		100.00% Pervious Area

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

Subcatchment 53S: Existing Metal Driveway



Summary for Subcatchment 54S: Existing Greenfields

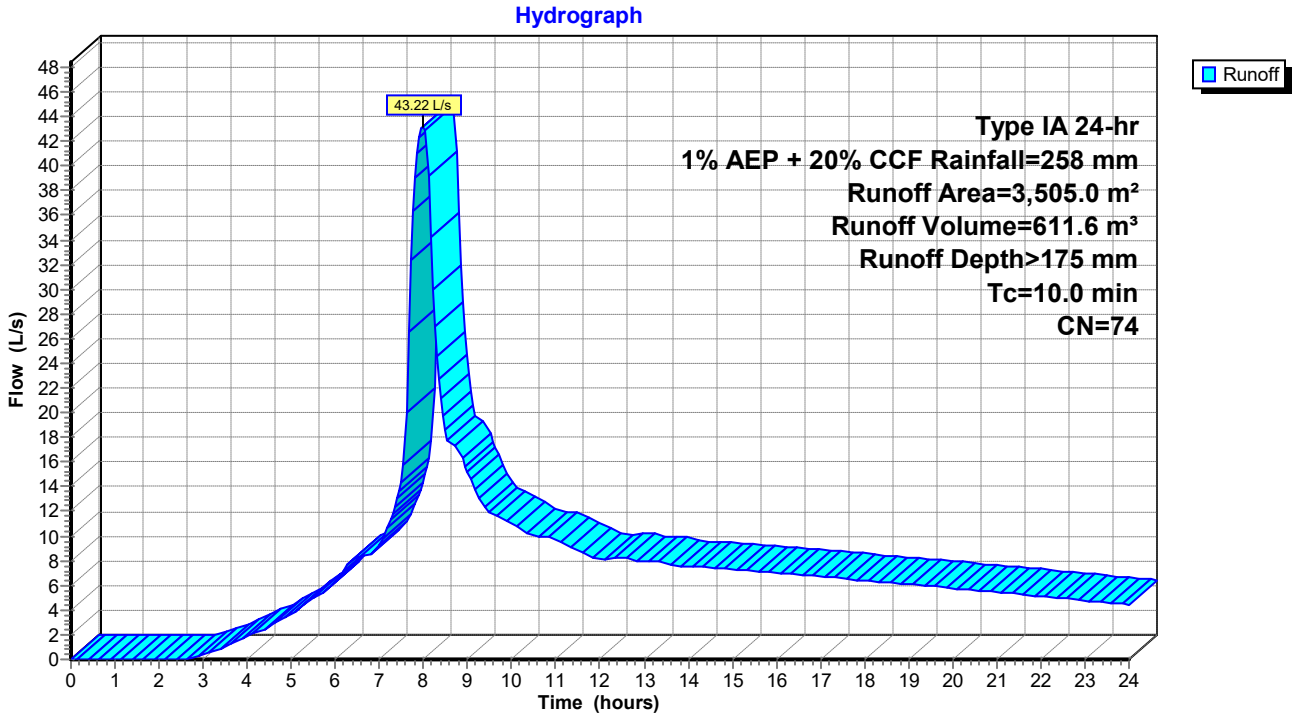
Runoff = 43.22 L/s @ 7.98 hrs, Volume= 611.6 m³, Depth> 175 mm

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 1% AEP + 20% CCF Rainfall=258 mm

Area (m²)	CN	Description
3,505.0	74	>75% Grass cover, Good, HSG C
3,505.0		100.00% Pervious Area

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

Subcatchment 54S: Existing Greenfields



Summary for Subcatchment 58S: Indicative Future Driveway

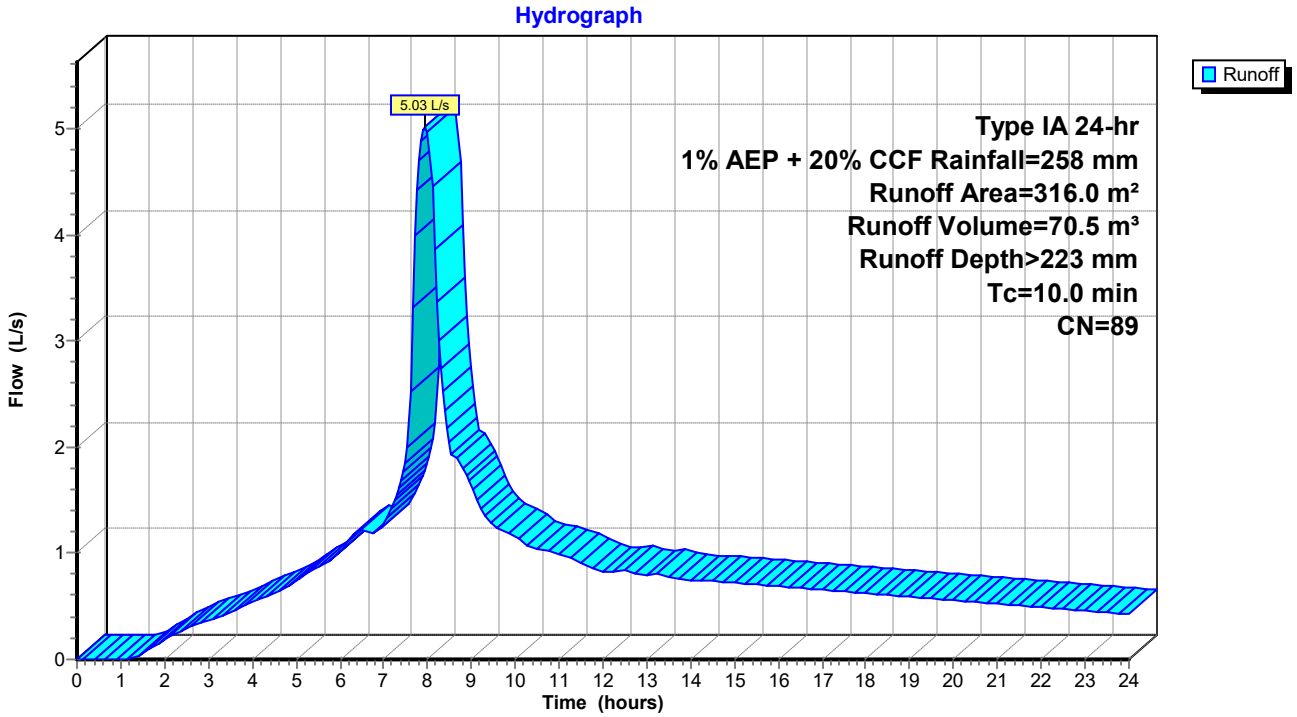
Runoff = 5.03 L/s @ 7.95 hrs, Volume= 70.5 m³, Depth> 223 mm

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 1% AEP + 20% CCF Rainfall=258 mm

Area (m²)	CN	Description
316.0	89	Gravel roads, HSG C
316.0		100.00% Pervious Area

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

Subcatchment 58S: Indicative Future Driveway



Summary for Pond 55P: 1 x 25,000L Rainwater Tanks

Inflow Area = 206.0 m²,100.00% Impervious, Inflow Depth > 251 mm for 1% AEP + 20% CCF event
Inflow = 3.50 L/s @ 7.94 hrs, Volume= 51.8 m³
Outflow = 3.18 L/s @ 8.08 hrs, Volume= 51.6 m³, Atten= 9%, Lag= 8.7 min
Primary = 3.18 L/s @ 8.08 hrs, Volume= 51.6 m³

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 0.163 m @ 8.08 hrs Surf.Area= 10.2 m² Storage= 1.7 m³

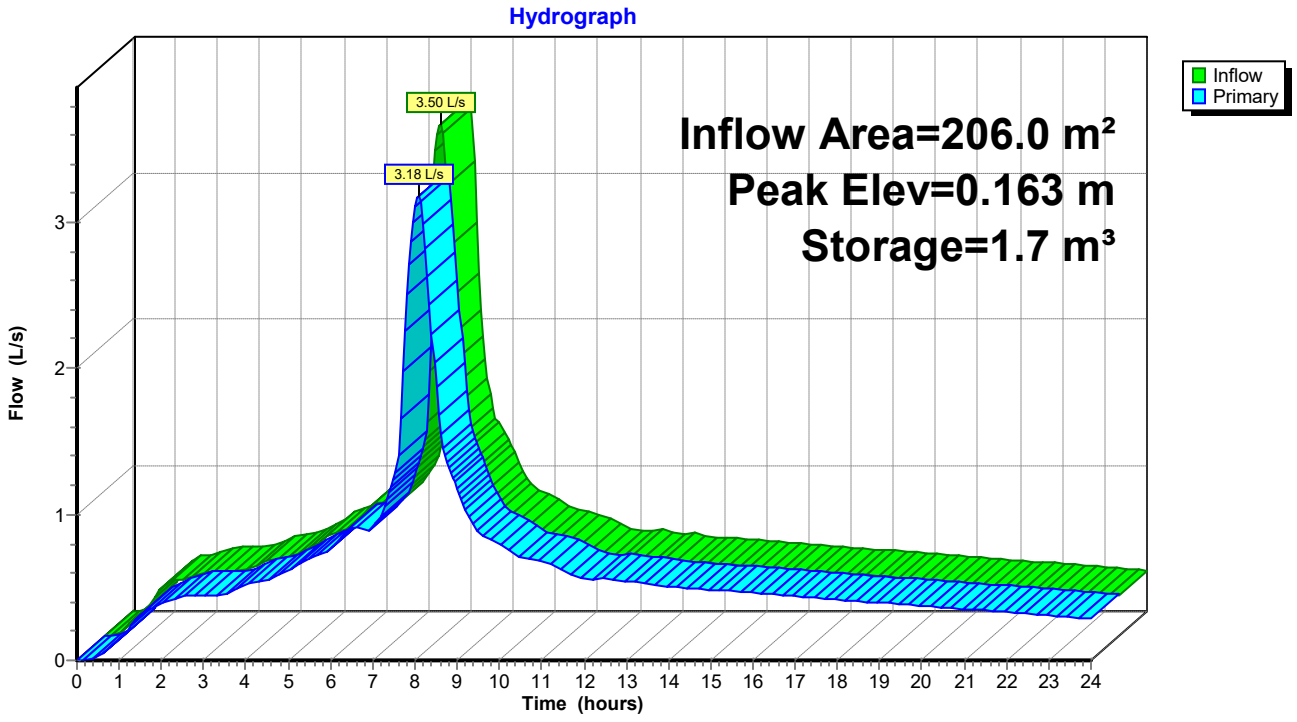
Plug-Flow detention time= 9.3 min calculated for 51.4 m³ (99% of inflow)
Center-of-Mass det. time= 6.3 min (652.1 - 645.8)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	26.5 m³	**3.60 mD x 2.60 mH Vertical Cone/Cylinder**

Device	Routing	Invert	Outlet Devices
#1	Primary	0.000 m	**65 mm Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=3.17 L/s @ 8.08 hrs HW=0.162 m (Free Discharge)
1=Orifice/Grate (Orifice Controls 3.17 L/s @ 0.96 m/s)

Pond 55P: 1 x 25,000L Rainwater Tanks

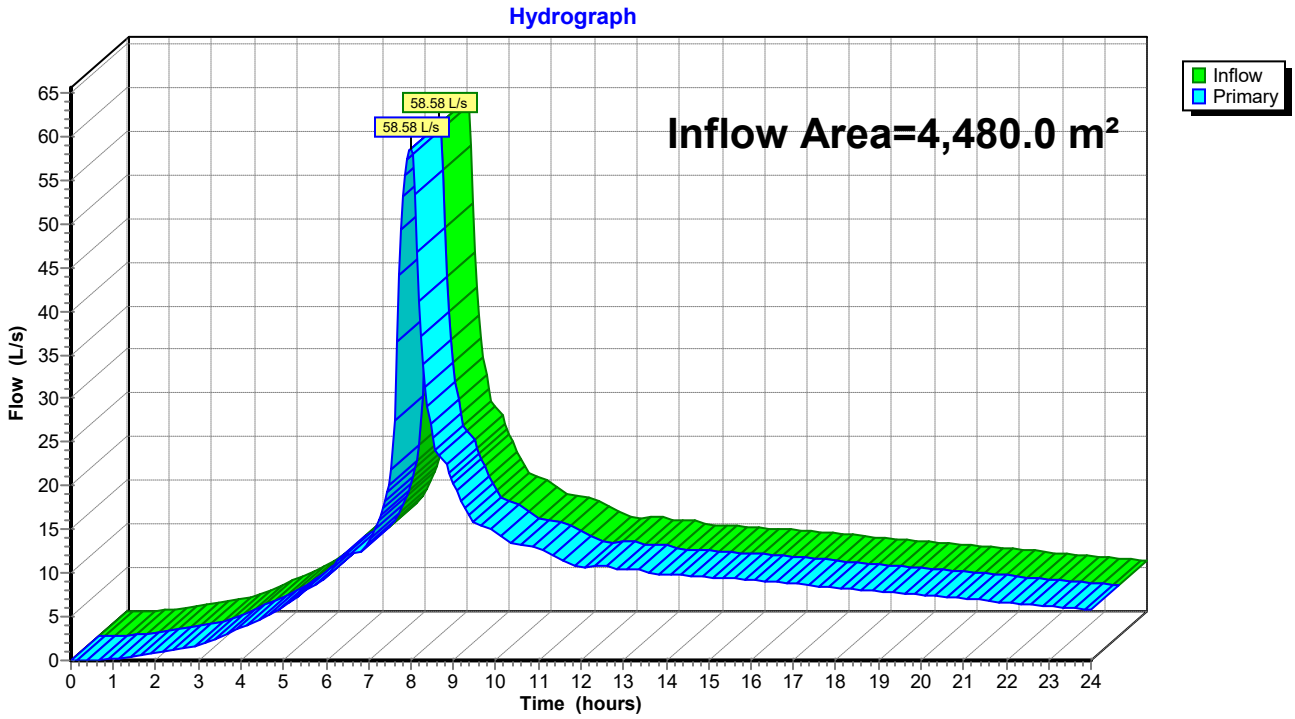


Summary for Link 56L: Flows Attenuated Back to Permitted Flows

Inflow Area = 4,480.0 m², 5.92% Impervious, Inflow Depth > 187 mm for 1% AEP + 20% CCF event
Inflow = 58.58 L/s @ 7.98 hrs, Volume= 836.5 m³
Primary = 58.58 L/s @ 7.98 hrs, Volume= 836.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link 56L: Flows Attenuated Back to Permitted Flows



HAND AUGER : HA01

CLIENT: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 22/10/2025 **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
Top soil	TOPSOIL, dark brown and dark grey, moist.	TS		Groundwater Not Encountered				1	
Awhitu Group Alluvium	NATURAL: Sandy SILT, brown and grey, medium dense, moist, no plasticity.		0.2					3	
			0.4					3	
	Fine to Medium SAND, grey and white, medium dense, moist.							3	
			0.6					4	
	Sandy SILT, grey and brown, medium dense, wet, no plasticity.							4	
			0.8					5	
	SILT, black, hard (dense), dry, no plasticity.							8	
			1.0					9	
			1.2						
Undifferentiated Tangihua Complex Basalt in Northland Allochthon	SILT, trace clay, brown, very stiff, dry, no plasticity.				UTP	-	-		
	1.4m: Minor clay, dry to moist, low plasticity.		1.4						
	Clayey SILT, light brown, very stiff, moist, low to moderate plasticity.		1.6						
	Silty CLAY, light brown, very stiff, moist, moderate to high plasticity.				161	54	3.0		
			1.8						
			2.0		107	48	2.2		
	2.2m: Becoming grey, moist to wet.		2.2						
			2.4						
	2.4m: Becoming stiff, wet.				93	48	1.9		
			2.6						
			2.8						
	2.8m: Occasional orange clasts, very stiff.				102	48	2.1		
	EOH: 3.00m - Target Depth		3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 3.00m (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: CSH

▼ 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: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 22/10/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: **ELEVATION:** Ground
FACTOR: **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
Top soil	TOPSOIL, dark brown and dark grey, dry.	TS		Groundwater Not Encountered				3	
Awhitu Group Alluvium	NATURAL: Sandy SILT, brown and grey, medium dense, dry, no plasticity.		0.2					3	
			0.4					3	
	Fine to Medium SAND, white, very dense, dry.							18	
	EOH: 0.50m - Too Dense To Auger (Hardpan)							20+	
			0.6						
			0.8						
			1.0						
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 0.50m (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: CSH

▼ 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

JOB NO.:	142947	**SHEET:**	1 OF 1
START DATE:	13/10/2025	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	DR4802	**ELEVATION:**	Ground
FACTOR:	1.39	**DATUM:**	

CLIENT: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Top soil	TOPSOIL, dark brown, moist.		0.0						
FILL	NON-ENGINEERED FILL: Clayey SILT, trace to minor sand, light brownish orange with whitish grey and dark orange mottles, stiff, moist, moderate plasticity.		0.2						
	NATURAL: SIlty CLAY, brownish orange with whitish grey mottles, stiff, moist, moderate to high plasticity.		0.4		70	25	2.8		
	CLAY, minor silt, brownish orange and whitish grey, stiff, moist, high plasticity.		0.6						
			0.8		89	42	2.1		
	1.0m: Becoming whitish grey with brownish orange streaks.		1.0						
	1.2m: Becoming very stiff.		1.2		103	58	1.8		
			1.4						
	1.6m: Becoming stiff.		1.6		81	47	1.7		
Undifferentiated Tangihua Complex Basalt in Northland Allochthon	Silty CLAY, grey with orange mottles, very stiff, moist, moderate plasticity.		1.8						
			2.0		111	56	2.0		
	2.2m: Becoming grey with orange and red mottles, moderate plasticity.		2.2						
			2.4						
	CLAY, some silt, dark greyish brown, very stiff, moist to wet, moderate to high plasticity.		2.6	▽	131	70	1.9		
	Silty CLAY, grey with brownish yellow and orange mottles, very stiff, wet, moderate plasticity.		2.8		139	28	5.0		
			3.0						
	3.1m: Becoming blue, moist, moderate to high plasticity, occasional pockets of brownish silt and clasts.		3.2		111	47	2.4		
			3.4						
			3.6		108	33	3.3		
	4.0m: Becoming moderate plasticity, occasional black and grey clast seams.		4.0		103	42	2.5		
			4.2						
			4.4						
	Clayey SILT, greenish blue, very stiff, moist, low to moderate plasticity.		4.6		195+	-	-		
			4.8						
			5.0	▼ 13/10/2025	195+	-	-		
	EOH: 5.00m - Target Depth		5.2						
			5.4						

REMARKS
End of borehole @ 5.00m (Target Depth: 5.00m)
Groundwater encountered @ 2.70m during drilling. Standing groundwater @ 5.00m.

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: CSH

▼ 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: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 13/10/2025 **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
Top soil	Sandy TOPSOIL, grey and brown, dry.	TS		Groundwater Not Encountered					
FILL	NON-ENGINEERED FILL: Clayey SILT, orangey brown, stiff, moist, low plasticity.		0.2						
			0.4		65	20	3.2		
			0.6						
Topsoil	BURIED TOPSOIL: grey and brown, very stiff, moist, no plasticity.	TS	0.8						
Awhitu Group Alluvium	NATURAL: Silty SAND, grey, very dense, moist.				UTP	-	-		
	Fine to Medium SAND, whitish grey, very dense, dry.		1.0						
	EOH: 1.00m - Too Dense To Auger (Hardpan)				UTP	-	-	20+	
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 1.00m (Target Depth: 5.00m)

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: CSH

▼ 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 : HA05

JOB NO.: 142947 **SHEET:** 1 OF 1

START DATE: 13/10/2025 **NORTHING:** **GRID:**

CLIENT: Adeline Knight **DIAMETER:** 50mm **EASTING:**

PROJECT: 3 Lot Subdivision (2 Lots for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 44 Morey Road, Cable Bay **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
Top soil	Sandy TOPSOIL, grey and brown, moist.	TS		Groundwater Not Encountered					
FILL	NON-ENGINEERED FILL: Clayey SILT, occasional pockets of sand, orangey brown, stiff, moist, low plasticity.		0.2						
			0.4		68	14	4.9		
			0.6						
			0.8		70	25	2.8		
Awhitu Group Alluvium	NATURAL: Sandy SILT, grey, medium dense, no plasticity.		1.0						
	Fine to Medium SAND, minor silt, grey, dense to very dense, moist.		1.2						
	EOH: 1.20m - Too Dense To Auger (Hardpan)		1.4		UTP	-	-	20+	
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS

End of borehole @ 1.20m (Target Depth: 5.00m)

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: CSH

▼ 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 : HA06

CLIENT: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 13/10/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: **ELEVATION:** Ground
FACTOR: **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 and black, moist.	TS	0.0	Groundwater Not Encountered				2	
Awhitu Group Alluvium	NATURAL: Sandy SILT, grey, medium dense, moist, no plasticity.		0.2					2	
	Fine to Medium SAND, whitish grey, dense, dry.		0.4					3	
	EOH: 0.50m - Too Dense To Auger (Hardpan)		0.6					8	
			0.8					20+	
			1.0						
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 0.50m (Target Depth: 5.00m)

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: CSH

▼ 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 : HA07

JOB NO.: 142947 **SHEET:** 1 OF 1

START DATE: 13/10/2025 **NORTHING:** **GRID:**

CLIENT: Adeline Knight **DIAMETER:** 50mm **EASTING:**

PROJECT: 3 Lot Subdivision (2 Lots for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 44 Morey Road, Cable Bay **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					2	
Awhitu Group Alluvium	NATURAL: Sandy SILT, brown, loose, moist.		0.4					2	
	SILT, some sand, brown, medium dense, moist.							3	
	0.9m: Becoming dense.		0.6					3	
			0.8					3	
			1.0					4	
			1.2					8	
			1.4					8	
Undifferentiated Tangihua Complex Basalt in Northland Allochthon	Clayey SILT, light brown, very stiff, moist, low to moderate plasticity.		1.6		UTP	-	-	10	
	1.7m: Occasional orangey brown streaks and clasts.		1.8					12	
	2.0m: Becoming moist to wet.		2.0		130	37	3.5	8	
			2.2						
			2.4		133	48	2.8		
	Silty CLAY, grey with orangey brown clasts, stiff, wet, moderate to high plasticity.		2.6						
			2.8						
	2.9m: Becoming bluish grey.		3.0	▽	93	42	2.2		
	3.2m: Becoming very stiff.		3.2		124	39	3.2		
			3.4						
			3.6		147	45	3.3		
			3.8						
	4.0m: Occasional clast inclusions.		4.0	▼ 13/10/2025	155	54	2.9		
			4.2						
			4.4						
	Clayey SILT, blue, very stiff, wet, moderate plasticity, frequent clast inclusions.				197+	-	-		
	4.5m: Becoming brown.		4.6						
			4.8		197+	-	-		
			5.0						
	EOH: 5.00m - Target Depth		5.2						
			5.4						

REMARKS

End of borehole @ 5.00m (Target Depth: 5.00m)

Groundwater encountered @ 2.90m during drilling. Standing groundwater @ 4.00m.

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: CSH

▼ 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

Wilton Joubert Limited
09 945 4188
185 Waipapa Road,
Kerikeri

SITE	**44 Morey Road, Cable Bay**
LEGAL DESCRIPTION	**Lot 1 DP 138219**
PROJECT	**Site Investigation for Proposed 4-Lot Subdivision**
CLIENT	**Adeline Knight**
REFERENCE NO.	**142947**
DOCUMENT	**Site Assessment Report**
STATUS/REVISION NO.	**FINAL – Issued for Resource Consent**
DATE OF ISSUE	**5 November 2025**

Report Prepared For	Attention	Email
Adeline Knight	Nina Pivac	knight.adeline@gmail.com nina@logiplan.co.nz

Authored by	**S. Page**	Engineering Technician	shaun@wjl.co.nz	
Reviewed by	**A. Brooke** *NZDE (Civil)*	Engineering Technician	aidan@wjl.co.nz	
Approved by	**C. Hegedus** *BETech (Geotech), CPEng, CMEngNZ*	Senior Geotechnical Engineer	csaba@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:	4-Lot subdivision (3 Lots [future Lot 2 to Lot 4] for assessment).
Development Proposals Supplied:	No - Once the Subdivision Scheme Plan has been finalised, it should be referred to us for review.
Geology Encountered:	Awhitu Group Alluvium cap to depths ranging between 0.50m to 1.5m below present ground level (bpgl), overlying Undifferentiated Tangihua Complex Basalt in Northland Allochthon deposits at depth.
Surficial Topsoil, Non-Engineered Fill & Buried Topsoil Encountered:	Yes – Surficial layers of topsoil and fill material underlain by buried topsoil in places were encountered at our test locations to depths ranging between 0.10m to 0.90m bpgl.
Overall Site Gradient in Proximity to Designated Building Platforms:	Near level or gently inclined (averaging less than 11°).
Site Stability Risk:	Low risk of instability at proposed Lots 2-4.
Liquefaction Risk:	Negligible risk of liquefaction susceptibility at proposed Lots 2-4.
Suitable Foundation Type(s):	Reinforced, raft slab foundation system, slab-on-grade with deepened perimeter strip footings, or timber subfloor suspended on bored, concrete encased, timber pile/pole foundations.
Soil Bearing Capacity:	Yes – Competent Natural Ground & Engineered Fill Only. Geotechnical Ultimate Bearing Capacity= 300kPa.
NZBC B1 Expansive Soil Classification:	The subsoils vary from **Class A (Sand and Rock Sites)** to **Class H (Highly Expansive).** **We recommend a Lot-by-Lot expansivity testing for future housing development (Building Consent Stage) to determine an appropriate soil class for foundation design.**
NZS1170.5:2004 Site Subsoil Classification:	Class C – Shallow soil stratigraphy.
Earthworks:	We are not aware of any earthworks on future Lots 2 to 4, however anticipate that site formation works associated with building platform preparation will be carried out for future housing development on each future lot during the Building Consent stage.
Consent Application Report Suitable for:	**Resource Consent**. This report is not intended to support any Building Consent application. Future development proposals for Lots 2 to 4 will need to be subject to site-specific investigations and assessments during the Building Consent stage.

2. INTRODUCTION

2.1. SCOPE OF WORK

Wilton Joubert Limited (WJL) was engaged by **Adeline Knight** (the Client) to undertake a geotechnical assessment of the above site, where we understand, it is proposed to subdivide the existing property into four individual allotments.

The primary purpose of this report is to provide Geotechnical assessments, along with preliminary design recommendations, pertaining to future residential development within three new vacant Lots (future Lot 2 to Lot 4). The existing residential development that covers the southeastern portion of the property will remain and be future Lot 1.

It is our understanding that this report will be submitted to support a Resource Consent application for the proposed subdivision development.

2.2. SUPPLIED INFORMATION

At the time of preparing this report, we were initially supplied with a mark-up sketch of the proposed subdivision which was then further amended to include an additional allotment. The subdivision development is approximately depicted on our appended Site Plan (Drawing No. 142947-G600).

Once the Subdivision Scheme Plan has been finalised, it should be referred to WJL for review. Additionally, this report is not intended to support any Building Consent application. Future development proposals for Lots 2 to 4 will need to be subject to site-specific investigations and assessments during the Building Consent stage.

3. SITE DESCRIPTION

The proposed development will be constructed within the following property (the site) which is located off the eastern side of Morey Road, in the southern outskirts of the Cable Bay urban environment:

- 44 Morey Road, Cable Bay, legally described as Lot 1 DP 138219.

The site is shown on our appended Site Plan and in Figure 1 below.

Figure 1: Aerial view with the subject property highlighted in cyan (from Northland Regional Council online GIS database).

The surface area of the subject site is approximately 1.5ha and is accessed at the northwestern boundary corner via an aggregate driveway that traverses towards the southeastern boundary corner.

Built development on site comprises an existing dwelling near the eastern boundary and shed near the southeastern boundary corner. A small sized timber pole fence bounds the southwestern side of the driveway. Vegetation comprises mainly grass, with trees intermittently bordering the driveway.

Topographically speaking, the site is set around a gently sloping crest at the southeastern portion of the site. Slopes fall from the crest towards the north at gentle inclinations up to 8°, and towards the west up to approximately 11°.

A level horse arena has been formerly created across the western portion of the property. This has involved a cut-fill earthworks operation in the order of up to approximately 3.0m and 1.5m, respectively, and tapering to the north. The cut is battered at average grades of 1V:2.5H (22°) to 1V:2H (27°), whilst the fill has generally adopted a 1V:1.5H (34°) batter grade.

The Far North District Council (FNDC) on-line GIS Water Services Map indicates that public underground service connections are not available to the property.

4. DEVELOPMENT PROPOSALS

It is our understanding that the client intends to subdivide the existing property into four individual allotments of between approximately 3,000m² to 4,000m² land areas of each Lot. The subdivision development is approximately depicted on our appended Site Plan and will require confirmation during review once the Subdivision Scheme Plan has been finalised.

Proposed Lot 1 will contain the existing residential development across the southeastern portion of the property and is excluded from our Geotechnical assessment.

Proposed Lots 2-4 will essentially encompass the remaining vacant land across the site. Specifically, Lot 2 covers the northeastern portion, Lot 3 covers the northwestern portion, including the horse arena, and Lot 4 covers the southwestern portion.

All four Lots are to be accessed via the existing driveway which is to be upgraded to a right-of-way (ROW) formation.

We have been engaged to provide Geotechnical assessments, along with preliminary design recommendations pertaining to future residential development within Lots 2 to 4. A 30m x 30m (900m²) designated building platform (DBP) has been nominated at Lots 2 and 4 for assessment, whilst a 650m² DBP has been nominated at Lot 3 due to the location of the horse arena. All three DBPs are depicted on our appended Site Plan.

At this preliminary stage, we have assumed any future dwelling at Lots 2 to 4 will be designed and constructed to apply loads generally in keeping with the requirements of NZS3604:2011.

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

Figure 2: Site photograph looking south towards the DBP of future Lot 2.

Figure 3: Site photograph looking south towards the DBP of future Lot 3.

Figure 4: Site photograph looking southeast towards the DBP of future Lot 4.

5. DESKTOP STUDY

5.1. PUBLISHED GEOLOGY

Local geology across most of the property is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as; **Awhitu Group Alluvium**.

These deposits are approximately 4 to 1 million years in age and described as; "*Partly consolidated sandstone and mudstone of high terraces*' (Ref: GNS Science Website).

Referring to the above mapping source, local geology across the northeastern and southwestern boundary corners, as well as the wider surrounding land, is noted as; **Undifferentiated Tangihua Complex Basalt in Northland Allochthon**.

These deposits are approximately 146 to 56 million years in age and described as; "*Basaltic pillow lava and pillow breccia, with sills and dikes of basalt and dolerite.*'

The Awhitu Group Alluvium deposits are essentially a surficial cap across the site and will be underlain by Undifferentiated Tangihua Complex Basalt in Northland Allochthon deposits at depth, being geologically older.

Additionally, a relic fold boundary, traversing southeast to northwest, is depicted slightly beyond the northeastern boundary corner.

Figure 5: Screenshot from the New Zealand Geology Web Map hosted by GNS Science. Blue marker depicts property location.

5.2. HISTORICAL AERIAL PHOTOGRAPHY REVIEW

A historical aerial photography review was undertaken to evaluate any slope instability features or changes in landform at the property. Aerial images from 1966 have been reviewed and compared to the present-day conditions.

In 1966, the property and surrounding crest land to the east was largely covered in bush as shown in Figure 6 below.

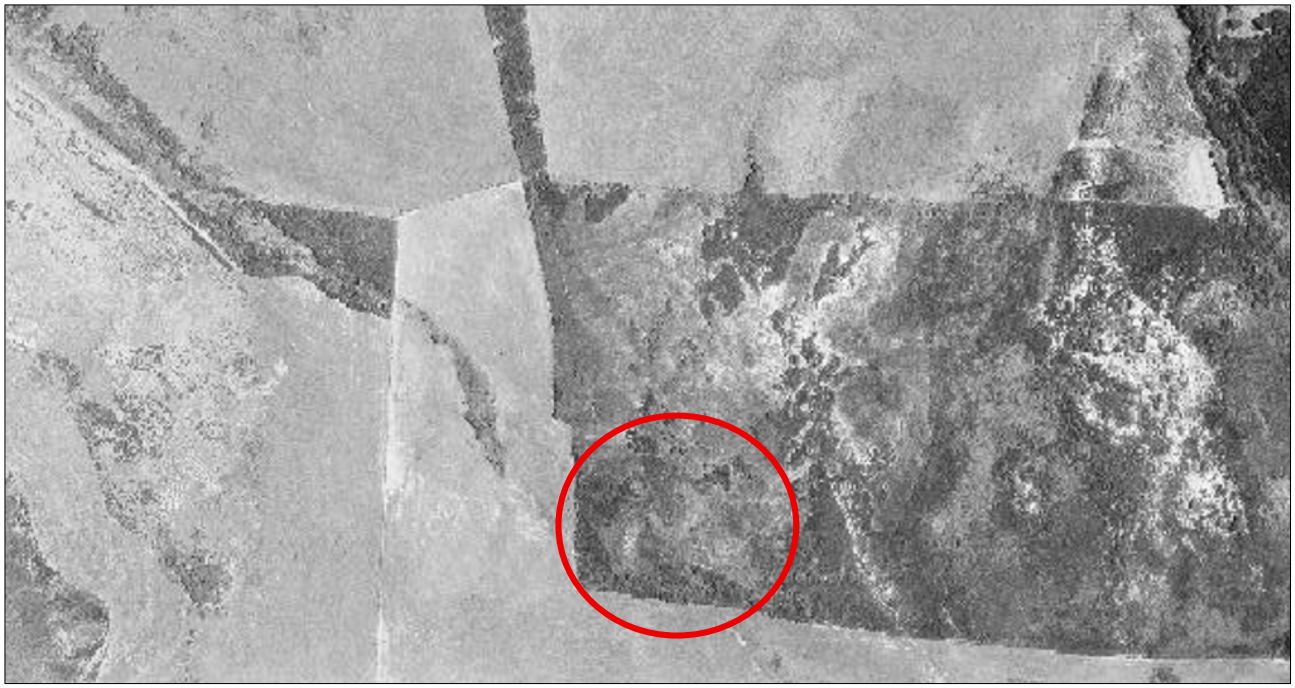


Figure 6: Historical aerial photo from 1966 (source: https://retrolens.co.nz). Red ring approximately depicts property location.

By 1981, the bush had been cleared, and the property was covered in pasture as shown in Figure 7 below.

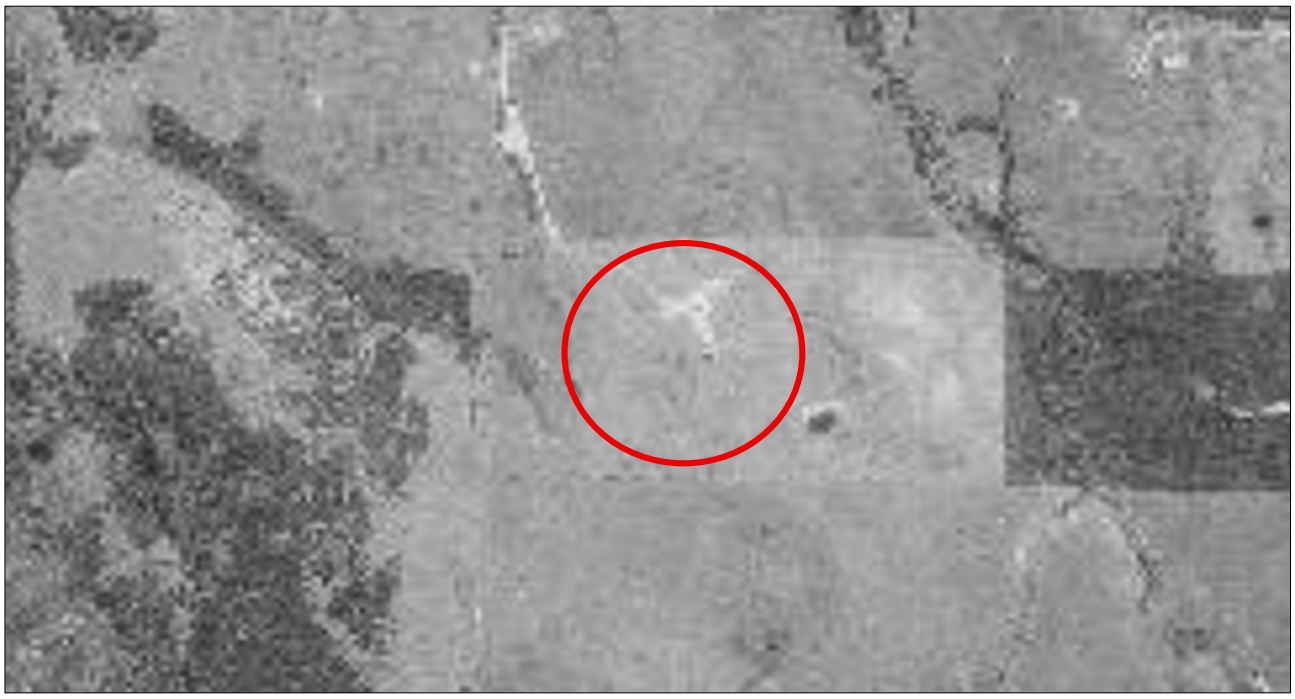


Figure 7: Historical aerial photo from 1981 (source: https://retrolens.co.nz). Red ring approximately depicts property location.

The existing residential development and Morey Road appear to have been constructed at some point between 1981 and April 2003 as shown in Figure 8 below. The horse arena appears to have been formed recently, likely after May 2024 as it is not shown on the latest aerial image on the FNDC's GIS (see Figure 1 above).

Figure 8: Historical aerial photo from April 2003 (source: Google Earth Pro). Red marker depicts property location.

There were no visible significant geomorphological changes in the landscape or obvious features consistent with major ground instability, indicating a period of stable ground conditions between 1966 and 2024, as depicted in the above figures.

6. GEOTECHNICAL INVESTIGATION

Our fieldwork, as depicted on our appended Site Plan, was undertaken on the 13th and 22nd October 2025 and involved:

- Drilling 7 (no.) 50mm diameter hand auger boreholes (HA01 to HA07 inclusive) to depths ranging between 0.50m and 5.0m below present ground level (bpgl),
- Undertaking Dynamic Cone Penetrometer (DCP-Scala) tests from the base of HA04 to HA05 which immediately refused at depths of 1.0m and 1.2m bpgl,
- HA01, HA02, HA06 and HA07 were initially supplemented with DCP-Scala tests in determining the available bearing capacities of the non-cohesive surficial soil cap. The test in HA06 refused at a depth of 0.50m bpgl,
- The measurement of appended Cross-section A-A' (Drawing No. 142947-G610) through the Lot 3 DBP, using a tape and electronic ZIP LEVEL, and
- Drawing appended Cross-section B-B' (Drawing No. 142947-G611) through the Lot 4 DBP, using 1.0m LiDAR contours sourced from the Land Information New Zealand (LINZ) database.

The soil sample arisings from the HAs were logged in accordance with the "*Field Description of Soil and Rock*", New Zealand Geotechnical Society (NZGS), December 2005.

7. GEOTECHNICAL FINDINGS

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

7.1. TOPSOIL

Topsoil was encountered in all seven HAs to depths ranging between 0.10m to 0.20m bpgl.

7.2. FILLED GROUND (LOT 3 DBP)

Underlying the topsoil in HA03 to HA05, fill material associated with the formation of the horse arena at future Lot 3 was encountered to depths ranging between 0.20m to 0.90m bpgl. The fill comprised of stiff clayey SILT, with occasional sand content. Additionally, a buried topsoil layer was underlying the fill in HA04, with the natural ground interface present at a depth of 0.80m bpgl.

Measured in-situ, BS1377 adjusted peak Vane Shear Strengths within the fill material ranged between 65kPa and 70kPa.

Considering the low Shear Vane Strengths encountered and presence of buried topsoil at depth which indicates the horse arena was not sufficiently stripped of deleterious (topsoil) material prior to fill placement, we consider the in-situ fill as NON-ENGINEERED and unsuitable to support future permanent structures.

7.3. NATURAL GROUND

The underlying natural deposits encountered across DBPs at future Lots 2 to 4 were consistent with our observations given in Section 5.1 above, and are summarised for each section as follows:

FUTURE LOT 2 DBP (HA01 and HA02)

Both HAs were initially underlain by a non-cohesive alluvium cap to a maximum depth of 1.2m bpgl, comprising of medium dense to dense and/or hard, sandy SILT, fine to medium SAND and SILT. Upslope HA02 was terminated at a depth of 0.50m due to the presence of a very dense HARDPAN. From a depth of 1.2m bpgl in downslope HA01, cohesive Undifferentiated Tangihua Complex Basalt in Northland Allochthon derived deposits were encountered to a target depth of 3.0m bpgl and comprised of stiff to very stiff, SILT, clayey SILT and silty CLAY.

DCP-Scala tests within the non-cohesive alluvium returned blow counts ranging between 3 and greater than 20 blows per 100mm ground penetration.

Within the cohesive deposits at depth, measured in-situ, BS1377 adjusted peak Shear Vane Strengths ranged between 93kPa and Unable to Penetrate (UTP), where the vane was unable to be pushed into the soil.

The ratio of peak to remoulded Shear Vane Strength values measured within the cohesive deposits ranged between 1.9 and 3.0, generally indicating 'Moderately Sensitive' subgrade.

Sensitive soil sites require to protect the subgrade from rain, wind, etc., and to avoid (or minimise) construction traffic and vibrating plants.

FUTURE LOT 3 DBP (HA03 to HA05)

HA03 was drilled near the base of the upslope cut and only encountered cohesive Undifferentiated Tangihua Complex Basalt in Northland Allochthon derived deposits to a target depth of 5.0m bpgl, comprising of stiff to very stiff, silty CLAY, CLAY and clayey SILT.

Below the filled and buried topsoil ground in downslope HAs 04-05, a 0.20m to 0.30m veneer of non-cohesive alluvium deposits were encountered, comprising of medium dense to very dense, silty SAND, sandy SILT and fine to medium SAND, until termination on a very dense HARDPAN present from depths ranging between 1.0m and 1.2m bpgl.

DCP-Scala tests within the non-cohesive alluvium returned blow counts exceeding 20 blows per 100mm ground penetration, indicating very dense deposits.

Within the cohesive deposits at depth, measured in-situ, BS1377 adjusted peak Shear Vane Strengths ranged between 70kPa and greater than 195kPa, the latter being where the soil strengths were in excess of the shear vane capacity.

The ratio of peak to remoulded Shear Vane Strength values measured within the cohesive deposits largely ranged between 1.7 and 3.3, generally indicating 'Moderately Sensitive' subgrade. In HA03, an isolated ratio of 5.0 was measured at depth of 2.8m bpgl.

FUTURE LOT 4 DBP (HA06 and HA07)

Both HAs were initially underlain by a non-cohesive alluvium cap to a maximum depth of 1.5m bpgl, comprising of loose to dense, sandy SILT, SILT and fine to medium SAND. Upslope HA06 was terminated at a depth of 0.50m due to the presence of very dense HARDPAN. From a depth of 1.5m bpgl in downslope HA07, cohesive Undifferentiated Tangihua Complex Basalt in Northland Allochthon derived deposits were encountered to a target depth of 5.0m bpgl and comprised of stiff to very stiff, clayey SILT and silty CLAY.

DCP-Scala tests within the non-cohesive alluvium returned blow counts ranging between 2 and greater than 20 blows per 100mm ground penetration.

Within the cohesive deposits at depth, measured in-situ, BS1377 adjusted peak Shear Vane Strengths ranged between 93kPa and greater than 197kPa and/or UTP.

The ratio of peak to remoulded Shear Vane Strength values measured within the cohesive deposits ranged between 2.2 and 3.5, generally indicating 'Moderately Sensitive' subgrade.

7.4. GROUNDWATER

Groundwater was only encountered in HA03 and HA07 on the day of our investigations and was initially struck at depths of 2.7m and 2.9m bpgl respectively, before stabilising by the end of the fieldworks at standing levels of 5.0m and 4.0m bpgl.

7.5. SUMMARY TABLE

The following table summarises our inferred stratigraphic profiling:

Table 1: Stratigraphic Summary Table

Investigation Hole ID	Termination Depth (m)	Depth to Base of Surficial Topsoil, Non-Engineered Fill & Buried Topsoil (m)	DCP-Scala Blow Count Range Per 100mm Ground Penetration within Non-Cohesive Natural Ground	DCP-Scala Refusal (20+ Blows) from the base of selected HAs Depth (m)	Vane Shear Strength Range within Cohesive Natural Ground (kPa)	Standing Groundwater Depth (m)
HA01	3.0	0.10	3 - 9	NT	93 - UTP	NE
HA02	0.50 (2)	0.10	3 – 20+	0.5	NT	NE
HA03	5.0	0.20	NT	NT	70 - 195+	5.0 (1)
HA04	1.0 (2)	0.80	20+	1.0	UTP	NE
HA05	1.2 (2)	0.90	20+	1.2	UTP	NE
HA03	0.50 (2)	0.15	3 – 20+	0.5	NT	NE
HA03	5.0	0.20	2 - 12	NT	93 - 197+ / UTP	4.0 (1)

Table Note: (1) Measured on the day of drilling, (2) Too dense to hand auger due to hardpan, NT Not tested, NE Not encountered

7.6. EXPANSIVE SOILS

Naturally occurring, seasonal moisture variations are a strong characteristic of most Upper North Island soils, typically resulting in plastic soil masses swelling during winter months and then shrinking during summer months. Such volumetric changes in foundation soils (broadly termed 'Expansive Soils') vary according to clay mineralogy and geology and are a significant risk to buildings.

Depending on placement of future dwellings and magnitude of earthworks, there is a potential for a difference in subsoil founding materials at foundation levels due to the presence of two differing geological formations encountered across the DBPs at future Lots 2 to 4.

At this preliminary stage and in accordance with NZBC B1, future dwellings will need to either be designed for **Class A (Sand and Rock Sites)** or **Class H (Highly Expansive**) soil conditions due to the high variation of the subsoils.

We recommend that the expansive soil classification for each future Lot will need to be determined during investigations and assessments for site-specific development proposals during the Building Consent stage.

Expansive soils will require mitigation by either deepened footings or a specific engineering design (SED) reinforced, stiffened raft slab foundation system. Preliminary foundation design recommendations are given in Section 9 below.

8. GEOTECHNICAL ASSESSMENTS

As appropriate to the site conditions, we have carried out the following geotechnical analyses for the DBPs at future Lots 2 to 4:

- Qualitative slope stability, and
- Liquefaction susceptibility.

8.1. QUALITATIVE SLOPE STABILITY

The DBPs at Lot 2 and Lot 4 are positioned on gently inclined land averaging less than 11° and are bound by similarly inclined land for a considerable distance. The Lot 3 DBP is positioned atop the broad, near level horse arena and must take into consideration the surrounding steep cut and fill batters.

Our assessment has also considered the following:

- Generally, medium dense to very dense soils of the Awhitu Group Alluvium initially overlying the site and stiff to hard weathered soils of the Undifferentiated Tangihua Complex Basalt in Northland Allochthon encountered at depth during our investigations,
- Groundwater was only encountered in HA03 and HA07 on the day of our investigations and was initially struck at depths of 2.7m and 2.9m bpgl respectively, before stabilising at standing levels of 5.0m and 4.0m bpgl.
- The site is situated on an elevated (hilltop) location, with good water-shedding characteristics down to Morey Road,
- There are no known active faults traversing through or close to the site, and
- No visual signs of ground instability were observed at the time of our investigation. A review of historical aerial photography confirms the absence of any obvious slope instability.

8.2. SLOPE STABILITY ASSESSMENT CONCLUSION

Based on our qualitative assessment, global land instability is not considered to be a constraint or risk to the proposed development. However local instability within existing and/or future cut-fill ground may present and needs to be addressed by appropriate battering, or be supported by suitable retaining structures.

8.3. LIQUEFACTION ASSESSMENT

Liquefaction is the loss of effective strength of a cohesionless soil (typically sand) due to pore-water pressures generated during a seismic event (earthquake). The partial or complete loss of effective strength of loose, saturated soils can result in vertical settlement and/or horizontal movement (lateral spreading) of the ground.

A commonly accepted definition is: "Areas susceptible to liquefaction generally correspond with geologically young deposits (less than 10,000 years) located in relatively flat areas close to active or abandoned waterways, in coastal or estuarine areas, and/or areas of uncompacted or poorly compacted fill." None of these characteristics apply to this site.

We have carried out liquefaction susceptibility assessments in order to identify the risk of ground damage during a seismic event, based on the following items:

- The FNDC online GIS Hazard Map categorises the site as an '*Unlikely*' Liquefaction Vulnerability area,
- Generally, medium dense to very dense soils of the Awhitu Group Alluvium initially overlying the site and stiff to hard weathered soils of the Undifferentiated Tangihua Complex Basalt in Northland Allochthon encountered at depth during our investigations,
- Groundwater was only encountered in HA03 and HA07 on the day of our investigations and was initially struck at depths of 2.7m and 2.9m bpgl respectively, before stabilising at standing levels of 5.0m and 4.0m bpgl.
- The site is situated on an elevated (hilltop) location, essentially above a height of RL50m New Zealand Vertical Datum (NZVD), with good water-shedding characteristics down to Morey Road,
- There are no known active faults traversing through or close to the site, and
- Soils of the Undifferentiated Tangihua Complex Basalt in Northland Allochthon underlie the site at depth (geological age +56My).

8.4. LIQUEFACTION ASSESSMENT CONCLUSION

Based on our assessment, we conclude that the soils at the site have a negligible risk of liquefaction susceptibility, and therefore liquefaction induced ground damage is consequently unlikely.

9. CONCLUSIONS AND RECOMMENDATIONS

Based on our observations, site survey, record research, HA investigation and in-situ testing as described herein, we consider on reasonable grounds that this report can be submitted to the Territorial Authority in support of a Resource Consent application for subdividing the subject site, substantiating that in terms of section 106 of the Resource Management Act and its current amendments, either

a) No land in respect of which the consent is sought, nor any structure on that land, is, nor is likely to be subject to material damage by erosion, falling debris, subsidence, or slippage from any source, or

b) No subsequent use that is likely to be made of the land is likely to accelerate, worsen, or result in material damage to that land, other land, or structure, by erosion, falling debris, subsidence, or slippage from any source.

Therefore, we are satisfied that the DBPs at future Lots 2 to 4 should be generally suitable for future residential construction in terms of NZS3604:2011, subject to future development proposals being subject to site-specific investigations and assessments during the Building Consent stage.

9.1 PRELIMINARY FOUNDATION DESIGN

Shallow foundations, such as a reinforced, raft slab foundation system, slab-on-grade with deepened perimeter strip footings, or timber subfloor suspended on bored, concrete encased, timber pile/pole foundations, will likely be suitable to support future dwellings within the DBPs of future Lots 2 to 4.

As mentioned earlier, due to the high variation of the subsoils, we recommend that the expansive soil classification for each future Lot will need to be determined during investigations and assessments for site-specific development proposals during the Building Consent stage.

At this stage, we recommend that future dwellings at Lot 2 and Lot 4 are positioned towards the upslope portion of each DBP where it is generally envisaged that shallow, very dense hardpans will likely be underlying.

The future dwelling at the Lot 3 DBP must take into consideration the surrounding steep cut and fill batters. Any proposed foundations within approximately 8.0m of the fill batter should be appropriately reviewed during the Building Consent stage in determining if short, soil creep-type piles are required in accounting for any regression of the steep batter slope. Additionally, we consider all existing in-situ fill as NON-ENGINEERED and unsuitable to support future permanent structures. All such material should be removed and replaced with engineered fill beneath any proposed concrete floor slab and all footings should penetrate the non-engineered fill and be sufficiently embedded into competent natural ground.

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 competent natural ground and/or engineered fill, for which careful future Geo-Professional inspections of the subgrade should be undertaken to check that the underlying conditions are in keeping with our expectations:

Table 2: Shallow Bearing Capacity Values

Parameters	Awhitu Group Alluvium, Undifferentiated Tangihua Complex Basalt in Northland Allochthon Soils & Engineered Fill
Geotechnical Ultimate Bearing Capacity	300 kPa
ULS Dependable Bearing Capacity (Φ=0.5)	150 kPa

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

9.1.2. SHALLOW FOUNDATIONS ON EXPANSIVE SOILS

For any Class H assessed building site, the soils are not considered to lie within the definition of "*good ground*" in accordance with NZS3604:2011, and as such, the design of shallow foundations is no longer covered by NZS3604:2011. Care must be taken to mitigate against the potential seasonal shrinkage and swelling effects of expansive foundation soils on both superstructures and floors. We therefore recommend SED should be undertaken by a qualified engineer for the design of the proposed foundations.

For such soil sites, we recommend all footings are embedded at a minimum of 0.90m below finished ground levels and 0.30m into competent natural ground, whichever is deeper.

9.2 NZS1170.5:2004 SITE SUBSOIL CLASSIFICATION

We consider all three DBPs to be underlain with a Class C – Shallow Soil stratigraphy.

9.3 SITE EARTHWORKS

We are not aware of any earthworks on future Lot 2 to 4, however anticipate that site formation works associated with building platform preparation will be carried out for future housing development on each future Lot during the Building Consent stage.

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" &
- Chapter 2: Site development suitability (geotechnical and natural hazards) of the Whangārei District Council's Engineering Standards (Version 0.4, dated 27 June 2022).

9.4 GENERAL SITE WORKS

We stress that all work should be undertaken in a careful and safe manner so that Health and Safety is not compromised, and that suitable Erosion and 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.

9.5 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 & SURFACE WATER 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 slope stability or foundation conditions.

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 building footprints to protect building platforms 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 be discharged to a FNDC approved stormwater reticulated system.

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

11. ON-SITE WASTEWATER DISPOSAL

No reticulated sanitary sewer is available for the site; therefore, an on-site wastewater treatment and disposal systems will be required to service future developments.

We recommend that all designs for future on-site wastewater systems should be carried out by an Engineer experienced in on-site wastewater disposal.

12. 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.

13. LIMITATIONS

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

This report has been commissioned solely for the benefit of our Client, **Adeline Knight**, 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,

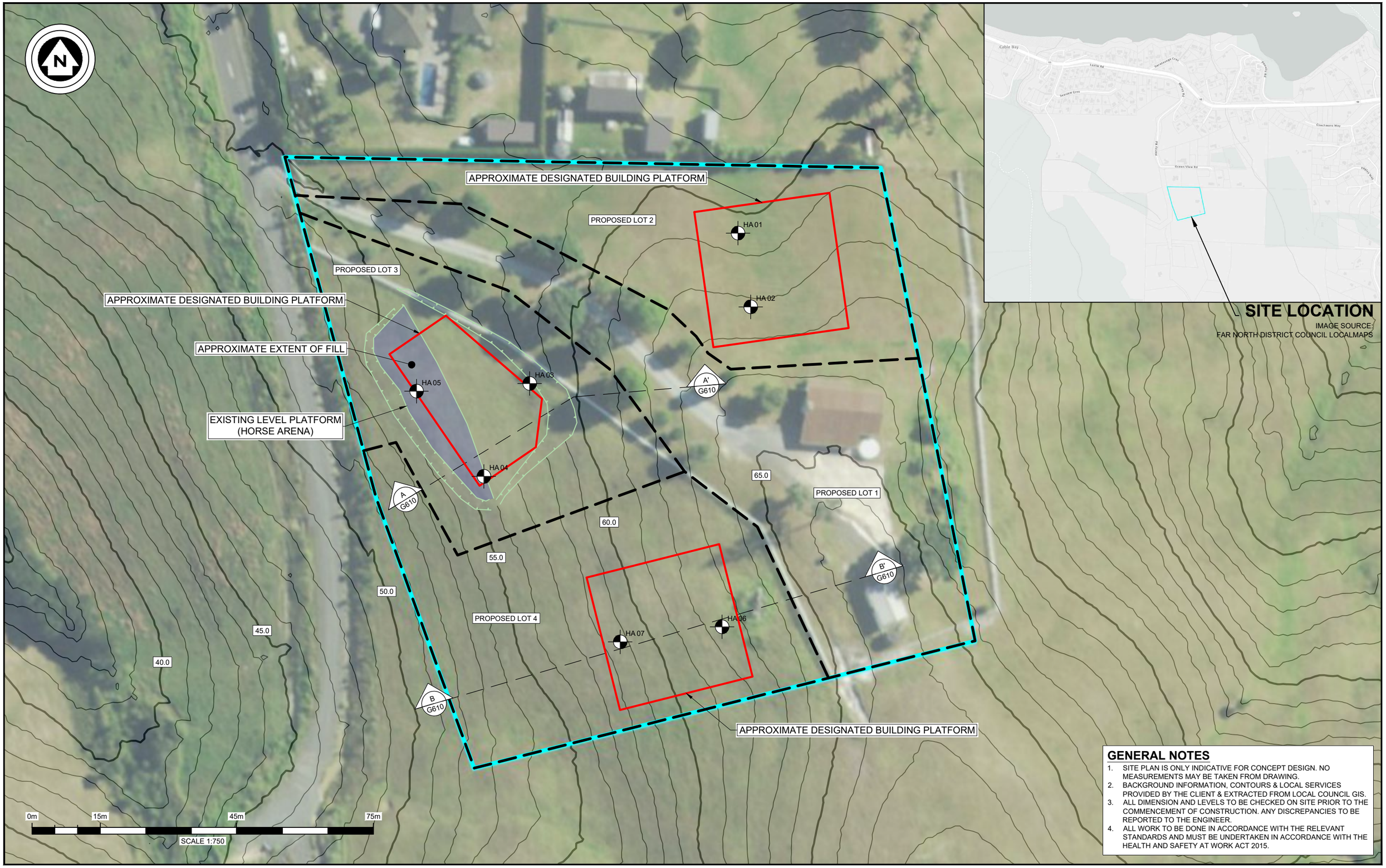
WILTON JOUBERT LIMITED

Appendices:

WJL Site Plan & Cross-sections A-A' and B-B' (3 sheets)

HA Records (7 sheets)

'*Foundation Maintenance and Footing Performance*' homeowner's guide, published by CSIRO (4 sheets)



SITE LOCATION

IMAGE SOURCE:
FAR NORTH DISTRICT COUNCIL LOCALMAPS

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	OCT 2025	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
DRAWN BY: A.B
CHECKED BY:
SURVEYED BY:

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

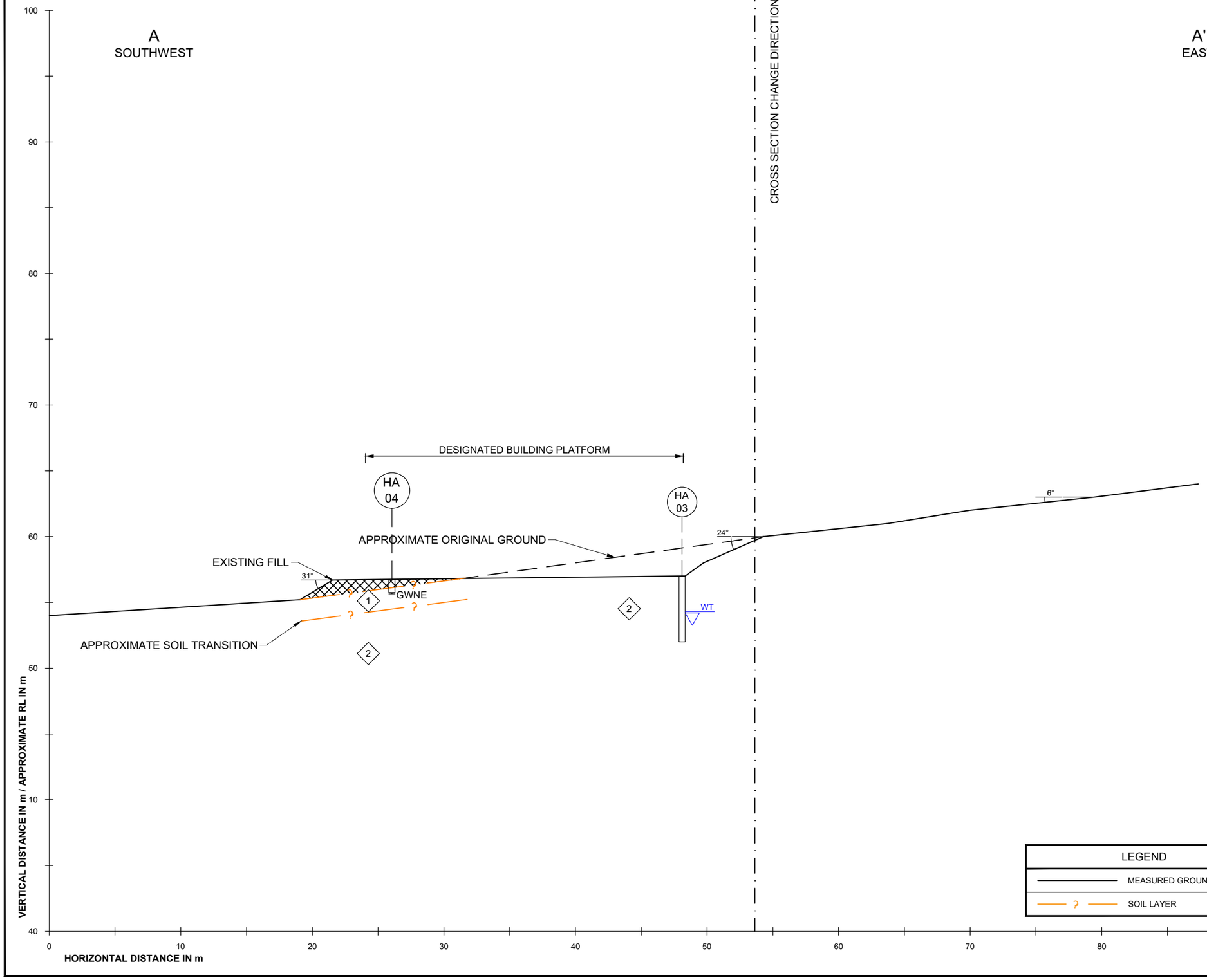
DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **PROPOSED SUBDIVISION**

PROJECT TITLE: **LOT 1 DP 138219 44 MOREY ROAD CABLE BAY NORTHLAND**

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE:	CO-ORDINATE SYSTEM:
1:750	NOT COORDINATED

DRAWING NUMBER: **142947-G600** ISSUE: **A**



KEY:

HA 01 — HAND AUGER LOCATION

WT — GROUNDWATER

GWNE — NO GROUNDWATER

DCP - SCALA PENETROMETER TEST

1 — AWHITU GROUP ALLUVIUM

2 — TANGIHUA COMPLEX BASALT IN NORTHLAND ALLOCHTHON

NOTES:

1. Cross Sections measured by survey tape and ZIP-LEVEL.
2. Reduced level information based on Contours from Surveyed Drawings.

GENERAL NOTES

1. CROSS SECTION 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.
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LEGEND	
———	MEASURED GROUND PROFILE
— ? —	SOIL LAYER

WILTON JOUBERT
Consulting Engineers
Northland: 09 945 4188 Auckland: 09 527 0196
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ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	OCT 2025	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
DRAWN BY: A.B
CHECKED BY:
SURVEYED BY:

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GEOTECHNICAL

DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE:
CROSS SECTION A - A'
(PROPOSED LOT 3)

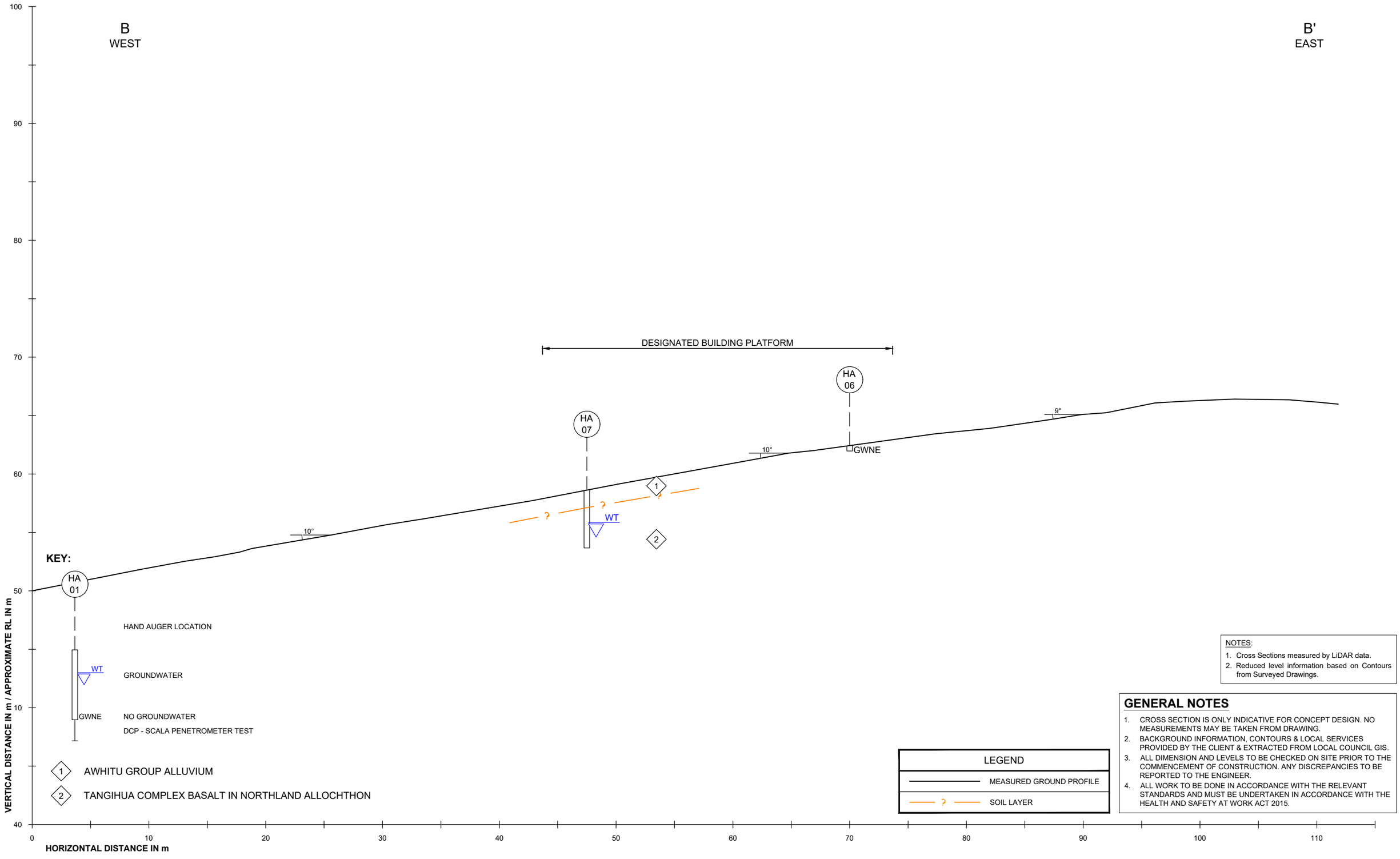
PROJECT DESCRIPTION:
PROPOSED SUBDIVISION

PROJECT TITLE:
LOT 1 DP 138219
44 MOREY ROAD
CABLE BAY
NORTHLAND

ORIGINAL DRAWING SIZE:	OFFICE:
A3	WHANGAREI
DRAWING SCALE:	CO-ORDINATE SYSTEM:
1:300	NOT COORDINATED
DRAWING NUMBER:	ISSUE:
142947-G610	A

B
WEST

B'
EAST



LEGEND

———	MEASURED GROUND PROFILE
?	SOIL LAYER

NOTES:

1. Cross Sections measured by LiDAR data.
2. Reduced level information based on Contours from Surveyed Drawings.

GENERAL NOTES

1. CROSS SECTION IS ONLY INDICATIVE FOR CONCEPT DESIGN. NO MEASUREMENTS MAY BE TAKEN FROM DRAWING.
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Northland: 09 945 4188
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ISSUE / REVISION

No.	DATE	BY	DESCRIPTION
A	OCT 2025	A.B	ISSUED WITH GEOTECHNICAL REPORT

DESIGNED BY:
DRAWN BY: A.B
CHECKED BY:
SURVEYED BY:

SERVICES NOTE
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GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE:
CROSS SECTION B - B'
(PROPOSED LOT 4)

PROJECT DESCRIPTION:
PROPOSED SUBDIVISION

PROJECT TITLE:
LOT 1 DP 138219
44 MOREY ROAD
CABLE BAY
NORTHLAND

ORIGINAL DRAWING SIZE: A3	OFFICE: WHANGAREI
DRAWING SCALE: 1:300	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 142947-G611	ISSUE: A

HAND AUGER : HA01

CLIENT: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 22/10/2025 **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
Top soil	TOPSOIL, dark brown and dark grey, moist.	TS		Groundwater Not Encountered				1	
Awhitu Group Alluvium	NATURAL: Sandy SILT, brown and grey, medium dense, moist, no plasticity.		0.2					3	
			0.4					3	
	Fine to Medium SAND, grey and white, medium dense, moist.							3	
			0.6					4	
	Sandy SILT, grey and brown, medium dense, wet, no plasticity.							4	
			0.8					5	
	SILT, black, hard (dense), dry, no plasticity.							8	
			1.0					9	
			1.2						
Undifferentiated Tangihua Complex Basalt in Northland Allochthon	SILT, trace clay, brown, very stiff, dry, no plasticity.				UTP	-	-		
	1.4m: Minor clay, dry to moist, low plasticity.		1.4						
	Clayey SILT, light brown, very stiff, moist, low to moderate plasticity.		1.6						
	Silty CLAY, light brown, very stiff, moist, moderate to high plasticity.				161	54	3.0		
			1.8						
			2.0		107	48	2.2		
	2.2m: Becoming grey, moist to wet.		2.2						
			2.4						
	2.4m: Becoming stiff, wet.				93	48	1.9		
			2.6						
			2.8						
	2.8m: Occasional orange clasts, very stiff.				102	48	2.1		
	EOH: 3.00m - Target Depth		3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 3.00m (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: CSH

▼ 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: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 22/10/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: **ELEVATION:** Ground
FACTOR: **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
Top soil	TOPSOIL, dark brown and dark grey, dry.	TS		Groundwater Not Encountered				3	
Awhitu Group Alluvium	NATURAL: Sandy SILT, brown and grey, medium dense, dry, no plasticity.		0.2					3	
			0.4					3	
	Fine to Medium SAND, white, very dense, dry.							18	
	EOH: 0.50m - Too Dense To Auger (Hardpan)							20+	
			0.6						
			0.8						
			1.0						
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 0.50m (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: CSH

▼ 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

JOB NO.:	142947	**SHEET:**	1 OF 1
START DATE:	13/10/2025	**NORTHING:**	**GRID:**
DIAMETER:	50mm	**EASTING:**	
SV DIAL:	DR4802	**ELEVATION:**	Ground
FACTOR:	1.39	**DATUM:**	

CLIENT: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / mm)	COMMENTS, SAMPLES, OTHER TESTS
Top soil	TOPSOIL, dark brown, moist.		0.0						
FILL	NON-ENGINEERED FILL: Clayey SILT, trace to minor sand, light brownish orange with whitish grey and dark orange mottles, stiff, moist, moderate plasticity.		0.2						
	NATURAL: SIlty CLAY, brownish orange with whitish grey mottles, stiff, moist, moderate to high plasticity.		0.4		70	25	2.8		
	CLAY, minor silt, brownish orange and whitish grey, stiff, moist, high plasticity.		0.6						
			0.8		89	42	2.1		
	1.0m: Becoming whitish grey with brownish orange streaks.		1.0						
	1.2m: Becoming very stiff.		1.2		103	58	1.8		
			1.4						
	1.6m: Becoming stiff.		1.6		81	47	1.7		
Undifferentiated Tangihua Complex Basalt in Northland Allochthon	Silty CLAY, grey with orange mottles, very stiff, moist, moderate plasticity.		1.8						
			2.0		111	56	2.0		
	2.2m: Becoming grey with orange and red mottles, moderate plasticity.		2.2						
			2.4						
	CLAY, some silt, dark greyish brown, very stiff, moist to wet, moderate to high plasticity.		2.6	▽	131	70	1.9		
	Silty CLAY, grey with brownish yellow and orange mottles, very stiff, wet, moderate plasticity.		2.8		139	28	5.0		
			3.0						
	3.1m: Becoming blue, moist, moderate to high plasticity, occasional pockets of brownish silt and clasts.		3.2		111	47	2.4		
			3.4						
			3.6		108	33	3.3		
	4.0m: Becoming moderate plasticity, occasional black and grey clast seams.		4.0		103	42	2.5		
			4.2						
			4.4						
	Clayey SILT, greenish blue, very stiff, moist, low to moderate plasticity.		4.6		195+	-	-		
			4.8						
			5.0	▼ 13/10/2025	195+	-	-		
	EOH: 5.00m - Target Depth		5.2						
			5.4						

REMARKS
End of borehole @ 5.00m (Target Depth: 5.00m)
Groundwater encountered @ 2.70m during drilling. Standing groundwater @ 5.00m.

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: CSH

▼ 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: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 13/10/2025 **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
Top soil	Sandy TOPSOIL, grey and brown, dry.	TS		Groundwater Not Encountered					
FILL	NON-ENGINEERED FILL: Clayey SILT, orangey brown, stiff, moist, low plasticity.		0.2						
			0.4		65	20	3.2		
			0.6						
Topsoil	BURIED TOPSOIL: grey and brown, very stiff, moist, no plasticity.	TS	0.8						
Awhitu Group Alluvium	NATURAL: Silty SAND, grey, very dense, moist.				UTP	-	-		
	Fine to Medium SAND, whitish grey, very dense, dry.		1.0						
	EOH: 1.00m - Too Dense To Auger (Hardpan)				UTP	-	-	20+	
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 1.00m (Target Depth: 5.00m)

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: CSH

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA05

JOB NO.: 142947 **SHEET:** 1 OF 1

START DATE: 13/10/2025 **NORTHING:** **GRID:**

CLIENT: Adeline Knight **DIAMETER:** 50mm **EASTING:**

PROJECT: 3 Lot Subdivision (2 Lots for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 44 Morey Road, Cable Bay **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
Top soil	Sandy TOPSOIL, grey and brown, moist.	TS		Groundwater Not Encountered					
FILL	NON-ENGINEERED FILL: Clayey SILT, occasional pockets of sand, orangey brown, stiff, moist, low plasticity.		0.2						
			0.4		68	14	4.9		
			0.6						
			0.8		70	25	2.8		
Awhitu Group Alluvium	NATURAL: Sandy SILT, grey, medium dense, no plasticity.		1.0						
	Fine to Medium SAND, minor silt, grey, dense to very dense, moist.		1.2						
	EOH: 1.20m - Too Dense To Auger (Hardpan)		1.4		UTP	-	-	20+	
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS

End of borehole @ 1.20m (Target Depth: 5.00m)

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: CSH

▼ 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 : HA06

CLIENT: Adeline Knight
PROJECT: 3 Lot Subdivision (2 Lots for Assessment)
SITE LOCATION: 44 Morey Road, Cable Bay

JOB NO.: 142947 **SHEET:** 1 OF 1
START DATE: 13/10/2025 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: **ELEVATION:** Ground
FACTOR: **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 and black, moist.	TS	0.0	Groundwater Not Encountered				2	
Awhitu Group Alluvium	NATURAL: Sandy SILT, grey, medium dense, moist, no plasticity.		0.2					2	
	Fine to Medium SAND, whitish grey, dense, dry.		0.4					3	
	EOH: 0.50m - Too Dense To Auger (Hardpan)		0.6					8	
			0.8					20+	
			1.0						
			1.2						
			1.4						
			1.6						
			1.8						
			2.0						
			2.2						
			2.4						
			2.6						
			2.8						
			3.0						
			3.2						
			3.4						
			3.6						
			3.8						
			4.0						
			4.2						
			4.4						
			4.6						
			4.8						
			5.0						
			5.2						
			5.4						

REMARKS
End of borehole @ 0.50m (Target Depth: 5.00m)

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: CSH

▼ 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 : HA07

JOB NO.: 142947 **SHEET:** 1 OF 1

START DATE: 13/10/2025 **NORTHING:** **GRID:**

CLIENT: Adeline Knight **DIAMETER:** 50mm **EASTING:**

PROJECT: 3 Lot Subdivision (2 Lots for Assessment) **SV DIAL:** 1994 **ELEVATION:** Ground

SITE LOCATION: 44 Morey Road, Cable Bay **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					2	
Awhitu Group Alluvium	NATURAL: Sandy SILT, brown, loose, moist.		0.4					2	
	SILT, some sand, brown, medium dense, moist.							3	
	0.9m: Becoming dense.		0.6					3	
			0.8					3	
			1.0					4	
			1.2					8	
			1.4					8	
Undifferentiated Tangihua Complex Basalt in Northland Allochthon	Clayey SILT, light brown, very stiff, moist, low to moderate plasticity.		1.6		UTP	-	-	10	
	1.7m: Occasional orangey brown streaks and clasts.		1.8					12	
	2.0m: Becoming moist to wet.		2.0		130	37	3.5	8	
			2.2						
			2.4		133	48	2.8		
	Silty CLAY, grey with orangey brown clasts, stiff, wet, moderate to high plasticity.		2.6						
			2.8						
	2.9m: Becoming bluish grey.		3.0	▽	93	42	2.2		
	3.2m: Becoming very stiff.		3.2		124	39	3.2		
			3.4						
			3.6		147	45	3.3		
			3.8						
	4.0m: Occasional clast inclusions.		4.0	▼ 13/10/2025	155	54	2.9		
			4.2						
			4.4						
	Clayey SILT, blue, very stiff, wet, moderate plasticity, frequent clast inclusions.				197+	-	-		
	4.5m: Becoming brown.		4.6						
			4.8		197+	-	-		
			5.0						
	EOH: 5.00m - Target Depth		5.2						
			5.4						

REMARKS

End of borehole @ 5.00m (Target Depth: 5.00m)

Groundwater encountered @ 2.90m during drilling. Standing groundwater @ 4.00m.

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: CSH

▼ Standing groundwater level

▽ GW while drilling

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FOUNDATION MAINTENANCE AND FOOTING PERFORMANCE

Preventing soil-related building movement

This Building Technology Resource is designed as a homeowner's guide on the causes of soil-related building movement, and suggested methods to prevent resultant cracking.

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 home owner 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. Generally soil classification is provided by a geotechnical report.

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.

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. Table 1 below is a reproduction of Table 2.1 from Australian Standard AS 2870-2011, Residential slabs and footings.

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 may be the province of the builder and should be taken into consideration as part of the preparation of the site for construction.

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, from AS 2870). 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.

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.

TABLE 1. 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

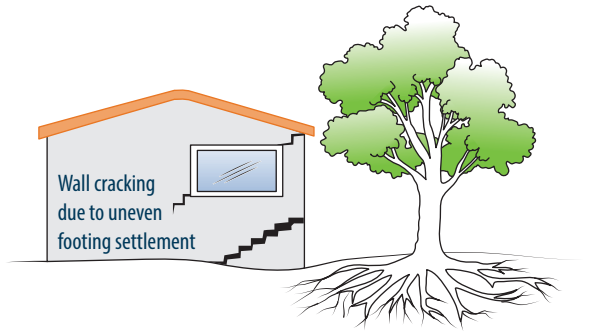

FIGURE 1 Trees can cause shrinkage and damage.

- 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 through absorption. The swelling process will usually begin at the uphill extreme of the building, or on the weather side where the land is flat. Shrinkage usually begins on the side of the building 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.

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. Table 2 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 AND 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 may 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 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.

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.

TABLE 2. CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS.

Description of typical damage and required repair	Approximate crack width limit	Damage category
Hairline cracks	<0.1 mm	0 – Negligible
Fine cracks which do not need repair	<1 mm	1 – Very Slight
Cracks noticeable but easily filled. Doors and windows stick slightly.	<5 mm	2 – Slight
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 – Moderate
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 – Severe

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Warning: Although this Building Technology Resource 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, and mould.
- 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

Existing trees may cause problems with the upheaval of footings by their roots, or shrinkage from soil drying. 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. Soil drying is a more complex issue and professional advice may be required before considering the removal or relocation of the tree.

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.

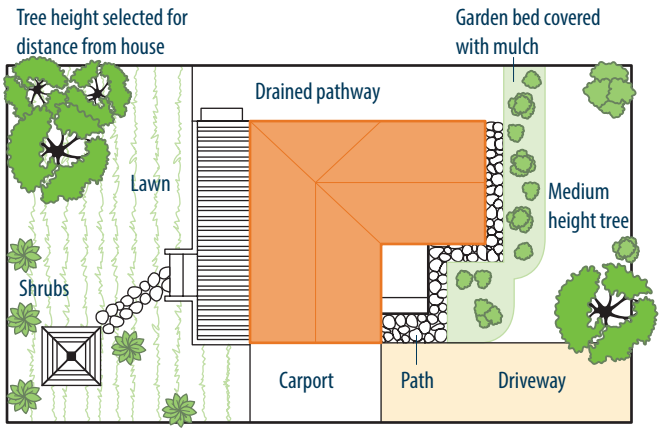

FIGURE 2 Gardens for a reactive site.

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 home owner 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.