Far North District Council

Office Use Only
Application Number:

Private Bag 752, Memorial Ave
Kaikohe 0440, New Zealand
Freephone: 0800 920 029
Phone: (09) 401 5200
Fax: (09) 401 2137
Email: ask.us@fndc.govt.nz
Website: www.fndc.govt.nz

APPLICATION FOR RESOURCE CONSENT OR FAST-TRACK RESOURCE CONSENT

(Or Associated Consent Pursuant to the Resource Management Act 1991 (RMA))
(If applying for a Resource Consent pursuant to Section 87AAC or 88 of the RMA, this form can be used to satisfy the requirements of Form 9)

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

1. Pre-Lodgement Meeting

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

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

O Land Use O Fast Track Land Use* ☑ Subdivision O Discharge

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

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

O Other (please specify) _____

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

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

~~Yes~~ / No

4. Applicant Details:

Name/s: Alec Magon

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

Phone Numbers:

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

_____ Post Code: _____

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

Name/s: Steven Sanson

Bay of Islands Planning (2022) Limited - Steve Sanson

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

Phone Numbers:

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

_____ Post Code: _____

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

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

Name/s: Refer CT Attached

Property Address/: Location: Pungaere Road, Kerikeri

7. Application Site Details:

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

Site Address/ Location: Pungaere Road, Kerikeri

Legal Description: Lot 5 DP 411627 Val Number:

Certificate of Title: 443242

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 prior to arranging a site visit.

8. Description of the Proposal:

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

Proposed subdivision in the Rural Production Zone.

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

9. Would you like to request Public Notification

~~Yes~~/No

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

O Building Consent (BC ref # if known)

O Regional Council Consent (ref # if known)

O National Environmental Standard consent

O Other (please specify)

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

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

Is the piece of land currently being used or has it historically ever been used for an activity or industry on the Hazardous Industries and Activities List (HAIL)

O yes Ø no O don't know

Is the proposed activity an activity covered by the NES? (If the activity is any of the activities listed below, then you need to tick the 'yes' circle).

Ø yes O no O don't know

Ø Subdividing land

O Changing the use of a piece of land

O Disturbing, removing or sampling soil

O Removing or replacing a fuel storage system

12. Assessment of Environmental Effects:

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

Please attach your AEE to this application.

13. Billing Details:

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

Name/s: (please write all names in full) Mason Horticulture Ltd

Email: [redacted]

Postal Address: [redacted]

Post Code: [redacted]

Phone Numbers: [redacted] Fax: [redacted]

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

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

Name: Alec Mason (please print)

Signature: [redacted] (signature of bill payer – **mandatory**) Date: 29/11/21

14. Important Information:

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

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

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

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

Name:_____(please print)

Signature:_____(signature) Date: _____

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

Checklist (please tick if information is provided)

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

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

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

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

BAY OF ISLANDS PLANNING (2022) LIMITED

Kerikeri House
Suite 3, 88 Kerikeri Road
Kerikeri

Email – office@bayplan.co.nz Website - www.bayplan.co.nz

17 July 2024

Re: Proposed subdivision in the Rural Production Zone, Pungaere Road, Waipapa (Lot 5 DP 411627)

The site is located on Pungaere Road and currently comprises one Certificate of Title, legally described as Lot 5 DP 411627 (CT ref. 443242).

The site gained approval under RC 2220399 as Restricted Discretionary Activity utilising the rights contained within 13.7.2.1 of the ODP. This decision is provided in the appendices. A variation is not proposed to this decision, rather a fresh application is sought.

The proposed subdivision proposes a staged approach to development as follows:

STAGE 1
- Lot 1 – 2.0174ha
- Lot 4 – 40.5071ha [balance]

STAGE 2
- Lot 2 – 2.0140ha
- Lot 3 – 2.0620ha
- Lot 4 – 36.4536ha

All necessary easements will be created, and all existing easements transferred, as outlined in the attached scheme plan **(Appendix A)**.

There are no new allotments generated as a result of the proposal [when compared with that approved], rather there is change in location of one of the allotments. Lot 5 is no longer required as neighbours have agreed to a right of way across that component.

Overall, the application has been assessed as a Restricted Discretionary Activity, owing to the sites ability to use residual rights as provided for in Rule 13.7.2.1 of the ODP.

To that end we attach a resource consent application to provide for the proposed subdivision.

The application is supported by the following information –

Planning Report, including Assessment of Environmental Effects;
Appendix A - Scheme Plan prepared by Williams & King
Appendix B - Certificate of Title

Appendix C – Previous Council Approval [RC 2220399].
Appendix D – Engineering Report prepared by Wilton Joubert.
Appendix E – Site Photos

Note that there is a locked gate restricting access to the site. Please call the applicant to arrange a site visit.

Thank you,

[redacted]

Steven Sanson
Consultant Planner

1.0 DESCRIPTION OF PROPOSAL

1. The applicant, Alec Magon, seeks resource consent to undertake a staged subdivision of a property located on Pungaere Road, Waipapa legally described as Lot 5 DP 411627.

2. The site is located within the Rural Production Zone and contains one existing dwelling as previously approved by Council.

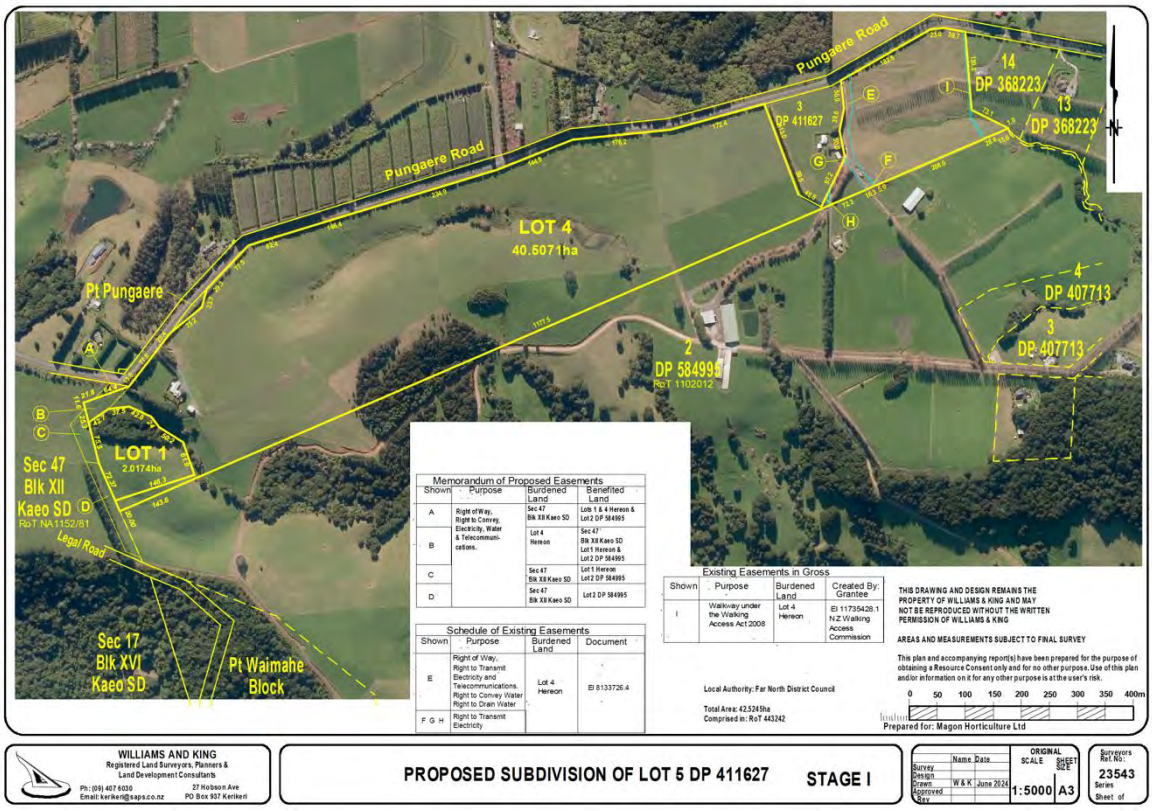
3. The proposed subdivision will result in the following lot areas:

STAGE 1

- Lot 1 – 2.0174ha
- Lot 4 – 40.5071ha [balance]

STAGE 2

- Lot 2 – 2.0140ha
- Lot 3 – 2.0620ha
- Lot 4 – 36.4536ha



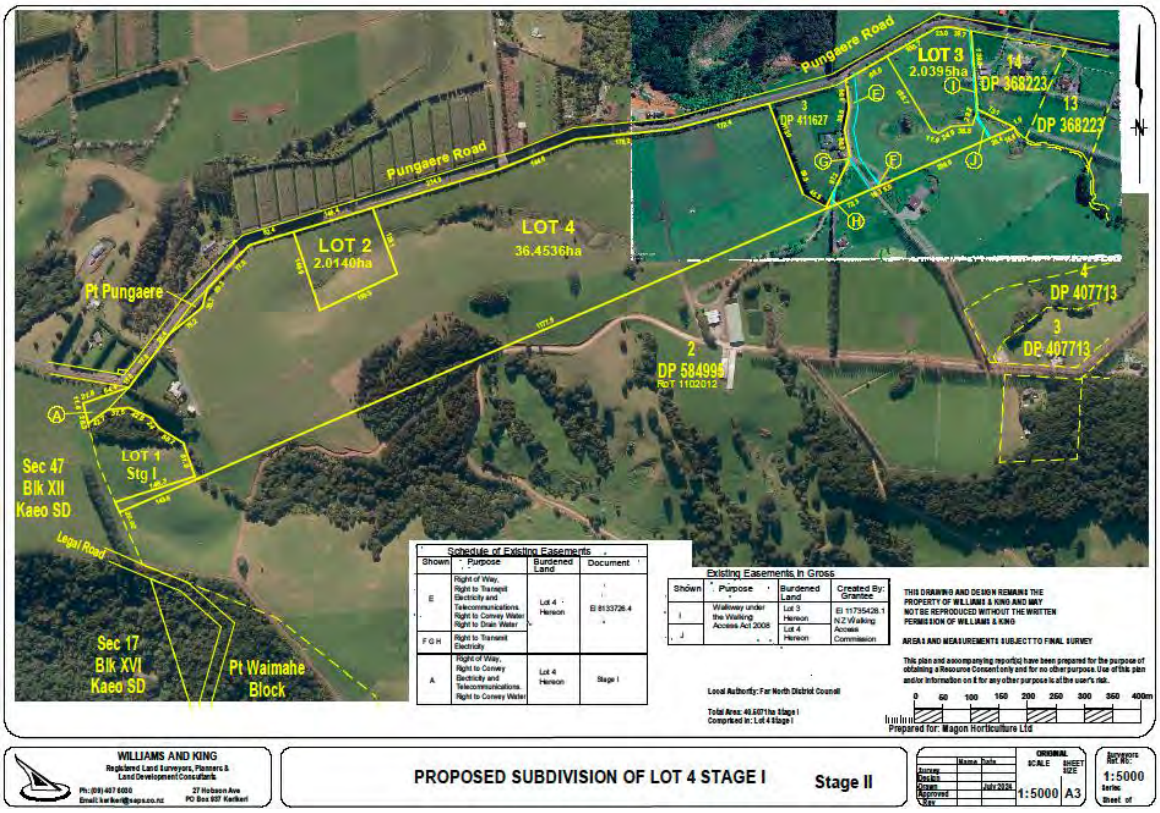


Figure 1: Proposed scheme plan (Prepared by Williams & King)

4. Proposed Lot 4 will remain in production whilst proposed Lot 1 will be for rural residential use [Stage 1]. Lot 2 and Lot 3 will be for rural residential use [Stage 2].

5. All necessary easements will be provided in accordance with the Memorandum of Easements shown on the scheme plan attached as **Appendix A.**

6. The subdivision is a **Restricted Discretionary Activity** under the Far North District Plan in accordance with Rule 13.7.2.1.

7. Based on the assessment of environmental effects provided below, it is concluded than any potential adverse effects arising from the proposed subdivision would be no more than minor and can be mitigated through appropriate conditions of resource consent.

Figure 2: Aerial image showing external boundaries (teal) of subject titles (Source: Far North Maps)

8. As part of the previous approval correspondence was provided to the processing planner at Lands & Survey regarding how the proposal meets the RDA criteria. This is because the site contains residual development rights under Clause [5] of the RDA criteria for minimum lot sizes in the Rural Production Zone.

9. This is the case because Stages 2 and 3 of RC 2090277 and RC 2080990 [being the subdivision and variation that created the parent title] were not completed, thus the maximum allowance under rules 13.8.1[b] and [c] have not been taken up. This approach has been agreed to as per the more recent decision being RC 2220399 which approved the proposal as an RDA.

2.0 DESCRIPTION OF THE SITE AND SURROUNDS

10. Situated approximately 7km to the west of the Waipapa township, the application site comprises one certificate of title legally described as Lot 5 DP 411627 (CT ref. 443242)

11. There are no consent notices applicable to the site. The site is subject to a number of land covenants and easement instruments, as registered on the Certificates of Title attached as **Appendix B.**

12. All relevant existing easements will be transferred to the new titles, and all new easements will be created as per the memorandum of easements outlined on the scheme plan.

13. The subject title has a current land area of 42.5245ha and is currently accessed via a number of vehicle crossings directly off Pungaere Road.

14. In terms of vegetation, the site is predominantly in pasture with small patches of scrub and exotic species located near the western and southern boundaries. No earthworks or vegetation clearance is required as part of this application.

15. The topography of the site varies from flat to rolling.

16. In terms of the District Plan, the site is located within the Rural Production Zone. All adjoining properties are similarly zoned Rural Production. The site is also located within a High-Density Kiwi Concentration Area. The applicant accepts that consent notice conditions may be imposed in relation to the keeping of cats and dogs, however these should not be applied to Lot 4 as this will remain in rural production.

17. As per NRC Maps, the site has not been identified as susceptible to river or coastal flood hazards. There are no other resource notations applicable to the site.

18. In terms of the surrounding environment, the locality is largely characterised by large landholdings interspersed with smaller lots similarly sized to that proposed, also containing residential development. The areas subject to rural residential subdivision are within Class 4 and Class 3 soils as outlined in the figure below.

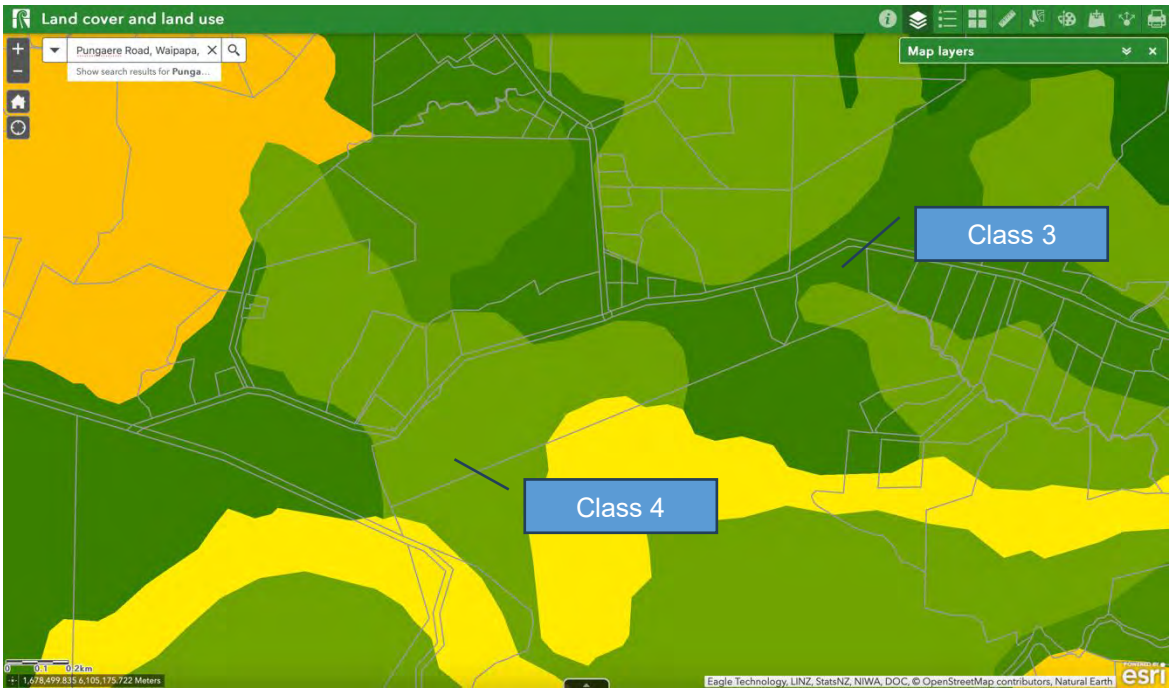


Figure 3: Soil Capacity of Site (Source: LRIS)

3.0 DISTRICT PLAN ASSESSMENT [OPERATIVE AND PROPOSED]

19. The proposal has been assessed as a **Restricted Discretionary Activity**, owing to the residual rights of the site outlined above.

20. The subdivision proposal is subject to other performance standards as set out in Table 1 below:

Table 1 - Subdivision Performance Standards

Subdivision Performance Standard	**Comment**
Rule 13.6.1 Definition of Subdivision of Land	The application meets the definition of subdivision as defined in the RMA.
Rule 13.6.2 Relevant Sections of Act	These are applied to the application.
Rule 13.6.3 Relevant Sections of the District Plan	These are applied to the application.
Rule 13.6.4 Other Legislation	There are no other pieces of legislation which are triggered by the proposal.
Rule 13.6.5 Legal Road Frontage	The site is currently accessed via Pungaere Road, which is formed to the engineering standards.
Rule 13.6.6 Bonds	Not applicable
Rule 13.6.7 Consent Notices	There are no Consent Notices registered on the current titles.
Rule 13.6.8 Subdivision consent before work commences	Minimal physical works will be required to complete the subdivision (if any).
Rule 13.6.9 Assessing Resource Consents	The subdivision application is a Non-Complying Activity. All matters for discretion are applicable.
Rule 13.6.10 Joint Hearings	Not applicable
Rule 13.6.12 Suitability for Proposed Land Use	The suitability of each site is considered within the Wilton Joubert Report. As Lot 4 contains existing development, the report does not consider in great detail the potential for development on that site.
Rule 13.7.2 Allotment Sizes, Dimensions and Other Standards	
Performance Standard	**Comment**
Rule 13.7.2.2 – Allotment dimensions	All new allotments can contain a 30m x 30m allotment dimension.

Subdivision Performance Standard	Comment
Rule 13.7.2.3 - Amalgamation of land in a rural zone with land in an urban or coastal zone	Not applicable.
Rule 13.7.2.4 – Lots divided by zone boundaries	Not applicable.
Rule 13.7.2.5 - Sites divided by an outstanding landscape, outstanding landscape feature or outstanding natural feature	Not applicable
Rule 13.7.2.6 – Activities, Utilities, Roads and Reserves	Not applicable
Rule 13.7.2.7 – Savings as to previous approvals	Not applicable
Rule 13.7.2.8 – Proximity to Top Energy transmission lines	Not applicable
Rule 13.7.2.9 – Proximity to National Grid	Not applicable

Table 2 - Natural and Physical Resources - Performance Standards

Chapter 12 – Natural and Physical Resources	
12.1 Landscapes and Natural Features	Not applicable
12.2 Indigenous Flora and Fauna	The site does not contain any significant areas of indigenous vegetation. No vegetation clearance is proposed.
12.3 Soils and Minerals	No earthworks are required as part of the subdivision.

12.4 Natural Hazards	The site is not within any identified District Plan hazard area. Development of the site would not be restricted in terms of any identified subsidence hazard under s106 of the Resource Management Act.
12.5 Heritage	Not applicable
12.6 Air	Not applicable
12.7 Lakes, Rivers Wetlands and the Coastline	Not applicable
12.8 Hazardous Substances	Not applicable
12.9 Renewable Energy and Energy Efficiency	Not applicable

Table 3 - Transportation Performance Standards

Chapter 15 - Transportation	
15.1.6A.2 Traffic Intensity	The proposed subdivision will only generate three additional lots for rural residential development. Thirty movements are permitted from the site as each RP lot (parent lot) gets 60 movements.
15.1.6B.1 Parking	There is ample parking space within each vacant lot to provide for parking and manoeuvring.
15.1.6C Access	As shown on the scheme plan, ROW easements will be created providing access to the lots. All other existing easements will be transferred to the new titles. As per the Engineering Report a compliant access can be provided for the new allotment proposed – Lot 3.
15.1.6C.1.8 Frontage to Existing Roads	The site is accessed via Pungaere Road which has been formed to a good standard and no upgrades are required.

21. An assessment of the proposal against the relevant land-use rules of the Far North District Plan is provided where it relates to existing built development:

Table 3 – Land-Use Performance Standards

Rural Production Zone	
Rule 8.6.5.1.1 Residential Intensity	Each vacant allotment will be suitable for a dwelling.
Rule 8.6.5.1.2 Sunlight	No part of any of the existing buildings will encroach the recession plane when measured inwards from any new boundary.
Rule 8.6.5.1.3 Stormwater Management	Except for Lot 4 all allotments are vacant. Lot 4 on completion of the subdivision is ~36ha. The rule will not be breached.
Rule 8.6.5.1.4 Setback from Boundaries	All existing buildings will be setback at least 10m from all new boundaries.
Rule 8.6.5.1.5 Transportation	Refer to Chapter 15 – Transportation for Traffic, Parking and Access above.
Rule 8.6.5.1.8 Building Height	All existing buildings are far less than 12m in height.
Rule 8.6.5.1.10 Building Coverage	Except for Lot 4 all allotments are vacant. Lot 4 on completion of the subdivision is ~36ha. The rule will not be breached.
Rule 8.6.5.1.11 Scale of Activities	Not applicable. The site will remain in residential / productive use.

22. Overall, this subdivision application falls to be considered as a **'Restricted Discretionary Activity.**

23. In terms of the Proposed District Plan, the following rules are assessed in Table 4 below.

Table 4 – PDP Standards

Proposed District Plan				
Matter	**Rule/Std Ref**	**Relevance**	**Compliance**	**Evidence**
Hazardous Substances Majority of rules relates to development within a site that has heritage or cultural items scheduled and mapped however Rule HS-R6 applies to any development within an SNA – which is not mapped	Rule HS-R2 has immediate legal effect but only for a new significant hazardous facility located within a scheduled site and area of	N/A	Yes	Not proposed **Permitted Activity**

	significance to Māori, significant natural area or a scheduled heritage resource HS-R5, HS-R6, HS-R9			
Heritage Area Overlays (Property specific) This chapter applies only to properties within identified heritage area overlays (e.g. in the operative plan they are called precincts for example)	All rules have immediate legal effect (HA-R1 to HA-R14) All standards have immediate legal effect (HA-S1 to HA-S3)	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Historic Heritage (Property specific and applies to adjoining sites (if the boundary is within 20m of an identified heritage item)). Rule HH-R5 Earthworks within 20m of a scheduled heritage resource. Heritage resources are shown as a historic item on the maps) This chapter applies to scheduled heritage resources – which are called heritage items in the map legend	All rules have immediate legal effect (HH-R1 to HH-R10) Schedule 2 has immediate legal effect	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Notable Trees (Property specific) Applied when a property is showing a scheduled notable tree in the map	All rules have immediate legal effect (NT-R1 to NT-R9) All standards have legal effect (NT-S1 to NT-S2)	N/A		Not indicated on Far North Proposed District Plan **Permitted Activity**

	Schedule 1 has immediate legal effect			
Sites and Areas of Significance to Māori (Property specific) Applied when a property is showing a site / area of significance to Maori in the map or within the Te Oneroa-a Tohe Beach Management Area (in the operative plan they are called site of cultural significance to Maori)	All rules have immediate legal effect (SASM-R1 to SASM-R7) Schedule 3 has immediate legal effect	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Ecosystems and Indigenous Biodiversity SNA are not mapped – will need to determine if indigenous vegetation on the site for example	All rules have immediate legal effect (IB-R1 to IB-R5)	N/A	Yes	No proposed vegetation clearance. **Permitted Activity**
Activities on the Surface of Water	All rules have immediate legal effect (ASW-R1 to ASW-R4)	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Earthworks all earthworks (refer to new definition) need to comply with this	The following rules have immediate legal effect: EW-R12, EW-R13 The following standards have immediate legal effect: EW-S3, EW-S5	Yes	Complies	With respect of EW-R12, this requires that the proposed earthworks comply with EW-S3. In effect, EW-S3 triggers the need for an ADP to be applied. It is confirmed that the proposed earthworks will comply with an ADP and this is volunteered as a condition of consent.

				EW-R13 links to EW-S5. EW-S5 requires earthworks to be controlled in accordance with GD-05. No earthworks are required for the subdivision. **Permitted Activity**
Signs (Property specific) as rules only relate to situations where a sign is on a scheduled heritage resource (heritage item), or within the Kororareka Russell or Kerikeri Heritage Areas	The following rules have immediate legal effect: SIGN-R9, SIGN-R10 All standards have immediate legal effect but only for signs on or attached to a scheduled heritage resource or heritage area	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Orongo Bay Zone (Property specific as rule relates to a zone only)	Rule OBZ-R14 has partial immediate legal effect because RD-1(5) relates to water	N/A	Yes	Not indicated on Far North Proposed District Plan **Permitted Activity**
Subdivision	SUB-R6, R13-R15, and R17	Yes	Yes	Whilst subdivision is proposed the rules with legal effect are not relevant. **Permitted Activity**
Comments:				
No consents are required under the PDP.				

4.0 STATUTORY CONSIDERATIONS

24. Section 104 of the RMA states that when considering an application for a resource consent, "the consent authority must, subject to Part II, have regard to –

(i)	*any actual and potential effects on the environment of allowing the activity; and*
(ii)	*any relevant provisions of –*
(iii)	*a national environment standard:*
(iv)	*other regulations:*
(v)	*a national policy statement: and*
(vi)	*a New Zealand Coastal Policy Statement:*
(vii)	*a regional policy statement or proposed regional policy statement:*
(viii)	*a plan or proposed plan; and*
(ix)	*any other matter the consent authority considers relevant and reasonably necessary to determine the application."*

25. The matters to be addressed under s.104 are discussed below under the headings Environmental Effects and District Plan Considerations. No Regional Plan matter is considered to be pertinent to the considerations as no consents are required in this respect.

26. Those relevant Section 104 considerations are addressed and followed by an assessment of Part II matters as they apply to the application.

Section 104 (1)(a) Assessment of Effects on the Environment

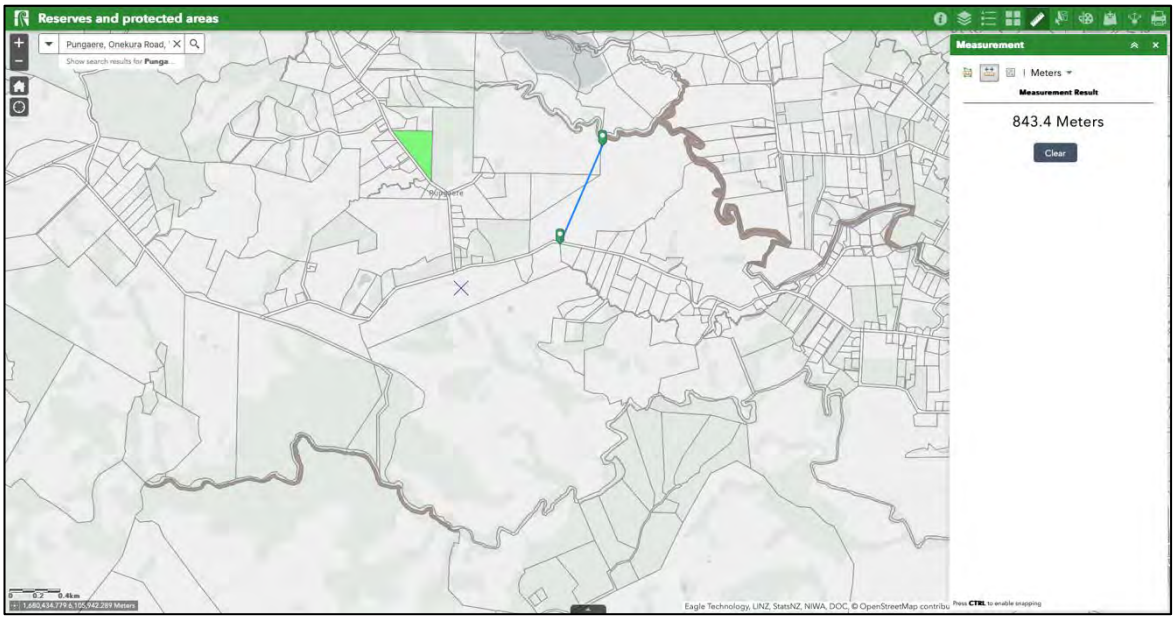
27. In terms of any potential adverse effects arising from the proposal, these include the assessment matters under Subdivision Rule 13.8.1

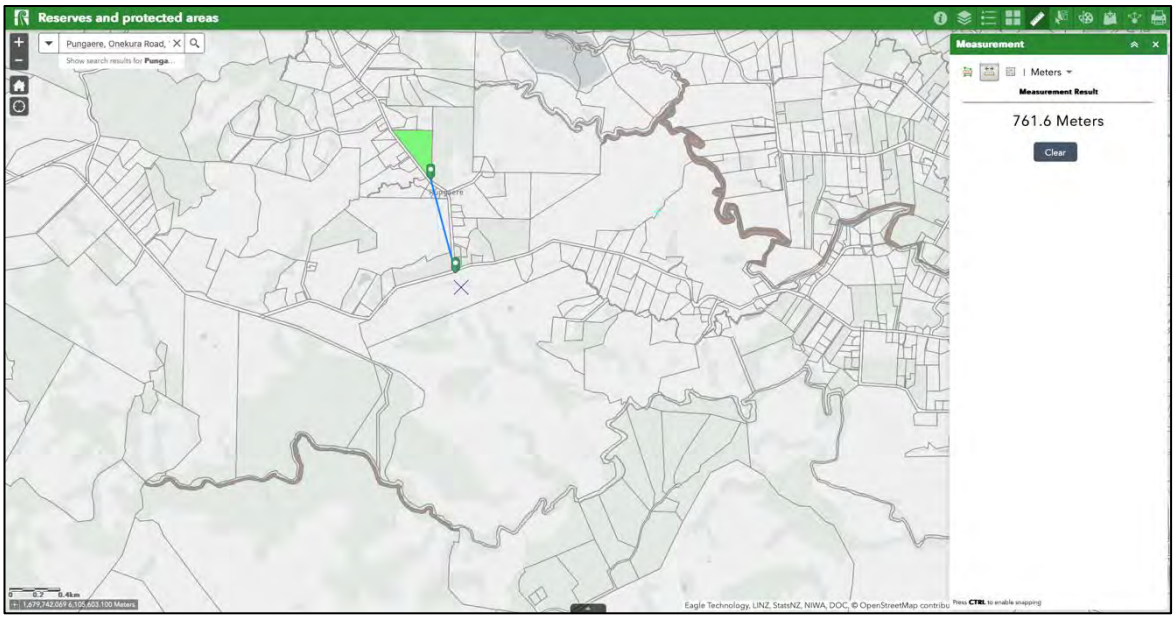
Effects on the Natural Character of the Coastal Environment - 13.8.1[ii]

28. The site is not mapped within the coastal environment.

Effects to DoC Land within 500m of the Site - 13.8.1[ii]

29. The site is not mapped within 500m of such landholdings. Refer to the figure below.


Reserves and protected areas
Pungaere, Onekura Road,
Measurement
Meters
Measurement Result
843.4 Meters
Clear
Pungaere
Eagle Technology, LINZ, StatsNZ, NIWA, DOC, © OpenStreetMap contribu


Reserves and protected areas
Pungaere, Onekura Road,
Measurement
Meters
Measurement Result
761.6 Meters
Clear
Pungaere
Eagle Technology, LINZ, StatsNZ, NIWA, DOC, © OpenStreetMap contribu

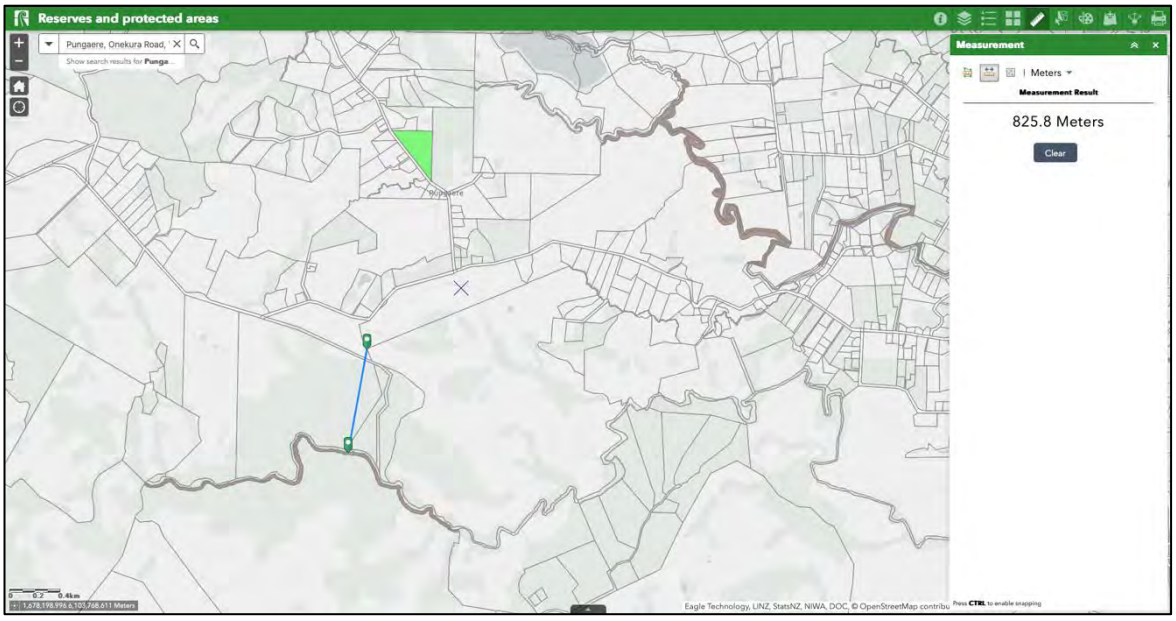


Figure 4: DoC Land (Source Far North Maps0

Effects on areas of significant indigenous flora and fauna - 13.8.1[ii]

30. There are no such mapped features that pertain to the site. Refer to the figure below.

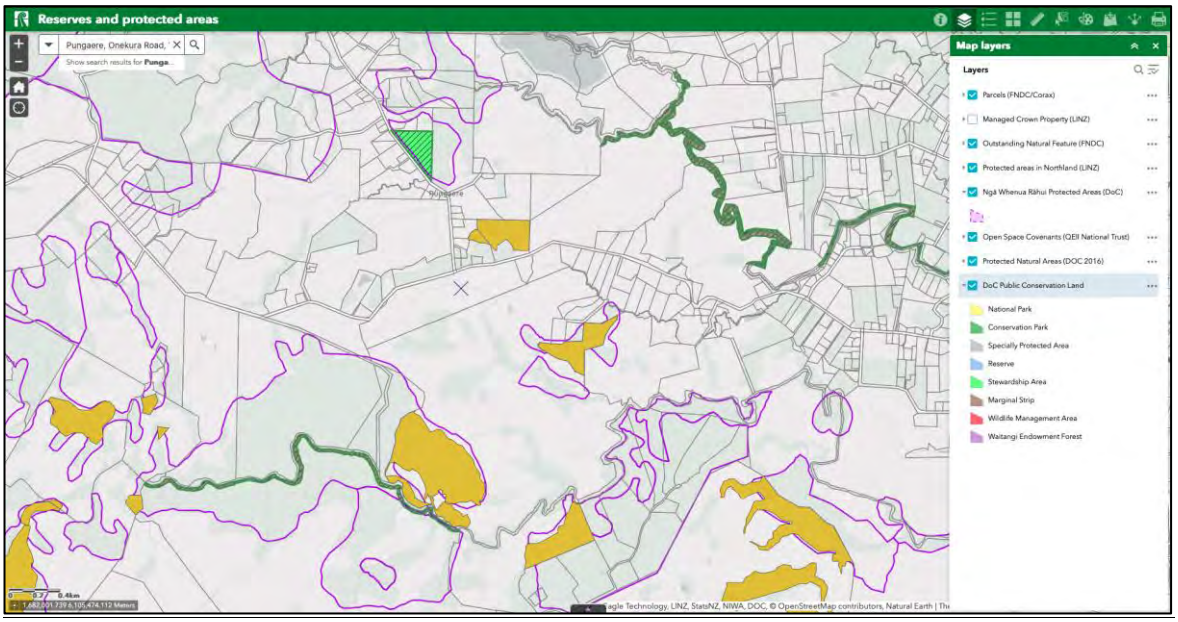


Figure 5: Reserve / Protected Areas (Source Far North Maps0

The mitigation of fire hazards - 13.8.1[ii]

31. Subject to the standard consent notice condition requiring appropriate water to be provided at time of development, any future or potential fire hazard can be appropriately

Consent Conditions – 13.7.3

32. For the purposes of imposing conditions, the Council restricts its discretion to the following maters:

- Property Access – Each site can be serviced appropriately as outlined within the previous consent application. The new allotment [Lot 3] comes with additional consideration as not being party to the previous application. FNDC standard consent conditions can apply. For the purposes of access to Lot 1 on Stage 1, this is shown and detailed in photos found in **Appendix E**. It is considered that this is appropriate subject to site specific upgrades required as set out in the previous decision.

- Natural & Other Hazards – These relevant hazards are addressed in the Wilton Joubert Report. There appears to be no specific resource consent conditions required.

- Water, Wastewater, Stormwater – These are addressed in the Wilton Joubert Report. Consent conditions in relation to these matters are appropriate.

- Electricity & Telecoms – Consent notice conditions can be applied to alert prospective purchasers of availability.

- Easements – These are all shown on the scheme plans and they can be adhered to at time of s223.

- Preservation of Resources – The previous approval considered Kiwi and it is expected that the same consent notice condition will roll down into this proposal. No other matter is necessary.

- Access to Reserves & Waterways – No new access is required but there is an existing walkway through the site which will remain attached to the new titles ensuring that walking access is maintained. These will be engrained into the s223 process.

- Land Use Compatibility – As an RDA activity, the proposal is inherently appropriate with the underlying rural use. No conditions were proposed in respect of the last approval and no new conditions in this respect are envisaged.

- Proximity to Airports – Not relevant and no consent conditions are required.

Section 104 (1)(ab) Any measures to achieve positive effects

33. Positive effects arising from the subdivision would include enabling the efficient use of land that is surplus to requirements, in a manner which supports the sustainable

management of the natural and physical resources within the site and maintains rural amenity.

Section 104 (b)(i) and (ii) National Environmental Standards & Other Regulations

34. The NES for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS). A review of Council records has revealed no evidence to suggest that a HAIL activity has previously been undertaken on site. This was agreed with under the previous application. As such, the NESCS is not applicable in this instance.

35. 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.

Section 104 (b)(iii) National Policy Statement(s)

36. The NPS for Highly Productive Land is considered to be relevant insofar as the Class 3 soils are presented on the site as per Figure 3 above. Whilst the policy statement is relevant as the proposed is an RDA activity there is limited scope to consider the soil concerns as per the Operative Far North District Plan.

Section 104 (b)(iv) New Zealand Coastal Policy Statement

37. The New Zealand Coastal Policy Statement is not relevant to this application.

Section 104 (b)(v) Regional Policy Statement or Proposed Regional Policy Statement

38. The Northland Regional Policy Statement is the applicable regional statutory document that applies to the Northland region. Jurisdiction for subdivision is governed by the Far North District Council and the policy framework for establishing an appropriate land use pattern across the district is set out in the Far North District Plan. This Plan is subject to the governing regional policy framework set out in the Northland Regional Policy Statement.

Table 5 – NRC Regional Policy Statement Review Assessment

Regional Policy Statement For Northland	
Objective / Policy	**Assessment**
Integrated Catchment Management	Not relevant.
Region Wide Water Quality	Not relevant.

Ecological Flows and Water Quality	Not relevant.
Enabling Economic Wellbeing	The proposal will increase economic wellbeing for the applicants, local building and construction suppliers.
Economic Activities – Reverse Sensitivity and Sterilisation.	Not relevant.
Regionally Significant Infrastructure	Not relevant.
Efficient and Effective Infrastructure	The proposal largely relies on on-site services and the use of Pungaere Road.
Security of Energy Supply	The site can be serviced at time of development.
Use and Allocation of Common Resources	Not relevant.
Regional Form	The proposal does not result in any reverse sensitivity of a change or change in character. The proposed use is aligned with the existing rural lifestyle nature and character of the site and surrounds.
Tangata Whenua Role in Decision Making	Council may seek relevant input through the consent process.
Natural Hazard Risk	Natural hazards have been assessed as above and in accompanying engineering reports.
Natural Character, Outstanding Natural Features, Outstanding Natural Landscapes and Historic Heritage	Not relevant.

Section 104 (b)(vi) Plans or Proposed Plans

39. This subdivision application is subject to the provisions of the operative Far North District Plan and is not subject to any Proposed Plan. The site is zoned Rural Production and is to be assessed in terms of the objectives and policies for the Rural Environment and Rural Production Zones and the district-wide subdivision, transportation and environment provisions.

40. The following objectives and policies are relevant to the assessment of this application and are considered in the context of the land use changes described above:

Table 6 - Rural Environment Objectives and Policies

OBJECTIVE OR POLICY		Assessment
OBJECTIVES		
8.3.1	To promote the sustainable management of natural and physical resources of the rural environment while enabling activities to establish in the rural environment.	The rural environment includes provision for both rural production and rural-residential activities where reverse sensitivity effects are avoided. Sustainable management of the rural environment would include both forms of rural activity where adverse effects can be avoided, remedied or mitigated.
8.3.2	To ensure that the life supporting capacity of soils is not compromised by inappropriate subdivision, use or development.	Refer to assessment of soils above.
8.3.3	To avoid, remedy or mitigate adverse effects of activities on the rural environment.	The assessment of effects concludes that there would be no adverse effects on the rural environment given the locational characteristics of the site and the adjacent land use pattern.
8.3.4	To protect areas of significant indigenous vegetation and significant habitats of indigenous fauna.	The site does not contain any areas of significant indigenous vegetation. Kiwi can be managed via conditions.
8.3.5	To protect outstanding natural features and landscapes.	The area has not been classified as outstanding and does not contain any outstanding features.
8.3.6	To avoid actual and potential conflicts between land use activities in the rural environment.	The site has a long history of rural production activities. These activities will continue. Given the large area of this allotment), there is ample space so as to maintain sufficient distance between rural activities and other land use activities.

OBJECTIVE OR POLICY		Assessment
8.3.7	To promote the amenity values of the rural environment.	The site is situated within a land use environment that has rural-residential characteristics and amenity values associated with this type of land use pattern. As discussed in the assessment of effects, the proposed lot sizes are compatible with those surrounding the subject site.
8.3.8	To facilitate the sustainable management of natural and physical resources in an integrated way to achieve superior outcomes to more traditional forms of subdivision, use and development through management plans and integrated development.	This objective is not relevant to the size and scale of this proposed subdivision.
POLICIES		
8.4.1	That activities which will contribute to the sustainable management of the natural and physical resources of the rural environment are enabled to locate in that environment.	Refer to 8.3.1 above.
8.4.2	That activities be allowed to establish within the rural environment to the extent that any adverse effects of these activities are able to be avoided, remedied or mitigated and as a result the life supporting capacity of soils and ecosystems is safeguarded.	The proposed subdivision will not generate adverse effects on local productive soil or ecosystem values. The site does not contain any versatile soils or highly valued eco-systems as mapped by FNDC.

OBJECTIVE OR POLICY		Assessment
8.4.3	That any new infrastructure for development in rural areas be designed and operated in a way that safeguards the life supporting capacity of air, water, soil and ecosystems while protecting areas of significant indigenous vegetation and significant habitats of indigenous fauna, outstanding natural features and landscapes.	All necessary infrastructure is existing. The proposal does not include any new infrastructure.
8.4.4	That development which will maintain or enhance the amenity value of the rural environment and outstanding natural features and outstanding landscapes be enabled to locate in the rural environment.	There are no outstanding features or landscapes present on the site or in the vicinity. The amenity values of the local environment will not be affected by the proposal.
8.4.5	That plan provisions encourage the avoidance of adverse effects from incompatible land uses, particularly new developments adversely affecting existing land-uses (including by constraining the existing land-uses on account of sensitivity by the new use to adverse effects from the existing use – i.e., reverse sensitivity).	The proposed subdivision is compatible with the surrounding land use pattern and would not generate adverse reverse sensitivity effects.
8.4.6	That areas of significant indigenous vegetation and significant habitats of indigenous fauna habitat be protected as an integral part of managing the use, development and protection of the natural and physical resources of the rural environment.	The site does not contain any areas of significant indigenous vegetation. Kiwi matters can be conditioned as per the previous approval.

OBJECTIVE OR POLICY		Assessment
8.4.7	That Plan provisions encourage the efficient use and development of natural and physical resources.	The District Plan enables efficient use and development of rural resource by not precluding activities from locating in the rural environment. The location of activities in the rural environment is subject to the extent to which adverse effects, including effects on rural amenity can be avoided, remedied or mitigated. The proposed subdivision would enable efficient use of surplus in a manner consistent with Rural Production zone outcomes.
8.4.8	That, when considering subdivision, use and development in the rural environment, the Council will have particular regard to ensuring that its intensity, scale and type is controlled to ensure that adverse effects on habitats (including freshwater habitats), outstanding natural features and landscapes, on the amenity value of the rural environment, and where appropriate on natural character of the coastal environment, are avoided, remedied or mitigated.	The proposed subdivision and development of the site is appropriate in its location and would avoid or mitigate adverse effects on the amenity of the local rural environment. There are no outstanding natural features, landscapes or habitats that would be affected by the proposal.

Rural Production Zone

41. The Rural Production Zone applies to most of the District's rural land other than those areas defined as Coastal, Rural Living or set aside for Recreation, Conservation or Minerals. The zone provides for a wide range of activities that are compatible with normal farming and forestry activities, including rural lifestyle and residential uses. The sustainable management of natural and physical resources is promoted in this zone.

42. The relevant expected outcomes listed within the District Plan for the Rural Production Zone are:

8.2.1 A rural environment where natural and physical resources are managed sustainably.
8.2.2 A rural environment in which a wide variety of activities is enabled, consistent with safeguarding the life supporting capacity of air, water, soil and ecosystems. 8.2.3 A dynamic rural environment which is constantly changing to meet the social and economic needs of the District's communities through the sustainable management of natural and physical resources.
8.2.4 The maintenance of areas of significant indigenous vegetation and significant habitats of indigenous fauna including aquatic habitats, and an increase in such areas that are formally protected.
8.2.5 Adverse effects arising from potentially incompatible activities are avoided, remedied or mitigated.
8.2.7 A rural environment where change is acknowledged whilst amenity values are maintained and enhanced to a level that is consistent with the productive intent of the zone.

43. The District Plan recognises the varied character of land zoned Rural Production and the different characteristics and values which occur throughout the zone. The relevant objectives and policies for the Rural Production Zone are discussed in Table 8 below:

Table 7 - Rural Production Zone Objectives and Policies

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
OBJECTIVES		
8.6.3.1	To promote the sustainable management of natural and physical resources in the Rural Production Zone.	The sustainable management of natural and physical resources is discussed in the context of Rural Environment Objective 8.3.1 in Table 7 above. The subject site contains a large portion of productive land of which will remain in productive use. Overall, the use of the site will remain unchanged.
8.6.3.2	To enable the efficient use and development of the Rural Production Zone in a way that enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety.	Efficient use and development in the context of the rural environment has been considered under Policy 8.4.7 above.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
8.6.3.3	To promote the maintenance and enhancement of the amenity values of the Rural Production Zone.	The immediate surrounding environment consists of smaller or similarly sized landholdings. Therefore, the proposed subdivision will be undertaken in a manner that is compatible with existing land use patterns. It is therefore considered that any adverse effects on rural amenity will be less than minor.
8.6.3.4	To promote the protection of significant natural values of the Rural Production Zone.	The site does not contain any significant natural values that require protection.
8.6.3.5	To protect and enhance the special amenity values of the frontage to Kerikeri Road between its intersection with SH10 and the urban edge of Kerikeri	The site does not have frontage to Kerikeri Road.
8.6.3.6	To avoid, remedy or mitigate the actual and potential conflicts between new land use activities and existing lawfully established activities (reverse sensitivity) within the Rural Production Zone and on land use activities in neighbouring zones.	The proposed subdivision is entirely compatible with the surrounding land use and would not generate any adverse reverse sensitivity effects on existing activities.
8.6.3.7	To avoided, remedy or mitigate the adverse effects of incompatible use or development on natural or physical resources.	As above.
8.6.3.8	To enable the efficient establishment and operation of activities and services that have a functional need to be located in the rural environments.	The RPZ provides for a wide range of activities provided reverse sensitivity effects can be appropriately managed. As previously stated, the proposed use of the site is consistent with the character and use of land within the immediate neighbourhood environment and represents an efficient use of otherwise remnant rural land.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
8.6.3.9	To enable rural production activities to be undertaken in the zone	The site is currently used for forestry / farming activities. The proposed boundary adjustment will enable these activities to continue.
POLICIES		
8.6.4.1	That a wide range of activities be allowed in the Rural Production Zone, subject to the need to ensure that any adverse effects, including any reverse sensitivity effects, on the environment resulting from these activities are avoided, remedied or mitigated.	As discussed above, the subdivision is considered appropriate and would not generate any significant adverse effects including any reverse sensitivity effects.
8.6.4.2	That standards be imposed to ensure that the off-site effects of activities in the Rural Production Zone are avoided, remedied or mitigated.	No adverse off-site effects would be generated by the proposal, including traffic effects.
8.6.4.3	That land management practices that avoid, remedy or mitigate adverse effects on natural and physical resources be encouraged.	The AEE demonstrates that the proposal will enable a wide range of activities to be undertaken as a permitted activity and can therefore be accommodated without adverse effects.
8.6.4.4	That the intensity of development allowed shall have regard to the maintenance and enhancement of the amenity values of the Rural Production Zone.	The proposed intensity of development is appropriate in this location, particularly given that up to three dwellings can currently be constructed on site as a permitted activity. The development is compatible with the amenity of the locality and would not adversely affect the amenity values of the RPZ.
8.6.4.5	That the efficient use and development of physical and natural resources be taken into account in the implementation of the Plan.	Efficient use and development are considered under Policy 8.4.7 in Table 7 above.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
8.6.4.6	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	The application site does not have frontage to Kerikeri Road.
8.6.4.7	That although a wide range of activities that promote rural productivity are appropriate in the Rural Production Zone, an underlying goal is to avoid the actual and potential adverse effects of conflicting land use activities.	The proposed subdivision will enable existing production activities to continue which are compatible with the surrounding land use and neighbourhood character.
8.6.4.8	That activities whose adverse effects, including reverse sensitivity effects, cannot be avoided remedied or mitigated are given separation from other activities	With a large balance lot which surrounds proposed allotments, the subdivision layout is able to provide sufficient separation distance between any potentially conflicting land use activities.
8.6.4.9	That activities be discouraged from locating where they are sensitive to the effects of or may compromise the continued operation of lawfully established existing activities in the Rural Production zone and in neighbouring zones.	The use of the site will largely remain unchanged and will not give rise to any reverse sensitivity effects.

44. In summary, it is considered that the proposal would achieve the outcomes sought by the objectives and policies for the Rural Production Zone given the extensive nature of the zone and its varied character, the fact that it does not possess any significant values which merit protection, and that the proposal conforms with the characteristics of the particular area in which it is located and would create no adverse effects on amenity or visual aspects.

Subdivision

45. The objectives and policies for subdivision are assessed in **Table 8** below.

Table 8 – Subdivision Objectives and Policies

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
OBJECTIVES		
13.3.1	To provide for the subdivision of land in such a way as will be consistent with the purpose of the various zones in the Plan and will promote the sustainable management of the natural and physical resources of the District, including airports and the social, economic and cultural wellbeing of people and communities.	The earlier assessments demonstrate that sustainable management of the physical land resource would be achieved. The existing and proposed activities are consistent with a variety of land uses that are appropriate within the zone and will not generate adverse effects on this local rural location.
13.3.2	To ensure that subdivision of land is appropriate and is carried out in a manner that does not compromise the life-supporting capacity of air, water, soil or ecosystems, and that any actual or potential adverse effects on the environment which result directly or indirectly from subdivision, including reverse sensitivity effects, are avoided, remedied or mitigated.	As per the assessment of effects, the proposed subdivision will not result in adverse effects on the life-supporting capacity of air, water, soil or ecosystems, nor will the proposal give rise to reverse sensitivity effects.
13.3.3	To ensure that the subdivision of land does not jeopardise the protection of outstanding landscapes or natural features in the coastal environment.	The site does not possess such values or features and is not part of the coastal environment.
13.3.4	To ensure that subdivision does not adversely affect scheduled heritage resources through alienation of the resource from its immediate setting/context.	There are no heritage resources on the property.
13.3.5	To ensure that all new subdivisions provide a reticulated water supply and/or on-site water storage sufficient to meet the needs of the activities that will establish all year round.	This can be provided at time of development.

OBJECTIVE OR POLICY		PERFORMANCE OF PROPOSAL
13.3.6	To encourage innovative development and integrated management of effects between subdivision and land use which results in superior outcomes to more traditional forms of subdivision, use and development, for example the protection, enhancement and restoration of areas and features which have particular value or may have been compromised by past land management practices.	As the site does not possess any significant values or characteristics, special forms of subdivision are not necessary.
13.3.7	To ensure the relationship between Maori and their ancestral lands, water, sites, wahi tapu and other taonga is recognised and provided for.	No sites of significance to Maori have been identified in the District Plan on the land or in the vicinity of the property.

POLICIES		
13.4.1	That the sizes, dimensions and distribution of allotments created through the subdivision process be determined with regard to the potential effects including cumulative effects, of the use of those allotments on: (a) natural character, particularly of the coastal environment; (b) ecological values; (c) landscape values; (d) amenity values; (e) cultural values; (f) heritage values; and (g) existing land uses.	The relevant items are the amenity of the locality and the surrounding land uses. The AEE did not identify any adverse effects on these identified values.
13.4.2	That standards be imposed upon the subdivision of land to require safe and effective vehicular and pedestrian access to new properties.	Appropriate access arrangements can be attained to achieve both safe and effective vehicular movement.
13.4.3	That natural and other hazards be taken into account in the design and location of any subdivision.	The site is not subject to any natural hazards.
13.4.4	That in any subdivision where provision is made for connection to utility services, the potential adverse visual impacts of these services are avoided.	This is not a requirement within the Rural Production Zone.
13.4.5	That access to, and servicing of, the new allotments be provided for in such a way as will avoid, remedy or mitigate any adverse effects on neighbouring property, public roads, and the natural and physical resources of the site caused by silt runoff, traffic, excavation and filling and removal of vegetation.	Works on the site will be managed to avoid effects of this nature however it considered that these would be minimal as all infrastructure is existing.

POLICIES		
13.4.6	That any subdivision proposal provides for the protection, restoration and enhancement of heritage resources, areas of significant indigenous vegetation and significant habitats of indigenous fauna, threatened species, the natural character of the coastal environment and riparian margins, and outstanding landscapes and natural features where appropriate.	The site has been identified as a 'Kiwi Presence' area. Council standard advice note is warranted here.
13.4.7	That the need for a financial contribution be considered only where the subdivision would: (a) result in increased demands on car parking associated with non-residential activities; or (b) result in increased demand for esplanade areas; or (c) involve adverse effects on riparian areas; or (d) depend on the assimilative capacity of the environment external to the site.	Not applicable
13.4.8	That the provision of water storage be taken into account in the design of any subdivision.	See Objective 13.3.5 above.
13.4.9	That bonus development donor and recipient areas be provided for so as to minimise the adverse effects of subdivision on Outstanding Landscapes and areas of significant indigenous flora and significant habitats of fauna.	N/A

POLICIES		
13.4.10	The Council will recognise that subdivision within the Conservation Zone that results in a net conservation gain is generally appropriate.	N/A
13.4.11	That subdivision recognises and provides for the relationship of Maori and their culture and traditions, with their ancestral lands, water, sites, waahi tapu and other taonga and shall take into account the principles of the Treaty of Waitangi.	See Objective 13.3.7 above.
13.4.12	That more intensive, innovative development and subdivision which recognises specific site characteristics is provided for through the management plan rule where this will result in superior environmental outcomes.	N/A
13.4.13	Subdivision, use and development shall preserve and where possible enhance, restore and rehabilitate the character of the applicable zone in regard to s6 matters, and shall avoid adverse effects as far as practicable by using techniques including: (a) clustering or grouping development within areas where there is the least impact on natural character and its elements such as indigenous vegetation, landforms, rivers, streams and wetlands, and coherent natural patterns; (b) minimising the visual impact of buildings, development, and associated vegetation clearance and earthworks, particularly as	The proposal does not generate any adverse effects that are more than minor. The techniques described in the policies are not necessary as the land does not possess the values or characteristics the techniques aim to protect.

POLICIES		
	seen from public land and the coastal marine area; (c) providing for, through siting of buildings and development and design of subdivisions, legal public right of access to and use of the foreshore and any esplanade areas; (d) through siting of buildings and development, design of subdivisions, and provision of access that recognise and provide for the relationship of Maori with their culture, traditions and taonga including concepts of mauri, tapu, mana, wehi and karakia and the important contribution Maori culture makes to the character of the District (refer ***Chapter 2*** and in particular ***Section 2.5*** and Council's *"Tangata Whenua Values and Perspectives" (2004)*; (e) providing planting of indigenous vegetation in a way that links existing habitats of indigenous fauna and provides the opportunity for the extension, enhancement or creation of habitats for indigenous fauna, including mechanisms to exclude pests; (f) protecting historic heritage through the siting of buildings and development and design of subdivisions.	

POLICIES		
13.4.14	That the objectives and policies of the applicable environment and zone and relevant parts of ***Part 3*** of the Plan will be taken into account when considering the intensity, design and layout of any subdivision.	These have been taken into account as described in the assessments above**.**

46. Overall, it is considered that the proposal would not be contrary to any District Plan objective or policy.

Table 9 – PDP Rural Production Zone

Objectives	
RPROZ-O1	The Rural Production zone is managed to ensure its availability for primary production activities and its long-term protection for current and future generations.
RPROZ-O2	The Rural Production zone is used for primary production activities, ancillary activities that support primary production and other compatible activities that have a functional need to be in a rural environment.
RPROZ-O3	Land use and subdivision in the Rural Production zone: a. protects highly productive land from sterilisation and enables it to be used for more productive forms of primary production; b. protects primary production activities from reverse sensitivity effects that may constrain their effective and efficient operation; c. does not compromise the use of land for farming activities, particularly on highly productive land; d. does not exacerbate any natural hazards; and e. is able to be serviced by on-site infrastructure.
RPROZ-O4	The rural character and amenity associated with a rural working environment is maintained.

47. The soils and underlying conditions associated with the site are versatile however as an RDA application there is no consideration of this resource that is required.

48. Primary production activities at a smaller scale are still possible on each allotment. Rural lifestyle activities are compatible with smaller scale, and intensity production activities such as small gardens, hobby farms with horses, grazing stock, and other livestock.

49. The primary production activities in the surrounds are protected via the subdivision design which promotes appropriate separation distances. The applicant is also the owner of the

existing primary activity in the surrounding allotments and the applications implies that they are comfortable with the design and makeup therein. Whilst Lot 3 is on Class 3 soils, this is in line with RDA criteria for rural lifestyle subdivision.

50. Natural hazards have been assessed for the proposal and will not be exacerbated. On site infrastructure can be provided.

51. A rural working character and amenity will be maintained, to a level that is considered appropriate and seen in the surrounds which is smaller allotments, coupled with lifestyle residences and smaller rural production activities taking place.

Policies	
RPROZ-P1	Enable primary production activities, provided they internalise adverse effects onsite where practicable, while recognising that typical adverse effects associated with primary production should be anticipated and accepted within the Rural Production zone.
RPROZ-P2	Ensure the Rural Production zone provides for activities that require a rural location by: a. enabling primary production activities as the predominant land use; b. enabling a range of compatible activities that support primary production activities, including ancillary activities, rural produce manufacturing, rural produce retail, visitor accommodation and home businesses.
RPROZ-P3	Manage the establishment, design and location of new sensitive activities and other non-productive activities in the Rural Production Zone to avoid where possible, or otherwise mitigate, reverse sensitivity effects on primary production activities.
RPROZ-P4	Land use and subdivision activities are undertaken in a manner that maintains or enhances the rural character and amenity of the Rural Production zone, which includes: a. a predominance of primary production activities; b. low density development with generally low site coverage of buildings or structures; c. typical adverse effects such as odour, noise and dust associated with a rural working environment; and d. a diverse range of rural environments, rural character and amenity values throughout the District.
RPROZ-P5	Avoid land use that: a. is incompatible with the purpose, character and amenity of the Rural Production zone; b. does not have a functional need to locate in the Rural Production zone and is more appropriately located in another zone; c. would result in the loss of productive capacity of highly productive land; d. would exacerbate natural hazards; and

	e. cannot provide appropriate on-site infrastructure.
RPROZ-P6	Avoid subdivision that: a. results in the loss of highly productive land for use by farming activities; b. fragments land into parcel sizes that are no longer able to support farming activities, taking into account: c. the type of farming proposed; and d. whether smaller land parcels can support more productive forms of farming due to the presence of highly productive land. e. provides for rural lifestyle living unless there is an environmental benefit.
RPROZ-P7	Manage land use and subdivision to address the effects of the activity requiring resource consent, including (but not limited to) consideration of the following matters where relevant to the application: a. whether the proposal will increase production potential in the zone; b. whether the activity relies on the productive nature of the soil; c. consistency with the scale and character of the rural environment; d. location, scale and design of buildings or structures; e. for subdivision or non-primary production activities: i. scale and compatibility with rural activities; ii. potential reverse sensitivity effects on primary production activities and existing infrastructure; iii. the potential for loss of highly productive land, land sterilisation or fragmentation f. at zone interfaces: i. any setbacks, fencing, screening or landscaping required to address potential conflicts; ii. the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable; g. the capacity of the site to cater for on-site infrastructure associated with the proposed activity, including whether the site has access to a water source such as an irrigation network supply, dam or aquifer; h. the adequacy of roading infrastructure to service the proposed activity; i. Any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity; j. Any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

52. Primary production activities will still be possible on each lot, and they will be able to internalize the effects of such activities.

53. Given the size of the landholdings, primary production will remain the dominant use on

each site. No rural lifestyle activity will be less than 1ha on each site. The proposal results in low density rural lifestyle development which is consistent with the surrounds.

54. As above, there are no outstanding reverse sensitivity or land use incompatibility effects resulting.

55. The site does contain a portion of class 3 soils, however as an RDA application there is no consideration of this resource that is required.

56. Production potential is limited owing to underlying conditions of the soil and site. However, smaller scale production activities can be undertaken, typical within the rural environment. The proposal is consistent in scale and character of the surrounds which have a predominant rural lifestyle use. There are no outstanding reverse sensitivity or land use incompatibility effects. All sites can be serviced by on-site infrastructure. There are no known historical, cultural or spiritual associations with the site.

57. The provisions seek to avoid rural lifestyle development unless there is an environmental benefit. The term environmental benefit is not defined in the PDP. The reversion to rural lifestyle use will see numerous environmental benefits such as a more efficient use of the compromised land for rural lifestyle purposes, providing for economic wellbeing through the creation of new and sought after allotments, whilst retaining the ability of smaller rural production activities being able to take place. The large balance lot also ensures appropriate rural production activities can still occur at scale.

Objectives	
SUB-O1	Subdivision results in the efficient use of land, which: a. achieves the objectives of each relevant zone, overlays and district wide provisions; b. contributes to the local character and sense of place; c. avoids reverse sensitivity issues that would prevent or adversely affect activities already established on land from continuing to operate; d. avoids land use patterns which would prevent land from achieving the objectives and policies of the zone in which it is located; e. does not increase risk from natural hazards or risks are mitigates and existing risks reduced; and f. manages adverse effects on the environment.
SUB-O2	Subdivision provides for the: a. Protection of highly productive land; and b. Protection, restoration or enhancement of Outstanding Natural Features, Outstanding Natural Landscapes, Natural Character of the Coastal Environment, Areas of High Natural Character, Outstanding Natural Character, wetland, lake and river margins, Significant Natural Areas, Sites and Areas of Significance to Māori, and Historic Heritage.

SUB-O3	Infrastructure is planned to service the proposed subdivision and development where: a. there is existing infrastructure connection, infrastructure should provided in an integrated, efficient, coordinated and future-proofed manner at the time of subdivision; and b. where no existing connection is available infrastructure should be planned and consideration be given to connections with the wider infrastructure network.
SUB-O4	Subdivision is accessible, connected, and integrated with the surrounding environment and provides for: a. public open spaces; b. esplanade where land adjoins the coastal marine area; and c. esplanade where land adjoins other qualifying waterbodies.

58. For the various reasons already provided, the proposal is considered consistent with the objectives for Subdivision under the PDP.

Policies	
SUB-P1	Enable boundary adjustments that: a. do not alter: i.the degree of non compliance with District Plan rules and standards; ii.the number and location of any access; and iii.the number of certificates of title; and b. are in accordance with the minimum lot sizes of the zone and comply with access, infrastructure and esplanade provisions.
SUB-P2	Enable subdivision for the purpose of public works, infrastructure, reserves or access.
SUB-P3	Provide for subdivision where it results in allotments that: a. are consistent with the purpose, characteristics and qualities of the zone; b. comply with the minimum allotment sizes for each zone; c. have an adequate size and appropriate shape to contain a building platform; and d. have legal and physical access.
SUB-P4	Manage subdivision of land as detailed in the district wide, natural environment values, historical an cultural values and hazard and risks sections of the plan
SUB-P5	Manage subdivision design and layout in the General Residential, Mixed Use and Settlement zone to provide for safe, connected and accessible environments by: a. minimising vehicle crossings that could affect the safety and efficiency of the current and future transport network; b. avoid cul-de-sac development unless the site or the topography prevents future public access and connections;

	c. providing for development that encourages social interaction, neighbourhood cohesion, a sense of place and is well connected to public spaces; d. contributing to a well connected transport network that safeguards future roading connections; and e. maximising accessibility, connectivity by creating walkways, cycleways and an interconnected transport network.
SUB-P6	Require infrastructure to be provided in an integrated and comprehensive manner by: a. demonstrating that the subdivision will be appropriately serviced and integrated with existing and planned infrastructure if available; and b. ensuring that the infrastructure is provided is in accordance the purpose, characteristics and qualities of the zone.
SUB- P7	Require the vesting of esplanade reserves when subdividing land adjoining the coast or other qualifying waterbodies.
SUB-P8	Avoid rural lifestyle subdivision in the Rural Production zone unless the subdivision: a. will protect a qualifying SNA in perpetuity and result in the SNA being added to the District Plan SNA schedule; and b. will not result in the loss of versatile soils for primary production activities.
SUB-P9	Avoid subdivision rural lifestyle subdivision in the Rural Production zone and Rural residential subdivision in the Rural Lifestyle zone unless the development achieves the environmental outcomes required in the management plan subdivision rule.
SUB-P10	To protect amenity and character by avoiding the subdivision of minor residential units from principal residential units where resultant allotments do not comply with minimum allotment size and residential density.
SUB-P11	Manage subdivision to address the effects of the activity requiring resource consent including (but not limited to) consideration of the following matters where relevant to the application: a. consistency with the scale, density, design and character of the environment and purpose of the zone; b. the location, scale and design of buildings and structures; c. the adequacy and capacity of available or programmed development infrastructure to accommodate the proposed activity; or the capacity of the site to cater for on-site infrastructure associated with the proposed activity; d. managing natural hazards; e. Any adverse effects on areas with historic heritage and cultural values, natural features and landscapes, natural character or indigenous biodiversity values; and f. any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.

59. For the various reasons already provided, the proposal is considered consistent with the

policies for Subdivision under the PDP.

60. Overall, the proposal is considered to be consistent with higher order documents.

Section 104 (c) Other Matters

61. No such other matters are considered relevant.

7.0 NOTIFICATION (S95A-95D)

62. S95A of the RMA determines circumstances when public or limited notification of an application may be appropriate. Section 95A sets out a series of steps for determining public notification. These include:

- *Step 1* – Mandatory public notification in certain circumstances. In respect of this application, the applicant is not seeking public notification, nor is it subject to a mandatory notification requirement.

- *Step 2* – Public notification precluded in certain circumstances. There are no circumstances that would preclude public notification of this application. It is not a controlled activity, nor is it a restricted discretionary or discretionary application for subdivision for a residential activity. The application is non-complying activity overall. The application is not a boundary activity.

- *Step 3* – Public notification required in certain circumstances. In respect of clause 8(a) the application is not subject to a rule or national environmental standard that requires public notification. In respect of clause 8(b), this assessment of effects on the environment concludes that any adverse effects would not be more than minor. For these reasons, it is considered that the application can be processed without public notification.

- *Step 4* – Public notification in special circumstances. 'Special circumstances' are those that are unusual or exceptional, but they may be less than extraordinary or unique. (Peninsula Watchdog Group Inc v Minister of Energy [1996] 2NZLR 5290). It is considered that there are no unusual or exceptional circumstances that would warrant notification of this application.

63. Section 95b sets out a series of steps for determining limited notification. These include:

- *Step 1* – certain affected groups and affected persons must be notified. These include affected customary rights groups or marine title groups (of which there are none relating to this application). Affected groups and persons may also include

owners of adjacent land subject to statutory acknowledgement if that person is affected in accordance with s95E. There are no groups or affected persons that must be notified with this application.

- *Step 2* – limited notification precluded in certain circumstances. These include any rule or national environmental standard that precludes limited notification, or the activity is solely for a controlled activity or a prescribed activity. These circumstances do not apply to this application.

- *Step 3* – certain other persons must be notified. An affected person is determined in accordance with s95E. A person is affected if the consent authority decides that the activity's adverse effects on the person are minor or more than minor (but are not less than minor). Adverse effects on a person may be disregarded if a rule or a national environmental standard permits an activity with that effect or is a controlled or restricted discretionary activity with an adverse effect that does not relate to a matter over which a rule or standard reserves control or discretion. Those circumstances do not apply to this application. S95E(3) states that a person is not affected if the person has given, and not withdrawn their written approval for a proposed activity or a consent authority is satisfied that it is unreasonable in the circumstances for an applicant to seek a person's written approval.

64. In respect of this application, an assessment of effects on the environment has concluded that in all potential effects it can be concluded that adverse effects are less than minor where they would affect owners of land that are adjacent to or within the immediate vicinity of the site.

65. The proposal is an RDA activity with all matters that are associated with rural lifestyle development being appropriately conditioned and provided on site. Therefore, there are considered to be no adversely affected persons.

66. Section 95C relates to the public notification after a request for further information which does not apply to this application.

67. Section 95D provides the basis for determining notification under Section 95A(8)(b) if adverse effects are likely to be more than minor. This assessment concludes that potential adverse effects arising from this subdivision proposal would not be more than minor.

8.0 OVERALL CONCLUSION

68. This application seeks resource consent to undertake a staged subdivision in the Rural Production Zone.

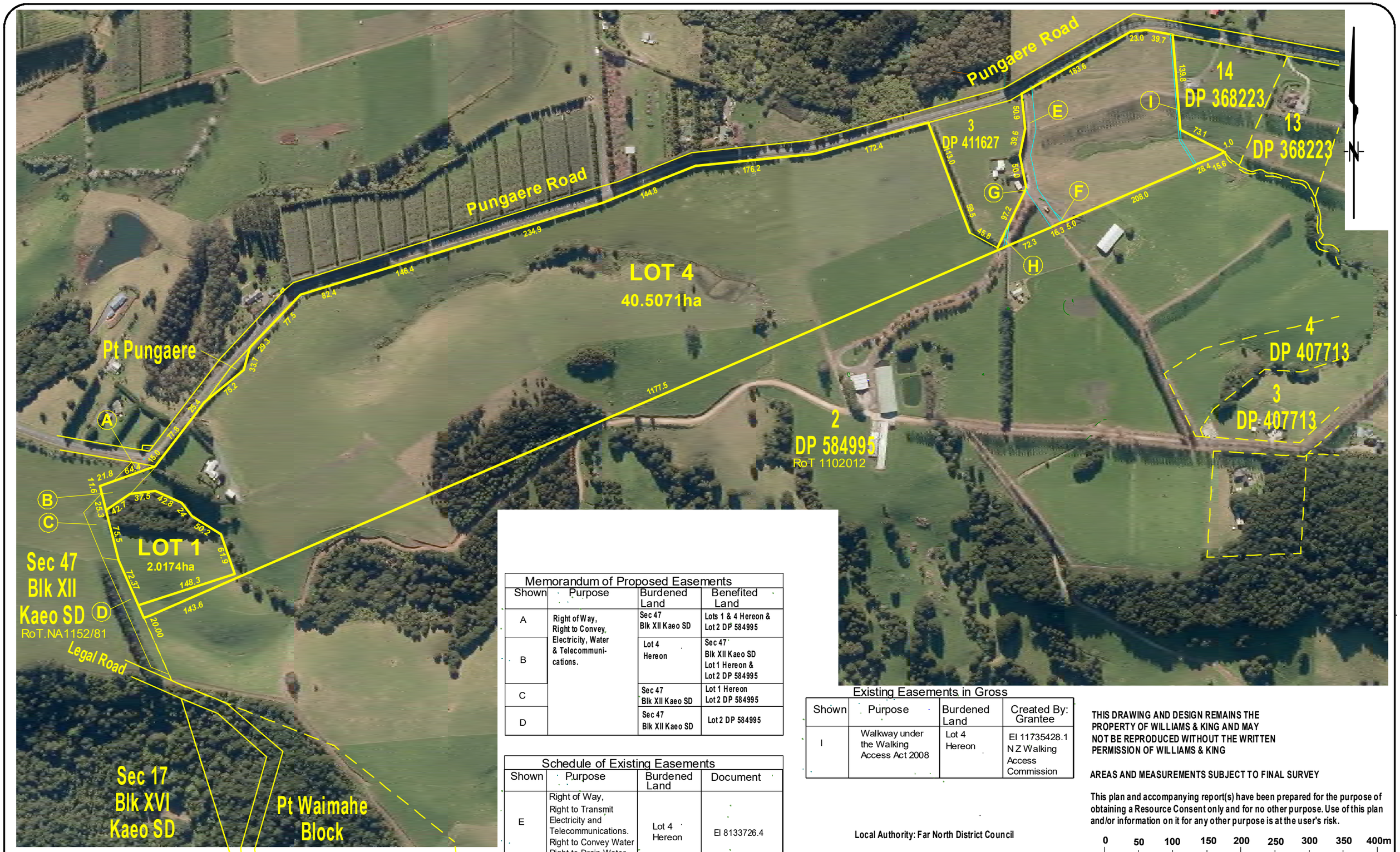
69. Based on the assessment of effects above, it is concluded that any potential adverse effects on the existing environment would be no more than minor and can be managed in terms of appropriate conditions of consent. Adverse effects on adjacent neighbours would be less than minor. The proposal would not be contrary to any relevant Plan objective of policy.

70. On this basis, it is considered that the application is able to be processed on a non-notified basis.

71. Please do not hesitate to contact me should you require any additional information.

Thank you,

Steven Sanson
Consultant Planner



Memorandum of Proposed Easements

Shown	Purpose	Burdened Land	Benefited Land
A	Right of Way, Right to Convey, Electricity, Water & Telecommunications.	Sec 47 Blk XII Kaeo SD	Lots 1 & 4 Hereon & Lot 2 DP 584995
B		Lot 4 Hereon	Sec 47 Blk XII Kaeo SD Lot 1 Hereon & Lot 2 DP 584995
C		Sec 47 Blk XII Kaeo SD	Lot 1 Hereon Lot 2 DP 584995
D		Sec 47 Blk XII Kaeo SD	Lot 2 DP 584995

Schedule of Existing Easements

Shown	Purpose	Burdened Land	Document
E	Right of Way, Right to Transmit Electricity and Telecommunications. Right to Convey Water Right to Drain Water	Lot 4 Hereon	EI 8133726.4
F G H	Right to Transmit Electricity		

Existing Easements in Gross

Shown	Purpose	Burdened Land	Created By: Grantee
I	Walkway under the Walking Access Act 2008	Lot 4 Hereon	EI 11735428.1 N Z Walking Access Commission

Local Authority: Far North District Council

Total Area: 42.5245ha
Comprised in: RoT 443242

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.

0 50 100 150 200 250 300 350 400m

Prepared for: Magon Horticulture Ltd

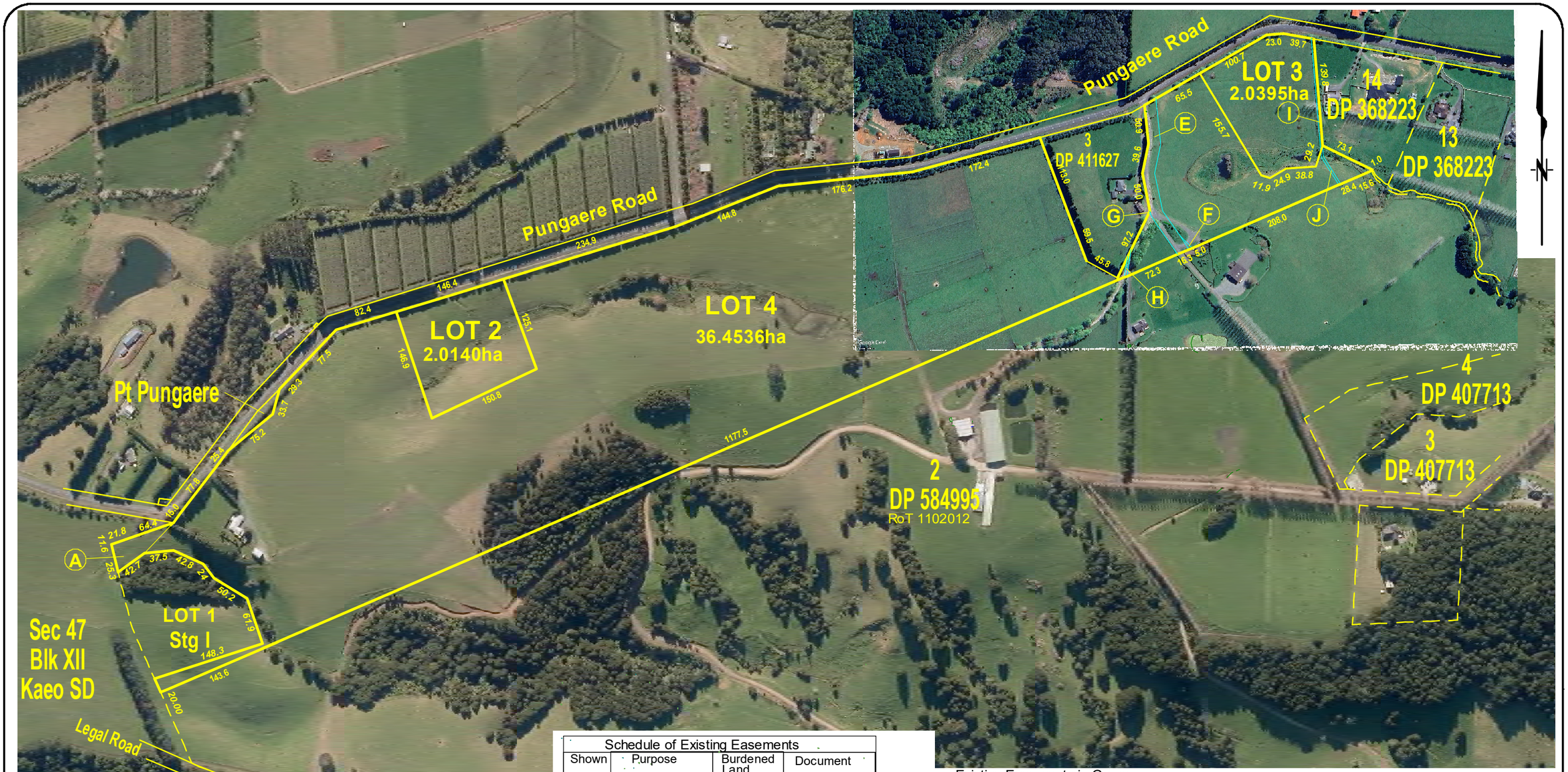
WILLIAMS AND KING
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 407 6030
Email: kerikeri@saps.co.nz
27 Hobson Ave
PO Box 937 Kerikeri

PROPOSED SUBDIVISION OF LOT 5 DP 411627 STAGE I

	Name	Date
Survey		
Design		
Drawn	W & K	June 2024
Approved		
Rev		

ORIGINAL SCALE 1:5000 SHEET SIZE A3

Surveyors Ref. No: 23543
Series
Sheet of



Schedule of Existing Easements

Shown	Purpose	Burdened Land	Document
E	Right of Way, Right to Transmit Electricity and Telecommunications. Right to Convey Water Right to Drain Water	Lot 4 Hereon	EI 8133726.4
F G H	Right to Transmit Electricity		
A	Right of Way, Right to Convey Electricity and Telecommunications. Right to Convey Water	Lot 4 Hereon	Stage I

Existing Easements in Gross

Shown	Purpose	Burdened Land	Created By: Grantee
I	Walkway under the Walking Access Act 2008	Lot 3 Hereon	EI 11735428.1 N Z Walking Access Commission
J		Lot 4 Hereon	

Local Authority: Far North District Council

Total Area: 40.5071ha Stage I
Comprised in: Lot 4 Stage I

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.

0 50 100 150 200 250 300 350 400m

Prepared for: Magon Horticulture Ltd

WILLIAMS AND KING
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 407 6030
Email: kerikeri@saps.co.nz
27 Hobson Ave
PO Box 937 Kerikeri

PROPOSED SUBDIVISION OF LOT 4 STAGE I

Stage II

	Name	Date
Survey		
Design		
Drawn		July 2024
Approved		
Rev		

ORIGINAL
SCALE 1:5000
SHEET SIZE A3

Surveyors Ref. No:
1:5000
Series
Sheet of

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 **443242**

Land Registration District **North Auckland**

Date Issued 25 May 2009

Prior References
NA63A/949

Estate Fee Simple

Area 42.5245 hectares more or less

Legal Description Lot 5 Deposited Plan 411627

Registered Owners
Magon Horticulture Limited

Interests

Subject to Section 8 Mining Act 1971(affects part formerly contained in CT NA64A/540)

Subject to Section 5 Coal Mines Act 1979 (affects part formerly contained in CT NA64A/540)

Land Covenant in Easement Instrument 6662870.5 - 24.11.2005 at 9:00 am

Land Covenant in Easement Instrument 8133726.2 - 25.5.2009 at 9:24 am

Land Covenant in Easement Instrument 8133726.3 - 25.5.2009 at 9:24 am

Subject to a right to transmit electricity over parts marked C, D & E and a right of way, right to transmit electricity and telcommunications, a right to convey water and a right to drain water over part marked A on DP 411627 created by Easement Instrument 8133726.4 - 25.5.2009 at 9:24 am

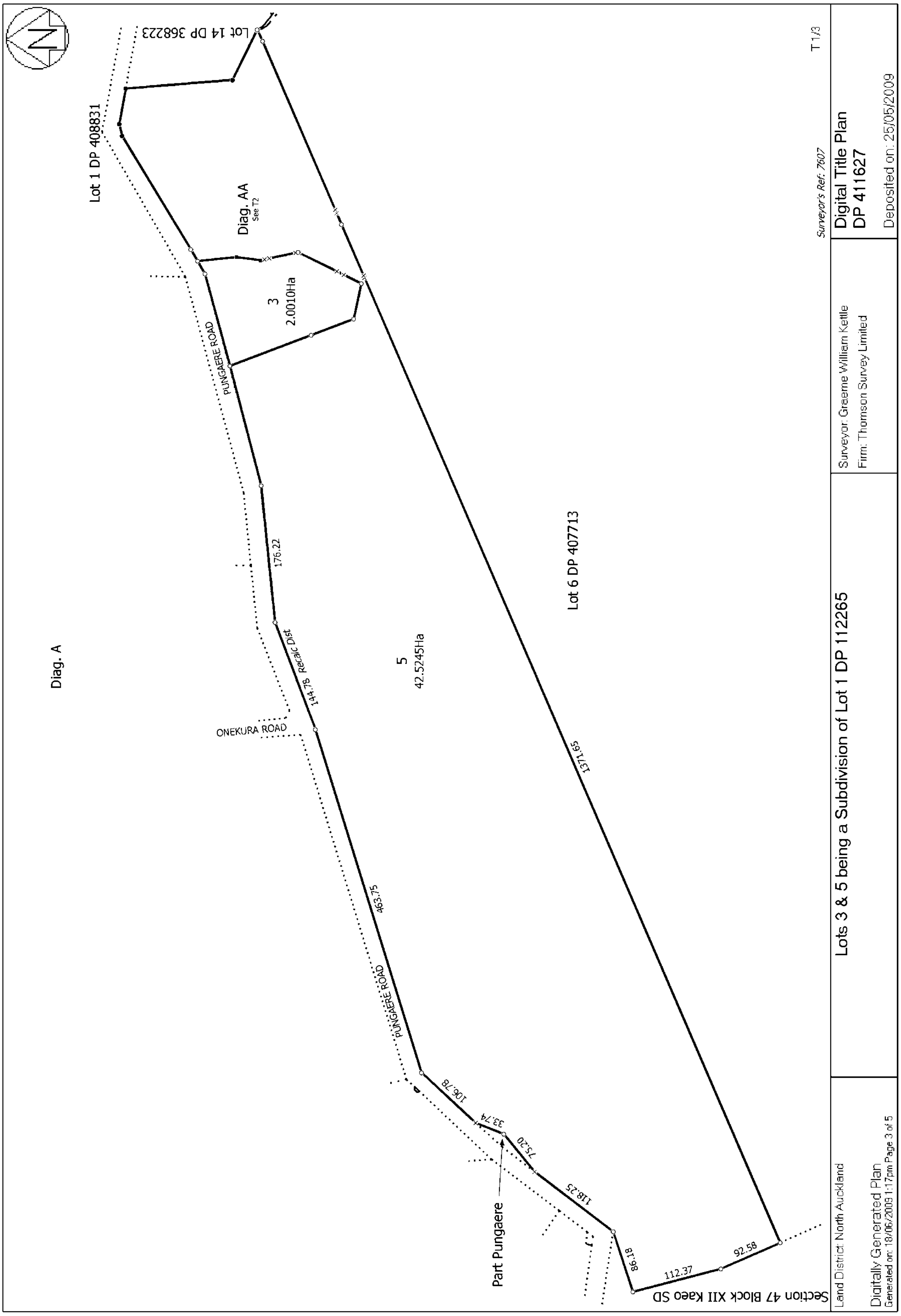
Appurtenant hereto a right to transmit electricity created by Easement Instrument 8133726.4 - 25.5.2009 at 9:24 am

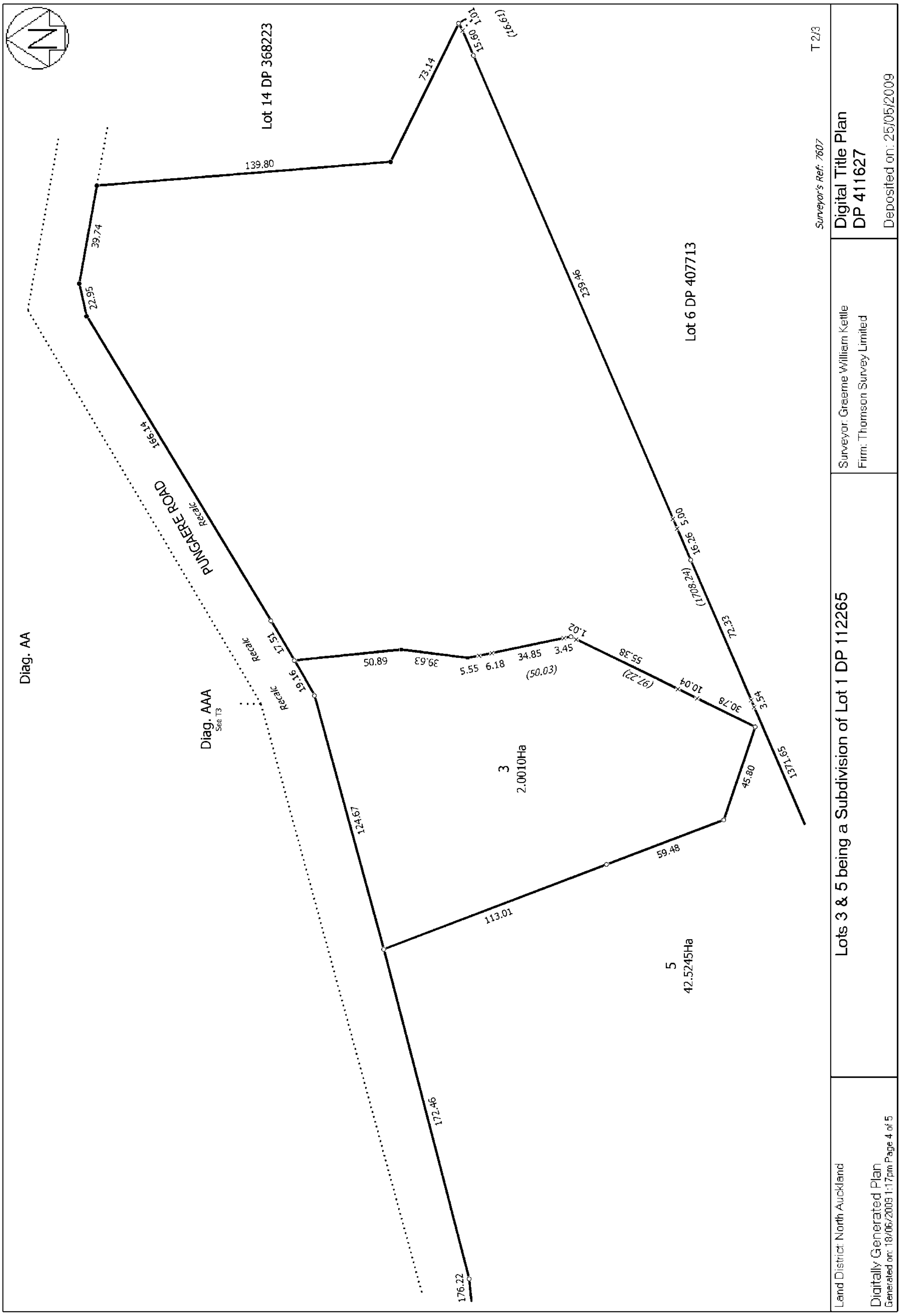
Some of the easements created by Easement Instrument 8133726.4 are subject to Section 243 (a) Resource Management Act 1991

Subject to a right (in gross) to a walkway under the Walking Access Act 2008 over part marked F on DP 521381 in favour of New Zealand Walking Access Commission created by Easement Instrument 11735428.1 - 28.4.2020 at 9:44 am

12096473.2 Gazette Notice (2021-In 729) declaring part marked F DP 521381 to be part of a walkway assigned the name Te Ohu Totara Walkway- 22.4.2021 at 7:00 am

12396385.3 Mortgage to Bank of New Zealand - 17.3.2022 at 4:00 pm


Lot 14 DP 368223
Lot 1 DP 408831
Diag. AA
See T2
3
2.0010Ha
PUNGAERE ROAD
176.22
Diag. A
Lot 6 DP 407713
5
42.5245Ha
144.78 Recalc Dist
ONEKURA ROAD
1371.65
463.75
PUNGAERE ROAD
106.78
33.74
75.20
118.25
Part Pungaere
86.18
112.37
92.58
Section 47 Block XII Kaeo SD
T1/3
Surveyor's Ref: 7607
Digital Title Plan
DP 411627
Deposited on: 25/05/2009
Surveyor: Graeme William Kettle
Firm: Thomson Survey Limited
Lots 3 & 5 being a Subdivision of Lot 1 DP 112265
Land District: North Auckland
Digitally Generated Plan
Generated on: 18/06/2009 1:17pm Page 3 of 5



Lot 14 DP 368223
Lot 6 DP 407713
PUNGAERE ROAD
Recalc
Diag. AA
Diag. AAA
See T3
3
2.0010Ha
5
42.5245Ha
139.80
73.14
39.74
22.95
166.14
239.46
15.60
1.01
(16.61)
5.00
16.26
(1708.24)
72.33
17.51
19.16
50.89
39.63
5.55
6.18
34.85
3.45
(50.03)
1.02
55.38
(97.22)
10.04
30.78
3.54
1371.65
45.80
59.48
113.01
124.67
172.46
176.22
T 2/3
Surveyor's Ref: 7607
Digital Title Plan
DP 411627
Deposited on: 25/05/2009
Surveyor: Graeme William Kettle
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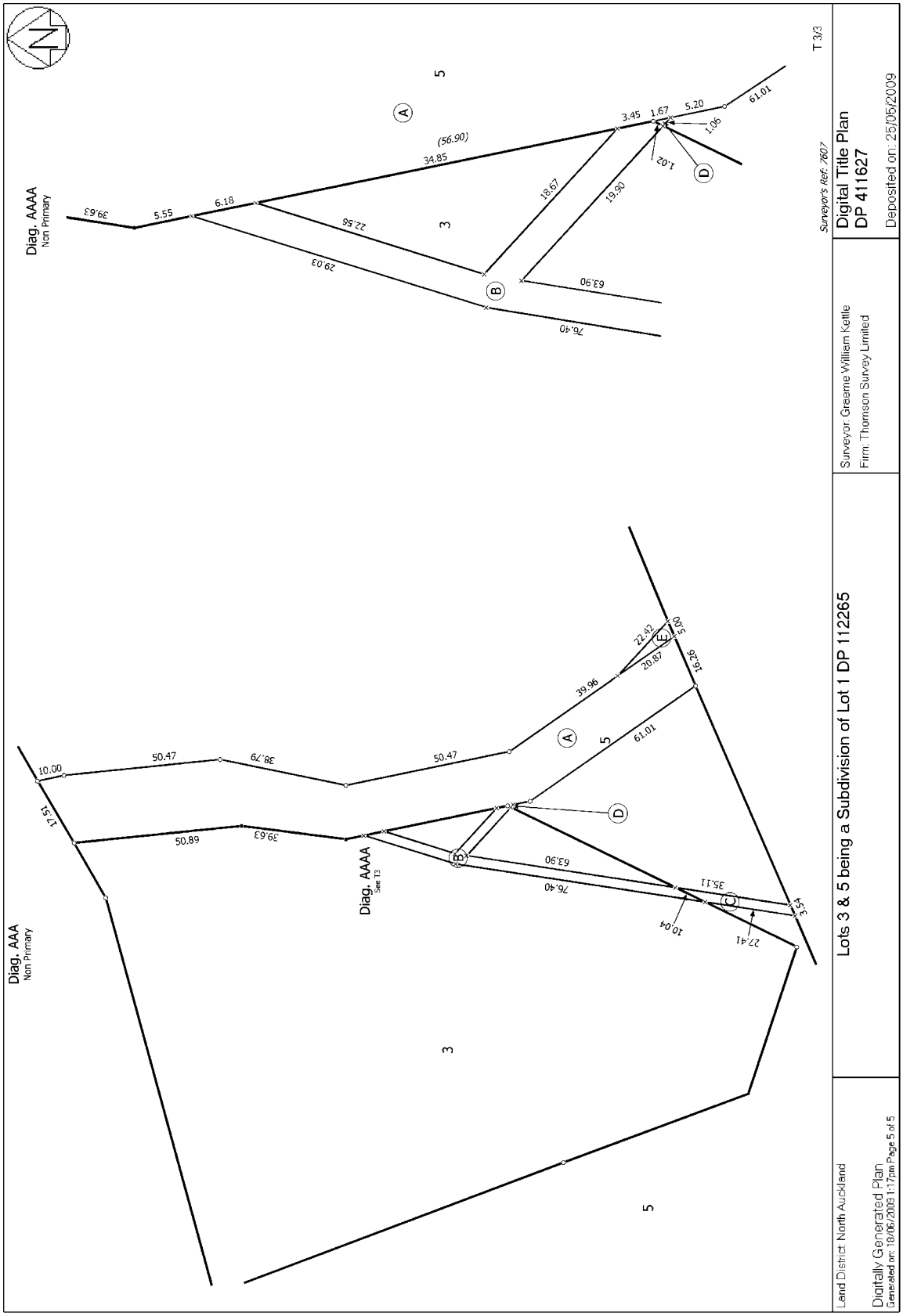

Diag. AAAA
Non Primary
Diag. AAA
Non Primary
Diag. AAAA
See T3
Surveyor's Ref. 7607
T 3/3
Lots 3 & 5 being a Subdivision of Lot 1 DP 112265
Digital Title Plan
DP 411627
Deposited on: 25/05/2009
Surveyor Greame William Kettle
Firm: Thomson Survey Limited
Land District: North Auckland
Digitally Generated Plan
Generated on: 18/06/2009 1:17pm Page 5 of 5

FAR NORTH DISTRICT COUNCIL

FAR NORTH OPERATIVE DISTRICT PLAN

DECISION ON RESOURCE CONSENT APPLICATION (SUBDIVISION)

Resource Consent Number: 2220399-RMASUB

Pursuant to section 104C of the Resource Management Act 1991 (the Act), the Far North District Council hereby grants resource consent to:

Alec Magon

The activity to which this decision relates: an application to subdivide, resulting in four allotments within the Rural Production Zone as a Restricted Discretionary activity. Specifically the proposal is to create the following allotments:

Lot 1 – 2.0160ha

Lot 2 – 2.0120ha

Lot 3 – 2.0140ha

Lot 4 – 36.0885ha

Subject Site Details

Address:	625 Pungaere Road, Waipapa
Legal Description:	Lot 5 DP 411627
Record of Title reference:	443242

Pursuant to Section 108 of the Act, this consent is issued subject to the following conditions:

1. This resource consent shall be carried out in general accordance with the documents and drawings and all supporting additional information submitted with the application, detailed below, and all referenced by the Council as resource consent number RC2220399 and the Planning Report, including Assessment of Environmental Effects, prepared by Bay of Islands Planning 2022 Limited, dated 2nd July 2022.

- Scheme Plan titled "Proposed Subdivision of Lot 5 DP 411627" prepared by Williams and King, dated February 2022, revised June 2022.
- Subdivision Suitability Report, referenced 120234, prepared by Wilton Joubert Limited, dated 28th October 2022.

2. The survey plan, submitted for approval pursuant to Section 223 of the Act for the proposed subdivision Lot 4 DP 180230 in accordance with the scheme plan prepared by Williams and King, dated February 2022, revised June 2022, shall show:

   (a) All necessary easements as required for right of way access, electricity and telecommunications.

   (b) The following amalgamation condition;

   That Lot 5 hereon be transferred to the owner of Lot 6 DP 407713 (RoT 427023) and that one Record of Title be issued to include both parcels.

3. Prior to the issuing of a certificate pursuant to Section 224(c) of the Act, the consent holder shall:

   (a) Provide a formed and sealed vehicle crossing to Lot 3 which complies with the Councils Engineering Standard FNDC/S/6 and 6B and section 3.3.7.1 of the Engineering Standards and NZS 4404:2004. The construction is to include water table drains and culverts required to direct and control stormwater runoff to the satisfaction of Council or their appointed representative.

   (b) Provide a formed sealed double vehicle crossing at easement A (Identified on Proposed Subdivision of Lot 5 DP 411627 Scheme Plan prepared by Williams and King, dated July 22) which complies with the Councils Engineering Standard FNDC/S/6D, Sections 3.3.7.1 and 15.1.6C.1.5 of FNDC District Plan and NZS 4404:2004. The construction is to include water table drains and culverts required to direct and control stormwater runoff to the satisfaction of Council or their appointed representative.

   (c) Provide formed and metalled access on ROW easement A & B to 3m finished metalled carriageway width and shall comply with Rule 15.1.6C.1.7(b) *[with passing bays provided to comply with Rule 15.1.6.1.2 of the Far North District Plan].* The formation is to consist of a minimum of 200mm of compacted hard fill plus a GAP 30 or GAP 40 running course and is to include water table drains and culverts as required to direct and control stormwater runoff.

   (d) Provide evidence that a Traffic Management Plan (TMP) has been approved by Council's Corridor Access Engineer and a Corridor Access Request (CAR) obtained prior to vehicle crossings being constructed or upgraded.

   (e) The consent holder will be responsible for the repair and reinstatement of the public road (Pungaere Road) carriageway, if damaged as a result of the construction of the vehicle access crossing.

(f) The consent holder shall provide 24-hour notice to the Far North District Council Council's Development Engineer or delegated representative prior to constructing vehicle crossings associated with conditions included in this notice.

(g) Secure the condition below by way of a Consent Notice issued under Section 221 of the Act, to be registered against the titles of the affected allotment. The costs of preparing, checking and executing the Notice shall be met by the Applicant.

Regarding Lot 1, Lot 2 and Lot 3

i. For on-site wastewater disposal system:
    a. The installation shall include an agreement with the system supplier or its authorised agent for the ongoing operation and maintenance of the wastewater treatment plant and the effluent disposal system.
    b. Following 12 months of operation of the wastewater treatment and effluent disposal system the lot owner shall provide certification to Council that the system is operating in accordance with its design criteria.

ii. No occupier of the lot, contractor and/or visitor shall keep or introduce on to the site carnivorous or omnivorous exotic animals (such as mustelids, cats or dogs). Except for any existing dogs on Lot 2 where, prior to the issue of the section 223 certificate, information has been provided to the Resource Consent Monitoring Officer with evidence for Council's records of the existing dogs on site, including:

    a. A photograph of the existing dog/s

    b. Written confirmation that the dog(s) have been micro-chipped

Regarding Lot 1, Lot 3 and Lot 4

iii. In conjunction with a building consent application for any residential dwelling (constructed or relocated), the consent holder shall provide a geotechnical assessment, prepared by a Chartered Professional Engineer (CPEng) with geotechnical expertise, which references the restrictions and recommendations of the Site Suitability Report (Geotechnical, Stormwater & Wastewater) prepared by Wilton Joubert reference 120234 and dated 28 September 2022.

iv. In conjunction with the construction of any building requiring a wastewater disposal system, the lot owner shall obtain a Building Consent and install a wastewater treatment and effluent disposal system. The System design should be developed from the 1% AEP event and restrictions and recommendations of Site Suitability Report (Geotechnical, Stormwater & Wastewater) prepared by Wilton Joubert reference 120234 and dated 28 September 2022. The design shall identify a suitable method of wastewater treatment for the proposed development along with an identified effluent disposal area plus a 100% reserve disposal area. The report shall confirm that all of the treatment & disposal system can be fully contained within the lot boundary.

v. In conjunction with the construction of any dwelling, and in addition to a potable water supply, a water collection system with sufficient supply for

firefighting purposes is to be provided by way of tank or other approved means and to be positioned so that it is safely accessible for this purpose. These provisions will be in accordance with the New Zealand Fire Fighting Water Supply Code of Practice SNZ PAS 4509.

vi. Electricity supply is not a condition of this consent and power has not been reticulated to the boundary of the lot. The responsibility for providing both power supply and telecommunication services will remain the responsibility of the property owner.

Regarding Lot 4

vii. No cats, dogs or mustelids shall be kept, or permitted to be kept on the property except for the following:

- The keeping of up to two farm dogs is permitted provided that they are trained in 'kiwi-aversion' and kept under control at all times and kept in a dog proof enclosure or inside at night-time.

The owner of the site shall ensure that any visitor to the site is made aware of, and complies with the above requirements

Advice Notes

1. Archaeological sites are protected pursuant to the Heritage New Zealand Pouhere Taonga Act 2014. It is an offence, pursuant to the Act, to modify, damage or destroy an archaeological site without an archaeological authority issued pursuant to that Act. Should any site be inadvertently uncovered, the procedure is that work should cease, with the Trust and local iwi consulted immediately. The New Zealand Police should also be consulted if the discovery includes koiwi (human remains). A copy of Heritage New Zealand's Archaeological Discovery Protocol (ADP) is attached for your information. This should be made available to all person(s) working on site.

2. During the assessment of your application it was noted that a private Land Covenant exists on your property. Council does not enforce private land covenants, and this does not affect Council approving your plans. However, you may wish to get independent legal advice, as despite having a resource consent from Council, the private land covenant can be enforced by those parties specified in the covenant.

3. The keeping of dogs on the site is permitted on Lot 4 to allow for working farm dogs that are required on site for the operation of the farm and it is recommended that they are trained in 'kiwi-aversion' and kept under control at all times.

4. A solicitor's undertaking shall be provided to Council confirming that all consent notices and covenants prepared for registration under the relevant conditions of this resource consent will be duly registered against the new titles to be issued for the subdivision. The solicitor must provide a post registration title and instruments.

   All consent notices and covenants to be prepared or registration under the relevant conditions of this resource consent shall be prepared by a Solicitor at the consent holder's expense.

Reasons for the Decision

1. The Council has determined (by way of an earlier report and resolution) that the adverse environmental effects associated with the proposed activity are no more than minor and that there are no affected persons or affected customary rights group or customary marine title group.

2. The application is for a Restricted Discretionary resource consent, as such under 104C only those matters over which council has restricted its discretion have been considered, these matters are:
    a) The effects on the natural character of the coastal environment for proposed lots which are in the coastal environment;
    b) The effects of the subdivision within 500m of land administrated by the Department of Conservation upon the ability of the Department to manage and administer land;
    c) The effects on areas of significant indigenous flora and significant habitats of indigenous fauna;
    d) The mitigation of fire hazards for health and safety of residents

3. In regard to section 104(1)(a) of the Act the actual and potential effects of the proposal will be acceptable as:
    a. The proposal for this four-lot subdivision is assessed as a restricted discretionary activity, with the proposal complies with all relevant District Plan rules, including all bulk and location rules, infringing minimum lot sizes for subdivision within a Rural Production Zone And utilises existing rights. It is considered the relevant and potential effects have been addressed within the assessment of effects above, and it has been concluded that the adverse effects will be less than minor.
    b. The proposal will also result in positive effects, including the enabling of the efficient use of land that is surplus to requirements, in a matter which supports sustainable management of natural and physical resources within the site and maintains rural amenity in the surrounding area.

3. In regard to section 104(1)(ab) of the Act there are no offsetting or environmental compensation measures proposed or agreed to by the applicant for the activity.

4. District Plan Rules Affected:
    <u>Adverse effects will be minor:</u>
    It is considered the relevant and potential effects have been addressed within the assessment of effects above, and it has been concluded that the adverse effects will be less than minor.

4. In regard to section 104(1)(b) of the Act the following statutory documents are considered to be relevant to the application:

    a) National Environmental Standards for Assessing and Managing Contaminants in Soils to Protect Human Health 2011,
    b) National Policy Statement for Highly Productive Land 2022,
    c) Operative Far North District Plan 2009,
    d) Proposed Far North District Plan 2022

<u>National Policy Statement for Highly Productive Land 2022</u>

While we acknowledge that the National Policy Standard for Highly Productive Soils is new and open to interpretation, our interpretation of the NPS:HPS is that only land, not the site, that is identified as LUC 1/2/3 is subject to the NPS. Therefore, despite a section of the site being classed LUC 3, because the proposed smaller allotments in this subdivision are situated on soil classed as LUC 4, no further consideration of this National Policy Standard is appropriate.

National Environmental Standards for Assessing and Managing Contaminants in Soils to Protect Human Health 2011

The activity is consistent with the NESCS considering that the application site has previously been utilised for rural production activities, for example stock grazing, and this continued use is proposed, with all allotments exceeding 2 hectares and considered to be remaining as productive land. This is exclusive of the existing dwelling on Lot 2, however, this land use is not proposed to change. Therefore it is considered that more likely than not there is not risk to human health.

Operative Far North District Plan 2009

The proposal is considered to be consistent with the relevant objectives and policies of the District Plan, including the objectives and policies of the Rural and Rural Productive Zone. The proposal is consistent with the rural character and amenity existing in this environment and the creation of three smaller allotments and a large balance lot in accordance with this design allows for rural living and rural production activities to continue as anticipated in this zone. The proposal results in less than minor adverse effects on the visual and amenity aspects of this environment.

Proposed Far North District Plan

The proposal is considered to be relatively consistent with the relevant objectives and policies outlined within the Horticulture chapter of the proposed district plan. Although the proposal is for a four lot subdivision, a large productive balance allotment is retained, which includes an area of LUC 3 soil. The subdivision is mainly designed to avoid land fragmentation, however where Lot 3 could be considered to fragment productive land, this land is classed LUC4 and therefore highly productive land is not considered affected. It is considered that this subdivision will not give rise to reverse sensitivity effects beyond less than minor. Therefore, it is considered that this proposal can be considered consistent with the Proposed Far North District Plan.

5. In accordance with an assessment under s104(1)(c) of the RMA no relevant non – statutory documents are considered appropriate.

6. No other matters were considered relevant in making this decision.

7. Part 2 Matters
The Council has taken into account the purpose & principles outlined in sections 5, 6, 7 & 8 of the Act. It is considered that granting this resource consent application achieves the purpose of the Act.

8. In summary it is considered that the activity is consistent with the sustainable management purpose of the RMA.

Approval

This resource consent has been prepared by Fiona Howe, Consultant Planner and is granted under delegated authority (pursuant to section 34A of the Resource Management Act 1991)

from the Far North District Council by:

Pat Killalea, Principal Planner

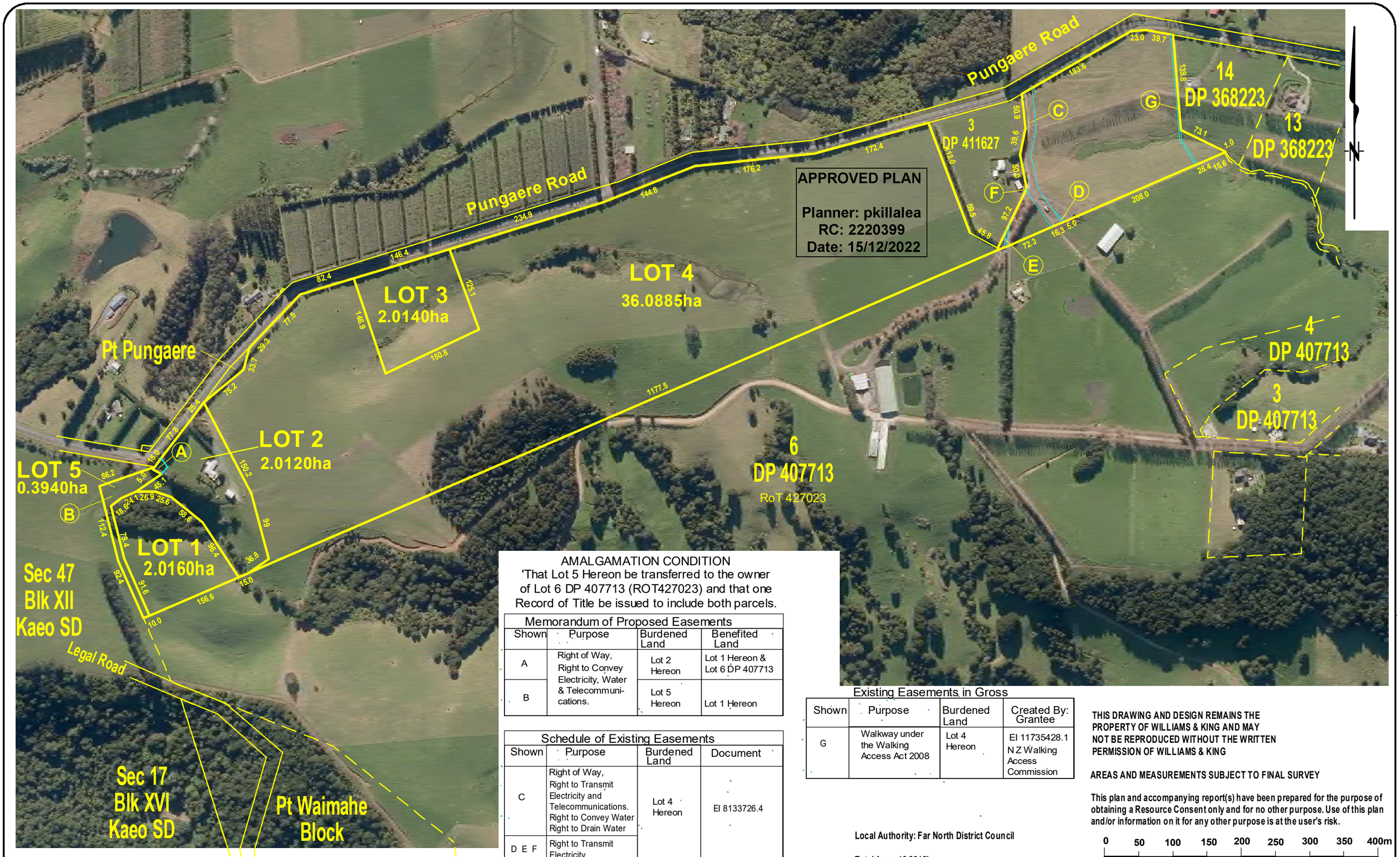
Date: 15th December 2022

Right of Objection
If you are dissatisfied with the decision or any part of it, you have the right (pursuant to section 357A of the Resource Management Act 1991) to object to the decision. The objection must be in writing, stating reasons for the objection and must be received by Council within 15 working days of the receipt of this decision.

Lapsing Of Consent
Pursuant to section 125 of the Resource Management Act 1991, this resource consent will lapse 5 years after the date of commencement of consent unless, before the consent lapses;

The consent is given effect to; or

An application is made to the Council to extend the period of consent, and the council decides to grant an extension after taking into account the statutory considerations, set out in section 125(1)(b) of the Resource Management Act 1991.



AMALGAMATION CONDITION

'That Lot 5 Hereon be transferred to the owner of Lot 6 DP 407713 (ROT427023) and that one Record of Title be issued to include both parcels.

Memorandum of Proposed Easements

Shown	Purpose	Burdened Land	Benefited Land
A	Right of Way, Right to Convey Electricity, Water & Telecommunications.	Lot 2 Hereon	Lot 1 Hereon & Lot 6 DP 407713
B		Lot 5 Hereon	Lot 1 Hereon

Schedule of Existing Easements

Shown	Purpose	Burdened Land	Document
C	Right of Way, Right to Transmit Electricity and Telecommunications. Right to Convey Water Right to Drain Water	Lot 4 Hereon	EI 8133726.4
D E F	Right to Transmit Electricity		

Existing Easements in Gross

Shown	Purpose	Burdened Land	Created By: Grantee
G	Walkway under the Walking Access Act 2008	Lot 4 Hereon	EI 11735428.1 N Z Walking Access Commission

Local Authority: Far North District Council

Total Area: 42.5245ha
Comprised in: RoT 443242

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.

0 50 100 150 200 250 300 350 400m

Prepared for: Magon Horticulture Ltd

WILLIAMS AND KING
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 407 6030
Email: kerikeri@saps.co.nz
27 Hobson Ave
PO Box 937 Kerikeri

PROPOSED SUBDIVISION OF LOT 5 DP 411627

	Name	Date
Survey		
Design		
Drawn		Feb 2022
Approved		
Rev		Jun 2022

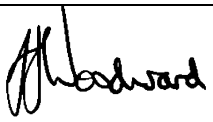
ORIGINAL
SCALE 1:5000
SHEET SIZE A3

Surveyors Ref. No:
1:5000
Series
Sheet of

Wilton Joubert Limited
Tel: 022 454 0411
nikora@wjl.co.nz

SITE	489 Pungaere Road, Waipapa
PROJECT	Proposed 1 into 4 Lot Subdivision
CLIENT	Alec Magon
REFERENCE NO.	134591
DOCUMENT	Site Suitability Report (Geotechnical, Stormwater & Wastewater)
STATUS/REVISION No.	FINAL (Revision C)
DATE OF ISSUE	8th July 2024

Report Prepared For	Email
Alec Magon	magonfencing@outlook.com

Geotechnical Componentry Authored by:	Nikora Ngaropo *BSc Geol*	Engineering Geologist	nikora@wjl.co.nz	
Civil Componentry Authored by:	G. M. Brant *(BE (Hons) Civil)*	Civil Engineer	gustavo@wjl.co.nz	
Geotechnical Componentry Reviewed and Approved by:	S.J. Woodward *(MEng, CPEng, CMEngNZ)*	Principal Geotechnical Engineer	simon@wjl.co.nz	
Civil Componentry Reviewed and Approved by:	B. Steenkamp (CPEng, BEng Civil, BSc (Geology))	Senior Civil Engineer	BenS@wjl.co.nz	

1. EXECUTIVE SUMMARY

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

Legal Description:	Lot 5 DP 411627
District Plan Zone	Rural Production Zone
Development Type:	Subdividing one lot into four.
Scope:	1. Assess suitability of Proposed Lots 1 - 3 in regard to Section 106 of the RMA and for a NZS3604:2011 Type Residential Dwelling. Lot 4 has not been considered for geotechnical commentary. 2. Assess suitability of Proposed Lots 1-4 for Stormwater, Wastewater disposal areas and Access (Lot 3 only).
Development Proposals Supplied:	Scheme Plans prepared by Williams and King Ltd titled "Proposed Subdivision of Lot 5 DP 411627" – Stage 1 & "Proposed Subdivision of Lot 4 Stage 1" – Stage 2, revision dated May & June 2024 respectively.
Lot Sizes	Proposed Lot 1 ~ 2.000 ha Proposed Lot 2 – 2.014 ha Proposed Lot 3 – 2.0395 ha Proposed Lot 4 – 36.4536 ha
NZS3604 Type Structures:	Inferred
Geology Encountered:	Kerikeri Volcanic Group and Alluvial Deposits
Fill Encountered:	Fill not encountered in the investigated areas
Overall Site Gradient in Proximity to Development:	**Proposed Lot 1**: Refer to text for more detail • Across the nominated building platform, gently sloping at gradients of up to 5°. • Approximately 20m-30m southeast of there, slopes increase to moderate gradients of 8°-12°, continuing to the gully bottom. • Approximately 25m northeast of the building platform, slopes increase from 19° to range between 26°-32°, down to the base of the gully. **Proposed Lot 2:** Refer to text for more detail • Across the nominated building platform, dipping southeast at gentle gradients of up to 5°, increasing slightly to 10°-13° after approximately 15m-20m, before steepening to 16°-20° near the bottom of the nearby gully. **Proposed Lot 3:** • The site is generally flat with no sloping ground greater than 3°-5° for 40m-50m within all directions of the indicative nominated building platform.
Site Stability Risk:	**Lot 1:** Moderate Risk of Global Instability depending on how the Lot is developed. Future construction should be set-back a minimum of 10m from slopes exceeding 16°, as detailed in Section 8.4. **Lot 2 & 3:** Overall Low Risk of deep-seated global instability provided recommendations within this report are adhered to.

Liquefaction:	The soils at the building site have no apparent risk of liquefaction susceptibility and liquefaction damage is therefore deemed unlikely.
Suitable Shallow Foundation Type(s):	Subject to appropriate landform modifications and expansive soil considerations, we expect that new residential dwellings designed in **general** accordance with NZS3604 can be built on proposed Lots 1 - 3, making use of, but not limited to, various of the following foundation options: • Timber Pile Type Foundations, • Reinforced Concrete Stiffened Raft Type Floor System, or • Conventional Reinforced Concrete Slab, with Perimeter Reinforced Concrete Foundations on Ground / Masonry Block Foundation Walls, both designed for expansive soils which will require specific engineering design. • Any NZ3604 style isolated footings expected to require a minimum embedment of 0.90m below final cleared ground level and into stiff virgin/natural material.
Shallow Soil Bearing Capacity:	For the investigated platforms in **Lot 1 & 2:** For Natural Soils & Engineered Fill Only. Geotechnical Ultimate Bearing Capacity = 300kPa Dependable Bearing Capacity = 150kPa (SRF = 0.5) For the investigated platform in **Lot 3:** For Natural Soils & Engineered Fill Only. Geotechnical Ultimate Bearing Capacity = 200kPa Dependable Bearing Capacity = 100kPa (SRF = 0.5)
NZBC B1 Expansive Soil Classification:	CLASS H – Highly Expansive (ys=78mm) unless re-classified by site specific testing following land modification.
NZS1170.5:2004 Site Subsoil Classification:	Class C – Shallow Soil stratigraphy
Proposed Earthworks:	Although no earthworks proposals have been supplied, it is envisioned that localised cut/fill earthworks operations will be undertaken to form level building platforms. Refer to report text for guidance and limitations.
Stormwater Management Rule:	Permitted Activity. 8.7.5.1.5 - The maximum proportion or amount of the gross site area covered by buildings and other impermeable surfaces shall be 15%. The total estimated future impervious area for the development does not exceed 15% of the site area. Therefore, this activity is considered a Permitted Activity under the FNDC District Plan.
Stormwater Mitigation:	The maximum permitted impervious area (15% impervious area) for Lots 1-4 are as follows: Lot 1 – 15% Impervious Area = 3,024m^2 Lot 2 – 15% Impervious Area = 3,021m^2 Lot 3 – 15% Impervious Area = 3,093m^2 Lot 4 – 15% Impervious Area = 54,650m^2

	A site-specific stormwater attenuation report in accordance with the Far North District Council Engineering Standards will be required if the proposed development within any lots exceeds the permitted 15% impervious area. As the permitted impervious area within each lot is greater than 3,000m^2, we expect that any potential future residential development would comply with Permitted Activity Rule (8.6.5.1.3). As such, we do not envision that a site-specific stormwater attenuation report will be required for Lots 1-4.
Wastewater Disposal	Recommendations for design have been provided for in Section 10.

2. SCOPE OF WORK & PROPOSED DEVELOPMENT

Wilton Joubert Ltd. (WJL) was engaged by the client, Alec Magon, to undertake a site suitability investigation to support a 1-into-4 lot proposed subdivision of Lot 5 DP 411627, as depicted to us on the subdivision scheme plan provided by Williams and King Ltd dated May 2024. Refer Figure 1 below.

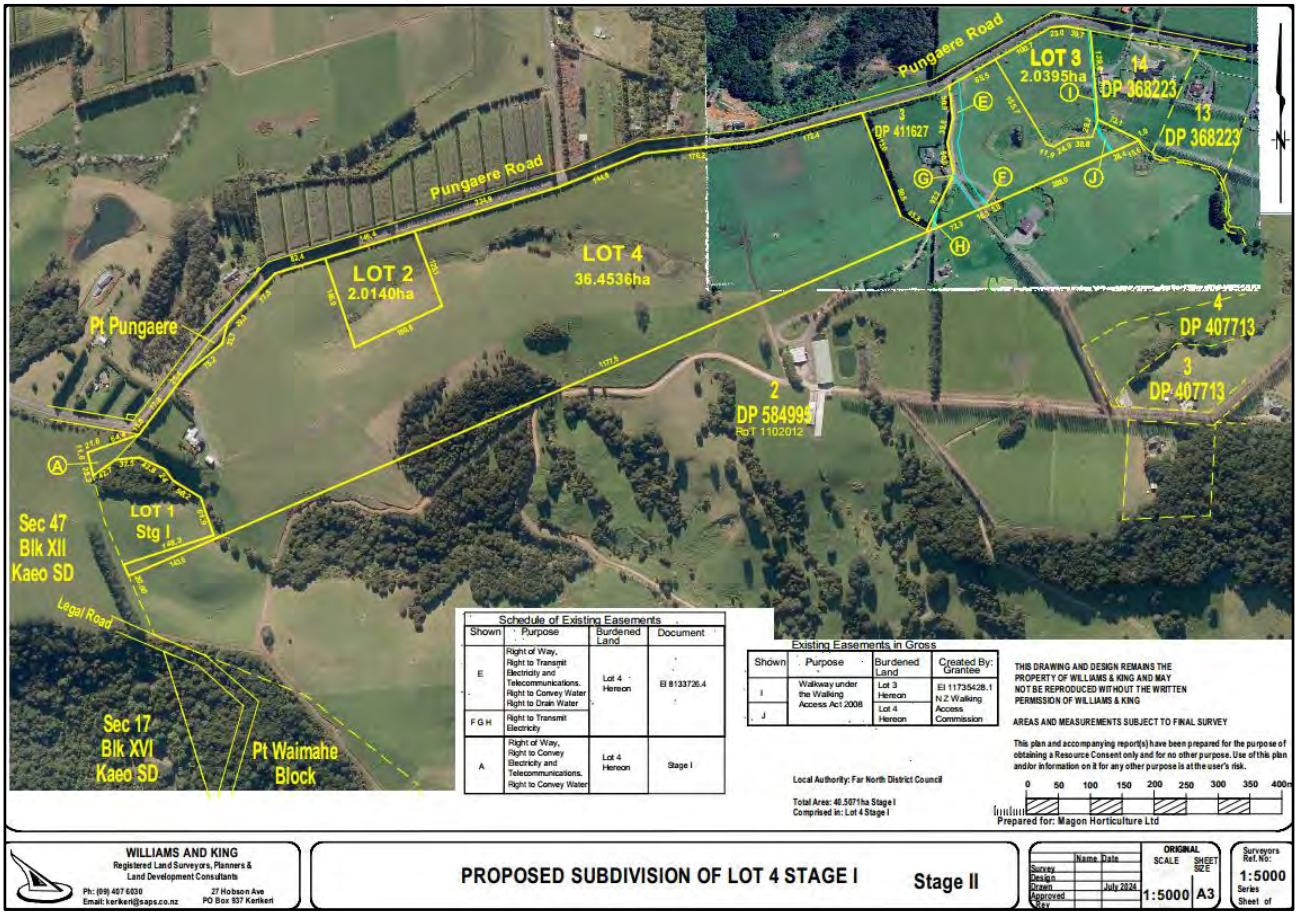


Figure 1 – Excerpt of the Subdivision Scheme Plan – Stage 2. Provided by the Client and Prepared by Williams and King.

The following report provides:

1) Preliminary site suitability recommendations where indicative nominated building platforms have been assessed, and
2) Recommendations for suitable wastewater disposal locations, stormwater commentary and access recommendations (Lot 3 only).

No development plans have been provided for the proposed construction of any future dwellings in the proposed lots 1 - 3 however, for the purposes of this assessment, we envision that any future proposed residential development thereon will generally be constructed in accordance with NZS3604:2011 and amendments, and hence we have assessed the suitability of the site subsoils within the marked areas on our site plan (attached within the appendices of this report) not only in terms of bearing capacity, but also for differential foundation movement due to soil expansivity and/or soil creep. Because Lot 4 contains the existing dwelling, it is excluded from any geotechnical conclusions and/or recommendations provided herein.

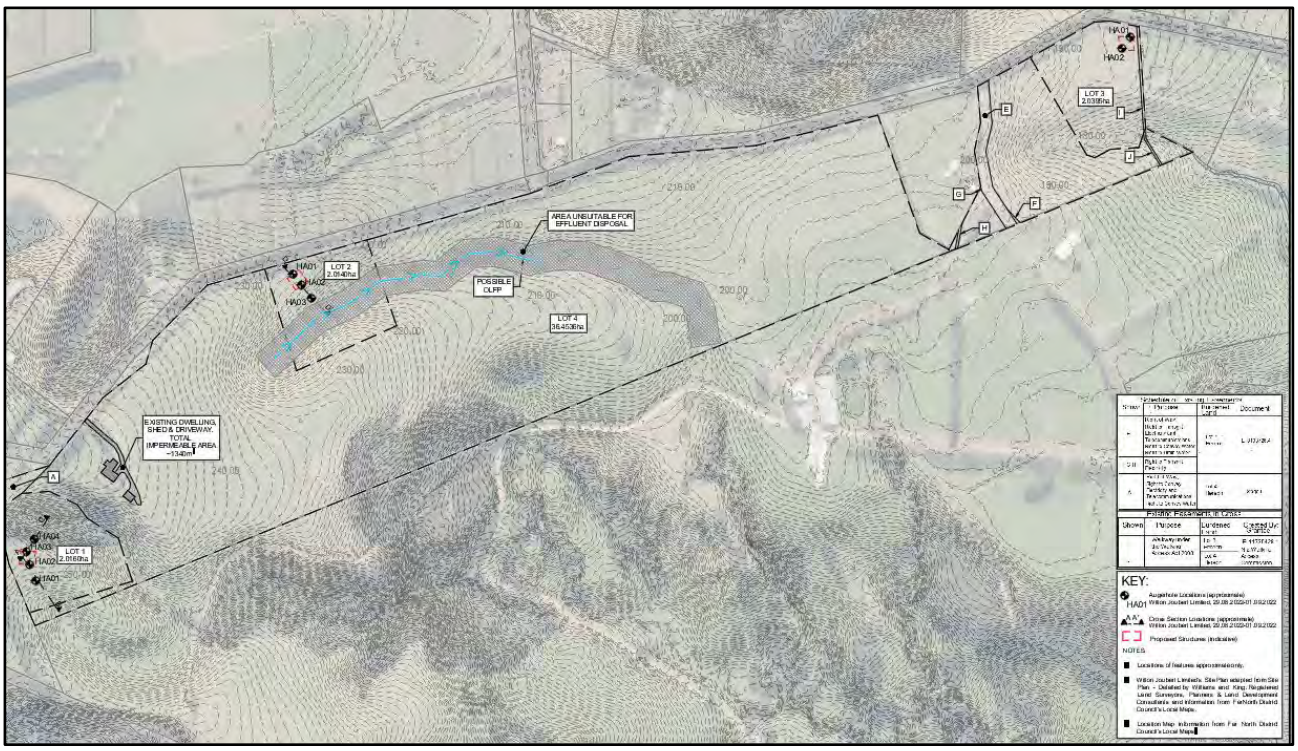


Figure 2 – Excerpt of the Overall Master Plan from Wilton Joubert Ltd.

Whilst recommendations for Wastewater Management and Stormwater Management for proposed Lot 1 -4 have been provided, our scope of works does not include any *environmental assessment* of site soils or groundwater.

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

3. SITE DESCRIPTION

The subdividing parent property at 489 Pungaere Road, Waipapa, Lot 5 DP 411627, lies at the crest of the southern flank of a large extended ridgeline, which approximately follows the Pungaere Road carriageway, which runs nearly east to west along the northern boundary of the subject parent property.

The parent property is being split into 4 lots, of which, Lot 1, 2 and 3 are the subject of this geotechnical assessment, while Lot 4, containing the existing rural residential dwelling, is excluded from geotechnical consideration and recommendations within this report.

The four Lots are described below:

Lot 1 – Containing large grass covered areas with some native trees and gullies.

Proposed Lot 1, 2.016ha in extent, is situated within the southwest corner of the Parent Lot and is bordered by Proposed Lot 4 to the northeast. The lot comprises mainly of pastural land. Northeast of the indicative building platform, there was some steeply sloping terrain where gradients ranged from 19°-32°, beginning approximately 22m from the indicative building platform and heading down into the native trees dressing the northeast facing gully flank. The southwestern portion of the lot contains a second gully with gently-moderately sloping terrain where grades initially generally do not exceed 10°-13° but subsequently increase beyond 13° approximately 40m to the southeast of the indicative building platform. Refer Figure 3 below and Cross-Sections A-B & A-C appended to this report.

Figure 3 – Drone Photos – Capturing Nominated Building Platform in Lot 1 with the Existing Gullies to the Northeast and Southeast.

Lot 2 – Predominantly grass covered with slopes flanking the platform heading down into gully located centrally within the lot.

Proposed Lot 2 will be 2.014ha in size and will be located adjacent to the northern boundary of the Parent Lot. The site is mainly grass covered with the current use associated with pastural grazing. Pungaere Road forms the northern boundary of Proposed Lot 2. The lot currently does not have existing vehicular access from Pungaere Road, although it is envisioned that access will be formed in the future through the northern boundary. An indicative building platform was able to be investigated near the north-western corner of the lot on near level to gently sloping terrain with grades less than 5°. Gently to moderately sloping terrain was observed heading down into the gully approximately 40m-50m from the edge of the indicative building platform, at grades generally not exceeding 16°-20°. Refer Figure 4 below and Cross-Section D-D' appended to this report.

Figure 4 – Drone Photos – Showing Nominated Building Platform in Lot 2 with the Existing Gully Central to the proposed allotment.

Lot 3 – Predominantly grass covered with a gully feature located further south of the nominated building platform.

Proposed Lot 3, 2.0395ha in extent, is predominantly covered in grass with gentle grades throughout the lot and trending to the south toward a local gully feature. Refer Figure 5 below.

The nominated building platform that we investigated is situated near the north-eastern corner of the proposed allotment, within the 'annexed portion', where grades generally do not exceed 3°-5° for approximately 40m-50m in all directions.

Figure 5 – Site Photo of Nominated Building Platform in Lot 3, facing Southwest from the Northeast Corner. Orange Cones are Indicative of the Nominated Building Platform Area.

Lot 4 – Balance Lot containing the existing dwelling - Predominantly grass covered areas with mature trees and gullies in localised locations. Geotechnical Componentry of this Report does not cover this Lot.

Lot 4 will be the balance lot of parent Lot 5 DP 411627 with Pungaere Road forming most of the northern boundary. Lot 4 contains the existing dwelling and is accessed at 625 Pungaere Road, Waipapa.The lot will be 36.4536ha in size and mainly grass covered, but with some mature trees scattered throughout it and mostly along the southern boundary. The bulk of the proposed Lot lies to the west of 489B Pungaere Road (Lot 3 DP 411627) and is dominated by a large gully that transects proposed Lot 2 as it approximately parallels Pungaere Road, before arcing around to cross the southern boundary, and feed into a complex gully system that skirts most of that boundary. Slopes near these gullies are generally gently to moderately sloping towards and just beyond their crests, but in some cases, as also observed in proposed Lot 2 and Lot 1, steeply sloping through their lower extents.

To the east of 489B is another area of pasture annexed to the parent Lot, which is dominated by another localised west to east trending gully.

Figure 6 – Drone Photos – Showing Existing Dwelling in Lot 4.

4. MAPPED GEOLOGY & SITE SUBSOILS

Local geology at the property is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as Kerikeri Volcanic Group Late Miocene basalt of Kaikohe – Bay of Islands Volcanic Field (Figure 7 - red shaded area), described as; "*Basalt lava, volcanic plugs and minor tuff"*, refer; 'GNS Science Website', considered to be some 9.7 to 1.8 million years old.

Around 600-700m to the east of the site, there is a small elliptical area where the geology is noted as Kerikeri Volcanic Group Late Miocene scoria of Kaikohe – Bay of Islands Volcanic Field, described as; *"Basalt scoria,"* 'GNS Science Website', the age of which has not been specified. Considering the local contours and landforms, it appears that this area represents a local volcanic cone as a potential source of the surrounding volcanic soils.

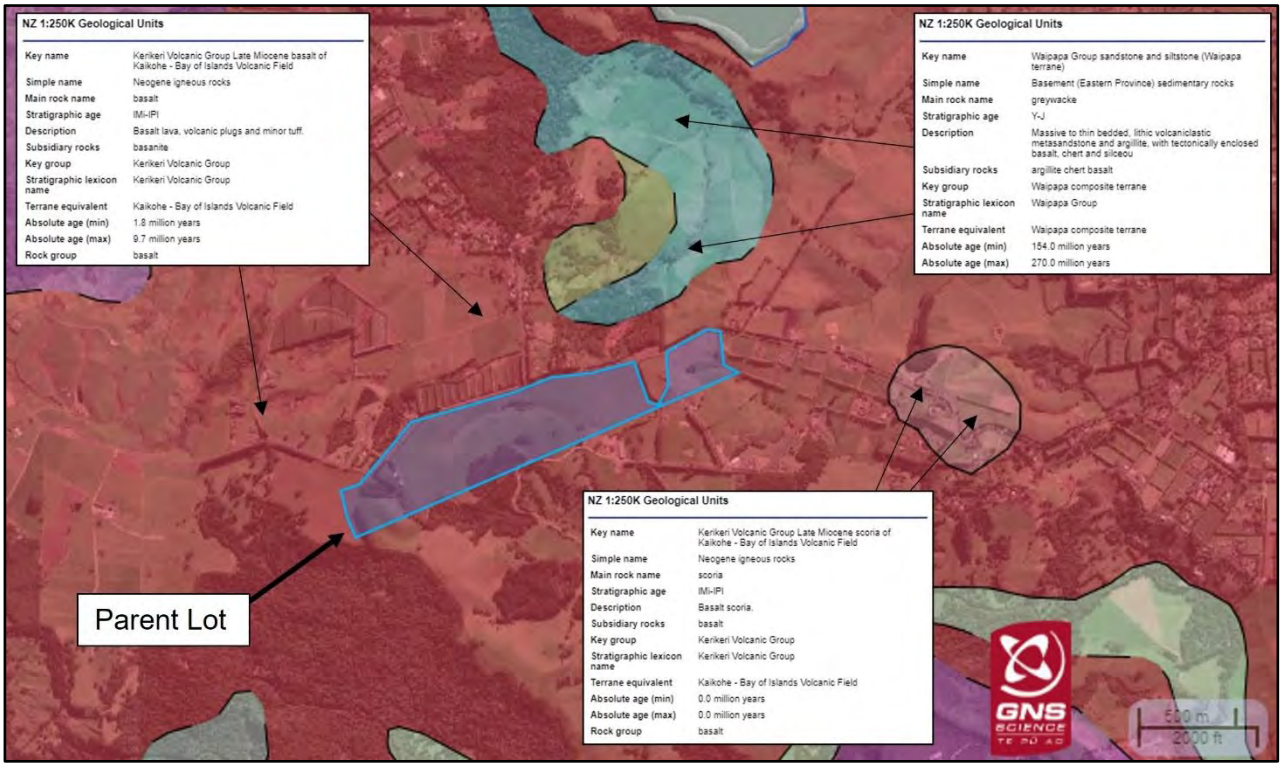


Figure 7 – Screenshot from New Zealand Geology Web Map hosted by GNS Science.

Approximately 150m to the north of the site, within the large gully situated across Pungaere Road, the local geology is noted on the GNS Science New Zealand Geology Web Map, Scale 1:250,000, as Waipapa Group sandstone and siltstone (Waipapa terrane) (Figure 7 - blue shaded area), described as; "*Massive to thin bedded, lithic volcaniclastic metasandstone and argillite, with tectonically enclosed basalt, chert and siliceous ooze,"* refer; 'GNS Science Website' and Haywood, "Out of the Ocean, Into the Fire", and which is deemed to be some 270 to 154 million years old.

Some of the larger nearby gullies to the south of the property are mapped as containing OISI (Holocene) river deposits (14,000 years old to Recent) (Figure 8), described as "*Unconsolidated to poorly consolidated mud, sand, gravel and peat deposits of alluvial, colluvial and lacustrine origins*," refer; 'GNS Science Website'. It is noted that these materials are typically confined to these gully features. Although unmapped, it is expected that some of this material also occupies the base and peripheral flanks of the minor gullies towards the higher reaches of the above catchments, such as those identified within proximity of the subject site, see Figure 9.

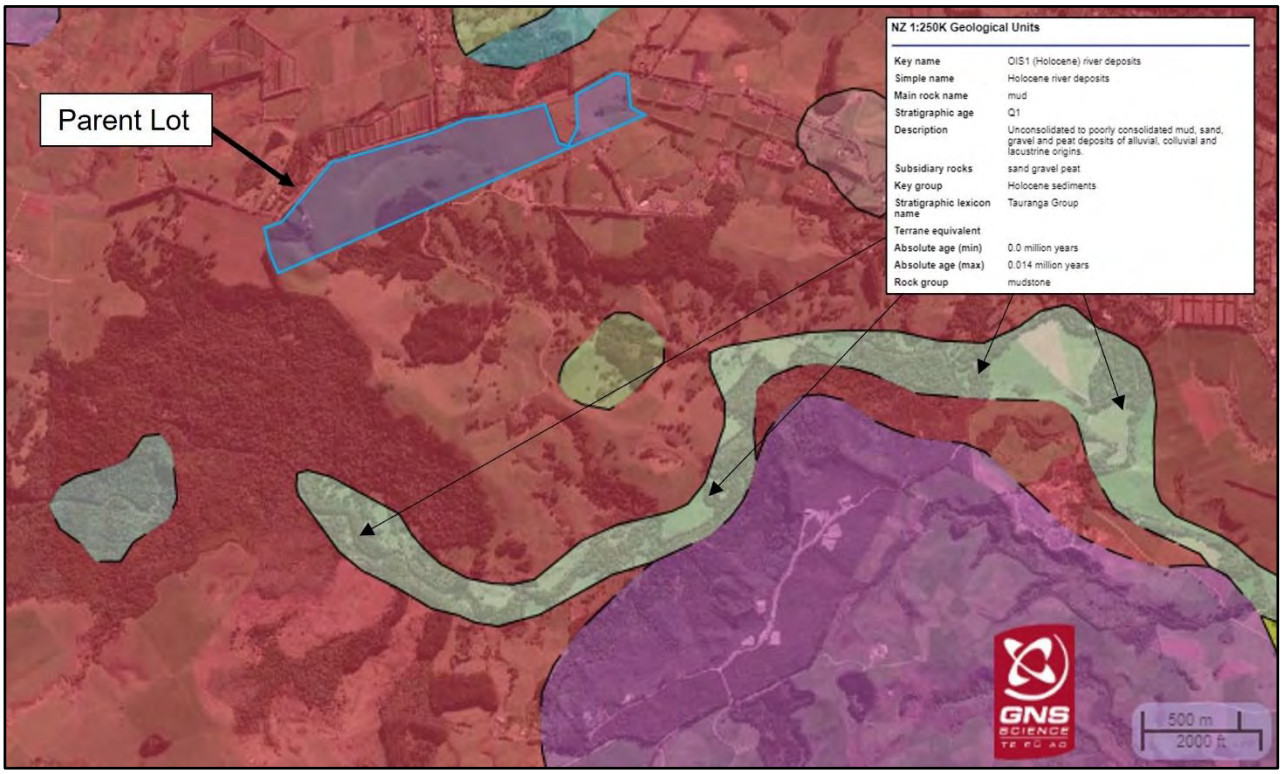


Figure 8 – Screenshot from New Zealand Geology Web Map hosted by GNS Science.

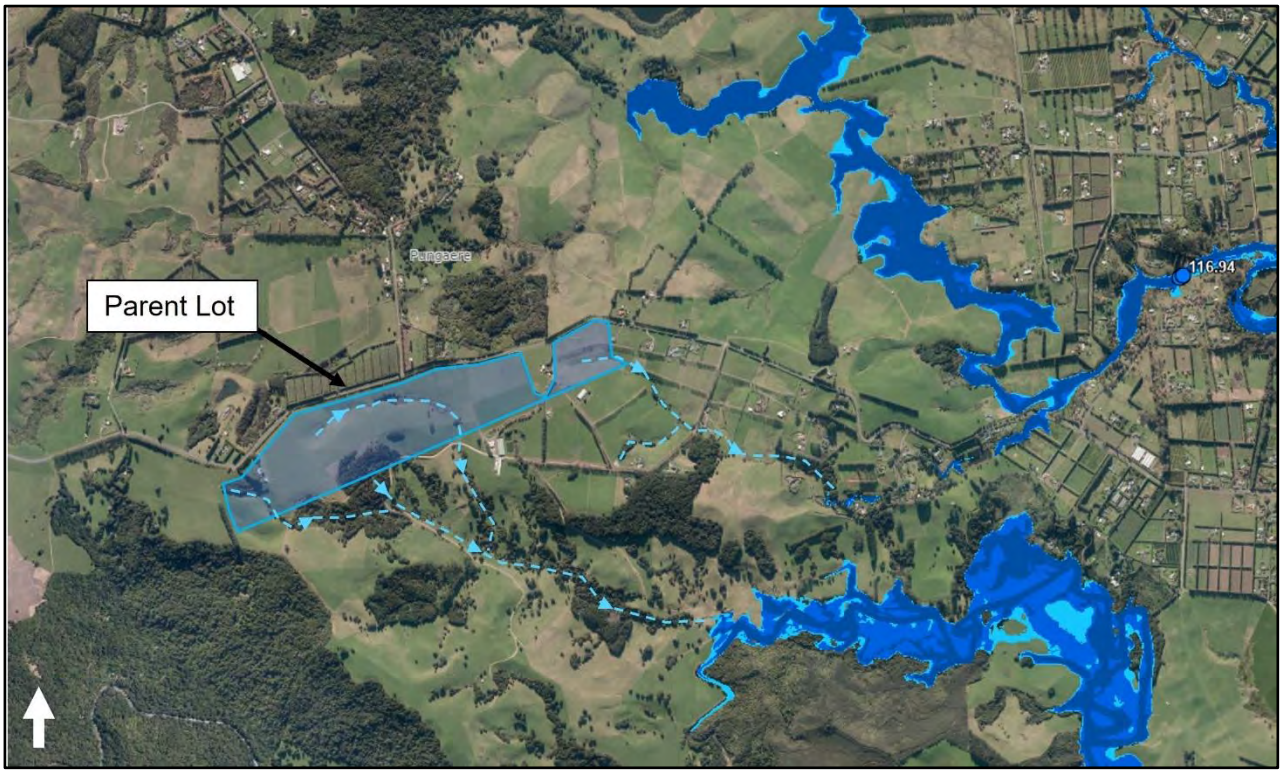


Figure 9 – Screenshot from Northland Regional Council (NRC) Online GIS Showing River Flood Extent, annotated with Local Gully Features within Proximity of the Subject Site.

It should be noted that our hand auger investigation carried out within the nominated building platform for Lot 3 encountered alluvial material representing that of a recent alluvial system within this portion of the site.

5. NATURAL HAZARDS

Northland Regional Council Hazard Maps indicate that there are no flood prone areas within the property, which we consider, coincides with the highly elevated nature of the site. The closest modelled river flood extent is situated approximately 1150m to the southeast of the site, at an elevation of some 100m below the subject property, See Figure 9 above. Therefore, potential flooding is expected to have no impact on the investigated development areas.

6. FIELDWORK INVESTIGATION

WJL carried out multiple shallow ground investigations on subsequent lots on 29.08.2022, 31.08.2022 and 01.09.2022. Subsoil testing involved the following:

Lot 1:

- Four hand auger boreholes (HA) of 50mm diameter drilled to a maximum depth of 5.0m below ground level (mbgl),
- Four Scala Penetrometer (DCP) tests undertaken from the invert of all boreholes to a maximum depth of 6.5mbgl, and
- Two Cross-Sections measured using a tape and ZipLevel® (A-B & A-C)

Lot 2:

- Three hand auger boreholes (HA) of 50mm diameter drilled to a maximum depth of 5.0m below ground level (mbgl),
- Three Scala Penetrometer (DCP) tests undertaken from the invert of all boreholes to a maximum depth of 6.8mbgl, and
- One Cross-Section measured using a tape and ZipLevel® (D-D')

Lot 3:

- Two hand auger boreholes (HA) of 50mm diameter drilled to a maximum depth of 4.0m below ground level (mbgl),

As each excavation progressed, careful inspections were made of the materials observed, and soil peak shear strength along with the remould tests were performed in situ, at selected depths, using a hand-held shear vane. The materials identified are described in detail on the appended records, together with the results of the various tests undertaken, plus the groundwater conditions as determined during our time on site.

The approximate locations of the HA's and Cross-Sections A-B, A-C and D-D' are shown on the appended site plan. The soil sample arisings from the boreholes were logged in accordance with the "Field Description of Soil and Rock", NZGS, December 2005.

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

7. FIELDWORK FINDINGS

The ground conditions encountered during the shallow ground investigation have been interpreted from the appended HA borehole records undertaken on Proposed Lots 1, 3 and 4.

In general terms, the site was found to be underlain with the following soils:

7.1 TOPSOIL

Topsoil was encountered to a maximum depth of 0.30m in Lot 1 and to a depth of 0.20m in Lot 2 and Lot 3.

7.2 FILL

Fill was not encountered within any of the Hand-Auger Boreholes.

7.3 NATURAL GROUND

The underlying natural deposits encountered within the investigated building platforms in Lot 1 and Lot 2 were consistent with our expectations of Kerikeri Volcanic Group comprising of stiff to very stiff clayey SILTs, with varying amounts of fine to coarse, weakly to strongly fused clasts throughout.

The natural deposits underlying the investigated platform in proposed Lot 3 were more indicative of Holocene Alluvial Deposits, comprising of clayey SILTs and CLAYs with some weakly cemented clasts throughout. The investigated building platform in Lot 3 is situated within proximity to a nearby gully. As previously mentioned in Section 4, material in this area is likely to have been influenced by the continued presence of flowing water over time, as evidenced by the local gully contours as well as the greyed colour of the soil suggesting that the soils were in a non-oxidising gley-zone.

Lot 1: Figures 10-13 (Inclusive)

Figure 10 – Site Photo of Lot 1 HA01 Arisings.

Figure 11 – Site Photo of Lot 1 HA04 Arisings.

Figure 12 – Site Photo of Lot 1 HA02 Arisings.

Figure 13 – Site Photo of Lot 1 HA03 Arisings.

Lot 2: Figures 14-16 (Inclusive)

Figure 14 – Site Photo of Lot 2 HA01 Arisings.

Figure 15 – Site Photo of Lot 2 HA02 Arisings.

Figure 16 – Site Photo of Lot 2 HA03 Arisings.

Lot 3: Figures 17-18 (Inclusive)

Figure 17 – Site Photo of Lot 3 HA01 Arisings.

Figure 18 – Site Photo of Lot 3 HA02 Arisings.

7.4 GROUNDWATER

Lot 1:
Groundwater was encountered in HA01 and HA02, at depths of 1.8mbgl and 2.6mbgl respectively and standing at 3.6mbgl and 2.9mbgl respectively by completion of our fieldwork.

Lot 2:
Groundwater not encountered in any of the related hand auger boreholes.

Lot 3:
Groundwater was encountered in HA02, at a depth of 1.2mbgl, rising to 1.0mbgl by completion of our fieldwork. HA01 appeared to have a high groundwater level measured at 0.20mbgl however, we anticipate the groundwater level measured to be due to the ingress of water from the surface soils having previously endured some heavy rainfall prior to us undertaking our investigations.

7.5 SOIL STRENGTHS

Measured vane shear strengths (dial readings adjusted to BS 1377) of the natural cohesive soil tested in the various boreholes were as follows:

- Lot 1 were found to be relatively high, ranging from 88kPa (17kPa remoulded) to in excess of 223kPa and/or UTP (unable to penetrate), averaging greater than 156kPa.
- Lot 2, the vane shear strengths ranged from 95kPa (60kPA remoulded) to in excess of 223kPa and/or UTP, averaging greater than 164kPa.
- Lot 3 were found to be relatively firm to stiff, ranging from 57kPa (19kPa remoulded) to 159kPa, averaging 88kPa.

Ratios of peak to remoulded undrained shear strengths, where able to be determined, indicated sensitivities according to the NZGS Guidelines as follows:

Lot #	Range	Sensitivity Description
1	widely ranging	Sensitive
2	1.5-4.3	Moderately Sensitive
3	1.5-5.9,	Moderately Sensitive to Sensitive

7.6 DCP-SCALA PENETROMETER TESTS

DCP-Scala tests, in terms of number of blows /0.10m of ground penetration, were noted from the invert of all Hand Auger Boreholes in Lot 1 and Lot 2, to provide a deeper indication of bearing capacity of the site soils within the potential building platforms and surrounding areas.

Recorded blow counts of between 1 and 20/0.10m within all DCP test locations are indicative of the variability of the material types and their density. It should be noted that variations may occur in DCP-Scala testing throughout the building platforms due to differing percussive effects on the pore pressures according to the differing degrees of saturation.

7.7 SUMMARY TABLE

The following table summarises our inferred stratigraphic profiling.

Table 1: Stratigraphic Summary Table; NE=Not Encountered, GWL=Groundwater Level

	Investigation Hole ID	Topsoil	Kerikeri Volcanic Group Materials	Holocene Alluvial Deposit Materials	GWL Encountered During Drilling/Upon Completion	Reason for Hole Termination
Lot 1	HA01 (5.00m drill depth)	0.20m	0.20m – 5.00m	NE	1.80m/3.60m	Target Depth
	HA02 (3.00m drill depth)	0.20m	0.20m – 3.00m	NE	2.60m/2.90m	Target Depth
	HA03 (3.00m drill depth)	0.30m	0.30m – 3.00m	NE	NE/NE	Target Depth
	HA04 (5.00m drill depth)	0.15m	0.15m – 5.00m	NE	NE/NE	Target Depth
Lot 2	HA01 (3.00m drill depth)	0.20m	0.20m – 3.00m	NE	NE/NE	Target Depth
	HA02 (3.00m drill depth)	0.20m	0.20m – 3.00m	NE	NE/NE	Target Depth
	HA03 (5.00m drill depth)	0.20m	0.20m – 5.00m	NE	NE/NE	Target Depth
Lot 3	HA01 (3.00m drill depth)	0.20m	NE	0.20m – 3.00m	0.20m/0.20m	Target Depth
	HA02 (4.00m drill depth)	0.20m	NE	0.20m – 4.00m	1.20m/1.00m	Target Depth

8. GEOTECHNICAL DISCUSSION

8.1 SHALLOW FOUNDATION SOIL EXPANSIVITY

In the absence of any earthworks proposals and/or indication of final floor levels, there was little relevance in undertaking site specific soil testing for expansivity, so instead, based on our experience with this geology, we provide a conservative preliminary soil expansivity classification of Class H (Highly) expansive soils as defined in clause 7.5.13.1.2, as introduced to NZS3604 by Amendment 19 of NZBC Structure B1/AS1:

- NZBC B1 Expansive Soil Class H
- Upper Limit of Characteristic surface movement (y_s) 78mm

Confirmation and/or re-classification of the above may be required at building consent stage via site-specific soil expansivity testing. Given that the soils are considered to not lie within the definition of "good ground" as per NZS3604, the design of shallow foundations are no longer covered by that standard, and 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 provide recommendations to mitigate these effects for the proposed foundations.

8.2 SHALLOW FOUNDATION BEARING

For Lot 1 and Lot 2, we consider that the available shallow foundation bearing capacity should be generally as follows and in keeping with the requirements of NZS3604:2011 type loadings provided founding is within the investigated platforms on or within the underlying competent natural soils or engineered fill.

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

The above bearing capacity values are considered to be appropriate for the design of shallow foundations, that bear on or within competent engineered fill and/or natural ground, for which careful geo-professional inspections of the subgrade should be undertaken to check that underlying ground conditions are in keeping with our expectations.

For Lot 3, where the indicative building platform contained

1. Groundwater level at ~1.20mbgl which raised to 1.00mbgl on completion of the field investigation, and
2. The presence of wet to saturated, firm to occasionally stiff gleyed Alluvial Clay,

the site should be considered capable of providing the following bearing capacity values:

Geotechnical Ultimate Bearing Capacity	200 kPa
ULS Dependable Bearing Capacity (Φ=0.5)	100 kPa

These cases may represent a difficult setting in which a foundation must be constructed with a reasonably uniform ground response in order to avoid differential settlement of a new dwelling. The above bearing capacity values are considered to be appropriate for the design of shallow foundations, that bear on or within competent engineered fill and/or natural ground, but given the unknown nature of future site modifications, it will be important for each building site to undergo further specific geotechnical assessment at the time of preparation for Building Consent application.

8.3 LIQUEFACTION SUSEPTIBILITY COMMENTARY

Liquefaction is a natural phenomenon where a loss of strength of sand-like soils is experienced following cyclic induced stress, which is typically a result of prolonged seismic shaking and the resultant increase in pore water pressure of saturated soils. Recent examples of this were experienced in Christchurch and the greater Canterbury Region during the Canterbury Earthquake Sequence between 2010-2011.

Cyclic loading during prolonged seismic shaking induces an increase in pore water pressure, which in turn decreases the effective stress of a sand-like deposit of soil. Excess pore water pressure (EPWP) can build to such an extent that the effective stress of the underlying soils is reduced to near zero, whereby the soils no longer carry shear strength and behave as a semi solid/fluid. In such a scenario, excess pore water pressures will follow the path of least resistance to eventual dissipation, which can lead to the migration of liquefied soils towards the surface, or laterally towards a free-face (edge of slope, riverbank, etc.) or layers that have not yet undergone liquefaction.

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

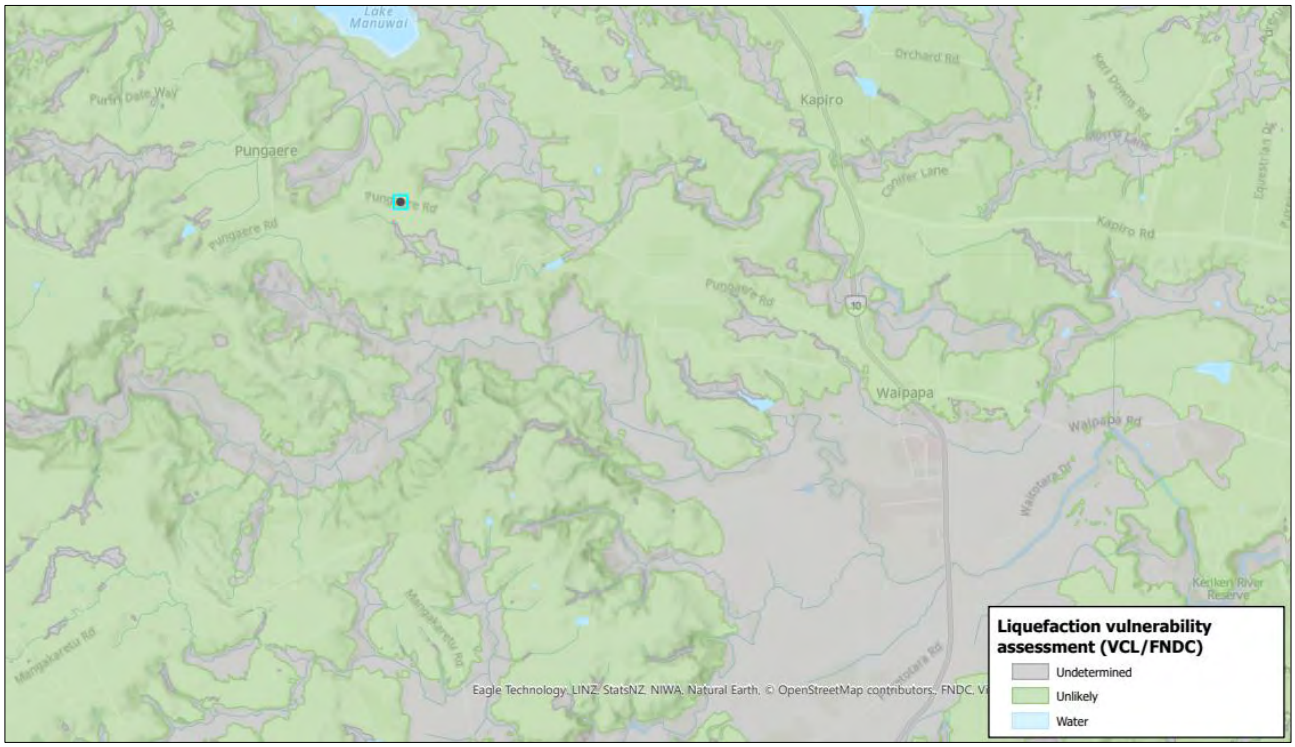


Figure 19: Screenshot aerial view of the subject site and surrounding land from the FNDC on-line GIS Liquefaction Vulnerability Map.

A screening procedure based on geological criteria was adopted to examine whether the subject site might be susceptible to liquefaction, as follows:

- There are no known active faults traversing through the property,
- There is no historical evidence of liquefaction in any of the investigated areas on site,
- Most of the site geology is of Late Miocene age, which would allow for over-consolidation effects arising from surface weathering and erosion, leading to an increase in effective strength, which corroborates with the high shear vane readings recorded in Lot 1 and Lot 2,
- All investigated platforms are elevated above significant natural drainage and water features, and
- The surficial soils mostly comprised of silty clays and clayey silts (predominantly volcanic ash) with some gravelly clasts throughout and moderate drainage potential.

Based on the above, we conclude that the soils at the building sites have a negligible risk of liquefaction susceptibility, and that liquefaction damage is therefore unlikely.

8.4 STABILTY COMMENTARY

8.4.1 ASSESSMENT CRITERIA – Lot 1

The Far North District Council DRAFT Engineering Standards (FNDC DES) (May 2021 edition) requires that hazards and other limitations that are applicable to a development be addressed in accordance with Section 2.3 Geotechnical/ Hazard Assessment of the FNDC DES.

Where Geotechnical Assessment is being undertaken for a site that is not mapped on the FNDC Land Instability Maps, or covered by a District Council commissioned assessment report, then the geotechnical assessment shall consider the classification of the site in terms of the following:

- Section 2.3.3.2 Low Stability Hazard,
- Section 2.3.3.3 Moderate Stability Hazard and
- Section 2.3.3.4 High Stability Hazard.

At the time of preparing this report, and noting that the site is not zoned on any FNDC Instability hazard maps, we deemed it to fit the following criteria of Moderate Stability Hazard:

> *"This land does not exhibit any evidence of any recent instability but does display 'relic' landslide geomorphology, or is sufficiently sloping to be potentially subject to instability due to either natural events (e.g. high intensity rainfall events or earthquake), or as a result of inappropriate cutting, filling, and/or site disposal of stormwater and/or effluent waste water. Applications for development (such as excavation, filling, removal of vegetation, disposal of stormwater or domestic wastewater into or over the area) may be appropriate to proceed subject to consent conditions provided that a geotechnical assessment includes a stability assessment demonstrating that the proposed development will not accelerate, worsen or result in the land being subject to, or likely to be subject to, erosion or slippage, to the satisfaction of the District Council".*

The FNDC DES requires that a Geotechnical Assessment Report of a Moderate Stability Hazard site shall include the following:

Table 2: Geotechnical Assessment for Moderate Stability Hazard Site Summary Table.

	Description of works	*Explanation*
a	Topographic survey (if not already available) or slope profiles,	10m contours are available to the site through FNDC Property maps. The contours are deemed to be representative of the site. In addition, 2 x specific Ziplevel© and tape measure cross sections were also conducted through the selected slopes, of which, Section A-C provides an accurate ground profile for the quantitative Slope Stability Analysis undertaken herein, using the SLIDE (Rocscience) software package.
b	A description of the geology and geomorphology of the area, including comment on the areas surrounding the development site,	Provided within the body of this report (Section 3 and 4)
c	Definition of the nature and continuity of the strata over the whole area of land which is proposed to be developed (buildings, access and services) and to a depth below which slipping is most unlikely, by means of test pit and/or drilling and/or auguring (unless existing exposures are adequate),	An intrusive site investigation was carried out on 29 August 2022 by WJL's Engineering Technician and Engineering Geologist. 4 x hand augers were taken to a maximum depth of 5.0m bgl, with 4 x DCP's continued at the base of all boreholes to a max. depth of 6.5m bgl. Relative strengths and the sensitivities of the soil stratum were collected by handheld shear vane tests and DCP's, as attached within the appendices of this report.
d	Assessment of the relative strength and the sensitivity of the soil in each stratum in which, or interface on which, sliding is practicable,	
e	Assessment of likely groundwater levels and piezo metric pressures in the strata during extreme infiltration conditions,	Ground water levels have been observed during the abovementioned field investigation, however, none was found within any of the hand auger boreholes for the key slope in question. It is noted that the field investigation was undertaken following an extended period of significant rainfall and the observed groundwater within HA01 and HA02 is inferred to represent an extreme groundwater regime for these slopes.
f	The geo-professional's opinion as to the stability and suitability of the land for development, including the stability of the whole slope (upon which the site may only form a part of) and the effects of the development (such as excavation, filling, removal of vegetation, disposal of storm water or effluent wastewater into or over the area) on the whole slope,	Provided in the recommendations section of this report.
g	Definite conclusions and recommendations on any development restrictions.	Provided in the recommendations section of this report.

8.4.2 STABILITY ANALYSIS MODELLING – Lot 1

The land beneath the nominated building platform in Proposed Lot 1 is gently sloping at gradients of less than 5°. Approximately 20m-30m southeast of the edge of the indicative building platform, slopes begin to increase moderately, reaching gradients of 8°-12°, which continue to the gully invert. Approximately 25m northeast of the edge of the indicative building platform, slopes begin to steeply increase from 19° to angles ranging between 26°-32°, before reaching the north-eastern gully. No evidence of significant deep-seated land movement was observed within the immediate vicinity of the indicative building platform.

Given the site geology and topography, and it being within a location perceived to be at Moderate Risk of Instability, we have undertaken a series of quantitative slope stability analyses utilising the steepest topographic profile measured at the site, 'Section A-C''.

Circular failure surfaces were initially considered; however, we consider deep seated rotational failure to be relatively uncommon in this geology, for which we believe translational sliding of surficial soils on the contact zone with the underlying less weathered rock to be the more relevant and governing mode of failure

Slope stability analyses were carried out using Slide[1] generally in accordance with Section 2 of Auckland Council's Code of Practise (ACC COP) for Land Development and Subdivision ver 1.6 (24 Sep 2013).

These analyses incorporated the following effective stress parameters, which are based on in-situ testing, literature review and experience with similar soils and most importantly, they follow the guidelines of Schedule 2E, ACCOP, for conservative cohesive soil input parameters. A building surcharge of 15kPa was also applied to the model.

	Very Stiff Soil Surficial Kerikeri Volcanic Group Materials	Completely Weathered Kerikeri Volcanic Group Materials
Unit Weight, γ (kN/m3)	18	18
Effective Cohesion c', (kPa)	3	5
Friction Angle, Φ' (°)	30	32

Table 3: Effective Stress Parameters for SLIDE analysis

We commenced our assessment with a number of sensitivity analyses using more conservative parameters for the soil stratum, and groundwater day-lighting positions (not presented here), which confirmed that the slope is very sensitive to fluctuations in groundwater level near the surficial soil layers, so we have assumed the following groundwater scenarios:

1) Moderate; Long-Term moderate groundwater conditions, for which we have assumed a groundwater level at the base of the hand auger boreholes HA03 & HA04 (3-5mbgl) (FoS required >1.5).

2) Elevated; Extreme, Transient groundwater conditions, for which we have assumed a groundwater level within 1.0m of the upper surficial soils (FoS required >1.3).

3) Seismic Loading. Short-term stability under conservatively low Total Stress conditions with an assumed groundwater level at the base of the hand auger boreholes HA03 & HA04 (3-5mbgl), and, based on an effective seismic event magnitude of 5.9, subjected to a peak ground acceleration of 0.17g (ULS) reduced to 65% of that (ie 0.12g), to reflect that the peak acceleration is only momentary. (Factor of Safety (FoS) required >1.2).

A summary of the factors of safety (F.O.S) calculated against failure for each of the above groundwater loading conditions cases is shown in the table below for the original unmodified slope, with minimum factors across the entire slope as well as extending beneath the indicative nominated building footprint:

Table 4: Summary of Factors of Design Safety

Design Case	Minimum FoS Predicted
Existing Scenario with Moderate Groundwater Conditions (FoS >1.5 required)	1.56 - OK
Existing Scenario with Elevated Groundwater Conditions (FoS >1.3 required)	1.33 - OK
Existing Scenario subjected to seismic event (FoS >1.2 required)	1.285 - OK

The analyses indicate that satisfactory FoS values are available for the global stability of the site under all conditions.

8.4.3 STABILITY DISCUSSION

In summary, when the proposed building platform for Lot 1 was modelled in its existing profile, under both Moderate and Elevated groundwater regimes, as well as under seismic conditions, acceptable Factors of Safety (FoS>1.5, >1.3 and >1.2 respectively) were obtained.

On the basis of the above stability analyses, we are satisfied that the future building development in this location on Lot 1 should not be exposed to unsatisfactory risk of slope instability, provided the following mitigation measures are observed:

- Any future proposed Building Platform should observe a minimum setback of 10m from all slopes steeper than 16° unless sanctioned by further specific engineering analyses and/or mitigation measures,
- Future overland stormwater flows and overflow from water tanks be discharged in a controlled manner into the overland flow path at the base of the slopes. Stormwater and wastewater discharge should be directed away from the crest of slopes
- The initiation of a planting regime as a long-term stability measure, commencing approximately 20m-25m to the northeast of the edge of the indicative building platform, where grades begin to steepen downslope to >19°.

8.4.4 SITE STABILITY COMMENTARY - Lot 2 & Lot 3

On proposed Lot 2, the ground across the indicative building platform is dipping to the southeast at grades of less than 5°. These increase to 10°-13° approximately 15m-20m southeast of the platform, before further increasing to 16°-20° near the bottom of the gully.

On proposed Lot 3, the indicative building platform is generally flat with no sloping ground greater than 3°-5° for approximately 40m-50m within all directions.

Although very minor surficial slumping was observed along some of the steeper slopes within the wider expanses of Lot 2 and Lot 3, no evidence of shallow surficial soil creep or significant deep-seated land movement was observed within the immediate vicinity of the indicative building platforms. For the establishment of final building platforms, care should be taken to maintain the minimum setback requirements from the site boundaries and/or any steep slopes exceeding 16°.

In Lot 2, soil strengths were found to be relatively high (>164kPa average) corroborating with the dense to very dense DCP-Scala penetrometer test results carried out from the invert of all hand augered boreholes. Soil strengths within the indicative building platform in Lot 3 were found to average <100kPa Due to the near level nature of the site for beyond 40m-50m, this should not have a significant impact on the stability of a future building site, although this will need to be accounted for in the design of shallow foundations. The potential effects of such will need to be confirmed in the future, once site development proposals have been formulated.

Overland stormwater flows from above any of the indicative building platforms will need to be diverted away from the future dwellings, as well as from any ancillary structures, such as sheds, minor dwellings, wastewater disposal field etc.

On the basis of:

- No obvious evidence of deep-seated instability within the immediate vicinity of influence of the indicated building platforms,
- Relatively high in-situ measured vane shear strengths corroborating with the dense to very dense DCP-Scala penetrometer results carried out at depth in Lot 2,
- The absence of shallow groundwater in Lot 2,
- The shallow grade across the nominated building platforms, and particularly the near level nature of the land surrounding the indicative building platform in Lot 3, and
- The eventual building sites on both Lots being elevated above natural drainage and water features, then

we consider that the risk of deep-seated global slope instability impacting the development within Lots 2 and 3 to be significantly low.

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

8.5 FOUNDATIONS

The natural surficial cohesive soils within the site are assessed as being expansive to differing degrees depending on their depth within the ground profile, and therefore will need to be specifically assessed in accordance with NZBC B1 – Structure.

Due to the presence of expansive soils identified beneath the sites, any proposed foundations are expected to require Specific Engineering Design (SED) as the soil conditions fall outside the NZS3604 definition of '*Good Ground*'. All foundations will need to be designed to account for expansive soils as specifically assessed at the site by a suitably qualified engineer, according to how each future building platform is modified.

New residential dwellings should be able to utilise various foundation type options which may include, but not be limited to, the following:

- Timber Pile Type Foundations,
- Reinforced Concrete Stiffened Raft Type Floor System, or
- Conventional Reinforced Concrete Slab, with Perimeter Reinforced Concrete Foundations on Ground / Masonry Block Foundation Walls but both designed for expansive soils, which may require undercutting up a depth of expansive soils and replacing them with non-expansive compacted hardfill.

Any NZ3604 style isolated footings require a minimum embedment of 0.90m below final cleared ground level and into stiff virgin/natural material.

8.5.1 SHALLOW FOUNDATION BEARING CAPACITY

It is generally envisaged that a Geotechnical Ultimate Bearing Capacity of 300kPa will be suitable for foundation design purposes for Proposed Lot 1 and Lot 2 and that a Geotechnical Ultimate Bearing Capacity of 200kPa be suitable for the foundation design purposes for Proposed Lot 3. However, in both instances, foundations will need to be subject to SED at Building Consent stages to suit land development proposals.

8.5.2 SEISMIC SUB-SOIL CLASS

In accordance with New Zealand Standard 1170.5 Section 3.1.1, the site subsoil site classification is determined to be Category C – Shallow soil sites.

9. GEOTECHNICAL CONCLUSIONS & RECOMMENDATIONS

Based on our fieldwork investigation, subsoil testing results, walkover inspection and stability assessment as described above, **and subject to the requirements of Section 8 above**, we believe on reasonable grounds that with regard to the Resource Management Act 1991; Section 106:

i. The land in respect of which a consent is sought, or any structure on the land, is not or is not likely to be subject to material damage by subsidence or slippage from any source; and,

ii. Any subsequent use that is likely to be made of the land is not likely to accelerate, worsen, or result in material damage to the land, other land, or structure by subsidence or slippage from any source.

And are therefore satisfied that the proposed lots should be generally suitable for building development in terms of NZS3604:2011, provided that site specific geotechnical assessment be undertaken to support future Building Consent Applications for Proposed Lots 1, 2 and 3 once final land modification proposals have been devised, adhering to the following recommendations of this report.

9.1 SITE EARTHWORKS

It is envisaged that cut and or engineered cut to fill earthwork operations may be required to form level building sites, but as no construction proposals have been provided at this stage, we have provided the following guidance and general recommendations, which should be included in any site-specific developments, but where possible, site-specific advice should be sought from an experienced Geotechnical Engineer.

We recommend that all proposed earthworks be assessed by a suitably qualified engineer prior to the commencement of works. All earthworks undertaken during site development should be inspected by an engineer familiar with the contents of this report to confirm that ground conditions are as anticipated.

We also recommend that all earthworks' activities be carried out in full accordance with the following technical publications, in particular:

i. Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region June 2016 Guideline Document 2016/005 Incorporating Amendment 2. https://content.aucklanddesignmanual.co.nz/regulations/technical-guidance/Documents/GD05%20Erosion%20and%20Sediment%20Control.pdf

ii. Auckland Council; Building on small sites - Doing it right. BC5850.

https://www.aucklandcouncil.govt.nz/building-and-consents/understanding-building-consents-process/starting-building-renovation-work/Documents/bc5850-building-small-sites-brochure.pdf

iii. New Zealand Standard Code of Practice for Earthfill for Residential Development, NZS 4431:1989.

iv. Code of Practice for Urban Land Subdivision – NZS 4404:2010, and

v. Any other relevant publications.

9.1.1 SITE CLEARANCE AND PREPARATION

We recommend that earthworks only be undertaken during periods of fine weather. During times of inclement weather, clean water diversion channels should be formed around the top of the earthworks sites, and the earthworks areas should be shaped to assist water shedding, so as to avoid ponding of stormwater run-off, as saturating site soils could result in a reduction of bearing capacities.

Beneath, and to at least 1m beyond the proposed building footprints, we recommend the stripping of all vegetation as well as all topsoil, followed by careful geo-professional inspections of the stripped ground to confirm that the underlying natural subgrade conditions are in keeping with our expectations. The subgrade should not be exposed for any prolonged period, otherwise it may deteriorate due to saturation (softening) or extreme drying (shrinking cracking) which can have detrimental effects on future foundations. Once inspection of the natural subgrade has been approved, we recommend that the contractor promptly employs either appropriate temporary measures, or the placement of compacted final GAP40 hardfill on top of the stripped subgrade to protect from all detrimental effects of the elements.

Likewise, isolated pier inverts should be poured as soon as possible once inspected by a Geo-Professional or covered with a protective layer of site concrete. It is envisioned that once excavated, these foundation types must be poured within 48-hours. If subgrade degradation occurs by either: excessive drying out resulting in desiccation shrinkage cracking, or, subgrade softening after a period of wet weather, it will be necessary to either re-hydrate the subgrade or allow it to dry out as appropriate or undercut the degraded material.

Drainage control measures are considered unlikely to be required while excavating ground during the construction of the proposed foundations. Finally, all exposed soils should be re-grassed and/or planted as soon as practicable to aid in stabilising the building site area.

9.1.2 TEMPORARY AND PERMANENT EARTHWORKS

It is important that any building sites should be contoured to assist in stormwater run-off. Any excavation left open should be protected and or left in a state so as to not pond water. Saturating site soils may result in a reduction of bearing capacities.

All cuts within the building sites should be limited to a height of 1.5m and should be battered back at a gradient of no greater than 1V:3H unless further investigated and/or specifically reviewed by a Chartered Professional Engineer.

All fills at client-care building sites should be limited to a height of 0.6m and should be battered back at a gradient no greater than 1V:3H unless further investigated and/or specifically reviewed by a Chartered Professional Engineer.

9.2 GENERAL SITE WORK NOTES

We stress that any and all works should be undertaken in a careful and safe manner so that Health & Safety is not compromised, and that suitable Erosion & Sediment control measures should be put in place.

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 temporary and permanent works, adjacent buildings and services.
- Should the contractor require any site-specific assistance with safe construction methodologies, please contact Wilton Joubert Ltd for further assistance.

9.3 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
- foundation construction too soon after their removal can result in soil swelling and raising foundations as the soils rehydrate.
- 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.

9.4 STORMWATER AND SURFACE WATER CONTROL - GEOTECHNICAL

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 the building footprint to protect the 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 Council approved stormwater reticulation system.

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

10. WASTEWATER MANAGEMENT

Lot 1, Lot 2 & Lot 3

No existing wastewater management systems are present within Lot 1, Lot 2, or Lot 3. As such, any future system must comply with the design details provided below. A new site-specific designed based on TP58 will be required by FNDC for any future development within Lot 1, Lot 2, and Lot 3. This should be conditioned as part of the Resource Consent process.

Lot 4

An existing wastewater management system is present on proposed Lot 4. The system servicing Lot 4 must have its location confirmed by a Registered Drainlayer to ensure that the system, including any trenches or effluent fields are located within the new property boundaries. As the system is legally existing, it may continue to operate, given that Lot 4 is not re-developed, and that the system is located within proposed Lot 4. If the existing system is not located within proposed Lot 4, the system can be either re-located to proposed Lot 4, or it can be decommissioned and replaced with a new on-site wastewater treatment system in accordance with the recommendations herein.

10.1 DESIGN PARAMETERS

The following tables are intended to be a concise summary of 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 Lot 1, Lot 2, or Lot 3, our recommendations have been based on a moderate size dwelling containing 4 bedrooms.

10.1.1 Summary of Preliminary Design Parameters for Primary Treatment Systems

Development Type:	Residential Dwellings
Effluent Treatment Level:	Primary Treatment Plant (<BOD5 30 mg/L, TSS 45 mg/L)
Fill Encountered in Disposal Areas:	Not encountered
Water Source:	Rainwater Collection Tanks
Soil Category (TP58):	Category 5 – Moderate to Slow Drainage
Estimate House Occupancy:	6 Persons
Loading Rate	5-10mm/day as specified by site specific investigation (Loading rates taken from Table 10.2, TP58 Pp 165)
Estimated Total Daily Wastewater Production per Lot:	1,080L
Typical Wastewater Design Flow Per Person	180ℓ/pp/pd (Estimated – introduction of water conservation devices may enable lower design flows)
Land Disposal System	Conventional Trenches
Loading Method	Gravity

Minimum Septic Tank Size	4,500L
Filter	3.5mm
Estimated Min. Disposal Area Requirement (basal area)	108-216m²
Required Min. Reserve Area:	100%
Buffer Zone	Not anticipated as a requirement
Cut-off Drain	As required

10.1.2 Summary of Preliminary Design Parameters for Secondary Treatment Systems

Development Type:	Residential Dwellings
Effluent Treatment Level:	Secondary (<BOD5 20 mg/L, TSS 30 mg/L)
Fill Encountered in Disposal Areas:	Not encountered
Water Source:	Rainwater Collection Tanks
Site Soil Category (TP58):	Category 5 – Moderate to Slow Drainage
Estimate House Occupancy:	6 Persons
Loading Rate:	3-4mm/day (Loading rates taken from Table 9.2, TP58 Pp 150)
Estimated Total Daily Wastewater Production per Lot:	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 or subsurface laid PCDI lines.
Loading Method	Dosed
Minimum Tank size	>2000L
Emergency Storage	24 hours
Estimated Min. Disposal Area Requirement	270-360m²
Required Min. Reserve Area:	30%

Buffer Zone	As required
Cut-off Drain	As required

10.2 Required Set back 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:

Feature	Primary treated domestic type wastewater	Secondary and tertiary treated domestic type wastewater	Greywater
Exclusion areas			
Floodplain	5 percent annual exceedance probability	5 percent annual exceedance probability	5 percent annual exceedance probability
Horizontal setback distances			
Identified stormwater flow path (including a formed road with kerb and channel, and water-table drain) that is down-slope of the disposal area	5 metres	5 metres	5 metres
River, lake, stream, pond, dam or natural wetland	20 metres	15 metres	15 metres
Coastal marine area	20 metres	15 metres	15 metres
Existing water supply bore	20 metres	20 metres	20 metres
Property boundary	1.5 metres	1.5 metres	1.5 metres
Vertical setback distances			
Winter groundwater table	1.2 metres	0.6 metres	0.6 metres

Figure 20: Table 9 of the PRPN (Proposed Regional Plan for Northland)

10.3 Northland Regional Plan Assessment

The 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 there will be no issue meeting the Permitted Activity Status requirements as outlined above.

11. STORMWATER MANAGEMENT

11.1 ASSESSMENT CRITERIA

The site lies within the Far North District Council. 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.

The site resides in a Rural Production Zone, see Figure 21 below:

Figure 21 – Snip from FNDC Maps Showing Site in Rural Production Zone

The following Stormwater Management Rules Apply:

Permitted Activity:
8.6.5.1.3 STORMWATER MANAGEMENT – The maximum proportion of gross site area covered by buildings and other impermeable surfaces shall be 15%

Controlled Activity:
8.6.5.2.1 STORMWATER MANAGEMENT – The maximum proportion of the gross site area covered by buildings and other impermeable surfaces shall be 20%.

To comply with Permitted Activity Rule (8.6.5.1.3) above, Lots 1-4 must not exceed an impervious area of 15%. The maximum permitted impervious area (15% impervious area) for Lots 1-4 are as follows:

Lot 1 – 15% Impervious Area	=	3,024m^2
Lot 2 – 15% Impervious Area	=	3,021m^2
Lot 3 – 15% Impervious Area	=	3,059m^2
Lot 4 – 15% Impervious Area	=	54,680m^2

A site-specific stormwater attenuation report in accordance with the Far North District Council Engineering Standards will be required if the proposed development within any lot exceeds the permitted 15% impervious area.

In compliance with the above, the existing impervious areas within proposed Lot 4 amount to approximately 1340m^2, with areas measured from FNDC Aerial Imagery Maps. Additionally, as the permitted impervious area is greater than 3,000m^2 for all lots, we expect that any potential future residential development within

proposed Lot 1, Lot 2, and Lot 3 would comply with Permitted Activity Rule (8.6.5.1.3). As such, we do not envision that a site-specific stormwater attenuation will be required for Lots 1-4.

To appropriately mitigate increased stormwater runoff from introduced impermeable areas, we recommended utilising Low Impact Design Methods on each lot as a means of stormwater management. 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). The design of the stormwater mitigation system may be provided by a suitably qualified individual (including but not limited to a competent LBP drafts person, architectural designer, drainlayer or an engineer).

11.2 PRIMARY STORMWATER

11.2.1 Stormwater Runoff from Roof Areas

Stormwater runoff from the roof of future proposed buildings must be captured by a gutter system and conveyed to potable water tanks.

Lots requiring attenuation will require a detention volume and control orifices in accordance with the Far North District Council Engineering Standards. The upper section of the potable water tanks, or a separate detention tank(s) may be used to achieve the required detention within the lot.

Discharge and overflow from the potable water tanks and/or detention tank(s) should be directed to a dispersal device within each lot, unless discharge is directed to an open channel, where an appropriate riprap outlet is required for erosion control. The dispersal device or discharge point should be positioned downslope of any buildings and effluent fields, with setback distances as per the relevant standards.

11.2.2 Stormwater Runoff from Driveway and Hardstand Areas

It is recommended to shape hardstand areas to shed runoff to large, vegetated areas and/or to stormwater catchpits, for runoff conveyance to the stormwater dispersal device.

Long accessway driveways or R.O.W's should be shaped to shed runoff to lower-lying grassed areas, well clear of any structures. This stormwater runoff should sheet flow and must not be concentrated to avoid scour and erosion. Runoff passed through the grassed area will be naturally filtered of entrained pollutants and will act to mitigate runoff by way of ground recharge and evapotranspiration. Concentrated flows must be managed with swales directed to a safe outlet location without causing erosion. These should be sized to manage the volume and velocity.

11.3 SECONDARY STORMWATER

Where required, overland flows and similar 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.

11.4 DISTRICT PLAN ASSESSMENT

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

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 can be provided for Lots 1-4 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 run-off will be collected by rainwater tanks for conveyance to a dispersal device. Low impact design principles should be used to control increased runoff from metal driveways. Hardstand areas should either be shaped to shed runoff to large, vegetated areas or stormwater catchpits, for runoff conveyance to a dispersal device.
(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 any new and existing roof area will be collected by rainwater tanks and discharged in a controlled manner to either an in-ground or above ground dispersal device, ensuring that no scour or erosion will occur. Runoff from metal driveways will be shaped to shed to the surrounding pasture to ensure that runoff does not concentrate and can be naturally filtered by the wide expanse of surrounding vegetation.
(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 containments from roads. Long accessway driveways or R.O.W's are best shaped to large pasture areas via sheet flow, to ensure that runoff does not concentrate. Large down-slope pasture areas act as bio-filter strips to filtered out entrained gross 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 due to rural setting.

(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.	No adverse effects identified.
(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

12. ACCESS AND VEHICLE CROSSING

12.1 GENERAL

A basic access and vehicle crossing assessment has been completed for Lot 3, with recommendations provided in this section.

It is proposed that Lot 3 will be accessed from a new access point directly off Pungaere Road from Lot 3's north-western corner.

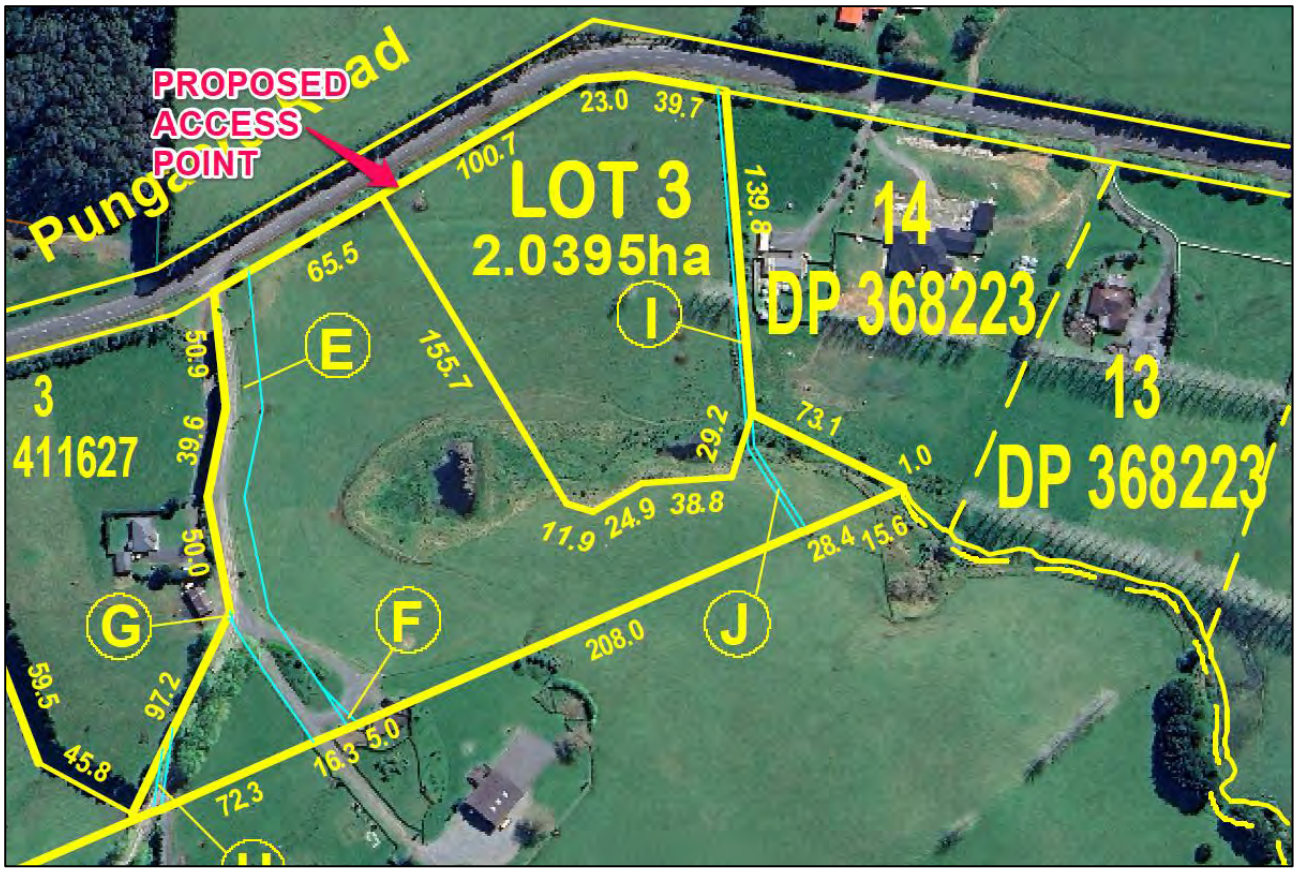


Figure 22 – Snip from Scheme Plan Showing Lot 3's Proposed Access Point

The proposed vehicle crossing and accessway must be constructed in accordance with Council's Engineering Standards and Guidelines.

12.2 VEHICLE CROSSING

The proposed vehicle crossing is to be constructed in accordance with the Far North District Council's Engineering Standards – FNDC Standards Drawing S / 6B is recommended.

The crossing shall not obstruct any drainage facilities within the berm. Where the drain is shallow and only carries low rain flow, the crossing may pass through the drain. Where the drain is of an unstable shape or carries significant rain flow the drain shall be piped under the crossing. Pipe and end treatments shall be sized appropriately for the catchment intercepted but shall be a minimum 300mm diameter.

12.3 SIGHT DISTANCES

Pungaere Road has a speed limit of 80km/hr. As such, a minimum sight distance of 115m is required in accordance with Standards Drawing S / 6 of the FNDC Engineering Standards. Sight distances were measured from GIS and LiDAR contour data.

The proposed access point allows for approximately 115m of sight distance to the northeast and >115m to the southwest. As such, the proposed access point complies with the Far North District Council Engineering Standards' requirements for sight distance.

We note that there is a blind corner to the northeast of the proposed access point location. It is therefore expected that vehicles will be travelling at speeds lower than 80km/hr from the northeast.

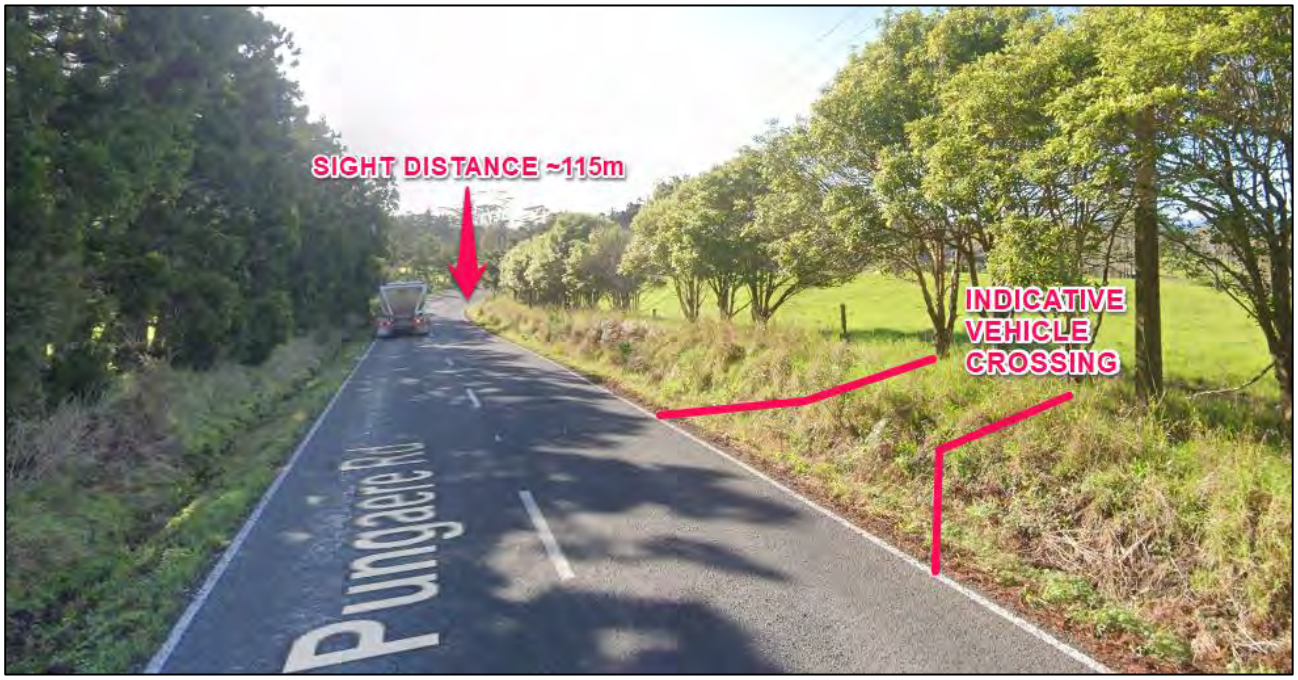


Figure 23 – Proposed Access Point on Pungaere Road Facing Northeast - ~115m Sight Distance Available

Figure 24 – Proposed Access Point on Pungaere Road Facing Southwest - >115m Sight Distance Available

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, Alec Magon, 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.

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 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.

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.

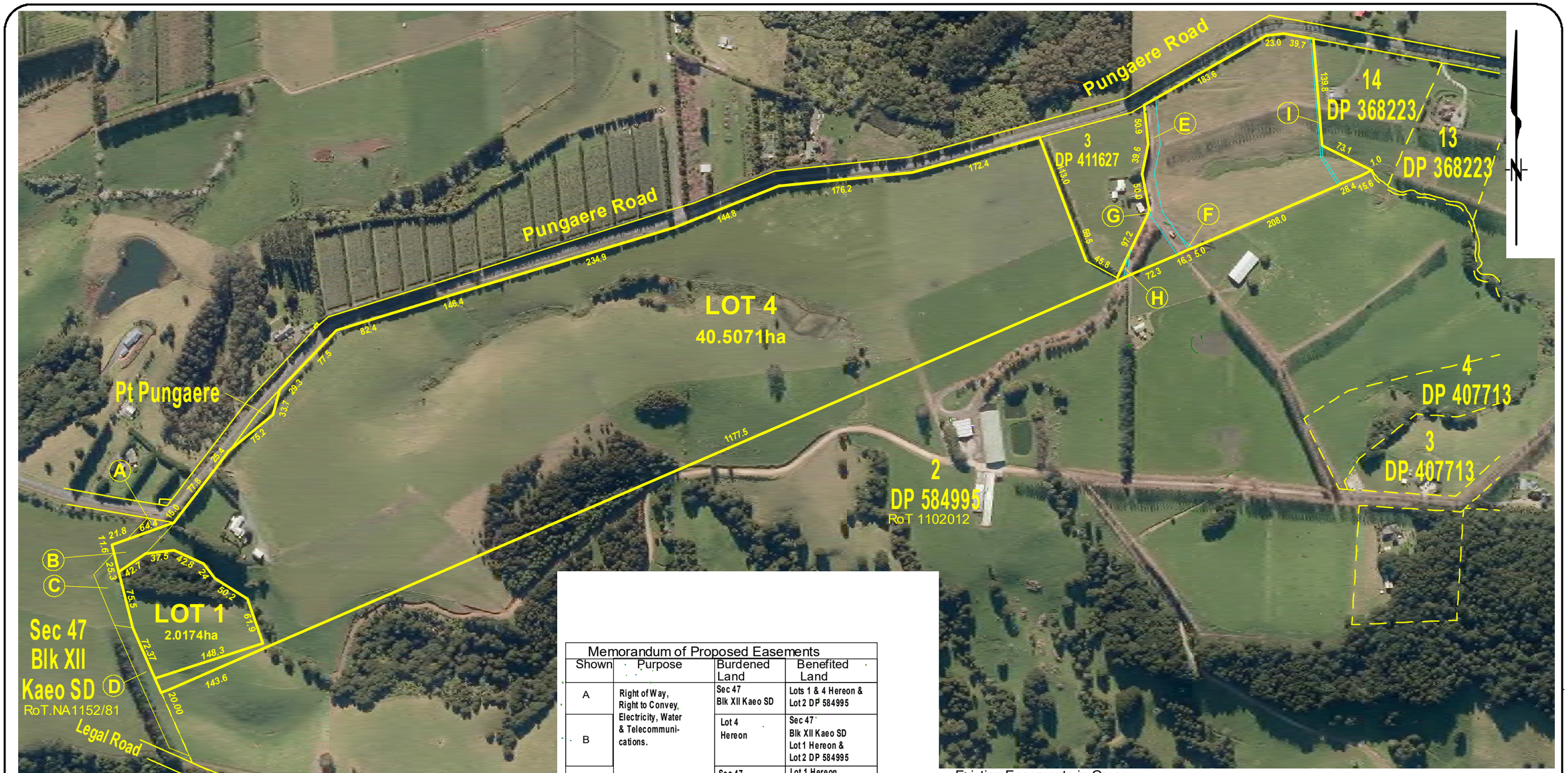
Thank you for the opportunity to provide our service on this project, and if we can be of further assistance, please do not hesitate to contact us.

Yours faithfully,

WILTON JOUBERT LIMITED

Enclosures:

- Scheme Plans (2 sheets)
- Site Plan (1 sheet)
- Cross-Sections A-B, A-C, D-D' (2 sheets)
- Hand Auger Borehole Records (9 sheets)
- Slope Stability Analysis Results (3 sheets)
- 'Foundation Maintenance & Footing Performance' sheet BTF18: A Homeowner's Guide, published by CSIRO (4 sheets)



Memorandum of Proposed Easements			
Shown	Purpose	Burdened Land	Benefited Land
A	Right of Way, Right to Convey, Electricity, Water & Telecommunications.	Sec 47 Blk XII Kaeo SD	Lots 1 & 4 Hereon & Lot 2 DP 584995
B		Lot 4 Hereon	Sec 47 Blk XII Kaeo SD Lot 1 Hereon & Lot 2 DP 584995
C		Sec 47 Blk XII Kaeo SD	Lot 1 Hereon Lot 2 DP 584995
D		Sec 47 Blk XII Kaeo SD	Lot 2 DP 584995

Schedule of Existing Easements			
Shown	Purpose	Burdened Land	Document
E	Right of Way, Right to Transmit Electricity and Telecommunications. Right to Convey Water Right to Drain Water	Lot 4 Hereon	EI 8133726.4
F G H	Right to Transmit Electricity		

Existing Easements in Gross

Shown	Purpose	Burdened Land	Created By: Grantee
I	Walkway under the Walking Access Act 2008	Lot 4 Hereon	EI 11735428.1 N Z Walking Access Commission

Local Authority: Far North District Council

Total Area: 42.5245ha
Comprised in: RoT 443242

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.

0 50 100 150 200 250 300 350 400m

Prepared for: Magon Horticulture Ltd

WILLIAMS AND KING
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 407 6030
Email: kerikeri@saps.co.nz
27 Hobson Ave
PO Box 937 Kerikeri

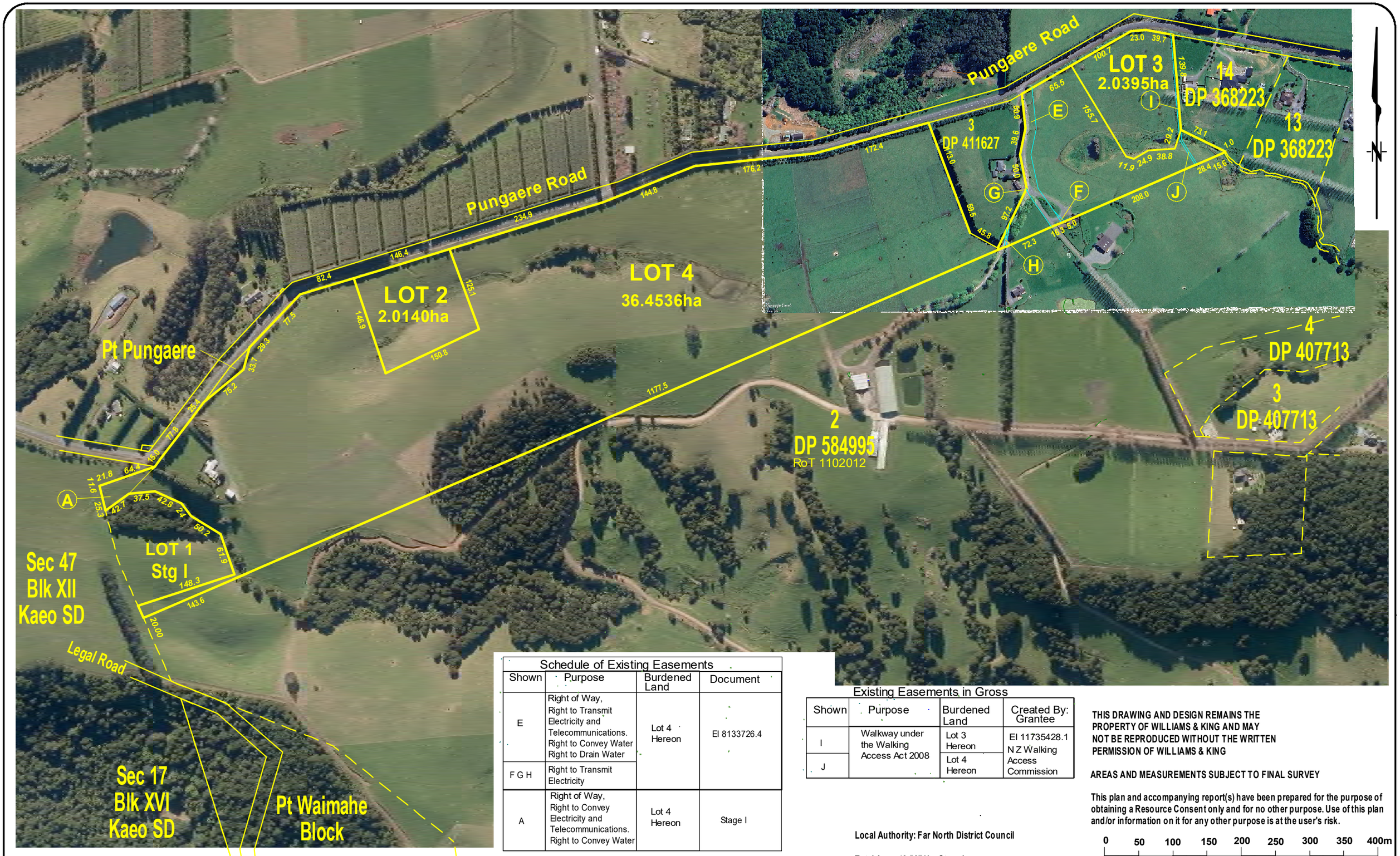
PROPOSED SUBDIVISION OF LOT 5 DP 411627

STAGE I

	Name	Date
Survey		
Design		
Drawn	W & K	June 2024
Approved		
Rev		

ORIGINAL SCALE 1:5000 SHEET SIZE A3

Surveyors Ref. No: 23543
Series
Sheet of



Schedule of Existing Easements

Shown	Purpose	Burdened Land	Document
E	Right of Way, Right to Transmit Electricity and Telecommunications. Right to Convey Water Right to Drain Water	Lot 4 Hereon	EI 8133726.4
F G H	Right to Transmit Electricity		
A	Right of Way, Right to Convey Electricity and Telecommunications. Right to Convey Water	Lot 4 Hereon	Stage I

Existing Easements in Gross

Shown	Purpose	Burdened Land	Created By: Grantee
I	Walkway under the Walking Access Act 2008	Lot 3 Hereon	EI 11735428.1 N Z Walking Access Commission
J		Lot 4 Hereon	

Local Authority: Far North District Council

Total Area: 40.5071ha Stage I
Comprised in: Lot 4 Stage I

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0 50 100 150 200 250 300 350 400m

Prepared for: Magon Horticulture Ltd

WILLIAMS AND KING
Registered Land Surveyors, Planners & Land Development Consultants
Ph: (09) 407 6030
Email: kerikeri@saps.co.nz
27 Hobson Ave
PO Box 937 Kerikeri

PROPOSED SUBDIVISION OF LOT 4 STAGE I

Stage II

	Name	Date
Survey		
Design		
Drawn		July 2024
Approved		
Rev		

ORIGINAL SCALE 1:5000 SHEET SIZE A3

Surveyors Ref. No:
1:5000
Series
Sheet of

Schedule of Existing Easements

Shown	Purpose	Burdened Land	Document
E	Right of Way, Right to Transmit Electricity and Telecommunications. Right to Convey Water Right to Drain Water	Lot 4 Hereon	EI 8133726.4
F G H	Right to Transmit Electricity		
A	Right of Way, Right to Convey Electricity and Telecommunications. Right to Convey Water	Lot 4 Hereon	Stage I

Existing Easements in Gross

Shown	Purpose	Burdened Land	Created By Grantee
I	Walkway under the Walking Access Act 2008	Lot 3 Hereon	EI 11735428.1 NZ Walking Access Commission
J		Lot 4 Hereon	

KEY:

HA01 Augerhole Locations (approximate) Wilton Joubert Limited, 29.08.2022-01.09.2022

A A' Cross Section Locations (approximate) Wilton Joubert Limited, 29.08.2022-01.09.2022

Proposed Structures (indicative)

NOTES:

1. Locations of features approximate only.
2. Wilton Joubert Limited's Site Plan adapted from Site Plan - Detailed by Williams and King: Registered Land Surveyors, Planners & Land Development Consultants and information from Far North District Council's Local Maps.
3. Location Map information from Far North District Council's Local Maps .

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	SEP'22	GB	GEOTECHNICAL SUBDIVISION SUITABILITY REPORT
B	JUN '24	GB	GEOTECHNICAL SUBDIVISION SUITABILITY REPORT REV B
C	JUL '24	NPN	GEOTECHNICAL SUBDIVISION SUITABILITY REPORT REV C

DESIGNED BY: GB/NN
DRAWN BY: GB
CHECKED BY: DS/BGS
SURVEYED BY: OTHER

SERVICES NOTE

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RESOURCE CONSENT

DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

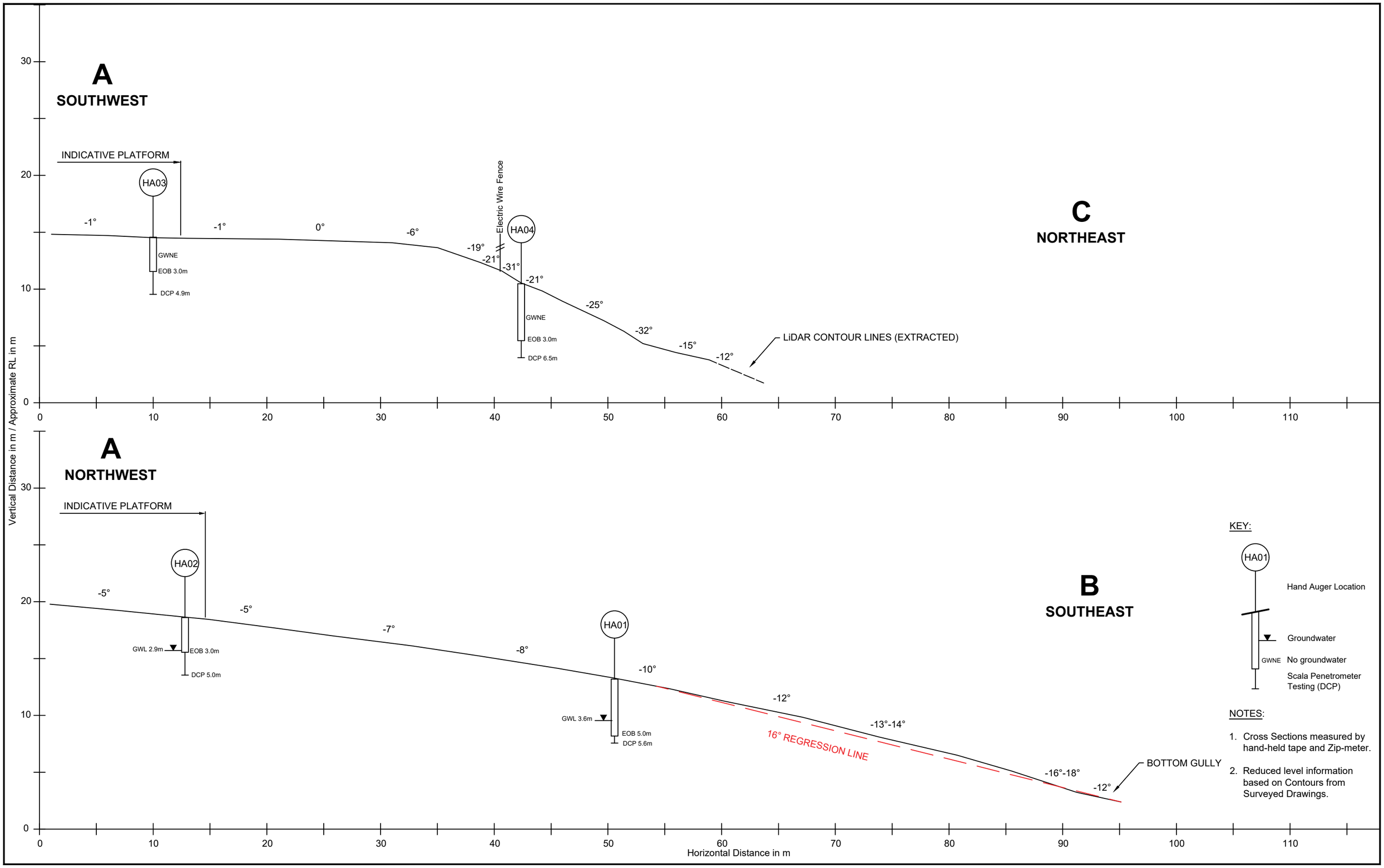
DRAWING TITLE: **SITE PLAN**

PROJECT DESCRIPTION: **GEOTECHNICAL SUBDIVISION SUITABILITY REPORT**

PROJECT TITLE: **PROPOSED SUBDIVISION OF LOT 5 DP 411627 PUNGAERE ROAD NORTHLAND**

ORIGINAL DRAWING SIZE:	OFFICE:
A3	OREWA
DRAWING SCALE:	CO-ORDINATE SYSTEM:
1:4500	NOT COORDINATED

DRAWING NUMBER: **134591-SP** ISSUE: **B**



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ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
A	14 JUN 2024	NN	ISSUED WITH SITE SUITABILITY REPORT

DESIGNED BY:
DRAWN BY: NN
CHECKED BY: GS/NA
SURVEYED BY: OTHER

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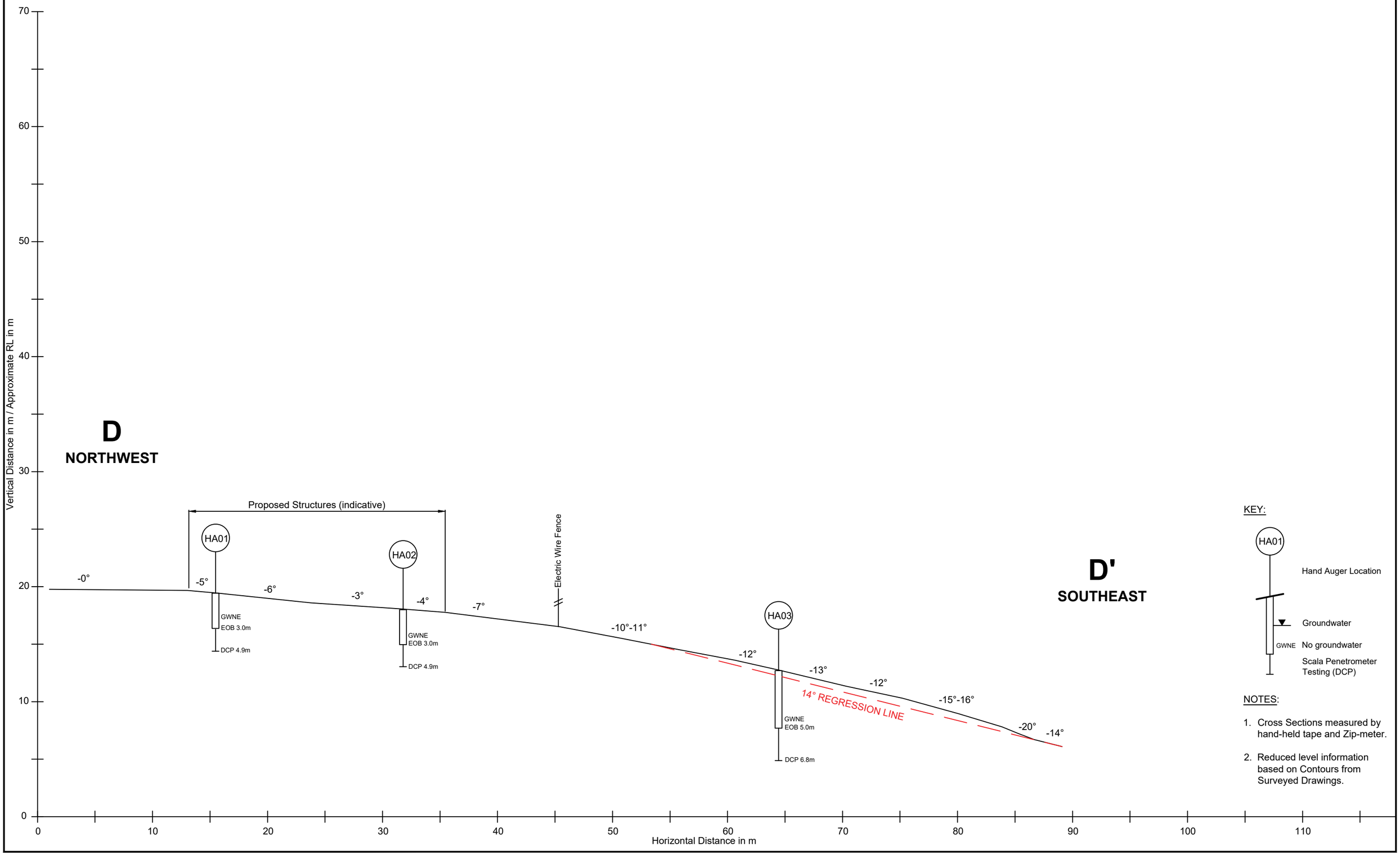
GEOTECHNICAL
DESIGN / DRAWING SUBJECT TO ENGINEER'S APPROVAL

DRAWING TITLE:
CROSS SECTIONS A- B & A - C

PROJECT DESCRIPTION:
GEOTECHNICAL SUBDIVISION SITE SUITABILITY

PROJECT TITLE:
**LOT 5 DP 411627
PUNGAERE ROAD
WAIPAPA
NORTHLAND**

ORIGINAL DRAWING SIZE: A3	OFFICE: NORTHLAND
DRAWING SCALE: 1 : 300	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 134591_CS	ISSUE: A



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ISSUE / REVISION			
No.	DATE	BY	DESCRIPTION
A	14 JUN 2024	NN	ISSUED WITH SITE SUITABILITY REPORT

DESIGNED BY:
DRAWN BY: NN
CHECKED BY: GS/NA
SURVEYED BY: OTHER

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

DRAWING TITLE:
CROSS SECTIONS A- B & A - C

PROJECT DESCRIPTION:
GEOTECHNICAL SUBDIVISION SITE SUITABILITY

PROJECT TITLE:
**LOT 5 DP 411627
PUNGAERE ROAD
WAIPAPA
NORTHLAND**

ORIGINAL DRAWING SIZE: A3	OFFICE: NORTHLAND
DRAWING SCALE: 1 : 300	CO-ORDINATE SYSTEM: NOT COORDINATED
DRAWING NUMBER: 134591_CS	ISSUE: A

HAND AUGER : HA01 - Lot 1

JOB NO.: 134591 **SHEET:** 1 OF 4

START DATE: 29/08/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.59 **DATUM:**

TOPSOIL CLAY SAND PEAT
FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - brown, some rootlets, moist, non plastic	TS	0.0						
Kerikeri Volcanic Group	slightly clayey SILT, some weakly cemented clasts <15mmØ, brown, occasional orange streaks, very stiff, moist, low plasticity		0.2						
			0.4		UTP	-	-		
	0.8m: becoming clayey, no weakly cemented clasts, reddish pink, low to medium plasticity		0.6						
			0.8		223+	-	-		
			1.0						
			1.2		146	60	2.4		
	1.4m: some strongly cemented clasts <10mmØ		1.4						
	slightly clayey SILT, yellow orange, brown, very stiff, moist, low plasticity		1.6		127	38	3.3		
	1.8m: ground water encountered		1.8	▽					
			2.0		146	48	3.0		
			2.2						
			2.4		153	51	3.0		
			2.6						
			2.8		127	40	3.2		
			3.0						
	3.2m: becoming stiff to very stiff		3.2		118	45	2.6		
			3.4						
	3.6m: some strongly cemented clasts <10mmØ		3.6	▼ 29/08/2022	159	51	3.1		
			3.8						
			4.0		223+	-	-		
	4.2m: moderately poor recovery due to groundwater suction < 40%		4.2						
			4.4		223+	-	-		
			4.6						
			4.8		UTP	-	-		
			5.0					7	
	EOH: 5.00m - Target Depth		5.2					3	
			5.4					15	
			5.6					20	
			5.8					20	
			6.0					20	
			6.2						
			6.4						
			6.6						
			6.8						

REMARKS

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

Groundwater encountered @ 1.80m during drilling. Standing groundwater @ 3.60m.

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

LOGGED BY: NN

CHECKED BY: JM

▼ Standing groundwater level

▽ GW while drilling

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

HAND AUGER : HA02 - Lot 1

CLIENT: Alec Magon
PROJECT: Site Suitability Report
SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri

JOB NO.: 134591 **SHEET:** 2 OF 4
START DATE: 29/08/2022 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.59 **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 - some weakly cemented clasts <10mmØ, brown, moist, non plastic	TS	0.2						
Kerikeri Volcanic Group	slightly clayey SILT, orange, pink, brown, very stiff to hard, moist, low plasticity		0.4		UTP	-	-		
	0.8m: becoming pinkish orange		0.8		223+	-	-		
	1.2m: becoming clayey, low to medium plasticity		1.2		118	64	1.8		
	1.6m: becoming brown with mottled light purplish grey		1.6		159	16	9.9		
	2.0m: no weakly cemented clasts		2.0		175	51	3.4		
	2.2m: some weakly to strongly cemented clasts <12mmØ		2.2						
			2.4		UTP	-	-		
	2.6m: groundwater encountered		2.6	▽					
			2.8	▼ 29/08/2022	223+	-	-		
	EOH: 3.00m - Target Depth		3.0					1	
			3.2					2	
			3.4					3	
			3.6					4	
			3.8					2	
			4.0					2	
			4.2					4	
			4.4					4	
			4.6					4	
			4.8					5	
								5	
								5	
								6	
								7	
								5	
								7	
								7	
								7	
								8	
								7	

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

REMARKS
End of borehole @ 3.30m (Target Depth: 3.00m)
Groundwater encountered @ 2.60m during drilling. Standing groundwater @ 2.90m.

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

LOGGED BY: NN
CHECKED BY: JM

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA03 - Lot 1

JOB NO.: 134591 **SHEET:** 3 OF 4

START DATE: 29/08/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR2053 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.413 **DATUM:**

TOPSOIL CLAY SAND PEAT FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - some rootlets, some weakly cemented clasts <10mmØ, brown, moist, non plastic	TS	0.2						
Kerikeri Volcanic Group	slightly clayey SILT, some strongly cemented clasts throughout <12mmØ, yellowish brown, moist, non plastic		0.4	Groundwater Not Encountered	UTP	-	-		
	0.8m: becoming clayey, reddish, low plasticity		0.8		198+	-	-		
			1.2		198+	-	-		
			1.6		181	71	2.5		
			2.0		130	57	2.3		
	2.2m: black streaks as limonite staining		2.2						
			2.4		155	73	2.1		
	2.5m: moist to wet, becoming silty		2.6						
			2.8		127	71	1.8		
			3.0					2	
	EOH: 3.00m - Target Depth		3.2					3	
			3.4					2	
			3.6					3	
			3.8					3	
			4.0					4	
			4.2					3	
			4.4					5	
			4.6					5	
			4.8					5	
								6	
								8	
								8	
								7	
								6	
								8	
								8	
								7	
								8	

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: JM

CHECKED BY: NN

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA04 - Lot 1

JOB NO.: 134591 **SHEET:** 4 OF 4

START DATE: 29/08/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR2053 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.413 **DATUM:**

TOPSOIL CLAY SAND PEAT
FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	DEPTH (m)	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Top soil	TOPSOIL - some strongly cemented clasts <10mm-20mmØ, brown, moist, non plastic	0.0					
Kerikeri Volcanic Group	clayey SILT, trace rootlets, some weakly cemented clasts 2mmØ-4mmØ, reddish orange, medium to high plasticity	0.2					
		0.4	172	68	2.5		
		0.6					
		0.8	99	42	2.4		
		1.0					
	1.2m: becoming orange	1.2	198+	-	-		
		1.4					
	SILT, some weakly cemented clasts <4mmØ, trace clay, greyish brown, non plastic	1.6	155	34	4.6		
		1.8					
	2.1m: ground water encountered - becoming wet	2.0	88	17	5.2		
		2.2					
		2.4	198+	-	-		
		2.6					
	2.8m: becoming greyish brown with mottled orange and yellow	2.8	127	23	5.5		
		3.0					
		3.2	110	42	2.6		
		3.4					
		3.6					
		3.8	122	31	3.9		
		4.0					
		4.2	127	48	2.6		
		4.4					
		4.6	198+	-	-		
		4.8					
		5.0				3	
	EOH: 5.00m - Target Depth		198+	-	-	6	
		5.2				8	
		5.4				8	
		5.6				8	
		5.8				10	
		6.0				10	
		6.2				10	
		6.4				10	
		6.6				9	
		6.8				14	
						17	
						18	
						20	
						20	
						18	

Groundwater Not Encountered

REMARKS

End of borehole @ 5.00m (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: JM

CHECKED BY: NN

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA01 - Lot 2

JOB NO.: 134591 **SHEET:** 1 OF 3

START DATE: 01/09/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.59 **DATUM:**

TOPSOIL CLAY SAND PEAT FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - minor fine to medium weakly cemented clasts throughout, brown, stiff, moist, non plastic	TS	0.2	Groundwater Not Encountered					
Kerikeri Volcanic Group	SILT, minor fine to medium sub-angular gravel clasts, brown, very stiff, moist, non plastic		0.4		223+	-	-		
	slightly clayey SILT, minor fine to coarse weakly cemented clasts, reddish brown, low plasticity		0.8		223+	-	-		
			1.2		223+	-	-		
			1.6		159	89	1.8		
	2.0m: becoming brown with pinkish red streaks		2.0		223+	-	-		
			2.4		140	67	2.1		
	2.6m: becoming orange with pink and brown streaks,		2.6						
	2.7m: becoming clayey, medium plasticity		2.8		95	60	1.6		
	EOH: 3.00m - Target Depth		3.0					1	
			3.2					2	
			3.4					2	
			3.6					2	
			3.8					3	
			4.0					2	
			4.2					3	
			4.4					4	
			4.6					3	
			4.8					6	
								6	
								6	
								7	
								8	
								8	
								6	
								7	
								8	
								7	

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: NN

CHECKED BY: JM

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA02 - Lot 2

JOB NO.: 134591 **SHEET:** 2 OF 3

START DATE: 01/09/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.59 **DATUM:**

TOPSOIL CLAY SAND PEAT FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE: PEAK STRENGTH (kPa)	SHEAR VANE: REMOULD STRENGTH (kPa)	SHEAR VANE: SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - minor fine to medium sub angular gravelly clasts, brown, stiff, moist, non plastic	TS	0.2						
Kerikeri Volcanic Group	SILT, some fine to coarse gravelly clasts, orange brown, pink, stiff to very stiff, moist, non plastic		0.4	Groundwater Not Encountered	UTP	-	-		
	slightly clayey SILT, brown, orange streaks, very stiff, moist, low plasticity		0.6						
	0.9m: trace weakly cemented clasts <4mmØ		0.8		223+	-	-		
	1.0m: becoming brown with yellow streaks		1.0						
			1.2		223+	-	-		
	1.5m: becoming brown with light purple and grey mottles		1.4						
			1.6		146	95	1.5		
			1.8						
			2.0		105	38	2.8		
			2.2						
			2.4		159	60	2.6		
	2.5m: becoming brown with pink and orange specks		2.6						
			2.8		165	73	2.3		
	2.9m: becoming dark brown with white specks		3.0					2	
	EOH: 3.00m - Target Depth		3.2					3	
			3.4					3	
			3.6					4	
			3.8					4	
			4.0					5	
			4.2					7	
			4.4					7	
			4.6					7	
			4.8					7	
								8	
								7	
								10	
								12	
								14	
								14	
								16	
								16	

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: NN

CHECKED BY: JM

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA03 - Lot 2

JOB NO.: 134591 **SHEET:** 3 OF 3

START DATE: 01/09/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.59 **DATUM:**

TOPSOIL CLAY SAND PEAT FILL SILT GRAVEL ROCK

STRATIGRAPHY	SOIL DESCRIPTION	LEGEND	DEPTH (m)	WATER	SHEAR VANE PEAK STRENGTH (kPa)	SHEAR VANE REMOULD STRENGTH (kPa)	SHEAR VANE SENSITIVITY	DCP - SCALA (Blows / 100mm)	COMMENTS, SAMPLES, OTHER TESTS
Topsoil	TOPSOIL - brown, stiff, moist, non plastic	TS	0.0						
Kerikeri Volcanic Group	slightly clayey SILT, trace weakly cemented clasts <10mmØ, brown with occasional orange streaks, very stiff, moist, low plasticity		0.2	Groundwater Not Encountered					
			0.4		223+	-	-		
	0.7m: becoming pinkish orange		0.6						
			0.8		223+	-	-		
			1.0						
	1.2m: light purple with greyish mottles		1.2		130	65	2.0		
			1.4						
			1.6		159	45	3.5		
			1.8						
	2.0m: occasional black specks as limonite staining		2.0		99	29	3.4		
			2.2						
			2.4		105	32	3.3		
			2.6						
			2.8		102	35	2.9		
			3.0						
	3.2m: light greyish purple with white specks		3.2		111	38	2.9		
			3.4						
			3.6		140	48	2.9		
	3.7m: pinkish red with black limonite staining		3.8						
			4.0		165	48	3.4		
	4.2m: groundwater encountered - soils saturated		4.2						
	4.4m: becoming yellow, grey, pink and red		4.4		175	41	4.3		
			4.6						
			4.8		108	38	2.8		
	EOH: 5.00m - Target Depth		5.0					2	
			5.2					2	
			5.4					2	
			5.6					3	
			5.8					2	
			6.0					4	
			6.2					4	
			6.4					6	
			6.6					8	
			6.8					12	
								12	
								10	
								14	
								12	
								13	
								14	
								16	
								18	

REMARKS

End of borehole @ 5.00m (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: NN

CHECKED BY: JM

▼ Standing groundwater level

▽ GW while drilling

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HAND AUGER : HA01 - Lot 3

CLIENT: Alec Magon
PROJECT: Site Suitability Report
SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri

JOB NO.: 134591 **SHEET:** 1 OF 2
START DATE: 31/08/2022 **NORTHING:** **GRID:**
DIAMETER: 50mm **EASTING:**
SV DIAL: DR4802 **ELEVATION:** Ground
FACTOR: 1.59 **DATUM:**

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
Topsoil	TOPSOIL - some weakly cemented clasts throughout, brown, moist, non plastic	TS	0.2	▼ 31/08/2022					
Alluvium	clayey SILT, orangish brown, yellow, stiff, moist, medium plasticity		0.4		111	51	2.2		
			0.6						
	silty CLAY, orangish brown, light grey mottles, stiff, moist, highly plastic		0.8		95	16	5.9		
	1.2m: becoming orangish yellow with occasional grey streaks		1.2		99	22	4.5		
			1.4						
			1.6		64	29	2.2		
	1.9m: becoming clay, highly plastic		1.8						
			2.0		78	33	2.4		
			2.2						
	2.4m: becoming very stiff		2.4		103	51	2.0		
			2.6						
			2.8		108	57	1.9		
	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						

REMARKS
End of borehole @ 3.00m (Target Depth: 3.00m)
Standing groundwater @ 0.20m.

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

LOGGED BY: NN
CHECKED BY: NA

▼ Standing groundwater level
▽ GW while drilling

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HAND AUGER : HA02 - Lot 3

JOB NO.: 134591 **SHEET:** 2 OF 2

START DATE: 31/08/2022 **NORTHING:** **GRID:**

CLIENT: Alec Magon **DIAMETER:** 50mm **EASTING:**

PROJECT: Site Suitability Report **SV DIAL:** DR4802 **ELEVATION:** Ground

SITE LOCATION: Lot 5 DP 411627, Pungaere Road, Kerikeri **FACTOR:** 1.59 **DATUM:**

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
Topsoil	TOPSOIL - some rootlets and weakly cemented clasts throughout <4mmØ, brown, moist, low plasticity	TS	0.0						
	slightly clayey SILT, some weakly cemented clasts <10mmØ, brown with occasional orange streaks, very stiff, moist, low plasticity		0.2						
			0.4		137	51	2.7		
			0.6						
			0.8		159	60	2.6		
	1.0m: water ingress		1.0	31/08/2022					
	clayey SILT, brownish orange, grey streaks, stiff, becoming wet, medium plasticity		1.2		73	48	1.5		
			1.4						
	silty CLAY, orangish grey, stiff, saturated, medium to highly plasticity		1.6		64	22	2.9		
			1.8						
Alluvium	CLAY, greyish white, stiff, saturated, highly plastic		2.0		60	16	3.8		
			2.2						
			2.4		57	19	3.0		
			2.6						
			2.8		64	29	2.2		
			3.0						
			3.2		67	16	4.2		
			3.4						
			3.6		89	45	2.0		
			3.8						
			4.0		83	41	2.0		
	EOH: 4.00m - Target Depth		4.2						
			4.4						
			4.6						
			4.8						

REMARKS

End of borehole @ 4.00m (Target Depth: 4.00m)

Groundwater encountered @ 1.20m during drilling. Standing groundwater @ 1.00m.

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

LOGGED BY: NN

CHECKED BY: NA

▼ Standing groundwater level

▽ GW while drilling

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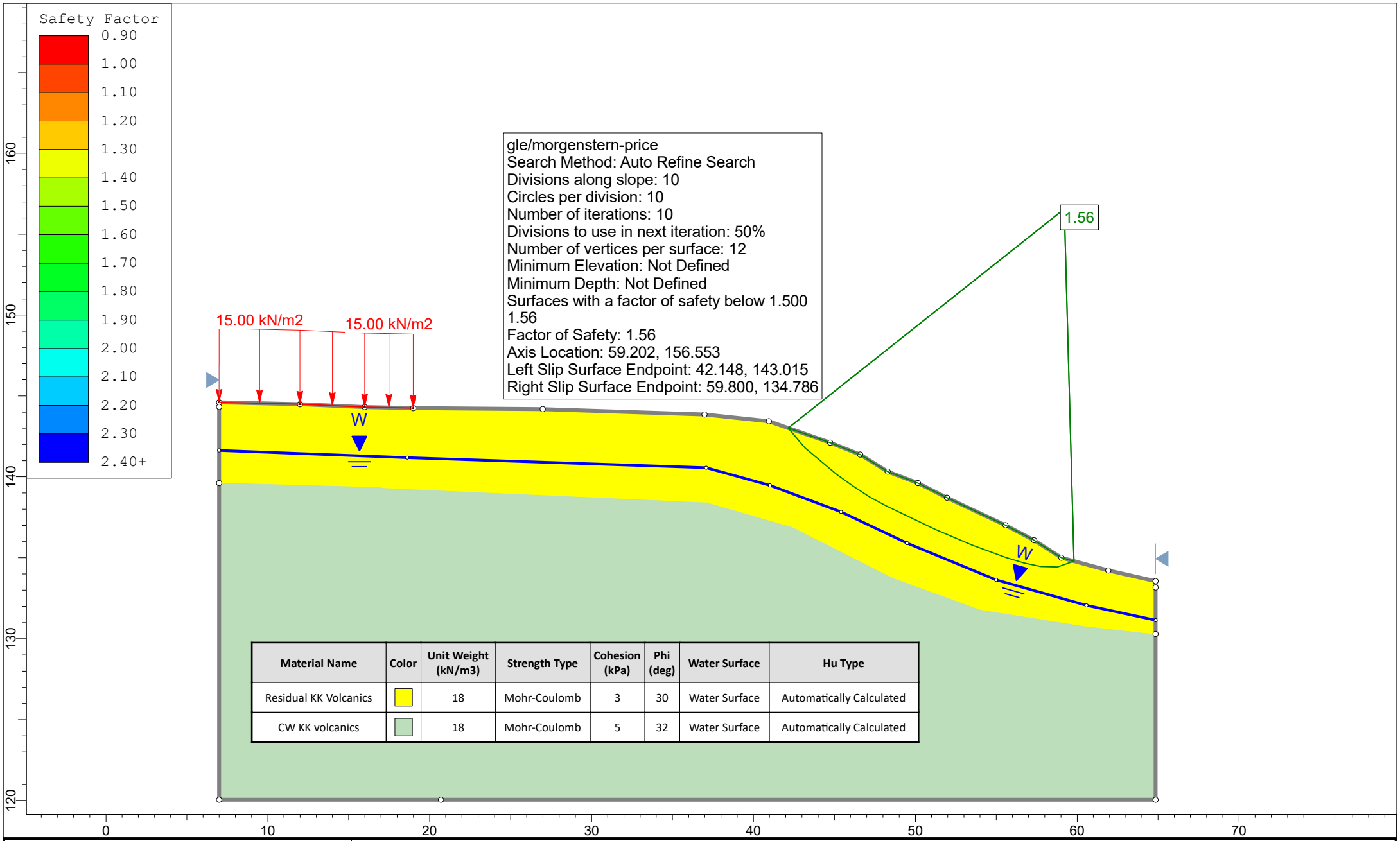
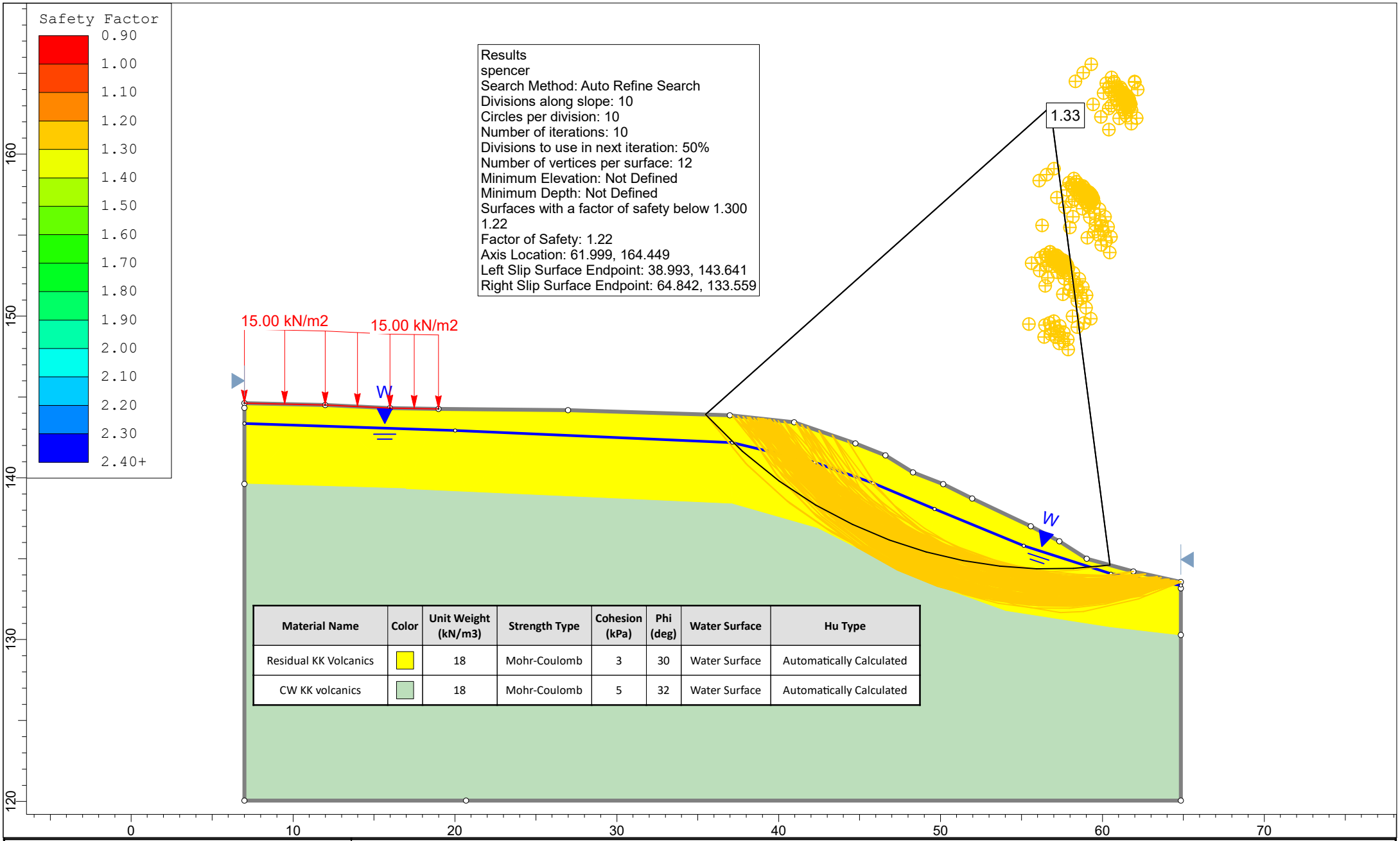


Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type
Residual KK Volcanics		18	Mohr-Coulomb	3	30	Water Surface	Automatically Calculated
CW KK volcanics		18	Mohr-Coulomb	5	32	Water Surface	Automatically Calculated

Project	489 Pungaere Road, Waipapa		
Analysis Description	Slope Stability - 1:300		
Drawn By	NN/CSH	*Company*	Wiltom Joubert Ltd
Date	9/14/2022, 4:19:16 PM	*File Name*	Slide1 - Mod-GWL.slim

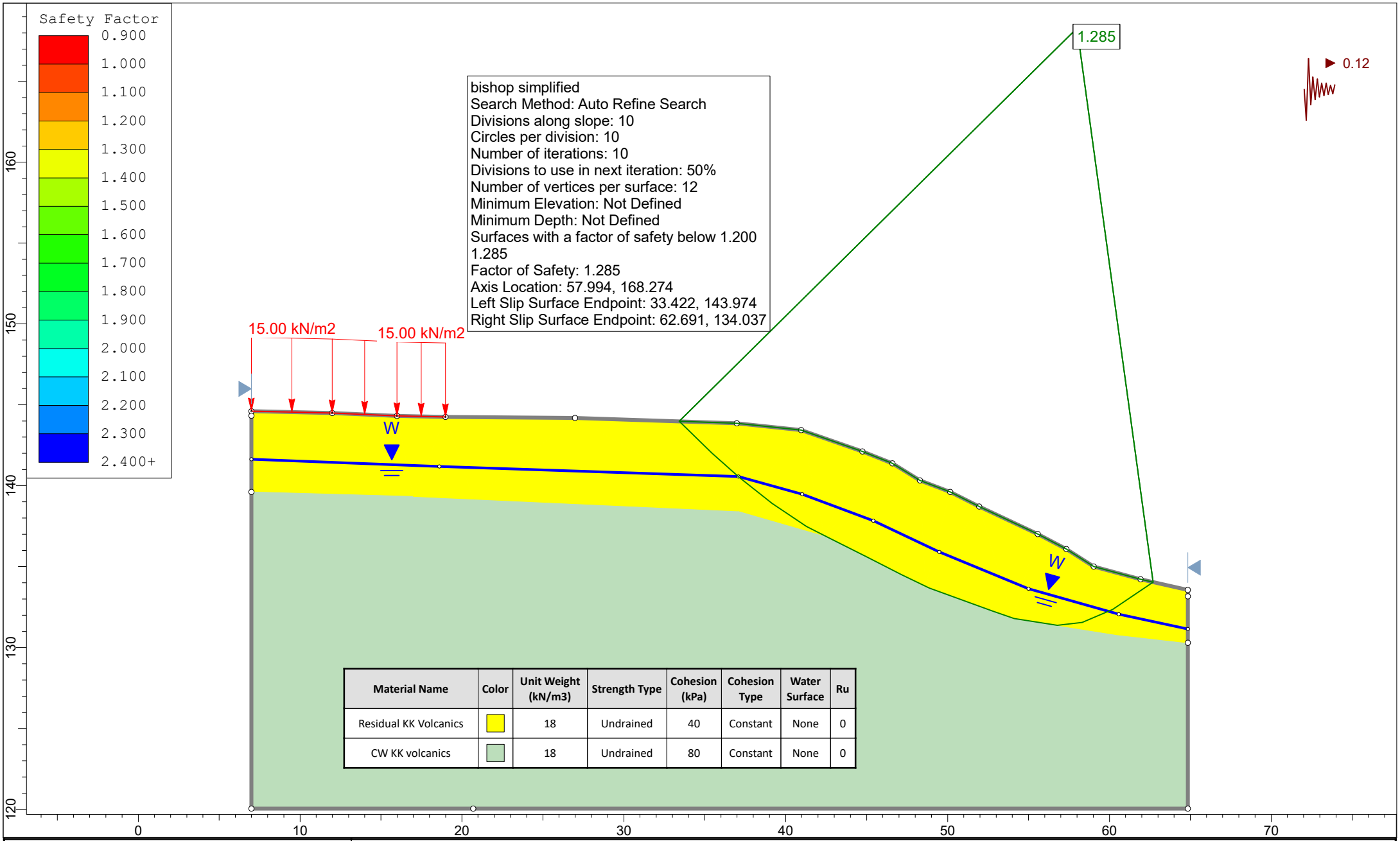
SLIDEINTERPRET 6.039



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type
Residual KK Volcanics		18	Mohr-Coulomb	3	30	Water Surface	Automatically Calculated
CW KK volcanics		18	Mohr-Coulomb	5	32	Water Surface	Automatically Calculated

SLIDEINTERPRET 6.039

Project	489 Pungaere Road, Waipapa		
Analysis Description	Slope Stability - 1:300		
Drawn By	NN/CSH	*Company*	Wiltom Joubert Ltd
Date	9/14/2022, 4:19:16 PM	*File Name*	Slide1 - Elevated-GWL.slim



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Cohesion Type	Water Surface	Ru
Residual KK Volcanics		18	Undrained	40	Constant	None	0
CW KK volcanics		18	Undrained	80	Constant	None	0

SLIDEINTERPRET 6.039

Project	489 Pungaere Road, Waipapa		
Analysis Description	Slope Stability - 1:300		
Drawn By	NN/CSH	*Company*	Wiltom Joubert Ltd
Date	9/14/2022, 4:19:16 PM	*File Name*	Slide1 - Mod-GWL + Seismic.slim

Foundation Maintenance and Footing Performance:
A Homeowner's Guide

PUBLISHING

BTF 18-2011 replaces Information Sheet 10/91

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

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

Soil Types

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

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

Causes of Movement

Settlement due to construction

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

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

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

Erosion

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

Saturation

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

Seasonal swelling and shrinkage of soil

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

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

Shear failure

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

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

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

GENERAL DEFINITIONS OF SITE CLASSES

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

Notes

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

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

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

Unevenness of Movement

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

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

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

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

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

Effects of Uneven Soil Movement on Structures

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

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

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

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

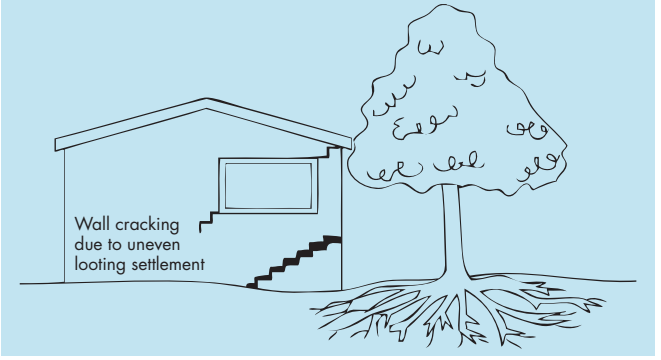
The first noticeable symptom may be that the floor appears slightly dished. This is often accompanied by some doors binding on the floor or the door head, together with some cracking of cornice mitres. In buildings with timber flooring supported by bearers and joists, the floor can be bouncy. Externally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

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

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

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

Trees can cause shrinkage and damage



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

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

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

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

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

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

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

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

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

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

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

Water Service and Drainage

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

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

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

Seriousness of Cracking

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

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

Prevention/Cure

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

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

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

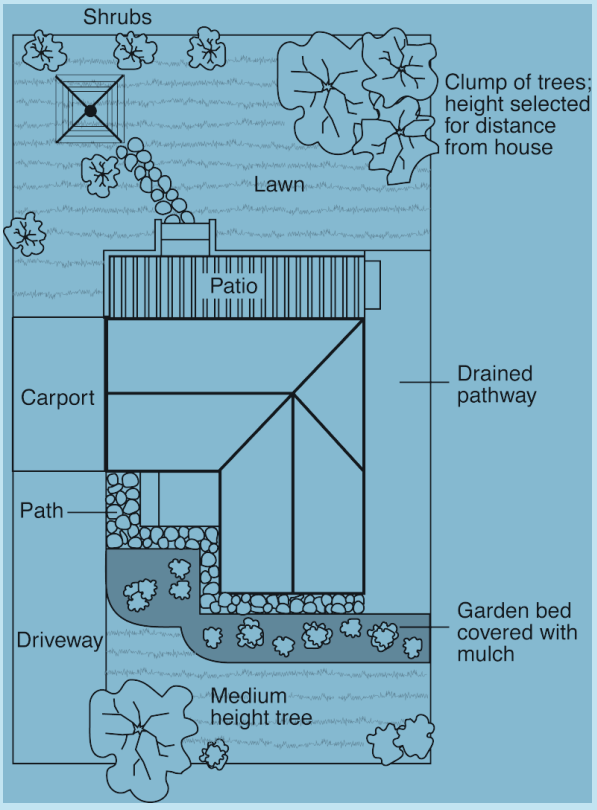
Protection of the building perimeter
It is essential to remember that the soil that affects footings extends well beyond the actual building line. Watering of garden plants, shrubs and trees causes some of the most serious water problems.

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

CLASSIFICATION OF DAMAGE WITH REFERENCE TO WALLS

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

Gardens for a reactive site



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

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

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

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

Condensation

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

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

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

The garden

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

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

Existing trees

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

Information on trees, plants and shrubs

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

Excavation

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

Remediation

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

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

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CONSTRUCTION MONITORING SERVICES

Construction monitoring is a service, which provides the client with independent verification (to the extent of the consultant's engagement) that the works have been completed in accordance with specified requirements. Most construction projects are unique, and construction works are often complex in detail and skilled professional involvement is necessary for the successful execution of such projects.

The decision as to which level is appropriate will be project dependent, but factors influencing the level of construction monitoring for a project are the size and importance of the project, the complexity of the construction works, and the experience and demonstrated skill in quality management of the constructor. The primary responsibility for completing the contract works in accordance with the requirements of the plans and specifications is the constructor's.

The involvement of the consultants is important during the construction phase to ensure that the design is being correctly interpreted, the construction techniques are appropriate and do not reduce the effectiveness of the design and the work is completed generally in accordance with the plans and specifications. The risk of non-compliance can be reduced by increasing the involvement of the consultant.

Table 1 sets out the five levels of construction monitoring, describes the types of review and indicates where a particular level of monitoring is appropriate. Tables 2 and 3 provide rating values for various aspects of a project to enable an assessment of an appropriate monitoring level to be made.

Table 1

LEVEL	REVIEW	COMMENT
CM1	Monitor the outputs from another party's quality assurance programme against the requirements of the plans and specifications. Visit the works at a frequency agreed with the client to review important materials of construction critical work procedures and/or completed plant or components. Be available to advise the constructor on the technical interpretation of the plans and specifications.	This level is only a secondary service. It may be appropriate where:- For the design consultant when another party is engaged to provide a higher level of construction monitoring or review during the period of construction or:- When the project works are the subject of a performance based specification and performance testing is undertaken and monitored by others.
CM2	Review, preferable at the earliest opportunity, a sample of each important work procedure, material of construction and component for compliance with the requirements of the plans and specifications and review a representative sample of each important completed work prior to enclosure or completion s appropriate. Be available to provide the constructor with technical interpretation of the plans and specification.	This level of service is appropriate for smaller projects of a routine nature being undertaken by an experienced and competent constructor and where a higher than normal risk of non-compliance is acceptable. It provides for the review of a representative sample of work procedures and materials of construction. The assurance of compliance of the finished work is dependent upon the constructor completing the work to at least the same standard as the representative sample reviewed.
CM3	Review, to an extent agreed with the client, random samples of important work procedures, for compliance with the requirements of the plans and specifications and review important completed work prior to enclosure or on completion as appropriate. Be available to provide the constructor with technical interpretation of the plans and specifications.	This level of service is appropriate for medium sized projects of a routine nature being undertaken by an experienced constructor when a normal risk of non-compliance is acceptable.
CM4	Review, at a frequency agreed with the client, regular samples of work procedures, materials of construction and components for compliance with the requirements of the plans and specifications and review the majority of completed work prior to the enclosure or on completion as appropriate.	This level of service is appropriate for projects where a lower than normal risk of non-compliance is required.
CM5	Maintain personnel on site to constantly review work procedures, materials of construction and components for compliance with the requirements of the plans and specifications and review completed work prior to enclosure or on completion as appropriate.	This level of service is appropriate for Major projects -Projects where the consequences of failure are critical -Projects involving innovative or complex construction procedures. The level of service provides the client with the greatest assurance that the completed work complies with the requirements of the plans and specifications.

Source www.ipenz.org.nz/ipenz/practicesupport/endorsedinfo/codes

Table 2

CRITERIA	K	ASSESSMENT				SELECTED VALUE
Project Status		Small	Medium	Large	Major	
	KA	1	2	3	4	
Complexity of work procedures		Routine	Difficult	Complex		
	KB	2	4	6		
Constructor's relevant experience		Inexperienced	Experienced	Certified ISO 9000		
	KC	6	2	1		
Consequences of non-compliance		Minor	Moderate	Serious	Critical	
	KD	1	4	6	12	
					KTOTAL = KA + KB + KC + KD ->	

Table 3

	LEVEL OF CONSTRUCTION MONITORING				
KTOTAL	CM1	CM2	CM3	CM4	
5-6	-	Sampling only	-	-	-
7-8	-	N/A	Weekly	-	-
9-10	A	N/A	Twice Weekly	-	-
11-12	Secondary	N/A	N/A	Twice Weekly	-
13-14	Service	N/A	N/A	Every second day	-
15-16	-	N/A	N/A	Daily	-
17-	-	N/A	N/A	N/A	Constant

N/A = Not Appropriate

- Secondary Service - This level of service is only appropriate when another party is responsible for undertaking the primary review of construction standards.
- Table 3 indicates the frequency of review considered to be appropriate for the project concerned. Not indicated is the time input requirement at each review. The time on each occasion will increase with the increased size and complexity of the construction works and should be agreed with the consultant at the time of engagement.
- Frequency of inspection is intended to be indicative of involvement with actual frequency dependent on the rate of progress of the works.

Photos of Existing Access – Lot 1 [Stage 1]


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