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

Office Use Only
Application Number:

Application for resource consent or fast-track resource consent

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

1. Pre-Lodgement Meeting

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

2. Type of Consent being applied for

(more than one circle can be ticked):

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

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

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

◯ **Yes** ✔ **No**

4. Consultation

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

If yes, which groups have you consulted with?	Whangaroa Catchment Working Group
Who else have you consulted with?	

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

5. Applicant Details

Name/s: Northland Regional Council - Rivers & Natural Hazards Team c/o Meg Tyler

Email: [redacted]

Phone number:

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

6. Address for Correspondence

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

Name/s: Steven Sanson - Bay of Islands Planning

Email: [redacted]

Phone number:

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

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

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

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

Name/s: Refer to Appendix 1 - Various

Property Address/ Location: Waikare Avenue, Kaeo

Postcode

8. Application Site Details

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

Name/s: Various - Refer Appendix 1

Site Address/ Location: Waikare Avenue, Kaeo

Postcode

Legal Description: Refer Appendix 1 **Val Number:**

Certificate of title: Refer Appendix 1

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 Meg prior to a site visit

9. Description of the Proposal:

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

Kaeo Stage II flood protection works.

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

10. Would you like to request Public Notification?

◯ **Yes** ✔ **No**

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

(more than one circle can be ticked):

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

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

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

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

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

- ◯ **Subdividing land**
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13. Assessment of Environmental Effects:

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Your AEE is attached to this application ✔ **Yes**

13. Draft Conditions:

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

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

14. Billing Details:

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

Name/s: (please write in full)

Email:

Phone number: Work | Home

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

Postcode

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

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

Name: (please write in full)

Signature:
(signature of bill payer

Date

MANDATORY

15. Important Information:

Note to applicant
You must include all information required by this form. The information must be specified in sufficient detail to satisfy the purpose for which it is required.
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15. Important information continued...

Declaration

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

Name: (please write in full) Steven Sanson

Signature: [redacted] **Date** 17-Dec-2024

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

Checklist (please tick if information is provided)

- ✔ Payment (cheques payable to Far North District Council)
- ✔ A current Certificate of Title (Search Copy not more than 6 months old)
- ✔ Details of your consultation with Iwi and hapū
- ✔ Copies of any listed encumbrances, easements and/or consent notices relevant to the application
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Email: [redacted]

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Name/s: (please write in full) Joseph Camuso NRC.

Email: [redacted]

Phone number:

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

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Name: (please write in full) Joseph Camuso

Signature:
(signature of bill payer) [redacted] MANDATORY

Date 17 Dec 2024

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Name: (please write in full) Steven Sanson

Signature: [redacted] Date 17-Dec-2024

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BAY OF ISLANDS PLANNING (2022) LIMITED

Kerikeri House
Suite 3, 88 Kerikeri Road, Kerikeri

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

06 January 2025

Application for Resource Consent – Kaeo Stage II Flood Protection Works

Please find below a resource consent application to undertake earthworks associated with the Kaeo Stage II Flood Protection Works.

The earthworks are associated with infill of a section of the Kaeo River, the construction new river channel and a stop bank.

Overall, the application is a **Discretionary Activity.**

Should you require any further information please do not hesitate to contact me.

Yours sincerely,

Steven Sanson
Consultant Planner

SITE DETAILS

Applicant	Northland Regional Council – Rivers and Natural Hazards Team
Address for Service	Bay of Islands Planning Limited PO Box 318 PAIHIA 0247 C/O - Steven Sanson steve@bayplan.co.nz 021-160-6035
Legal Description	Various – Refer **Appendix 1**
Record Of Title [RoT]	Various – Refer **Appendix 1**
Physical Address	Waikare Avenue, Kaeo
Site Area	Various – Refer **Appendix 1**
Owner of the Site	Various – Refer **Appendix 1**
District Plan Zone	Rural Production & Commercial [ODP] Rural Production & Mixed Use [PDP]
District Plan Features	Nil
NRC Features	Coastal & River Flood Hazards
Soils	Class 3
Flora / Fauna	Kiwi Present
HAIL	Nil
Wetlands	Nil

Schedule 1

1.0 INTRODUCTION & PROPOSAL

1.1 Report Requirements

1. This report has been prepared for the Northland Regional Council – Rivers and Natural Hazards Team [**applicant**] in support of a land use consent in Kaeo, Northland.

2. The application has been prepared in accordance with the provisions of Section 88 and the Fourth Schedule of the Resource Management Act 1991. This report serves as the Assessment of Environmental Effects required under both provisions.

3. The report also includes an analysis of the relevant provisions of the Far North District Plan [Operative and Proposed], relevant National Policy Statements and Environmental Standards, Regional Planning Documents as well as Part 2 of the Resource Management Act 1991.

1.2 Proposal & Background

4. A range of details regarding the site are outlined in Schedule 1 of this Report. These details are supplemented by the Record of Title's and relevant instruments located in **Appendix 1.**

5. Stage I of the works already completed are provided in Figure 1 below. These works have played a role in reducing the effects of flooding to the Kaeo Township.

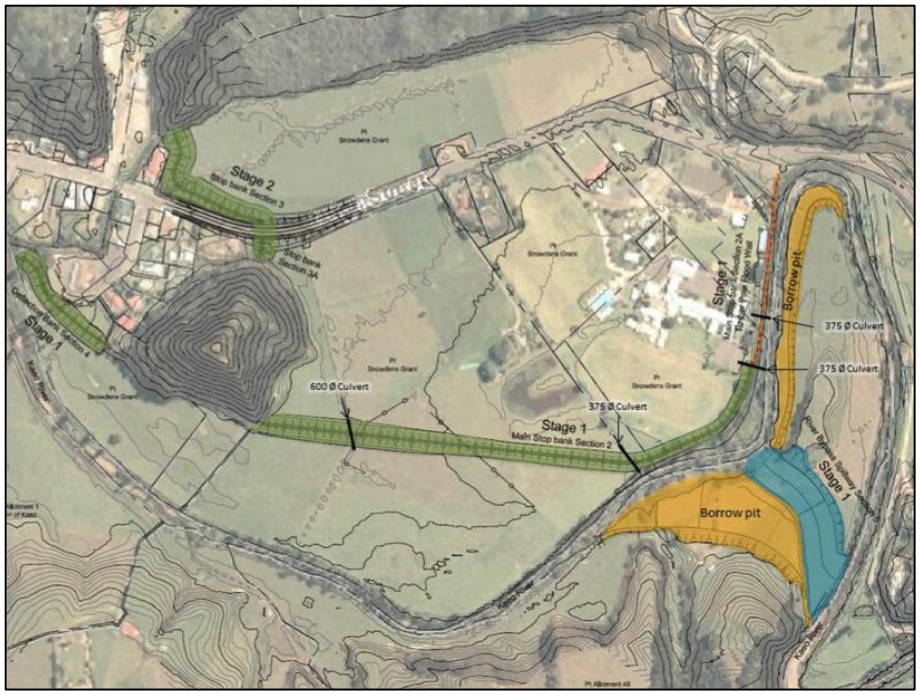


Figure 1 – Kaeo Stage I Works [Source: NRC]

6. The applicant proposes to continue the flood mitigation works in Kaeo through this Stage II proposal.

7. Land Use Consent: The works associated with flood protection works at Kaeo require a land use consent from the Far North District Council.

8. The proposal is considered to breach the following rules:

    - 12.3.6.1.1 Excavation and/or Filling, Excluding Mining and Quarrying, in the Rural Production Zone – Discretionary Activity [for volume and height of stopbank].

9. Proposal Rationale: The proposal is for Stage II of the Kaeo Flood Protection Scheme. This project augments the initial works undertaken in 2013/2014. Consents are required due to the scale of earthworks required from FNDC. The works are proposed to be undertaken across five Records of Title.

10. Stage II seeks to reduce flooding of Kaeo by realigning the Kaeo River channel and using the cut material to create a deflection bank [stopbank]. This would move the confluence ~520m downstream close to the Omaunu Road bridge.

11. The works seek to reduce the backflow effect currently experienced by ~600mm and will reduce flooding in and around the Kaeo Township.

12. FNDC consents are required for earthworks only. The overall site plan and drawings for the proposal has been prepared by Trine Kel and is provided as **Appendix 2**.

13. Details of the proposal are provided in Table 1 below.

Table 1 – Proposal Details

Item	**Length**	**Cut / Fill**
Proposed Stop bank	696m	Fill – 20,763m^3
Proposed Channel	740m	Cut – 30,248m^3
Proposed Infill Area	182m	Fill – 4,203m^3
Total	1,618m	Cut – 30,248m^3 Fill – 24,966m^3 **Balance: Cut – 5,282m^3**

14. The cut / fill details per site are as follows.

Table 2 – Proposal Details Per Site

Site	**Cut**	**Fill**
NA2D/6	10,877.78m^3	-
NA48C/581	12,897.12m^3	15,498.74m^3
NA35B/601	6,835.057m^3	4,794.944m^3

NA502/92	371.7669m^3	-
NA4D/903	-	1,978.8m^3
NA1089/79	-	822.3492m^3

15. The proposal seeks a total of 55,214m^3 of earthworks. As shown on the plans in **Appendix 2,** the material won from the site will be used for the stop bank / infill works, and the balance held on the site for future use.

16. Consents will be sought concurrently from the Northland Regional Council for the project. A copy of this application is provided as **Appendix 3**. We envisage the bulk of the consenting requirements to be assessed from a regional perspective and some alignment between the two consenting agencies are sought.

17. The works are considered to align with public flood control / flood protection as provided for within s133 of the Soil Conservation and Rivers Control Act 1941. The works are also specifically provided for as Regionally Significant Infrastructure under Appendix 3 of the Regional Policy Statement for Northland [Refer Clause 3[a]].

18. Therefore, the proposal is considered to meet the definition of 'specified infrastructure' under higher order documents.

19. Modelling has been undertaken to support the proposed works, and this is provided in **Appendix 4**.

20. Figure 2 below highlights the modelled impact of the proposed works on the Kaeo Township. As can be seen, certain areas are less affected by flooding as a result of the proposed works.

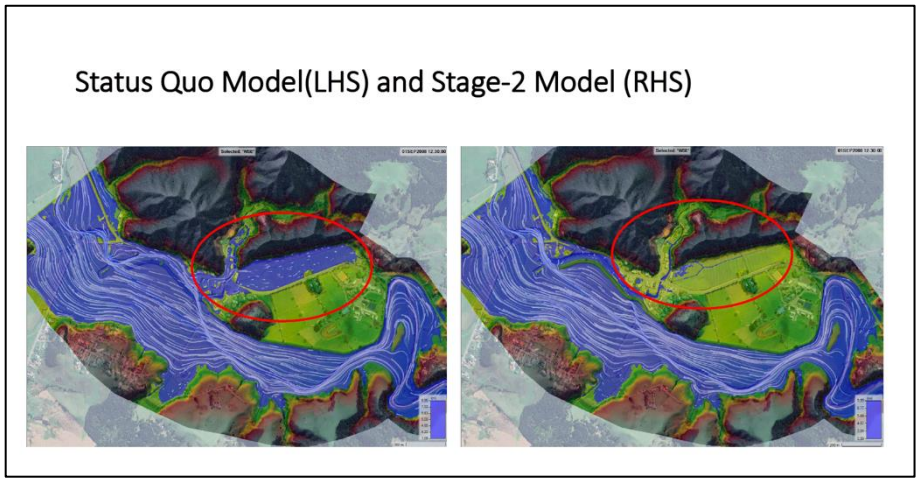


Figure 2 – Modelling Results [Source: NRC]

21. Works are expected to be carried out using large earthmoving equipment. This may include motor scrapers, tractors and trailers and Moxy. However, this will depend on the contractor, their methodology and available equipment. It is possible that the works could occur across two earthworks seasons. Again, this is to be determined.

22. Proposed fill sites are internal to the site, therefore there is no particular need for earthmoving equipment to be using the State Highway or neighbouring streets on an ongoing basis. Timing of the works will be circulated to the community, prior to works being undertaken. These matters will all be provided within an Erosion and Sediment Control Plan proposed to be provided as a condition of consent.

23. In order to understand the ecological conditions of the site NZ Environmental Management have been engaged to undertake and provide an Ecological Impact Assessment (EcIA). This will be provided once received.

2.0 DESCRIPTION OF THE SITE & SURROUNDS

24. The proposal is located across five Record of Titles, provided in **Appendix 1**. These titles collectively make up the 'site', noting that FNDC has rules that work on a site per site basis.

25. In terms of integrated management of effects, it is simpler to consider the proposal as a whole and not attempt to split up each site and assess effects in that manner. The application is therefore premised on this approach, noting the allowances per site as a permitted activity.

26. From a planning perspective, the following Figures which relate to Schedule 1 provide an understanding of the site. For ease of reference, the 'site' is highlighted in yellow in Figures below.

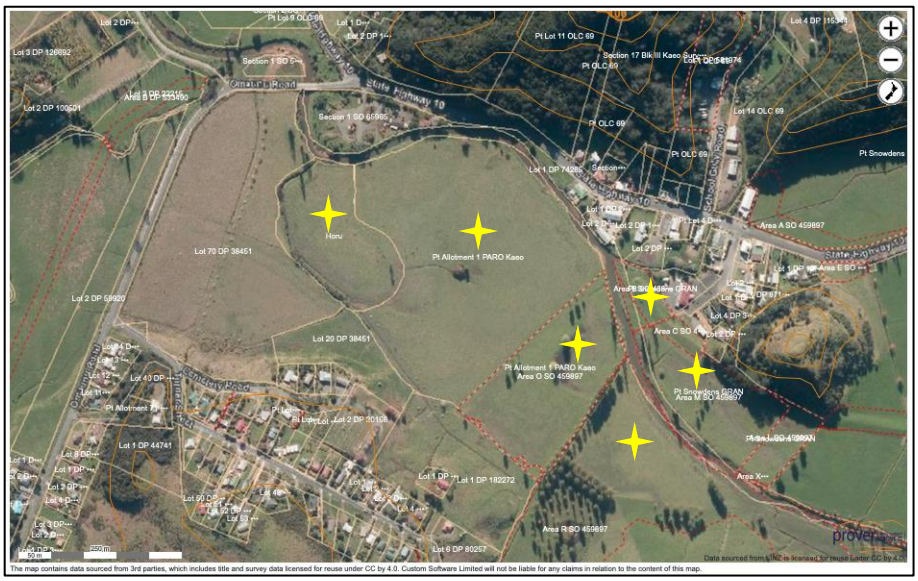


Figure 3 – Site Aerial [Source: Prover]

27. The site sits to the south of the Kaeo Township and runs adjacent and along a short extent of the Kaeo River. The sites are largely in pasture and are vacant where the works are proposed. One of the sites is located off Waikare Avenue where the works tie in with Stage I development.

Figure 4 –Toporaphy [Source: NRC Local Maps]

28. The topography of the site is as shown in Figure 4. The site is low lying and largely flat. The land rises to the east, south and north.

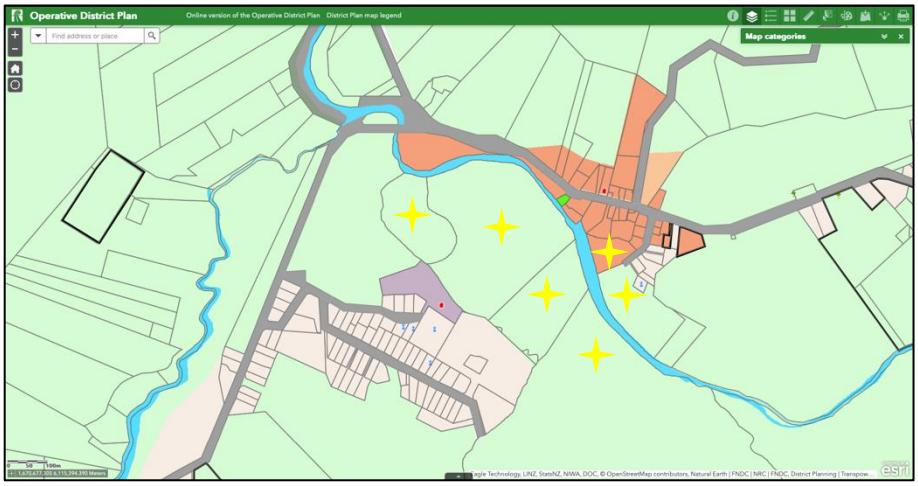


Figure 5 – Zoning [Source: Far North Maps]

29. The site is zoned Rural Production and Commercial and there are no apparent resource features of concern in the Operative District Plan [ODP]. Under the Proposed District Plan [PDP], the site is Rural Production and Mixed Use, also with no resource features present.

Figure 6 – Resource Features [Source: Far North Maps]

30. Soils for the site are Class 3. There are mapped historic sites and HAIL sites in the surrounds, however these are not mapped as being within the development footprint. The entire development area is subject to river and coastal flood hazards.

31. Protected Natural Areas are located to the north and south of the site and development area at Ngarahu P04036 and Kaeo Bush P04052. Kaeo is considered as being within a Kiwi Present Area.

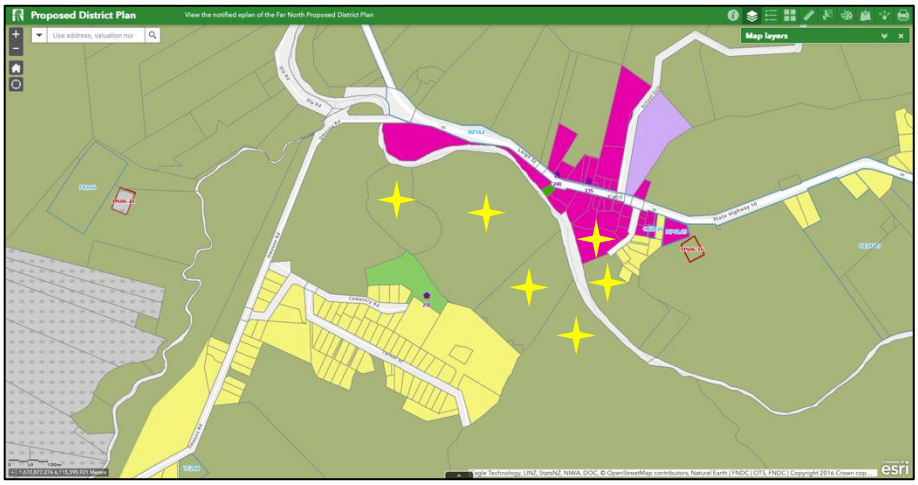


Figure 7– Proposed District Plan [Source: Far North Maps]

Figure 8 – Soils [Source: Far North Maps]

32. The immediate surrounds are characterised by low lying pastoral land surrounding the Kaeo Township. The Kaeo Township is made up of various commercial and residential elements along the State Highway.

Figure 9 – Historic Sites [Source: Far North Maps]

33. From a wider perspective, the environment is largely rural in nature.

Figure 10 – HAIL Map [Source: NRC Local Maps]

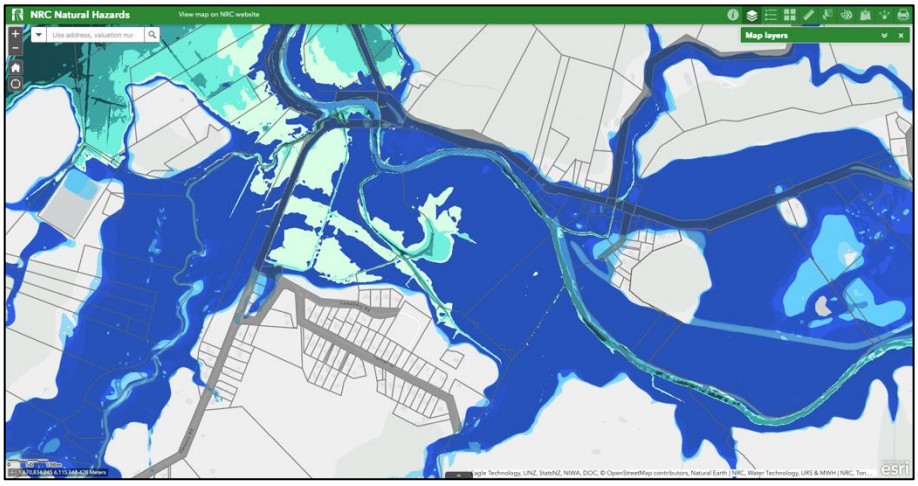


Figure 11 – Natural Hazards Map [Source: NRC Local Maps]

Figure 12 – Reserves & Protected Areas [Source: Far North Maps]

3.0 RECORD OF TITLE, CONSENT NOTICES AND LAND COVENANTS

34. The Record of Title are attached at **Appendix 1**. There are no relevant interests to consider, however it is noted that some of the landholdings are subject to instruments relating to the Stage I works. These have not been provided but can be ordered and provided on request.

4.0 RESOURCE CONSENT REQUIREMENTS

35. The relevant zoning, resource features, and other critical information required to determine the consenting requirements for the proposal have been considered above.

36. ***Tables*** below provides an assessment against the relevant ODP and PDP standards and identifies the reasons for resource consent.

Table 3 – Rural Production Zone

Rule	Assessment
Rule 8.6.5.1.1 Residential Intensity	No dwellings proposed. **Complies**
Rule 8.6.5.1.2 Sunlight	No buildings proposed. **Complies**
Rule 8.6.5.1.3 Stormwater Management	No impervious surfaces proposed. **Complies**
Rule 8.6.5.1.4 Setback from Boundaries	No buildings proposed. **Complies**
Rule 8.6.5.1.5 Transportation	No buildings proposed. **Complies**
Rule 8.6.5.1.8 Building Height	No buildings proposed. **Complies**
Rule 8.6.5.1.10 Building Coverage	No buildings proposed. **Complies**
Rule 8.6.5.1.11 Scale of Activities	No buildings / activities proposed.

	Complies

Table 4 – District Wide Rules

Rule	Assessment
12.1 Landscapes & Natural Features	Not relevant as these features do not occur at the site. **Complies**
12.2 Indigenous Flora & Fauna	Isolated trees will be removed through the proposal. **Complies**
12.3 Soils & Minerals	More than 20,000m3 of earthworks are proposed across the site / development area. The stopbank heights are proposed to be ~3m in height. **Discretionary Activity**
12.4 Natural Hazards	Site is not within Hazard Areas mapped by FNDC [Coastal Hazard 1 and2]. No buildings of concern to fire risk. **Complies**
12.5 Heritage	There are no notable trees present on the site. There are no historic sites, buildings or objects relevant to the site / development area. Archaeological features are present but they are outside of the proposed works. The rule is not affected by the proposal. There is no proposed building, excavating, filling, planting of trees or clearance of vegetation within a Site of Cultural Significance to Maori. **Complies**
12.7 Lakes, Rivers and Wetlands	No buildings proposed.

	Complies
12.8 Hazardous Substanaces	Not relevant as not proposed. **Complies**
12.9 Renewable Energy & Energy Efficiency	Not relevant as not proposed. **Complies**
13 Subdivision	Not relevant as not proposed. **Complies**
14 Financial Contributions	Not relevant. **Complies**
15 Transportation	No buildings / activities proposed. **Complies**
16 Signs and Lighting	Not relevant. **Complies**
17 Designation	Not relevant. **Complies**
18 Special Areas	Not relevant. **Complies**
19 GMO's	Not relevant. **Complies**

37. In terms of the Operative Plan the application falls to be considered as a **Discretionary Activity** because of the identified breaches.

4.1 FNDC Proposed District Plan

38. These comprise relevant rules that have immediate effect under the Proposed District Plan.

Table 5 – Proposed District Plan

Rule	Assessment
Hazardous Substances	Not relevant as no such substances proposed.

	Complies
Heritage Area Overlays	Not indicated on Far North Proposed District Plan. **Complies**
Historic Heritage	Not indicated on Far North Proposed District Plan. **Complies**
Notable Trees	Not indicated on Far North Proposed District Plan. **Complies**
Sites and Areas of Significance to Māori	There are no activities proposed within a SASM. **Complies**
Ecosystems and Indigenous Biodiversity	No vegetation clearance required. **Complies**
Activities on the Surface of Water	Not indicated on Far North Proposed District Plan **Complies**
Earthworks	Proposed earthworks will be in accordance with the relevant standards including GD-05 and the consent decision can have an ADP applied. **Complies**
Signs	Not indicated on Far North Proposed District Plan **Complies**
Orongo Bay Zone	Not indicated on Far North Proposed District Plan **Complies**
Subdivision	Not proposed.

	Complies

39. As above, no consents are required under the PDP.

5.0 STATUTORY CONSIDERATIONS

40. Section 104B governs the determination of applications for Discretionary activities.

> **104B Determination of applications for discretionary or non-complying activities**
>
> After considering an application for a resource consent for a discretionary activity or non-complying activity, a consent authority—
>
> (a) may grant or refuse the application; and
>
> (b) if it grants the application, may impose conditions under section 108.
>
> Section 104B: inserted, on 1 August 2003, by section 44 of the Resource Management Amendment Act 2003 (2003 No 23).

When considering an application for resource consent, a consent authority must have regard to the matters under section 104 of the Resource Management Act 1991, including any matters relating to Part 2. References to Part 2 in applications are only required where Plans may be deficient in terms of giving effect to the purpose and principles of the Act.

41. Section 104 of the RMA sets out matters to be considered when assessing an application for a resource consent.

> **104 Consideration of applications**
>
> (1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to–
>
> (a) any actual and potential effects on the environment of allowing the activity; and
>
> (ab) any measure proposed or agreed to by the applicant for the purpose of ensuring positive effects on the environment to offset or compensate for any adverse effects on the environment that will or may result from allowing the activity; and
>
> (b) any relevant provisions of—
>
> (i) a national environmental standard:
>
> (ii) other regulations:
>
> (iii) a national policy statement:
>
> (iv) a New Zealand coastal policy statement:
>
> (v) a regional policy statement or proposed regional policy statement:
>
> (vi) a plan or proposed plan; and
>
> (c) any other matter the consent authority considers relevant and reasonably necessary to determine the application.

42. In the determination of this application, those considerations include the actual and potential effects of an activity on the environment, the relevant provisions of the Northland Regional Policy Statement (or other relevant statutory document), the Far North District Plan and any other matter the consent authority considers relevant and reasonably necessary to determine the application.

43. The following assessment addresses all of the relevant considerations under s104 of the RMA.

44. The RMA definition of 'Environment' includes:

> *(a) Ecosystems and the constituent parts, including people and communities; and*
> *(b) All natural and physical resources; and*
> *(c) Amenity values; and*
> *(d) The social, economic, aesthetic, and cultural conditions which affect the matters stated in paragraphs (a) to (c) of this definition or which are affected by those matters.*

45. The definition of 'Environment' includes the concept of a 'future state of the environment' where the environment as it currently exists might be modified by permitted activities and by resource consents that have been granted, and where it appears likely that those consents will be implemented.

46. Section 104(2) of the RMA states that:

> *"when forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if a national environmental standard or the plan permits an activity with that effect."*

47. This is referred to as the "permitted baseline" which includes effects on the environment arising from permitted standards that form part of a District Plan.

48. In the context of this application, the permitted baseline includes the permitted residential activities standards for the Rural Production zone and the relevant district wide rules. Any adverse effects associated with these activities are deemed to be acceptable to the extent that they are permitted and may be disregarded in accordance with Section 104(2).

49. Within the Rural Production Zone and in relation to earthworks, each site is permitted up to 5,000m^3 of cut and fill works to be undertaken. There are five Records of Title subject to the development. Therefore, 25,000m^3 of works can be discounted from the total volume proposed. This is taken into consideration in the effects assessment below.

50. As there are no other activities involved or consents required, the remainder of the works, outside of those requiring regional consents, are permitted activities under the ODP and PDP.

51. The RMA meaning of 'effect' includes:

3 Meaning of effect

In this Act, unless the context otherwise requires, the term **effect** includes—

(a) any positive or adverse effect; and

(b) any temporary or permanent effect; and

(c) any past, present, or future effect; and

(d) any cumulative effect which arises over time or in combination with other effects—

regardless of the scale, intensity, duration, or frequency of the effect, and also includes—

(e) any potential effect of high probability; and

(f) any potential effect of low probability which has a high potential impact.

52. For this application, the potential adverse effects to be assessed are those arising from aspects of the proposal that have been identified as requiring a resource consent in the ***Tables*** above.

Table 6 – Assessment of Effects

Matter	Assessment
Positive Effects	
Positive effects arising from the proposal	The proposal promotes continued investment into the Kaeo Township and community through flood protection / mitigation. It builds on the Stage I works to provide a higher level of service and reduce flooding effects at certain locations. The proposal takes into account climate change considerations to ensure that the works are fit for purpose for future generations. While not a driving factor, the works will have incidental economic and employment benefits for the district and region through the various service providers involved and goods brought.
Earthworks [Derived from Chapter 12.3.7]	
Any effects on the life supporting capacity of the soil	The proposal is likely to result in effects to soils temporarily whilst works are being undertaken. This will include the cut, and fill works to establish the site and construct the flood measures.

	Over time these temporary effects will subside, and during works will be mitigated appropriately through construction management and soil and erosion controls measures. Whilst soils are predominantly Class 3 and subject to protection, the works are defined as 'specified infrastructure'. As such, the proposed development on the land is exempt from the 'avoid' policy [Refer Clause 3.9[j][i]] within the National Policy Statement for Highly Productive Land. On this basis, effects are considered to be less than minor.
Any adverse effects on stormwater flow within the site, and stormwater flow to or from other properties in the vicinity of the site including public roads.	The proposal does not introduce more floodwater or stormwater into the system, it simply moves the confluence downstream. Omaunu Road controls the flow and creates a pseudo detention dam, therefore modelling does not indicate adverse downstream effects. The effects are positive in this respect.
Any reduction in water quality.	Consent conditions will manage this effect appropriately, at the least the applicant will be expected to avoid / mitigate effects as follows: ○ the production of any conspicuous oil or grease films, scums or foams, floatable or suspended materials. ○ A conspicuous change in colour or visual clarity. ○ An emission of objectionable odour. ○ An increase in suspended solids concentration greater than 100 grams per cubic metre.

	Accordingly, adverse effects are no more than minor.
Any loss of visual amenity or loss of natural character of the coastal environment.	The site is not located in the Coastal Environment.
Effects on Outstanding Landscape Features and Outstanding Natural Features (refer to Appendices 1A and 1B in Part 4, and Resource Maps.	These features are not present.
The extent to which the activity may adversely affect areas of significant indigenous vegetation or significant habitats of indigenous fauna.	These features are not present; however the applicant has undertaken a baseline fish survey, and wetland delineation with results pending. The applicant will work with the Council to determine appropriate consent conditions [if any] that arise from the conclusions of these reports.
The extent to which the activity may adversely affect heritage resources, especially archaeological sites.	The works are clear of the registered archaeological site.
The extent to which the activity may adversely affect the cultural and spiritual values of Maori, especially Sites of Cultural Significance to Maori and waahi tapu (as listed in Appendix 1F in Part 4, and shown on the Resource Maps).	Mana whenua are part of the catchment group who have authorized the lodging of consents. Whilst cultural features are not readily apparent where works are proposed, this does not necessarily mean that they are not potentially impacted. To ensure appropriate consideration of this matter, the applicant has met with and requested feedback from local Iwi / Hapu groups for the overall body of works which will support both applications. This feedback will be provided when received.
Any cumulative adverse effects on the environment arising from the activity.	All effects are considered to be temporary in nature, arising at time of works / construction. Following this the proposal will largely have a positive impact as shown in Figure 2, with a modelled reduction in floodwater effects for the

	Kaeo Township. There are no known cumulative adverse effects arising.

The effectiveness of any proposals to avoid, remedy or mitigate any adverse effects arising from the activity.	The following consent conditions are expected for the proposal:
	
	• Pre-start site meeting with relevant authorities and the principal earthworks contractor.
	• Works being undertaken with approved plans.
	• Sediment control measures constructed and maintained in accordance with GD05.
	• Provision of an Erosion and Sediment Control Plan which includes:
	  ○ The expected duration [timing and staging] of earthworks, location of disposal sites, and clean water diversions [if required].
	  ○ Details of all erosion and sediment controls including diagrams and plans.
	  ○ The commencement and completion dates for the implementation of the erosion and sediment controls.
	  ○ Details of surface revegetation.
	  ○ Measures to minimize sediment being deposited on public roads.
	  ○ Measures to ensure dust discharge from the activity does not create a nuisance.
	  ○ Measures to prevent spillage of fuel, oil, and other contaminants.
	  ○ Means of ensuring contractor compliance with the Plan.
	  ○ Name and contact details of persons responsible for monitoring and maintaining all erosion and sediment control measures.
	  ○ Contingency for the potential effects of large/high intensity rain storm events.

	• Provision of a stabilized construction entrance to the site.
	• Works not being undertaken from 1 May to 30 September unless approved.
	• Management of stormwater away from the earthworks areas and capable of managing a 1 in 20 year event if drains / cut offs are used.
	• Management of water quality by avoiding the effects of:
	  ○ the production of any conspicuous oil or grease films, scums or foams, floatable or suspended materials.
	  ○ A conspicuous change in colour or visual clarity.
	  ○ An emission of objectionable odour.
	  ○ An increase in suspended solids concentration greater than 100 grams per cubic metre.
	• Section 128 review condition to deal with any adverse effects on the environment that may arise from the exercise of the consent.
	
	Through implementation of these conditions, effects will be no more than minor.

The ability to monitor the activity and to take remedial action if necessary;	Consent conditions will provide appropriate avenues for works to be monitored as they are completed.
The criteria in Section 11.20 Development Plans in Part 2.	Not relevant.
The criteria (p) in Section 17.2.7 National Grid Yard.	Not relevant.
Effects to Persons	
Potential effects to persons arising from the proposal.	There are no affected customary rights groups or marine title groups. The applicant is going through legal processes to acquire land for the proposed works. This will ensure that works will be undertaken

	entirely on land owned / managed by the applicant. The flood mitigation works, when subjected to the conditions outlined above, will have only temporary effects to others in the surrounds. These temporary effects are considered less than minor and all manageable through consent conditions.

53. Overall, it is considered that the actual and potential adverse effects of the proposal would be less than minor.

6.0 RELEVANT PLAN CONSIDERATIONS

54. Section 104 (1)(b) requires that regard be given to the relevant provisions of:
    - A national environmental standard;
    - Other regulations;
    - A national policy statement;
    - A New Zealand coastal policy statement;
    - A regional policy statement or proposed regional policy statement;
    - A plan or proposed plan

55. There are no applicable National Environmental Standards. It is concluded that the site is not a HAIL site and that the National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health does not apply to this proposal.

56. Furthermore, the activity is not affected by the NES – Freshwater as the proposal is considered to be for 'specified infrastructure'.

57. In terms of relevant National Policy Statements, the NPS for Highly Productive Land does apply, but as above the proposal is for 'specified infrastructure' which provides an exemption for such activities. The NPS for Indigenous Biodiversity has no rules so is not relevant.

58. The New Zealand Coastal Policy Statement is not relevant as the site is not mapped within the environment as per the Regional Policy Statement for Northland.

6.1 Northland Regional Policy Statement

59. The subject site is within the Northland region and is subject to the governing objectives and policies of the operative Northland Regional Policy Statement (operative May 2016). It is concluded that the proposal is consistent with the aims and intent of this document.

Table 7 – Assessment of the RPS

Matter	Assessment
Integrated Catchment Management	Not relevant
Region Wide Water Quality	Mitigation measures are proposed to ensure that water quality is not adversely affected and maintained.
Ecological Flows and Water Quality	No water take is proposed.
Indigenous Ecosystems & Biodiversity	There are no SNAs at the development location
Enabling Economic Wellbeing	This is incidental to the main purpose of the development. There will be economic exchanges as a result of the proposal.
Economic Activities – Reverse Sensitivity and Sterilization	The proposal does not sterilise any other activities.
Regionally Significant Infrastructure	The proposal meets the definition of regionally significant infrastructure. The proposal is positive for the region of Northland and the Kaeo Township.
Efficient and Effective Infrastructure	The proposal seeks to build on already completed flood control infrastructure and Kaeo.
Security of Energy Supply	Not relevant.
Use and Allocation of Common Resources	Not relevant.
Regional Form	Not relevant.
Tangata Whenua Role in Decision Making	Tangata whenua have been involved in the project. There further views will be provided in the form of feedback and through continued discussion in the committee meetings.
Natural Hazard Risk	The entire proposal is targeted to reduce natural hazard [flooding] risk for Kaeo.
Natural Character, Outstanding Natural Features, Outstanding Natural Landscapes and Historic Heritage	These features are not located at the development site.

6.2 FNDC Operative District Plan

60. The relevant objectives are those associated with the Coastal Environment, General Coastal Zone and Subdivision Chapter of the ODP. These are addressed below.

Table 8 – Rural Environment Assessment

Objectives	**Assessment**
8.3.1 To promote the sustainable management of natural and physical resources of the rural environment.	This is considered to be met, particularly in relation to wellbeing of the Kaeo Township through reduced flooding impacts.
8.3.2 To ensure that the life supporting capacity of soils is not compromised by inappropriate subdivision, use or development.	The proposal is considered to be appropriate in that specified infrastructure is exempt from the consideration of high class soils.
8.3.3 To avoid, remedy or mitigate the adverse and cumulative effects of activities on the rural environment.	Mitigation approaches are outlined in earlier tables.
8.3.4 To protect areas of significant indigenous vegetation and significant habitats of indigenous fauna.	These are not readily apparent on the site.
8.3.5 To protect outstanding natural features and landscapes.	Not relevant.
8.3.6 To avoid actual and potential conflicts between land use activities in the rural environment.	The proposal does not have a conflict with the surrounding uses.
8.3.7 To promote the maintenance and enhancement of amenity values of the rural environment to a level that is consistent with the productive intent of the zone.	Flood protection works such as that proposed does not result in an amenity that is not foreseen within the Rural Environment.
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.	Not relevant.
8.3.9 To enable rural production activities to be undertaken in the rural environment.	The proposal is not strictly a rural production activity, but has a function need to be located where it has to limit the effects of flooding.
8.3.10 To enable the activities compatible with the amenity values of rural areas and rural production activities to establish in the rural environment.	The activity is considered to be compatible.
Policies	**Assessment**
8.4.1 That activities which will contribute to the sustainable management of the natural and physical resources of the rural	Refer 8.3.9 above.

environment are enabled to locate in that environment.	
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 and rural productive activities are able to continue.	The proposal is for a community approach to flood management, soils aren't impacted to a level considered inappropriate as the works are considered to be for 'specified infrastructure'. Rural production activities can continue to occur.
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.	This is considered to be met.
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.	These features are not present.
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).	Noted
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.	These are not readily apparent on the site.
8.4.7 That Plan provisions encourage the efficient use and development of natural and physical resources, including consideration of demands upon infrastructure.	Noted
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	The intensity, scale, and type are considered to be appropriate in relation to those matters.

amenity value of the rural environment, and where appropriate on natural character of the coastal environment, are avoided, remedied or mitigated. Consideration will further be given to the functional need for the activity to be within rural environment and the potential cumulative effects of non-farming activities.	

Table 9 – Rural Production Zone Assessment

Objectives	**Assessment**
8.6.3.1 To promote the sustainable management of natural and physical resources in the Rural Production Zone.	Addressed in 8.3.1 above.
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.	The proposal is considered to represent an efficient use of land.
8.6.3.3 To promote the maintenance and enhancement of the amenity values of the Rural Production Zone to a level that is consistent with the productive intent of the zone..	Addressed in 8.3.7 above.
8.6.3.4 To promote the protection of significant natural values of the Rural Production Zone.	There are no known significant natural values that apply to the site.
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.	Not relevant.
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.	Addressed in 8.4.5 above.
8.6.3.7 To avoid remedy or mitigate the adverse effects of incompatible use or development on natural and physical resources.	Addressed in 8.4.5 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 rural environments.	The proposal is considered to have a functional need to be located in the rural environment.

8.6.3.9 To enable rural production activities to be undertaken in the zone.	The proposal attains this objective.
Policies	**Assessment**
8.6.4.1 That the Rural Production Zone enables farming and rural production activities, as well as a wide range of activities, subject to the need to ensure that any adverse effects on the environment, including any reverse sensitivity effects, resulting from these activities are avoided, remedied or mitigated and are not to the detriment of rural productivity.	Mitigation measures are proposed which meet the policy.
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.	There are no known off site effects resulting.
8.6.4.3 That land management practices that avoid, remedy or mitigate adverse effects on natural and physical resources be encouraged.	GD05 measures proposed meet the intent of this policy.
8.6.4.4 That the type, scale and intensity of development allowed shall have regard to the maintenance and enhancement of the amenity values of the Rural Production Zone to a level that is consistent with the productive intent of the zone.	Address above.
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.	The proposal is considered to represent an efficient use of land.
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.	Not relevant.
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.	There are no direct conflicting uses in the surrounds.
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	There are no direct conflicting uses in the surrounds.
8.6.4.9 That activities be discouraged from locating where they are sensitive to the effects	There are no direct conflicting uses in the

of or may compromise the continued operation of lawfully established existing activities in the Rural Production zone and in neighbouring zones.	surrounds.

Table 10 – Soils & Minerals Assessment

Objectives	**Assessment**
12.3.3.1 To achieve an integrated approach to the responsibilities of the Northland Regional Council and Far North District Council in respect to the management of adverse effects arising from soil excavation and filling, and minerals extraction.	The proposal seeks approvals from both authorities.
12.3.3.2 To maintain the life supporting capacity of the soils of the District.	This is considered achieved as all soil will remain on site and the ultimate end use seeks to utilise soils hazard mitigation.
12.3.3.3 To avoid, remedy or mitigate adverse effects associated with soil excavation or filling.	Refer to earlier tables for mitigation measures proposed.
12.3.3.4 To enable the efficient extraction of minerals whilst avoiding, remedying or mitigating any adverse environmental effects that may arise from this activity.	Not relevant.
Policies	**Assessment**
12.3.4.1 That the adverse effects of soil erosion are avoided, remedied or mitigated.	Refer to earlier tables for mitigation measures proposed.
12.3.4.2 That the development of buildings or impermeable surfaces in rural areas be managed so as to minimise adverse effects on the life supporting capacity of the soil.	Not relevant.
12.3.4.3 That where practicable, activities associated with soil and mineral extraction be located away from areas where that activity would pose a significant risk of adverse effects to the environment and/or to human health. Such areas may include those where: (a) there are people living in close proximity to the site or land in the vicinity of the site is zoned Residential, Rural Living, Coastal Residential or Coastal Living; (b) there are significant ecological, landscape, cultural, spiritual or heritage values;	The proposal is not for extraction.

(c) there is a potential for adverse effects on lakes, rivers, wetlands and the coastline; (d) natural hazards may pose unacceptable risks.	
12.3.4.4 That soil excavation and filling, and mineral extraction activities be designed, constructed and operated to avoid, remedy or mitigate adverse effects on people and the environment	Refer to earlier tables for mitigation measures proposed.
12.3.4.5 That soil conservation be promoted.	Soils will remain on site, conserved for future use.
12.3.4.6 That mining tailings that contain toxic or bio-accumulative chemicals are contained in such a way that adverse effects on the environment are avoided.	Not relevant.
12.3.4.7 That applications for discretionary activity consent involving mining and quarrying be accompanied by a Development Plan.	Not relevant.
12.3.4.8 That as part of a Development Plan rehabilitation programmes for areas no longer capable of being actively mined or quarried may be required.	Not relevant.
12.3.4.9 That soil excavation and filling in the National Grid Yard are managed to ensure the stability of National Grid support structures and the minimum ground to conductor clearances are maintained.	Not relevant.
12.3.4.10 To ensure that soil excavation and filling are managed appropriately, normal rural practices as defined in Chapter 3 will not be exempt when determining compliance with rules relating to earthworks, except if the permitted standards in the National Grid Yard specify that activity is exempt.	Not relevant.

61. Overall, it is considered that the proposed dwelling development would not be contrary to any applicable District Plan objective or policy.

6.4 FNDC Proposed District Plan Objectives and Policies

62. The relevant objectives are those associated with the Rural Production Zone of the PDP. These are addressed below.

Table 11 – Rural Production Zone

Matter	Assessment

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.	Rural production activities are likely to eventuate on the land subject to the works and the wider surrounds.
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.	The proposal is compatible and has a functional need to locate where it is proposed to provide positive effects to the Kaeo Township.
RPROZ-O3 - Land use and subdivision in the Rural Production zone: protects highly productive land from sterilisation and enables it to be used for more productive forms of primary production; protects primary production activities from reverse sensitivity effects that may constrain their effective and efficient operation; does not compromise the use of land for farming activities, particularly on highly productive land; does not exacerbate any natural hazards; and is able to be serviced by on-site infrastructure.	The proposal is for 'specified infrastructure' so has a pathway to be exempt from consideration of soils. Reverse sensitivity effects are not known to arise from the proposed works. Farming is not compromised, but is unlikely to occur. The proposal seeks to reduce natural hazard impacts. The proposal does not need servicing.
RPROZ-O4 - The rural character and amenity associated with a rural working environment is maintained.	This is not expected to change and stop banks and river realignments are expected within this zone.
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.	Not proposed.
RPROZ-P2 - Ensure the Rural Production zone provides for activities that require a rural location by: enabling primary production activities as the predominant land use; enabling a range of compatible activities that support primary production activities,	Noted.

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.	No sensitive activities are proposed.
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 predominance of primary production activities; low density development with generally low site coverage of buildings or structures; typical adverse effects such as odour, noise and dust associated with a rural working environment; and a diverse range of rural environments, rural character and amenity values throughout the District.	This is considered to be met.
RPROZ-P5 - Avoid land use that: is incompatible with the purpose, character and amenity of the Rural Production zone; does not have a functional need to locate in the Rural Production zone and is more appropriately located in another zone; would result in the loss of productive capacity of highly productive land; would exacerbate natural hazards; and cannot provide appropriate on-site infrastructure.	The proposal is not strictly in line with the policy as soils will be lost, however this is promoted through the NPS.
RPROZ-P6 - Avoid subdivision that:	Not relevant.

results in the loss of highly productive land for use by farming activities; fragments land into parcel sizes that are no longer able to support farming activities, taking into account: the type of farming proposed; and whether smaller land parcels can support more productive forms of farming due to the presence of highly productive land. 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: whether the proposal will increase production potential in the zone; whether the activity relies on the productive nature of the soil; consistency with the scale and character of the rural environment; location, scale and design of buildings or structures; for subdivision or non-primary production activities: scale and compatibility with rural activities; potential reverse sensitivity effects on primary production activities and existing infrastructure; the potential for loss of highly productive land, land sterilisation or fragmentation at zone interfaces:	These matters are somewhat related to the proposal. However, overall the proposal is likely to meet most of these requirements and have been assessed earlier.

any setbacks, fencing, screening or landscaping required to address potential conflicts; the extent to which adverse effects on adjoining or surrounding sites are mitigated and internalised within the site as far as practicable; 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; the adequacy of roading infrastructure to service the proposed activity; Any adverse effects on historic heritage and cultural values, natural features and landscapes or indigenous biodiversity; Any historical, spiritual, or cultural association held by tangata whenua, with regard to the matters set out in Policy TW-P6.	

6.4 Proposed Far North District Plan Objectives & Policies & Weighting

63. Section 88A(2) provides that "any plan or proposed plan which exists when the application is considered must be had regard to in accordance with section 104(1)(b)." This requires applications to be assessed under both the operative and proposed objective and policy frameworks from the date of notification of the proposed district plan.

64. In the event of differing directives between objective and policy frameworks, it is well established by case law that the weight to be given to a proposed district plan depends on what stage the relevant provisions have reached, the weight generally being greater as a proposed plan move through the notification and hearing process. In Keystone Ridge Ltd v Auckland City Council3, the High Court held that the extent to which the provisions of a proposed plan are relevant should be considered on a case by case basis and might include:

- The extent (if any) to which the proposed measure might have been exposed to testing and independent decision making.
- Circumstances of injustice; and
- The extent to which a new measure, or the absence of one, might implement a coherent pattern of objectives and policies in a plan.

65. In my view the PDP has not gone through the sufficient process to allow a considered view of the objectives and policies for the Rural Production Zone with however this has been provided. The assessment of the relevant objectives and policies from the ODP and the PDP has concluded these can be meet by the proposal.

7.0 SECTION 5 - PURPOSE OF THE ACT

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

67. It is considered that proposal represents Part 2, Section 5 of the Act.

7.1 Section 6 - Matters of National Importance

68. In achieving the purpose of the Act, a range of matters are required to be recognised and provided for. This includes:

> a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:
> b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:
> c) the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:
> d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:
> e) the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu, and other taonga:
> f) the protection of historic heritage from inappropriate subdivision, use, and development:
> g) the protection of protected customary rights:
> h) the management of significant risks from natural hazards.

69. In context, the relevant items to the proposal and have been recognised and provided for.

7.2 Section 7 - Other Matters

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

71. These matters have been given particular regard through the design of the proposal.

7.3 Section 8 - Treaty of Waitangi

72. The Far North District Council is required to take into account the principles of the Treaty of Waitangi when processing this consent. This consent application may be sent to local Iwi and hapū who may have an interest in this application.

8.0 CONCLUSION

73. A Discretionary Activity resource consent is sought from the Far North District Council to carry out the land use and subdivision activity.

74. The proposal is considered to result in less than minor effects on the environment and through assessment, there are no minor or more than minor effects to persons.

75. The proposal is consistent with the objectives and policies of the Far North District Plan, the Regional Policy Statement for Northland, and achieves the purpose of the Act.

76. Relevant NPS' and NES' have been considered with the proposal finding consistency with their general aims and intent.

Steven Sanson
Consultant Planner

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	**NA2D/6**
Land Registration District	**North Auckland**
Date Issued	21 November 1963

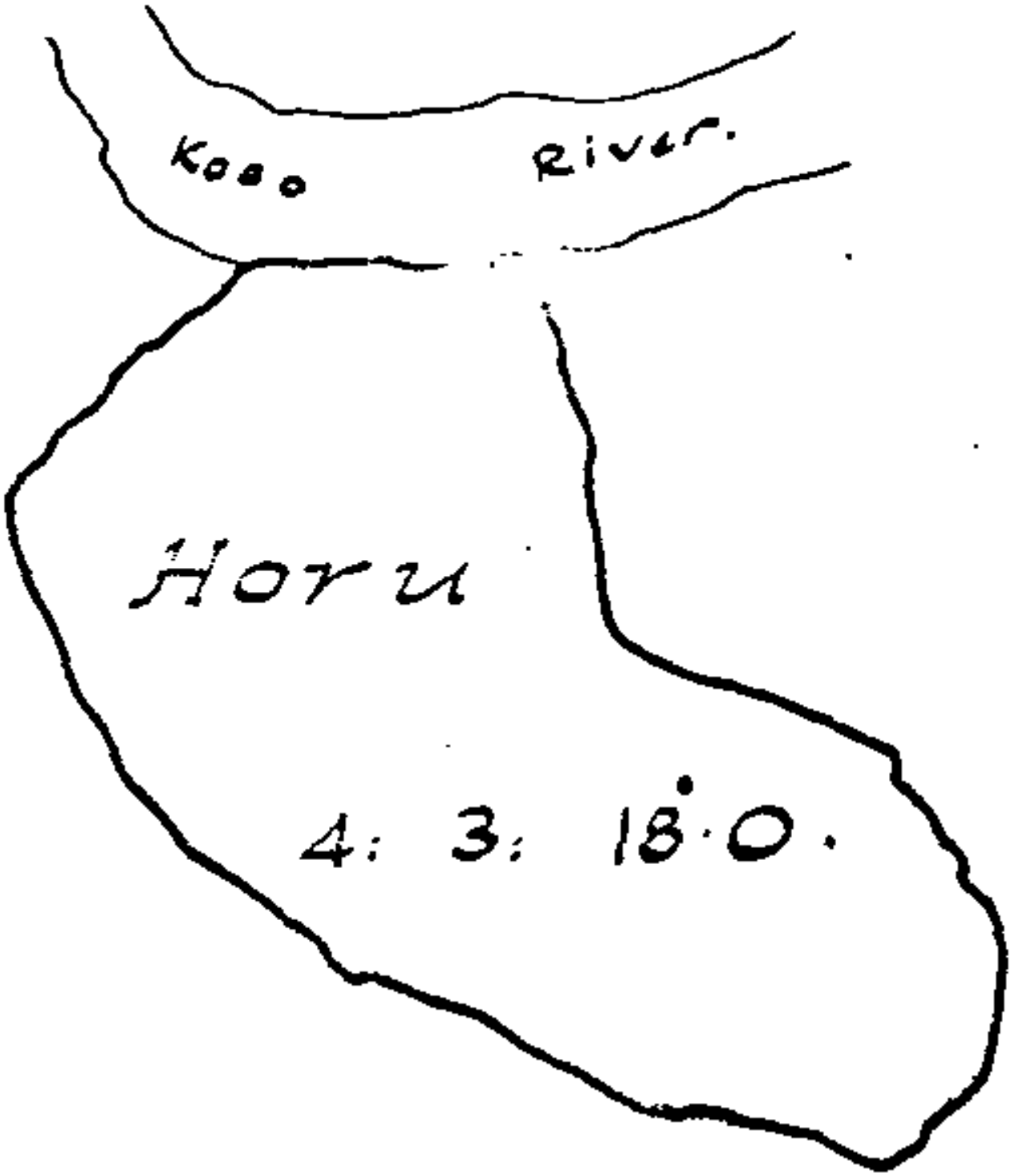
Prior References
NA3/142

Estate	Fee Simple
Area	1.9678 hectares more or less
Legal Description	Horu Block

Registered Owners
J.L. Hayes & Sons Limited

Interests

999831.1 Mortgage to ANZ Banking Group (New Zealand) Limited - 9.10.1981 at 12.25 pm


Kooo
River.
Horu
4: 3: 18·0·

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Limited as to Parcels

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

R.W. Muir
Registrar-General of Land

Identifier	**NA4D/903**
Land Registration District	**North Auckland**
Date Issued	27 November 1964

Prior References
NA518/197

Estate	Fee Simple
Area	7335 square metres more or less
Legal Description	Part Snowdens Grant
Registered Owners	

Third View Investments 2014 Limited

Interests

Subject to a right of way over part created by Conveyance 123933 (R42/452)

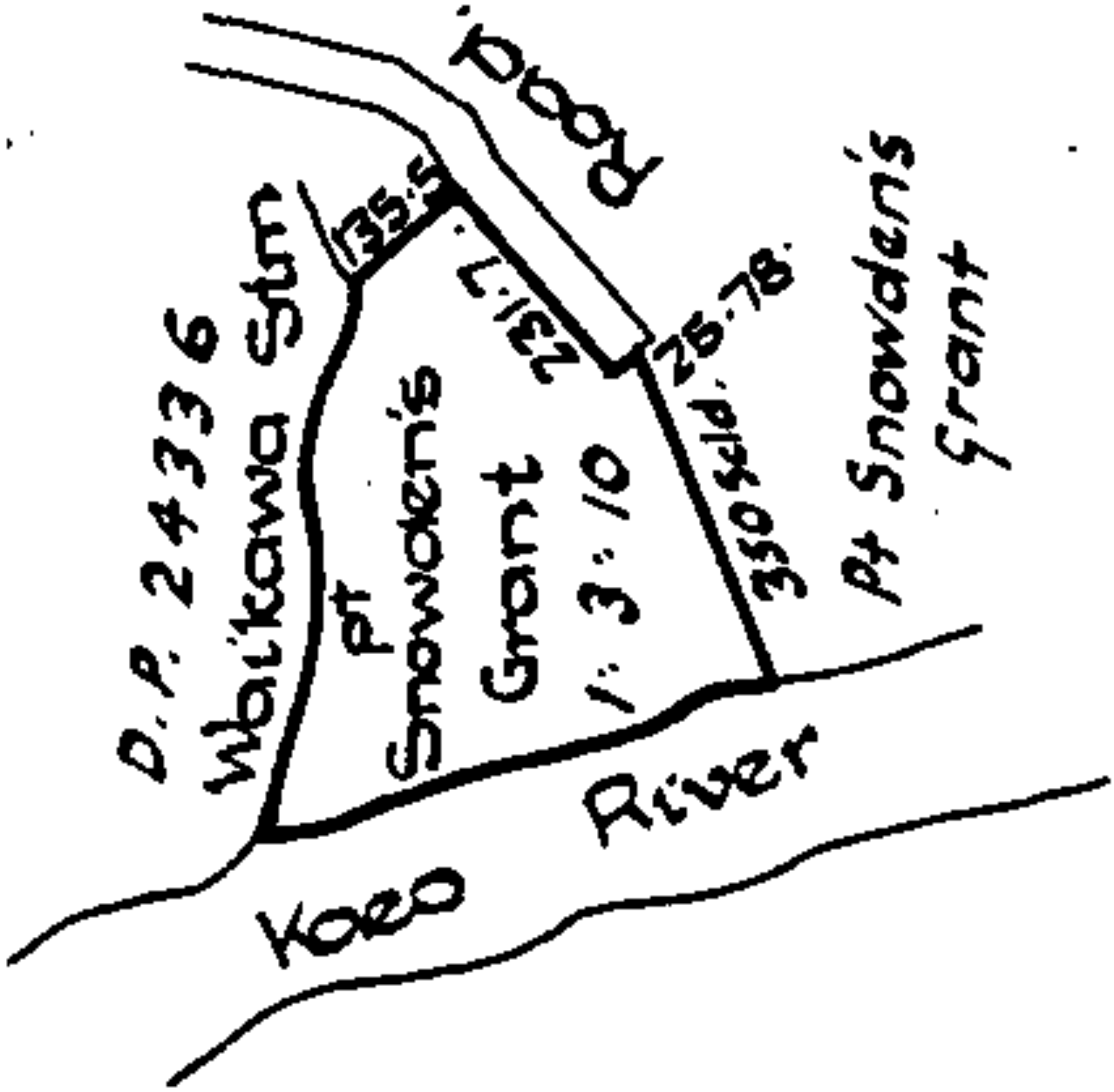
Subject to a right of way over part created by Conveyance 144047 (R60/493)

Subject to a right of way over part created by Conveyance 196787 (R159/487)

Subject to a water supply easement over part marked A on DP 375063 created by Easement Instrument 7064882.4 - 11.10.2006 at 9:00 am

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked N, stop bank over part marked B on SO 459897 and right of way in favour of Northland Regional Council created by Easement Instrument 9482600.3 - 31.10.2013 at 9:35 am


Road
D.P. 24336
Waikawa Stm
Pt Snowden's Grant
1: 3: 10
Pt Snowden's Grant
Koeo River

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Limited as to Parcels

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

R.W. Muir
Registrar-General
of Land

Identifier	**NA48C/581**
Land Registration District	**North Auckland**
Date Issued	11 December 1980

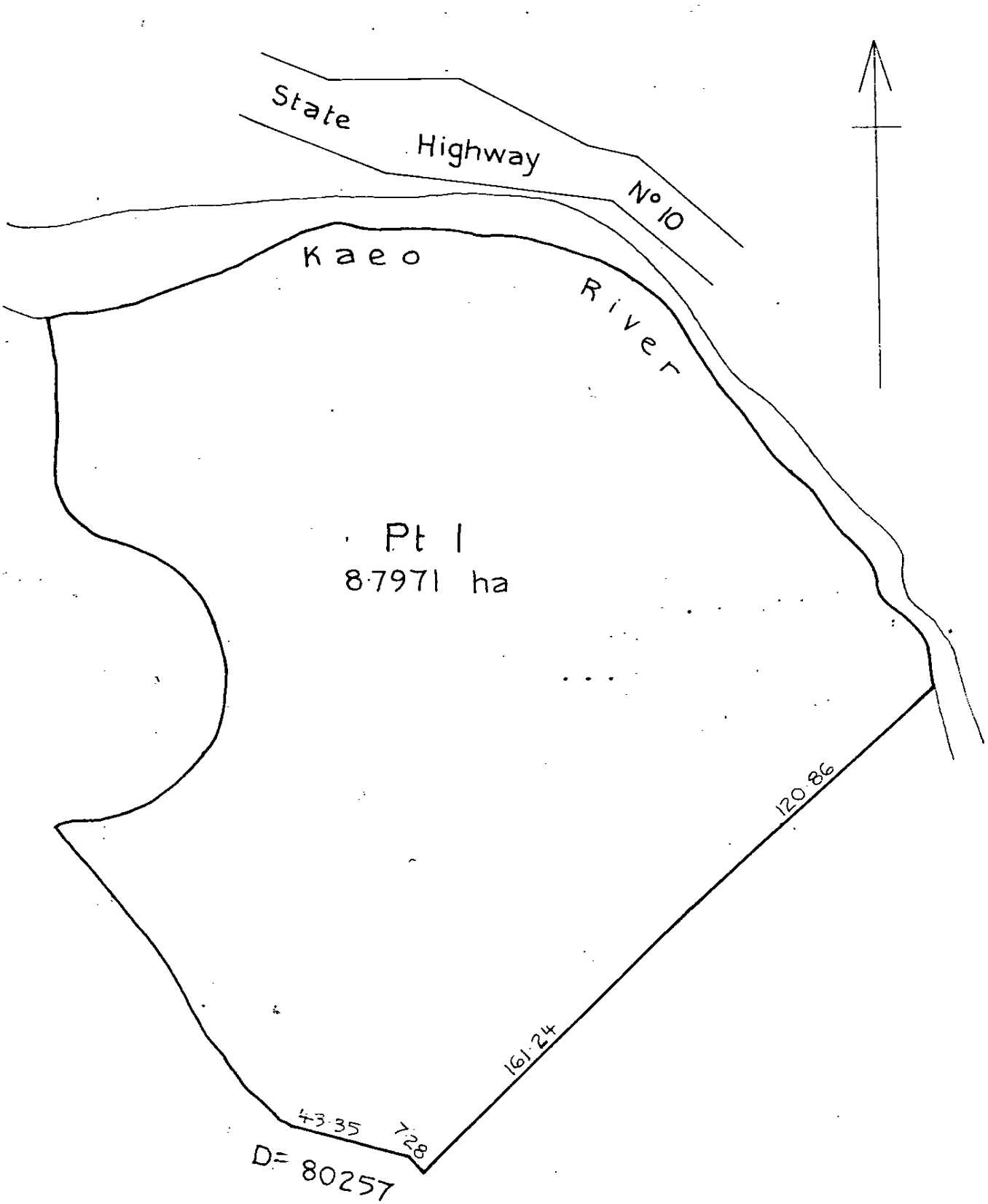
Prior References
NA502/94

Estate	Fee Simple
Area	8.7971 hectares more or less
Legal Description	Part Allotment 1 Parish of Kaeo
Registered Owners	

J. L. Hayes & Sons Limited

Interests

999831 Mortgage to ANZ Banking Group (New Zealand) Limited - 9.10.1981 at 12.25 pm


State
Highway
No 10
Kaeo
River
Pt 1
8·7971 ha
120·86
161·24
43·35
7·28
D= 80257

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Limited as to Parcels

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

R.W. Muir
Registrar-General of Land

Identifier	**NA502/92**
Land Registration District	**North Auckland**
Date Issued	06 November 1925

Prior References
DI 1 H. 834

Estate	Fee Simple
Area	83.7699 hectares more or less
Legal Description	Part Allotment 1 Parish of Kaeo
Registered Owners	

Leslie Kelman Jackson and Jeanette Yvonne Jackson

Interests

579204 Transfer being a grant of water easement over Lots 1, 2 & 4 Plan 36214 appurtenant to the land in CT NA578/197 Henry Robert Leslie to The Public Trustee - produced 9.1.1953 at 12.00 pm Term 10 years commencing from 1.3.1947

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked R on SO 459897 in favour of Northland Regional Council created by Easement Instrument 9482600.1 - 31.10.2013 at 9:35 am

Subject to a right (in gross) to convey electricity and telecommunications over part marked B on DP 535420 in favour of Top Energy Limited created by Easement Instrument 11506097.2 - 3.9.2019 at 12:16 pm


Kaoo River
DITCH
Stn
Pt. Allot 1
207 . 0 . 0
Sm
100
1420
305
300
530
1840
1930
1588
215
860
Stn
See
LT Plan 23049

RECORD OF TITLE
UNDER LAND TRANSFER ACT 2017
FREEHOLD
Limited as to Parcels

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

R.W. Muir
Registrar-General of Land

Identifier	**NA1089/79**
Land Registration District	**North Auckland**
Date Issued	20 October 1953

Prior References
NA518/201

Estate	Fee Simple
Area	2.2915 hectares more or less
Legal Description	Part Snowdens Grant
Registered Owners	

Leslie Kelman Jackson and Jeanette Yvonne Jackson

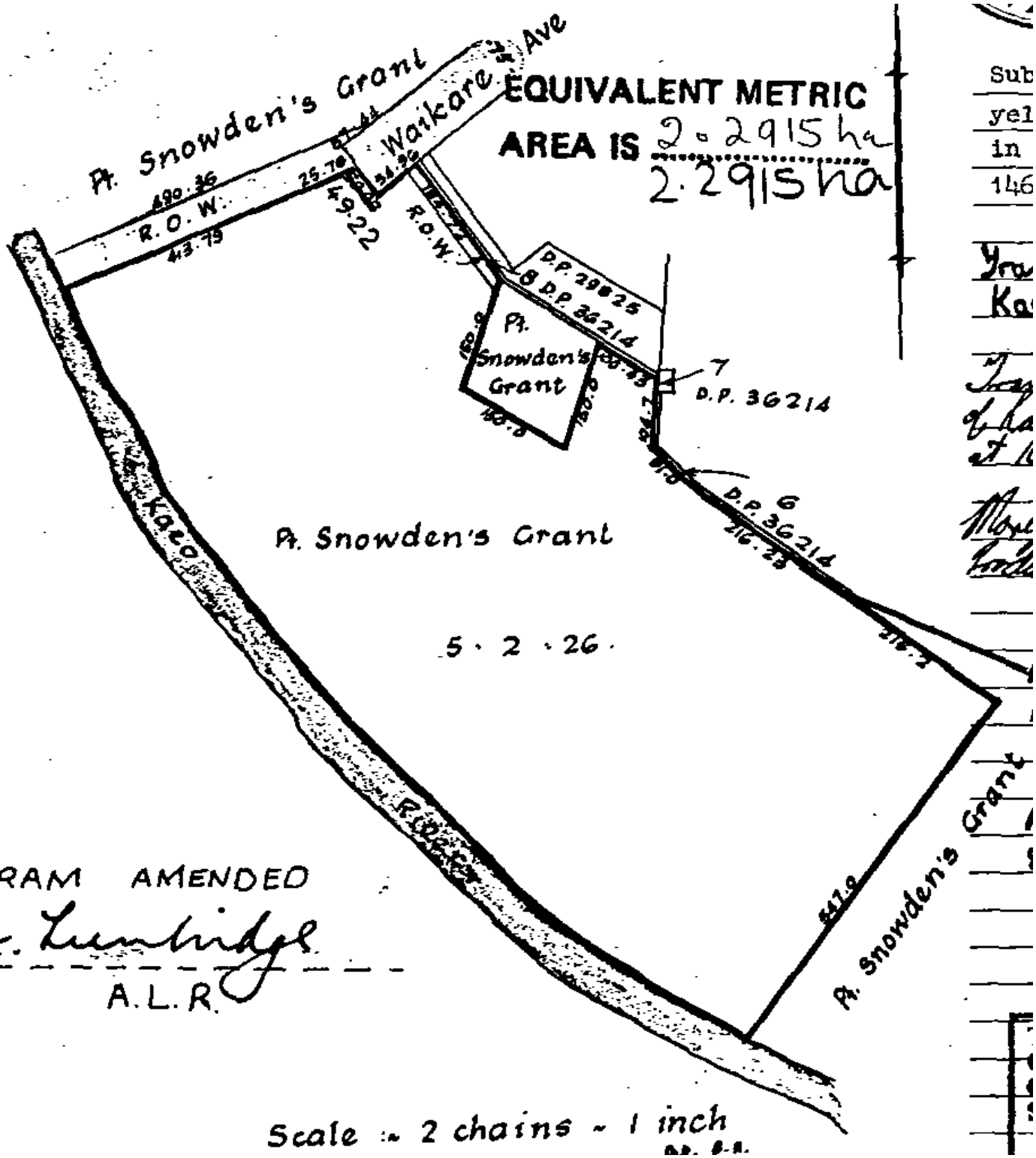
Interests

Subject to a right of way over part created by Conveyance 146201 (R.55/895)

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked M and stopbank (flow path) over part marked C on SO 459897 in favour of Northland Regional Council created by Easement Instrument 9482600.1 - 31.10.2013 at 9:35 am

10148434.1 Notification that a building consent issued pursuant to Section 72 Building Act 2004 identifies inundation as a natural hazard - 7.8.2015 at 7:00 am


Pt. Snowden's Grant
Waikare Ave
EQUIVALENT METRIC
AREA IS 2.2915 ha
2.2915 ha
490.36
R.O.W.
43.79
25.70
49.22
R.O.W.
D.P. 29825
& D.P. 36214
Pt. Snowden's Grant
D.P. 36214
D.P. 36214
Pt. Snowden's Grant
5 · 2 · 26 ·
Kaeo
R.O.W.
Pt. Snowden's Grant
SRAM AMENDED
A.L.R
Scale :- 2 chains - 1 inch

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 **NA35B/601**

Land Registration District **North Auckland**

Date Issued 09 December 1976

Prior References

NA36D/1145 NA36D/1146 NA480/113

Estate Fee Simple

Area 3.7827 hectares more or less

Legal Description Lot 7-8 Deposited Plan 80257 and Part Allotment 1 Deposited Plan 21540

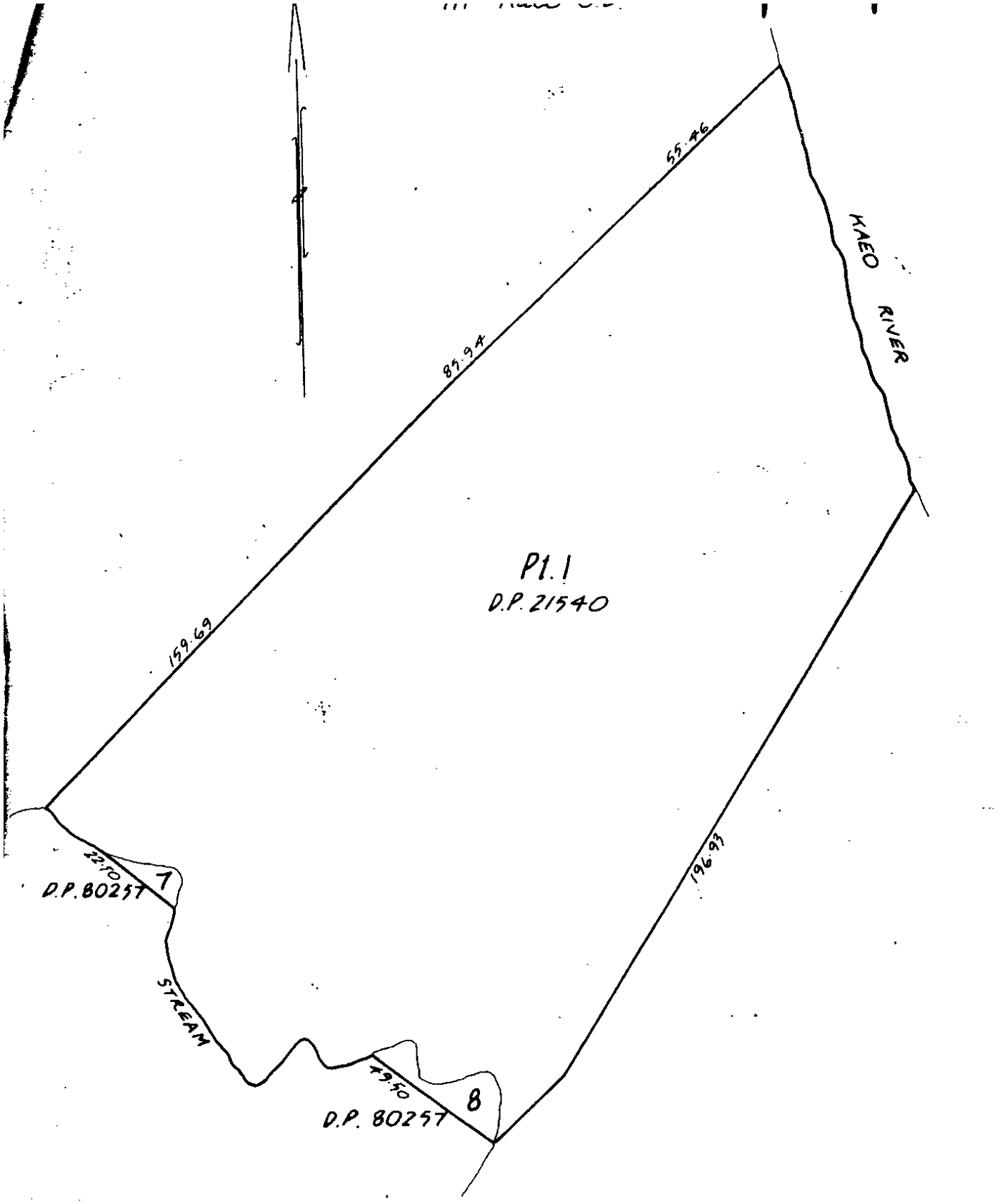
Registered Owners

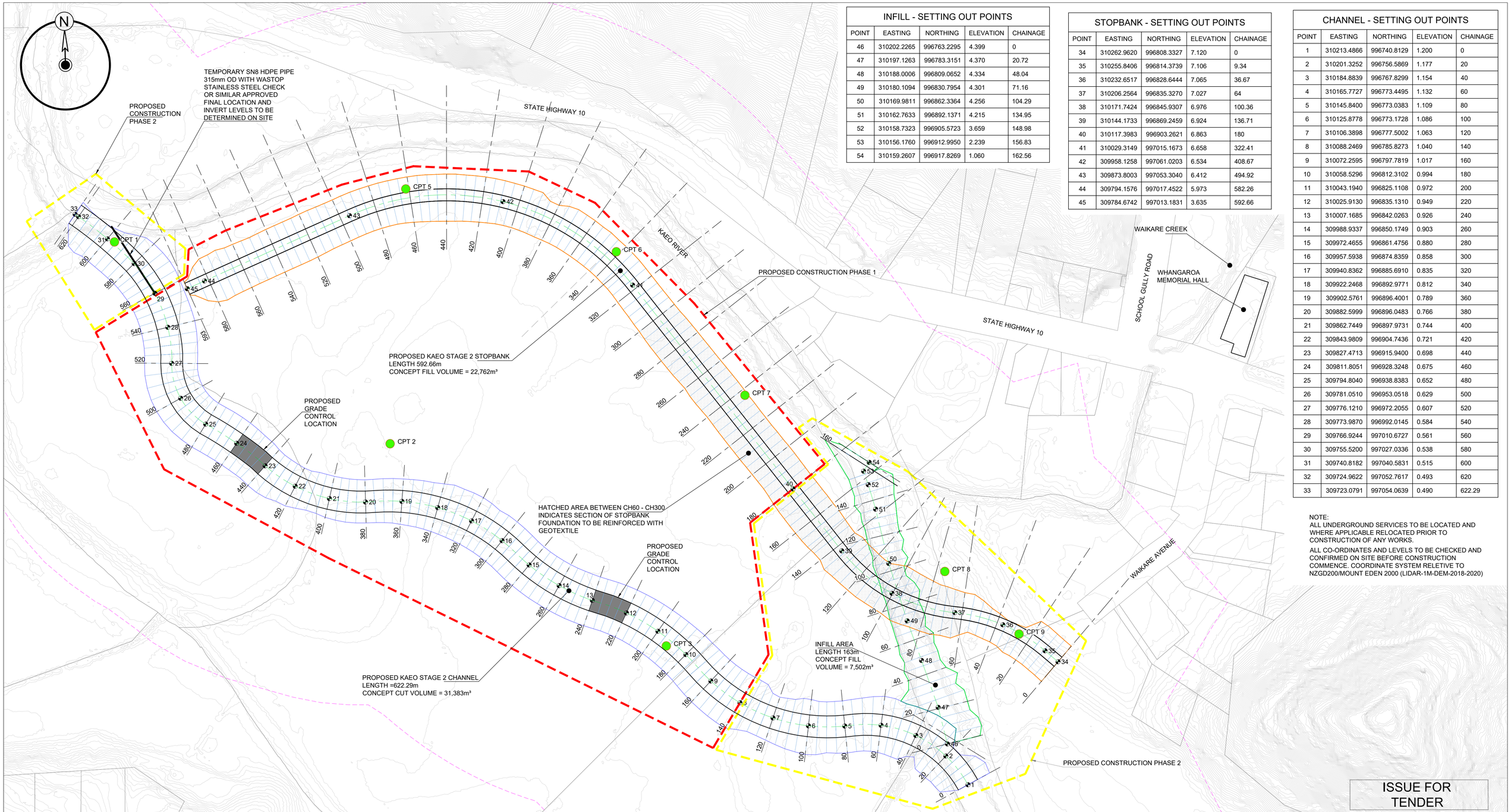
Leslie Kelman Jackson and Jeanette Yvonne Jackson

Interests

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked O, P and Q on SO 459897 in favour of Northland Regional Council created by Easement Instrument 9482600.1 - 31.10.2013 at 9:35 am


55.46
KAEO RIVER
89.94
P1.1
D.P. 21540
159.69
196.93
22.50
D.P. 80257
1
STREAM
49.50
8
D.P. 80257



INFILL - SETTING OUT POINTS

POINT	EASTING	NORTHING	ELEVATION	CHAINAGE
46	310202.2265	996763.2295	4.399	0
47	310197.1263	996783.3151	4.370	20.72
48	310188.0006	996809.0652	4.334	48.04
49	310180.1094	996830.7954	4.301	71.16
50	310169.9811	996862.3364	4.256	104.29
51	310162.7633	996892.1371	4.215	134.95
52	310158.7323	996905.5723	3.659	148.98
53	310156.1760	996912.9950	2.239	156.83
54	310159.2607	996917.8269	1.060	162.56

STOPBANK - SETTING OUT POINTS

POINT	EASTING	NORTHING	ELEVATION	CHAINAGE
34	310262.9620	996808.3327	7.120	0
35	310255.8406	996814.3739	7.106	9.34
36	310232.6517	996828.6444	7.065	36.67
37	310206.2564	996835.3270	7.027	64
38	310171.7424	996845.9307	6.976	100.36
39	310144.1733	996869.2459	6.924	136.71
40	310117.3983	996903.2621	6.863	180
41	310029.3149	997015.1673	6.658	322.41
42	309958.1258	997061.0203	6.534	408.67
43	309873.8003	997053.3040	6.412	494.92
44	309794.1576	997017.4522	5.973	582.26
45	309784.6742	997013.1831	3.635	592.66

CHANNEL - SETTING OUT POINTS

POINT	EASTING	NORTHING	ELEVATION	CHAINAGE
1	310213.4866	996740.8129	1.200	0
2	310201.3252	996756.5869	1.177	20
3	310184.8839	996767.8299	1.154	40
4	310165.7727	996773.4495	1.132	60
5	310145.8400	996773.0383	1.109	80
6	310125.8778	996773.1728	1.086	100
7	310106.3898	996777.5002	1.063	120
8	310088.2469	996785.8273	1.040	140
9	310072.2595	996797.7819	1.017	160
10	310058.5296	996812.3102	0.994	180
11	310043.1940	996825.1108	0.972	200
12	310025.9130	996835.1310	0.949	220
13	310007.1685	996842.0263	0.926	240
14	309988.9337	996850.1749	0.903	260
15	309972.4655	996861.4756	0.880	280
16	309957.5938	996874.8359	0.858	300
17	309940.8362	996885.6910	0.835	320
18	309922.2468	996892.9771	0.812	340
19	309902.5761	996896.4001	0.789	360
20	309882.5999	996896.0483	0.766	380
21	309862.7449	996897.9731	0.744	400
22	309843.9809	996904.7436	0.721	420
23	309827.4713	996915.9400	0.698	440
24	309811.8051	996928.3248	0.675	460
25	309794.8040	996938.8383	0.652	480
26	309781.0510	996953.0518	0.629	500
27	309776.1210	996972.2055	0.607	520
28	309773.9870	996992.0145	0.584	540
29	309766.9244	997010.6727	0.561	560
30	309755.5200	997027.0336	0.538	580
31	309740.8182	997040.5831	0.515	600
32	309724.9622	997052.7617	0.493	620
33	309723.0791	997054.0639	0.490	622.29

NOTE:
ALL UNDERGROUND SERVICES TO BE LOCATED AND WHERE APPLICABLE RELOCATED PRIOR TO CONSTRUCTION OF ANY WORKS.

ALL CO-ORDINATES AND LEVELS TO BE CHECKED AND CONFIRMED ON SITE BEFORE CONSTRUCTION COMMENCE. COORDINATE SYSTEM RELETIVE TO NZGD200/MOUNT EDEN 2000 (LIDAR-1M-DEM-2018-2020)

ISSUE FOR TENDER

KAEO PHASE 2 FLOOD MITIGATION PLAN LAYOUT

SCALE 1:1000

TRINEKEL CIVIL ENGINEERING SOLUTIONS

	NAME	DATE
DRAWN	MS	20/12/2024
CHECKED	KK	20/12/2024
RESPONSIBLE ENGINEER	KK	20/12/2024
LEAD DISCIPLINE ENGINEER		
PROCESS ENGINEER	.	.
ENGINEERING MANANGER	.	.
PROFESSIONAL DISC. ENGINEER		
REGISTRATION NUMBER	.	
SCALE	AS SHOWN	

CLIENT: NORTHLAND REGIONAL COUNCIL

PROJECT: KAEO PHASE 2 FLOOD MITIGATION

TITLE: KAEO PHASE 2 FLOOD MITIGATION PLAN LAYOUT

A1

PROJECT					DOC			PBS/WBS/ AREA			DISC	SEQUENCE				REVISION	
0	0	5	5	0	0	1	0	S	W	C	0	0	0	1	T	0	

REFERENCES
0055-001-0SW-C-0000 DRAWING INDEX
CAD FILE NAME:

REFERENCES
PLOT DATE: 20/12/2024 12:36:06 am

REVISIONS

NO	DATE	DESCRIPTION	BY	CHK	RESP ENG	LD ENG	PRO ENG	ENG MAN	PROF ENG
T0	20/12/24	ISSUED FOR TENDER	MS	KK	.	KK	.	.	KK
P1	3/12/24	ALIGNMENT UPDATE OF STRUCTURES	KK	KK	.	KK	.	.	KK
P0	12/11/24	ISSUED FOR INFORMATION	KK	KK	.	KK	.	.	KK

GENERAL NOTES:

ALL UNDERGROUND SERVICES TO BE LOCATED AND WHERE APPLICABLE RELOCATED PRIOR TO CONSTRUCTION OF ANY WORKS.

ALL WORKS SHALL COMPLY WITH:
- NORTHLAND REGIONAL PLAN

ALL TEMPORARY WORKS IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR.

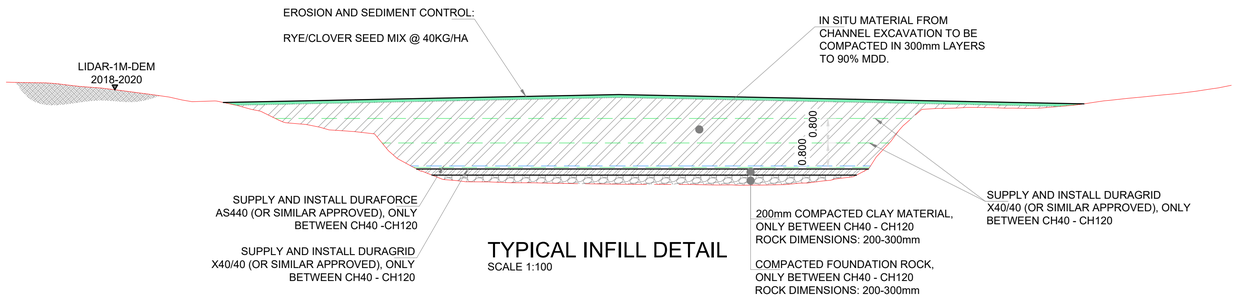
TEST ALL EARTH-FILLS OTHER THAN THOSE SPECIFICALLY IDENTIFIED AS UNCONTROLLED FILL IN ACCORDANCE WITH NZS4431 USING STANDARD TESTING PROCEDURES AS SET OUT IN NZS 4402.

TAKE ALL NECESSARY MEASURES TO PREVENT EXCESSIVE WATER-LOGGING OF SURFACE MATERIALS YET TO BE EXCAVATED OR COMPACTED OR BOTH, AND TO PREVENT FILL MATERIAL FROM BEING ERODED AND RE-DEPOSITED AT LOWER LEVELS.

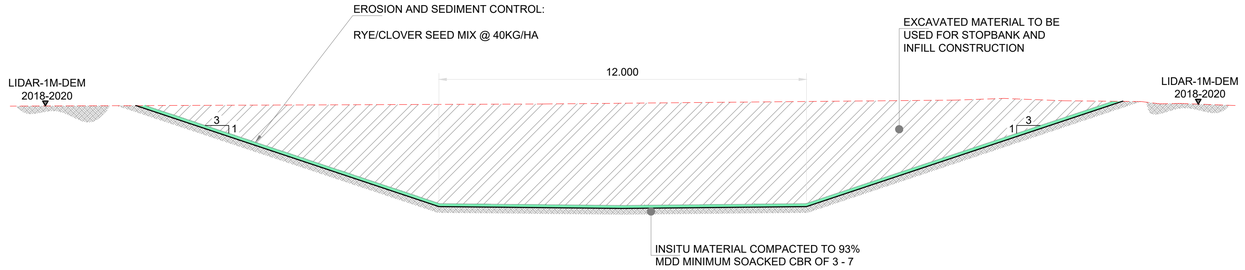
CONSTRUCT ALL EXCAVATION IN SUCH A MANNER THAT THE SURFACE IS FREE DRAINING OVER THE ENTIRE AREA. NO WATER TO POND ON ANY COMPLETED SURFACE.

WHERE MATERIAL IS TO BE CARTED OFF SITE BY PUBLIC ROAD, IT WILL BE IDENTIFIED AS CUT TO WASTE FOR OFF-SITE DISPOSAL. CARRY OUT ALL ASPECTS OF THE OFF SITE DISPOSAL, INCLUDING PREPARATION OF AN EARTHWORKS MANAGEMENT PLAN, OBTAINING ANY NECESSARY LAND USE CONSENTS AND RESOURCE CONSENTS AND PREPARATION OF AN EROSION AND SEDIMENT CONTROL PLAN WHERE REQUIRED. UNDERTAKE PREPARATORY WORK AND SITE CLOSURE AT THE DISPOSAL SITE.

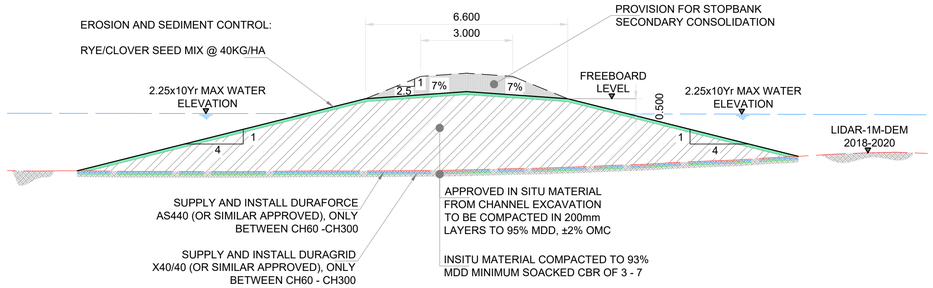
TESTING TO NZS 4407:2015 TEST 4.2 (NDM BACKSCATTER)
TEST FREQUENCY SHALL BE ONE TEST PER 1000M³ AND NOT LESS THAN LIFTS OF BETWEEN 0.6M AND 1.0M DEPTH OF FILL PLACED, WITH THE ADDITIONAL CRITERIA THAT THE FIRST 1000M³ OF FILL PLACED SHALL HAVE 3 SETS OF TESTS AND ALL FILL SHALL HAVE A MINIMUM OF 5 SETS OF TESTS.
AS WELL AS ACCOMPLISHING THE MINIMUM STANDARD OF COMPACTION AS SET OUT ABOVE, THE CONTRACTOR MUST ENSURE THAT THE FILL IS NOT OVER-COMPACTED TO THE EXTENT THAT WEAVING OF THE FILL IS PRODUCED.



TYPICAL INFILL DETAIL
SCALE 1:100



TYPICAL CHANNEL DETAIL
SCALE 1:100



TYPICAL STOPBANK DETAIL
SCALE 1:100

ISSUE FOR TENDER

TRINEKEL CIVIL ENGINEERING SOLUTIONS

	NAME	DATE
DRAWN	MS	20/12/2024
CHECKED	KK	20/12/2024
RESPONSIBLE ENGINEER	KK	20/12/2024
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CLIENT: NORTHLAND REGIONAL COUNCIL

PROJECT: KAEO PHASE 2 FLOOD MITIGATION

A1

TITLE:

KAEO PHASE 2 FLOOD MITIGATION

DETAILS & NOTES

.

KAEO PHASE 2 FLOOD MITIGATION STRUCTURE DETAILS & NOTES
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REFERENCES		
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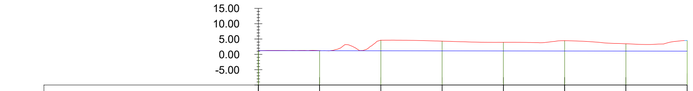
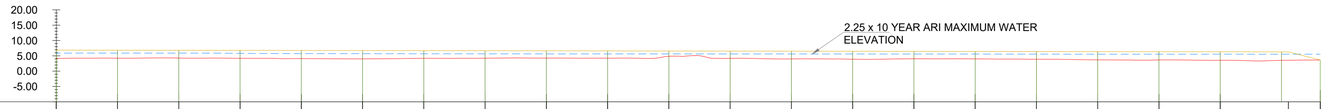
PROPOSED CHANNEL INVERT	1.04	1.017	0.994	0.972	0.949	0.926	0.903	0.880	0.858	0.835	0.812	0.789	0.766	0.744	0.721	0.698	0.675	0.652	0.629	0.607	0.584	0.56
LIDAR-1M-DEM-2018-2020	4.522	4.290	4.025	3.961	3.615	3.440	3.322	3.167	3.080	2.274	3.184	2.579	2.307	2.616	2.560	3.019	3.184	3.348	3.390	3.504	3.779	3.801
NGL TO CHANNEL INVERT	-3.482	-3.272	-3.031	-2.989	-2.667	-2.514	-2.419	-2.286	-2.223	-1.439	-2.372	-1.789	-1.541	-1.873	-1.839	-2.321	-2.509	-2.696	-2.761	-2.897	-3.196	-3.239
VERTICAL GEOMETRY		-0.11% 420.000m																				
HORIZONTAL ALIGNMENT		L = 28.656m R = 94.440m	L = 63.723m R = 117.596m	L = 58.251m R = 110.395m	L = 85.150m R = 99.375m	L = 69.504m R = 80.114m	L = 31.463m R = 211.185m	L = 46.464m R = 38.684m	L = 36.789m R = 81.793m														
STATION	140.00	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560.00

LONG SECTION - CHANNEL (CP1)
SCALE 1:1000



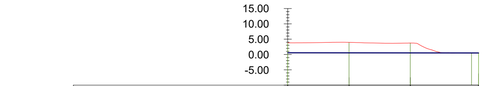
PROPOSED CHANNEL INVERT	1.20	1.177	1.154	1.131	1.109	1.086	1.063	1.04
LIDAR-1M-DEM-2018-2020	1.195	1.211	4.610	4.298	3.925	4.465	3.456	4.522
NGL TO CHANNEL INVERT	0.005	-0.034	-3.456	-3.167	-2.817	-3.379	-2.394	-3.482
VERTICAL GEOMETRY		-0.11% L = 3.307m 140.000m						
HORIZONTAL ALIGNMENT		L = 76.625m R = 63.650m			L = 60.068m R = 94.440m			
STATION	0.00	20	40	60	80	100	120	140.00

LONG SECTION - CHANNEL (CP2)
SCALE 1:1000



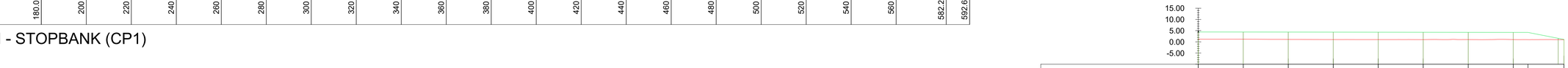
PROPOSED STOPBANK HEIGHT	6.86	6.834	6.805	6.777	6.748	6.720	6.691	6.662	6.634	6.605	6.577	6.548	6.519	6.491	6.462	6.434	6.405	6.376	6.348	6.319	6.29	3.64
LIDAR-1M-DEM-2018-2020	4.158	4.220	4.279	4.190	4.108	4.004	4.198	4.222	4.251	4.234	4.849	4.174	3.982	3.905	4.033	4.005	3.886	3.684	3.654	3.535	3.550	3.635
NGL TO STOPBANK HEIGHT	2.704	2.604	2.526	2.587	2.640	2.715	2.493	2.441	2.383	2.371	1.728	2.374	2.538	2.586	2.430	2.429	2.520	2.692	2.694	2.784	2.738	0.000
VERTICAL GEOMETRY		-0.14% 402.254m																			-25.58% 10.402m	
HORIZONTAL ALIGNMENT		L = 142.413m							L = 172.502m R = 130.000m								L = 97.740m					
STATION	180.00	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	582.25	592.66

LONG SECTION - STOPBANK (CP1)
SCALE 1:1000



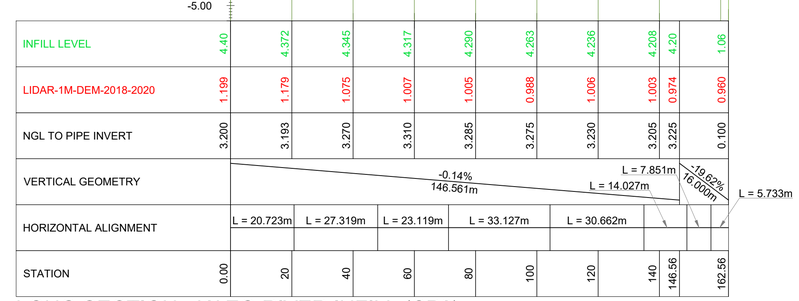
PROPOSED CHANNEL INVERT	0.56	0.538	0.515	0.49	
LIDAR-1M-DEM-2018-2020	3.801	3.967	3.738	0.484	
NGL TO CHANNEL INVERT	-3.239	-3.429	-3.223	0.006	
VERTICAL GEOMETRY		L = 19.147m R = 81.793m	-0.11% 62.289m		
HORIZONTAL ALIGNMENT			L = 43.143m R = 223.059m		
STATION	560.00	580	600	622.29	

LONG SECTION - CHANNEL (CP2)
SCALE 1:1000



PROPOSED STOPBANK HEIGHT	7.12	7.091	7.063	7.034	7.006	6.977	6.948	6.920	6.891	6.86
LIDAR-1M-DEM-2018-2020	6.970	6.739	5.429	4.789	4.240	4.218	4.593	4.441	3.994	4.158
NGL TO STOPBANK HEIGHT	0.150	0.353	1.634	2.245	2.765	2.759	2.355	2.479	2.897	2.704
VERTICAL GEOMETRY		L = 9.339m	-0.14% 180.000m							
HORIZONTAL ALIGNMENT			L = 54.666m R = 90.000m		L = 72.706m R = 90.000m			L = 43.290m		
STATION	0.00	20	40	60	80	100	120	140	160	180.00

LONG SECTION - STOPBANK (CP2)
SCALE 1:1000



INFILL LEVEL	4.40	4.372	4.345	4.317	4.290	4.263	4.236	4.208	4.20	1.06
LIDAR-1M-DEM-2018-2020	1.199	1.179	1.075	1.007	1.005	0.988	1.006	1.003	0.974	0.960
NGL TO PIPE INVERT	3.200	3.193	3.270	3.310	3.285	3.275	3.230	3.205	3.225	0.100
VERTICAL GEOMETRY		-0.14% 146.561m					L = 7.851m L = 14.027m		-19.92% 16.000m	L = 5.733m
HORIZONTAL ALIGNMENT		L = 20.723m	L = 27.319m	L = 23.119m	L = 33.127m	L = 30.662m				
STATION	0.00	20	40	60	80	100	120	140	146.56	162.56

LONG SECTION - KAEO RIVER INFILL (CP2)
SCALE 1:1000

LEGEND

- SURFACE LIDAR-1M-DEM-2018-2020
- 2.25X10YRMAXWE
- PROPOSED STOPBANK HEIGHT
- KAEO RIVER INFILL
- PROPOSED CHANNEL INVERT

KAEO PHASE 2 FLOOD MITIGATION STRUCTURE LONG SECTIONS
SCALE 1:1000

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CLIENT: NORTHLAND REGIONAL COUNCIL

PROJECT: KAEO PHASE 2 FLOOD MITIGATION

TITLE: LONG SECTIONS

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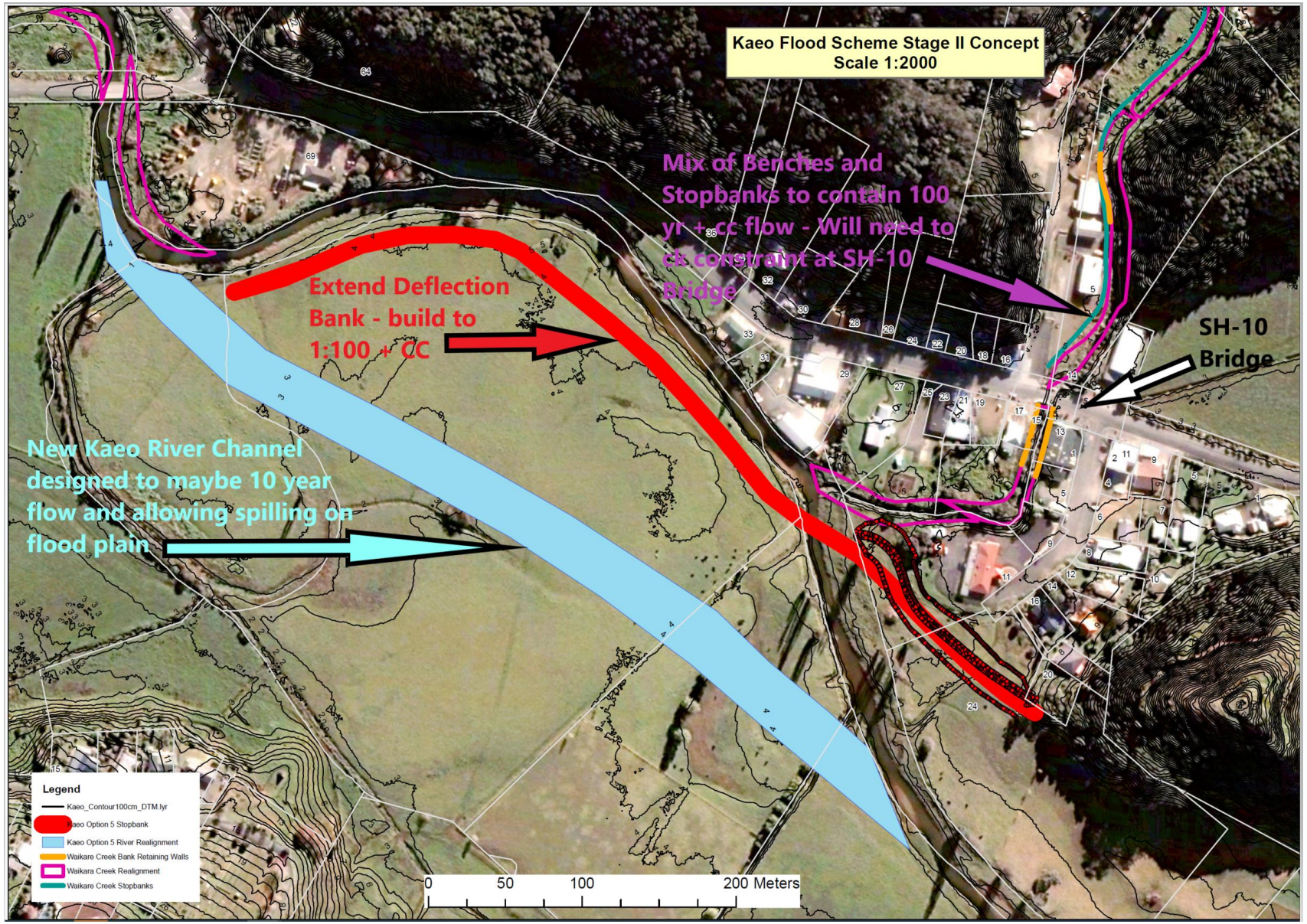
Kaeo 2D model

Prepared by : Sher Khan

Date: 06 March 2024.

Kaeo Stage-2 Works Assessment

Work Brief provided by NRC



Model Runs

- **Status Quo Model: A simple 2D model was run with an approximate flow equivalent to a 10-year ARI flow derived from the regionwide model at Kaeo Fire Station (River+floodplain flow for 10yr12hr=384 m^3/s).**
- **Scheme Design Model: Similar setup as the above model with the following changes:**
  - **Adding a new channel starting from opposite of Kaeo Settler Cemetery and ending at upstream of the Omaunu Rd Bridge.**
  - **Adding a stop bank along the existing Kaeo river on the left bank.**

Note: The model set-up is aimed at investigating the relative effects of shifting the natural confluence of the Waikare Creek and the Kaeo river further downstream close to the Omaunu Road Bridge. It was envisioned that shifting the confluence downstream will reduce the backwater effects into the Creek reducing flooding at and around the SH10 bridge in Kaeo.

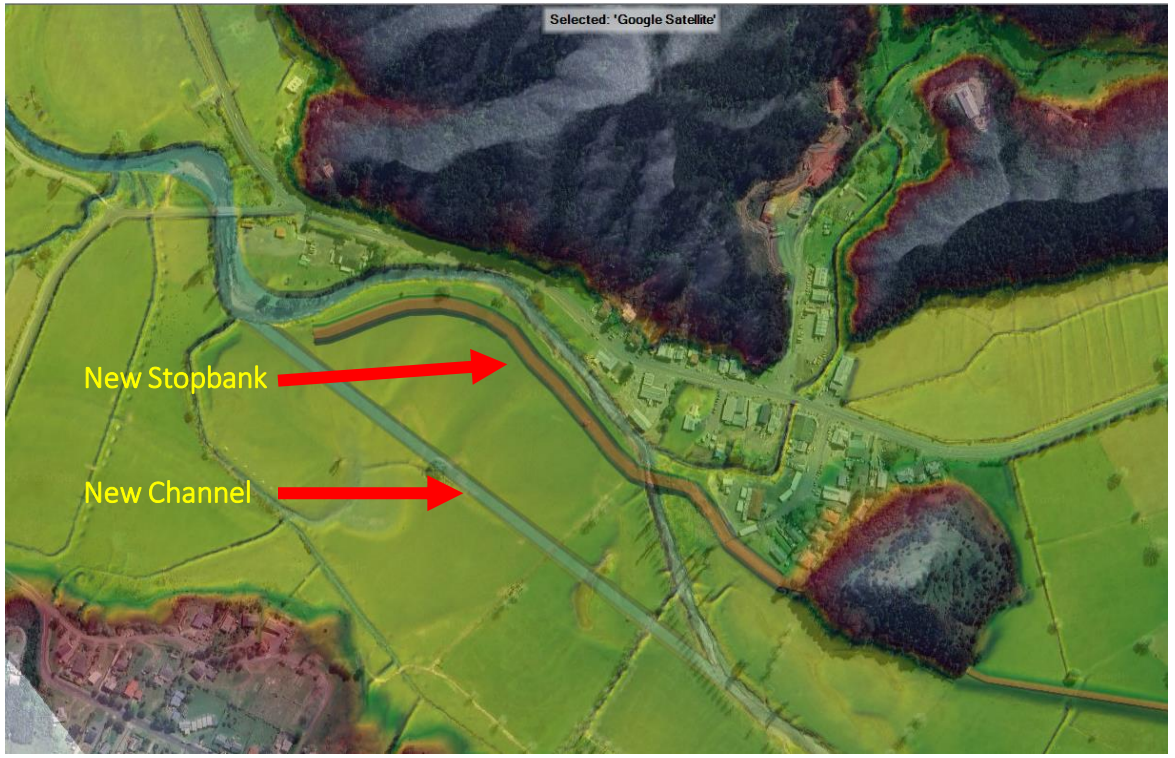
The model objective is to find the relative difference in the flow/levels at the Omaunu Rd bridge and SH10 Bridge.

Model may need further improvements if we want to use it for any design purpose.

Model Set-up

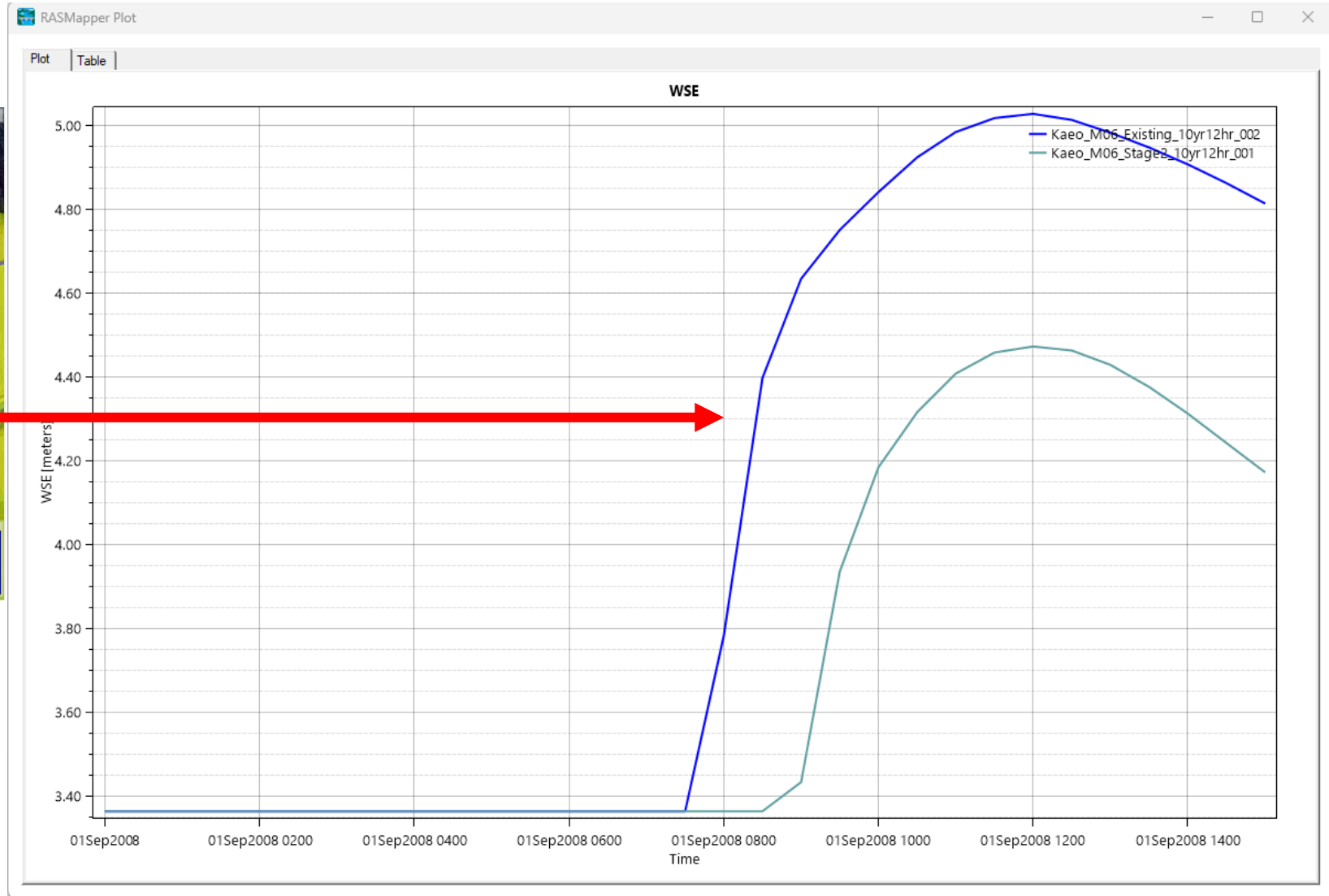
Status Quo Model Set-up

Stage-2 Model Set-up



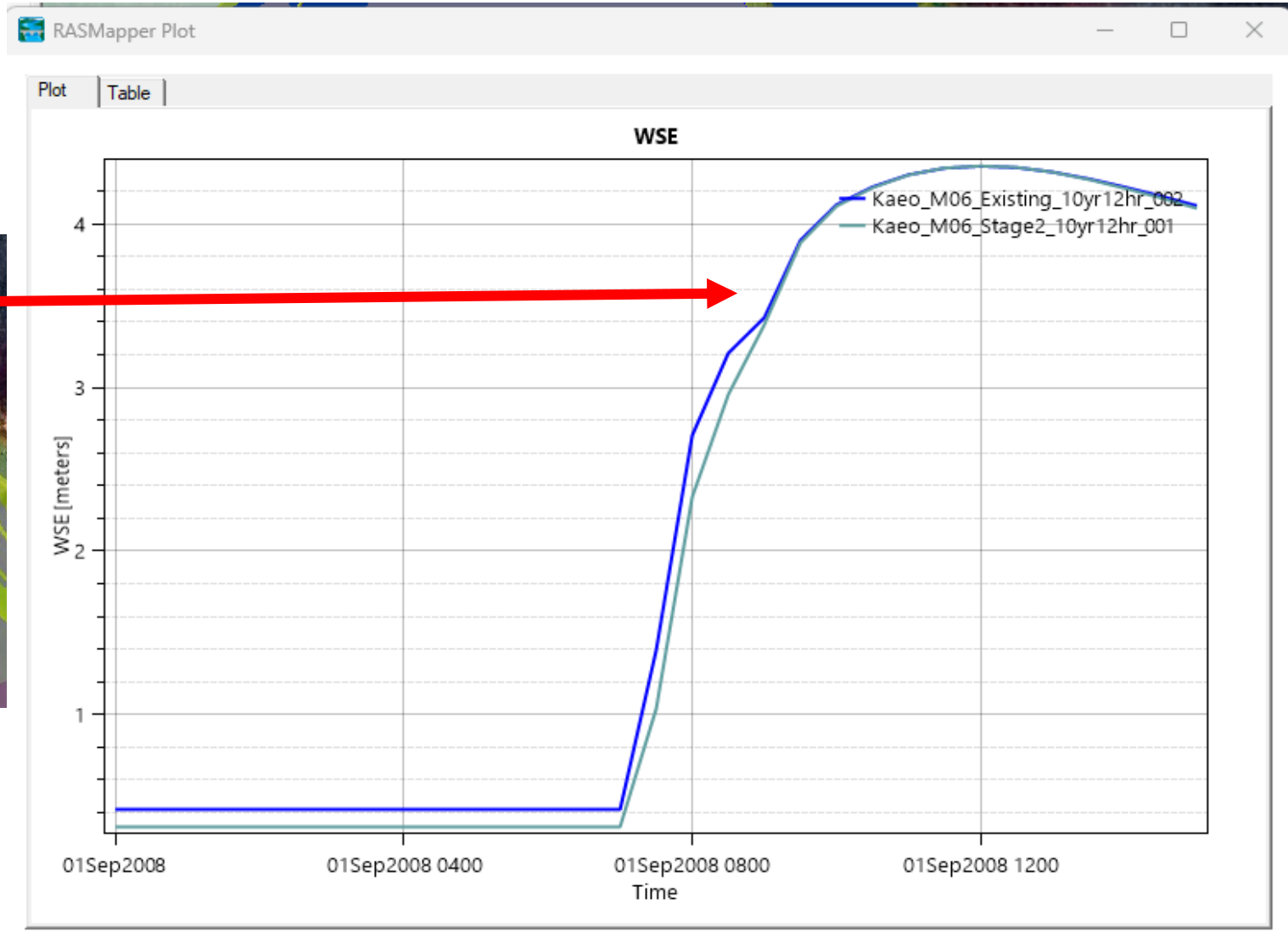
Comparison of Levels under the SH10 Bridge

The levels under the SH10 bridge are reduced by 560mm (about 0.5m) due to the proposed stage-2 works . This means that shifting the confluence downstream by adding a new channel and a new stopbank reduces the backwater effects on the stream.

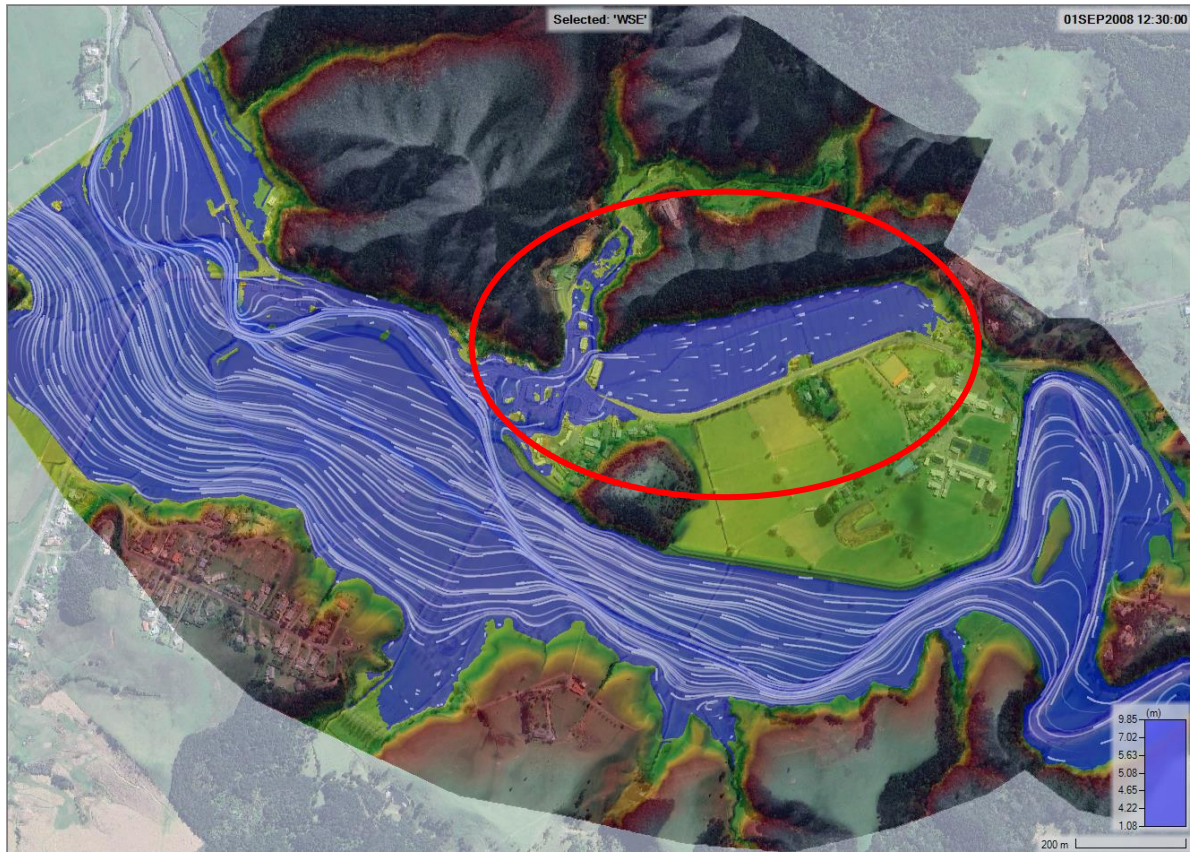


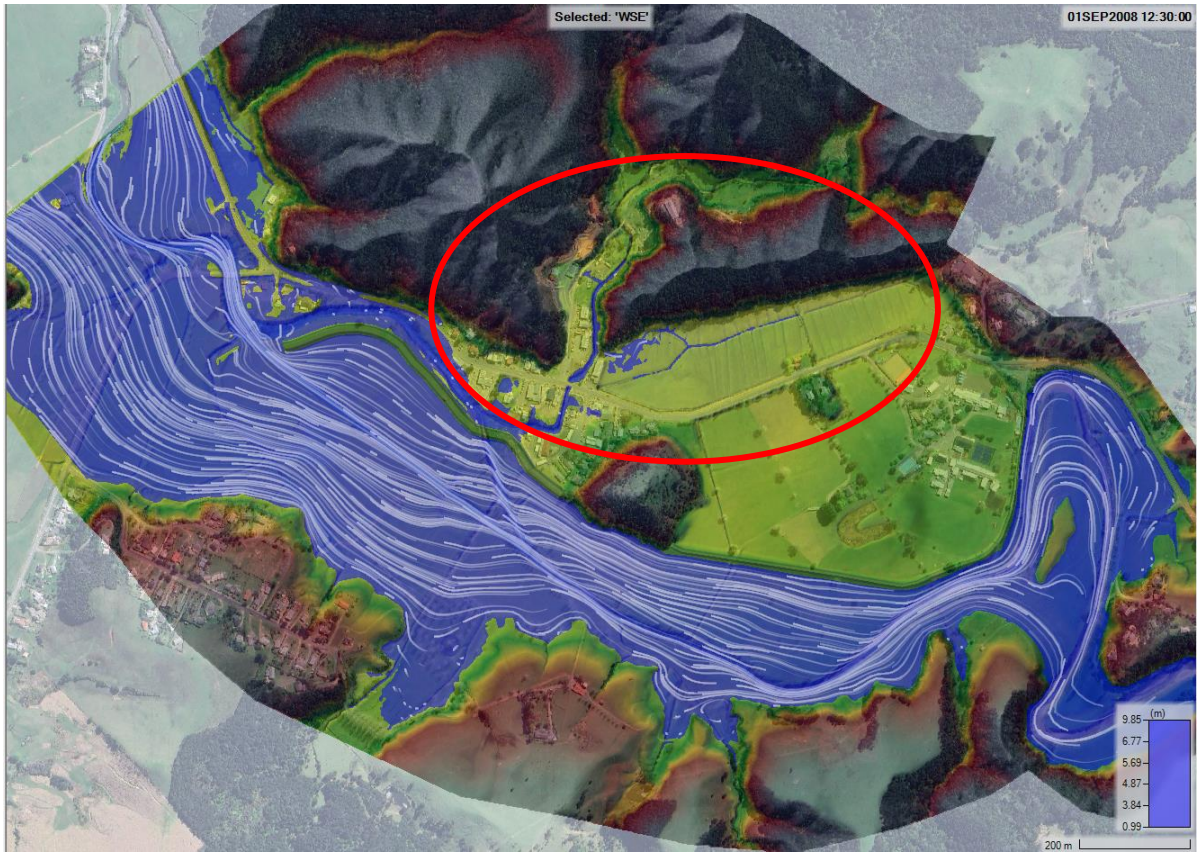
Comparison of Levels under the Omaunu Rd Bridge Bridge

The proposed Stage-2 works do not impact the levels under the Omaunu Rd Bridge bridge. Small benching upstream and downstream of the bridge that is included in this model could be a reason for this. Additional flow due to the floodplain storage loss may be compensated by this benching.



Status Quo Model(LHS) and Stage-2 Model (RHS)





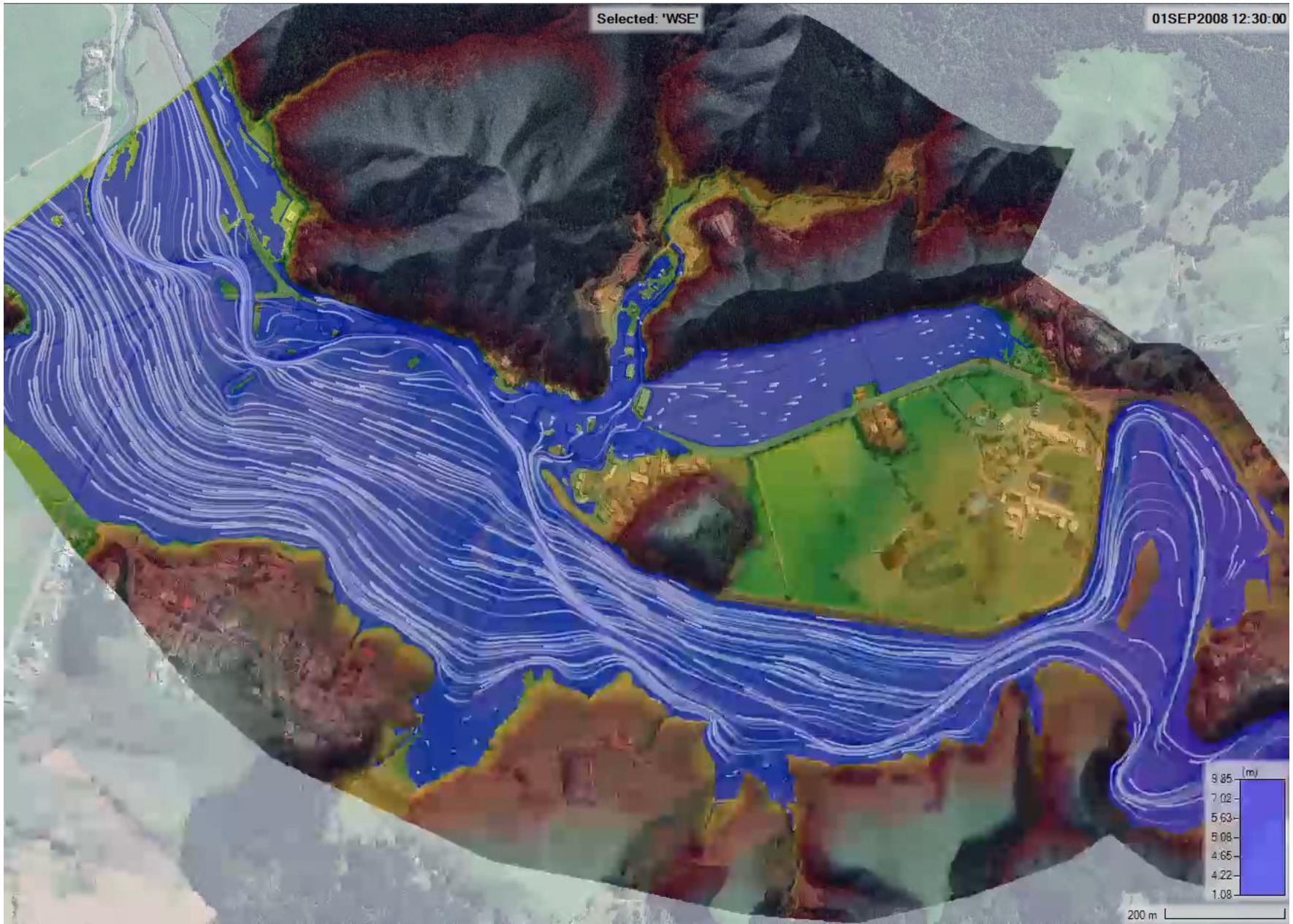
Remarks

- **Shifting the confluence of the Kaeo River and the Waikare Creek downstream close to the Omaunu Road Bridge reduces the backwater into the creek and reduces flood impact on the buildings.**
- **The levels at the SH10 bridge could reduce by 560mm with stage-2 works.**
- **The paddock behind the Whangaroa Memorial Hall could be used as an additional storage**

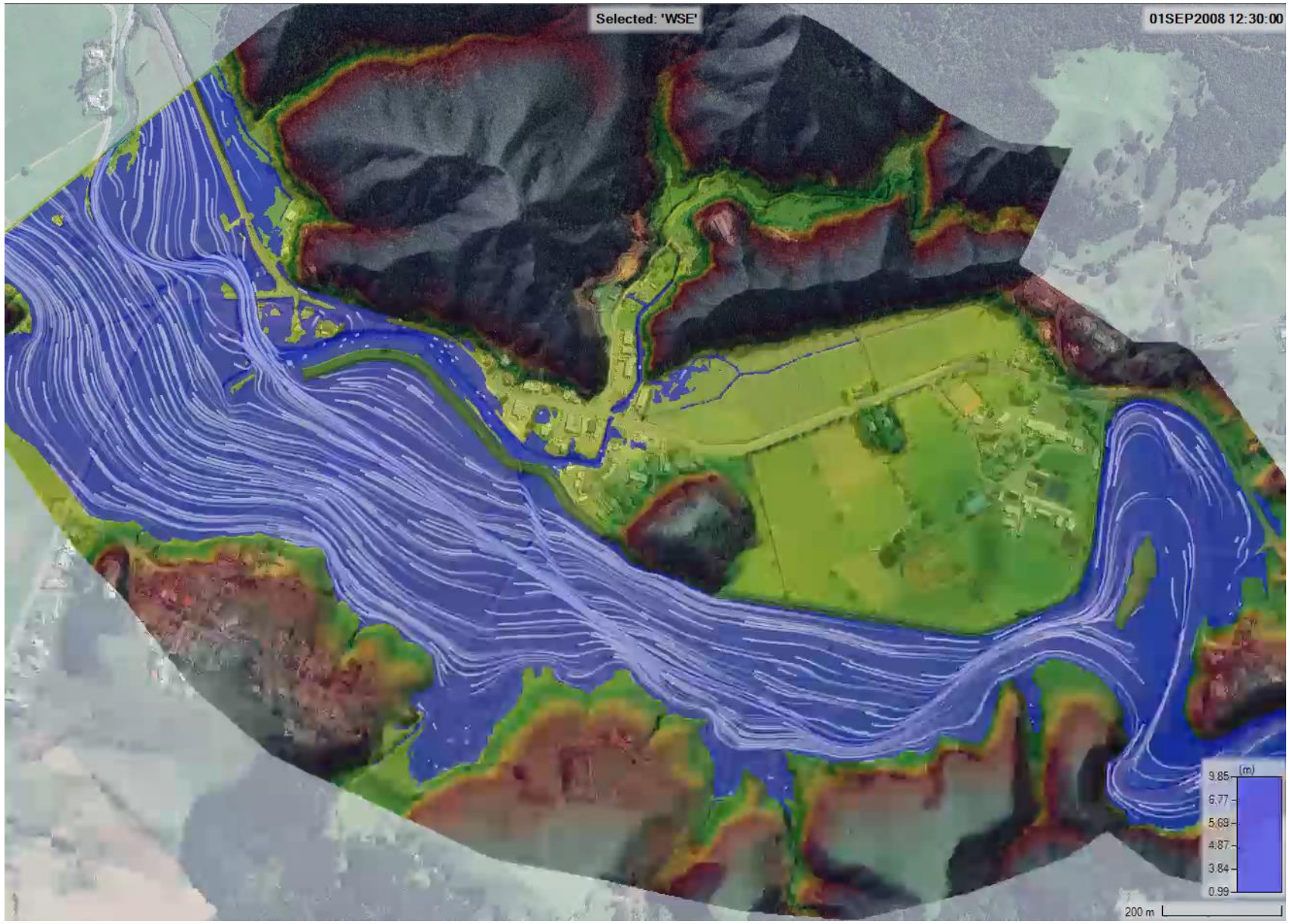
Model Assumptions

- **The model has an inflow boundary with 384m³/s flow (10yr12hr). This is derived from the from the regionwide model.**
- **An outflow boundary is set as normal depth.**
- **No tidal effects are included in the model.**
- **The model set-up only includes inflows along the Kaeo river and the stream inflows are not included in this model.**

Status Quo Model Video



Stage-2 Model Video



Outlook

Fw: 2250280-RMALUC, Horu, Omaunu Road, Kaeo 0479

From Robin Rawson <Robin.Rawson@fndc.govt.nz>
Date Wed 1/15/2025 1:22 PM
To Swetha Maharaj <Swetha.Maharaj@fndc.govt.nz>
Cc Victoria Neki <Victoria.Neki@fndc.govt.nz>

Kia ora Swetha

Thank you for the opportunity to comment on this application.

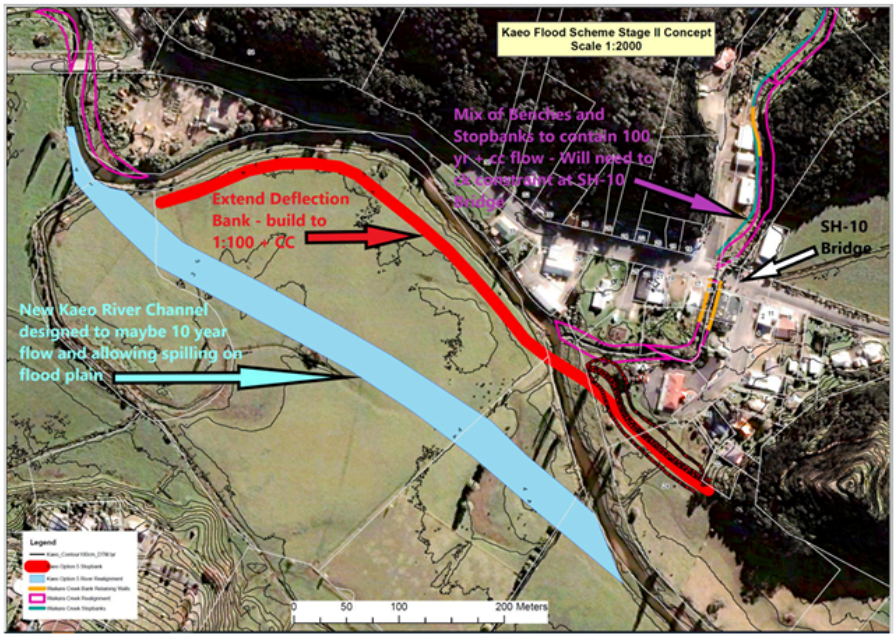
Proposed works in Kaeo consist of diverting the Kaeo River to the south and extending a deflection bank located near the existing channel.

Works will be within private land to the south of the existing stream channel. A Council recreation reserve is located to the north of the existing stream and in proximity to the extended deflection bank.

Proposed works will have the outcome of reducing the flood hazard risk for Kaeo, and this outcome is supported by FNDC. It is my assessment that any negative effects on the amenity of the nearby park will be minimal, and that Kaeo residents are likely to have positive associations with the deflection bank.

Parks Planning has no further comments on this application.

Regards,
Robin



Robin Rawson
Parks & Reserves Planner - Growth Planning and Placemaking
M 272171426 | **P** 6494015288 | Robin.Rawson@fndc.govt.nz

Te Kaunihera o Te Hiku o te Ika | Far North District Council
Pokapū Kōrero 24-hāora | 24-hour Contact Centre 0800 920 029

TE PAE O UTA
Te Ao Māori Framework
Click to find out more
TU KOTAHI WHANAKE TAHI KŌKIRI TAHI

From: Planning Technicians <Planning_Technicians@fndc.govt.nz>
Sent: Tuesday, January 14, 2025 1:06 PM
Cc: Swetha Maharaj <Swetha.Maharaj@fndc.govt.nz>; Te Hono Support <tehonosupport@fndc.govt.nz>
Subject: 2250280-RMALUC, Horu, Omaunu Road, Kaeo 0479

Kia ora koutou,

RE: Resource Consent Application RC 2250280-RMALUC.

Please see the link below for the resource consent application received by Far North District Council.

2250280-RMALUC

The application is for a proposal for Kaeo Stage II flood protection works breaching Excavation and/or Filling, Excluding Mining and Quarrying, in the Rural Production Zone as Discretionary Activity.

The application has been allocated to Swetha Maharaj.

Kindly note that under the Resource Management Act 1991, the Council is obligated to decide, within 20 working days of receiving an application, whether the application should be notified. Input from interested parties is often vital in informing this decision.
To ensure the application is processed within the required statutory timeframes, we respectfully request that you provide your feedback within 5 working days. Should this not be feasible, please inform us at your earliest convenience.

Ngā mihi,

Anneke Price
Planning Assistant Technician - Resource Consents Team 1
M 0272948787 | **P** +6494015395 | Anneke.Price@fndc.govt.nz
Te Kaunihera o Te Hiku o te Ika | Far North District Council

Pokapū Kōrero 24-hāora | 24-hour Contact Centre 0800 920 029
fndc.govt.nz

Cultural Impact Assessment

Proposed Kāeo River

Stage Two Flood Mitigation Plan

This assessment focusses on the socio-cultural aspects of knowledge systems and the impacts on them. While these aspects of culture necessarily touch on others, those will be covered in more depth by other collaborating stakeholder assessors. More particularly, Matauranga Māori, kawanatanga, rangatiratanga, and tikanga which impact on the values of mauri ora and Te Mana o te Wai, will be included here.

Generally, this assessment refutes the Northland Regional Council (NRC) claim, in the process of consenting themselves, that this project has " 'effects' that are considered less than minor". NRC are the environmental authority in the Northland region and accordingly employ natural or environmental science and scientists to determine issues such as the river flooding that occurs at Kāeo. From an engineering perspective the most efficient way to move water is to straighten its path allowing it to run downhill easier. However, environmental problems are cultural by nature, for example the flooding of towns and transport routes. This highlights the need for environmentalism to be informed by the cultural theory that is Matauranga Māori, and is an example of how knowledge systems and language use determine certain outcomes.

Authorship:

This Cultural Impact Assessment (CIA) is compiled Miro Tapui Ltd., a Research and Development Company with strong affiliations to Whangaroa whānau and hapū culture. Primary author and co-director Thomas Hawtin (Ngāti Wikitoria, Ngāti Miro), B.A. Social Anthropology, is the current Chairperson of Kaitiaki Whangaroa Association, a member of the Whangaroa Catchment Committee and from a local farming family of four generations. Fellow co-director Robyn Tauroa (Te Aetō, Te Whānau Pani), M.A. Museums, is kaitiaki of Whangaroa Papa Hapū archives, a current Te Runanga o Whaingaroa Trustee, and descends from Whangaroa tūpuna.

Previous Works: 2019 'Whangaroa Ngahere Scoping Report' commissioned by the Department of Conservation.

Assessment Limitations:

The main limitations of this assessment concern the short timeframe, at the late stages of planning for the project, as well as minimal resourcing. It is also noted that, at an online meeting facilitated by NRC in January 2025, attendees agreed that Miro Tapui Ltd., would compile this CIA focussing on socio-cultural aspects, with others providing assessments through different lenses – environmental, archaeological and economic for instance. This CIA has not had the privilege of viewing any of the other assessments, nor that required Ecological Report, at the time of submission.

1. Introduction

Culture refers to people's feelings, thoughts and knowledge about the world, and can be examined by looking at

i) spiritual beliefs of a social grouping,

ii) the enigma and hinengaro of leadership and determination, or decision-making processes, and

iii) the according material culture including production knowledge and technologies, trade and distribution systems, landscape modifications, etc..

These correspond respectively to the cultural values of Mana Atua, Mana Tangata, and Mana Whenua.

By examining culture in terms of its knowledge and knowledge systems, we consider the body of organised and systematised knowledge – Matauranga Māori. Matauranga Māori is an example of a science, or cultural theory, informed by the whakapapa relationship of things making this an expansionist science rather than a reductionist one. Like all knowledge systems Matauranga Māori is recorded in language - te reo - and particularly in the form of keywords and names that are part of categorising taxonomies which hold meaning – knowledge. In this knowledge system the desired outcome is mauri ora affecting both Mana Atua, Mana Tangata and Mana Whenua, and therefore Te Mana o te Wai.

While this report fulfils the policy obligations of the NRC in the Resource Management Act, however the main intent of this assessment is to assist and encourage the NRC, its separate departments and their staff to understand the importance of Matauranga Māori and cultural determinism alongside environmental determinism integrating it into their actions and activities on the ground.

2. Background Overview

Ko Pohue te Maunga,

Ko Kāeo te Awa,

Ko Whangaroa te Moana.

Kāeo township is situated alongside the Kāeo River which in turn is named after the Kāeo, the unique Whangaroa name for the freshwater mussel. The Kāeo River is by far the largest water River flowing into Whangaroa Harbour, and Kāeo township is situated in an upper section of its estuarine floodplain. Thus, Kāeo is a hub of cultural activity in Whangaroa, largely due to the influence of the Kāeo River and the access it affords to valued resources. There were once significant beds of kāeo in the Kāeo River, and Kāeo was the place tupuna went to gather them in season.

Whangaroa rohe boasts evidence of some of the earliest human occupation throughout Aotearoa, and in fact some Whangaroa Hapū claim no migratory waka at all, they were always here. This can be confirmed by the names of creation story characters on the landscape, such as Omahuta, Otangaroa, Te Urenui a Maui and Te Pokopoko o Hinenuitepo to name just a few. Further, it was here in the years leading up to 1835 that Whangaroa rangatira conceived and drafted He Whakaputanga, the Declaration of Independence, as well as having a large influence in 1840 Te Tiriti o Waitangi which was to ratify the initial declaration. These facts help to describe the nature and dynamics of the social culture evidenced at Kāeo in Whangaroa which continue to be impacted upon.

Soon after Captain Cooks arrival, two Whangaroa Rangatira, Huru and Tuki, were kidnapped and taken to Norfolk Island to capitalise on their valued knowledge. While there, Tuki stated that Whangaroa boast 2000 fighting men, suggesting a Whangaroa population of around 9000 people. Although Whangaroa doesn't support that size of population today (many people have had to move to find work or access to resources), nevertheless there is barely a hilltop or valley throughout Whangaroa that hasn't been occupied, modified, or utilised by Whangaroa tūpuna. Furthermore, this provides some insight into the enigmatic leadership of Te Ara, the prominent rangatira in the area when the Wesleyan missionaries arrived, illustrating the utility of tukuwhenua and Matauranga Māori, when he said:

> "I am glad to see you and you are free to come and live at my place, but you cannot have pigs or trees for anything but muskets and powder." (The Methodist Mission to New Zealand p8).

In response, the Wesleyan Mission ignored and formed and entered into a land 'purchase' agreement for the land now in question for these proposed works. This agreement was one of the first land claims in Aotearoa, and exemplifies the grievances caused by the misinterpretation of tukuwhenua intention, which became the alienation of land and

resources, and not the mutual benefits that would otherwise strengthen and enhance hapū-whānau culture.

Upstream from the Omaunu Rd. bridge is the land associated with this assessment. Pohue Pā dominates, the Kāeo River valley disappearing into the hills beyond. From here, you see the Wesleyan memorial cairn at the foot of a knoll hill on that side of the river. That hill, like all the others, once had a vibrant kauri ngahere, plenty for Te Ara and the many generations of his people living there to prosper from. It was for the exploitation of those kauri trees that Dromedary Rd., which is now more or less Omaunu Rd., was the first road in NZ (1820) built to cart 120 premium kauri spars to the upper tidal zone where they were shipped away. The view from roughly this spot of that kauri grove was the last one of Captain Thompson and the crew from the Boyd in 1809 who came for that taonga also. Remains of their bones were found on a mound of earth nearby where a victory feast had occurred.

This is tairikiriki, the special place where the waters of Tane te waiora and the waters of Tangaroa meet. Here inanga spawn, the genesis of an ecosystem and close companion to the Kāeo freshwater mussel. Here are the upper reaches for mullet and even the Whangaroa kaitiaki whai (stingray) and aihe (dolphin) are known to visit here. Being a natural wetland floodplain, this area teemed with all manner of material resources used in food production and trade, housing, health and medicine, education, and recreation.

At the time of Te Ara, that knowledge system was operating in well populated area, and records describe the scene and its environment as “idyllic” and “pristine”, the water drinkable and dripping in all manner of recreational opportunities.

Being a prominent waterway, Kāeo River was navigable a long way upstream, supporting a thriving hapū culture, and providing the reason Kāeo township was built where it is for the trade and commerce of a timber industry. These describe some of the cultural significance of this area of land.

3. Traditional Decision Making

Without water there is no life. It is the impacts of changing the river channel across a floodplain characterised by tairikiriki that we are assessing, therefore it is ultimately the Mana o te Wai that is paramount:

- Mana Atua, the power of the river and its waterways to contain and support life;
- Mana Tangata, determined and managed by ideas, decisions and actions; and
- Mana Whenua, influencing the power and life essence of the land.

He Whakaputanga documents the socio-political system of Whangaroa in accord with Matauranga Māori. As well as the hapu and whānau identification it describes the 'wakaminenga' policy and decision-making structure and function where hapu and whānau rangatira and tohunga met to wananga, make policies and decisions, and plan to execute those decisions. In terms of participating hapū in a Whangaroa wakaminenga, aside from Ngāti Uru and Ngāti Pakahi at Mangaiti Marae, there were also Whānau Pani, Ngāti Kawau, and Te Aetō. It is understood that written recordings of 1860s Runanga hui, proclaim that Hongi Hika identified the latter two hapū as leading Whangaroa hapū before his death in 1828, seven years before the drafting and signing of He Whakaputanga in 1835.

In 'Crown Sponsorship Of Mass Deforestation In Whangaroa and Hokianga 1840-1990', (Dr. Garth Cant, 2014) commissioned by the Waitangi Tribunal, the deforestation of the Kāeo River River to develop farming and agriculture interests is outlined. It goes on to explain how the health of the river has been affected, along with a change in climate where flooding is more frequent and intense. What this means, is that a once vibrant ecosystem with drinkable, swimmable and native biodiverse rivers and waterways are now full of gravel and sediment burying once deep bedrock swimming holes. Without shade, and clogged with sediment, the opportunities of discovery for Matauranga Māori are limited. High levels of bovine ecoli in the river also discourages entering this type of live classroom.

As is evident from claimant briefs, water quality in Whangaroa is a major focus and concern for tangata whenua as their customary rights, culture and traditions are inextricably linked to their kaitiakitanga of the waterways. Terence Tauroa explains that:

> "They were an important food source and economic activity. They were also really important for cultural, social and spiritual purposes. Floods are now more frequent and do more damage." (Northland Rural Rivers, p 187).

4. Contemporary Decision Making

Since Te Tiriti o Waitangi was signed by both British Crown agents and hapū rangatira, and therefore Whangaroa hapū, there have been a series of colonisation attempts to rein Māori identity and social structure into a Crown corporate model. Two key legislations are the Māori Social and Economic Advancement Act 1956, and the Runanga Act 1981. The former organised Māori under a Boards of Trustees corporate model, such as Te Tai Tokerau Māori Trust Board, Whangaroa Māori Trust Board, and Marae Trust Committees. The latter, although repealed, contributed to the current hapū social system, by enabling Runanga, associated with Marae Trust Boards, to operate as agents in the control and distribution of resources.

Whangaroa Papa Hapū has arisen from the Waitangi Treaty Act 1975 to support and address breaches of Te Tiriti by the Crown. From this area of research, the validity of hapū, whānau, their rangatira, and their Wakaminenga political structure has been highlighted, as well as the colonising mechanisms responsible for what some may regard as confusing. The evidence reveals the long history of how Matauranga Māori and its knowledge holders have been ignored and sidelined to the detriment of both people and environment. In these ways the culture of tikanga mauri, and the spirit of kaitiakitanga have been, and are compromised and ignored.

Dr. Gary Bramley's brief of evidence expounds -

> "that the …opinions of tangata whenua have not "been wholly embraced", but rather "relegated for the most part to the margins of environmental decision-making" and that "consultation appears to be local government informing Māori of resource management activity, rather than making genuine efforts to hear Māori perspective…experience in relation to the flood protection works at Kāeo is that NRC came…to apply their solution to the problem, and any other suggestions were dismissed as impractical or too expensive" (Wai1040 AA0047, p.14).

The structure and function of the Whangaroa Catchment Committee[i] is designed according to a Crown-Corporate model operating top down in its environmental Kaupapa and working to a budget and strict timelines. While this may be an efficient way of "getting the job done", it makes a farce of local knowledge and culture. At these types of meetings, discussions are dominated by environmental engineering language and knowledge (as well as predominant farming interests), with equally confusing financial forecasts and figures bolstering an authoritative stance as to how and what decisions are to be made. Time and again this way of doing things is ignorant of, and biased against local knowledge and systems that otherwise compose of a type of 'joking' relationship towards cultural knowledge holders and theories. This is best described as insultation rather than consultation, demonstration that Matauranga Māori cultural theory is being ignored and sidelined, negatively impacting on the culture of kawanatanga and rangatiratanga, impacting on mauri ora and Te Mana o te Wai.

5. Recreation and Knowledge Acquisition

Ko au te awa, ko te awa ko au.

Dr Gary Bramley states:

> " Ko au te awa, ko te awa ko au…When I was a child we still had a large communal garden shared with others in the whānau…Our whānau supported and helped each other and lived off the land and sea…, from Inumia in the upper River…to Pahuhu, where the Rogers family lived and gathered kai and where I used to swim as a boy, to the outlet in the Whangaroa Harbour which was a recreational and kaimoana gathering spot for members of my whānau."

Bill Hori explains how recreational activities times are when Matauranga Māori is learnt:

> "To supplement our meal table, we relied heavily on what we could grow and harvest locally – tuna and watercress and kaimoana which was plentiful back then. As kids we spent a great deal of time exploring and swimming in the streams which were clean and drinkable. A favourite pastime was catching tadpoles and watching them transform into frogs".

Further to this, in 2022 the late Mohi Kara led waka full of local rangatahi up to Waikare Stream, as pictured on the title page (Source: Georgina Lawrence). This may be the last time Kaeo is visited in this way of acquiring and contributing to Matauranga Māori.

These several points illustrate distinct parts of Matauranga Māori cultural theory, its acquisition and utility, whose main object is universal mauri ora and Te Mana o te Wai, including the impacts from an environmentally determined mindset.

In the mind of Matauranga Māori the proposal of intervening in a river to straighten it, is simply to create a drain for agricultural and residential purposes without any consideration for the taonga mauri of the water, or the life and people it supports for future generations – environmentalism with cultural theory being ignored.

These aspects of cultural knowledge, their acquisition and utility, will be negatively impacted upon by engineering an artificial river channel, effectively alienating access to these cultural resources.

6. Impacted Values:

From the analysis of socio-cultural issues associated with this proposed plan, the following values are identified as being impacted.

Mana Atua:

- Mauri ora and Te Mana o te Wai.
  While Matauranga Māori reigned supreme, the life force of the environment was strong and healthy – Te Mana o te Wai. With the exploitative and consequently degrading colonial mindset this has changed so that many of the key indicators of mauri ora and te Mana o te Wai, for example taonga species, cannot be found. Works of this scale without considering these values and concerns are shown to have negative cultural impacts as well as the continued degradation of the river and its environment.

- Kaitiaki tikanga.
  Without knowledge and ideals mediated from kaitiaki atua, the whole idea of looking after aspects of the environment is confused and thwarted. While one ideology thinks and acts wholistically, the other is focussed solely on the lens of engineering and mitigating for flood events. The ideas, viewpoints, and language used in the planning as well as the execution of these intended public works will have an impact on the voice of Kaitiaki tikanga (the correct ways of doing things). In turn, this impacts on the values of Mauri ora and Te Mana o te Wai. With an engineered environment the opportunities for learning and utilising Matauranga Māori kaitiaki activities are limited by access, both physically and mentally.

Mana Tangata:

- Tino rangatiratanga.
  Ranga - to bring together, and tira – to guide, identifies those with what it takes to draw together and represent people in the making of decisions that affect people. Wakaminenga identifies the associated participatory political structure.
  Without identifying, consulting and utilising this leadership and participatory political structure prevalent in Kāeo and Whangaroa, will further alienate the traditional culture to a foreign colonial one focussed primarily on economic profit and loss. This impacts on all cultural health indicators as foreign ideologies manipulate and vie for what happiness entails and means.

- Misinterpreting cultural significance.
  As explained, the Kāeo area, and especially the portion of land concerned with this assessment, is culturally and historically significant to Aotearoa New Zealand. As well as containing many sites of cultural significance, where two cultures critiqued each

other from either side of the river, where availability of resources and water transport established one of the country's earliest European towns, and from where significant socio-cultural systems were conceived of and promoted in Te Whakaputanga, and Te Tiriti o Waitangi.

That the area in question is determined by NRC in its own consent process that "effects are considered to be less than minor" is a gross misrepresentation of the truth. Although this area of land may have no archaeological sites registered, nevertheless with the known history, natural and human, of both Kāeo and Whangaroa areas, there is no telling what might be found when work commences.

This factor extends to the misinterpretation of concepts and understandings found in the dialect of Whangaroa words and place names which affect the meaning of the cultural narrative. One example is Waikare awa which joins the Kāeo River just downstream from where a substantial stop bank is proposed to divert the river to a new channel, leaving Waikare Stream to occupy the old channel alone. This name is traditionally given to this stream because of the 'kare', the 'rippling whirls', that occur when these two flooding waters meet just upstream from the tairikiriki where the fresh (Tane te waiora) and saltwater (Tangaroa) meet towards the downstream end of this portion of land.

The name on the bridge in Kāeo town is 'Waikare Stream', part of the local cultural narrative. However, on records and documents used by NRC, etc., the name is listed as 'Waikara'. This makes no sense in this assessment. By misinterpretation of names which hold important information intrinsic to cultural knowledge, it alters the narrative and therefore access to the wise solutions to be found within. This confusing ignorance impacts on the value of decision-making capacity and capability to address common concerns such as Mauri ora, and Te Mana o te Wai.

- <u>Matauranga Māori</u>

  Matauranga Māori is a taonga tuku iho of the highest value. Māori knowledge is informed by whakapapa, the related categorisation of things, and the experience of those things learnt from the source – whakapapa o te korero.

  Through a plan that misinterprets and ignores Matauranga Māori and its local culture will compromise an already mistrusting culture and impact on political relations by being ignored. This impacts on the social contract without which an organisation cannot operate.

Mana Whenua:

- Tatai ki te whenua.

  To understand something about Māori land ownership beliefs and practises you must understand something about tukuwhenua. Firstly, people belong to the land, not the other way around. Secondly, people who come to live there might be offered a piece of land on which to live and perform their business for the mutual benefit of all. This is what is called a tukuwhenua agreement which was the intent written into many of the early land purchase agreements in Whangaroa. It is also evidenced in the interactions of Te Ara and the Wesleyan missionaries becoming a land purchase agreement that was eventually received into the hands of a prominent farming family associated with the Wesleyan Methodist Church. Slowly the landscape has changed to the predominant grass and cows that it is today. What was intended to be of benefit to tangata whenua and their aspirations, has alienated them. Further sale and purchase of the land will further alienate tangata whenua from it and the access to cultural resources.

- Tikanga around public works that will alter taonga.

  To Whangaroa Māori rivers and waterways, like maunga and whenua, are sacred tupuna – "Ko Pohue te maunga, ko Kāeo te Awa, ko Whangaroa te moana". These are sacred taonga are worthy of the utmost respect, and any modification or disturbance to them must be conducted under strict tikanga – the correct ways of doing things.

  By disturbing tupuna without the proper tikanga from the beginning to the end of any proposed works, is seen as desecration ultimately affecting Mauri ora and Te Mana o te Wai.

  This is already the case with the Kāeo River and its flooding issues and further work without regard to tikanga will further degrade mauri ora and Te Mana o te Wai.

8. **Remedies and Recommendations**:

The main intent of this report is to assist the NRC in avoiding, minimising, and mitigating negative impacts on the cultural values associated with the Kāeo River Stage Two flood works.

As the recurring theme, this assessment shows the impacts when knowledge and knowledge systems are ignored.

It follows that the solutions need to account for problems that have arisen from the past (that effects are less than minor) as well as those presently, that will affect the mauri ora and mana of the river now and in the future.

1. Correctly identify, consult, and engage with a proper "Whangaroa Whakaminenga".

2. That this area of land be purchased to create a World Heritage Site, with culturally based solutions to protect and enhance the Kāeo asset. For the sake of a 200mm delayed advantage in a normal flood event, a culturally based design, and solutions, may better protect and benefit the Kāeo asset.

3. That a thorough archaeological report be conducted before any works begin, as well as the inclusion of a trusted archaeologist alongside cultural monitors during any works, should works proceed.

4. Correct the Cultural Impact Assessment process to ensure these happen at the conception of a project proposal and are resourced to be the consenting agency for proposals.

5. Create opportunities for kaitiaki tikanga that protect, restore, and enhance mauri ora and Te Mana o te wai. These range from respective karakia and ritual, considering Mana Atua, Mana Tangata and Mana Whenua, to creating native habitat.

6. Create a project narrative that includes the planning process, execution of the plan, and desired outcomes which impact on the mauri ora and Mana o te Wai. This narrative would include Te Whakaputanga and Te Tiriti o Waitangi intentions and Matauranga Māori contributions to the desired outcomes of mauri ora and Te Mana o te Wai protecting the asset of Kāeo township.

7. Adjust and correct all NRC policies, indices, and interactions to say instead that, "cultural affects (not environmental effects) are considered to be significant in the Kāeo River area".

8. Review NRC Organisational Strategy, to
   a) acknowledge and explore how environmental issues are cultural in character, and that cultural determinism, e.g. from a Matauranga Māori perspective, enriches and informs the environmentally determined roles of environmental scientists.
   b) resource job descriptions that broker the theme of Environmentalism and Cultural theory being integrated into strategic plans, project idea conceptions and planning, down to project works and maintenance. This will impact on how good policy making becomes a reality on the ground.

9. Support the correction of Whangaroa Māori place names such as 'Waikare' Stream, and acknowledge the notion of Te Mana o te Wai, that the harbour and her tributaries are a 'Mauri', a living person. Further, that the Whangaroa harbour environment be acknowledged and registered as a person, a living being.

10. That the project design creates opportunities for recreation and education that support the cultural narrative such as waka and boat travel, swimming, educational discovery, etc.. This would include culturally based solutions from Tane te waiora and Tangaroa in reestablishing native environments such as wetlands and taonga species.

[i] Whangaroa Catchment Committee was pulled together by FNDC and NRC following 2007 flood events, initially as the Kāeo River Liaison Committee to conduct flood mitigation works to protect the Kāeo township. Interested stakeholders include the farming and business communities and town residents. Only one legislated Māori organisation is represented, despite the three organisations described in this assessment, as well as several Whangaroa marae affected by decisions made.

CULTURAL IMPACT ASSESSMENT (CIA)

FOR

KAEO STAGE II FLOOD PROTECTION WORKS

Kaeo, a rising North Auckland township | Record | DigitalNZ

PREPARED FOR THE NORTHLAND REGIONAL COUNCIL

3rd FEBRUARY 2025

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Disclaimer:

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This Cultural Impact Assessment (CIA) should be read in conjunction with the following documents:

Title	Author/s	Date
clough_monograph18.pdf	Richard Shakles Sarah Phear Rod Clough	April 2015 (reissued 2017)
1.0 AEE - Kaeo Stage II FINAL.pdf	Steven Sanson	December 2024
2023Kāeo & Pupuke Rivers NĪSHRP Report.pdf	Nicholas Naysmith & Tracey Phillip	2023 – copyright White Bait Connection
2025-193.pdf	James Robinson	November 2024
northlandheritagesurveymethodologyreport.pdf	Adina Brown Rod Clough	November 2015

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Mōteatea no Whaingaroa

Toia mai ra te ata i ngarahu e

E ngiha ko te tao tenei ka ora mai e

Haere koutou e au Tama tane e

Tira o te kahui tena ka riro e

E tangi ngunguru ana e tangi haere ana e

Huia ka tu i roto o te Pupuke e huia

Hau rarangi noa i runga o Wharera e

Timu noa nga tai i roto Whaingaroa e

Ka rikiriki koa nga tai o te rae e

I waho te wahapu na

Ka whakarongo koe nga tai o te akau

Tai wahi rua i roto Waiaua e

Hau mano whenua i runga o Purau e

Ripoa iho ai nga toka Whakaruru e

Raro Pikoa ki te hoa rangatira na e

Paku kau ai te tai o Wharepoke e

Ninihi kau ai te tai o Kerikeri

Rapea koe te tikina atu ana e

To waka hoehoe ki runga te Kaipuke

Kaupapa waka i roto Waipara e

Me ko Tama na Rahi nana i here mai e

He kawa taura rua te kawa i a Pango

Ka hari ra ko te wahine Ati Maru e

Ka riro i a ia nei

Ka ngaro hoki ra ko te whare o te riri e

Kei hea hoki ra to pu tangi atu e

A tau te wheoro he moana pouri e

Tuhia ka rewa te toto aku hoa e

Tuhi ana i te rangi

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Appendices

1. Executive Summary:

Northland Regional Council Kaeo Stage II Flood Protection Works

This Cultural Impact Assessment (CIA) evaluates the potential cultural impacts associated with the Northland Regional Council's Kaeo Stage II Flood Protection Works. The project aims to address flood risk management in the region, specifically in vulnerable communities and landscapes. The CIA identifies and assesses how flood protection works may affect local Māori cultural values, practices, and historical associations, providing insights into the potential for positive and negative impacts on these areas.

The assessment highlights key cultural considerations, including potential impacts on wāhi tapu (sacred sites), marae (community centers), traditional resources, and Māori connections to land and water. To gather important perspectives, consultation with local hapū (Ngati Pakahi and Ngati Uru) was undertaken, ensuring that their cultural rights and values are adequately considered and respected throughout the project's lifecycle.

The CIA also explores mitigation strategies to reduce adverse cultural impacts, recommending measures such as relocating works away from sensitive sites, monitoring cultural values, and ongoing engagement with Māori communities. These recommendations aim to promote cultural sensitivity and ensure that flood protection works contribute positively to both the environment and the community's cultural heritage.

In conclusion, this Cultural Impact Assessment provides a comprehensive document evaluation and analysis of the cultural implications of the Kaeo Stage II Flood Protection Works. The CIA offers guidance for managing potential effects while upholding the Cultural Values of Ngati Pakahi & Ngati Uru, and fostering long-term relationships with the community, Northland Regional Council, and other Māori stakeholders.

2. Background & Proposal:

The Northland Regional Council (NRC) aims to conduct flood control earthworks, which will include the removal of vegetation, lowering of ground levels, clearing of sediment, and the construction of stop banks on the northern side of the Kaeo River, just north of the new Kaeo Bridge. These measures are intended to help mitigate future flooding issues that have been a persistent problem in the Kaeo area.

The area's archaeology is not well understood, and any sites that **are discovered** could enhance our knowledge of past occupations in this region. This area holds significance for Te Rūnanga o Whaingaroa, the Whangaroa Māori Trust Board, Ngati Uru, and Ngati Pakahi.

Figure 1 below provides Stage I of the works already completed. These works have reduced the effects of flooding on the Kaeo Township.

Figure 1: Kaeo Stage I Works

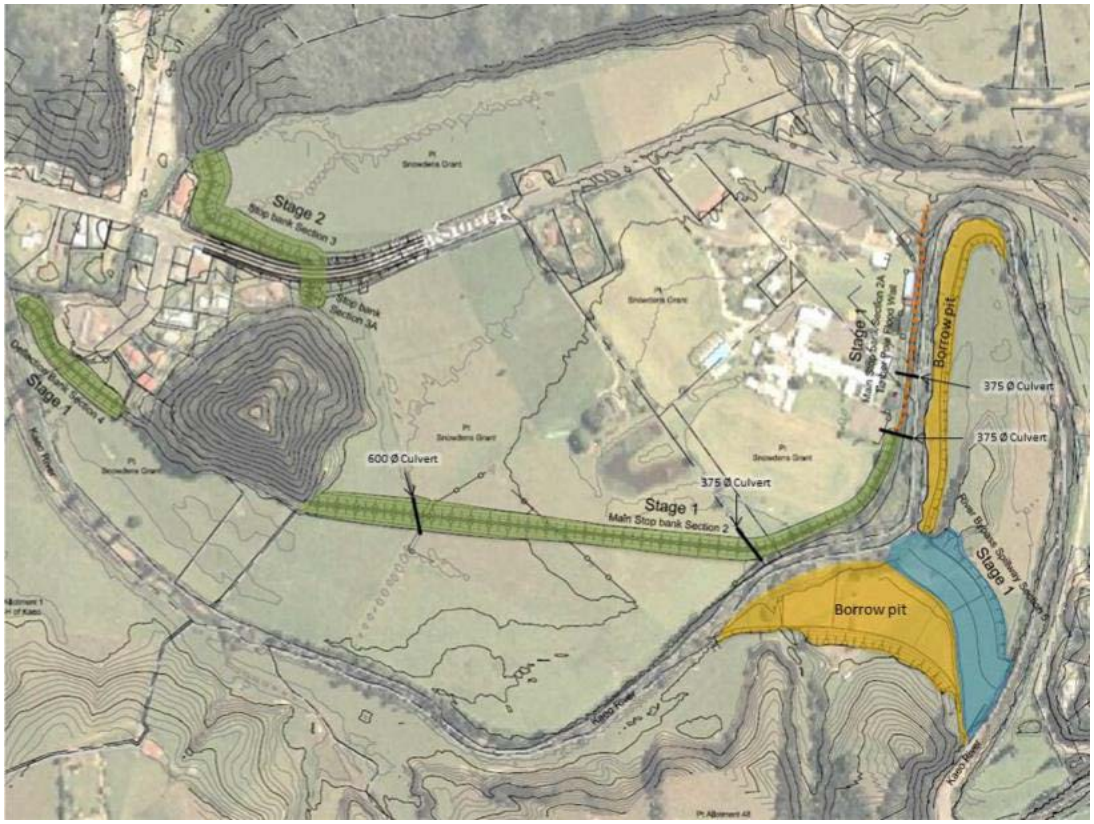


Figure 1 – Kaeo Stage I Works (Source: NRC)

The applicant (NRC) proposes to continue the flood mitigation works in Kaeo through this Stage II proposal.

Stage II seeks to reduce flooding of Kaeo by realigning the Kaeo River channel and using the cut material to create a deflection bank (stop bank). This would move the confluence ~520m downstream close to the Omaunu Road bridge.

Proposal Rationale: This project augments the initial works undertaken in 2013/2014 (Stage I). The works are proposed to be undertaken across five Records of Title. (listed in 1.0 AEE - Kaeo Stage II FINAL.pdf)

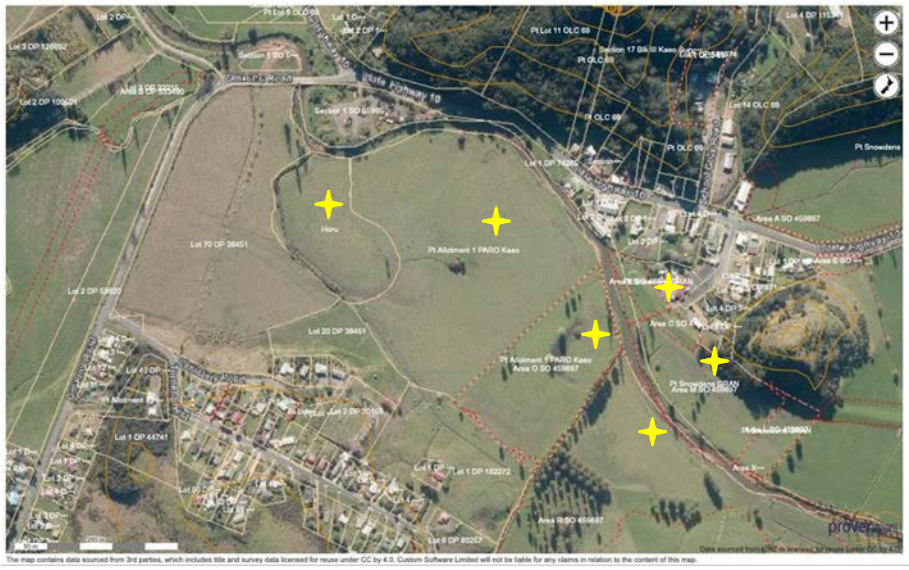
A Land Use Consent from the Far North District Council (FNDC) is required for the works associated with flood protection.

The proposal is considered to breach the following rules: 12-natural-and-physical-resources-full-chapter-for-oc.pdf

12.3.6.1.1 Excavation and/or Filling, Excluding Mining and Quarrying, in the Rural Production Zone – A Discretionary Activity.

The site sits to the south of the Kaeo Township and runs adjacent to and along a short extent of the Kaeo River. The sites are largely in pasture and are vacant where the works are proposed. One of the sites is located off Waikare Avenue where the works tie in with Stage I development. For ease of reference, the 'site' is highlighted in yellow in Figure 2 below.

Figure 2: Site Aerial (Source: Prover)



3. Briefing and Scope of the CIA:

The Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru was contacted by NRC (Megan Tyler) via email on 16th January 2025 Fwd_ Kaeo Stage 2 Flood Mitigation - Cultural Impact Assessment.pdf. A further meeting via "Teams" was also scheduled by NRC (Chantez Connor-King) on Friday 24th January 2025. Fwd_ Hui to Discuss CIA Report Submission - Via Teams_Zoom.pdf

There are four (4) expressions of interest to complete CIAs.

Te Runanga a Iwi o Whaingaroa

The Whangaroa Maori Trust Board } Combined to work on One CIA

Ngati Pakahi & Ngati Uru Hapu Representative }

Thomas Hawton (Kaitiaki o Whangaroa)

The scope (*as communicated via email by NRC*) of the Cultural Impact Assessments is outlined below:

1. *"the purpose of the CIA is to address relevant points under the Resource Management Act (RMA). Specifically, the* ***CIA should focus on the cultural values, interests, and potential effects of the proposed works on these****. See attached section D.1."* proposed-regional-plan-february-2024.pdf
2. *Completion and submission of all CIAs is* ***Monday 3rd February 2025***
3. **Specifics of D.1 within the** proposed-regional-plan-february-2024.pdf

   D.1 Tāngata whenua[28]

   D.1.1 When an analysis of effects on tāngata whenua and their taonga is required

   A resource consent application must include in its assessment of environmental effects an analysis of the effects of an activity on tāngata whenua and their taonga[29] if one or more of the following is likely:

   1) adverse effects on mahinga kai[30] or access to mahinga kai[31], or
   2) any damage, destruction, or loss of access to wāhi tapu, sites of customary value, and other ancestral sites and taonga with which Māori have a special relationship[32], or
   3) adverse effects on Indigenous biodiversity in the beds of waterbodies or the coastal marine area where it impacts on the ability of tāngata whenua to carry out cultural and traditional activities[33], or

4) the use of genetic engineering and the release of genetically modified organisms into the environment, or
5) adverse effects on taiāpure, mataitai, or Māori non-commercial fisheries,[34] or
6) adverse effects on protected customary rights,[35] or
7) adverse effects on Sites and Areas of Significance to Tāngata Whenua mapped in the Regional Plan (proposed-regional-plan-july-2021.pdf | Ngā mahere matawhenua).

28 The RMA definition of tāngata whenua is "in relation to a particular area, means the iwi, or hapū, that holds mana whenua over that area". For an analysis of effects, the appropriate iwi or hapū will need to be identified. Council officers will be available to assist with this.
29 An analysis of effects on tāngata whenua and their taonga may be necessary in circumstances not outlined in this policy – it will depend on the circumstances.
30 Food and places for obtaining natural foods and resources. The work (mahi), methods, and cultural activities involved in obtaining food and resources.
31 This includes, for instance, kai awa (river food) kai repo (swamp food) and kaimoana (seafood).
32 This includes, for instance, impacts on the quality of water used for ceremonial purposes.
33 This includes, for instance, use of rongoa (medicinal) plants, and uses for raranga (weaving).
34 Māori non-commercial fisheries are defined in the Fisheries Act 1996.
35 As defined by the Marine and Coastal Area (Takutai Moana) Act 2011.

4. Collaboration:

The Whangaroa Maori Trust Board (WMTB), in collaboration with Ngati Uru and Ngati Pakahi's cultural representative, has been commissioned by NRC to complete a **combined Cultural Impact Assessment (CIA)** for the Kaeo Stage II Flood Protection Works. The CIA will be guided by the scope outlined above.

A cultural impact assessment (CIA) is a process used to evaluate the potential effects of a proposed project, policy, or development on cultural heritage, practices, and values within a community. It typically includes the following components:

1. **Identification of Cultural Resources**: This involves identifying the cultural assets, such as traditions, customs, language, places, rituals, and tangible and intangible heritage, that may be affected by the project.
2. **Stakeholder Consultation**: Engaging with local communities, cultural groups, indigenous peoples, and other stakeholders to gather their perspectives on how the project may impact their cultural practices and values.
3. **Impact Analysis**: Assessing how the proposed action might affect cultural resources, including direct and indirect impacts. This can include impacts on sacred sites, traditional knowledge, or community well-being.

4. **Social and Cultural Context**: Understanding the broader social and cultural context in which the community operates, including demographic, historical, and economic factors that may influence cultural practices.
5. **Mitigation and Management Plans**: Proposing strategies to avoid, minimize, or compensate for negative impacts on cultural resources. This may include protection measures for significant cultural sites or supporting cultural preservation efforts.
6. **Monitoring and Follow-Up**: Outlining methods to monitor the ongoing effects of the project on cultural resources and providing mechanisms for ongoing community involvement or adjustment.

The scope of this CIA is to ensure that Maori cultural values are respected and preserved throughout the lifecycle of the project, balancing development needs with the protection of cultural heritage.

5. Cultural Impact Assessment for Kaeo Stage II Flood Protection Works

5.1. Introduction

This Cultural Impact Assessment (CIA) aims to assess the potential cultural impacts of the proposed Kaeo Stage II Flood Protection Works along the Kaeo River. The assessment will focus on Māori cultural heritage, values, and practices, particularly those relating to the Kaeo River and its surrounding areas. The assessment draws on current legislation and considers historical Māori sites that predate European settlement, ensuring alignment with cultural preservation and regulatory requirements.

5.2. Project Overview

The Northland Regional Council (NRC) aims to conduct flood control earthworks, which will include the removal of vegetation, lowering of ground levels, clearing of sediment, and the construction of stop banks on the northern side of the Kaeo River, just north of the new Kaeo Bridge. These measures are intended to help mitigate future flooding issues that have been a persistent problem in the Kaeo area.

5.3. Methodology

This CIA is based on the following methods:

- Consultation with hapū representatives (Ngati Pakahi and Ngati Uru).
- Review of historical records, maps, and documents relating to the Kaeo River.
- Analyse significant cultural and heritage sites along the river.
- Consideration of current environmental conditions and their importance to Māori cultural practices.

5.4. Legislative and Regulatory Framework

The following legislation and policies guide the cultural protection and management of heritage and resources in New Zealand:

- **Resource Management Act 1991 (RMA)**: This is the primary legislation governing land use and environmental management in New Zealand. It requires consideration of the impacts of projects on the environment, including cultural heritage and the Māori community's interests. Note: The Resource Management (Freshwater and Other Matters) Amendment Act 2024 was considered but does not apply to this project.

- **Heritage New Zealand Pouhere Taonga Act 2014** (as of 24 December 2024) This Act protects and manages historic places, including Māori heritage sites, through registration and oversight.

- **Te Runanga a Iwi o Whaingaroa Iwi Management Plan - 2022-2027-1-trow-te-ukaipo-iwi-environmental-plan.pdf**

- **Other Legislation that was considered:**
- Marine and Coastal Area (Takutai Moana) Act 2011
- New Zealand Coastal Policy Statement 2010
- National Policy Statement & Environmental Standards
- Northland Regional Policy Statement
- Regional Planning Documents
- Regional Water and Soil Plan
- (Operative & Proposed) Far North District Plan

5.5. Identification of Historical Māori Sites

- **Historical Sites Pre-European Settlement**: The Kaeo River and its surrounding landscape are known to be rich in Māori history. Some of the key historical and culturally significant sites along the river may include:

- **Marae and settlement areas**: Traditional Māori villages (pā sites) and settlements near the river. Specific sites should be identified through consultation with hapū in the area.

- **Wahi tapu**: Sacred sites, such as burial grounds, ancestral sites, or locations associated with important events in Māori history.

- **Rivers and waterways as ancestral pathways**: The Kaeo River itself is likely to hold cultural significance as a waterway used for travel, fishing, and spiritual practices. Rivers were considered tupuna (ancestors) in Māori culture and were treated with deep respect.

5.6. Consultation with Hapu

Meaningful consultation with local hapu (Ngati Pakahi and Ngati Uru) is crucial in identifying any additional cultural concerns, stories, or knowledge about the Kaeo River. This consultation highlights any specific concerns raised by the Māori community regarding the impact of the project on cultural values and practices.

5.7. Potential Impacts on Māori Cultural Heritage

The proposed project may impact the following aspects of Māori cultural heritage:

- **Physical destruction of heritage sites**: The proposal may alter or damage wahi tapu or marae or restrict access to traditional resources.
- **Effects on cultural practices**: Changes to the river could affect traditional practices such as fishing, gathering, and spiritual rituals tied to the water.
- **Disruption to ancestral connections**: For Māori, the Kaeo River is a taonga (treasure) that represents their ancestors. Any harm to the river may disrupt their cultural identity.

5.8. Mitigation and Management Measures

Recommendations to mitigate the potential cultural impacts of the proposed project will be added to a section at the end of the CIA Report (pg. 14)

5.9. Conclusion

This Cultural Impact Assessment has outlined the potential cultural effects of the proposed project along the Kaeo River, drawing on current legislation, local Māori history, and community consultation. It is essential to respect Māori cultural values, heritage, and ancestral connections to the land and water. By implementing the proposed mitigation measures (Recommendations pg. 14) and continuing consultation with iwi and hapu, it is possible to minimize adverse impacts and ensure the project aligns with cultural preservation.

6. Legislative and Planning Documents Recommendations

1. As noted within the 2023Kāeo & Pupuke Rivers NĪSHRP Report.pdf *NRC should support WBC & Kaitiaki Whangaroa, and the broader Kaeo community, to engage with the various landowners on the Kaeo River to implement some forms of protection, possibly temporary fencing, on the sites identified as potential inanga spawning sites (Figures 7 & 8).*
2. *NRC to give effect to Te Runanga a Iwi o Whaingaroa Iwi Management Planning Document (IMP)* 2022-2027-1-trow-te-ukaipo-iwi-environmental-plan.pdf in particular "The Freshwater, Rivers, Streams and Estuary Environments" issues, outcomes and strategic objectives on pgs. 14 & 15.
3. NRC to adhere to the proposed-regional-plan-february-2024.pdf in particular sections C.2, C.3. C.4, & D.1
4. *NRC to adhere to all conditions of the Heritage NZ consent* 2025-193.pdf and take into account sections 4, and 10 – 20 of the Heritage New Zealand Pouhere Taonga Act 2014 Heritage New Zealand Pouhere Taonga Act 2014 (1).pdf
5. *NRC to adhere to sections 6 (e), 7 (a), 8 & 63 of the RMA 1991* Resource Management Act 1991.pdf
6. *NRC to consider the Clough Archaeological Reports* clough_monograph18.pdf & northlandheritagesurveymethodologyreport.pdf in particular "Maori Settlement"
7. *NRC to adhere to the "entire" Bay of Islands planning* 1.0 AEE - Kaeo Stage II FINAL.pdf in particular, all Tables and summaries of effects.

7. Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru Recommendations

8. *NRC to give effect to the "**Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru Cultural Values Assessment**" (Appendix 1)*
9. *NRC to acknowledge "**Ngati Pakahi & Ngati Uru Mana Whenua**" Tupuna korero (Appendix 2)*
10. *NRC to employ "**Cultural Monitors** " as assigned by the WMTB for the duration of the project. Such Cultural Monitors will be inducted to the site and attend all "pre-start" meetings held on-site.*
11. **Site protection and preservation**: NRC to work with Heritage New Zealand and Hapu to protect any identified cultural sites or wahi tapu. Where

necessary, establish buffer zones to prevent damage. **NRC to ensure there is a buffer zone of a minimum of 50 meters from the base of the Pohue Pa site** *and remains free from any earthworks for the duration of the project. (silent File)*

12. **Cultural impact management plan**: If deemed necessary i.e. to avoid or mitigate adverse effects, NRC to develop a management plan that integrates Māori perspectives on environmental stewardship, ensuring that the river and surrounding landscape are cared for according to tikanga Māori (Māori customs).
13. **Consultation on alternative options**: If significant cultural impacts are identified, work with the Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru to consider alternative locations or methods of development that better respect cultural values.

8. Summary & Findings

The Whangaroa Maori Trust Board, Ngati Pakahi, and Ngati Uru find that the proposed Kaeo Stage II Flood Protection Works will have no more than minor effects on their cultural values and interests if the legislative, Planning Documents, and Whangaroa Maori Trust Board, Ngati Pakahi, and Ngati Uru Recommendations are accepted and implemented into the project.

Signed: Date: 2nd February 2025

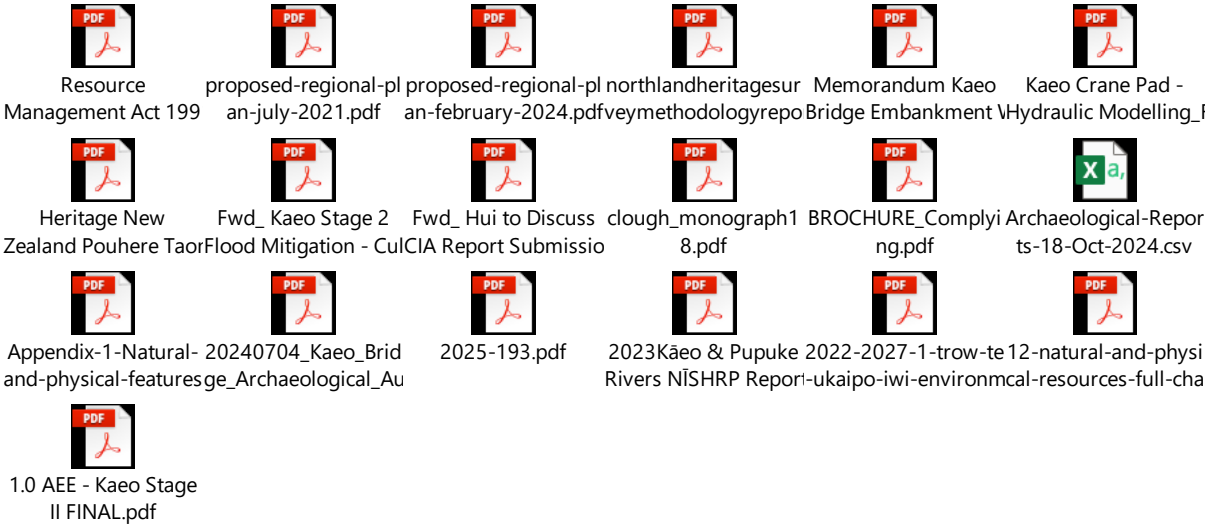
Violet Walker

Violet Walker – Whangaroa Maori Trust Board

B. Aldridge

Bryce Aldridge – Ngati Pakahi & Ngati Uru

9. References



Appendix 1

The Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru

Cultural Values Assessment

Our collective responsibilities and duty to Cultural Values is to avoid, remedy, or mitigate adverse effects on:

CULTURAL SITES

Wāhi Tapu, Wāhi Taonga Archaeology of Maori Origin Cultural Features and Places, Cultural Landscapes

Koiwi (Human skeletal remains)

Pa Sites (Fortified Palisades, Trenches)

Ovens (Heating Stones/Hangi)

Midden Sites (Shell Deposits)

Terraces/Platforms

Adzes (Stone Tools)

Waka (Canoes) Waka landing areas.

Agriculture Pits/Lines (Kamara/Rua Pits)

Pou (Carved Poles)

Whare and Wharenui

Churches

Culture and Traditions

Ancestral Lands

Water

Wāhi Tapu Area, including Caves

Historic Place

Buildings and Structures

Kainga and fishing villages

Rock walls/Art sites

The Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru used the following items to guide the cultural values impact assessment of any actual or potential impacts from the Kaeo Stage II Flood Protection Works

Item A

If it is likely that the activity will result in any significant adverse Cultural effect, a description of any possible alternative locations or methods for undertaking the activity:

Item B

An assessment of the actual or potential Cultural effect of the proposed activity:

Item C

If the activity includes the discharge of any contaminant, a description of –

(i) The nature of the discharge and the sensitivity of the proposed receiving environment to adverse effects; and

(ii) Any possible alternative methods of discharge, including discharge into any other receiving environment:

Item D

A description of the mitigation measures (including safeguards and contingency plans where relevant) to be undertaken to help prevent or reduce the actual or potential effect:

Item E

Identification of the persons affected by the proposal, the consultation undertaken, if any, and any response to the views of any person consulted.

Item F

If the scale or significance of the activity's effects are such that monitoring is required, a description of how and by whom the effects will be monitored if the activity is approved:

Item G

If the activity will, or is likely to, have adverse effects that are more than minor on the exercise of a protected customary right, a description of possible alternative locations or

methods for the exercise of the activity (unless written approval for the activity is given by the protected customary rights group).

Item H

Any effect on Hapu, the neighborhood and, where relevant, the wider community including any social, economic, or environmental effects:

Item I

Any physical effect on the locality, including any landscape and visual effects:

Item J

Any effects on ecosystems, including effects on plants or animals and any physical disturbance of habitats in the vicinity:

Item K

Any effect on natural and physical resources having aesthetic, recreational, scientific, historical, spiritual, or cultural value, or other special value, for present or future generations:

Item L

Any discharge of contaminants into the environment, including any unreasonable emission of noise, and options for the treatment and disposal of contaminants:

Item M

Any risk to Tangata Whenua, the neighborhood, the wider community, or the environment through natural hazards or the use of any hazardous substances or hazardous installations:

Appendix 2:

Ngāti Pakahi and Ngāti Uru Mana Whenua

The evidence below also focuses on our hapū of Ngāti Pakahi and Ngāti Uru. The korero is based on the korero tuku iho passed down through the generations. This kōrero re-confirms that the hapū of Ngāti Pakahi and Ngāti Uru have been on and continue to be on the whenua known as Whangaroa.

As I will touch on further below, the Tahawai hapū of Whangaroa come from Hare Hongi tua rua the son of Hongi Hika and Tuhikura. Hongi Hika's father was Te Hōtete of Ngāpuhi. So, through Tahawai hapū we have a connection to Ngāpuhi.

Marae

An important marae for our people is Mangaiti. This is a Ngāti Pakahi marae. The whare there is Tau-Te-Rangi-Mārie. There is also Te Huia, that's the old marae. That is a Ngāti Uru Marae.

Ngāti Pakahi also have Tahawai Marae, which is a modern one.

Kaeo is an important area for all of Whangaroa. The name "Kaeo" is derived from a food, He pipi tena. When I was a child we could collect the pipi. We would collect it from the edge of town. There are some areas where the pipi can still be found. Ko tērā taku mōhio mō tērā ingoa. The pipi that we would collect was a specific type of pipi. It is from that variety of pipi that we now have the name for the town, Kaeo. In fact, it was my tūpuna that gave the name to that area. Ngāti Pakahi and Ngāti Uru were the tribes in residence at the time that Kaeo was named.

Ngati Pakahi

Ngāti Pakahi is known as an in-land hapū. The hapū on the coast act as the kaitiaki of the takutai moana and are responsible for establishing the coastal boundaries between hapū. The in-land hapū, like Ngāti Pakahi, have the same authority over the ngahere. Their land boundaries are called ngahere boundaries.

Like many of our Whangaroa hapū, our rohe are interlinked and overlapping. However, land blocks that are widely recognised as Ngāti Pakahi whenua are Kaikinikini, Mangapa, Mangaiti, Waikukupa. Also, Takakuri north and inland.

Ngati Uru

Ngāti Uru derive their origin at a place called Rāwhiti, which is on the other side of Kororāreka. From Rāwhiti they then crossed the harbour, came through Matauri Bay, Mahinepua, and down to Te Hoanga in Whangaroa. Their history caught up with them here at Oruru. Whangaroa is their last place of occupation, where they settled with Ngāti Pakahi, right down all the way to Waipapa.

There is a large earth mound located at Kaeo called Te Pohue. It is located where there was once the location of an ancient pā. Ko tērā te ingoa ō te maunga nei. I'm of the view that it was put there by my tūpuna. It is a mound which should not be there. I know this, simply because it is right in the middle of a flood plain, earth would not have been able to gather there naturally without washing away. But still it has ended up in the middle of nowhere, it's just sitting there.

People may doubt that our tūpuna would have the skills or knowledge to have constructed the artificial mound. But where the flood plain is, that's where they used to bring waka up into that area. The waka would have been able to transport the earth and deposit it at Te Pohue. It would not have been impossible for our tūpuna to have built the mound. There is also evidence that they had constructed a river in next to no time subsequently. This shows their ability. Our tūpuna were so advanced that they knew where fresh water could be located in the middle of the ocean. They knew where along their migration path this fresh water would be located. They also knew where there were places in the middle of the ocean where the water was only a metre of two deep. Their engineering whakaaro and their knowledge was brilliant.

Me pēnei te kōrero, te riu. In describing the occupation of nga hapu o Whangaroa, te riu ō Te Ngati Uru tribe goes as far south as the Kerikeri airport, but the southern boundary of Ngāti Uru is Waipapa. There is a river just on the other side of Waipapa which was considered to be their boundary from the elders' point of view. Ko tērā te rohe mō tērā taha. The boundary comes from Tangitu to Puketi to Waipapa to Te Whau where there is a pā called Te Whau. Te Hoanga is their northern boundary. Maungataniwha is their south-western boundary, coming from Oruru.

(Korero ia Nuki Aldridge 2017)

Moe mai te Rangatira, Moe mai, Moe mai, Moe mai.

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Northland Regional Council
Attention: M. Tyler

5 February 2025

Dear Meg,

Re: Archaeological assessment of the proposed Kaeo Flood Mitigation Stage II works

Please accept this advice by way a letter report, concerning the archaeological effects of your proposal for flood mitigation work at Kaeo, Whangaroa. This report provides an update to the original assessment and subsequent monitoring and excavation undertaken for Stage I by Clough and Associates (Phear, Shakles and Clough 2010, Shakles, Phear and Clough 2015). This assessment incorporates the results of monitoring that work in, additional historic research, and the current plants for Stage II.

You have provided plans for Stage II (Figure 1-Figure 2) and the assessment of environmental effects prepared for consenting preparing by Bay of Islands planning (Sanson 2024).

The method used to assess potential archaeological effects was by desktop assessment only. However I have undertaken other work in Kaeo including the Spickman Cemetery opposite the project area at the State Highway 1 Omaunu Road intersection (Carpenter 2019, Carpenter, Wallace and Kerby 2025 *in preparation*), re-piling the Spickman house at Dip Road (Carpenter 2012, Gibb 2013), and the new Kaeo State Highway 1 Bridge and associated flood mitigation work (Carpenter 2021, 2024).

Along with reviewing the documents noted above, this desktop assessment has used regional archaeological publications and unpublished reports, New Zealand Archaeological Association Site Record Files (NZAA SRF) downloaded via the ArchSite website, archaeological reports held by Heritage New Zealand, land plans, Deeds Indexes and Registers held at Land Information New Zealand, and aerial imagery available through Google Earth and Retrolens, along with other archival research.

1.0 legislative Context

Under the Heritage New Zealand Pouhere Taonga Act 2014 (HNZPTA; previously the Historic Places Act 1993) all archaeological sites are protected from any modification, damage or destruction except by the authority of Heritage New Zealand Pouhere Taonga. Section 6 of the HNZPTA defines an archaeological site as:

> "(a) any place in New Zealand, including any building or structure (or part of a building or structure), that—
>
> (i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(b) includes a site for which a declaration is made under section 43(1)"

To be protected under the HNZPTA an archaeological site must have physical remains that pre-date 1900 and that can be investigated by scientific archaeological techniques. Sites from 1900 or post-1900 can be declared archaeological under section 43(1) of the Act.

If a development is likely to impact on an archaeological site, an authority to modify or destroy this site can be sought from the local Heritage New Zealand Pouhere Taonga office under section 44 of the Act. Where damage or destruction of archaeological sites is to occur Heritage New Zealand usually requires mitigation. Penalties for modifying a site without an authority include fines of up to $300,000 for destruction of a site.

Most archaeological evidence consists of sub-surface remains and is often not visible on the ground. Indications of an archaeological site are often very subtle and hard to distinguish on the ground surface. Sub-surface excavations on a suspected archaeological site can only take place with an authority issued under Section 56 of the HNZPTA issued by the Heritage New Zealand.

Archaeological sites and other historic heritage may also be considered under the Resource Management Act 1991 (RMA). The RMA establishes (under Part 2) in the Act's purpose (Section 5) the matters of national importance (Section 6), and other matters (Section 7) and all decisions by a Council are subject to these provisions. Sections 6e and 6f identify historic heritage (which includes archaeological sites) and Maori heritage as matters of national importance.

Councils have a responsibility to recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, wahi tapu, and other taonga (Section 6e). Councils also have the statutory responsibility to recognise and provide for the protection of historic heritage from inappropriate subdivision, use and development within the context of sustainable management (Section 6f). Responsibilities for managing adverse effects on heritage arise as part of policy and plan preparation and the resource consent processes.

2.0 Proposal

The following is taken from project assessment of environmental effects submitted for the Northland Regional Council earthworks consent (Sanson 2024: 5-7):

> "The proposal is for Stage II of the Kaeo Flood Protection Scheme. This project augments the initial works undertaken in 2013/2014. Consents are required due to the scale of earthworks required from FNDC. The works are proposed to be undertaken across five records of title…
>
> …Stage II seeks to reduce flooding of Kaeo by realigning the Kaeo River channel and using the cut material to create a deflection bank [stopbank]. This would move the confluence ~520m downstream close to the Omaunu Road bridge.
>
> …The works seek to reduce the backflow effect currently experienced by ~600mm and will reduce flooding in and around the Kaeo Township.
>
> …The proposal seeks a total of 55,214m3 of earthworks…the material won from the site will be used for the stopbank / infill works, and the balance held on the site for future use."

Per the plans (Figure 1- Figure 2), a ~500m long stopbank will be established from a point on the left (south) bank of the river near the confluence of the Waikara Stream (sometimes spelled Waikare in historic sources) and

Kaeo River and extend westwards to a point approximately 130m south of the State Highway 1/Omaunu Road intersection. The river channel will be realigned to the south of the stopbank and broadly parallel to it and will provide fill for the stopbank. The "new" channel broadly follows the line of an old river channel/meander. The existing river channel between the new channel and the Waikara Stream confluence will be infilled.

The project also requires land use consents from Far North District Council, along with the Regional Council earthworks consent.

3.0 Archaeological and Historic Context

For a detailed review of the archaeology and history of the area, see Carpenter 2021, Shakles, Phear and Clough 2010 and Phear, Shackles and Clough 2015. The following sections provide a brief overview of sites in the project area, and additional historic research undertaken.

3.1 Archaeological Sites and Investigations

There are four sites recorded in the vicinity of the project area, P04/428 Pohue Pā, P04/633 the Wesleydale Mission, P04/765 the Spickman family cemetery and P04/767 the "Dromedary Road".

The project area is dominated by Pohue Pā at the eastern end of the Kaeo township, between the town and primary school and college, just outside the eastern end of the project area. Pohue is a classic terraced 'wedding cake' pā and investigations on several terraces along with historic records indicated it was established in the 18th century and occupied into the 1820s, by the Ngati Uru Chief Te Ara (Georige). While the Pā is the most obvious indication of Māori occupation, the area occupied and utilised by the inhabitants extended out onto the river flats, as indicated by commentary of the Wesleydale Missionaries and archaeological findings reported in Phear, Shakles and Clough (2015) for Stage I of the Kaeo flood mitigation project. Phear et. al. recorded a large number of postholes, pits, fire scoops and ovens and other features in the spillway established immediately east of the Pā, with the earliest features dating to the 16th century.

To the south and southwest of the project area, on the opposite side of the river from Pohue Pā is the site of 'Wesleydale', the Wesleyan Mission Station occupied from 1823-1827. The Mission was established on 53 acres of land purchased by the Rev. Samuel Leigh between Kaeo, the Dromedary Road (see below), and the river (which at the time was to the south of its current alignment). There is no plan of the Mission but it was known to have comprised of a number of separate structures including two storey buildings, within a palisaded enclosure with orchards, cultivations and grazed pasture around the outside. It was sketched by missionary Nathaniel Turner in the mid-1820s. The higher ground on the mission property has been modified by suburban development in the mid-late 20th century, and the establishment of the current Kaeo cemetery but the flats to the river are largely unmodified except by fencing and farm curtilage.

Just west of the project area is the Spickman family cemetery, probably established in 1842 upon the death of the wife of the first European settler to establish himself after Wesleydale was abandoned, William Spickman. William Spickman was a former convict and later CMS Missionary builder, who bought land in Kaeo in 1834 and moved there from Waimate with his first wife Mary. Mary died in 1842 and was probably the first to be buried in the cemetery, although eh first recorded burial was in 1880 and the last in ca.1915, as the site was used for the interment of the wider Spickman, Hayes and families. The Spickman cemetery was disestablished in late 2019 due to the risk of slipping into the State Highway 1 corridor, with remains and coffin materials being reburied in the Kaeo cemetery (Carpenter 2019, Carpenter, Wallace and Kerby 2025, *in prep*).

Also to the west of the project area is the line of the Dromedary Road, the track used by crew of the HMS Dromedary to access timber for spars during its sojourn in the harbour in 1820. The original road more or less follows the line of Omaunu Road. Further to the west is the Spickman Cottage at Dip Road, the third and final

dwelling occupied by Spickman, and his second wife Mary Mangaiti (sometimes spelled Mangete), with the earlier occupations somewhere near the family cemetery and comprising first a nikau whare and then a European-style cottage.

3.2 Additional Historic Research

The project area includes land observed and sketched by Nathaniel Turner in the mid-1820s (Figure 6), and described in a letter he wrote to the Secretaries of the Wesleyan Missionary Society in 1826, just prior to the Mission being muru'd (a retaliatory raid for uru) and abandoned:

> "The long Building at the back is a Rush House, 45 feet by 12 - 27 of which is a Schoolroom, the remainder which is in two rooms is occupied by Luke. The House below is our Dwelling the main building of which is 26 by 13, with a Skilling or Leanto at the back 10 feet wide and another at the Southern end 8 feet. The Building to the right on the same level contains three apartments, two below and one above. The one above serves as a Store for Native Provisions etc etc. The one below it is principly occupied by the Native Girls. The Skilling or Leanto is the Carpenters Shop. The tall building above is the Barn and the small one to the right of it is the Cow House which is Rush and Logs. The one down the Bank below is the Boat House, built of Rush. The Garden and young Orchard are within the inner fence below the House. The Wheat Field is to the left and below that. That below and to the left where the Cattle are seen is a Flat of uncultivated ground coverd with small brush wood. The enclosures below are the Native Plantations or Kumera Grounds. The river runs in the front and to the right and left in a very Serpentine manner. The Foreground is part of a Native Village. The principle village where the Pa is, which could not be included is just to the left. The Hills immediately at the back are barren, but those in the distance are covered with fine Timber, Kaudi etc etc. The view of the Settlement does not nearly equal the view in richness of Scenery as from the Settlement."

At the time, the river appears to have run on the southern meander, to be re-established by this project. Later, and to the north of the river William Spickman would purchase his holdings and settle, first above what is now the Omaunu Road intersection above what became the family cemetery, and then to the west as his family holdings expanded to Dip Road. To the east on the south side of the river and across Pohue Pā, the land was was purchased by Snowden, except for approximately 4.5-5 acres between the old and new channels and the Maingaiti Stream, which became known as Horu, at the western end of the project area.

Maori land plan ML 2224 Plan of Horu (Figure 7) was surveyed in 1869 by Richard Fairburn. It shows a four acre area on the south side of the river, surrounded by a drain which diverts a stream around two sides of the block, before falling into the river. Annotations show the plan was produced in the Native Land Court on 2 January 1872 before Judge F. E. Manning. To the west is Wesleydale land, to the east is Snowden Davies' land, and to the north is Spickmans. The Horu Block is shown as 4 acres 3 Roods and 18 perches.

On 2 January 1872 a Certificate of Title was issued over the 4-acre Horu block situated at and awarded to two owners. On 10 March 1876 the land was transferred to M. Spickman, Mary Spickman nee Mangatete.

Another, undated plan ML 8642 (Figure 8) shows Horu as Ko-Te-Horu and gives an area of 5 acres 3 roods and 27 perches. The southwestern side of the block is shown as swamp, and the southern portion is cultivated. The land west and east is both shown as Wesleyan Mission land, with the Mangaiti creek to the west also indeicated.Despite the later numbering, this plan probably pre-dates ML 2224 as the surveyed area is shown as larger than the surveyed area on the 1869 plan and the title/grant in 1872, suggesting a later revision of the block boundaries and size.

In 1897 the block again came before the Native Land Court. On 27 May, Kairama (or Kairana?) Pumipi (?) claimed the land. Mere (Mary) Tukariri Goulton, the widow of William Goulton, also appeared before the Court and

presented the Crown Grant for the land issued to William Spickman and Mere (Mary) Mangatai Spickman, signed by Sir G. T. Bowen and dated 31 October 1872. The document was endorsed with several subsequent transfers and mortgages. Kairama's claim was dismissed (Native Land Court Northern Minute Book 17: 321).

Mary Tukariri was born in Kaeo around and died in 1946. She was the second wife of William Goulton,

The block came before the court again in 1902. On 11 September 1902 Pene Arana of Ahipara came before the court and claimed the land. The five acres then-surveyed was bounded by the Weslyean Mission land, and "an island". Arana stated that the land was occupied by the European Thomas Hayes but did not know who leased it to him. Pene said it was 20 years since his people had occupied the place. Heremaia Te Ana had the land surveyed, but George Penney occupied it and wouldn't let them on it. The land was the same as the Horu awarded to Mere Mangatai as she was living on it. Campbell made the survey for Heremaia about 10 years earlier. The acreage was 5 acres 3 roods and 27 perches

The Court found that the original award was for 4 acres 3 roods and 18 perches as granted to Mere Mangaiti in 1872 and since sold to Brown. The Court stood down at the request of the applicant who wanted to see the surveyor. The next day the surveyor Campbell appeared to say he surveyed the lands without authority, at the request of Heremaia. The land was occupied by Europeans and did not appear to be native land. At that point at the request of Pene Arana, the claim and two others were adjourned until the titles could be scrutinised (Tokerau No. 1 Maori Land Council Minute Book: 42, 53).

The eastern side of the project area, "Snowden's Grant" was part of an extensive series of land purchases undertaken by Henry Davis Snowden in Whangaroa in the mid-1830s, and additional purchased in the 1840s which gave him ownership of the south side of the Kaeo River east from Wesleydale, and the land between the river and the upper reaches of the Waikara Stream (Berghan 2006). Snowden, born in Sydney in 1811 was a friend of Chief Ururoa having met him and other local Māori on trading trips through the 1830s. He was resident in Whangaroa by 1833 but travelled widely His first wife Sophia died in 1841 and he took up with Ururoa's daughter Erana (Ellen) by 1842, and marrying in 1858. He was the master of the coastal trader *Prospect*, and then *Hellen* until collapsing onboard the latter in 1864, sying shortly after arriving back in Whangaroa.

The project area is shown in a number of photographs from the early 20th century (Figure 10-Figure 14), taken across properties subdivided and sold out of Snowden's grant after his passing in 1864, from the western slope of Pohue Pā. In the foreground is the commercial centre of Kaeo along Waikare Street and the Great North Road either side of the Waikara Stream confluence with the river, dominated by the Settler Hotel, with the original building burning down in 1936. In the distance, several large farm buildings are present on the left bank/south side of the river below the bluff where William Spickman established himself, above what is now the Omaunu Road intersection. Survey plan SO 24336 (1932) shows the footprint of the buildings prior to the fire.

In aerial imagery from the 1940s, tennis courts are present, a local club having been established in the early 20th century (Figure 16).

3.3 Archaeological Potential in the Project Area

Māori archaeological features typical of dispersed occupation and cultivation away from Pohue Pā from the prehistoric through to the early historic period and consistent with finds from the first stage of the Kaeo flood mitigation project may include postholes from whare or smaller structures like field shelters or palisading/fencing around garden plots, fire scoops, ovens, storage bins and storage pits, and shell midden and artefacts like stone tool flakes. Gardening features themselves may be present, such as gardening scoops containing imported mulches or anthropogenic fills (such as mixes of soil, charcoal, shell, sand and river gravels) and furrows from later ploughing.

Given the long human occupation of the valley, changes to the course of the river and tributary streams, the presence of historically attested swamps/wetlands and what is known from similar environments elsewhere in Taitokerau it is possible that rarer and more significant finds may be uncovered, such as horticultural drains associated with wetland taro cultivation, or caches of wooden tools or other taonga in wetlands.

European archaeological features which might be expected include rubbish pits or deposits, or river/stream bank rubbish disposal along the Kaeo River and Waikara Stream typical with 19th century and early 20th century practice from the Settlers Hotel and surrounding commercial and domestic occupations at the eastern end of the project area. In the central and western part of the project area there may be foundations and rubbish pits from the late 19th century farm buildings indicated in historic photos, and the remains of the early to mid-10th century tennis courts. Postholes from fences and potentially stockyards and other structures are possible.

4.0 Assessment of Archaeological Values

4.1 Assessment Criteria

Where archaeological sites, features and/or values are present within the proposed subdivision the following criteria are used to assess their significance:

The first set of criteria assess the potential of the site to provide a better understanding of New Zealand's past using scientific archaeological methods. These categories are focussed on the intra-site level.

4.1.1 Condition and Integrity.

How complete is the site? Are parts of it already damaged or destroyed? What information can be provided by the investigation of the site using archaeological methods.

A complete, undisturbed site with visible/accessible physical features would have high value, a partly-destroyed or damaged site would have moderate value and a site suffering from extensive modification or damage would be of low value.

4.1.2 Diversity

How diverse are the visible/accessible physical features, and those features which might be expected below the surface and amenable to archaeological investigation of the site?

A complex site like a pā or kāinga withs pits, terraces, defensive works, midden and stratified occupation deposits or other visible/accessible physical features and which could be expected to have a variety of subsurface features and associated with a long-term occupation by a large group of people would be of high significance. A smaller site, such as a complex of a few terraces, pits and midden which might be associated with a family-level occupation and used for a short period of time would be of moderate significance A site with only one or two known or expected feature types, such as a small midden which overlay several ovens and with no other associated features is of low value.

4.1.3 Rarity and Uniqueness

How rare or unique is the site as a type? Are there features within the site that are not commonly found or are unusual?

Rarity can be described in a local, regional and national context. If the site is not rare at all, it has low significance in this category. If the site is rare in a local context only it is of low significance, if the site

is rare in a regional context, it has moderate significance and it is of high significance it the site is rare nationwide. Coastal shell midden with relatively homogenous contents and not specifically associated with a larger occupation or other features are ubiquitous in Taitokerau/Northland and are the most common site type nationally, and would generally be of low archaeological significance. Small pit and terrace complexes are moderately common and typically moderately significant. Pā sites, although still numbered in the thousands nationally, are rarer and are of high significance. Sites from the earliest period of human occupation in Aotearoa New Zealand, so-called "Archaic" sites associated with the cooked remains of moa and other extinct or locally extirpated species and Polynesian-style artefact forms are incredibly rare and unique and are of the highest significance, despite being a kind of midden.

The second set of criteria puts the archaeological site into its broader context including the wider archaeological landscape, amenity values, and historic context and associations with events and people, and the values the present-day communities of interest hold in the site.

4.1.4 Archaeological Context

What is the context of the site within the surrounding archaeological sites?

The question here is the part the site plays within the surrounding known archaeological sites. A site which sits amongst similar surrounding sites without any specific features of note, such as a coastal midden with other midden nearby is of low significance. A site which occupies a central or prominent position such as a large pā with surrounding satellite occupation, horticultural and other sites which might reasonably be associated with it is of high significance.

4.1.5 Landscape Context and Amenity Values

What is the context of the site within the landscape? Does it have visual, education, recreation or other amenity values

This question is linked to the one above, but focuses onto the position of the site in the landscape. If it is a dominant site with many features still visible from public places it has high significance, but if the sites' position in the landscape is ephemeral with little or no features visible it is of low significance. This assessment is also concerned with the amenity value of a site such as whether it is publicly accessible and used for recreational or other activities, available and useful for interpretation and education activities. A prominent pā in a public reserve with walking tracks, an urupa visible from the road, or the site of a first waka or ship landing, church service or other important event regardless of whether anything physical is visible would be of high significance. Subsurface features on private land and not otherwise associated with any important person or even would be assessed as having low significance.

4.1.6 Historic Context and Community Associations

What is the historic context of the site and is it associated with important historic events or people? How do communities of interest, be they the mana whenua, other descendant communities or local inhabitants feel about the site?

This is the question of known cultural association either by tangata whenua or other descendant groups. Sites linked with important historic events or people have higher the significance while sites with no known history are of lesser significance. Likewise sites ascribed value by communities of

interest are of higher significance than those sites the community is unaware of or does not care about.

An overall significance assessment derives from weighing up the different significance values across of the six categories.

4.2 Archaeological Significance Assessment

Two assessments are provided, one for likely European features and one for likely Māori archaeological features. Māori archaeological features are assessed as being of moderate archaeological significance if present due to the range of features and information which may be present, the archaeological context and strong associations with the Tangata Whenua. European archaeological features are likely to be of low archaeological significance due to the relatively common nature and late date of such features and their poor condition.

Table 1: Significance assessment of Māori archaeological features.

Significance Category	Value	Comment
Integrity, Condition and Information Potential	Low	Only subsurface features are likely to be present, and these will have been modified by 170 years or more of semi-regular flooding, stream and river channel movements, farming and other land development. Nevertheless any remaining features are likely to provide additional information on the occupation of the Kaeo valley by Māori in the pre and protohistoric period including information on chronology, subsistence practices and material culture.
Diversity	Moderate	Based on the results of monitoring and investigation for Stage I of the Kaeo flood mitigation project, there may be a range of subsurface features present in the project area for Stage II including fire scoops and ovens, storage pits and bins, postholes, midden and artefactual material like stone tool flakes.
Rarity	Low	Subsurface archaeological features like storage pits, fire scoops and ovens, storage pits and midden, as might be expected in the project area, are relatively common.
Archaeological Context	Moderate	Pohue Pā dominates the Kaeo valley and was an important settlement into the mid-19th century. Features which may be found on the level ground below the pā are likely to be associated with its occupation, comprising the cultivations and outlying occupations of the local Māori community when season and security did not require them to live on the Pohue itself.
Landscape Context and Amenity	Low	Any Māori archaeological features affected will be below the existing ground surface with no public access/visibility. They have no landscape or recreational amenity but may be interpreted off-site at the Kaeo museum or similar institution, or signage at a nearby amenity area.
Historical and Community Associations	High	Any archaeological features associated with the Māori occupation of Kaeo are likely to be of significance to the Tangata Whenua.

Table 2: Significance assessment of European archaeological features

Significance Category	Value	Comment
Integrity, Condition and Information Potential	Low	The original Settlers Hotel was destroyed in 1936 and new hospitality facilities were established on the same site. The farm buildings appear to have been destroyed likewise in the early 20th century and only subsurface features may remain. They will contain limited information about European occupation and use of the area in the late 19th century.
Diversity	Moderate	A range of features may be present including rubbish pits and deposits, building foundations, and curtilage.
Rarity and Uniqueness	Low	Late 19th century sites with subsurface features are ubiquitous.
Archaeological Context	Low	There is little or no local archaeological context for any finds which might be forthcoming in the project area, except that they are likely to be associated with either the Settlers Hotel and neighbouring commercial operations at the eastern end of the project area, or the agricultural use of the western end.
Landscape Context and Amenity Values	Low	Any European archaeological features affected will be below the existing ground surface with no public access/visibility. They have no landscape or recreational amenity but may be interpreted off-site at the Kaeo museum or similar institution, or signage at a nearby amenity area.
Historical and Community Associations	Low	European archaeological features are likely to be from the late 19th century, after the original settlement of the area by the Spickman and Snowden families. Such remains may be of some interest to the local community. It is far less likely that any remains of Wesleydale extended into the project area.

5.0 Assessment of Archaeological Effects

On the basis of the existing archaeological record and additional historic research presented here, it is likely that the proposed Kaeo Stage II flood mitigation works will have archaeological effects by modifying or destroying any subsurface archaeological features associated with:

- Pre and proto-historic /historic Māori occupation and horticultural activities on both sides of the riverbank within the project area.
- Historic European occupation associated with the late 19th century hotel and other commerce on Waikara Avenue at the eastern end of the project area.
- Historic European occupation associated with the late 19th century farm buildings at the western end of the project area.
- Maori and European occupation and horticultural activities on and near the (Te) Horu Block.

It is unlikely that additional standard archaeological testing techniques (spade and/or probe) would identify subsurface features associated with any of these activities. They are unlikely to be identified except by large scale topsoil stripping and bulk excavation due to prior landscape changes from repeated flooding including changes to the river course and deposition of alluvial deposits forming at a rate of 8-13mm per year from the historic period (i.e. up to 1.3m of silt in the last 100 years).

The form such features are likely to take also affects the likelihood that they would be identified by small scale testing. Postholes from fences and small structures, horticultural scoops and furrows, and fire scoops associated with Māori occupation such as were identified in the Stage I works; postholes and from historic buildings and associated farming, commercial and domestic operations, small rubbish pits or deposits of historic rubbish are unlikely to be identified by spade or probe testing.

Regardless of whether such features can be identified by testing prior to the consenting of the project or the start of works, there is no possibility of avoiding the features due to the purpose and scope of the project.

6.0 Findings and Recommendations

On the basis of this review the central part of the project area was used for kumara gardens and kainga in the 1820s, and probably before and after this period. From the 1860s if not earlier and through to 1900 the western end of the project area was a cultivated area in an old meander of the river, known as Te Horu, and this land was claimed by Mere (Mary) Spickman nee Mangaiti (Mangete) with title granted to her and her husband William Spickman in 1872 and subsequently conveyed to the Goulton family. In the early 20th century, there were at least two substantial buildings at the western end of the project area, probably associated with some form of agricultural or horticultural activities. In the mid-20th century, tennis courts were also present in the centre of the project area, with the Kaeo Tennis Club in operation in that area after the floods of 1903 and before 1931 (Note any remaining features do not meet the legal definition of an archaeological site and are of historic interest only). The eastern end of the project area below Pohue Pā was used as a kainga in the early 19th century, associated with Pohue Pā, and by the late 19th century was the site of a substantial hotel and now the site of the Kaeo Tavern.

There may be subsurface archaeological features associated with some or all of these activities. They are unlikely to be proactively identified and avoided due to the scope of the project, the form of the likely features, and the history of flooding and alluvial deposition across the project area. However they are likely to only be o low to moderate archaeological significance.

Mitigation of the Kaeo Stage II Flood Works should be by monitoring and investigation and reporting of any features under an archaeological authority.

I make the following recommendations:

1. The Northland Regional Council should apply for an archaeological authority on a precautionary basis for the proposed Kaeo Flood Mitigation Stage II project.

2. Any such an Authority application will also require consultation with the Tangata Whenua, and consent of the landowners.

3. Management and mitigation of archaeological effects will require:
    a. Pre-start/site induction for contractors and crew.
    b. Archaeological monitoring of any site establishment/sediment control.
    c. Archaeological monitoring of stripping for haul roads, spillways, channels and stopbanks.
    d. Processes to manage variations and work requests.
    e. Processes to manage accidental finds and damage, through on-call procedures.

4. Due to the project scope, nature and uncertainty of the potential archaeological effects and the range of features which might be encountered, an archaeological site instruction is required but a research strategy is not necessary.

5. All final plans issued for construction should be reviewed by the archaeologist prior to commencement. Any borrow areas or other works outside the project area identified in the attached plans will require additional assessment and may require a separate authority if not included beforehand.

6. If archaeological remains or buried cultural deposits are encountered elsewhere during works, such as layers of shell midden, oven stones, artefacts etc, the Northland Regional Council or their agents, should cease work in the immediate vicinity and Heritage New Zealand and Geometria Ltd should be contacted for advice on how to proceed.

7.0 References

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Regards,

Jonathan Carpenter
Director/Senior Archaeologist

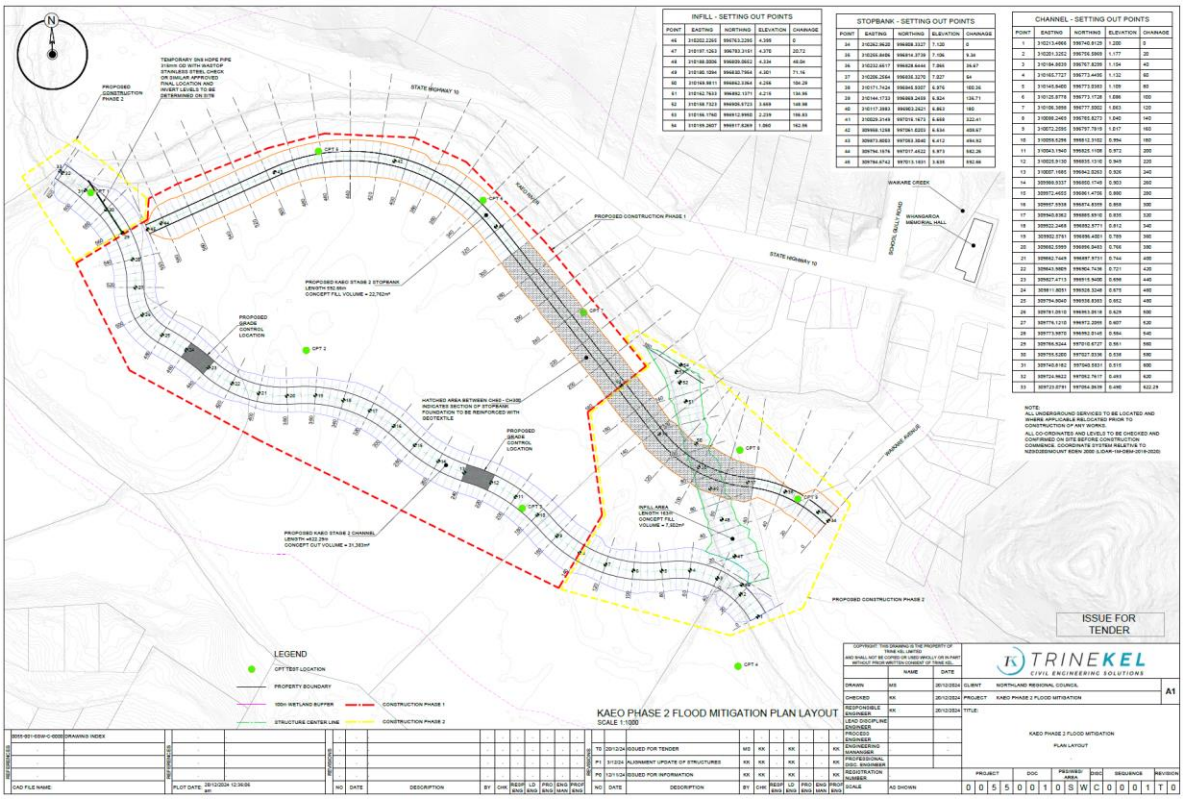

Figure 1: Archaeological sites and features, prior modification and proposed track.

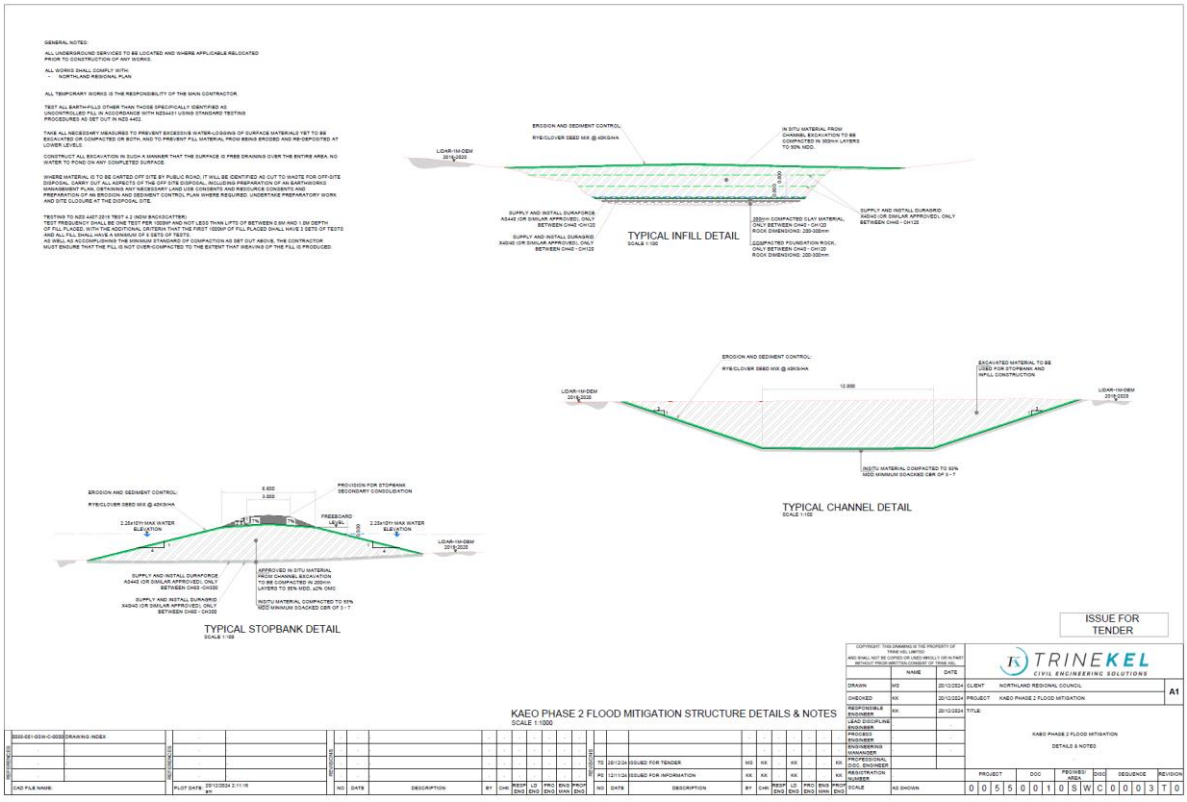

Figure 2: Track Section B plan and profile.

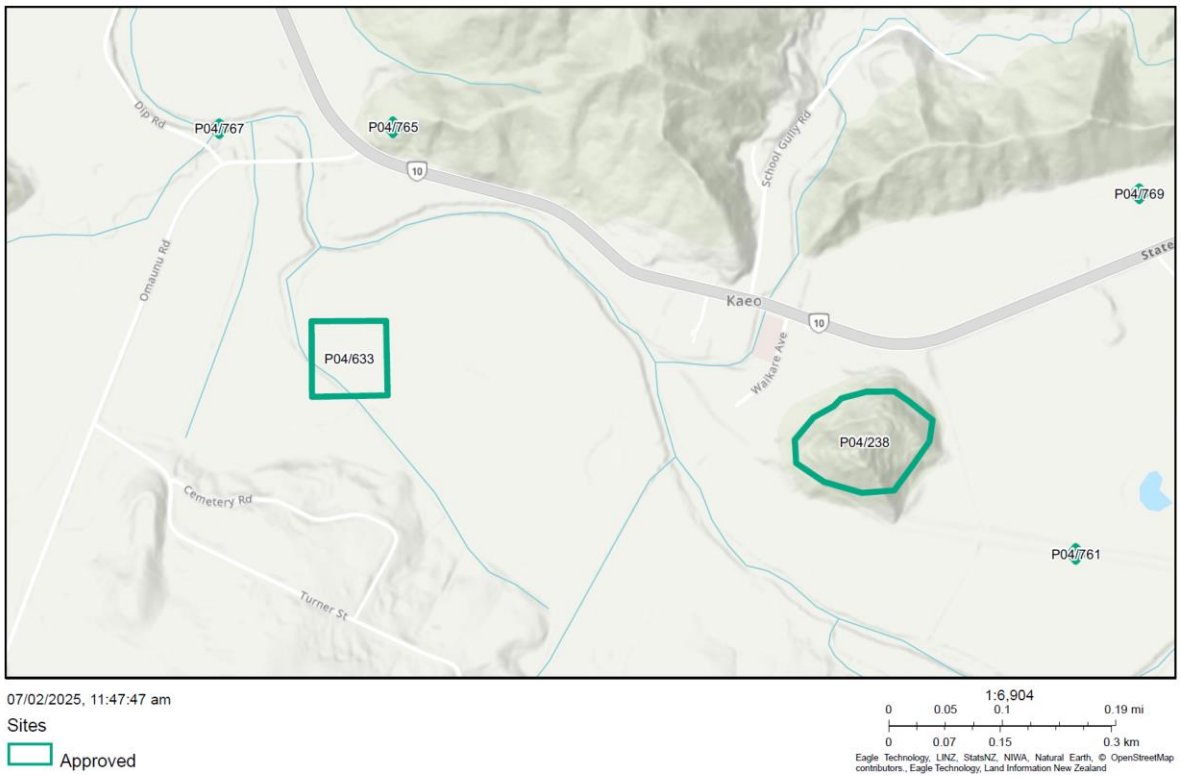

Figure 3: Archaeological sites in the vicinity of the project area.

SITE P04/761 EXCAVATION RESULTS, *CONTINUED*

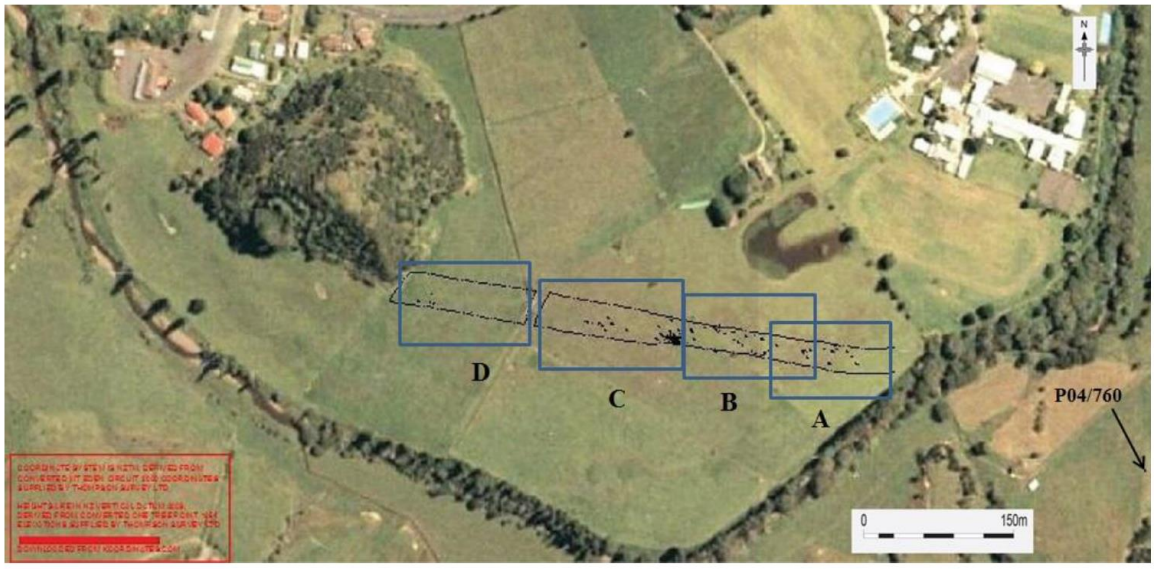

Figure 38. Plan of excavated extent of site P04/761 with aerial overlay; the location of site P04/760 is indicated by the arrow. Details of Sections A-D are presented in Figures 39-42

Figure 4: Map of features recorded in Stage 1 of the Kaeo flood mitigation works east of Pohue Pā (Shakles, Phear and Clough 2015: 52).

Figure 48. South-east facing post excavation plan shot of pit [236]. Scale: 2x1m

Figure 5: Storage pit with grinding stone recorded in Stage 1 of the Kaeo flood mitigation works (Shakles, Phear and Clough 2015: 60).

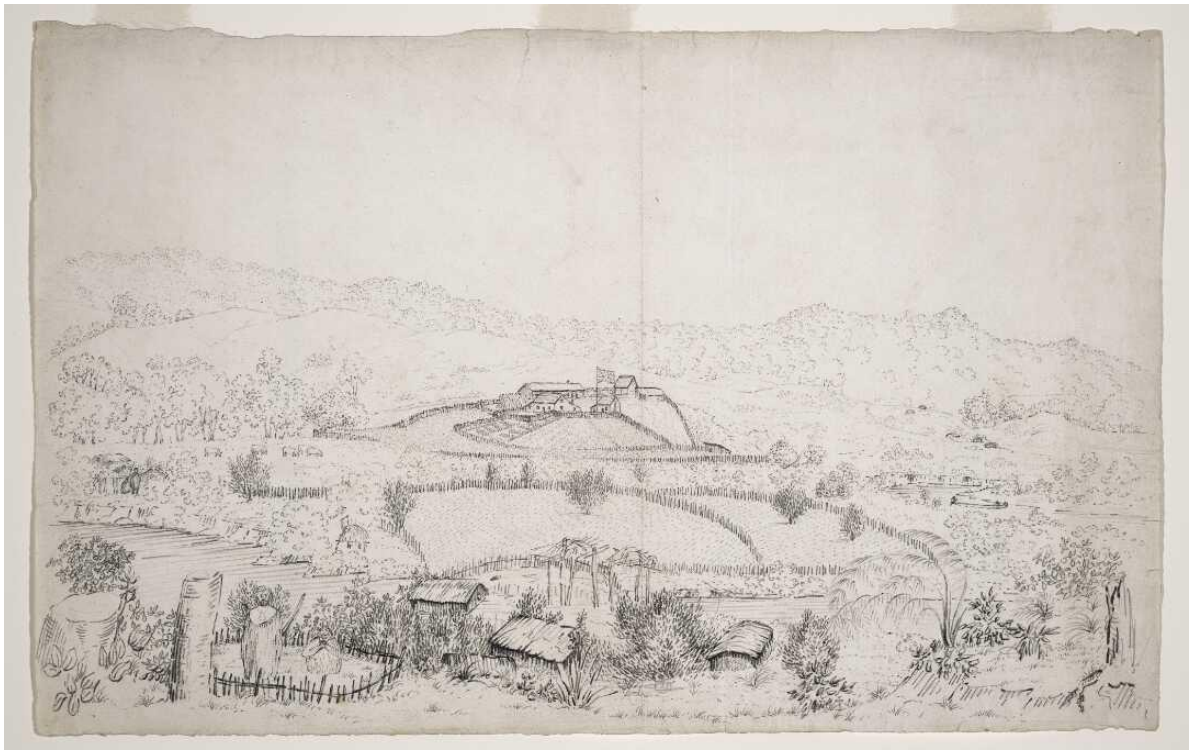

Figure 6: View of the Wesleydale Mission, sketched from the north side of Pohue Pā by Nathaniel Turner between 1824-1827. Note the river in the foreground, with whare, fences and cultivations on the opposite (left/west/south) side of the river from the pā. ATL B-121-023.

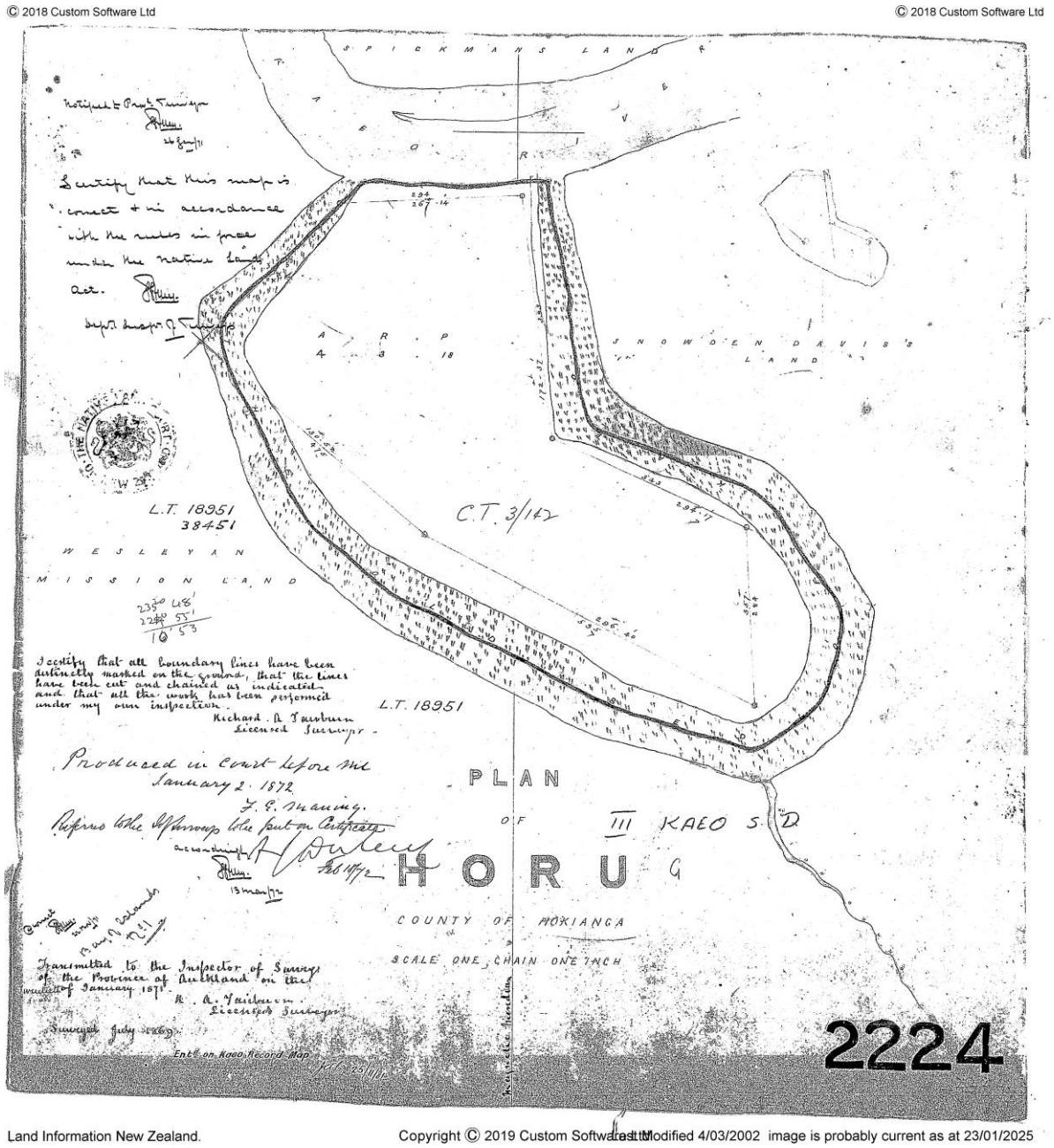

Figure 7: ML 2224 (1872) Plan of Horu, showing Mission and Snowden land.

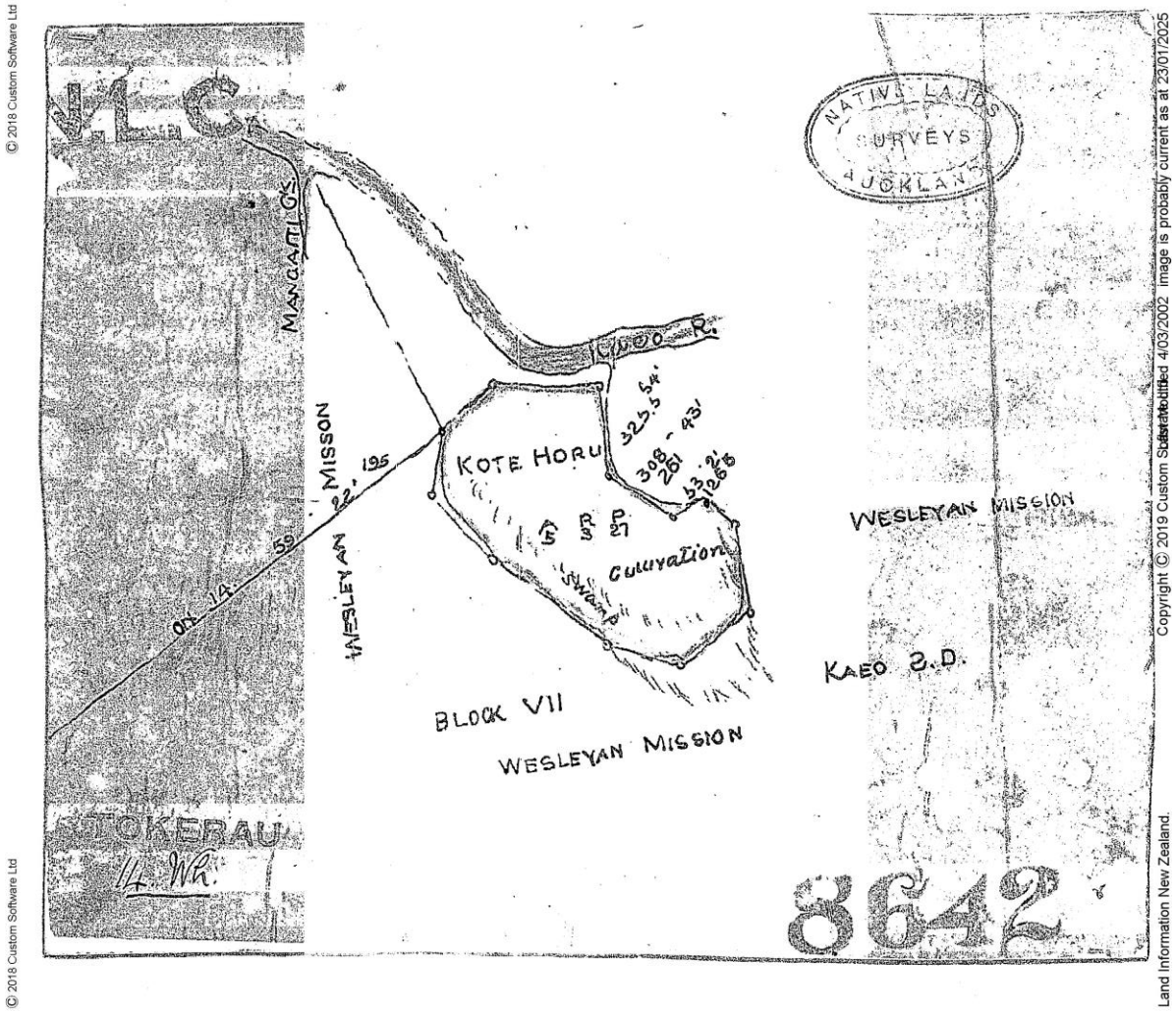

Figure 8: ML 8642 (ca. 1902) Kote Horu (Ko Te Horu), showing cultivation, swamp and Mission land.

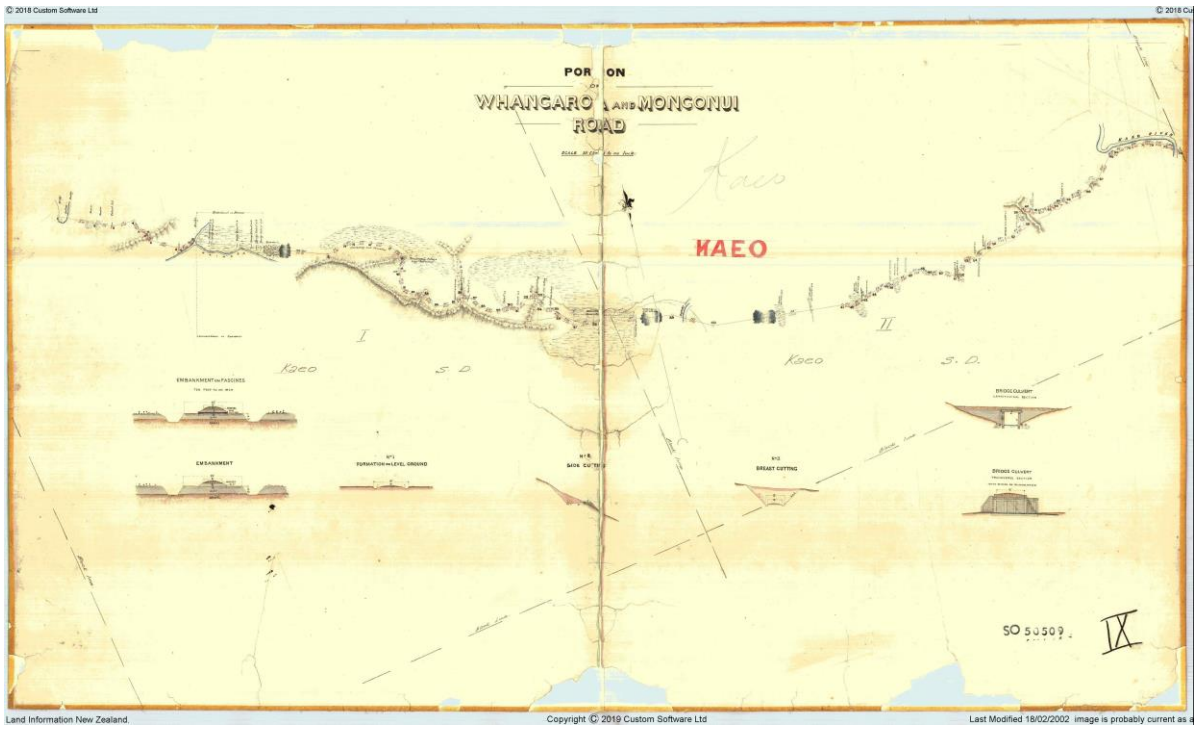

Figure 9: Looking downslope and east over approximate track alignment, with airstrip to the left of frame.

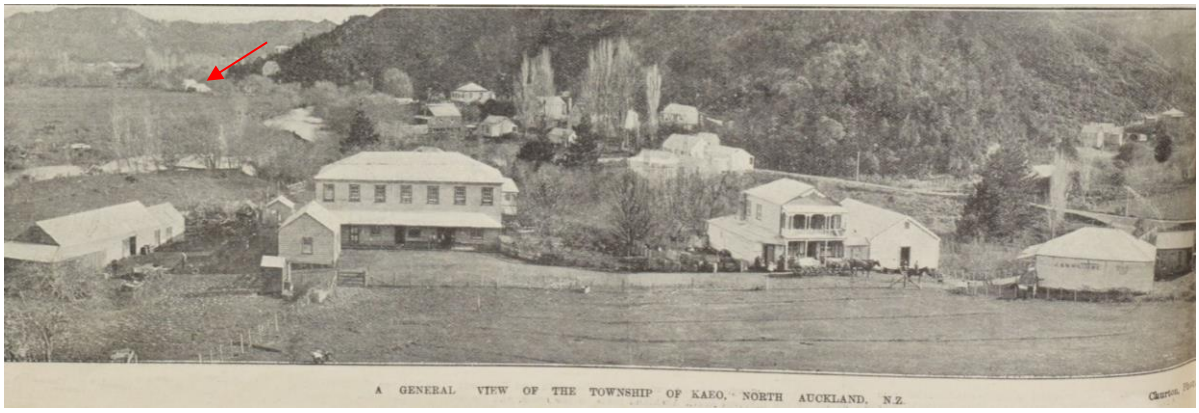

Figure 10: Auckland Weekly News, 22 October 1903. APL AWNS-19031022-02-05. Note the Settlers Hotel centre left, which burned down in 1936, and the two farm buildings on the left bank of the river in the background (arrowed red), at the western end of the project area.

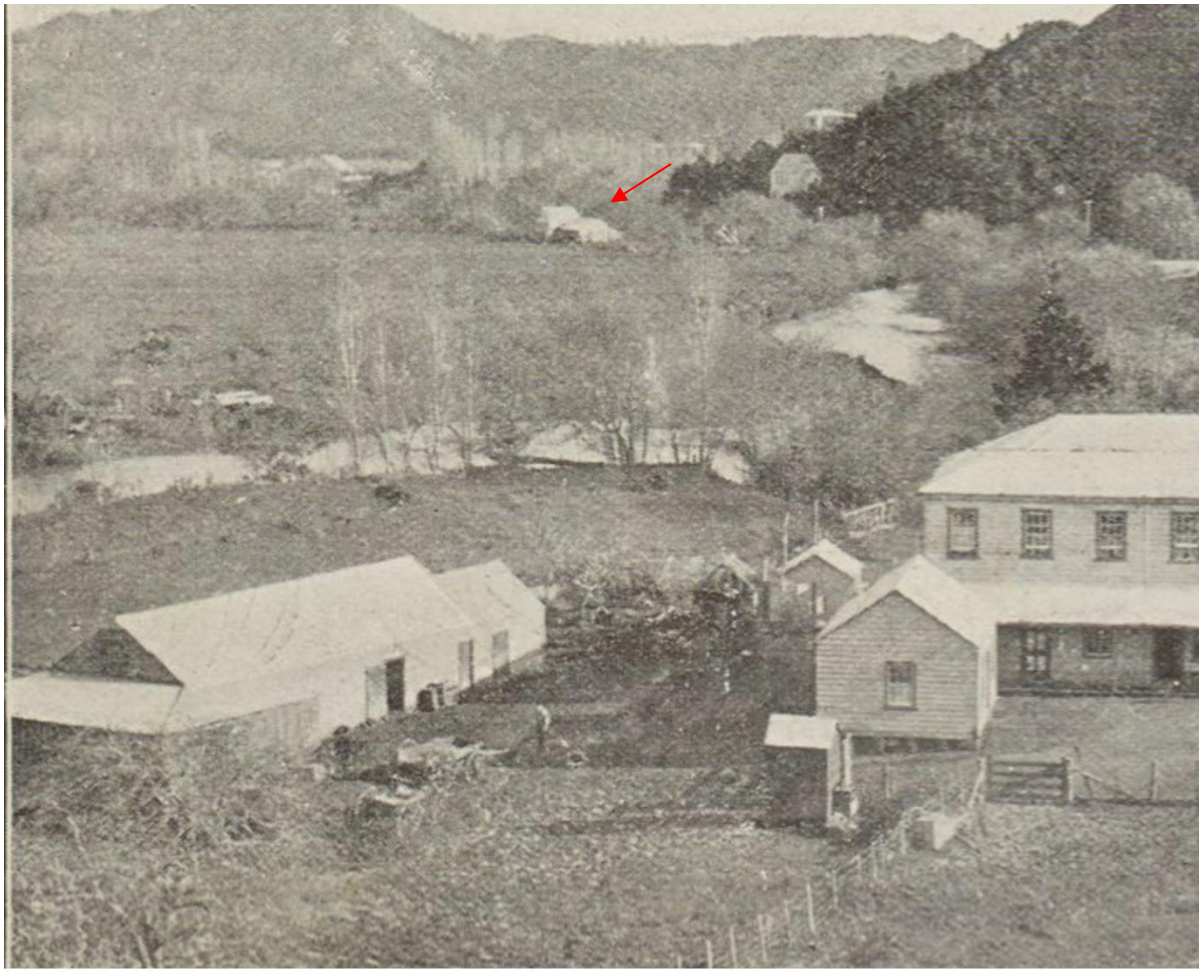

Figure 11: Detail from Auckland Weekly News, 22 October 1903. APL AWNS-19031022-02-05 showing hotel buildings, with farm buildings in the distance at the western end of the project area.

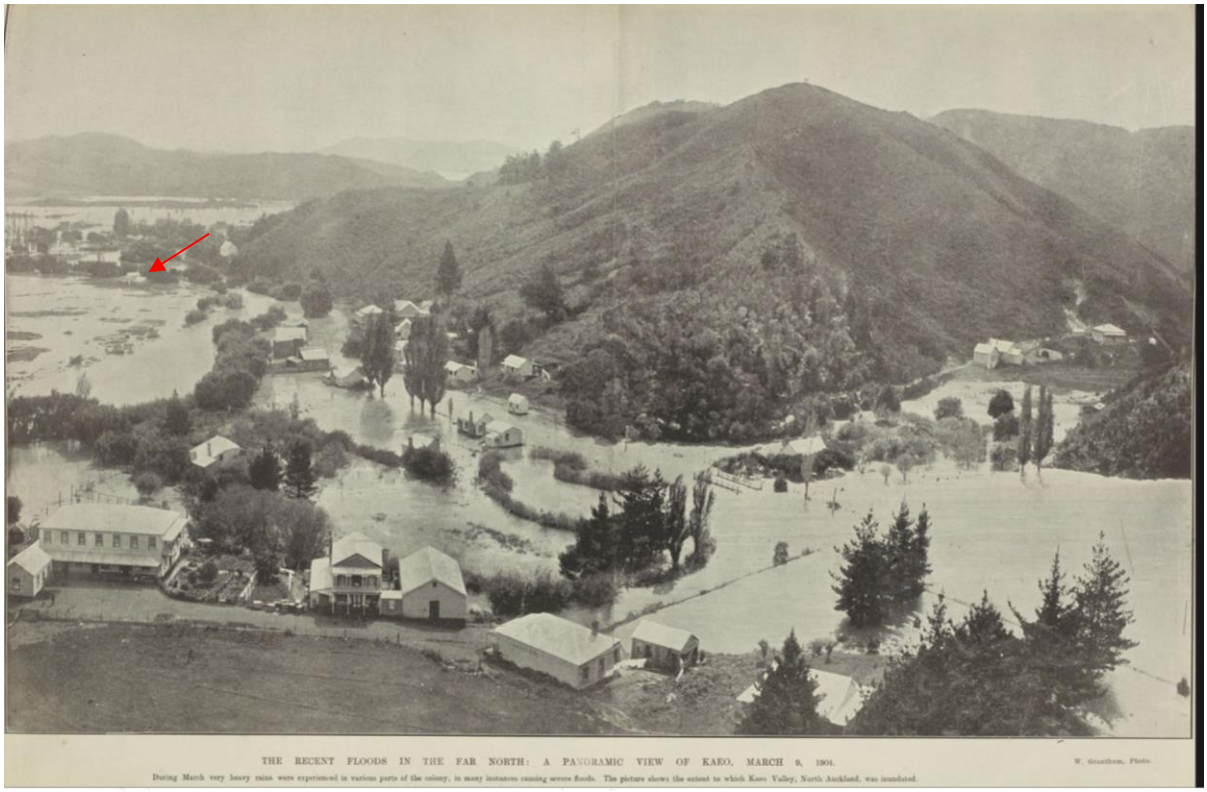

Figure 12: The recent floods in the Far North: a panoramic view of Kaeo, March 9, 1904. Auckland Weekly News, 31 March 1904. APL AWNS-19040331-05-01. Note the farm buildings surrounded by flood waters (arrowed red), with Settlers Hotel on the left foreground.

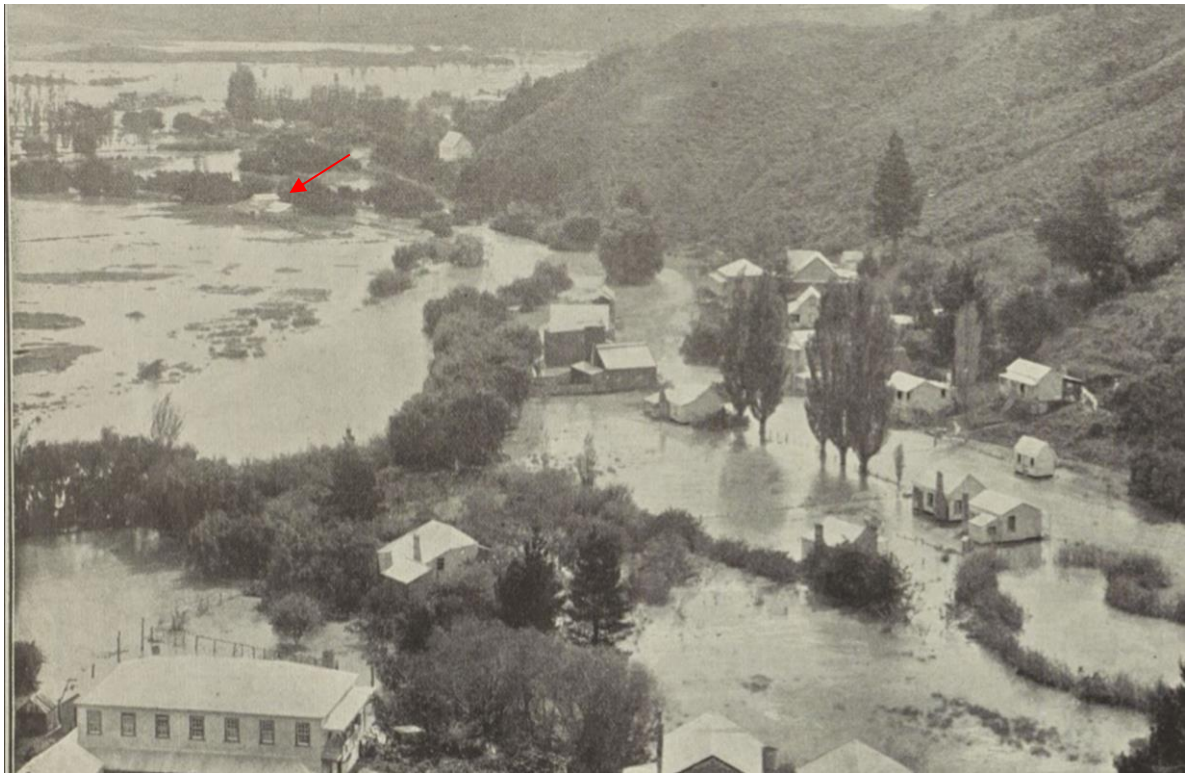

Figure 13: Detail of Auckland Weekly News, 31 March 1904 with hotel and farm buildings (arrowed red).

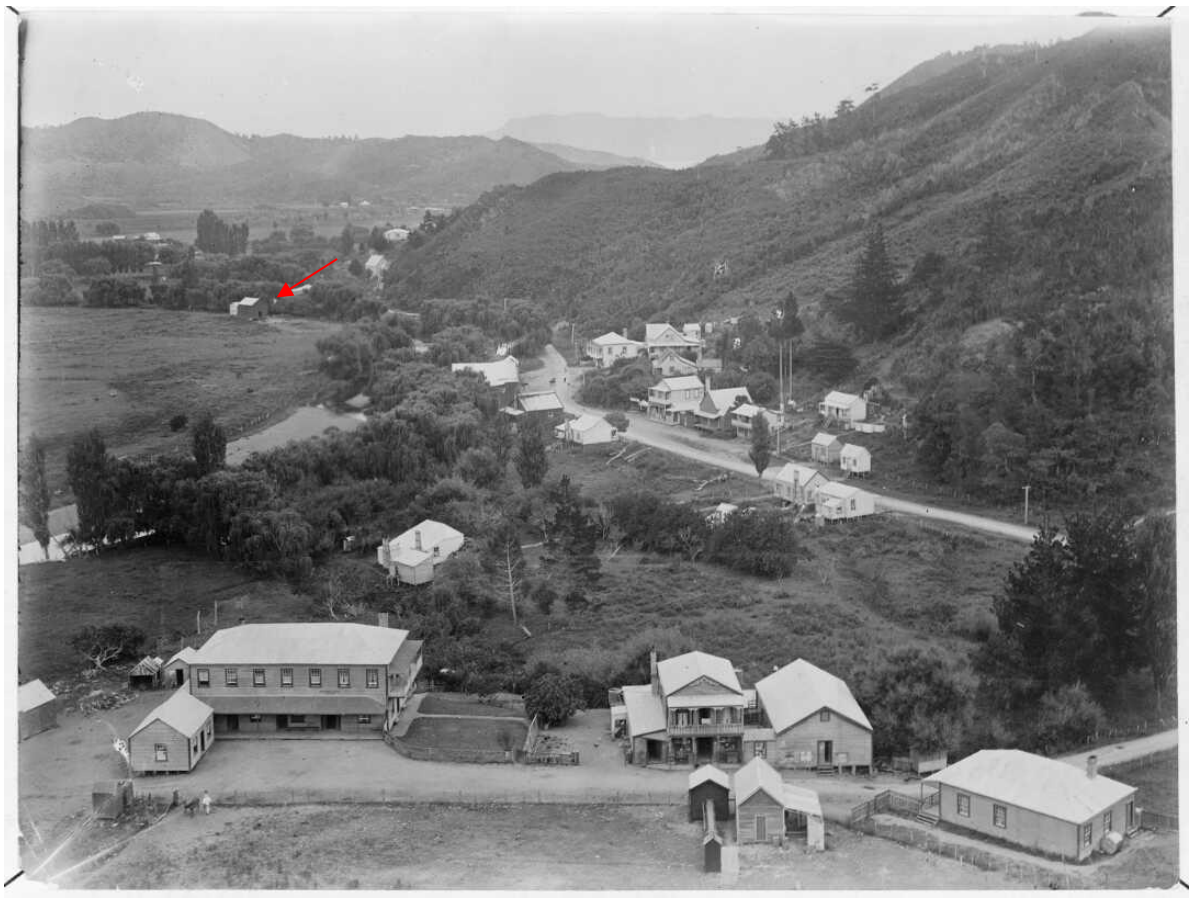

Figure 14: View west over Kaeo by the Northwood Brothers, ca.1910. Note hotel in the foreground, and farm buildings (arrowed red) on the opposite bank and a change to the configuration and colour of the buildings. ATL 1/2-029852-F.

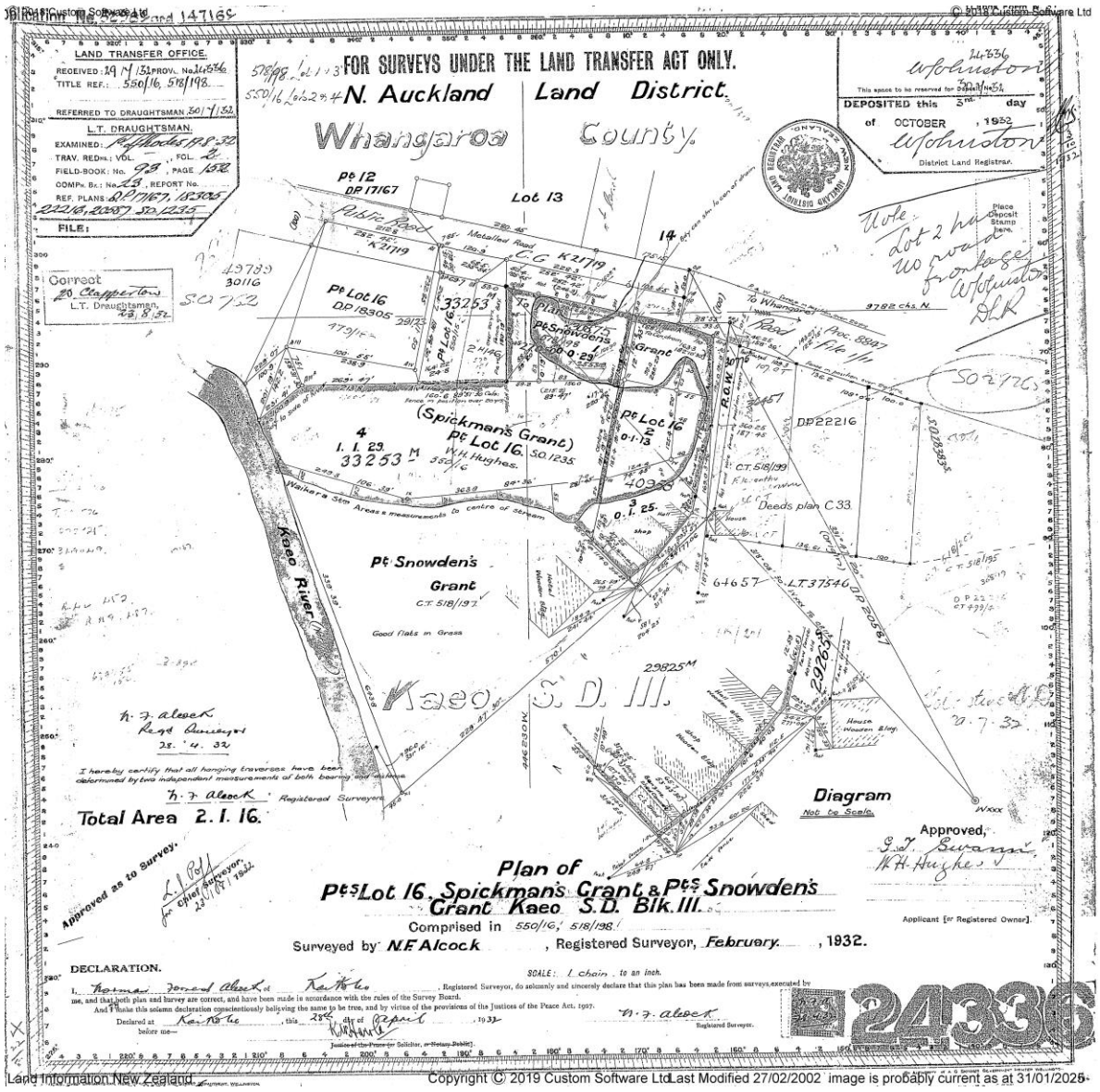

Figure 15: SO 24336 (1932) Ot Lot 16 Spickman's Grant and Pt SNowdens Grant (1932) showing Settlers Hotel and outbuildings.

Figure 16: Detail from aerial image of Kaeo, with tennis courts (arrowed red), approximate location of farm buildings (orange arrow) and Te Horu (arrowed green) in 1947. Whites Aviation. ATL WA-05166-F.

Prepared for Northland Regional Council

Ecological Impact Assessment (EcIA) for realignment of Kāeo River

Report NZEM2025.112.01.01.Rev3Draft

NZ Environmental Management

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SECTIONS

LIST OF FIGURES

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DOCUMENT CONTROL

NZEM Quality System: Issued Details	
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Report Status	Draft
Prepared by	Astrid Dijkgraaf and Tony Fiske
Reviewed by	Dr. Tim Martin
Approved by	Astrid Dijkgraaf
Date Issued	10 February 2025

1. Introduction

1.1 Rational for proposed works

The Kāeo Township, State Highway 1 (SH1) and surrounding land is subjected to regular flooding from the Kāeo River and tributaries, with historic and more recent flood events documented in early photographs and newspaper reports from as early as 1901 (Ahsan and Howse, Undated).

The floods of March and July 2007 were unprecedented and extraordinary in the sense that 100 YR ARI rainfall predictions were exceeded twice in the space of four months (Niwa, 2007). These flood events fundamentally shifted the assessment of risk from flooding for this area of Northland (Ahsan and Howse, Undated).

The resulting floods inundated dwellings and commercial buildings, particularly in the township, including the school, and downstream along SH10, Dip Road and the Waikōura flats. The township was inundated by fast flowing water from the Waikara Stream which runs under SH10, then by much deeper flood water from the Kāeo River (Ahsan and Howse, Undated). An example of expected water depths modelled for an 1% Annual Exceedance Probability (AEP)[1] is provided in Figure 1-1.

As part of ongoing flood protection works for Kāeo township, Northland Regional Council (NRC) is proposing to realign the Kāeo River, so that the confluence bof the Kāeo River and the Waikara Stream is further downstream of Kāeo township. This will reduce the frequency and scale of potential future flooding of the township. The proposed works also include extending the 2014 embankment downstream to prevent the Kāeo River from flowing back into the Waikara Stream to protect Kāeo township. The proposed works are illustrated on Figure 1-2.

These are **Regionally Important** works as identified in the Northland Regional Plan and the Regional Infrastructure Strategy Plan 2018-2048 – flood protection and control – rautaki hanganga. The works are considered **specified infrastructure** as per the National Policy Statement–Freshwater Management (NPS-FM, 2024) and **Regionally Significant Infrastructure** in the Northland Regional Plan (Appendix H.9 of the plan). There is a **functional need** (NPS-FM clause 3.21) for the proposal or activity to be located at this particular location because the flood protection would only be effective here.

[1] An AEP is the probability of a certain size flood occurring in a single year. A 1% AEP means there is a 1% chance in any single year of the flood event happening.

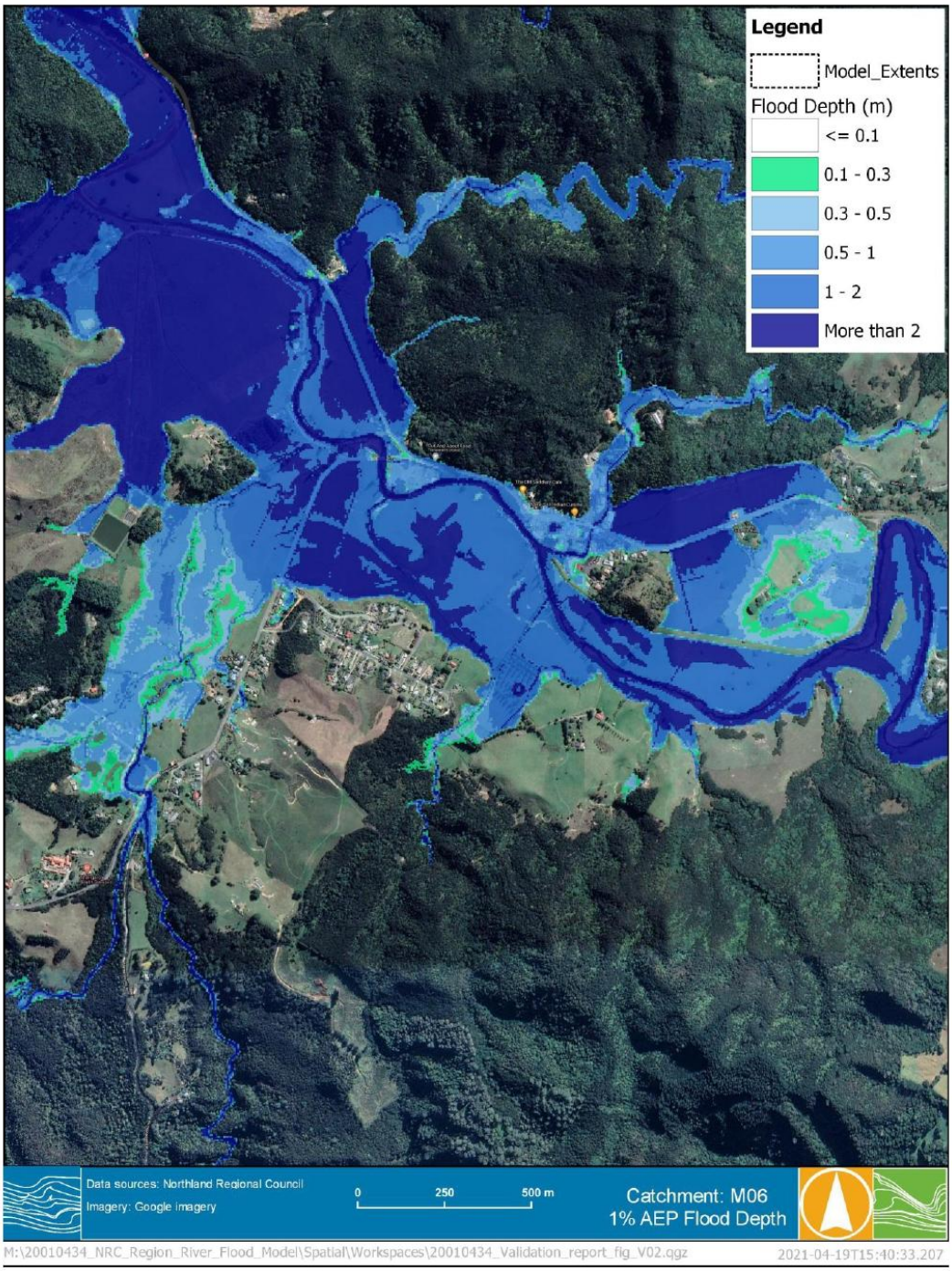


Figure 1-1: Model of water depth as Kāeo township during 1% AEP flood.
Source: Figure 2-1 in Khan and De Boer (2021).

Figure 1-2: Location of the proposed works.
Source: GIS shapefile provided by TrineKel on 31 January 2025.

1.2 Legal requirements

Works in freshwater environments, including **natural inland wetlands**[2], is controlled by the National Policy Statement–Freshwater Management (NPS-FM, 2024) and the National Environmental Standards-Freshwater (NES-F, 2020). The NES-F clauses pertinent to this proposal are provided in Appendix B.

For the relevant clauses in the NPS-FM please refer to the online version of this document https://environment.govt.nz/publications/national-policy-statement-for-freshwater-management-2020-amended-october-2024/.

These two legal documents seek to ensure that the loss of rivers, streams and wetlands is minimised or redressed and that the effects management hierarchy has been applied to ensure adverse effects are avoided, minimised, remediated, or otherwise mitigated. The NPS-FM also seeks to encourage wetland maintenance and restoration and maintaining or improving fish passage.

Because the works are classed as **specified infrastructure** assessment of **natural inland wetlands** is subject to NES-F (New Zealand legislation, 2021) Clause 45 Construction of specified infrastructure.

Although the current use of the land is pasture, due to the impending change in use any onsite wetlands would not qualify for the NPS-FM (2024) pastoral exclusion (Clause 3.21 definition of natural inland wetland (e) (i) & (ii)) due to imminent change of purpose.

Thus, identification of earthworks within 100 m of a natural inland wetland, vegetation clearance or earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland are all discretionary activities if it is for the purpose of constructing specified infrastructure.

As this project involves infilling of part of the existing channel of the Kāeo River, Subpart 2-Reclamation of Rivers (Clause 56A &57) of the NES-F applies and such works are a discretionary activity.

Additionally, NES-F Subpart 3—Passage of fish affected by structures (Clauses 58-60) will also apply and NES-F Clauses 55 & 56 (General matters).

1.3 Scope

Provide a report that identifies the ecological values within the proposed works area. Describe the potential effects of the proposed works on these values, and how the effects management hierarchy has been applied to ensure no net loss of ecological values (and if possible a net gain).

[2] Definition of natural inland wetland as per NPS-FM clause 3.21.

1.3.1 Tasks

Task 1: Liaison

a. Met with Northland Regional Council (NRC) to understand the scope of the project.
b. Worked closely and liaised with these representatives throughout the project.

Task 2: Fieldwork assessment pre-construction (undertaken by NRC)

Undertook a site assessment that included the following aspects:

a. Aquatic parameters
    - Undertook electro-fishing in the reach to be either closed (backfilled) or abandoned by Kāeo River and in the future solely occupied by the Waikara Stream below its former confluence with the Kāeo River.
    - Took an eDNA sample from this reach prior to fishing.
    - Undertook macro-invertebrate sampling and arranged for sample analysis.
b. Terrestrial and wetlands[3]
    - Delineated any wetlands and described their values (as per the National Policy Statement for Freshwater protocols). All wetlands within 100m of proposed works were assessed to adhere to the NPS-F.
        - Located, described, and identified values of old meanders (which are not wetlands).
    - Provided habitat descriptions and mapping.

Task 2a: Stream ecological valuation (undertaken by NZEM)

- Undertook habitat and catchment mapping and assessment flow parameters and river substrate that could change because of works and/or need to be achieved or exceeded in the new constructed reach.
- Compiled background information on in-flow parameters that could change because of works and/or need to be achieved or exceeded in the new constructed reach such as dissolved oxygen, water clarity, turbidity, water temperature, pH, flow rates.
- Assessed the potential that these reaches provide or could provide īnanga spawning habitat.

Task 3: Liaised with client to identify suitable mitigation options

a. Identified potential remediation, mitigation, or offset opportunities for likely adverse ecological effects.
b. These potential remediation, mitigation and offset opportunities will be discussed and agreed upon with potential partners for the mitigation (e.g. Kaitiaki Whangaroa Community Group, Fish and Game, the Whitebait Connection etc) during the more detailed design phase of the works.

[3] NZEM had intended to undertake a walk over survey for lizards, birds and their habitat while undertaking the wetland assessment. This will need to be done at some future stage prior to works commencing. If required, NZEM will prepare a cost proposal for more detailed fauna survey (e.g. lizards).

2. Project background

2.1 Site description

The terrestrial works area is currently exotic pasture with negligible ecological value, apart from potential natural inland wetlands and historic river meanders. The area is bounded by the Kāeo River on the east and a tributary of the Kāeo River on the west. The Waikara Stream flows through Kāeo township into the Kāeo River. The confluence of the Kāeo River with the Waikara Stream is about 5.8 km upstream (following the river) and 3.9 km inland (linear distance) from Whangaroa Harbour (Figure 1-2).

Anecdotal information from the locals indicates that there used to be several swimming holes along this stretch of the Kāeo River which have silted in over time, and none remain. Additionally, the source of siltation appears to have changed from non-point input from farmland to a greater input from plantation forestry, in particular after the 2007 flood when parts of an upstream forestry block had recently been felled.

The predicted ecosystem type is WF7.1 pūriri totara forest[4] on well drained Whakapara silt loam. There is no evidence of pūriri -totara forest remaining. No plant species that are nationally threatened or locally uncommon are reported on the iNaturalist database. Only one fauna species recorded in the area has a national threat status (At Risk-Declining).

The larger trees seen on the site are exotic. There are no kauri in the development area to invoke consideration of the Biosecurity (National PA Pest Management Plan) Order 2022.

2.2 Catchment description

The Kāeo River has a catchment area of 114 square kilometres, with 88 square kilometres of catchment area situated above Kāeo Township. The Kāeo River flows through three distinct basins each with their own character and significant contributing tributaries (Ahsan and Howse, Undated).

Figure 2-1 is an illustration of the Kāeo River catchment as well as the nearby Takou River and Pupuke River catchments.

The upper portions of the catchment are steep, reaching a maximum elevation of 456 m above sea level (asl) on Omataroa Ridge Road in Puketi Forest. The middle basin, south of Kāeo township, has distinct terraces before passing under Waiare Road and several short, steep-graded streams, each of which drops off the Taraire and the Kerikeri-Waipapa Plateau, and off a 300 m to 400 m high range with high points at Haunga, Te Painga and Ngarahu. The middle basin is separated from the lower valley by a narrow gorge between Waiare Road Bridge and the end of Green Lane (Ahsan and Howse, Undated).

After emerging through a narrow gap at the end of Green Lane, the Kāeo River flows from just upstream of the schools for approximately eight kilometres on a 500 m-wide floodplain

[4] Classification by Singers (2018) based on Singers and Rogers (2014).

past Kāeo Township and down to the Whangaroa Harbour. The river is tidal for the last five kilometres and, in the lower basin between SH10 Bridge and the harbour, is stop banked between reclaimed tidal flats (Ahsan and Howse, Undated).

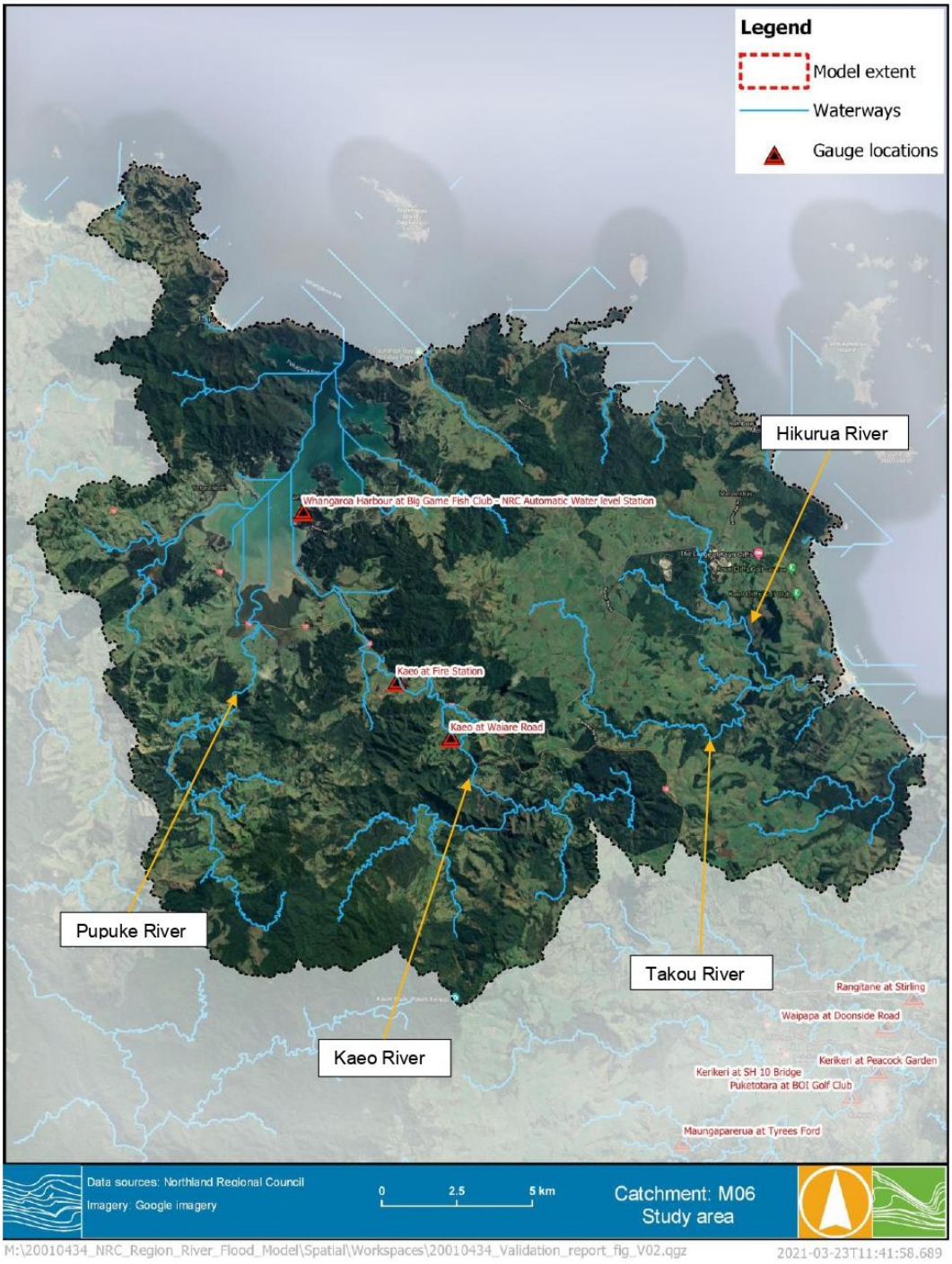


Figure 2-1. Kāeo River catchment.
Source: Figure 2-1 in Khan and De Boer (2021).

2.3 Ecological District

Most of the Kāeo River catchment lies within the Whangaroa Ecological District and is composed of coastal hill country with moderately to deeply incised valleys and the highest point is Huia, 385 m above sea level (asl). The coastline is steep and rocky, with pocket gravel beaches and some sand beaches, and common nearshore islets and rock stacks. The Kāeo River flows into the Whangaroa Harbour (2,600 ha) which occupies a drowned valley system and has a highly indented coastline (Conning, 1999).

The geology through with the river flows comprises lower Miocene Whangaroa Subgroup bluff-forming andesitic tuff breccia, lava flows and intrusions outcrop especially around Whangaroa Harbour, east and southeast of Kāeo, and at Taratara (Conning, 1999).

The Whangaroa Ecological District has a mild, humid and rather windy climate, with winds being predominantly from the southwest. The mean annual rainfall is around 1,450 mm with most rainfall occurring during the winter between May and August. The driest months are November to March and dry spells (period of 15 days or more having less than 1 mm of rain per day) occur at this time of the year. Periodic cyclonic storms in late summer and early autumn can bring heavy rain and may have widespread effects such as slips and windfalls, and heavy rain can also occur during northeasterly wind flows (Conning, 1999).

Historically, much of the district was dominated by broadleaf–podocarp–kauri (*Agathis australis*) forest which has been extensively logged, particularly for kauri but also totara (*Podocarpus totara* var. *totara*) and puriri (*Vitex lucens*). Whangaroa is one of the former "great kauri ports" and has the longest history of kauri extraction of any area in New Zealand. The first shipment of kauri from New Zealand was taken from Kāeo on the sailing ship Dromedary in 1820 (Conning, 1999).

No mature kauri forest remains today. Early botanists found the area to be floristically diverse, with broadleaf forest along the coast, including pohutukawa (*Metrosideros excelsa*) on cliffs and in valleys behind small sandy beaches. Estuarine wetlands including mangrove (*Avicennia marina* var. *australasica*) forests were also more extensive than at the present time. So little remains of freshwater wetlands that one can only speculate on their original extent. It is likely that they occurred mainly in floodplain valleys and in the coastal valleys grading into the saltwater influence (Conning, 1999).

Much of the current native habitat in the Whangaroa Ecological District consists of secondary shrubland and forests on steep, dissected hillsides, uneconomical for production, but extensively cleared in colonial times and in the heyday of agricultural subsidies (Conning, 1999 and Figure 2-2).

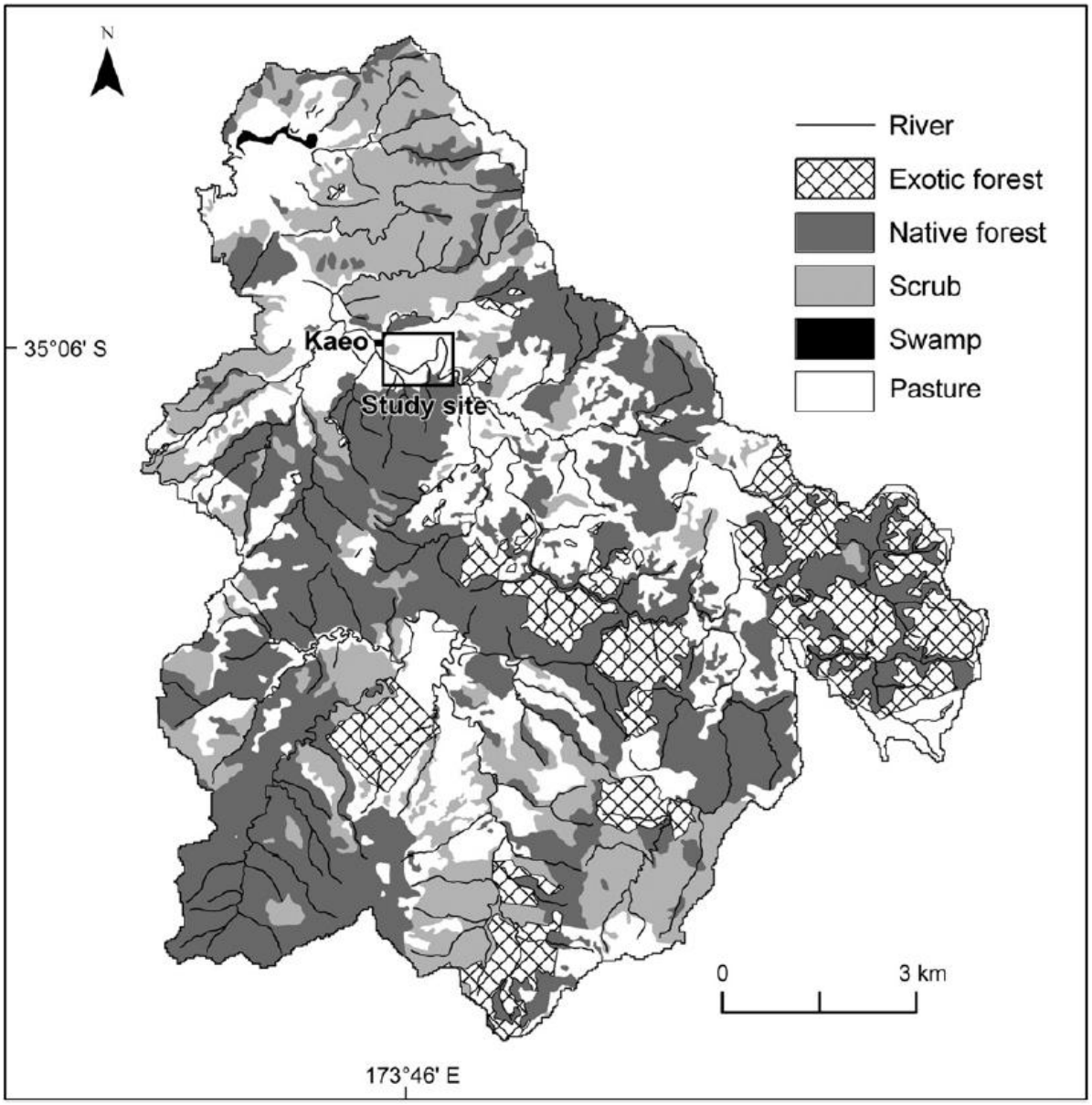


Figure 2-2: Land cover map of the Kāeo catchment.
Data source: Figure 3 from Richardson et al. (2014) based on NZTopo50-AV28 geodata, www.linz.govt.nz. The study site indicated is the focus of the Richardson et al. (2014) research and is somewhat southeast of this project.

2.4 Threatened Land Environment

Cieraad et al (2015) classify this area of land as > 30% left and < 10% protected

This means that indigenous vegetation in these environments are less reduced (> 30% indigenous cover left) and fragmented than other categories, but have little protection (< 10% of the area legally protected). The remaining indigenous vegetation is poorly represented in private or public conservation areas.

However, there is very little indigenous vegetation left within the project area.

2.5 Terrestrial species

iNaturalist has a record for red-billed gull (*Larus novaehollandiae scopulinus*; At Risk-Declining) within Kāeo township itself and this species will use pasture areas occasionally, but the works area does not provide good seasonal habitat.

None of the other species recorded in the area are Threatened or At Risk species.

Table 2-1: Number of identifiable species or taxa for the Kāeo township area.
Source: iNaturalist data website accessed on 17 January 2025.

Species group	Research standard	Identification needs confirmation
Invertebrate animals	1	3
Spiders and relatives	21	41
Birds	2	0
Fungi	5	3
Insects	93	103
Snails and relatives	1	0
Plants	8	6
Total	**131**	**156**
Combined total		**287**

Lodge (2024) undertook a 5 minute bird count and noted common native and exotic insectivores, as well as pūkeko (*Porphyrio melanotus*) and paradise shelduck (*Tadorna variegata*).

2.6 Freshwater fish

2.6.1 Northland fish species

Northland supports at least 23 species of native freshwater fish with more than 50% being endemic to New Zealand, three listed as nationally threatened, and some (i.e., Dune Lake Galaxias and Northland mudfish) only found within the region. The three Threatened species found in the region are the shortjaw kōkopu (*Galaxias postvectis*; Nationally Threatened)[5], pouched lamprey (*Geotria australis*; Nationally Threatened), and Northland mudfish (*Neochanna heleios*; Nationally Threatened) (Ruehle, 2022).

Shortjaw kōkopu are the most widespread in the region but are still restricted to streams in native bush (e.g., Waipoua Forest), and Northland mudfish are found only in wetlands around Kerikeri, Kaikohe and Lake Ōmāpere in the Far North. By contrast, pouched lamprey is considered extremely rare. According to the New Zealand Freshwater Fish Database, there has been only one physical record of lamprey in Northland since 2000. However, lampreys were detected in the Waipoua Forest with environmental DNA (eDNA)

[5] National fish threat classification as per Dunn et al. (2017).

techniques in 2021 by NRC reinvigorating efforts to determine the species' range (Ruehle, 2022).

Northland is also home to unique, land-locked populations of galaxiids inhabiting the Kai Iwi and Poutō dune lakes. Once classified entirely as dwarf īnanga (*Galaxias gracilis*; Taxonomically Indistinct), the Kai Iwi populations have been shown to be genetically indistinct from īnanga, but for conservation purposes are treated as a separate species to the Dune Lakes Galaxias (Galaxias "dune lakes"; At Risk–Naturally Uncommon). The Poutō populations are still considered as *G. gracilis* by Dunn et al. (2018).

Some of the species found in Northland are landlocked or in small defined populations and therefore not expected to occur in the Kāeo catchment.

The Whangaroa catchment (which includes the Kāeo River) is considered to be of moderate regional significance for fish species. Fish species with (at the time) National Threat Rankings predicted for the Whangaroa catchment (which includes the Kāeo River) were longfin eel, īnanga, bluegill bully, redfin bully, lamprey and black mudfish (Hughey et al. 2013).

In total, 11 native fish species were recorded during the 2023/2024 State of the Environment (SOE) Freshwater Fish Monitoring of wadable waterways in Northland. This monitoring includes 23 sites throughout the Northland region and does not include the Kaeo River or Whangaroa catchment. The fish species recorded are shortfin eel (*Anguilla australis*), longfin eel (*Anguilla dieffenbachia*), banded kōkopu (*Galaxias fasciatus*), īnanga (*Galaxias maculatus*), kōaro (*Galaxias brevipinnis*), bluegill bully (*Gobiomorphus hubbsi*), common bully (*Gobiomorphus cotidianus*), Cran's bully (*Gobiomorphus basalis*), redfin bully (*Gobiomorphus huttoni)*, common smelt (*Retropinna retropinna*), torrentfish (*Cheimarrichthys fosteri*). The At-Risk fish species found were bluegill bully, īnanga, kōaro, longfin eel and torrentfish (Sanwar, 2024).

2.6.2 Īnanga spawning habitat

The Whangaroa Catchment has been identified as a priority catchment by the Department of Conservation (DOC) and the Whitebait Connection (WBC) to identify, protect, and restore the īnanga spawning habitat found therein (Naysmith and Phillip, 2023). The WBC undertook surveys of sections of the Kāeo River using the Orchard and Hickford (2017) methods to identify the salt wedge[6], as well as generalised habitat assessment and īnanga spawning. Īnanga spawn (lay eggs) on vegetation trailing in the water near the top of the saltwater wedge.

Saltwater wedge and spawning observation surveys were conducted on the Kāeo River on 4 occasions during 2023. On all four occasions the saltwater wedge was downstream of Dip Road with one site as far down as the SH10 bridge that crosses the Kāeo River north of the Kāeo township Figure 2-3.

[6] The salt wedge is a layer of saltwater below a layer of freshwater, which is pushed into an estuary or up a river by tides. Saltwater is denser than freshwater, thus it tends to move upstream below the less dense freshwater, creating a wedge-shaped layer of saltwater.

No spawning events were detected on the Kāeo River although adult īnanga were seen in reasonably large numbers during the salt wedge surveys. Many were seen searching the riverbanks in the areas thought to have spawning potential (Naysmith and Phillip, 2023).

The southern most predicted spawning area is about 600 m downstream of the proposed new confluence (new channel) of the Kāeo River with the Waikare Creek. But the tidal influence (water level increasing with incoming tides) extends well past the fire station at Kāeo (where the river level gauge is located; Figure 2-4) [7] indicating that if suitable habitat was created along the to be abandoned Kāeo River channel, and/or the proposed new Kāeo River channel, that īnanga may use these areas to spawn.

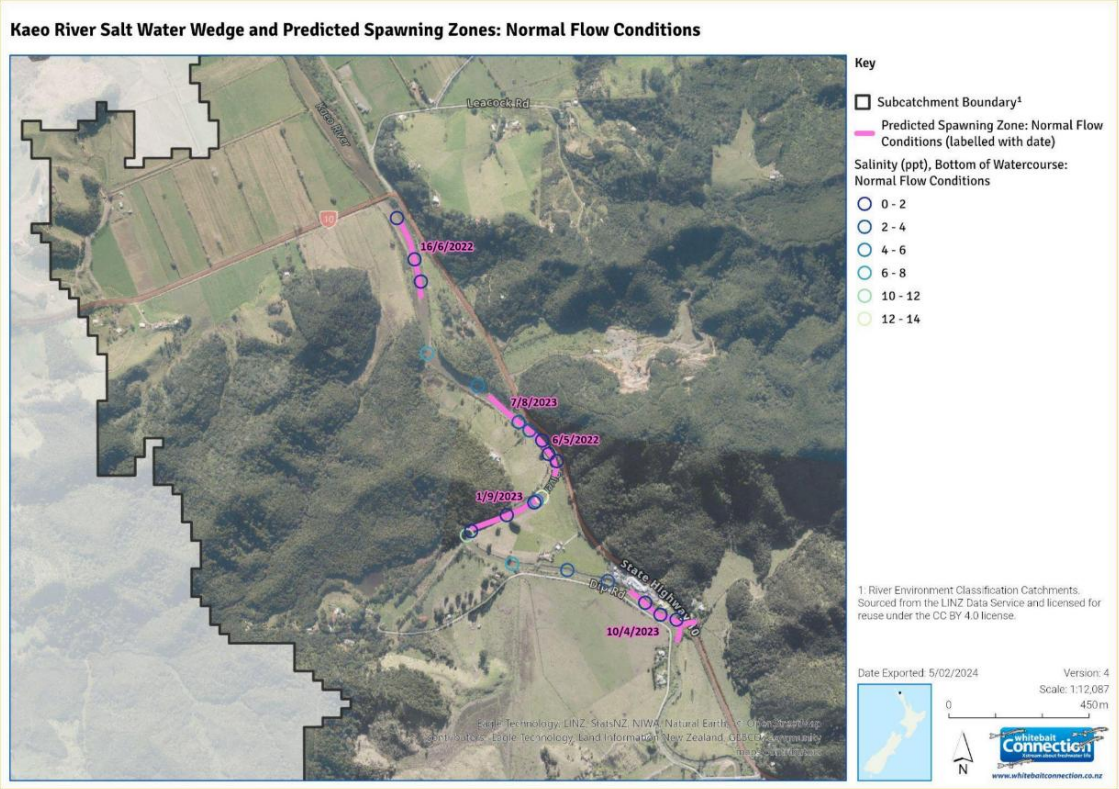


Figure 2-3: Location of the saltwater wedge and predicted īnanga spawning habitat along the Kāeo River.
Source: Map 6 in Naysmith and Phillip (2023).

[7] https://www.nrc.govt.nz/environment/environmental-data/environmental-data-hub/?moduleId=5&collectionId=19&displayId=1&siteId=387&measurementId=98&daysOfData=365

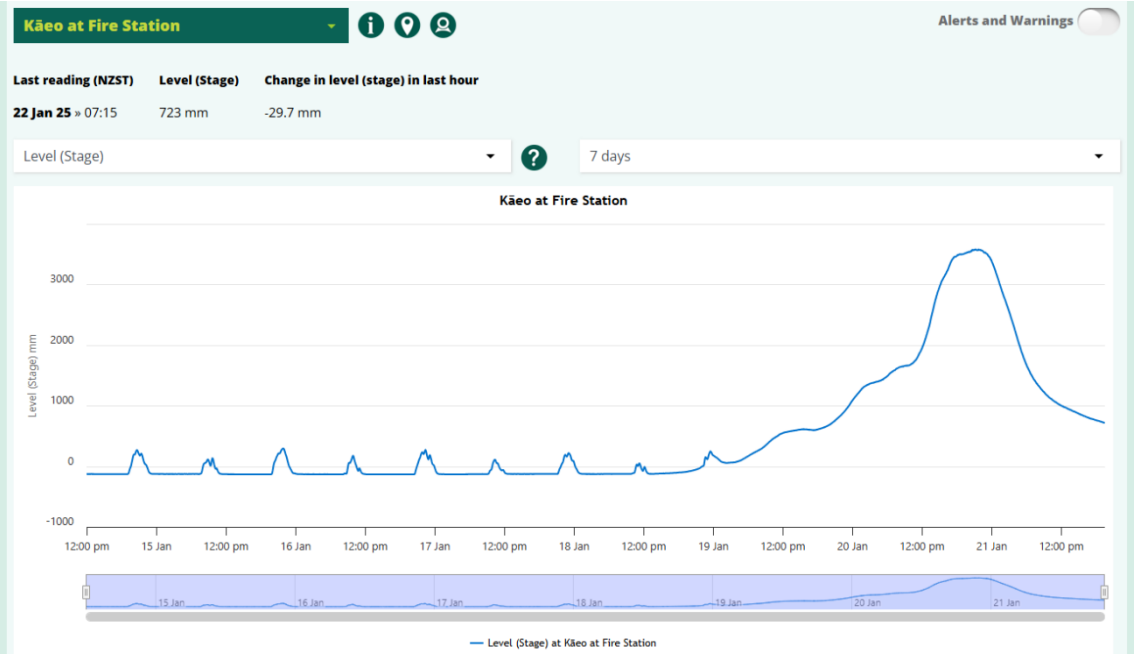


Figure 2-4: Kāeo River level measured at the Fire Station.
The figure shows the tidal peaks during the day and a significant increase in water level during a heavy rain event.
Source: Data from NRC environmental data hub website. Accessed 22 January 2025.

2.6.3 Hawtin and Donovan fish survey

A survey conducted by Thomas Hawtin and Donovan Ecological Management (Hawtin et al., 2022) in 2021 and 2022, covering 25 stream sites predominantly within the Kāeo river catchment, concluded that freshwater fish populations were in reasonable health in many of the smaller tributaries and lower reaches of the catchment, with two sites having abundant smelt and robust populations of īnanga.

However, the survey also revealed a scarcity of other species, with only one kōura (freshwater crayfish, *Paranephrops planifrons*) and a single kāeo (freshwater mussel, *Echyridella sp.*) observed during the entire survey. The solitary specimen of kāeo, an organism that lends its name to both the river and the town, was found in Pupuke.

2.6.4 NIWA Freshwater Fish Database

NIWA data in the Freshwater Fish Database (FWFD) from 1966 to 2022 offers an overview of aquatic species and their distribution across different water bodies, with species counts recorded in multiple years (Appendix C). While this dataset provides valuable insights into the species observed at various locations over time, it should not be considered a definitive measure of fish populations or overall biodiversity as fish diversity varies throughout the year and between years, and there also are differences in the frequency of fish surveys undertaken per year.

Table 2-2: Number of surveys that recorded freshwater fish and large invertebrate species in the Kāeo River catchment.

Data from the NIWA FWFD between 1966 and 2022, and national threat classification from the New Zealand Threat Classification System[8]. The Kāeo River catchment and the data in this table includes waterways both upstream and downstream of Kāeo township and the location of the fishing effort is shown in Figure 2-5.

Scientific name	Common Name	Māori Name	National threat classification	Number of surveys
Anguilla	Unidentified eel	Tuna	Depends on species	5
Anguilla australis	Shortfin eel	Tuna	Not Threatened	4
Anguilla dieffenbachii	Longfin eel	Tuna	At Risk-Declining	23
Cheimarrichthys fosteri	Torrentfish		At Risk-Declining	3
Galaxias	Unidentified galaxiid		Depends on species	7
Galaxias fasciatus	Banded kōkopu	Kōkopu	Not Threatened	18
Galaxias maculatus	Īnanga	Īnanga	At Risk-Declining	11
Gambusia affinis	Gambusia		Introduced and Naturalised	3
Gobiomorphus	Unidentified bully		Depends on species	5
Gobiomorphus cotidianus	Common bully		Not Threatened	3
Gobiomorphus gobioides	Giant bully		At Risk-Naturally Uncommon	1
Gobiomorphus hubbsi	Bluegill bully		At Risk-Declining	1
Gobiomorphus huttoni	Redfin bully		Not Threatened	21
Nil	No species recorded			1
Paratya curvirostris	Freshwater Shrimp	Kōura	Not Threatened	6
Retropinna retropinna	Common smelt	Pōrohe	Not Threatened	9
Total	**12 identified species**			**121**

[8] National freshwater fish threat classification as per Dunn et al., (2018).

Figure 2-5: Locations of fish data from NIWA Freshwater Fish Database.
Grey circles are locations where fish surveys have been undertaken.
Source: Data extracted from NIWA FWFD on 14 January 2025 and displayed using the Fish database Assistant by Jowett Consulting[9].

In 1966, multiple species were observed in the Kāeo River, including the shortfin eel (*Anguilla australis*), longfin eel, common bully, redfin bully, and common smelt.

By 1999, a count was made for longfin eel in the Kāeo River, with 1 individual recorded. In 2001, the presence of longfin eel, banded kōkopu, redfin bully, kōura, and freshwater shrimp (*Paratya curvirostris*) was noted in the Inumia Stream, with counts made for each

[9] https://www.jowettconsulting.co.nz/home/nz-species-db.

species except the freshwater shrimp. In the Inumia Stream 33 eels were seen that were not identified to species level.

In 2005, in a Kāeo River tributary, banded kōkopu and eels were present, but their counts were relatively low, with banded kōkopu at 11 and eels at 2.

In 2016, the Kāeo River saw a broader variety of species noted, including shortfin eel, longfin eel, torrentfish, banded kōkopu, īnanga, bluegill bully, and redfin bully. The redfin bully was most numerous with 54 individuals, while other species had counts ranging from 1 to 12 individuals.

By 2021, a more expansive range of species was recorded across various streams. An unidentified eel and shortfin eel were noted in Waikara Stream, while longfin eel, banded kōkopu, and other species were recorded in multiple streams. Redfin bully had a count of 72 individuals in Upokorau Stream, and banded kōkopu had 25 in Waikara Stream.

In 2022, the presence of longfin eel, torrentfish, banded kōkopu, and īnanga was noted in various streams, including Inumia stream, a Kāeo River tributary, and Waionepu stream. Counts varied across species, with banded kōkopu showing notable numbers (35 in Waiare Stream) and redfin bully recorded in Taita Stream and other locations.

Across all years, the total count of specimens recorded (from Kāeo township upstream) is 751, with the most frequently observed species being redfin bully, followed by various species of Galaxias and longfin and shortfin eels.

The summarised NIWA FFDB information is provided in Appendix C.

2.7 Freshwater habitat quality

2.7.1 State of the environment habitat monitoring

Habitat data was collected for Northland State of the Environment sites in 2007, 2008 and 2010 including the Kāeo River at Dip Road (downstream of Kāeo township). In 2007, this data included physiochemical, habitat information, stream habitat quality and Pfankuch stability index (Northland Regional Council, 2008) and this baseline data is provided in Appendix D.

In terms of habitat quality[10], the Kāeo River was one of the two worst rivers (had the lowest score of 27) of those assessed in Northland in 2010 and had moved down from 2008 assessment (6th poorest and score of 58) this downward trend takes this site from sub-optimal to poor habitat quality over this period. Aspects that may have contributed to this decline is that the Kāeo River experiences frequent flooding events, upstream areas of plantation forestry rotating through logging episodes, erosion/cutting and deposition, and some parts of the Kāeo River are accessible to stock access (Northland Regional Council, 2011).

[10] Combined score for habitat abundance, habitat diversity, hydrological heterogeneity, channel alteration, bank stability, channel shade, and riparian vegetation.

The Kāeo River at Dip Road Pfankuch Bank Stability Index improved from poor to fair stability in the last four to five years (Northland Regional Council, 2011).

2.7.2 Land Air Water Aotearoa results

The Land Air Water Aotearoa (LAWA) website[11] also includes data for the Kāeo at Dip Road. It outlines that just under half of the catchment is native forest and scrub, with the remainder in pine forestry, lifestyle blocks or pastoral farming. The site is located below the township of Kāeo, just before the influence of salt water. The underlying geology of the river is soft sediments, which is reflected in its high turbidity levels. Bacteria levels are elevated and are a result of farm rainfall-runoff and livestock access to waterways. Other parameters are either very good (top 25% of rivers) or OK (within 50% of rivers). The trends of measured parameters are variable with some increasing and others decreasing in quality Appendix D.

2.7.3 Northland Biodiversity Ranking - River Ranks

Rankings of rivers and streams was derived from a ranking analysis of indigenous-dominated terrestrial and freshwater ecosystems for the Northland Region, which in turn was based on Northland Potential Ecosystem report by Nick Singers (Singers & Rogers publication) and Ecosystem Prioritisation and Rarity by John Leathwick. The ecosystem classification used to map potential ecosystems of Northland was developed by the Department of Conservation, as a tool for prioritising ecosystem management (Singers & Rogers 2014).

Table 2-3: Information and relative biodiversity ranking for Kāeo River and tributaries. Source: NRC environmental data server.

Parameter	Kāeo upstream of Waikara Stream	Kāeo downstream of Waikara Stream	Waikara Stream	Tributary below proposed new confluence
Condition #	0.33	0.33	0.61	0.55
River Environment Classification (REC2.5) reach number	1,004,008	1,004,008	1,003,886	1,004,087
Linking number to REC2.5	1,004,341	1,004,341	1,004,296	1,004,345
Rank Mean *	0.19	0.19	0.31	0.85
River ecosystem type (FENZ level 2)	C4	C4	C4	C4
Reach bank length^*	561.60	561.60	963.85	1,297.97

\# The estimated ecological integrity or condition, with values ranging between 0 (very poor condition) and 1 (very high condition).

* The mean rank for the river or stream segment, with values ranging between 0 (highly ranked) and 1 (low ranked); the value for a particular river segment indicates the proportion of all river segments by length that would need to be selected for that river segment to be included.

^* This value is double the length of the actual river reach as it includes both banks.

[11] https://www.lawa.org.nz/explore-data/northland-region/river-quality/kaeo-river/kaeo-at-dip-road.

The Kāeo River within the area of interest (i.e. near Kaeo township) is ranked as a river with a relatively low habitat condition (33%) compared to other rivers in Northland, due to the loss of indigenous vegetation and riparian habitat.

2.7.4 Other sources

The Dissolved Oxygen Measurements (mg/L) on the Kāeo River ranged between 4.47 mg/L and 10.46 mg/L. This meets the 7-day mean guideline that has been proposed for the protection of freshwater fish. Water temperature measurements ranged between 11.2℃ and 16.9℃ which are well below the mortality threshold for native fish species (Naysmith and Phillip, 2023).

3. Methodology

3.1 In-stream assessment

3.1.1 Electric fishing

The Kāeo River was electrically fished by a team from NRC[12] as part of the State of the Environment Monitoring on 3 December 2024 to determine the species present. The methodology followed for the Electric Fishing Machine adhered to best practices outlined in the New Zealand Freshwater Fish Protocols (Joy et al., 2013). In this method, a 150-meter stretch of stream (the reach) is divided into ten continuous sub-reaches. Each sub-reach is electro-fished in 3-meter sections, with careful adjustments made to the pulse rate and frequency throughout the fishing process. These adjustments are based on the conductivity readings at the start of the fishing and the fish's reactions to the electric shock, ensuring minimal physical trauma to the individuals captured (Hadyn Butler, Northland Regional Council, Pers. Comm. 9 December 2024).

3.1.2 Macro-invertebrate sampling

The Macroinvertebrate sample was collected by NRC using the National Environmental Monitoring Standards protocol for Macro-invertebrates (Milne et al., 2022), with approximately 1 m^2 of habitat sampled and collated into a single sample for processing. Habitat types sampled included bankside vegetation, run (gravel), submerged wood, and macrophytes. This sample was sent to and analysed by EOS[13] for processing (Hadyn Butler, Northland Regional Council, Pers. Comm. 9 December 2024).

3.1.3 Stream ecological valuation

A Stream Ecological Valuation (SEV) was undertaken by an NZ Environmental Management team during the afternoon on clear day, 14 January 2025. Only the physical parameters of the Stream Ecological Valuation (SEV) procedure were measured, as electric fishing and macro-invertebrate sampling had already been done. The survey was planned and undertaken at low tide (for example refer to Figure 2-4). The same 150 m reach that was electro-fished by NRC was assessed (Figure 5-1).

The SEV using the method as per Neale et al (2015) including:

Cross sectional measures

- Depth
- Substrate assessment
- Shade
- Macrophytes.
- Velocity

Reach scale measures

- Piped inflows
- Channel modification
- Channel lining
- Connectivity with floodplain
- Riparian vegetation
- Barriers to migration
- Oxygen demand

[12] Hadyn Butler, Lana Newman and Laura McLeod.
[13] https://www.eosecology.co.nz/

Desk-based measures

- Water quality
- Catchment impervious surface
- Riparian canopy cover
- Riparian cover seasonality
- Riparian zone filtering capacity
- Extent of Galaxiidae spawning habitat
- Quality of Galaxiidae spawning habitat
- Physical habitat quality
- Riparian zone connection

3.2 Wetland delineation

Identification of wetlands within 100 m of the proposed works site on the Kāeo floodplain was undertaken by members of the Biodiversity and Land teams from NRC on 6 December 2024. The NZ Wetland Delineation Protocols (Ministry for the Environment, 2022a) were adhered to. A desk top exercise was also undertaken to look for wetlands, low lying areas and evidence of wetland hydrology including flooding using old aerial imagery, oblique aerial photographs, and other layers such as Digital Elevation (Forester and Hansen, 2024).

Field methodology included a ground-based visual assessment of the whole site to 100 m outside the planned work areas (Figure 3-1). This was based on an aerial image with and overlay of the proposed works and a 100 m buffer around the extremities of the proposed work. Areas to the east of State Highway 1 (SH1) within the 100 m buffer were not investigated as it is within Kāeo township, and no wetlands are present, and it was deemed unlikely that works could affect these uphill areas. The river and stream channels were also not included (Forester and Hansen, 2024).

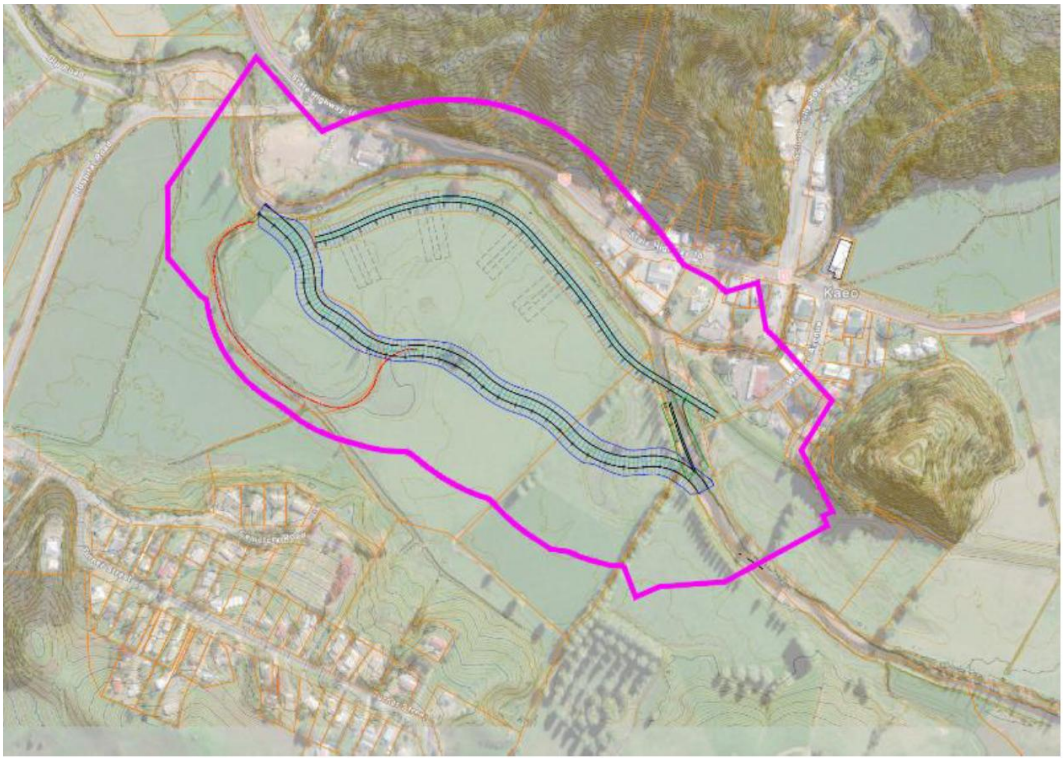


Figure 3-1: Kāeo Phase 2 Flood Mitigation Project proposed works and 100 m buffer.
The 100 m buffer is shown as a pink outline.
Source: NRC File note from Forester and Hansen (2024). Note that the proposed works layout has changed since this survey was undertaken.

Potential wetland areas were identified based on the visual dominance of plant species adapted to wet conditions (Rapid Test using the Vegetation Tool for Wetland Delineation in New Zealand; Ministry for the Environment, 2022a). The Pasture Exclusion Tool (Ministry for the Environment, 2022b) was applied alongside the Wetland Delineation Vegetation Tool (Forester and Hansen, 2024).

Where potential wetlands were identified, 2 m x 2 m plots were set up and the NZ Wetland Delineation Tool was applied based on all three criteria – vegetation, soils and hydrology. Four wetland plot assessments in two wetlands were undertaken. For the other sites which were similar, a simple vegetation description was done (Forester and Hansen, 2024).

A GPS was used to locate the wetlands, map the boundaries and track the path that was followed during the on-ground assessment. Threatened plant species and fauna were also noted (Forester and Hansen, 2024). The report is appended as Appendix G.

The wetland boundaries were drawn on an aerial in GIS when back in the office. The boundaries of the wetlands and therefore the extent of the wetlands are indicative (Lisa Forester, Northland Regional Council, Pers. Comm 17 January 2025).

4. Results

4.1 Aquatic

4.1.1 Electric fishing results

The 150-metre fishing reach included the confluence of Waikare Creek, as the river's character on either side of the confluence is very similar. The location of the surveyed reach in relation to the proposed works is illustrated on Figure 5-1.

The streambed is relatively flat and uniform, consisting of deep, mobile deposits of small gravel and sand. During fishing, it was observed that this area is utilized by juvenile fish, including eels and bullies. Therefore, the loss of this habitat should be considered when designing the mitigation package. Adult fish were found exclusively along the banks, either within the bankside vegetation, root mats, or undercut banks along the true left bank, or among the large rocks forming the revetment along the true right bank (Hadyn Butler, Northland Regional Council, Pers. Comm. 9 December 2024).

The low flow conditions were suitable for e-fishing and water clarity was moderate. The electric fishing machine was operated by Hadyn Butler at a voltage of 260 V[14] with a Duty cycle of 12%[15] and a pulse frequency of 30 Hz[16]. Fishing commenced at 10:20 am and lasted 330 minutes. The water temperature at the time was 22°C, Dissolved Oxygen Saturation 104.5 %, Dissolved Oxygen 9.18 mg/L, Conductivity at 25°C was 139.2 µS/cm, and the pH of 6.95 is good. The total area fished was 1,192 m2 and the wetted width varied between 6 m and 10 m (average 8.8 m). Channel shade was very low (9 of 10 sub-reaches) or low (Hadyn Butler, Northland Regional Council, Pers. Comm. 19 December 2024).

This section briefly summarises fish caught per each 15 m reach. Full results are provided in Appendix E.

- Subreach 1 recorded a variety of fish species, predominantly shortfin and longfin eel, and unidentified eel species. Other species included gambusia, redfin bullies, common bullies, torrentfish, galaxids, and smelt, ranging in size from small bullies to larger eels, with one unidentified eel measuring 640 cm.
- Subreach 2 also featured various eel species, with shortfin eels up to 800 cm, redfin bullies, gambusia, and smelt.
- Subreach 3 mirrored this pattern, with shortfin eels and smaller species like torrentfish, common bullies, and smelt.

[14] 200–500 V for medium conductivity (100–300 µS/cm).
[15] The duty cycle of an electric fishing machine is the ratio of on-time to off-time, and is typically between 10% and 50%.
[16] Where mostly small fish are expected (most cases in New Zealand streams) use a pulse frequency of 60–70 Hz and pulse width of 2 msec. If larger fish > 200 mm are expected then use a pulse frequency of 30 Hz.

- Subreach 4 shortfin eels were again most common, along with longfin eels, torrentfish, and redfin bullies.
- Subreach 5 showed a strong presence of large shortfin eels, alongside bullies and a few gambusia.
- Subreach 6 continued the trend of shortfin eels, redfin bullies, and common bullies.
- Subreach 7 had a similar mix, with shortfin eels, smelt, and unidentified bullies.
- Subreach 8 followed suit, featuring shortfin eels, redfin bullies, and common bullies.
- Subreach 9 primarily consisted of redfin bullies and shortfin eels, along with some smelt and common bullies.
- Subreach 10 had a similar composition, with notable shortfin and longfin eels, along with redfin bullies, common bullies, and smelt.

Overall, the survey highlighted a good diversity of fish relative to other rivers in Northland (Section 2.6.1), with eels being the most frequent, followed by bullies and other species.

Table 4-2 summarises the number and size range of fish species caught per reach.

This survey caught 7 of the 11 indigenous species of fish known to occur in Northland and of the 9 species fish species known to occur upstream of Kaeo township (Table 4-1).

Many of the fish species in the Kaeo River are migratory species and will move through the area of interest at particular times during the year to complete the breeding cycle.

Table 4-1: Comparison of fish observations from various sources.

Recorded in Northland 2024 State of the Nation report (Sanwar, 2024)		Known from upstream NIWA FWFD	Electric fishing results
Anguilla australis	Shortfin eel	y	y
Anguilla dieffenbachii	Longfin eel	y	y
Cheimarrichthys fosteri	Torrentfish	y	y
Galaxias fasciatus	Banded kōkopu	y	
Galaxias maculatus	Īnanga	y	
Gobiomorphus cotidianus	Common bully	y	y
Gobiomorphus hubbsi	Bluegill bully	y	
Gobiomorphus huttoni	Redfin bully	y	y
Retropinna retropinna	Common smelt	y	y
Galaxias brevipinnis	kōaro		
Gobiomorphus basalis	Cran's bully		
Not fish species			
Paranephrops	Kōura	y	
Paratya curvirostris	Freshwater Shrimp	y	
Electric fishing additional species			
Gobiomorphus gobioides	Giant bully		y
Total fish species	**11**	**9**	**7**

Table 4-2: Number of fish per species caught per reach, and an indication of size range.

			Number of fish caught per reach										Fish size range (mm)	
Common name	**Scientific name**	**Threat classification[17]**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**Min**	**Max**
Bully (Unidentified)			19	6	1			1	1	2	1	16	13	57
Common bully	*Gobiomorphus cotidianus*	Not Threatened	2				2	4		4	4	1	40	72
Eel (Unidentified)			26	25	6	7	11	12	14	11	15	5	30	640
Galaxid (Unidentified)			1										40	40
Gambusia	*Gambusia affinis*	Introduced and Naturalised	2				2				4		15	42
Giant bully	*Gobiomorphus gobioides*	At Risk-Naturally Uncommon		1									53	53
Longfin eel	*Anguilla dieffenbachii*	At Risk-Declining	1	1		1						1	350	900
Redfin bully	*Gobiomorphus huttoni*	Not Threatened	2	4			8	4	1		5	2	30	69
Shortfin eel	*Anguilla australis*	Not Threatened	2	2	3	8	7	5	3	7	5	8	73	850
Smelt	*Retropinna retropinna*	Not Threatened			3				2		3	1	51	84
Torrentfish	*Cheimarrichthys fosteri*	At Risk-Declining	3		1	2			1	1			30	36
Unidentified fish			2	2							1			
Grand Total			**60**	**41**	**14**	**18**	**30**	**26**	**22**	**25**	**38**	**34**		

[17] National fish threat classification as per Dunn et al. (2018).

The electric fishing data were analysed as per the IBI protocol[18] for the NPS-FM.

The NRC fish data included numerous instances of species being identified to genus-level rather than species level. In total 184 fish were not identified to species-level including 92 fish that were measured but not identified. These unidentified fish were excluded from the IBI protocol (as recommended) except for the single unidentified galaxid.

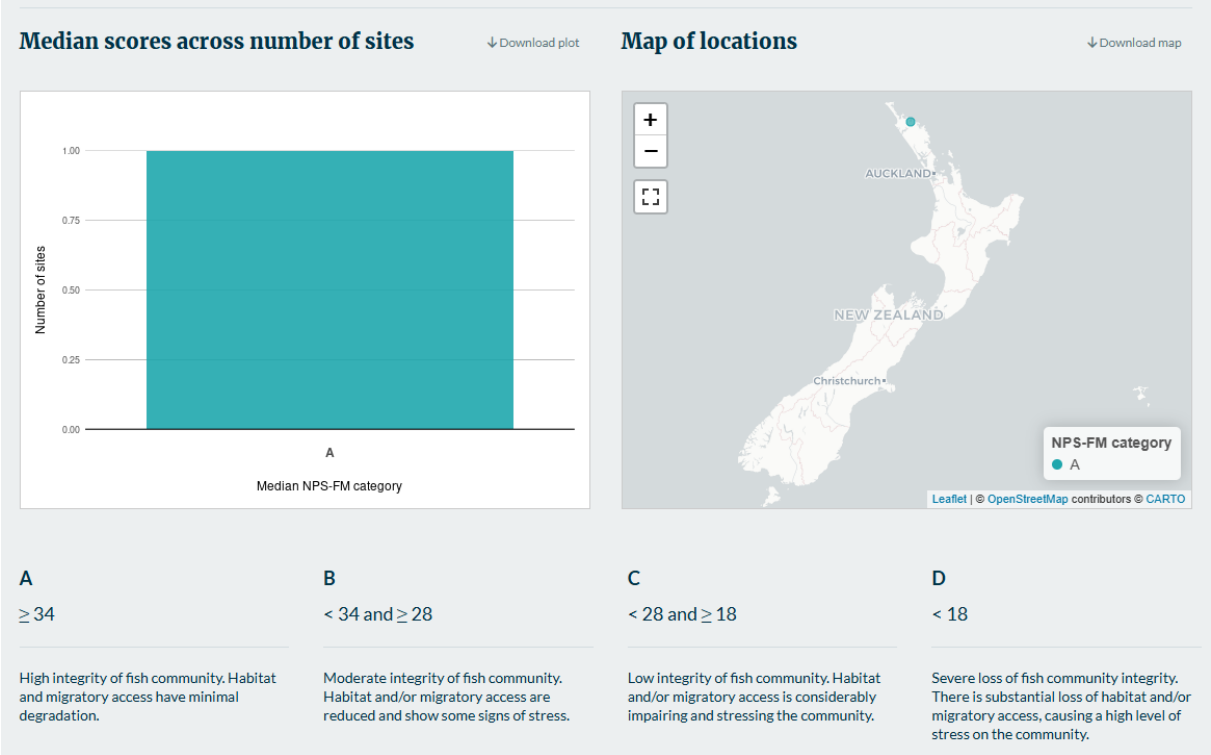


Figure 4-1: Median IBI score for the electric fishing data for the Kāeo River.
Source: https://mfenz.shinyapps.io/fish-ibi-calculator/

Table 4-3: IBI score for the electric fishing data for the Kāeo River.
Source: https://mfenz.shinyapps.io/fish-ibi-calculator/

Parameter	Results
Date	3/12/2024
SiteID	101607 (Kāeo at Below Fire station)
StratumSite	101607_3.9_20
Altitude (m asl from topo map)	20
Penetration (linear km to Whangaroa harbour)	3.9
Species richness	9
Species non-native	1
IBI score	54
NPS-FM category	A

[18] https://environment.govt.nz/publications/using-the-fish-ibi-calculator-to-meet-the-nps-fm/ and https://mfenz.shinyapps.io/fish-ibi-calculator/

The good score reflects that most of the species known to occur in the Kāeo River (as per the NIWA FWFD) were found during the electric fishing. However, the habitat for fish is impacted by a lack of riparian shading, significant sedimentation, loss of deep pools, and very homogeneous in-stream habitat.

4.1.2 Macro-invertebrate results

Macroinvertebrates were collected below the Kāeo Fire Station on December 3, 2024. The sampling site featured a hard-bottomed substrate, composed of bedrock, cobble, pebbles, gravel, and other materials, with limited macroinvertebrate habitats such as macrophytes, algae/moss, and stones. The amount of both coarse and fine particulate organic matter was low and the sample only contained low quantities of macrophytes, algae or moss, stones, and gravel or sand.

The sample was received and processed on 16 December 2024 using the SOE (RCJC) processing method. All invertebrate taxa were identifiable.

Tolerance values (ranging from 0 to 10) indicate the sensitivity of different taxa to poor water quality. Taxa with values of 8 or higher are considered sensitive, while those with values of 3 or lower are more tolerant.

Appendix F lists all the taxa in the sample. A total of 4,508 macroinvertebrates were collected across eight taxonomic groups and 21 taxa. The most common species were freshwater shrimp (*Paratya*) with 3,456 specimens and freshwater mud snail (*Potamopyrgus*) with 661 specimens. These species have tolerance values ranging from 3.6 to 5 for *Paratya* and 2.1 to 4 for *Potamopyrgus*.

In addition, a total 43 mayfly larvae were collected. Mayflies are highly sensitive to pollution, particularly in low-oxygen conditions. A significant presence of mayflies typically indicates good water quality, however their abundance in Kāeo was low. The mayfly taxa collected included:

- *Arachnolocus* (tolerance values of 8 for hard-bottom sites and 8.1 for soft-bottom sites)
- *Austroclima* (tolerance values of 9 for hard-bottom sites and 6.5 for soft-bottom sites)
- *Zephlebia* (tolerance values of 7 for hard-bottom sites and 8.8 for soft-bottom sites)

The calculated MCI score is 88.57 indicating that the quality class is fair with probable moderate pollution levels

Table 4-4: Interpretation of MCI-type biotic indices.
Source: Table 2 in Stark and Maxted (2007).

Stark & Maxted (2004, 2007) quality class	Stark (1998) descriptions	MCI MCI-sb	SQMCI & QMCI SQMCI-sb & QMCI-sb
Excellent	Clean water	> 119	> 5.99
Good	Doubtful quality or possible mild pollution	100–119	5.00–5.90
Fair	Probable moderate pollution	80–99	4.00–4.99
Poor	Probable severe pollution	< 80	< 4.00

4.1.3 Macrophyte species present

The macrophyte species noted within the Kāeo River were the native (not threatened) common duckweed (*Lemna minor*) and red pondweed (*Potamogeton cheesemanii*), and the introduced and weedy alligator weed (*Alternanthera philoxeroides*), oxygen weed (*Egeria densa*), and willow weed (*Persicaria maculosa*).

4.1.4 Stream Ecological Valuation

The substrate was predominantly small-medium sized gravel (39%) with a smaller, but roughly equal, amount of small gravel (23%), large gravel (15%), and silt or sand (16%). Large gravel (3%) and large cobbles (4%) were sparse.

Average water depth was 23 cm (range 4 cm to 89 cm). Most of the macrophytes were submerged, but there were a few reaching the surface or emergent. The average flow velocity was 0.36 m/sec (range 0.28 m/sec to 0.77 m/sec). There is very little riparian vegetation thus there was no effective shading of the water.

The information collected during the above surveys was entered into the SEV calculator to produce the 14 individual function scores presented in Table 4-5.

Table 4-5: Stream Ecological Valuation functions, scores and assessment

Function	Score for Kāeo River	Assessment of score
Natural flow regime	0.87	There were no piped inflows, the channel appeared to be mostly natural with minor channel incision from flood-flows. Flow patterns are affected by a reduction of instream elements such as woody debris or boulders,
Floodplain effectiveness	0.26	There are some elements that restrict movement onto the floodplain, but during large flows the floodplain is activated.
Connectivity for natural species migration	1.00	No barriers to fish migration (within this reach).
Natural connectivity to groundwater	0.92	Good as very little impervious surfaces.
Water temperature control	0.04	Poor due to lack of shade
Dissolved oxygen levels	0.68	Sub-optimal as indicated by the moderate macrophyte biomass.
Organic matter input	0.00	Negligible.
In-stream particle retention	0.53	There are some macrophyte species and areas to help retain in-stream particles.
Decontamination of pollutants	0.65	The grazed and mown exotic grasses and weeds do provide some filtering of contaminants.
Fish spawning habitat	0.10	Unsuitable for galaxid species.
Habitat for aquatic fauna	0.13	Poor habitat diversity, abundance, hydrological heterogeneity, channel shade, and riparian vegetation.

Function	Score for Kāeo River	Assessment of score
Fish fauna intact	0.90	Fish fauna is reasonably intact, with species occupying most aquatic niches (e.g. bottom feeders, algal feeders, predators etc).
Invertebrate fauna intact	0.75	The community index is about half of the maximum, the range of invertebrates is about 66% of the expected, and most species are tolerant of poor conditions.
Riparian vegetation intact	0.14	Hardly any riparian vegetation.
Biodiversity function mean score	**0.59**	**A bit over half as good as a high quality waterway.**

Overall, the physical parameters of this reach of the Kāeo River are about half the quality of a high quality waterway. There are a few aspects that could be improved significantly to increase the quality of this reach including more habitat diversity in-stream and on the banks, and provision of spawning habitat and shade.

4.2 Terrestrial

4.2.1 Wetland delineation

Forester and Hansen (2024) describe the area as follows. The ungrazed area on the east bank (true right) of the Waikara Stream at the confluence of the present Kāeo River was inspected with no wetland areas recorded. The whole floodplain area to the west of the present Kāeo River is heavily grazed and showed signs of flooding (winter pugging and flood debris) and seasonal soil wetness (oxidized iron mottling). The main upland/dryland vegetation on this flood plain is dominated by kikuyu (*Cenchrus clandestinus*) and clover pasture species (*Trifolium pratense* and *T. repens*).

Areas identified as potential wetlands using the Rapid test for vegetation were restricted to hollows, old drainage channels and cut off oxbows including the pathway where the Kāeo River used to flow.

Three small wetlands, totalling approximately 5,190 m² (0.5 ha)[19], were identified within 100 m of the Kāeo Stage 2 flood mitigation area. These occupy hollows on old river or drainage channels and were heavily grazed and highly degraded. Wetland A is *c*. 1,300 m^2, Wetland B is *c*. 580 m^2 and Wetlands C is *c*. 3,310 m^2. The location of the wetlands is shown in Figure 4-2.

Forester and Hansen (2024) provided more description of each wetland and the four 2 m × 2 m wetland delineation plots (Appendix G).

[19] Note that the areas for the wetland differ slightly from the Forester and Hansen (2024) report as these shapes were not saved and could not be shared with NZEM. The wetland shapes were redrawn by NZEM and the image shared with and approved by Lisa Forester.

The wetlands did not meet the criteria for pasture exclusion, because although dominated by exotic plant species, these species are not on the pasture list as they are not used to improve pasture (Cosgrove et al., 2022).

4.2.2 Animal and plant species

Forester and Hansen (2024) did not see any threatened plant or animal species. Fauna that often use wetlands that were observed included one grey duck–mallard hybrid (*Anas superciliosa* x *platyrhynchos*), four paradise shelduck, and one red damselfly (*Xanthocnemis zealandica*). All wetland areas assessed have been grazed for a long time and are degraded and of low value in their current state. Most plant species recorded in the area were exotic plants, and some are weedy. Out of a total of 20 species recorded in all plots only two species, native water pepper (*Persicaria decipiens*) and Edgar's rush (*Juncus edgariae*), were native (Forester and Hansen, 2024).

During the NZEM site visits, welcome swallows (warou; *Hirundo neoxena*), New Zealand fantails (pīwakawaka; *Rhipidura fuliginosa*), red-billed gulls, spur-winged plover (*Vanellus miles*), and the introduced mallard (rakiraki; *Anas platyrhynchos*) were observed.

Bittern are known from a wetland near Dip Road, but not within the site itself (Stephanie Membery NRC, Pers. Comm. 6 December 2024). The area is mapped as potential North Island brown kiwi habitat, but there is currently insufficient cover, a lack of predator control (especially dogs and mustelids) and no scrub or forest to provide permanent or good habitat. The area is also considered to be poor habitat for indigenous lizard species but only exception might be areas of taller or rank grass (e.g. along fence lines) which copper skinks (*Oligosoma aeneum*; At Risk–Declining[20]) could use.

[20] Lizard threat classifications as per Hitchmough et al., (2024).

Figure 4-2: Aerial of the Kāeo River floodplain showing the three natural inland wetlands.

The wetlands are labelled A, B and C. Four 2 m × 2 m wetland delineation plots were located at points A/1, A/2, A/3 and C/1.

Source: Forester and Hansen (2024) memo Figure 2.

4.3 Ecological values of site features

The values of the various site features were assessed as per Sections 5.2 and 5.3 in the Ecological impact assessment - EIANZ guidelines for use in New Zealand: terrestrial and freshwater ecosystems (Roper-Lindsay et al., 2018). Scoring values were derived with reference to Tables 4 to 7 in Roper-Lindsay et al. (2018).

Table 4-6 identifies and describes the various site features, and ranks each for representativeness, rarity or distinctiveness, diversity and pattern and ecological context.

Table 4-6: Assessment of ecological values of site features.

Site feature	Description	Representativeness	Rarity/ distinctiveness	Diversity and pattern	Ecological context	Overall score
Kaeo River and catchment	Moderate sized catchment with approximately half the area forested. High stream order (5th) broad perennial river with some tidal influence at the project site.	Moderate Moderate sized catchment and half forested	High Relatively unmodified lowland river as not armoured with tidal influence	Moderate More diverse upstream, and grades into saline riparian vegetation downstream, but the reach near the project site is more modified	High Part of an important river system.	High
Kaeo River physical attributes	Has good natural flow regime, with high connectivity for species migration and to groundwater, moderate instream chemical attributes, but poor floodplain connectivity, shading and organic matter input	Moderate Typical of lowland rivers in Northland	Moderate Typical of lowland rivers in Northland	High Still many river functions that are good	Very high Important for connectivity up and down the river	High
Fish species diversity	Has good fish species diversity including four At Risk-Declining species and one At Risk-Naturally Uncommon	High Most of the species expected have been found	High Includes At Risk species	High Good diversity of types of fish occupying most aquatic niches (e.g. bottom feeders, algal feeders, predators etc)	High Evidence of juveniles and adults using the area, also important for fish passage up and down the river	Very high
Macro-invertebrate diversity & Macro-invertebrate index	The community index is about half of the maximum, the range of invertebrates is about 66% of the expected, and most species are tolerant of poor conditions	Moderate Low abundance of clean water species	Moderate Good range of species, but low abundance of clean water species	High All trophic levels are represented	Moderate Good range of species to provide food for other species	High
Macrophyte diversity	Moderate amount of macrophyte species; 2 of the 5 were indigenous. None have NZ threat status	Moderate Includes some commonly occurring indigenous species	Low No species with threat category	Low Common indigenous or exotic species	Moderate Provides habitat for fauna	Moderate

Site feature	Description	Representativeness	Rarity/ distinctiveness	Diversity and pattern	Ecological context	Overall score
In-stream habitat diversity	Poor habitat diversity, abundance, hydrological heterogeneity, channel shade, and riparian vegetation, no fish spawning habitat	Low Relatively homogenous	Low Not unusual	Moderate There are several size classes of gravels, bank undercuts and variable depth water	Moderate Mobile deposits of small gravel and sand important for juvenile fish	Moderate
Riparian diversity	Riparian areas dominated by exotic grasses and weeds	Low Not indigenous	Low Not indigenous	Low No trees or shrubs	Moderate Some filtering of sediment to protect river	Low
Threatened land classification	> 30% left and < 10% protected, but little indigenous vegetation remaining	Low	Low	Low	Low	Negligible
Wetland areas	Three small areas totalling about 0.5 ha mostly vegetated with exotic species	Moderate Wetland based on old river meanders	High About 5.5% of wetlands remain in Northland[21]	Low Low indigenous diversity	Low Doesn't provide good habitat or buffer good habitat	Moderate
Old meanders and oxbows	Old river meanders are still visible in the project landscape.	Moderate Still visible in the landscape and some have wetland qualities, but dominated by exotic species	Moderate Old meanders and oxbows have never been that common	Low Only old river meanders, no oxbows within project area	Low Some habitat variability but limited	Moderate
Terrestrial plants	Two of 20 plant species were indigenous	Low	Low	Low	Low	Negligible
Terrestrial fauna	Low number of generally common indigenous birds	Low	Low	Low	Low	Negligible
Terrestrial fauna	Low probability of At Risk lizards on site	High	Moderate	Moderate	Moderate	Moderate

[21] https://www.nrc.govt.nz/resource-library-archive/environmental-monitoring-archive2/annual-environmental-monitoring-archive/2010/2009-2010-annual-environmental-monitoring-report/land-and-biodiversity/wetlands-and-biodiversity/

5. Proposed works

The proposed works would divert the Kāeo River into a new constructed riverbed that could incorporate parts of an older river channel. The excavated material would be used to extend the floodwall embankment constructed in 2014 on the true right bank of the current Kāeo River channel to protect the Kāeo township and State Highway 10 (SH10) from a 1:100 + climate event.

Once the Kāeo River is diverted into the new riverbed, the no-longer active section would be back-filled to reduce the chance of future breakthroughs into the current bed. Downstream of this backfill, and new embankment water levels will likely be lower than currently as only the Waikara Stream would occupy this section (Figure 5-2).

There is no intention to make the new Kāeo River channel larger to cope with higher volume events as there is an expectation the flood plain will activate as per status quo.

Figure 1-2 is the drawing provided by TrineKel showing the likely location and magnitude of the proposed works.

Figure 5-1 provides more detail on the various components proposed to be constructed.

Figure 5-2 has converted the line-drawings provided by TrineKel into areas where works are proposed. Note that the entire area between the proposed new embankment and new river channel could be affected by vehicles transporting excavated sediment from the new channel to the new embankment. Indicative footprint effects on identified natural inland wetlands are provided in Figure 6-2.

5.1 Project Staging

The project works is proposed to be carried out over two summers (Stage 1 & 2).

Stage 1 consists of cutting 90% of the new river channel and stop bank material placement and compaction. At either end of the new channel, sufficient soil material would be left in place to stop the river breaking through into the new channel. Leaving both the channel and the embankment to over-winter and stabilise for one season will increase the likelihood of a stable transition between the current river and the new channel.

Stage 2 would happen over the second summer season and includes opening the transition (moving the old river channel into the new alignment) after in-stream ecological measures have been constructed. Additional ecological management actions may also be required in other parts of the site to fully address ecological effects. Any construction for ecological mitigation would occur during this season, but planting up will likely occur over the winter and spring planting seasons. Potential ecological management options are discussed in Section 7.

The approximate earthworks volumes are as follows (Matías Silveira, TrineKel, Pers. Comm. 30 January 2025):

New river channel

- Total Excavated Volume: 30,787 m^3
  - Construction Phase 1: 20,610 m^3
  - Construction Phase 2: 10,177 m^3

Current but to be abandoned channel

- Total Infill Volume: 7,502 m^3

New embankment

- - Total Stopbank Volume: 15,137 m^3
  - Construction Phase 1: 9,015 m^3
  - Construction Phase 2: 6,122 m^3

Excess material

- The difference between the cut and fill is 8,148 m3

5.2 Sediment Control of the Site

The sediment control plan will be detailed in the Construction Management Plan, which will be finalised following the construction tender in January 2025. Sediment control measures during earthworks include:

1. Using the excavated new channel as a sediment retention pond to manage runoff from the site. Exposed earth from the work site will drain into the channel, with a Decanting Earth Bund (DEB) directing water back into the live channel. These measures will comply with GD05 sediment control guidelines.
2. Stabilising constructed channels and stop banks progressively by applying grass seed and hay mulch during construction.

5.3 New river channel specifications

The bulk of the earthworks to create the new river channel will be undertaken during the first construction season. Prior to the second construction season, additional consultation will be undertaken including with the local community, to formulate appropriate river channel specifications.

The minimum specifications will need to match the physical parameters identified for the Kāeo River from the SEV survey. Ideally, these specifications would result in an overall improvement of in-stream (and potentially fish spawning habitat) and riparian habitat and potentially provide better recreational opportunities for the local community (e.g. swimming holes).

5.4 Dewatering sequence

The old 'to be abandoned' Kāeo River channel may need to be dewatered in stages. For instance, it may require the construction of a temporary diversion dam followed by the infilling of the 'to be abandoned' channel. The sequence is important for how fish species

will be salvaged from the channel prior to material being deposited in the channel. This will require further consideration during the two earthworks seasons.

5.5 'Abandoned' Kāeo River reach

Work will also need to be undertaken during the second season on how to retain water in the reach where the Kāeo River has been diverted from and will be solely occupied by the Waikara Stream. There will be a significant change in volume of water in this 'to be abandoned' river reach as the Waikara Stream only contributes about 2% of the total volume of water during non-flood events (large variability due to different catchment and rain events; Alan Bee NRC Pers. Comm. 28 November 2024).

In-channel modifications and improvements and riparian planting will be needed, and potential options need to be consulted on with the local community prior to implementation.

5.6 Terrestrial habitat enhancements

A range of other habitat improvements and construction works are likely to be required to ensure no-net loss of wetland habitat from the site and to improve habitat values for this new reach of the Kāeo River. Potential options need to be consulted on with the local community prior to implementation

Figure 5-1: Proposed works to divert the Kāeo River and construct a floodwall (embankment).
Source: Shapefiles in blue provided by TrineKel on 30 January 2025.

Figure 5-2: Areas of proposed works to divert the Kāeo River and construct a floodwall (embankment).
Source: Based on shapefiles provided by TrineKel on 30 January 2025.

6. Potential effects

The magnitude of the potential effects is described in Section 7.1.

6.1 Permanent effects

6.1.1 Loss of river habitat

The Kāeo River will be excluded from 704 m of currently accessible reach, including 180 m lost permanently (in-filled). About 524 m of the current reach would essentially be dewatered as the volume would drop to about 2% of the current volume, as that is the proportion of contributed by the Waikara Stream.

The new channel is expected to be about 598 m long resulting in a net loss of 106 m of river channel, which equates to 933 m^2 of river habitat, using an average wetted bank width of 8.8 m (refer to Section 4.1.1). Total riparian edge lost will be 212 linear metres (twice the length of river lost as there is a bank on each side).

The river bottom will be stabilised between earthworks season 1 and 2 by compacting the surface and then applying a rye/clover seed mix Figure 6-1.

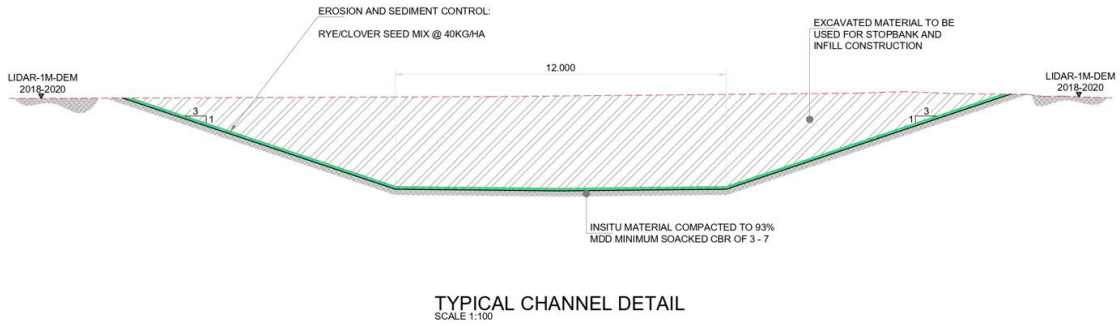


Figure 6-1: Typical detail for proposed channel cross-section.
Source: TrineKel drawing included in Appendix H.

This riverbed design is not intended to be the final configuration, but no further details are currently available. Additionally, options need to be discussed with various experts and the local community.

This loss of habitat will affect all fauna and flora species in the current reach, and if sufficient mitigation is not provided, the new channel also. There is significant potential for species to be lost completely from this area and also to affect upstream populations that migrate through this reach of the Kaeo River.

This includes habitat for At Risk fish species known to live or pass through this reach of the Kaeo River (Table 6-1).

Table 6-1: Fish species known from this and upstream reaches of the Kaeo River.
Fish and freshwater invertebrate threat status as per Dunn et al. (2018 and Grainger et al. (2018) respectively.

Scientific name	Common name	National Threat status
Anguilla dieffenbachii	Longfin eel	At Risk-Declining
Cheimarrichthys fosteri	Torrentfish	At Risk-Declining
Galaxias maculatus	Īnanga	At Risk-Declining
Gobiomorphus hubbsi	Bluegill bully	At Risk-Declining
Gobiomorphus gobioides	Giant bully	At Risk-Naturally Uncommon
Anguilla australis	Shortfin eel	Not Threatened
Galaxias fasciatus	Banded kōkopu	Not Threatened
Gobiomorphus cotidianus	Common bully	Not Threatened
Gobiomorphus huttoni	Redfin bully	Not Threatened
Paranephrops	Kōura	Not Threatened
Paratya curvirostris	Freshwater Shrimp	Not Threatened
Retropinna retropinna	Common smelt	Not Threatened

6.1.2 Loss of habitat in 'abandoned' reach

The volume of water in the 'abandoned' river channel is expected to drop significantly during normal flow conditions as the Waikara Stream only contributes about 2-3% of total volume in this reach (Appendix I). This could result in:

- water flowing mainly through the subsurface (i.e. no surface water)
- Very shallow water that is unsuitable for fish or other aquatic species
- parts of this reach drying out completely
- intermittent and isolated pools
- loss of fish and invertebrate habitat
- water overheating and no longer being able to support fish or invertebrate populations
- increased algal and macrophyte growth
- loss of connectivity along this reach and into the Waikara Stream resulting in fish passage obstruction. Fish species known from the Waikara Stream include At Risk-Declining longfin eel and Not Threatened banded kokopu.

Water temperature threshold for various species are discussed in Olsen et al., (2012) for Auckland Rivers. Some key macroinvertebrate species fail to cope with temperatures over about 23°C and fish species (juvenile or adult) in-stream habitat becomes lethal for some species (e.g. smelt) if temperatures exceed 20°C.

Suggestions are provided in Section 7.3 as to the elements that could be included in the ecological mitigation package and a resource consent to require a channel enhancement plan to be developed (Section 8).

6.1.3 Loss of wetland habitat

Vegetation clearance within, and within a 10 m setback from, and earthworks or land disturbance and changes to hydrology will occur within 100 m of natural inland wetlands. These are all discretionary activities under the NES-F (Appendix B).

It is also expected that vehicular traffic will cross from the new channel to the new embankment further impacting and potentially compacting other terrestrial areas including wetlands. Essentially, the entire terrestrial area between the new channel and the embankment could potentially be affected by vehicular movements and associated issues such as weed dispersal. Depending on the vehicular access routes and other movements there is potential for all areas of wetland that have been identified to be affected (Figure 6-2).

Table 6-2 provides estimates for these various scenarios. The total area of wetland is estimated at 5,194 m^2 which increases to 13,135 m^2 when a 10 m buffer is included to address vegetation clearance rules. The footprint of the works is estimated to result in the physical loss of 826 m^2 which results in 2,503 m^2 of potential vegetation clearance within a 10 m buffer. This is solely due to the location of the proposed new channel which partially follows previous river meanders, which are lower in altitude than the rest of the river flat and hence more likely to be wetland (Table 6-3).

Table 6-2 provides estimates for various vehicular movement scenarios also. If vehicular movements are restricted to the east side of the channel, then the potential areas of wetland affected by works is 1,493 m^2 with vegetation clearance within a 10 m buffer (so wetland plus buffer) of 4,727 m^2. Should traffic not be restricted on either side of the new channel then the total wetland lost could be 5,194 m^2 (0.52 ha) and total vegetation clearance within a 10 m buffer of 13,135 m^2 (1.31 ha).

Table 6-2: Estimated loss calculations for wetland areas plus 10 m buffers.
Please refer to the text for additional information.

	Wetland				Area
Estimated loss of area (m^2)	**A**	**B**	**C**	**Total**	**in ha**
Estimated area	1,293	586	3,315	**5,194**	**0.52**
Estimated area + 10 m buffer	4,035	1,795	7,305	**13,135**	**1.31**
Loss of wetland	301	350	0	**651**	**0.07**
Loss of wetland + 10 m buffer	891	1,025	0	**1,916**	**0.19**
East of new channel	889	236	3,315	**4,440**	**0.44**
East of new channel + 10 m buffer	2,576	770	7,305	**10,651**	**1.07**
West of new channel	404	350	0	**754**	**0.08**
West of new channel + 10 m buffer	1,459	1,025	0	**2,484**	**0.25**

Table 6-3: Approximate works footprints and overlap with wetlands.

Area of works	Approximate works area (m^2)	Overlap with wetland (m^2)	Overlap with wetland + 10m buffer (m2)
New bund footprint	10,705	0	0
New Kāeo river reach footprint	16,462	651	1,916
Section of current Kāeo river channel filled	1,697	0	0

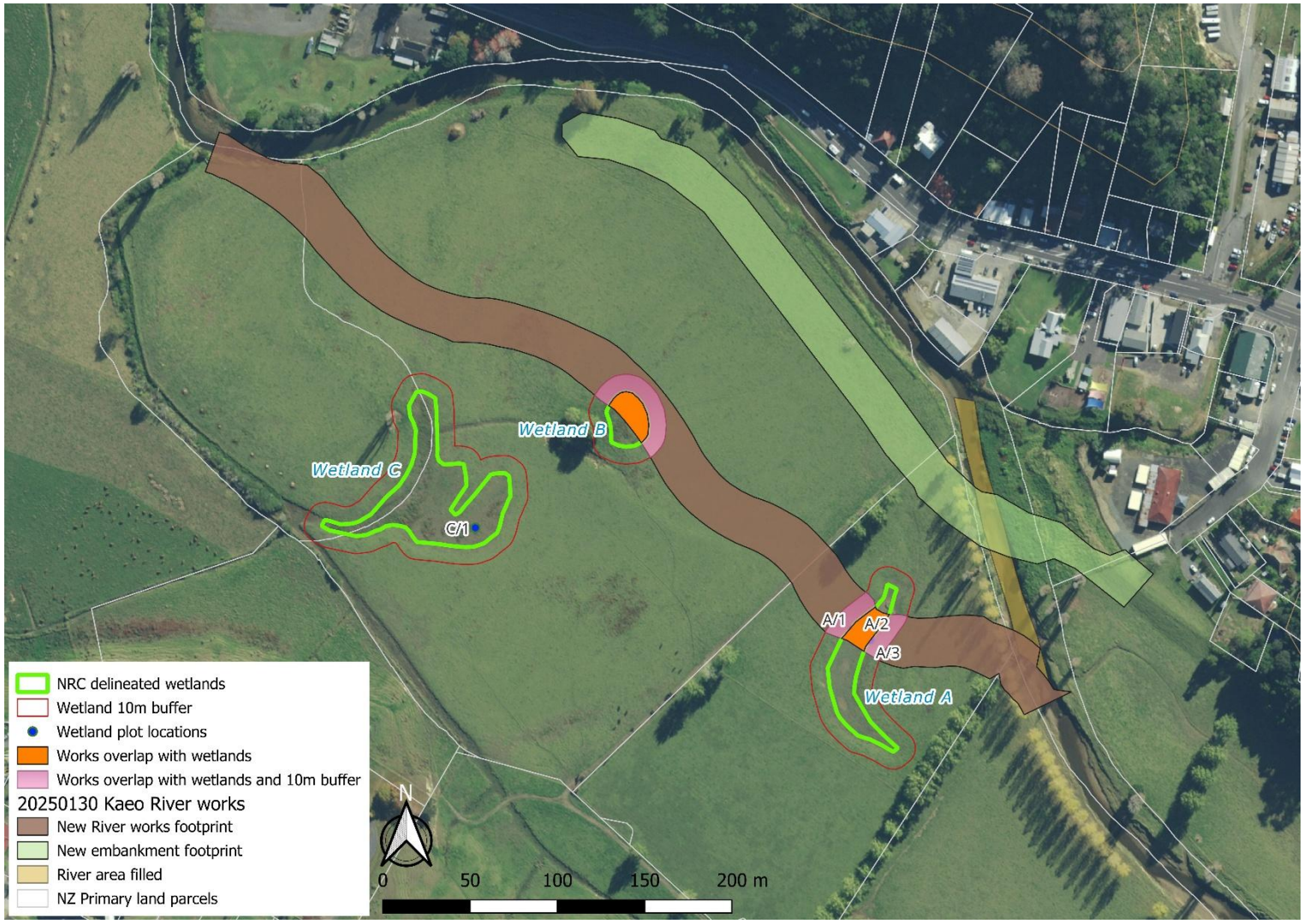


Figure 6-2: Areas of proposed works in relation to wetland locations and a 10 m wetland buffer.
Source: Based on shapefiles provided by TrineKel on 10 December 2024 and digitising the NRC wetland shapes.

Management actions for the loss of wetland extend are provided in Section 7.4. A condition of the resource consent should be to prepare and implement a Wetland Construction and Enhancement Plan, including requirements to reinstate an area(s) at least equivalent to the area of wetland lost (Section 8).

6.1.4 Loss of terrestrial habitat

Other than the loss of wetland habitat already described, the current terrestrial habitat has very low habitat values for all native fauna species.

The only exception might be if there are areas of taller or rank grass (e.g. along fence lines) where copper skinks (*Oligosoma aeneum*; At Risk–Declining[22]) may be present. Searching for lizards and relocating these to safe adjacent areas prior to vegetation removal is recommended.

Potential lizard salvage requirements are provided in Section 7.5 as well as a resource consent to require searching any areas of rank grass for lizards prior to vegetation clearance (Section 8).

6.2 Temporary effects

6.2.1 Stranded fish

As the new channel is activated this will result in a reduction in water flowing through the 'abandoned' channel. This could result in fish being stranded in isolated pools with no possibility of retreat to remaining river habitat A fish salvage operation will be required to minimise the mortality of aquatic fauna.

Proposed staging of works to salvage stranded fish are provided in Section 7.6 as well as a resource consent to require fish salvage prior to dewatering of any waterways (Section 8).

6.2.2 Recolonisation by fish species

During the time between the two earthworks seasons there may be a possibility that the newly constructed channel will partially fill due to rainwater or groundwater in-flow, or a king-tide. It is also possible that a significant flood across the floodplain will fill the channel.

Should all or part of the new channel be filled with water then there will be the potential for fish species to recolonise this reach (for instance during a flood, and eels are known to cross damp ground).

6.2.1 Sediment control for dewatering

If the channel is filled or partially filled with water between the two earthworks seasons (as per Section 6.2.2) then this water may need to be pumped out to enable the final

[22] Lizard threat classifications as per Hitchmough et al., (2024).

shaping and river-bed contouring. This has the potential to release a sediment plume into the waterways and, depending on the location, adjacent wetland areas.

6.2.2 Sediment plume

Activation of the new channel could cause a downstream sediment plume as the riverbed will not have been activated. How to mitigate this will need to be further discussed between construction Phases 1 and 2.

This will be a temporary effect as eventually the riverbed should reach an equilibrium with sediment input from upstream moving through the new channel. How to address this potential effect should be included in the Kāeo New River Channel Enhancement Plan (Sections 7.7, 7.8 and 8).

6.3 Construction effects

6.3.1 Exposed soil and faces

Exposed soil and faces will be progressively stabilised to minimise sediment release. The new channel will be used as a sediment detention pond between earthworks season 1 and two. Further details on soil and sediment management are provided in the information from TrineKel (some reproduced in Appendix H).

Management of exposed soil and faces is briefly discussed in Section 7.8. A resource consent condition is required to develop a suitably robust Erosion and Sediment Control Plan (Section 8).

6.3.2 Stranded fish

Just prior to diverting the Kāeo River into its new channel, fish passage barriers will need to be constructed at the upstream end. Then fish need to be salvaged from the dewatered sections (as per Section 6.2.1). However, it will also be required to salvage fish prior to infilling the channel for a temporary diversion dam as well as the infilling the remainder of the dewatered channel.

The dewatering sequence will need to be discussed and decided upon between earthworks season 1 and 2.

Proposed staging of works to salvage stranded fish are provided in Section 7.6. A resource consent is required to salvage fish prior to dewatering of any waterways (Section 8).

6.3.3 Introduction of pest animal and plant species

Construction equipment will be brought in from elsewhere to undertake earthworks and works within the site. Thus, there is the possibility that pest animals and pest plants are inadvertently introduced to the site, unless the equipment is thoroughly cleaned prior to arriving onsite. It would also be useful to identify areas of particular pest plant species that already occur within the site and control these prior to works starting to reduce the possibility of spreading these within the site.

Some additional details are provided in Section 7.9 Resource consent conditions will need to ensure that all equipment brought to the site is free of pest plant material and animals and to identify and control areas of pest plants prior to works commencing to reduce their spread (Section 8).

6.3.4 Ensure that the as-built structures are functioning as intended.

Once the construction has been completed and the Kāeo River successfully diverted into the new channel, both the new channel and the Waikara channel will need to be assessed to ensure that their ecological functioning is as intended. This should also include auditing of any other mitigation measures (e.g. restoration planting, wetland creation).

These assessments should be repeated two years after the completion of the construction. A resource condition consent should be included (Section 8) to ensure that the structures and ecological management actions are working and progressing as intended. More details as the to the monitoring requirements is provided in Section 7.10.

7. Potential ecological management actions

The potential ecological management actions in this Section are currently suggestions as to what can be done to redress the potential adverse effects of the proposed works. These need to be discussed in more detail with NRC and stakeholder groups and be achievable within a yet to be determined budget. So, although the ecological management actions are broadly described it is not possible to assess which options will be enacted and therefore whether the quantum of ecological management actions will fully address the ecological impacts.

7.1 Assessment of potential effects

The magnitude of the potential effects with and without ecological management actions have been assessed as per Roper-Lindsay et al. (2018) Tables 8 to 10 and are provided in Table 7-1.

Due to the considerable uncertainty with regard to the quantum of effects and the yet to be developed ecological management actions package, it is recommended that that resource consent conditions are included in the consent to ensure that sufficient ecological redress is provided. The broad outlines of these conditions are provided in Section 8.

With the right mix of ecological management actions, the overall outcomes would reduce adverse effects and could provide a significant improvement in freshwater, riparian, and wetland habitat and potentially human recreation and aesthetic improvements also.

Table 7-1: The magnitude of the potential effects on site features from proposed works with and without ecological management actions.

Item	Site feature	Ecological value score	Activity or feature	Potential effect	Duration and reversibility	Magnitude of effect	Level of effect without mitigation	Potential ecological management actions	Magnitude after ecological management actions	Level of effect after ecological management actions
1	Kaeo River and catchment	High	Diversion of channel	Diversion of 704 m of river into a new channel lacking in-stream features[23].	Permanent and hard to reverse	Very high	Very high	The in-stream river habitat is at least and preferably more complex and diverse compared to the reach that has been abandoned, including connectivity to the floodplain and groundwater, with a comparable channel capacity. The channel includes pools of various depths, riffles and runs and a diverse range of sediment sizes including boulders. The flow characteristics should also include back-flow areas, eddies, regularly and closely spaced low or nil-velocity areas to enable fish to migrate through the new channel. Logs are embedded in the bank by their root-bowls as well as eel tunnels (novaflow tubes) to provide additional in-stream habitat variability. Vegetation hangs in and overhangs the bank to provide shaded habitat. 'Off-stream' river compartments provide breeding habitat for fish, and especially inanga. The gradient into the existing channel enables the tidal influence, and if possible the salt wedge, to enter the new channel to a similar distance inland as preconstruction as well as any 'off-stream' river compartments connected to the new channel. Rip rap or gabion baskets (or similar engineering solutions) are avoided on the riverbed to prevent sub-surface flows occurring. The amount of rip rap or gabion baskets (or similar) is less than 5% along the channel, is only used where this type of engineering is functionally required and include features that can provide habitat such as novacoil tubes, gaps between rocks and uses larger boulders in gabion baskets to create habitat holes.	Low if all these aspects are included. Depending on how well this is executed the outcome could even be positive resulting in a net gain in diversity of in-stream flow and habitats	Moderate to low
2	Kaeo River and catchment	High	Changes to tidal influence and saline wedge	Effects on the location and depth of tidal influence (and salt wedge) with consequent loss of potential fish spawning habitat, changes to aquatic biota and macrophyte species.	Permanent and hard to reverse	Very high	Very high			
3	Kaeo River physical attributes	High	Flow characteristics effects on fish passage	Strong laminar flow and lack of habitat and channel shading resulting in loss of fish passage in the new channel. This affects 88 km^2 (8,800 ha) of upstream habitat	Permanent and hard to reverse	Very high	Very high			
4	Kaeo River physical attributes	High	Homogenous in-stream habitat	Lack of in-stream habitat variability and resulting in loss of aquatic species habitat. Different species require different habitat types. For instance, juvenile fish were noted on fine gravels and eels preferred bank overhangs[23].	Permanent and hard to reverse	Very high	Very high			
5	Kaeo River physical attributes	High	Artificial channel elements	Use of engineered features such as rip-rap or gabion baskets to ensure the new channel does not re-position itself could make portions of the riverbed or river bank less habitable for certain species. On the other hand, species such as eels can favour rip rap type habitat	Permanent and hard to reverse	High	Very high			
6	In-stream habitat diversity	Moderate	New channel with uniform habitat	Uniform habitat as shown in Figure 6-1 would greatly reduce the diversity of aquatic species that can live within this reach	Permanent and hard to reverse	Very high	High			
7	Kaeo River and catchment	High	Channel infilling	Infilling and therefore permanent loss of 180 m of river channel resulting in permanent loss of 1,584 m^2 river habitat	Permanent and hard to reverse	Very high	Very high	Create at least an additional 2,517 m2 (= 1,584 + 933 m2) of in-stream habitat connected to and part of same reach of the river. 'Off-stream' habitat compartments are described in more detail in Section 7.2.1. Also ensure that the in-stream habitat is more complex and diverse than what it is currently	Low if all these aspects are included. If the 'off-stream' river compartments prove to provide	Moderate to low
8	Kaeo River and catchment	High	Reduction in channel length	New channel is shorter by 106 m of resulting in loss of 933 m^2 of in-river habitat	Permanent and hard to reverse	Very high	Very high			

[23] Assumes that the final channel is as per typical cross-section in Figure 6-1

Item	Site feature	Ecological value score	Activity or feature	Potential effect	Duration and reversibility	Magnitude of effect	Level of effect without mitigation	Potential ecological management actions	Magnitude after ecological management actions	Level of effect after ecological management actions
9	Kaeo River and catchment and physical attributes	High	Reduction in amount of habitat available	The reduction in the total channel by 933 m2 will result in resident populations of aquatic fauna being compressed into a smaller area or displaced to other areas. This will result in increased pressure on resources such as food and hiding places. These factors could result in a significant decrease in the number of organisms inhabiting this reach.	Permanent and hard to reverse	High	Very high	to provide for greater population densities and habitat for a range of species.	breeding habitat for fish, and especially inanga, then it would be a net gain	
10	Kaeo River and catchment	High	Loss of riparian margin	Loss of 212 m of riparian margin due to shorter channel, resulting in loss of filtration and habitat variability for aquatic species	Permanent and hard to reverse	Very high	Very high	Plant up at least 1,060 m2 of new channel riparian margin (212 m by 5m wide) with indigenous plant species. Use species that will lie flat during flood flows within the channel and to the top of the riverbank but also use shrub and tree species further from the bank margin (especially on the northern bank) to provide shade and nutrient input. Also include species such as sedges that overhang and hang in the water on the river's edge. Ensure any planting is protected from stock.	Positive Improvement on current situation	Net gain
11	Kaeo River physical attributes	High	Channel shading	Channel shading of the new channel – there currently is little channel shading which can result in elevated water temperatures which are unfavourable to aquatic species, especially at low flows	Short term during construction and while grass re-establishes	Low	Low			
12	Riparian diversity	Low	Riparian vegetation within and along the new channel	The current channel has poor riparian vegetation currently, although the grass does provide some filtering of surface flows	Permanent but can be modified	Low	Low			
13	Kaeo River and catchment	High	Loss of water in abandoned channel	Significant drop in water volume in abandoned channel to 2% of current volume over 524 m resulting in permanent adverse changes and loss of 4,611 m^2 of habitat	Permanent and hard to reverse	Very high	Very high	A perennial fully connected meandering channel is created or maintained, and a sufficient water depth is available above the riverbed substrate to provide suitable habitat for fish and other aquatic fauna. The channel is not uniform but include pools, riffles and runs and a diverse range of sediment sizes and instream habitat. Additional habitat features such as logs, deeper pools, back water areas, and areas of undercut bank are included. To address the reduction in aquatic species population, the in-stream and bank habitat is more complex and provides more variety than currently exists. Riparian planting is undertaken across the full width of the abandoned channel to stabilise the chosen channel and provide shade to keep the shallow water cool so that it is suitable for aquatic fauna and prevent excessive macrophyte growth. Riparian planting with indigenous species will reduce establishment of weedy species and provide a better and more diverse habitat and food for indigenous species aquatic and terrestrial fauna	Moderate if all these aspects are included Has the potential to result in positive outcome in the long-term (25 year+) if done well Positive	Low
14	Kaeo River physical attributes	High	Loss of habitat in the abandoned channel	Lack of water in the abandoned channel which would result in complete loss of fauna habitat within the channel and potential for water in abandoned channel to become sub-surface flow resulting in loss of fish passage for longfin eel and banded kopopu (and potentially other species) to 2.17 km^2 (217 ha) of upstream habitat.	Permanent and hard to reverse	Very high	Very high			
15	Kaeo River physical attributes	High	Increase in unfavourable conditions in abandoned channel	At least 98% reduction of aquatic habitat in abandoned channel. Shallow channel without shading and will easily overheat making it unsuitable for aquatic fauna and flora. Increased algal and macrophyte growth due to lack of shading but also lack of dilution of any excess nutrient input into the Waikara Stream.	Permanent and hard to reverse	Very high	Very high			

Item	Site feature	Ecological value score	Activity or feature	Potential effect	Duration and reversibility	Magnitude of effect	Level of effect without mitigation	Potential ecological management actions	Magnitude after ecological management actions	Level of effect after ecological management actions
16	Riparian diversity	Low	Riparian vegetation within the abandoned channel	Without planting and management, the dry areas in the abandoned channel will be covered by weedy plant species. This may provide shading but is not desirable. Also planting will help stabilise the remaining channel	Permanent but can be modified	Moderate	Low			
17	Wetland areas	Moderate	Direct effects on wetlands	It is estimated the new channel would directly affect 826 m^2 of wetland and 2,503 m^2 of vegetation clearance within a 10 m buffer. The total area affected by works could be as much 5,194 m^2 (0.52 ha) with a total vegetation clearance of 13,135 m^2 (1.31 ha) within a 10 m buffer	Permanent and not reversible	Very high	High	Once the area of wetland affected by works is known, at least the equivalent area+10%[24] of indigenous species dominated wetland is created with an indigenous species buffer of at least 10 m wide around the wetland(s). A larger deeper wetland area dominated by tall reeds may provide additional habitat for bittern. The water flow to wetlands is maintained or increased. Wetlands A and B will be bisected by work and will be directly fed from the new channel. Wetland C receives water via the existing historic river meander. Stock are excluded from wetland areas and the wetlands are managed so that pest plants do not become dominant but indigenous plant species do. This would improve the quality of the wetland habitat compared to what currently exists.	Moderate to positive if all these aspects are included If done well then this may result in a positive outcome (net gain) in the long term (25 year+)	Low
18	Wetland areas	Moderate	Hydrological effects on wetlands within 100 m of works	The new channel will alter surface and sub-surface flows to the wetlands. Worst case scenario this could result in all the identified wetlands drying out so that non-wetland plant species come to dominate and complete loss of wetland habitat	Permanent and difficult to reverse	Very High	High			
19	Wetland areas	Moderate	Post works effects	Currently stock have access to the wetlands and help to maintain exotic species dominance. It is not yet clear how the land will be managed once the channel has been constructed but this could include ongoing stock access.	Permanent but reversible (assuming stock continue to have access)	High	Moderate			
20	Old meanders and oxbows	Moderate	Infill of and/or excluding water from oxbows and old river meanders	The wetland features that are affected are in historic river meanders and/or remnant oxbows. There are additional meanders and old oxbows that could also be affect by infilling, vehicle traffic and/or loss of water which will result in the loss or alteration of these features	Permanent and difficult to avoid or reverse	High	Moderate	Works and vehicle traffic in and across site avoid as many of the identifiable features as possible. These features are used to connect to mapped wetlands and 'off-stream' river compartments which helps maintain and/or reactivate these features.	Low to positive	Low
21	Fish species diversity	Very high	At Risk and other fish populations	Five At Risk fish species are known from this reach of the Kaeo River as well as another five Not Threatened fish and two invertebrate species. These species could all be lost from this reach of the river[25]. It is likely that in the short term there will be an unavoidable reduction in fauna population due to salvage requirements and disturbance	Permanent and hard to reverse	Very high	Very high	Ensure that there is no loss of fish passage connectivity throughout the project and that the new river channel and the abandoned river channel provide sufficient in-stream habitat and resting areas to enable fish passage to the upstream catchments. The new channel and the abandoned channel provide a greater variety of suitable habitat to support populations of aquatic species in similar (or higher) densities to what has been recorded previously for this reach of the Kaeo River.	Low if all these aspects are included If done well then this may result in a positive outcome in the long term (25 year+)	Moderate

[24] To account for time-lags during construction.
[25] Assumes that the final channel is as per typical cross-section in Figure 6-1.

Item	Site feature	Ecological value score	Activity or feature	Potential effect	Duration and reversibility	Magnitude of effect	Level of effect without mitigation	Potential ecological management actions	Magnitude after ecological management actions	Level of effect after ecological management actions
22	Fish species diversity	Very high	Fish passage to upstream catchment during the project and after completion	Should the new channel and the abandoned channel prove to be hostile to migrating aquatic fauna then this would adversely affect populations within 88 km2 of upstream catchment area	Permanent and hard to reverse	Very high	Very high			
23	Macro-invertebrate diversity & Macro-invertebrate index	High	Loss of macro-invertebrate species and/or loss of sensitive macro-invertebrate species	Such a loss would signal that the water conditions within the river reach have declined. This in turn affects the diversity of other species that feed on these macro-invertebrates and could also	Permanent and but potential to reverse	High	Very high	Ensure perennial cool water with a variety of depths and variable habitat including pools, riffles and runs and a diverse range of sediment sizes and instream habitat. Include habitat features such as logs, deeper pools, back water areas, and areas of bank undercut. Undertake riparian planting provide shade to keep water cool so that it is suitable for aquatic macro-invertebrates and prevent excessive macrophyte growth	Low if all these aspects are included If done well then this may result in a positive outcome in the long term (25 year+)	Low
24	Macrophyte diversity	Moderate	Changes in macrophyte density and/or diversity	The changes to the channel could result in increased water temperature and uniform water depth. This will cause an increase in undesirable macrophyte species and abundance with flow on effects on other aquatic species	Permanent but can be modified	High	Moderate	Provide variable instream habitat with variable water depth and velocities and riparian planting to shade the waterways and reduce undesirable macrophyte growth	Low	Low
25	Terrestrial fauna	Negligible	Vegetation clearance and habitat disturbance	Likely to only affect transient population of indigenous fauna other than lizards if rank grass along fence lines is affected (disturbance of lizards and lizard habitat	Temporary, likely to return once works has been completed	Low	Very low	None required, but other ecological management actions such as creating wetlands and planting of indigenous species could increase the number and diversity of native fauna within the site	Very low and potentially positive	Very low
26	Terrestrial fauna - lizards	Moderate	Vegetation clearance and habitat disturbance	Low probability of copper skink (At Risk-declining) if rank grass along fence lines is affected (all indigenous lizards are fully protected under the Wildlife Act 1953)	Depends on how much habitat affected and loss of connections to nearby habitat	Moderate	Moderate	Prior to areas of rank grass being removed, undertake survey for indigenous lizard species and move these to safe sites. If indigenous lizards are found then a Lizard Management Plan and Permit under the Wildlife Act 1953 will be required, and specification of features to improve lizard habitat.	Low	Low
27	Terrestrial plants	Negligible	Clearance and earthworks	Most of the site is exotic pasture grass and tree species.	Permanent loss under areas of works	High	Very low	Areas will be grassed as part of sediment control. Recommend including indigenous tree and shrub species in replanting	Low	Very low

7.2 Redress for loss of river habitat

It is estimated that about 180 m of river channel will be lost permanently (in-filled) and that the new channel will be about 106 m shorter than the current river channel. This equates to 2,517 m^2 of in-stream habitat lost and reduction of 212 linear metres of poor quality riparian habitat.

Ideally, the new channel would provide instream habitat superior to that provided by the current river channel (Section 4.1.4), and the riparian banks on both sides of the river would be planted up and these areas protected from stock access.

7.2.1 Instream habitat

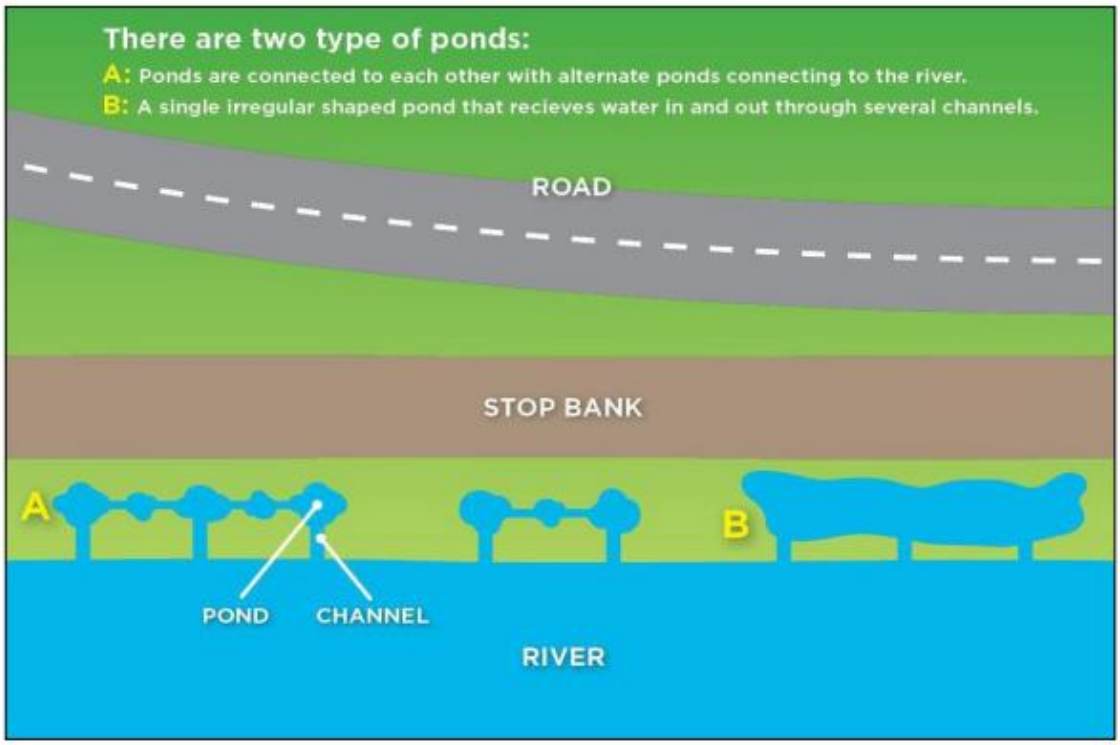
The river cross-section illustrated in Figure 6-1, is not intended to be the final configuration, as it does not provide sufficient or suitable instream habitat or habitat heterogeneity for aquatic species, nor will it maintain the health of the river. This section outlines suggestions as to the elements that could be included in the ecological management actions. A resource consent condition to require a channel enhancement plan should be developed (Section 8).

To compensate for the loss of channel habitat and riparian habitat, create fish spawning bays so that the 'off-stream' habitat compartments created totals at least 2,517 m^2 with planted riparian banks of at least 212 linear metres. Additionally, the quality of the riparian edge should be improved from the current very low standard (Section 4.1.4).

This part of the Kāeo River is near the tidal wedge and there are significant tidal effects (refer to Figure 2-4). Providing areas of still water that are regularly refreshed by tidal influence will provide additional freshwater fish habitat to that provided within the channel itself.

If the riparian margins are planted up with vegetation that overhangs and drapes into the water then this may create habitat suitable for īnanga spawning and/or other species. Creating open water areas that can be effectively shaded is crucial and provide valuable rearing and spawning habitat for whitebait and eel species. Incorporating some logs and large stumps will provide additional and greater variation in habitat.

Figure 7-1 is from a short report (Kapa and Elery, 2020) summarising how this approach has been successful in other parts of New Zealand.



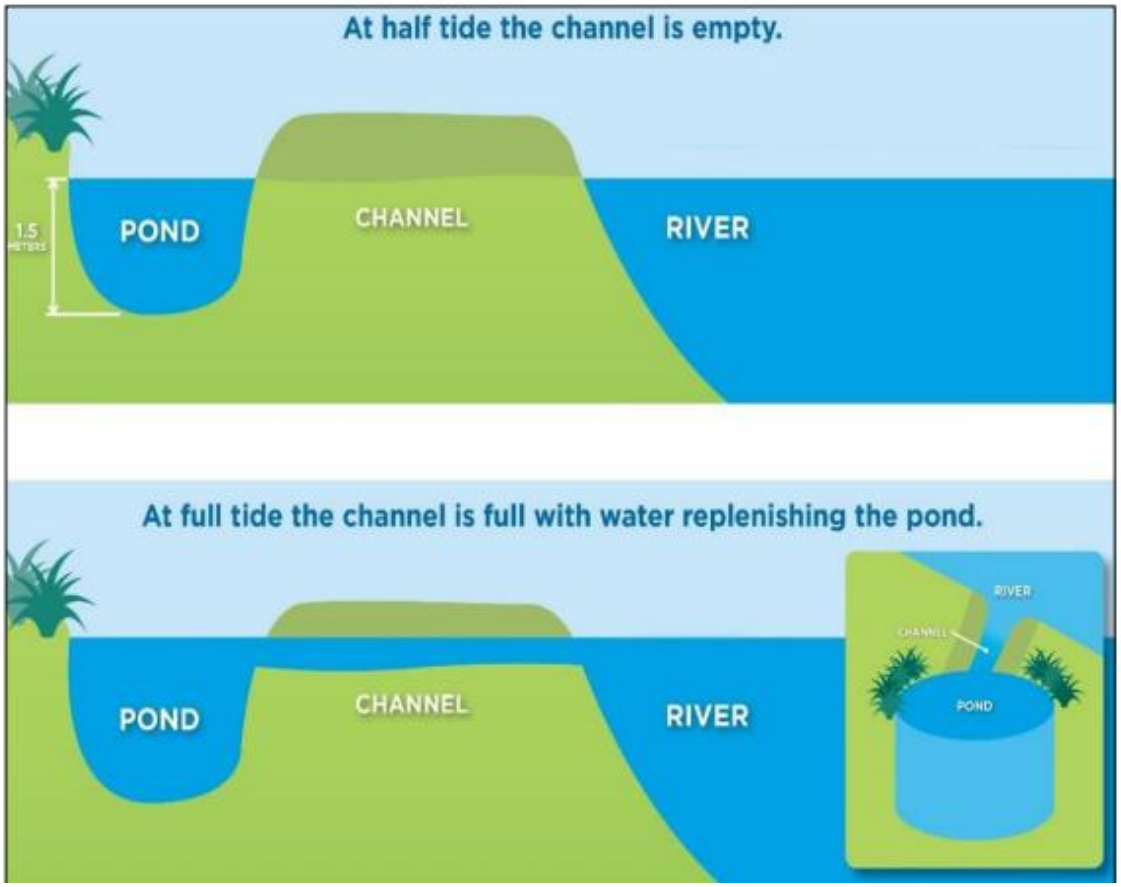


Figure 7-1: Graphic explaining potential īnanga spawning habitat.
Source: https://atlas.boprc.govt.nz/api/v1/edms/document/A3589660/content

Well-constructed and natural waterways have a meandering shape with regular to irregularly spaced sequences of pools, riffles and runs. These should have a mixture of flows and depths and provide a variety of habitats to support fish and invertebrate life. Pools are deep with slow water. Riffles are shallow with fast, turbulent water running over rocks. Runs are deep with fast water and little or no turbulence. Designs should also incorporate sections that are relatively flat and uniform, and consist of deep, mobile deposits of small gravels and sand to provide habitat for juvenile fish, including eels and bullies.

The average river depth at normal summer flows should be at least 23 cm but with variable depth (e.g. range 4 cm to at least 89 cm Section 4.1.4). There should be sufficient continuous above ground water flowing that fish passage is always maintained for the full length of new channel. Impervious riverbed surfaces should be avoided as should rock rip-rap or materials that would results in much of the water to flow sub-surface.

If feasible other habitat elements should also be incorporated. These could include, but are not limited to:

- Tree-trunks with the root-bowls embedded in the banks to provide habitat heterogeneity and variability of instream habitat (can be used to redirect flows too).
- Novacoil tubes embedded in the banks to provide in-bank habitat for species such as eels.
- 'Off-line' tributary wetlands to recoup the amount of river lost and provide areas of relatively still aquatic habitat.
- Ensuring that remaining wetlands and oxbows are reconnected to the river, and where this is possible, via previous river meanders.
- Large boulders and rock piles.
- Deep pools that retain water all year round.
- Artificial bank overhangs (especially if riparian vegetation cannot drape in the water.

Improve the character of the channel by planting areas up with suitable riparian species. If these species drape into the water at normal flows this would assist with creating in-stream habitat and partially shade the water and provide organic matter input.

7.2.2 Riparian habitat

The riparian margins (at least 10 m from the river edge, but preferably 20 m) on both sides of the river should be planted with a variety of appropriate native species to help stabilise the banks, provide riparian habitat and shade, and sediment filtering. Close to the river these will need to include species such as rushes and sedges that will lie flat during floods. Ideally these species would also drape into the water during normal flows to provide fish habitat and partial instream shading.

For the northern side of the river, investigate the option of including taller indigenous tree and shrub species to help shade the water, and whether this will increase the aquatic roughness and cause issues during flood flows.

All riparian areas should be fenced so that stock cannot access the areas. Palatable plant species should be fitted with plant protectors at the time of planting. All planted areas

should be monitored for plant survival and browse by animals, dead plants replaced, and weeds and rank grass removed so that plants are not overtopped. If animals are found to be browsing plants, then pest animal control or better fencing may be required. Also assess the risk of pukeko uprooting plants in the early stages. Terrestrial planting should occur during autumn and or winter but not during very cold or dry periods.

The planting plan should identify which species will be planted where, at what density, where the plants will be sourced from and what size the plants should be, how the site will be prepared, monitored for success, how issues will be addressed, and reporting requirements.

7.2.3 Recreational opportunities

Potentially, the new channel could also provide for recreational opportunities by including at least one area that could be used as a swimming hole, to replace those lost to ongoing sedimentation (Section 2.1).

7.3 Ecological management actions for the loss of water in 'abandoned' reach

Area of abandoned reach to be rehabilitated is approximately 4,600 m^2 including a new permanent channel for the Waikara Stream.

Identify areas within the channel where the reduced flow from the Waikara Stream will be maintained so that perennial surface water flow is maintained, even at low flows. Ideally the remainder of the abandoned channel would be planted up with a range of suitable native species similar to what is proposed for the new Kāeo River channel and for similar reasons (maintain stream bank stability, provide habitat and shading and instream organic material).

Additional issues to consider include ensuring that the Waikara Stream cannot undercut existing structures and SH1, that sediment within the channel is not remobilised, and to prevent the channel from being dominated by weed species. There also may be opportunities to introduce additional structural and habitat elements to increase fauna habitat diversity like what has been suggested for the new channel.

7.4 Ecological management actions for the loss of wetland habitat

Table 6-2 provides estimates for various scenarios for the loss of extent of natural inland wetlands and the surrounding 10 m vegetation buffer.

The values within the natural inland wetlands and the vegetation buffers are generally low due to grazing and because these areas are dominated by non-native plant species. However, wetlands have been severely depleted in total area in New Zealand and in Northland only about 5.5% of wetlands remain. Wetlands provide valuable ecosystem services (such as retaining and filtering water) and fauna and flora habitat.

There are other low-lying areas associated with the identified natural wetlands. Ideally additional wetlands would be constructed in these areas to provide for wetlands that are

similar in size (plus 10% to account for lag time) to what will be lost. If these are planted up with appropriate native species then this would also improve the value of these wetlands. Wetland C could potentially be improved both by planting with indigenous species and connecting it to the new channel via the existing river meander.

Note that wetlands constructed to create more off-line river habitats for indigenous fish (Section 7.2.1) will not count towards the total area of wetland being constructed or maintained within the site. This is the case for two reasons:

- The purpose of the off-stream habitat ponds is to provide additional fauna habitat not specifically to create wetland. Wetlands are a good habitat for some but not all fish species.
- There is a need to redress the loss of a substantial area of in-river habitat AND the loss of wetland extent. Including off-line or other fish habitat enhancement can therefore not be counted twice and included in wetland area created or enhanced.

Should funding permit this, construct larger reed-dominated wetlands with open water pools to provide additional habitat for the New Zealand bittern - that are known from a nearby wetland.

All wetlands plus associated buffer vegetation areas should be fenced so that stock cannot access these areas. Palatable plant species should be fitted with plant protectors at the time of planting. All planted areas should be monitored for plant survival and browse by animals, dead plants replaced, and weeds and rank grass removed so that plants are not overtopped. If animals are found to be browsing plants then pest animal control or better fencing may be required. Also assess the risk of pukeko uprooting plants in the early stages.

Terrestrial planting should occur during autumn and or winter but not during very cold or dry periods. However, wetland planting should occur during early spring when there still is sufficient soil moisture. Planting into wetlands during autumn and winter often causes root rot resulting in plant death.

The planting plan should identify which species will be planted where, at what density, where the plants will be sourced from and what size the plants should be, how the site will be prepared, monitored for success, how issues will be addressed, and reporting requirements.

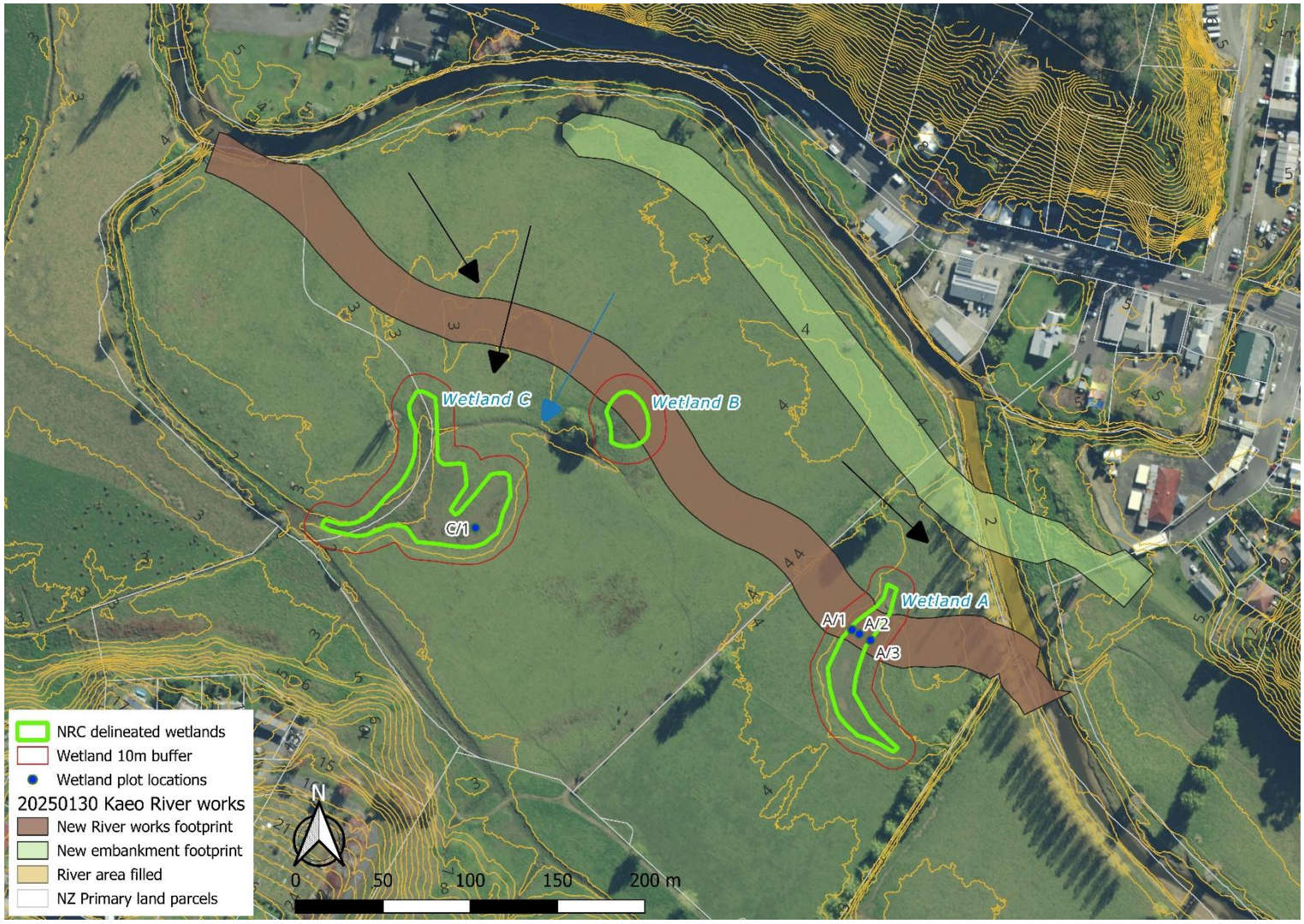


Figure 7-2: Additional low-lying areas near the proposed new river channel that could be suitable for wetland creation.
Additional low-lying areas are indicated by black arrows. These areas occur on both sides of the proposed new channel, so the arrows are indicative only. The river meander is indicated by the blue arrow.

7.5 Ecological management actions for loss of terrestrial habitat

Just prior to vegetation clearance any fences with tall or rank grass should be checked for indigenous lizard occupation. As soon as the lizards have been removed and relocated to safe adjacent areas, the vegetation should be scraped up and deposited at a nearby location for a final lizard check prior to being disposed of.

This work will require a Department of Conservation wildlife authority permit. The DOC permit process can take up to a year, requires Hapū consultation, and DOC charges a processing fee, the amount of which is not known until the application is lodged. This cost can range from $500 – $2,500 (Estimate only).

Pasture should be not allowed to become rank prior to works or between earthworks seasons to avoid creating more lizard habitat and potentially even daytime shelter for kiwi. If the grass areas do become rank then additional searches for lizard occupancy and kiwi occupancy (with a kiwi-dog) may be required immediately prior to works.

7.6 Salvage of stranded fish

All waterways where water needs to be removed (bund creation or dewatering river or new channel reaches) or significantly lowered will require fish salvage. All fishing and fish handling needs to be undertaken by people with the appropriate Department of Conservation and/or Ministry of Primary Industry permits.

It is recommended that the new channel is constructed "off-line" and not have water flowing through it until it is completed and the upstream end broken through into the Kāeo River (but note comments in Sections 6.2.2 and 6.2.1).

Once the water can access the new Kāeo River channel, it is recommended that a small bund is constructed at the upstream end of the to be abandoned Kāeo River channel, and that this area is subject to fish salvage prior to the construction of the bund.

As soon as the current Kāeo River channel water levels reduce (after bunding) the whole reach to the new junction will need to be checked for stranded fish and fish relocated. NZEM are permitted to handle and translocate fish, but it will require large numbers of people to rescue fish from pools from the entire reach that will have reduced water flow or will be filled in. It will likely require support from suitably qualified people from the Department of Conservation and/or NRC to minimise stress on and relocate fish quickly to suitable habitat.

It will also be required that the new embankments still allow access into the river for fish salvage.

Fish passage barriers will need to be installed at the downstream end of the old Kāeo river channel that is to be backfilled to prevent fish from recolonising the area after fish salvage and relocation This barrier will need to be checked regularly, and especially after floods, until the backfilling has been completed.

7.7 Prevention of sediment plume

How to mitigate and prevent this will need to be further discussed between construction season 1 and 2 and incorporated into the Kāeo New River Channel Enhancement Plan.

7.8 Management of exposed soil and faces

Require a recourse consent condition that an Erosion and Sediment Control Plan (ESCP) is developed that meets Northland Regional Council regulations and standards, and that this ESCP is adhered to and monitored until the project is completed.

The ESCP should include consideration of whether the riverbed is to be grassed or whether this could cause anoxic and potentially toxic conditions if mixed with river water (either during a flood or if it needs to be released prior to starting earthworks season 2).

The new, but partially formed, channel may be partially or fully filled with water from flood events, rain, king tides, overland flow, and groundwater prior to season 2 construction and earthworks.

The ESCP will also need to consider what is to happen in this scenario, as the water is likely to contain a substantial amount of sediment and may also have been recolonised by fish.

7.9 Management of pest animal and plant species

Require a resource consent condition that all equipment brought to site has been thoroughly cleaned and inspected prior to leaving their previous work site to ensure that no soil, plant seeds, or pest animals adhere to or are contained/trapped within the equipment.

Some key species of concern include parrots feather (*Myriophyllum aquaticum*), mugwort (*Artemisia verlotiorum*), Chinese privet (*Ligustrum sinense*), woolly nightshade (*Solanum mauritianum*) and elephant's ear (*Alocasia brisbanensis*).

Require a resource consent condition that NRC is to identify any plant species of concern with the works site (including within the upstream reach of the Kāeo River) and either arrange to control these species or raise awareness with the contractors to ensure that these are not spread within or beyond the site.

7.10 Ensure that the as-built structures are functioning as intended.

This will require an SEV in the new Kāeo River Channel and an SEV in the reach that has been abandoned from Kāeo River and is solely occupied by Waikara Stream. In the new Kāeo River Channel the various SEV component should be at least those recorded during the SEV and other associated parameters in Section 4. Ideally, the new SEV will show a significant improvement in in-stream and riparian habitat parameters.

For the reach that is now solely occupied by Waikara Stream, the SEV parameters in Section 4 should be compared to the new SEV scores to ensure that the ecological

management actions in Section 7.3 have been sufficient to redress the change in condition of this reach.

Audit the effectiveness of any other ecological management actions (e.g. restoration planting, wetland creation).

Write a report to be provided to the NRC consents department that describes the success or failure of ecological management actions and mitigation measures and how to address any failures.

8. Suggested resource consent conditions

- Require a resource consent condition to produce a Kāeo New River Channel Enhancement Plan in consultation with the local community to provide sufficient or suitable instream habitat and habitat heterogeneity for aquatic species and to maintain the health of the river, and if possible (and desired by the community) to provide a swimming hole for recreation. It should include those aspects discussed in Sections 7.2 and 7.7.
- Require a resource consent condition to produce a Waikara Stream Channel Enhancement Plan, for that portion of the Kāeo River that has been abandoned, to provide sufficient or suitable instream habitat and habitat heterogeneity for aquatic species and to maintain the health of the river. This plan should be developed in consultation with the local community. This plan could be incorporated into a combined Kāeo new river channel and Waikara Stream channel enhancement plan. It should include those aspects discussed in Section 7.3.
- Require a resource consent condition to produce a Wetland Construction and Enhancement Plan to ensure that the extent of wetland within the site is maintained (or increased) and that these areas are enhanced to increase native species dominance. It should include those aspects discussed in Section 7.4.
- Require a consent condition to search any areas of rank grass for lizards prior to vegetation removal and the salvage any indigenous lizards to adjacent safe areas. It should include those aspects discussed in Section 7.5.
- Require a resource condition to ensure indigenous fish species are salvaged from all river and stream reaches that are to be dewatered or where the water level will drop significantly. It should include those aspects discussed in Section 7.6.
- Require a recourse consent condition that an Erosion and Sediment Control Plan (ESCP) is developed that meets Northland Regional Council regulations and standards, and that this ESCP is adhered to and monitored until the project is completed. It should include those aspects discussed in Section 7.8.
- Require a resource consent condition that all equipment brought to site has been thoroughly cleaned and inspected prior to leaving their previous work site to ensure that no soil, plant seeds, plant fragments, aquatic algae of any type, or pest animals adhere to or are contained/trapped within the equipment.
- Require a resource consent condition that NRC is to identify any plant species of concern with the works site (including within the upstream reach of the Kāeo River) and either arrange to control these species or raise awareness with the contractors to ensure that these are not spread within or beyond the site.
- Require a resource consent condition that reports back on all the as-built and ecological management actions and mitigation measures to ensure that these are functioning as intended. It should include those aspects discussed in Section 7.10.

9. Conclusion

The realignment of the Kāeo River into a new constructed channel is seen as the best option to reduce flood effects on Kāeo township. This is a complex and multifaceted project, with the potential to result in significant ecological effects. At this stage it is not yet possible to fully quantify potential adverse ecological effects. Therefore, it is also not possible to confirm the ecological management and mitigation actions that might be required to redress these potential adverse effects. Moreover, the local community needs to be consulted about the best mix of ecological management actions and mitigation options.

The works will be split into two earthworks seasons. It is therefore anticipated that the various ecological management actions and mitigation options will be fleshed out and reported on between earthworks season 1 and two and implemented as part of earthworks season 2, as well as any subsequent monitoring requirements.

10.Appendices

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10.2 Appendix B: National Environmental Standards for Freshwater Regulations 2020

Accessed: 17 January 2025

Construction of specified infrastructure

Clause 45 – Discretionary activities

(1) Vegetation clearance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of constructing specified infrastructure.

(2) Earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland is a discretionary activity if it is for the purpose of constructing specified infrastructure.

(3) Earthworks or land disturbance outside a 10 m, but within a 100 m, setback from a natural inland wetland is a discretionary activity if it—

(a) is for the purpose of constructing specified infrastructure; and

(b) results, or is likely to result, in the complete or partial drainage of all or part of the natural inland wetland.

(4) The taking, use, damming, or diversion of water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if—

(a) the activity is for the purpose of constructing or upgrading specified infrastructure; and

(b) there is a hydrological connection between the taking, use, damming, or diversion and the wetland; and

(c) the taking, use, damming, or diversion will change, or is likely to change, the water level range or hydrological function of the wetland.

(5) The discharge of water into water within, or within a 100 m setback from, a natural inland wetland is a discretionary activity if—

(a) the discharge is for the purpose of constructing or upgrading specified infrastructure; and

(b) there is a hydrological connection between the discharge and the wetland; and

(c) the discharge will enter the wetland; and

(d) the discharge will change, or is likely to change, the water level range or hydrological function of the wetland.

(6) A resource consent for a discretionary activity under this regulation must not be granted unless the consent authority has first—

(a) satisfied itself that the specified infrastructure will provide significant national or regional benefits; and

(b) satisfied itself that there is a functional need for the specified infrastructure in that location; and

(c) applied the effects management hierarchy.

General matters

Clause 55–General conditions on natural inland wetland activities

(1) This regulation applies if a regulation in this subpart refers to the compliance of an activity with the general conditions in this regulation.

General condition for permitted activities: prior notice of activity

(2) If this regulation applies in relation to a permitted activity, the 1 or more persons responsible for undertaking the activity must, at least 10 working days before starting the activity, provide the relevant regional council with the following information in writing:

(a) description of the activity to be undertaken; and

(b) description of, and map showing, where the activity will be undertaken; and

(c) a statement of when the activity will start and when it is expected to end; and

(d) a description of the extent of the activity; and

(e) their contact details.

General conditions: water quality and movement

(3) The general conditions relating to water quality and movement are as follows:

(a) the activity must not result in the discharge of a contaminant if the receiving environment includes any natural inland wetland in which the contaminant, after reasonable mixing, causes, or may cause, 1 or more of the following effects:

(i) the production of conspicuous oil or grease films, scums or foams, or floatable or suspended materials:

(ii) a conspicuous change in colour or visual clarity:

(iii) an emission of objectionable odour:

(iv) the contamination of freshwater to the extent that it is not suitable for farm animals to drink:

(v) adverse effects on aquatic life that are more than minor; and

(b) the activity must not increase the level of flood waters that would, in any flood event (regardless of probability), inundate all or any part of the 1% AEP floodplain (but see subclause (4)); and

(c) the activity must not alter the natural movement of water into, within, or from any natural inland wetland (but see subclause (5)); and

(d) the activity must not involve taking or discharging water to or from any natural inland wetland (but see subclause (5)); and

(e) debris and sediment must not be placed—

(i) within a setback of 10 m from any natural inland wetland; or

(ii) in a position where it may enter any natural inland wetland.

(4) Subclause (3)(b) does not apply if the person undertaking the activity—

(a) owns or controls the only land or structures that would be affected by a flood in all or any part of the 1% AEP floodplain; or

(b) has—

(i) obtained written consent to undertaking the activity from each person who owns or controls the land or structures that would be affected by a flood in all or part of the 1% AEP floodplain, after informing them of the expected increase in the level of flood waters; and

(ii) satisfied the relevant regional council that they have complied with subparagraph (i).

(5) Despite subclause (3)(c) and (d), the temporary taking, use, damming, or diversion of water around a work site, or discharges of water into the water around a work site, may be undertaken if the following conditions are complied with:

(a) the activity must be undertaken during a period when there is a low risk of flooding; and

(b) the activity must be undertaken only for as long as necessary to achieve its purpose; and

(c) before the activity starts, a record must be made (for example, by taking photographs) of the original condition of any affected natural inland wetland's bed profile and hydrological regime that is sufficiently detailed to enable compliance with paragraph (d) to be verified; and

(d) the bed profile and hydrological regime of the natural inland wetland must be returned to their original condition no later than 14 days after the start of the activity; and

(e) if the activity is damming, the dam must be no higher than 600 mm; and

(f) if the activity is a diversion that uses a pump, a fish screen with mesh spacing no greater than 3 mm must be used on the intake.

(6) In subclauses (3) and (4), **1% AEP floodplain** means the area that would be inundated in a flood event of a size that has a 1% or greater probability of occurring in any one year.

General condition: earth stability and drainage

(7) The general condition relating to earth stability and drainage is that the activity must not create or contribute to—

(a) the instability or subsidence of a slope or another land surface; or

(b) the erosion of the bed or bank of any natural inland wetland; or

(c) a change in the points at which water flows into or out of any natural inland wetland; or

(d) a constriction on the flow of water within, into, or out of any natural inland wetland; or

(e) the flooding or overland flow of water within, or flowing into or out of, any natural inland wetland.

General conditions: earthworks, land disturbance, and vegetation clearance

(8) The general conditions on earthworks, land disturbance, and vegetation clearance are as follows:

(a) during and after the activity, erosion and sediment control measures must be applied and maintained at the site of the activity to minimise adverse effects of sediment on natural inland wetlands; and

(b) the measures must include stabilising or containing soil that is exposed or disturbed by the activity as soon as practicable after the activity ends; and

(c) the measures referred to in paragraph (b) must remain in place until vegetation covers more than 80% of the site; and

(d) if the activity is vegetation clearance, it must not result in earth remaining bare for longer than 3 months.

General conditions: vegetation and bird and fish habitats

(9) The general conditions relating to vegetation and bird and fish habitats are as follows:

(a) only indigenous species that are appropriate to a natural inland wetland (given the location and type of the natural inland wetland) may be planted in it; and

(b) the activity must not result in the smothering of indigenous vegetation by debris and sediment; and

(c) the activity must not disturb the roosting or nesting of indigenous birds during their breeding season; and

(d) the activity must not disturb an area that is listed in a regional plan or water conservation order as a habitat for threatened indigenous fish; and

(e) the activity must not, during a spawning season, disturb an area that is listed in a regional plan or water conservation order as a fish spawning area.

General condition: historic heritage

(10) The general condition relating to historic heritage is that the activity must not destroy, damage, or modify a site that is protected by an enactment because of the site's historic heritage (including, to avoid doubt, because of its significance to Māori), except in accordance with that enactment.

(11) In subclause (10), **enactment** includes any kind of instrument made under an enactment.

General conditions: machinery, vehicles, equipment, and construction materials

(12) The general conditions on the use of vehicles, machinery, equipment, and materials are as follows:

(a) machinery, vehicles, and equipment used for the activity must be cleaned before entering any natural inland wetland (to avoid introducing pests, unwanted organisms, or exotic plants); and

(b) machinery that is used for the activity must sit outside a natural inland wetland, unless it is necessary for the machinery to enter the natural inland wetland to achieve the purpose of the activity; and

(c) if machinery or vehicles enter any natural inland wetland, they must be modified or supported to prevent them from damaging the natural inland wetland (for example, by widening the tracks of track-driven vehicles or using platforms for machinery to sit on); and

(d) the mixing of construction materials, and the refuelling and maintenance of vehicles, machinery, and equipment, must be done outside a 10 m setback from any natural inland wetland.

General conditions: miscellaneous

(13) The other general conditions are as follows:

(a) the activity must be undertaken only to the extent necessary to achieve its purpose; and

(b) the activity must not involve the use of fire or explosives; and

(c) if there is existing public access to a natural inland wetland, the activity must not prevent the public from continuing to access the natural inland wetland (unless that is required to protect the health and safety of the public or the persons undertaking the activity); and

(d) no later than 5 days after the activity ends,—

(i) debris, materials, and equipment relating to the activity must be removed from the site; and

(ii) the site must be free from litter.

Clause 56–Restricted discretionary activities: matters to which discretion is restricted

The discretion of a consent authority is restricted to the following matters if an activity is a restricted discretionary activity under this subpart:

(a) the extent to which the nature, scale, timing, intensity, and location of the activity may have adverse effects on—

(i) the existing and potential values of the natural inland wetland, its catchment, and the coastal environment; and

(ii) the extent of the natural inland wetland; and

(iii) the seasonal and annual hydrological regime of the natural inland wetland; and

(iv) the passage of fish in the natural inland wetland or another water body:

(b) whether there are practicable alternatives to undertaking the activity that would avoid those adverse effects:

(c) the extent to which those adverse effects will be managed to avoid the loss of the extent of the natural inland wetland and its values:

(d) other measures to minimise or remedy those adverse effects:

(e) how any of those adverse effects that are more than minor may be offset or compensated for if they cannot be avoided, minimised, or remedied:

(ea) the extent to which the effects of the activity will be managed through applying the effects management hierarchy:

(f) the risk of flooding upstream or downstream of the natural inland wetland, and the measures to avoid, minimise, or remedy that risk:

(g) the social, economic, environmental, and cultural benefits (if any) that are likely to result from the proposed activity (including the extent to which the activity may protect, maintain, or enhance ecosystems).

Subpart 2—Reclamation of rivers

Clause 56A–Meaning in this subpart of applying effects management hierarchy

In this subpart, a requirement to **apply the effects management hierarchy** includes a requirement to apply clause 3.24(3) of the National Policy Statement for Freshwater Management as if a reference in that clause to a regional council were a reference to the consent authority.

Clause 57–Discretionary activities

(1) Reclamation of the bed of any river is a discretionary activity.

(2) A resource consent for a discretionary activity under this regulation must not be granted unless the consent authority has first—

(a) satisfied itself that there is a functional need for the reclamation of the river bed in that location; and

(b) applied the effects management hierarchy.

Subpart 3—Passage of fish affected by structures

How this subpart applies

Clause 58–Purpose of this subpart

The purpose of this subpart is to deal with the effects on the passage of fish of the placement, use, alteration, extension, or reconstruction of any of the following structures in, on, over, or under the bed of any river or connected area:

(a) a culvert:

(b) a weir:

(c) a flap gate (whether passive or non-passive):

(d) a dam:

(e) a ford.

Clause 59–When multiple provisions of this subpart apply

If an overall structure is made up of 2 or more structures to which different provisions of this subpart apply (for example, a culvert with a flap gate), those provisions apply to the respective parts of the overall structure.

Clause 60–When this subpart does not apply

This subpart does not apply to any of the following structures in, on, over, or under the bed of any river or connected area:

(a) an existing structure, meaning a structure that was in the river or connected area at the close of 2 September 2020, and including any later alterations or extensions of that structure:

(b) a customary weir, meaning a weir that is used for the purpose of practising tikanga Māori, including customary fishing practices.

10.3 Appendix C: NIWA Database Fish Records for Kāeo River and Tributaries Upstream of Works

Table 10-1: NIWA Freshwater database records for Kāeo River upstream of Kāeo township.

Year	Scientific Name	Common Name	Present (no count)	Water Body	Total Count
1966	*Anguilla australis*	Shortfin eel	Present	Kāeo River	
	Anguilla dieffenbachii	Longfin eel	Present	Kāeo River	
	Gobiomorphus cotidianus	Common bully	Present	Kāeo River	
	Gobiomorphus huttoni	Redfin bully	Present	Kāeo River	
	Retropinna retropinna	Common smelt	Present	Kāeo River	
1999	*Anguilla dieffenbachii*	Longfin eel	0	Kāeo River	1
2001	*Anguilla*	Unidentified eel	0	Ihumia Stream	33
	Anguilla dieffenbachii	Longfin eel	0	Ihumia Stream	2
	Galaxias fasciatus	Banded kōkopu	0	Ihumia Stream	4
	Gobiomorphus huttoni	Redfin bully	0	Ihumia Stream	39
	Paranephrops	Kōura	0	Ihumia Stream	1
	Paratya curvirostris	Freshwater Shrimp	Present	Ihumia Stream	
2005	*Anguilla*	Unidentified eel	0	Kāeo River tributary	2
	Galaxias fasciatus	Banded kōkopu	0	Kāeo River tributary	11
2016	*Anguilla*	Unidentified eel	0	Kāeo River	20
	Anguilla australis	Shortfin eel	0	Kāeo River	4
	Anguilla dieffenbachii	Longfin eel	0	Kāeo River	5
	Cheimarrichthys fosteri	Torrentfish	0	Kāeo River	11
	Galaxias fasciatus	Banded kōkopu	0	Kāeo River	6
	Galaxias maculatus	Īnanga	0	Kāeo River	1
	Gobiomorphus hubbsi	Bluegill bully	0	Kāeo River	12
	Gobiomorphus huttoni	Redfin bully	0	Kāeo River	54
	Retropinna retropinna	Common smelt	0	Kāeo River	4
2021	*Anguilla*	Unidentified eel	0	Waikara stream	1
	Anguilla australis	Shortfin eel	0	Waikara stream	2
	Anguilla dieffenbachii	Longfin eel	0	Kāeo River tributary	4
				Pahuhu creek	4
				Upokorau stream	5
				Waiare stream	3
				Waikara stream	4
				Waionepu stream	2
	Galaxias	Unidentified galaxiid	0	Kāeo River tributary	3
				Pahuhu creek	23
				Upokorau stream	17
				Waiare stream	36
				Waikara stream	12
				Waionepu stream	4
	Galaxias fasciatus	Banded kōkopu	0	Kāeo River tributary	7
				Waiare stream	16
				Waikara stream	25

Year	Scientific Name	Common Name	Present (no count)	Water Body	Total Count
				Waionepu stream	23
	Galaxias maculatus	Īnanga	0	Pahuhu creek	1
				Upokorau stream	5
				Waikara stream	22
	Gobiomorphus	Unidentified bully	0	Kāeo River tributary	2
				Waiare stream	30
				Waionepu stream	9
	Gobiomorphus cotidianus	Common bully	0	Waiare stream	2
				Waikara stream	1
	Gobiomorphus huttoni	Redfin bully	0	Kāeo River tributary	17
				Pahuhu creek	25
				Upokorau stream	72
				Waiare stream	7
				Waikara stream	12
				Waionepu stream	6
2022	*Anguilla dieffenbachii*	Longfin eel	0	Inumia stream	2
				Kāeo River tributary	12
				Taita stream	3
				Te Poka stream	8
				Waiare stream	8
				Waionepu stream	6
	Cheimarrichthys fosteri	Torrentfish	0	Kāeo River tributary	5
				Taita stream	1
	Galaxias fasciatus	Banded kōkopu	0	Inumia stream	6
				Kāeo River tributary	22
				Waiare stream	35
				Waionepu stream	1
	Galaxias maculatus	Īnanga	Present	Te Poka stream	
				Waionepu stream	
	Gobiomorphus huttoni	Redfin bully	0	Kāeo River tributary	30
			Present	Taita stream	
				Te Poka stream	
				Waionepu stream	
	Retropinna retropinna	Common smelt	Present	Kāeo River tributary	
				Taita stream	
				Te Poka stream	
				Waionepu stream	
Total					**751**

10.4 Appendix D: Aquatic health

NRC annual report cards for rivers -2024

Kaeo at Dip Road**

Northland REGIONAL COUNCIL

Water Quality Report Card 2022

Site description

The Kāeo River begins north of Waipapa and flows north into the Whangaroa Harbour. Just under half of the catchment is native forest and scrub, with the remainder in pine forestry, lifestyle blocks or pastoral farming. The site is located below the township of Kāeo, just before the influence of salt water.

Summary

This site exceeded all Water Quality Index parameters apart from Dissolved Reactive Phosphorus in 2022. Exceedances in 2022 may correlate with more frequent and stronger rain events.
Keeping stock away from waterways helps to reduce the amount of sediment, nutrients and harmful faecal bacteria that enters the waterways. Planting the riparian margins helps to filter surface runoff and take up nutrients as well as having many other benefits.

Find out more at

Water Quality Index - Poor								
Parameter	Unit	Standard	Result 2022	Status				
				2022	2021	2020	2019	2018
Ammonical-N	g/m3	Median <0.01	0.013	✗	✓	✓	✓	✓
Nitrate-N	g/m3	Median <0.1	0.13	✗	✓	✓	✓	✓
Visual Clarity	m	Median >0.89	0.57	✗	✓	✓	✓	✓
E.coli	MPN/100 mL	Median <703	1150	✗	✓	✓	✓	✓
Dissolved Reactive Phosporus	g/m3	Median <0.051	0.009	✓	✓	✓	✓	✓
Dissolved Inorganic Nitrogen	g/m3	Median <0.1	0.14	✗	✓	✓	✓	✓

Ecological Health		
Parameter	Standard	Result 2022
Macroinvertebrate Community Index	Poor <90	81.3
Periphyton Score	Excellent ≤50	19.4

*The preriphyton value is derived from a 3-yearly rolling 92nd percentile. The MCI value is scored from one year of sampling. All grading is based on the values set in the National Policy Statement for Freshwater 2020.

Disclaimer

This report card provides a snapshot of the water quality and ecological health at Kaeo at Dip Road** for the past 5 years. The median for each 12-month period per calendar year is assessed against the latest regional Water Quality Index, Macroinvertebrate Community Index and Periphyton Scores. A tick indicates an achieved standard and a cross a not-achieved standard. The current Water Quality Index is based on the number of achieved standards.
If you would like to find out more about Northland's water quality visit our Environmental Data Hub at
www.nrc.govt.nz/environment/environmental-data/environmental-data-hub/
Or to find out more about water quality parameters at ***www.lawa.org.nz/explore-data/river-quality/***

Kaeo River at Below Fire Station

Water Quality Report Card for 2024

Northland REGIONAL COUNCIL

Site description

The Kaeo River begins north of Waipapa and flows north into Whangaroa Harbour. Just under half the cathment is native forest and scrub, with the remainder in pine forestry, lifestyle blocks or pastoral farming. The site is located below the fire station near the middle of town, up above the influence of salt water.

Summary

Ecoli and visual clarity exceeded the Water Quality Index standard. Keeping stock away from waterways helps to reduce the amount of sediment, nutrients and harmful faecal bacteria that enters the waterways. Planting the riparian margins helps to filter surface runoff and take up nutrients as well as having many other benefits. Soil erosion can be prevented or reduced by improving the way the land is used, by planting trees, or by allowing native bush to grow in areas that are at risk from erosion.

Water Quality Index - Fair

Parameter	Unit	Standard	2024		2023	2022	2021	2020
			Median	Result	Result	Result	Result	Result
Ammonical-N	g/m3	Median <0.01	0.009	✓				
Nitrite-N	g/m3	Median <0.11	0.00	✓				
Visual Clarity	m	Median >0.97	0.49	✗				
E.coli	MPN/100 mL	Median <539	670	✗				
Dissolved Reactive Phosporus	g/m3	Median <0.043	0.005	✓				
Dissolved Inorganic Nitrogen	g/m3	Median <0.11	0.01	✓				

Ecological Health

Parameter	Unit	Standard	2024		2023	2022	2021	2020
			Median	Result	Result	Result	Result	Result
Periphyton Score	mg chl-a/m2	NPSFM						

Disclaimer

This report card provides a snapshot of the water quality and ecological health at Kaeo River at Below Fire Station over the past 5 years. The median for each 12-month period per hydrological year (i.e., 1 July 2023 - 30 June 2024) is assessed against the latest regional Water Quality Index and Periphyton Scores. A tick indicates an achieved standard while a cross indicates a not-achieved standard. The current regional Water Quality Index is based on the number of achieved standards.

https://www.nrc.govt.nz/resource-library-summary/research-and-reports/rivers-and-streams/water-quality-index-methodol

For more information visit the Environmental Data Hub:
www.nrc.govt.nz/environment/environmental-data/environmental-data-hub/

The Kāeo River begins north of Waipapa and flows north into the Whangaroa Harbour. Approximately half of the catchment is indigenous forest and scrub, with the remainder in pine forestry or pastoral farming. The underlying geology of the river is soft sediments. The site is located below the township of Kāeo, just before the influence of salt water.

The results from 2008-09 for the Kāeo River are summarised in the table below. These include the median, range and percentage of sampling occasions that complied with relevant guidelines. An asterisk in the table below denotes a median value outside the recommended guideline.

Table 10-2: Kāeo River health parameters from 2008-2009.

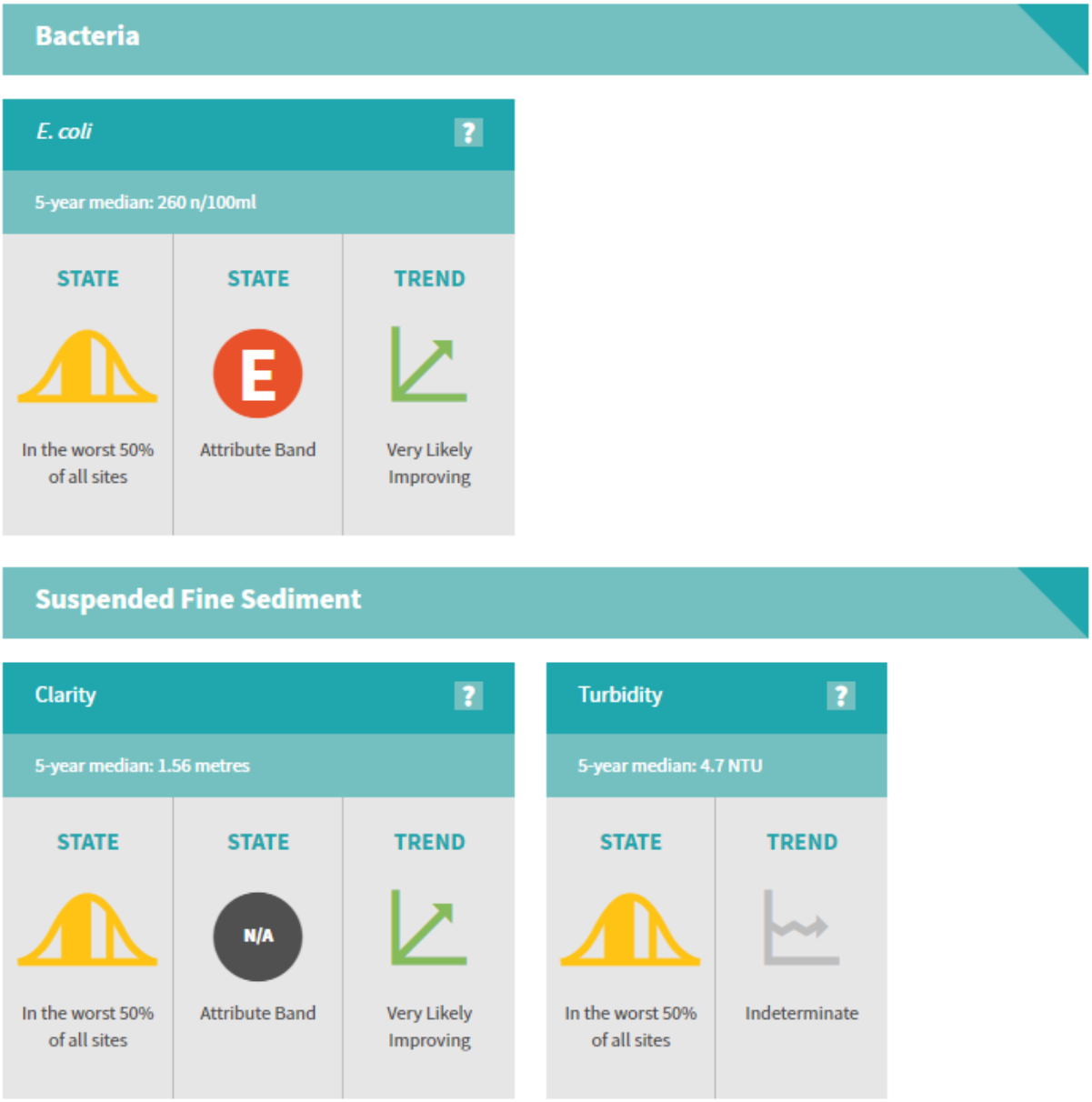
Parameter	Median	Range	% complies with guideline
Temperature (deg. cel.)	17.6	10.5 - 24.6	
Dissolved oxygen (% Sat.)	96.4*	78.2 - 109.6	25
Conductivity (mSm)	13.8	11.7 - 14.9	
Water clarity (m)	0.90	0.5 - 1.5	75
Turbidity (NTU)	6.1*	2.6 - 16.4	50
E. coli (n/100mL)	538.5	86 - 2613	50
Dissolved reactive phosphorus (mg/L)	0.005	0.005	100
Total phosphorus (mg/L)	0.016	0.01 - 0.025	100
Ammoniacal nitrogen (mg/L)	0.005	0.005 - 0.02	100
Total nitrogen (mg/L)	0.254	0.064 - 0.502	100
pH	7.2	6.9 - 7.3	67

The results from 2008-09 indicate that water quality in the Kāeo River is better than the previous year with all nutrient parameters meeting their trigger values on all sampling occasions. However, like last year *E.coli* and turbidity compliance is still poor with only half the samples meeting the trigger value of 550 *E. coli*/100ml.

pH compliance has improved with levels falling within the trigger range of 7.2 -7.8 on eight out of 12 sampling events. In 2007-08, only three samples fell within this range.

Trend analysis cannot yet be undertaken for this site as there is insufficient data.

LAWA assessment



Nitrogen

Total Nitrogen

5-year median: 0.19 mg/L

STATE	TREND
In the best 25% of all sites	Very Likely Degrading

Total Oxidised Nitrogen

5-year median: 0.045 mg/L

STATE	TREND
In the best 25% of all sites	Very Likely Degrading

Dissolved Inorganic Nitrogen

5-year median: 0.059 mg/L

STATE	TREND
In the best 25% of all sites	Not Assessed

Ammoniacal Nitrogen

5-year median: 0.006 mg/L

STATE	STATE	TREND
In the best 50% of all sites	Attribute Band (toxicity)	Very Likely Improving

Nitrate Nitrogen

5-year median: 0.045 mg/L

STATE	STATE	TREND
In the best 25% of all sites	Attribute Band (toxicity)	Very Likely Degrading

Phosphorus

Dissolved Reactive Phosphorus

5-year median: 0.007 mg/L

STATE	STATE	TREND
In the best 50% of all sites	Attribute Band	Indeterminate

Total Phosphorus

5-year median: 0.016 mg/L

STATE	TREND
In the best 50% of all sites	Likely Degrading

10.5 Appendix E: NRC Kāeo River electric fishing data

Table 10-3: Fish species observed and caught by NRC electric fishing.
A 150 m reach of the Kāeo River was fished by the Northland Regional Council freshwater team led by Hadyn Butler on 3 December 2024. The reach fished included the confluence with the Waikare Stream (not ideal according to the SEV protocol) and took 330 minutes (Hadyn Butler Pers. Comm. 9 December 2024).

Sub-reach	Species	Length (mm)	Count
1	Eel (Unidentified)		1
1	Unidentified fish		2
1	Gambusia	28	1
1	Eel (Unidentified)		1
1	Eel (Unidentified)	640	1
1	Eel (Unidentified)		1
1	Eel (Unidentified)		5
1	Longfin eel	350	1
1	Shortfin eel	200	1
1	Torrentfish	34	1
1	Redfin bully	40	1
1	Gambusia	29	1
1	Common bully	61	1
1	Eel (Unidentified)		1
1	Bully (Unidentified)	19	1
1	Shortfin eel	250	1
1	Bully (Unidentified)	20	1
1	Torrentfish		1
1	Eel (Unidentified)		2
1	Eel (Unidentified)	55	1
1	Bully (Unidentified)	15	1
1	Eel (Unidentified)	60	1
1	Galaxid (Unidentified)	40	1
1	Common bully	64	1
1	Eel (Unidentified)	70	1
1	Torrentfish	32	1
1	Bully (Unidentified)	16	1
1	Bully (Unidentified)	20	1
1	Bully (Unidentified)	18	1
1	Eel (Unidentified)	70	1
1	Eel (Unidentified)	58	1
1	Eel (Unidentified)	50	1
1	Eel (Unidentified)	45	1
1	Bully (Unidentified)	15	1
1	Bully (Unidentified)	18	1
1	Bully (Unidentified)	13	1
1	Bully (Unidentified)	17	1
1	Eel (Unidentified)	170	1
1	Bully (Unidentified)	22	1
1	Bully (Unidentified)	18	1
1	Eel (Unidentified)	200	1
1	Eel (Unidentified)	70	1
1	Eel (Unidentified)	75	1
1	Bully (Unidentified)	20	1
1	Bully (Unidentified)	13	1
1	Eel (Unidentified)	80	1

Sub-reach	Species	Length (mm)	Count
1	Redfin bully	33	1
1	Eel (Unidentified)	85	1
1	Bully (Unidentified)	20	1
1	Bully (Unidentified)	18	1
1	Bully (Unidentified)	22	1
1	Bully (Unidentified)	15	1
1	Bully (Unidentified)	22	1
1	Eel (Unidentified)	63	1
2	Longfin eel	800	1
2	Eel (Unidentified)		7
2	Unidentified fish		2
2	Redfin bully	69	1
2	Eel (Unidentified)	200	1
2	Eel (Unidentified)	65	1
2	Eel (Unidentified)		1
2	Eel (Unidentified)	150	1
2	Shortfin eel	800	1
2	Redfin bully	52	1
2	Eel (Unidentified)	60	1
2	Eel (Unidentified)	75	1
2	Redfin bully	48	1
2	Bully (Unidentified)	22	1
2	Bully (Unidentified)	18	1
2	Bully (Unidentified)	20	1
2	Eel (Unidentified)	90	1
2	Eel (Unidentified)	90	1
2	Eel (Unidentified)	150	1
2	Giant bully	53	1
2	Redfin bully	48	1
2	Eel (Unidentified)	56	1
2	Shortfin eel	76	1
2	Eel (Unidentified)	55	1
2	Eel (Unidentified)	60	1
2	Bully (Unidentified)	21	1
2	Eel (Unidentified)	73	1
2	Eel (Unidentified)	84	1
2	Bully (Unidentified)	20	1
2	Bully (Unidentified)	19	1
2	Eel (Unidentified)	66	1
2	Eel (Unidentified)	50	1
2	Eel (Unidentified)	53	1
2	Eel (Unidentified)	100	1
3	Eel (Unidentified)		2
3	Eel (Unidentified)		3
3	Torrentfish	36	1
3	Bully (Unidentified)	20	1
3	Shortfin eel	350	1
3	Shortfin eel	135	1
3	Shortfin eel	400	1
3	Eel (Unidentified)	70	1
3	Smelt	81	1
3	Smelt	77	1
3	Smelt	84	1
4	Eel (Unidentified)		1
4	Eel (Unidentified)	30	1
4	Shortfin eel	95	1
4	Shortfin eel	225	1

Sub-reach	Species	Length (mm)	Count
4	Eel (Unidentified)		1
4	Shortfin eel	200	1
4	Shortfin eel	800	1
4	Shortfin eel	160	1
4	Eel (Unidentified)		2
4	Shortfin eel	136	1
4	Torrentfish	32	1
4	Shortfin eel	160	1
4	Eel (Unidentified)	35	1
4	Shortfin eel	112	1
4	Torrentfish	33	1
4	Longfin eel	900	1
4	Eel (Unidentified)		1
5	Eel (Unidentified)	50	1
5	Eel (Unidentified)	60	1
5	Shortfin eel	105	1
5	Eel (Unidentified)		1
5	Redfin bully	62	1
5	Redfin bully	42	1
5	Redfin bully	50	1
5	Shortfin eel	400	1
5	Eel (Unidentified)		1
5	Shortfin eel	121	1
5	Shortfin eel	450	1
5	Eel (Unidentified)	66	1
5	Eel (Unidentified)		2
5	Common bully	40	1
5	Gambusia	42	1
5	Redfin bully	56	1
5	Common bully	63	1
5	Redfin bully	44	1
5	Redfin bully	48	1
5	Shortfin eel	350	1
5	Redfin bully	39	1
5	Gambusia	38	1
5	Shortfin eel	82	1
5	Shortfin eel	119	1
5	Redfin bully	47	1
5	Eel (Unidentified)	56	1
5	Eel (Unidentified)	67	1
5	Eel (Unidentified)	53	1
5	Eel (Unidentified)	80	1
6	Common bully	60	1
6	Eel (Unidentified)		3
6	Redfin bully	43	1
6	Eel (Unidentified)		1
6	Bully (Unidentified)	57	1
6	Shortfin eel	800	1
6	Eel (Unidentified)	74	1
6	Eel (Unidentified)		2
6	Eel (Unidentified)	90	1
6	Shortfin eel	73	1
6	Shortfin eel	610	1
6	Redfin bully	50	1
6	Eel (Unidentified)	70	1
6	Redfin bully	60	1
6	Eel (Unidentified)	55	2

Sub-reach	Species	Length (mm)	Count
6	Common bully	64	1
6	Eel (Unidentified)	75	1
6	Redfin bully	57	1
6	Common bully	50	1
6	Common bully	54	1
6	Shortfin eel	91	1
6	Shortfin eel	80	1
7	Eel (Unidentified)		1
7	Redfin bully	30	1
7	Bully (Unidentified)	25	1
7	Torrentfish	30	1
7	Eel (Unidentified)	80	1
7	Eel (Unidentified)		2
7	Eel (Unidentified)	83	1
7	Eel (Unidentified)	66	1
7	Eel (Unidentified)	75	1
7	Eel (Unidentified)	50	1
7	Eel (Unidentified)		1
7	Shortfin eel	800	1
7	Shortfin eel	400	1
7	Shortfin eel	250	1
7	Smelt	53	1
7	Smelt	51	1
7	Eel (Unidentified)		5
8	Eel (Unidentified)		1
8	Eel (Unidentified)		1
8	Torrentfish	36	1
8	Eel (Unidentified)		1
8	Shortfin eel	750	1
8	Shortfin eel	176	1
8	Eel (Unidentified)		3
8	Common bully	52	1
8	Shortfin eel	93	1
8	Eel (Unidentified)		2
8	Bully (Unidentified)	25	1
8	Shortfin eel	109	1
8	Shortfin eel	700	1
8	Shortfin eel	250	1
8	Eel (Unidentified)	63	1
8	Bully (Unidentified)	20	1
8	Common bully	60	1
8	Shortfin eel	800	1
8	Eel (Unidentified)		2
8	Common bully	72	1
8	Common bully	57	1
9	Common bully	50	1
9	Common bully	70	1
9	Eel (Unidentified)	35	1
9	Common bully	52	1
9	Common bully	58	1
9	Eel (Unidentified)		1
9	Eel (Unidentified)	70	1
9	Shortfin eel	750	1
9	Eel (Unidentified)		7
9	Shortfin eel	155	1
9	Shortfin eel	80	1
9	Shortfin eel	650	1

Sub-reach	Species	Length (mm)	Count
9	Shortfin eel	700	1
9	Smelt	60	1
9	Smelt	56	1
9	Smelt	57	1
9	Redfin bully	62	1
9	Eel (Unidentified)	60	1
9	Eel (Unidentified)		2
9	Bully (Unidentified)	20	1
9	Gambusia	15	4
9	Unidentified fish		1
9	Eel (Unidentified)		1
9	Redfin bully	55	1
9	Redfin bully	43	1
9	Redfin bully	46	1
9	Redfin bully	56	1
9	Eel (Unidentified)	55	1
10	Eel (Unidentified)		1
10	Shortfin eel	850	1
10	Shortfin eel	300	1
10	Eel (Unidentified)		1
10	Bully (Unidentified)		16
10	Shortfin eel	115	1
10	Shortfin eel	122	1
10	Shortfin eel	162	1
10	Redfin bully	58	1
10	Eel (Unidentified)	80	1
10	Eel (Unidentified)	60	1
10	Shortfin eel	160	1
10	Shortfin eel	156	1
10	Shortfin eel	460	1
10	Smelt	59	1
10	Longfin eel	800	1
10	Eel (Unidentified)	45	1
10	Redfin bully	38	1
10	Common bully	54	1

10.6 Appendix F: Kāeo River Macro-invertebrate data

Table 10-4: Macro-invertebrate taxa caught by NRC.

EOS sample ID number: I240650 Site no. 101607
Site name: Kāeo at Below Fire Station
Rep/Client sample no. MCI_101607_03-12-2024 Collection date: 3/12/2024
Total Numbers - based on the 'Total (incl. missed taxa)' column from 'Invertebrate Raw Data'.
NOTE: Missed taxa are recorded as "1".

Taxa grouping	MCI-level taxa name	SOE ID level	Taxa name	Sum of Total (incl missed taxa (1)
Coleoptera	*Elmidae*	*Elmidae*	*Elmidae* (L)	1
Crustacea	*Paratya*	*Paratya*	*Paratya*	3,456
Diptera	*Austrosimulium*	*Austrosimulium*	*Austrosimulium*	43
	Harrisius	*Harrisius*	*Harrisius*	1
	Muscoidea (No MCI)	*Muscoidea*	*Muscoidea*	21
	Orthocladiinae	*Orthocladiinae*	*Orthocladiinae*	43
	Tanypodinae	*Tanypodinae*	*Tanypodinae*	43
	Tanytarsini	*Tanytarsini*	*Tanytarsini*	43
Ephemeroptera	*Arachnocolus*	*Arachnocolus*	*Arachnocolus*	1
	Austroclima	*Austroclima*	*Austroclima*	21
	Zephlebia	*Zephlebia*	*Zephlebia*	21
Mollusca	*Lymnaeidae*	*Pseudosuccinea*	*Pseudosuccinea*	21
	Physa	*Physa*	*Physa*	21
	Potamopyrgus	*Potamopyrgus*	*Potamopyrgus*	661
Odonata	*Xanthocnemis*	*Xanthocnemis*	*Xanthocnemis*	1
Plecoptera	*Zelandobius*	*Zelandobius*	*Zelandobius*	1
Trichoptera	*Hudsonema*	*Hudsonema*	*Hudsonema*	1
	Oxyethira	*Oxyethira*	*Oxyethira*	43
	Paroxyethira	*Paroxyethira*	*Paroxyethira*	21
	Pycnocentrodes	*Pycnocentrodes*	*Pycnocentrodes*	43
	Triplectides	*Triplectides*	*Triplectides*	1
Total				**4,508**

Table 10-5: Macro-invertebrate index for taxa caught by NRC.

Invertebrate Indices	Count or score
Total from Table 10-4	4508
Total	21
MCI-hb	94
MCI-sb	89.9
UCI	13.35
EPT Richness	9
Hydroptilidae	2
EPT (- Hydroptilidae)	7
QMCI-hb	4.75
QMCI-sb	3.41
QUCI	1.17
SQMCI-hb	4.75
SQMCI-sb	3.41
% EPT	3.40
% Hydroptilidae	1.42
% EPT (- Hydroptilidae)	1.98
ASPM-hb	0.24
ASPM-sb	0.24

10.7 Appendix G: NRC Kāeo River Project Wetland Identification

Northland REGIONAL COUNCIL
Te Kaunihera ā rohe o Te Taitokerau

File Note

File No:	Kaeo River project wetland identification
Date of Correspondence:	11th December 2024
Subject:	Kaeo Phase 2 Flood Mitigation Project Wetland Identification

Action Taken:

On Thursday 6th of December 2024 members of the Biodiversity and Land teams visited the site of the planned Kaeo Phase 2 Flood Mitigation project (Figure 1). The purpose of the visit was to provide information on wetlands within 100m of the planned works area (within the pink boundary line on Map 1) to inform the consenting process including:

1. Identification of any natural inland wetlands as defined in the National Environmental Standards for Freshwater (NES FW) 2020[1] (Appendix 1), including wetlands outside the works area that are within an area of pasture used for grazing, that do not contain threatened species or trigger the pasture exclusion tool
2. Map the extent of natural inland wetlands within 100m of the works site (note that the NES FW regulations for these wetlands do not take size into account)
3. Assess the ecological value of these wetlands

Results of this work will provide information for the consultant's report and feed into the project design around mitigation of effects and possible offsetting to achieve no net wetland loss.

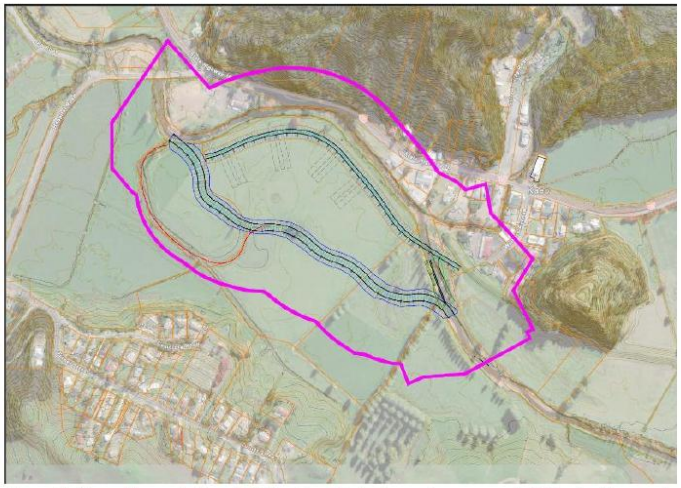


Figure1: Kaeo Phase 2 Flood Mitigation Project works area and 100m buffer marked in pink

[1] https://environment.govt.nz/acts-and-regulations/regulations/national-environmental-standards-for-freshwater/

1

Method

Identification of wetlands around the work site on the Kaeo floodplain followed the NZ Wetland Delineation Protocols[2]. A desk top exercise was also undertaken to look for wetlands, low lying areas and evidence of wetland hydrology including flooding using old aerial imagery, oblique aerial photographs, and other layers such as Digital Elevation.

Field methodology included a ground-based visual assessment of the whole site to 100 m outside the planned work areas. Potential wetland areas were identified based on the visual dominance of plant species adapted to wet conditions (Rapid Test using the Vegetation Tool for Wetland Delineation in New Zealand, Clarkson 2014[3]). Where potential wetlands were identified, 2m x 2m plots were set up and the NZ Wetland Delineation Tool was applied based on all three criteria – vegetation, soils and hydrology. Four wetland plot assessments in two wetlands were undertaken. For the other sites which were similar, a simple vegetation description was done. A GPS was used to locate the wetlands, map the boundaries and track the path that was followed during the on-ground assessment. Threatened plant species and fauna were also looked out for. The Pasture Exclusion Tool (MfE 2022[4]) was applied alongside the Wetland Delineation Vegetation Tool.

Results

Presence of wetlands

The eastern side of the Kaeo River was not assessed, even though it is within 100m of the worksite as it is within Kaeo township, and no wetlands are present. The river and stream channels were also not included. The ungrazed area on the east bank (true right) of the Waikara Stream at the confluence of the present Kaeo River (Photo 1) was inspected with no wetland areas recorded. This area is weedy with large swards of mugwort *(Artemisia verlotiorum)* as well as elephant's ear *(Alocasia brisbanensis)* and others.

The whole floodplain area to the west of the present Kaeo River is heavily grazed and showed signs of flooding and seasonal soil wetness. Photo 2a shows the main upland/dryland vegetation on the flood plain dominated by kikuyu *(Cenchrus clandestinus)* and clover pasture species *(Trifolium pratense and T. repens)*. Photo 2b is of a soil profile in dry pasture near the Kaeo River showing evidence of a seasonally wet soil with oxidized iron mottling. There was also evidence of winter pugging and flood debris indicating that wetland hydrology is present. Areas identified as potential wetlands using the Rapid test for vegetation were restricted to hollows, old drainage channels and cut off oxbows including the pathway where the Kaeo River used to flow. Figure 2 shows the mapped extent of low-lying areas where wetlands were seen marked as Wetlands A, B and C. The NZ Wetland Delineation Tool was used to confirm wetlands. One transect was placed across Wetland A (Figure 2) with three plots at random intervals in each of the three vegetation types. Photos 3a and b show Wetland A and the soil profile. Photo 4 is an aerial oblique of Wetland A showing standing water in March 2023. Photo 5 is an aerial oblique showing Wetlands B and C in March 2023.

Wetland B was a small c.100 m2 hollow with a similar species composition to Wetlands A and C. In this location overall species covers were recorded and its extent mapped using a GPS. Wetland B (Photos 6 and 7a) is close to the planned new main river channel near a copse of planted trees including a large European oak *(Quercus robur)*. This area is lower lying and contains a muddy puddle

[2] https://environment.govt.nz/publications/wetland-delineation-protocols/
[3] https://www.landcareresearch.co.nz/assets/Discover-Our-Research/Biodiversity/Species-ecosystem-services/Restoring-wetland-ecosystem-functioning/vegetation_tool_wetland_delineation.pdf
[4] https://environment.govt.nz/assets/publications/Pasture-exclusion-assessment-methodology.pdf

that the stock were standing in (Photo 7b). There were no water troughs, so it is possible that this is a natural hollow that has been deepened at some stage to provide water for stock. Planting oak around farm ponds to attract ducks is common.

A single plot was placed in Wetland C in a random location within the one vegetation type (Photo 8a). Photo 8b shows the hydric soil profile near the plot in Wetland C. Photo 9 is of Wetland C looking north towards a stock pugged and ponded area (Photo 10) where it joins a drain which flows into Kaeo River near the northern boundary (Photo 11). The serious aquatic weed parrot's feather *(Myriophyllum aquaticum)* was present at this location. This weed spreads by fragments so care must be taken not to spread it using equipment if any works are done in this area.

Figure 2: Map showing location of the three wetland (A, B, C) and plots (A/1 – A/3 and C/1)

Table 1 below shows the outcomes of four wetland delineation plots, three of which were placed in a transect across Wetland A and one plot in Wetland C. The result of a Rapid vegetation test in Wetland B is also included. The completed delineation forms for Wetland A and C are in Appendix 2. Plots A/1 and A/2 were clearly wetland whereas Plot A/3 right near the edge of the wetland failed both the dominance and prevalence test for vegetation even though soils indicated seasonally wet conditions and there was evidence of flooding. This plot right on the wetland-dryland boundary, was dominated by species favouring dry conditions and did not classify as a wetland.

Wetland B (Photo 6) was similar in composition to Wetland A and C being dominated by exotic water pepper *(Persicaria hydropiper)* and Mercer grass *(Paspalum distichum),* so a full plot delineation was not done. Although dry at this time of the year, there was heavy cattle pugging in this area indicating that the ground is wet in winter.

To the west, the plot in Wetland C showed that it was wetland on all parameters. A soil pit was dug and showed a mottled hydric soil profile indicating a seasonally wet soil (Photo 8b). Across the site all the wetlands were grazed, degraded and dominated by exotic wetland plants.

Pasture exclusion test results

All the wetlands identified did not trigger the criteria for pasture exclusion because they were dominated by species which are not on the pasture exclusion list[5], i.e., not introduced to improve pasture.

Table 1: Wetland delineation and pasture exclusion plot results

Wetland/ Plot no	Wetland veg Dominance test	Wetland veg Prevalence test < or = 3	Hydric Soils test	Hydrology presence test	Pasture exclusion	Status	% Dominance native plants
A/1	100% pass	2 Pass	Pass	Pass	Fail	Wetland	0%
A/2	100% pass	2.16 Pass	Pass	Pass	Fail	Wetland	0%
A/3	0 % fail	3.52 Fail	Pass	Pass	Fail	Upland	0%
B/1* (rapid test)	100% pass	2.2 Pass	-	-	Fail	Wetland	1%
C/1	100% pass	1.81 Pass	Pass	Pass	Fail	Wetland	20.8%

*Soils and hydrology not assessed at this wetland, but these attributes are assumed to be consistent with soils and hydrology across the rest of the area

Wetland extent

The calculated wetland extent within 100 m of the works area totals approximately 4,000 m2 (0.4 ha). Wetland A is 1,400 m2, Wetland B is 100 m2 and Wetlands C is 2,500 m2.

Wetland values

No threatened species including plants or wildlife were noted. One grey duck – mallard hybrid (*Anas superciliosa x platyrhynchos*) and four paradise shelducks (*Tadorna variagata*) were observed across the site. One red damselfly (*Xanthocnemis zealandica*) was observed in the ponded area by the drain on the west of the site. All wetland areas assessed have been grazed for a long time and are degraded and of low value in their current state. The majority of plant species recorded in the area were exotic plants, some weedy. Out of a total of 20 species recorded in all plots only two species, *Persicaria decipiens* (native water pepper) and Edgar's rush (*Juncus edgariae*), were native. Despite the degraded nature of the wetlands, there is potential to restore the hydrology as well as extend, connect, fence and plant some of these areas as part of a bigger restoration project on the floodplain or as part of offsetting or mitigation for the effects of the works. An ecological restoration report could be sought to facilitate this. Also care should be taken to avoid spreading any of the more serious weeds on equipment from drains and river channels when undertaking works. These include parrots feather, mugwort, Chinese privet *(Ligustrum sinense)*, willow *(Salix sp.)* and elephant's ear.

[5] https://environment.govt.nz/assets/publications/National-list-of-exotic-pasture-species.pdf

Summary

Three small wetlands occupying hollows and old river, or drainage channels were identified within 100m of the Kaeo Stage 2 flood mitigation river works area. These wetlands totalled approximately 4,000 m2 (0.4 ha).

None of the wetlands identified triggered the criteria for pasture exclusion.

The wetlands were heavily grazed and highly degraded, dominated mainly by exotic wetland species. No threatened wetland species (plants or animals) were recorded.

Despite their degraded nature there is potential to restore the hydrology as well as extend, connect, fence and plant some of these areas as part of a bigger restoration project on the floodplain or as part of offsetting or mitigation for the effects of the works. An ecological restoration report could be sought to facilitate this.

Care should be taken to avoid spreading any of the more serious weeds on equipment from drains and river channels when undertaking earthworks. These include parrots feather, mugwort, Chinese privet and elephant's ear.

Photo 1: No wetlands were recorded on the eastern bank (true right) of the Waikara Stream at its confluence with the present Kaeo River channel. The area is very weedy with a large sward of mugwort and other weeds such as elephant's ear.

Photo 2a and b: Grazed flood plain in works area. Left (a) Pasture dominated by dryland pasture species - Kikuyu and white clover. Right (b) – soil profile showing oxidized iron mottles indicating a seasonally wet soil

Photo 3a and b: Wetland A. Left (a) - Plot 2 (4 m2) in Wetland A dominated by the exotic wetland grass species Paspalum distichum. Right (b) - Hydric soil profile in Wetland A showing oxidised mottles indicative of seasonal wetness.

Photo 4: Water sitting in Wetland A in March 2023 from oblique aerial image (credit: Photoblique - Biospatial)

Photo 5: Aerial oblique showing extent of Wetlands B and C in March 2023 (credit: Photoblique – Biospatial)

Photo 6: Close up of Wetland B, a small area dominated by exotic willow weed and Paspalum distichum

Photo 7a and b : Left (a) - Wetland B area assessed. Right (b) - Ponded area near Wetland B and was probably part of the old river channel and may have been enhanced/dug out to provide water for stock.

Photo 8a and b: Wetland C. Left (a) - Wetland C near plot looking north. Wetland is dominated by both exotic and native water pepper (Persicara spp.). Right (b) - Hydric soil profile at Wetland C near plot showing oxidation and mottling indicative of seasonal wetness

Photo 9: Wetland C downstream of plot looking north towards drain flowing into Kaeo River at the northern boundary

Photo 10: Ponded area where Wetland C meets a drain flowing north to the Kaeo River, pugged by stock and with the serious weed parrot's feather

Photo 11: Drain on northern boundary flowing north- east to Kaeo river infested with exotic willow weed, Chinese privet, mugwort, willow and elephant's ear

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Biodiversity Team
Northland Regional Council

Appendix 1: National Policy Statement for Freshwater Management 2020

Section 3.21 Definitions relating to wetlands and rivers -

natural inland wetland means a wetland (as defined in the Act) that is not:

(a) in the coastal marine area; or

(b) a deliberately constructed wetland, other than a wetland constructed to offset impacts on, or to restore, an existing or former natural inland wetland; or

(c) a wetland that has developed in or around a deliberately constructed water body, since the construction of the water body; or

(d) a geothermal wetland; or

(e) a wetland that:

(i) is within an area of pasture used for grazing; and

(ii) has vegetation cover comprising more than 50% exotic pasture species (as identified in the National List of Exotic Pasture Species using the Pasture Exclusion Assessment Methodology (see clause 1.8)); unless

(iii) the wetland is a location of a habitat of a threatened species identified under clause 3.8 of this National Policy Statement, in which case the exclusion in (e) does not apply

Appendix 2: Plot sheets

NEW ZEALAND WETLAND DELINEATION DATA FORM: PASTURE TEST

SECTION A – SITE INFORMATION

Site: Kaeo River Project — Region: Kaeo - Northland — Sampling point/ID: Transect A Plot 1
Owner/address: Wetland A — Date: 5/12/24 — Land use: Grazing
Landform: River Flats/old oxbow — Local relief: Flats – concave — Landcover: rough pasture
Is the land drained? (YES) NO UNKNOWN — Investigator(s): Jacki B, Lisa Forster, Steph M — Slope°: 0–3°
GPS (NZTM): — Altitude m: — Photo Nos:

Are climatic/hydrologic conditions on the site typical for this time of year? (YES) NO (If NO explain in Remarks)
Are Vegetation ✓ Soil ✓ or Hydrology ✓ significantly disturbed? — Are 'Normal Circumstances' present? YES ✓ NO
Are Vegetation ✗ Soil ✗ or Hydrology ✗ naturally problematic? — Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Pasture exclusion? YES ☐ NO ☑
Hydrophytic vegetation present? YES ☑ NO ☐
Hydric soils present? YES ☑ NO ☐
Wetland hydrology present? YES ☑ NO ☐
Is the sampled area within a wetland? YES ☑ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status	Pasture % cover
Tree Stratum (Plot size:_____)				
1.				
2.				
3.				
4.				
Total tree cover (TT) =		50%___	20%___	
Sapling/Shrub Stratum (Plot size:_____)				
1.				
2.				
3.				
4.				
5.				
Total sapling/shrub cover (TS) =		50%___	20%___	
Herb Stratum (Plot size:_____)				
1. Paspalum distichum	99	✓	FACW	X
2. Persicaria hydropiper	2		FACW	X
3. Cyperus eragrostis	0.5		FACW	X
4.				
5.				
6.				
7.				
8. All species exotic				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
Total herb cover (TH) = 101.5		50% 50.75	20% 20.3	
			Total (P) = 0	
Total Vegetation Cover (TVC): TT+TS+TH = 101.5		50% 50.75		

Pasture Exclusion Test:
Pasture cover/Total vegetation cover (P/TVC) x100 = 0 %
☒ Rapid Pasture Test
☒ Pasture Exclusion Test is >50%

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 1
Tot. Dominant Spp. across strata (B) 1
% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW	101.5	x 2 =	203
FAC		x 3 =	
FACU		x 4 =	
UPL		x 5 =	
Total	(A)		(B)

Prevalence Index (B/A) = 2

Hydrophytic vegetation indicators:
☑ Rapid Test
☑ Dominance Test is >50%
☑ Prevalence Index is ≤3.0[1]
☐ Morphological adaptations[1] (supporting data in Remarks)
☐ Problematic hydrophytic vegetation[1]
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☑ NO ☐ UNCERTAIN ☐

Remarks:
low lying old oxbow that floods. Bottom of it is dominated by Paspalum distichum

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-0	no horizon						No topsoil, wasteland
0-5	brown/orange	dark iron	5%		matrix	Mineral	Silty and gravels
5-25	grey/brown	dark iron	80%		matrix + cracks	Mineral	manganese nodules
							Shows evidence of
							cracking

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators: Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☑ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☑ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley profile OR
- ☑ Mottled profile

Horizon:
- ☑ Reductimorphic
- ☑ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):
Location: Depression Flat Valley Gully Slope
Water table: Depth (cm) —
High GW Perched Seepage Tidal Lithic
Pans: Depth (cm) ____
Pan Humus Fe-pan Densi- Duri- Fragi Ortstein
Restricting layers: Depth (cm) ____
Slow perm argillic
☒ Pugged no

Hydric soils present? YES ☑ NO ☐ UNCERTAIN ☐ **NZSC subgroup** ____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply Soil °C ____

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☑ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☑ Saturation in aerial imagery (3F)
- ☑ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species	1 (A)
2. No. FACU & UPL dominant species	0 (B)
3. Total	1 (A+B)
4. FAC-neutral (>50%)	100 (A/A+B]*100

Wetland hydrology present? YES ☑ NO ☐

Sketch of site/vegetation types/sampling points:

Remarks:

NEW ZEALAND WETLAND DELINEATION DATA FORM: PASTURE TEST

SECTION A – SITE INFORMATION

Site: Kaeo River Project | Region: Kaeo - Northland | Sampling point/ID: Transect A / Plot 2
Owner/address: Wetland A | Date: 5/12/24 | Land use: Grazing
Landform: River Flats / old Oxbow | Local relief: Flat - concave | Land cover: Rough Pasture
Is the land drained? YES__ NO__ UNKNOWN__ | Investigator(s): Kahina Hansen, Rowan, Nicky P | Slope°: 0 - 3°
GPS (NZTM): S 35.06.12.61 E 173.46.6840 | Altitude m: | Photo Nos:

Are climatic/hydrologic conditions on the site typical for this time of year? YES ✓ NO__ (if NO explain in Remarks)
Are Vegetation ✓ Soil ✓ or Hydrology ✓ significantly disturbed? | Are 'Normal Circumstances' present? YES ✓ NO__
Are Vegetation ✗ Soil ✗ or Hydrology ✗ naturally problematic? | Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Pasture exclusion? YES ☐ NO ☑
Hydrophytic vegetation present? YES ☑ NO ☐
Hydric soils present? YES ☑ NO ☐
Wetland hydrology present? YES ☑ NO ☐
Is the sampled area within a wetland? YES ☑ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status	Pasture % cover
Tree Stratum (Plot size:_____)				
1.				
2.				
3.				
4.				
Total tree cover (TT) =		50%	20%	
Sapling/Shrub Stratum (Plot size:_____)				
1.				
2.				
3.				
4.				
5.				
Total sapling/shrub cover (TS) =		50%	20%	
Herb Stratum (Plot size:_____)				
1. Paspalum distichum	90	✓	FACW	X
2. Persicaria hydropiper	8		FACW	X
3. Cyperus eragrostis	2		FACW	X
4. Lolium perenne	0.5		FACU	✓
5. Lonchus clandestinus	8.		FACU	✓
6. Trifolium repens	0.5		FACU	✓
7.				
8. All species exotic				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
Total herb cover (TH) =	109	50% 54.5	20% 21.8	Total (P) = 9
Total Vegetation Cover (TVC): TT+TS+TH =	109	50% 54.5		

Pasture Exclusion Test:
Pasture cover/Total vegetation cover (P/TVC) x100 = 8.2 %
☒ Rapid Pasture Test
☒ Pasture Exclusion Test is >50%

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) _____
Tot. Dominant Spp. across strata (B) _____
% OBL/FACW/FAC (A/B) _____

Prevalence Index:

Total % cover of:		Multiply by:	
OBL		x 1 =	
FACW	100	x 2 =	200
FAC	0	x 3 =	0
FACU	9	x 4 =	36
UPL		x 5 =	
Total	109 (A)		236 (B)

Prevalence Index (B/A) = 2.16

Hydrophytic vegetation indicators:
☑ Rapid Test
☑ Dominance Test is >50%
☑ Prevalence Index is ≤3.0[1]
☑ Morphological adaptations[1] (supporting data in Remarks)
☒ Problematic hydrophytic vegetation[1]
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☑ NO ☐ UNCERTAIN ☐

Remarks:

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
	SAME	AS		Transect	A/	Plot 1	

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators:

Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley profile OR
- ☐ Mottled profile

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):
Location: Depression Flat Valley Gully Slope
Water table: Depth (cm) ____
High GW Perched Seepage Tidal Lithic
Pans: Depth (cm) _____
Pan Humus Fe-pan Densi- Duri- Fragi Ortstein
Restricting layers: Depth (cm) _____
Slow perm argillic
- ☐ Pugged

Hydric soils present? YES ☑ NO ☐ UNCERTAIN ☐ **NZSC subgroup** _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply Soil °C_____

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

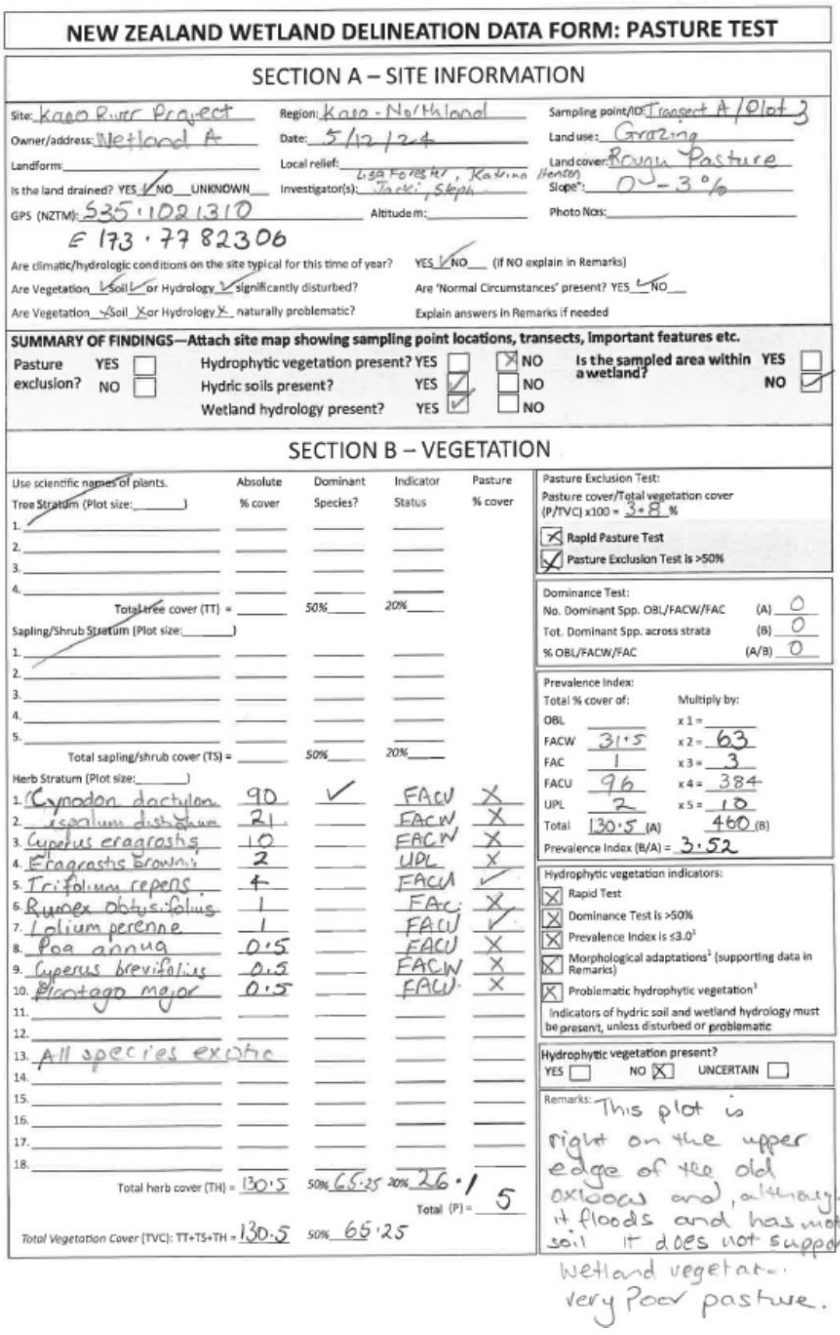
- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation
1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☑ NO ☐

Sketch of site/vegetation types/sampling points:

Remarks:



NEW ZEALAND WETLAND DELINEATION DATA FORM: PASTURE TEST

SECTION A – SITE INFORMATION

Site: Kaeo River Project — Region: Kaeo - Northland — Sampling point/ID: Transect A / Plot 3
Owner/address: Wetland A — Date: 5/12/24 — Land use: Grazing
Landform: — Local relief: — Land cover: Rough Pasture
Is the land drained? YES ✓ NO ___ UNKNOWN ___ — Investigator(s): Lisa Forester, Katrina Hanton, Jacki, Steph — Slope°: 0 – 3 %
GPS (NZTM): S35 · 102,310 E 173 · 77 82306 — Altitude m: — Photo Nos:

Are climatic/hydrologic conditions on the site typical for this time of year? YES ✓ NO ___ (If NO explain in Remarks)
Are Vegetation ✓ Soil ✓ or Hydrology ✓ significantly disturbed? — Are 'Normal Circumstances' present? YES ✓ NO ___
Are Vegetation ✓ Soil ✗ or Hydrology ✗ naturally problematic? — Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Pasture exclusion? YES ☐ NO ☐
Hydrophytic vegetation present? YES ☐ NO ☒
Hydric soils present? YES ☑ NO ☐
Wetland hydrology present? YES ☑ NO ☐
Is the sampled area within a wetland? YES ☐ NO ☑

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status	Pasture % cover
Tree Stratum (Plot size: ___)				
1.				
2.				
3.				
4.				
Total tree cover (TT) =		50% ___	20% ___	
Sapling/Shrub Stratum (Plot size: ___)				
1.				
2.				
3.				
4.				
5.				
Total sapling/shrub cover (TS) =		50% ___	20% ___	
Herb Stratum (Plot size: ___)				
1. Cynodon dactylon	90	✓	FACU	X
2. Paspalum distichum	21		FACW	X
3. Cyperus eragrostis	10		FACW	X
4. Eragrostis brownii	2		UPL	X
5. Trifolium repens	4		FACU	✓
6. Rumex obtusifolius	1		FAC	X
7. Lolium perenne	1		FACU	✓
8. Poa annua	0.5		FACU	X
9. Cyperus brevifolius	0.5		FACW	X
10. Plantago major	0.5		FACU	X
11.				
12.				
13. All species exotic				
14.				
15.				
16.				
17.				
18.				
Total herb cover (TH) = 130.5		50% 65.25	20% 26.1	
			Total (P) = 5	
Total Vegetation Cover (TVC): TT+TS+TH = 130.5		50% 65.25		

Pasture Exclusion Test:
Pasture cover/Total vegetation cover (P/TVC) x100 = 3.8 %
☒ Rapid Pasture Test
☑ Pasture Exclusion Test is >50%

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 0
Tot. Dominant Spp. across strata (B) 0
% OBL/FACW/FAC (A/B) 0

Prevalence Index:

Total % cover of:	Multiply by:
OBL ___	x1 = ___
FACW 31.5	x2 = 63
FAC 1	x3 = 3
FACU 96	x4 = 384
UPL 2	x5 = 10
Total 130.5 (A)	460 (B)

Prevalence Index (B/A) = 3.52

Hydrophytic vegetation indicators:
☒ Rapid Test
☒ Dominance Test is >50%
☒ Prevalence Index is ≤3.0[1]
☒ Morphological adaptations[2] (supporting data in Remarks)
☒ Problematic hydrophytic vegetation[3]
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☐ NO ☒ UNCERTAIN ☐

Remarks: This plot is right on the upper edge of the old oxidation pond, although it floods and has mottled soil it does not support wetland vegetation very poor pasture.

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
		SAME AS TRANSECT A/PLOT 1					

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators: Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley profile OR
- ☐ Mottled profile

Horizon:
- ☐ Reductimorphic
- ☐ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):
Location: Depression Flat Valley Gully Slope
Water table: Depth (cm) ____
High GW Perched Seepage Tidal Lithic
Pans: Depth (cm) _____
Pan Humus Fe-pan Densi- Duri- Fragi Ortstein
Restricting layers: Depth (cm) _____
Slow perm argillic
☐ Pugged

Hydric soils present? YES ☑ NO ☐ UNCERTAIN ☐ **NZSC subgroup** _____

Primary hydrology indicators: minimum of 1 required; check all boxes that apply Soil °C_____

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☐ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☐ Oxidised rhizosphere on roots (3B)
- ☐ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

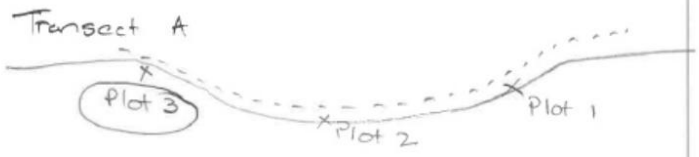
Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

- ☐ Water-stained leaves (2K)
- ☐ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☐ Saturation in aerial imagery (3F)
- ☐ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

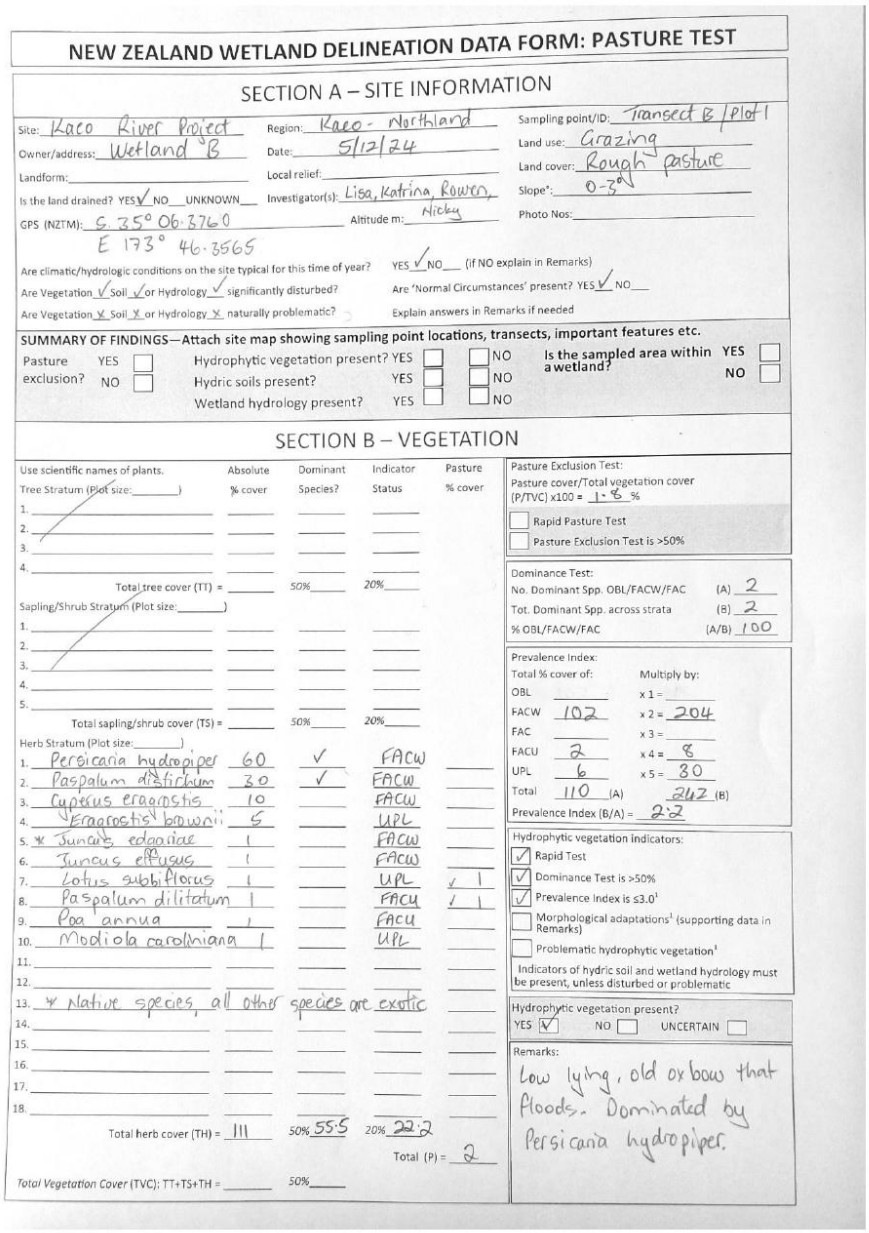
FAC-neutral test (4D); refer to Section B: Vegetation
1. No. OBL & FACW dominant species _____(A)
2. No. FACU & UPL dominant species _____(B)
3. Total _____(A+B)
4. FAC-neutral (>50%) _____(A/A+B)*100

Wetland hydrology present? YES ☑ NO ☐

Sketch of site/vegetation types/sampling points:



Remarks:



NEW ZEALAND WETLAND DELINEATION DATA FORM: PASTURE TEST

SECTION A – SITE INFORMATION

Site: Kaeo River Project | Region: Kaeo - Northland | Sampling point/ID: Transect B / plot 1
Owner/address: Wetland B | Date: 5/12/24 | Land use: Grazing
Landform: | Local relief: | Land cover: Rough pasture
Is the land drained? YES ✓ NO UNKNOWN | Investigator(s): Lisa, Katrina, Rowen, Nicky | Slope*: 0-3°
GPS (NZTM): S 35° 06.3760 E 173° 46.3565 | Altitude m: | Photo Nos:

Are climatic/hydrologic conditions on the site typical for this time of year? YES ✓ NO (if NO explain in Remarks)
Are Vegetation ✓ Soil ✓ or Hydrology ✓ significantly disturbed? Are 'Normal Circumstances' present? YES ✓ NO
Are Vegetation X Soil X or Hydrology X naturally problematic? Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Pasture exclusion? YES ☐ NO ☐
Hydrophytic vegetation present? YES ☐ NO ☐
Hydric soils present? YES ☐ NO ☐
Wetland hydrology present? YES ☐ NO ☐
Is the sampled area within a wetland? YES ☐ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status	Pasture % cover
Tree Stratum (Plot size:)				
1.				
2.				
3.				
4.				
Total tree cover (TT) =		50%	20%	
Sapling/Shrub Stratum (Plot size:)				
1.				
2.				
3.				
4.				
5.				
Total sapling/shrub cover (TS) =		50%	20%	
Herb Stratum (Plot size:)				
1. Persicaria hydropiper	60	✓	FACW	
2. Paspalum distichum	30	✓	FACW	
3. Cyperus eragrostis	10		FACW	
4. *Eragrostis brownii	5		UPL	
5. * Juncus edgariae	1		FACW	
6. Juncus effusus	1		FACW	
7. Lotus subbiflorus	1		UPL	✓ 1
8. Paspalum dilitatum	1		FACU	/ 1
9. Poa annua	1		FACU	
10. Modiola caroliniana	1		UPL	
11.				
12.				
13. * Native species, all other species are exotic				
14.				
15.				
16.				
17.				
18.				
Total herb cover (TH) = 111		50% 55.5	20% 22.2	
			Total (P) = 2	
Total Vegetation Cover (TVC): TT+TS+TH =		50%		

Pasture Exclusion Test:
Pasture cover/Total vegetation cover (P/TVC) x100 = 1.8 %
☐ Rapid Pasture Test
☐ Pasture Exclusion Test is >50%

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 2
Tot. Dominant Spp. across strata (B) 2
% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:	Multiply by:
OBL	x 1 =
FACW 102	x 2 = 204
FAC	x 3 =
FACU 2	x 4 = 8
UPL 6	x 5 = 30
Total 110 (A)	242 (B)

Prevalence Index (B/A) = 2.2

Hydrophytic vegetation indicators:
✓ Rapid Test
✓ Dominance Test is >50%
✓ Prevalence Index is ≤3.0[1]
☐ Morphological adaptations[1] (supporting data in Remarks)
☐ Problematic hydrophytic vegetation[1]
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ✓ NO ☐ UNCERTAIN ☐

Remarks:
Low lying, old oxbow that floods. Dominated by Persicaria hydropiper.

Note: basic vegetation assessment applied to delineation protocol for Wetland B

NEW ZEALAND WETLAND DELINEATION DATA FORM: PASTURE TEST

SECTION A – SITE INFORMATION

Site: Kaeo River Project — Region: Kaeo Northland — Sampling point/ID: Transect C/Plot 1
Owner/address: Wetland C — Date: 5/12/24 — Land use: Grazing
Landform: — Local relief: flat - concave — Land cover: Rough Pasture
Is the land drained? YES__NO__UNKNOWN__ — Investigator(s): Lisa Forester, Karina Hansen — Slope°: 0 - 3°
GPS (NZTM): S 35·06·0953 E 173·46·5331 — Altitude m: — Photo Nos:

Are climatic/hydrologic conditions on the site typical for this time of year? YES ✓ NO__ (If NO explain in Remarks)
Are Vegetation__ Soil__ or Hydrology__ significantly disturbed? — Are 'Normal Circumstances' present? YES ✓ NO__
Are Vegetation ✗ Soil__ or Hydrology ✗ naturally problematic? — Explain answers in Remarks if needed

SUMMARY OF FINDINGS—Attach site map showing sampling point locations, transects, important features etc.

Pasture exclusion? YES ☐ NO ☑
Hydrophytic vegetation present? YES ☑ NO ☐
Hydric soils present? YES ☑ NO ☐
Wetland hydrology present? YES ☑ NO ☐
Is the sampled area within a wetland? YES ☑ NO ☐

SECTION B – VEGETATION

Use scientific names of plants.	Absolute % cover	Dominant Species?	Indicator Status	Pasture % cover
Tree Stratum (Plot size:_____)				
1.				
2.				
3.				
4.				
Total tree cover (TT) =		50%__	20%__	
Sapling/Shrub Stratum (Plot size:_____)				
1.				
2.				
3.				
4.				
5.				
Total sapling/shrub cover (TS) =		50%__	20%__	
Herb Stratum (Plot size:_____)				
1. Persicaria hydropiper	65	✓	FACW	x
2. Persicaria decipiens	20	✓	OBL	x
3. Paspalum distichum	10		FACW	x
4. Cyperus eragrostis	1		FACW	x
5. Juncus articulatus	1		FACW	x
6. Eragrostis brownii	1		UPL	x
7. Juncus acuminatus	0.5		OBL	x
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
Total herb cover (TH) =	98.5	50% 49.25	20% 19.7	Total (P) = 0
Total Vegetation Cover (TVC): TT+TS+TH =	98.5	50% 49.25		

Pasture Exclusion Test:
Pasture cover/Total vegetation cover (P/TVC) x100 = 0 %
☑ Rapid Pasture Test
☒ Pasture Exclusion Test is >50%

Dominance Test:
No. Dominant Spp. OBL/FACW/FAC (A) 2
Tot. Dominant Spp. across strata (B) 2
% OBL/FACW/FAC (A/B) 100

Prevalence Index:

Total % cover of:		Multiply by:	
OBL	20.5	x1 =	20.5
FACW	77	x2 =	154
FAC	1	x3 =	3
FACU		x4 =	
UPL	1	x5 =	5
Total	98.5 (A)		182.5 (B)

Prevalence Index (B/A) = 1.85

Hydrophytic vegetation indicators:
☑ Rapid Test
☑ Dominance Test is >50%
☑ Prevalence Index is ≤3.0[1]
☑ Morphological adaptations[1] (supporting data in Remarks)
☒ Problematic hydrophytic vegetation[1]
Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Hydrophytic vegetation present?
YES ☑ NO ☐ UNCERTAIN ☐

Remarks:
In old oxbow on wet area of ground. Very rough grazed area. On old river flat.

SECTION C – SOIL AND HYDROLOGY

Profile description: (Describe to the depth needed to confirm indicator presence/absence, 30 cm default)

Depth (cm)	Matrix colour (moist)	Mottles colour (moist)	Mottles %[1]	Mottles Size[2]	Mottle location[3]	Material[4]	Remarks
0-5 cm	grey	rust					
5-20 cm	location from top		50%		Matrix	mineral	

[1]Use % area charts; [2]Use size classes; [3]Ped face, pore, within ped along roots, within matrix; [4]Organic (peaty), humic, mineral soil

Hydric soil indicators: Soil drainage (circle) W MW I P VP

Organic layers:
- ☐ Organic soil material
- ☐ Litter
- ☐ Fibric
- ☐ Mesic
- ☐ Humic
- ☐ Peaty topsoil
- ☐ Peaty subsoil

Concretions:
- ☐ Iron concretions
- ☐ Manganese concretions
- ☐ Nodular

Consistence:
- ☐ Plastic
- ☐ Sticky
- ☐ Fluid

Colours: profile form either:
- ☐ Gley profile OR
- ☑ Mottled profile

Horizon:
- ☐ Reductimorphic
- ☑ Redox mottled
- ☐ Redox segregations
- ☐ Perch-gley features

Cause of wetness (circle appropriate):
Location: Depression Flat Valley Gully Slope
Water table: Depth (cm) ~740cm
High GW Perched Seepage Tidal Lithic
Pans: Depth (cm) ___
Pan Humus Fe-pan Densi- Duri- Fragi Ortstein
Restricting layers: Depth (cm) ___
Slow perm: argillic
☑ Pugged

Hydric soils present? YES ☑ NO ☐ UNCERTAIN ☐ **NZSC subgroup** ___

Primary hydrology indicators: minimum of 1 required; check all boxes that apply Soil °C ___

- ☐ Surface water (1A)
- ☐ Groundwater <30 cm (1B)
- ☐ Soil saturation <30 cm (1C)
- ☐ Water marks (2A)
- ☐ Sediment deposits (2B)
- ☐ Drift deposits (2C)
- ☐ Algal mat/crust (2D)
- ☐ Iron deposits (2E)
- ☐ Surface soil cracks (2F)
- ☑ Inundation on aerial imagery (2G)
- ☐ Sparsely vegetated concave surface (2H)
- ☐ Salt crust (2I)
- ☐ Aquatic invertebrates (2J)
- ☐ Hydrogen sulphide odour (3A)
- ☑ Oxidised rhizosphere on roots (3B)
- ☑ Reduced iron (3C)
- ☐ Reduced iron in tilled soil (3D)
- ☐ High water table stunted/stressed plants (4A)

Secondary hydrology indicators: minimum of 2 required; check all boxes that apply

- ☐ Water-stained leaves (2K)
- ☑ Drainage patterns (2L)
- ☐ Dry-season water table (3E)
- ☑ Saturation in aerial imagery (3F)
- ☑ Geomorphic position (4B)
- ☐ Shallow aquitard (4C)
- ☐ FAC-neutral test (4D)
- ☐ Frost-heave hummocks (4E)

FAC-neutral test (4D); refer to Section B: Vegetation

1. No. OBL & FACW dominant species	1	(A)
2. No. FACU & UPL dominant species	0	(B)
3. Total	1	(A+B)
4. FAC-neutral (>50%)	100	(A/A+B)*100

Wetland hydrology present? YES ☑ NO ☐

Sketch of site/vegetation types/sampling points:

Remarks:

10.8 Appendix H: Proposed works cross-sectional details

GENERAL NOTES:

ALL UNDERGROUND SERVICES TO BE LOCATED AND WHERE APPLICABLE RELOCATED PRIOR TO CONSTRUCTION OF ANY WORKS.

ALL WORKS SHALL COMPLY WITH:
- NORTHLAND REGIONAL PLAN

ALL TEMPORARY WORKS IS THE RESPONSIBILITY OF THE MAIN CONTRACTOR.

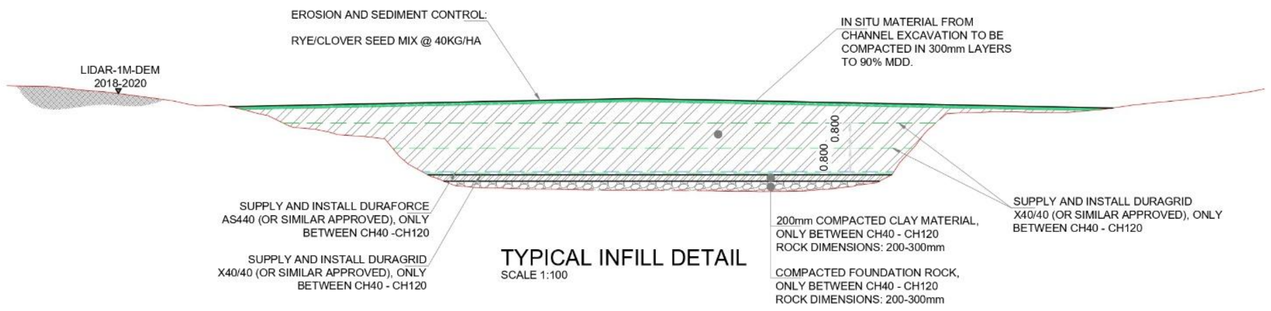
TEST ALL EARTH-FILLS OTHER THAN THOSE SPECIFICALLY IDENTIFIED AS UNCONTROLLED FILL IN ACCORDANCE WITH NZS4431 USING STANDARD TESTING PROCEDURES AS SET OUT IN NZS 4402.

TAKE ALL NECESSARY MEASURES TO PREVENT EXCESSIVE WATER-LOGGING OF SURFACE MATERIALS YET TO BE EXCAVATED OR COMPACTED OR BOTH, AND TO PREVENT FILL MATERIAL FROM BEING ERODED AND RE-DEPOSITED AT LOWER LEVELS.

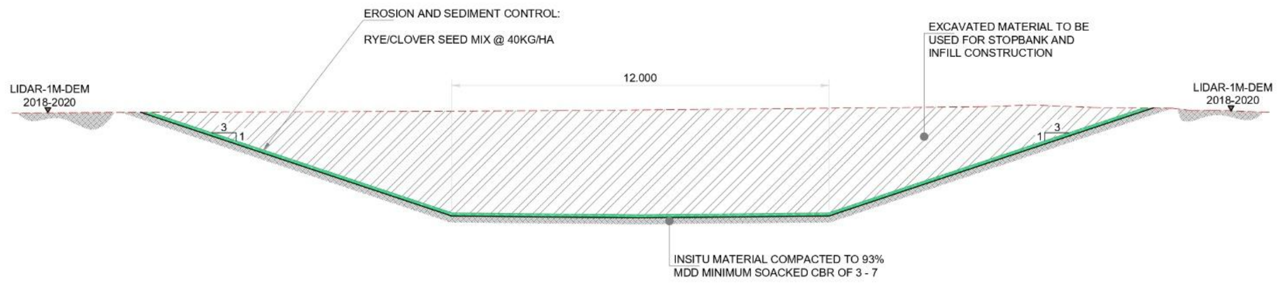
CONSTRUCT ALL EXCAVATION IN SUCH A MANNER THAT THE SURFACE IS FREE DRAINING OVER THE ENTIRE AREA. NO WATER TO POND ON ANY COMPLETED SURFACE.

WHERE MATERIAL IS TO BE CARTED OFF SITE BY PUBLIC ROAD, IT WILL BE IDENTIFIED AS CUT TO WASTE FOR OFF-SITE DISPOSAL. CARRY OUT ALL ASPECTS OF THE OFF SITE DISPOSAL, INCLUDING PREPARATION OF AN EARTHWORKS MANAGEMENT PLAN, OBTAINING ANY NECESSARY LAND USE CONSENTS AND RESOURCE CONSENTS AND PREPARATION OF AN EROSION AND SEDIMENT CONTROL PLAN WHERE REQUIRED. UNDERTAKE PREPARATORY WORK AND SITE CLOSURE AT THE DISPOSAL SITE.

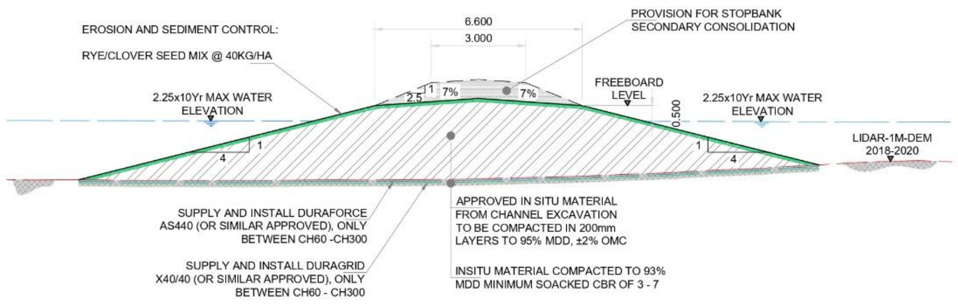
TESTING TO NZS 4407:2015 TEST 4.2 (NDM BACKSCATTER)
TEST FREQUENCY SHALL BE ONE TEST PER 1000M³ AND NOT LESS THAN LIFTS OF BETWEEN 0.6M AND 1.0M DEPTH OF FILL PLACED, WITH THE ADDITIONAL CRITERIA THAT THE FIRST 1000M³ OF FILL PLACED SHALL HAVE 3 SETS OF TESTS AND ALL FILL SHALL HAVE A MINIMUM OF 5 SETS OF TESTS.
AS WELL AS ACCOMPLISHING THE MINIMUM STANDARD OF COMPACTION AS SET OUT ABOVE, THE CONTRACTOR MUST ENSURE THAT THE FILL IS NOT OVER-COMPACTED TO THE EXTENT THAT WEAVING OF THE FILL IS PRODUCED.



TYPICAL INFILL DETAIL
SCALE 1:100



TYPICAL CHANNEL DETAIL
SCALE 1:100



TYPICAL STOPBANK DETAIL
SCALE 1:100

ISSUE FOR TENDER

KAEO PHASE 2 FLOOD MITIGATION STRUCTURE DETAILS & NOTES
SCALE 1:1000

TRINEKEL CIVIL ENGINEERING SOLUTIONS

	NAME	DATE
DRAWN	MS	20/12/2024
CHECKED	KK	20/12/2024
RESPONSIBLE ENGINEER	KK	20/12/2024
LEAD DISCIPLINE ENGINEER	.	.
PROCESS ENGINEER	.	.
ENGINEERING MANANGER	.	.
PROFESSIONAL DISC. ENGINEER		
REGISTRATION NUMBER	.	
SCALE	AS SHOWN	

CLIENT: NORTHLAND REGIONAL COUNCIL
PROJECT: KAEO PHASE 2 FLOOD MITIGATION
A1

TITLE: KAEO PHASE 2 FLOOD MITIGATION DETAILS & NOTES

PROJECT	DOC	PBS/WBS/ AREA	DISC	SEQUENCE	REVISION
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REFERENCES	
0055-001-0SW-C-0000	DRAWING INDEX
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PLOT DATE: 20/12/2024 2:11:16 am

NO	DATE	DESCRIPTION	BY	CHK	RESP ENG	LD ENG	PRO ENG	ENG MAN	PROF ENG
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T0	20/12/24	ISSUED FOR TENDER	MS	KK	.	KK	.	.	KK
P0	12/11/24	ISSUED FOR INFORMATION	KK	KK	.	KK	.	.	KK

10.1 Appendix I: Flow estimates for waterways

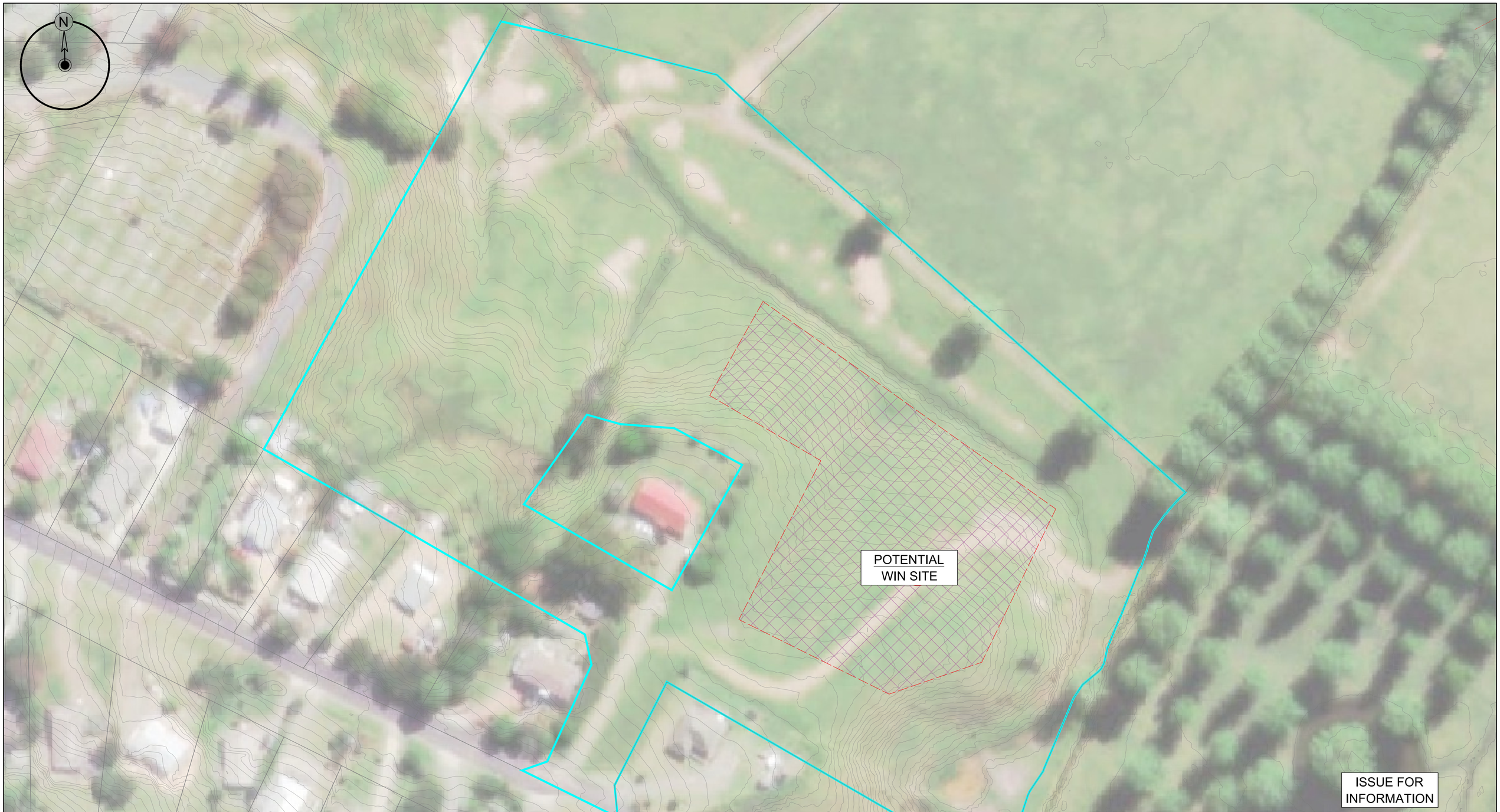
Table 10-6: NRC flow estimates for waterways.
Provided by Alan Bee on 28 November 2024.

Site source Site description	Kāeo Waiare Road	Kāeo Fire Station	Waikara Stream Kāeo	Relative Waikara flow
Gauging No	416218	416219	416220	
Date	28/11/2025	28/11/2025	28/11/2025	
Start time	846	1011	1038	
Finish time	903	1029	1056	
Hydro site #	2616	2624	2603	
Flow method	RS5	RS6	RS7	
Flow Provisional	370	457	7.4	
Flow final	383	470	8	1.88%
Staff guage	-0.25	-0.92	FireStation SG - 0.92	
Error %	6.4	3.9	32	
Calc by	SJ	SJ	SJ	
QRev flow	383	470	8	1.88%
Qrev error %	4.4	7.3	45.3	

Simon carried out flow gaugings today for you at the above. Large error for the Waikara Stream as it was very low, but it shows as about 2% of the Kāeo River flow at this stage.

Table 10-7: NZ River Classification of waterways and relative flow estimate.
Accessed via https://www.jowettconsulting.co.nz/home/nz-species-db.

Name	Kāeo River	Waikara Stream	Relative Waikara flow
NZRiver segment	1004341	1004296	
Stream order	5	2	
Distance to the sea km	4.4	4.7	
Elevation m above sea level	20	20	
Catchment area km2	88.04	2.17	
mean flow L/s	2356	58	2.46%
mean annual low flow L/s	327	10	3.06%



KAEO PHASE 2 FLOOD MITIGATION POTENTIAL EARTHFILL WIN SITE
SCALE 1:500

ISSUE FOR INFORMATION

	NAME	DATE
DRAWN	KM	18/02/2025
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RESPONSIBLE ENGINEER	.	.
LEAD DISCIPLINE ENGINEER		
PROCESS ENGINEER	.	.
ENGINEERING MANANGER	.	.
PROFESSIONAL DISC. ENGINEER	KK	
REGISTRATION NUMBER	.	
SCALE	AS SHOWN	

CLIENT NORTHLAND REGIONAL COUNCIL

PROJECT KAEO PHASE 2 FLOOD MITIGATION

A1

TITLE:

KAEO PHASE 2 FLOOD MITIGATION

POTENTIAL EARTHFILL WIN SITE

PROJECT				DOC			PBS/WBS/ AREA			DISC	SEQUENCE				REVISION	
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055-001-00G-G-001-P0	DRAWING INDEX
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PLOT DATE: 18/02/2025 3:51:09 pm

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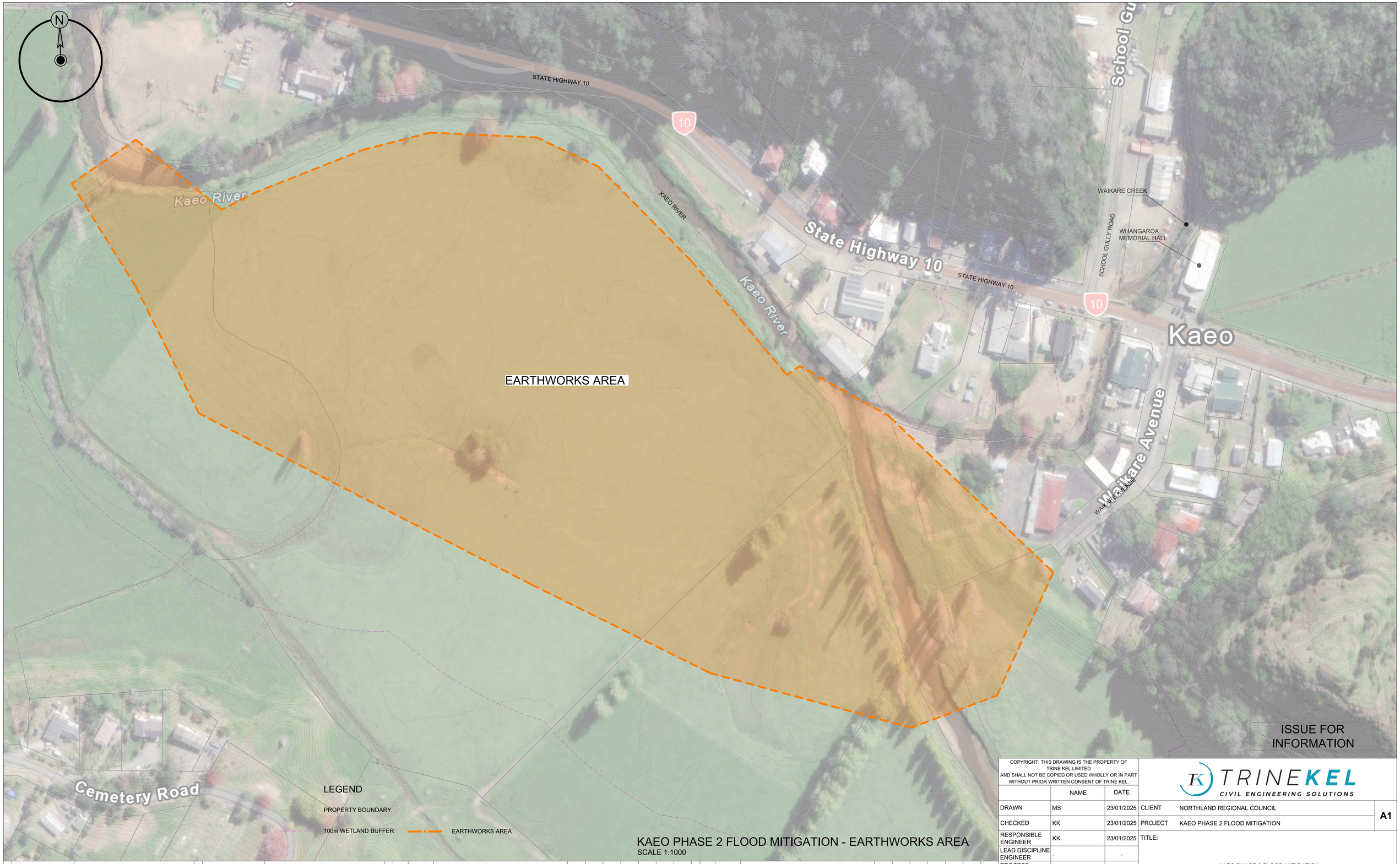
P4	04/02/25	ISSUED FOR INFORMATION	MS	KK	.	KK	.	.	KK
T0	20/12/24	ISSUED FOR TENDER	MS	KK	.	KK	.	.	KK
P1	3/12/24	ALIGNMENT UPDATE OF STRUCTURES	KK	KK	.	KK	.	.	KK
P0	18/02/25	ISSUED FOR INFORMATION	KM		.		.	.	



KAEO PHASE 2 FLOOD MITIGATION - EARTHWORKS AREA

SCALE 1:1000

REFERENCES

0055-001-0SW-C-0000	DRAWING INDEX
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PLOT DATE: 23/01/2025 4:08:54 pm

REVISIONS

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P0	23/01/25	ISSUED FOR INFORMATION	MS	KK	.	KK	.	.	KK

TRINEKEL
CIVIL ENGINEERING SOLUTIONS

	NAME	DATE
DRAWN	MS	23/01/2025
CHECKED	KK	23/01/2025
RESPONSIBLE ENGINEER	KK	23/01/2025
LEAD DISCIPLINE ENGINEER	.	.
PROCESS ENGINEER	.	.
ENGINEERING MANANGER	.	.
PROFESSIONAL DISC. ENGINEER	KK	23/01/2025
REGISTRATION NUMBER	.	
SCALE	AS SHOWN	

CLIENT: NORTHLAND REGIONAL COUNCIL

PROJECT: KAEO PHASE 2 FLOOD MITIGATION

TITLE:

KAEO PHASE 2 FLOOD MITIGATION

EARTHWORKS AREA

A1

PROJECT				DOC				PBS/WBS/ AREA		DISC	SEQUENCE				REVISION	
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Te Kaunihera o Te Hiku o te Ika
Far North District Council

HE ARA TĀMATA
CREATING GREAT PLACES
Supporting our people

Private Bag 752, Kaikohe 0440, New Zealand
ask.us@fndc.govt.nz
0800 920 029
fndc.govt.nz

Application No: 2250280-RMALUC
For: 11 Waikare Avenue, Kaeo 0478

30 January 2025

Northland Regional Council
C/- Bay Of Island Planning
PO Box 318
Paihia 0247

Dear Steve and Meg,

Re: Resource Consent Application – Request for Further Information

An assessment of your application for a resource consent to undertake a landuse proposal has been made.

Under Section 92(1) of the Resource Management Act 1991, the Council requires further information to be able to consider your proposal. This additional information will help us to better understand the proposed activity, its effects on the environment and the means by which any adverse effects on the environment may be avoided, remedied, or mitigated.

The additional information required by the Council is listed below, with reasons as to why we need this information to be provided.

1. As per our meeting discussion, please provide an ecological report.

2. As per our meeting discussion, please provide a cultural impact assessment.

3. Please provide a letter stating whether the proposed work will impact archaeology of the site from a SQEP (archaeologist).

   Please note depending on the specialists reports and comments, further information maybe required.

4. Please provide further traffic and construction management for the proposed works. (Please note a TMP and CMP may be conditioned).
   - number of vehicles/trucks per day
   - entry points
   - will pedestrian access be impacted
   - hours of work

In accordance with the Act, your application will be suspended until we receive this information. Once we have received the information to our satisfaction, a decision will be made regarding the further processing of the application and whether notification may be required.

Under Section 92 A (1) of the Act you are required to comply with this request before 24/2/25, by either:

(a) providing the requested information, or;

(b) informing the Council in writing that you agree to provide the information. (Please advise Council when the information will be provided. Taking this into account, Council will set a reasonable time for the provision for the information), or;

(c) informing the Council in writing of your refusal to provide the information.

Please use the attached form when sending in your response to the Council.

It is important that you respond in one of the three ways listed above within the timeframe specified. If you do not provide the information before the deadline, or if you refuse to provide the information, the Council **must,** pursuant to Section 95C of the Resource Management Act, publicly notify your application (upon payment of the required fee).

Please feel free to contact the undersigned if you have any questions or concerns regarding this request for further information.

Yours faithfully

Swetha Maharaj
RESOURCE PLANNER

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

To **- *Swetha Maharaj***
Resource Planner / Planning Consultant Far North District Council

From - *Northland Regional Council*

Resource Consent RMA/ LUC/SUB/ *2250280-RMALUC*

Regarding your letter dated …… under Section 92 of the Resource Management Act:

[*Note to the Applicant* – please mark the option (s) you have taken]

☐ (1) I have provided the following information requested by the Council:

(a) ……

(b) ……

(c) ……

☐ (2) I advise that I will provide the information requested by the Council before:

……

[*Note to the Applicant* – please indicate <u>when</u> you are able to provide this information. Council will then set a date for the provision of the information and advise you of that deadline].

☐ (3) I refuse to provide the information requested by the Council.

Name of Applicant / Agent ……..

Signature of Applicant / Agent ……

Date ……

NOTIFICATION DETERMINATION UNDER SECTIONS 95A TO 95G OF THE RESOURCE MANAGEMENT ACT 1991

1 Application Details

Council Reference:	2250280-RMALUC
Applicant:	Northland Regional Council
Property Address:	73 Turner Street, Kaeo Horu, Omaunu Road, Kaeo
Legal Description:	• Horu Block (NA2D/6) • Part Allotment 1 Parish of Kaeo (NA48C/581) • Part Allotment 1 Parish of Kaeo (NA502/92) • Part Snowdens Grant (NA4D/903) • Part Snowdens Grant (NA1089/79) • Lot 7-8 Deposited Plan 80257 and Part Allotment 1 Deposited Plan 21540 (NA35B/601)
Description of Application:	Kaeo Stage II flood protection works breaching Excavation and/or Filling, Excluding Mining and Quarrying, in the Rural Production Zone as Discretionary Activity.
Reporting Planner:	Swetha Maharaj
Operative District Plan Zoning:	Rural Production, Commercial and Residential
Operative District Plan Notations:	NA
Other Notations of Relevance:	Coastal & River Flood Hazards Kiwi Present Class 3 In close proximity: P04/428, P04/633, P04/765 and P04/767 and the project area is dominated by Pohue Pā. Iwi AOI: Ngāpuhi / Ngāti Kahu ki Whaingaroa Te Runanga o Whaingaroa Environmental Management Plan. Also named as Te Ūkaipo Iwi Resource Management – 2011

	Nearby Sites of Cultural Significance to Maori (reviewed): Waahi tapu Sites of Cultural Significance to Maori (reviewed): Te Pohue Pa & waahi tapu
Proposed District Plan Zoning:	Rural Production, Mixed use and General Residential
Proposed District Plan Overlays:	Coastal & River Flood Hazards
Proposed District Plan Designations:	NA
Building Consent Reference number :	NA

2 Procedural Details

Date Received:	14-Jan-2025
Date of Site Visit:	16-Jan-2025
Further Information Requested:	30-Jan-2025
Further Information Received:	15-May-2025
Suspended under section 88E:	NA
Extension Pursuant to section 37:	NA
Pre-application Meeting Held:	NA
Pre-lodgement Consultation by Applicant:	NA

Locality Plan

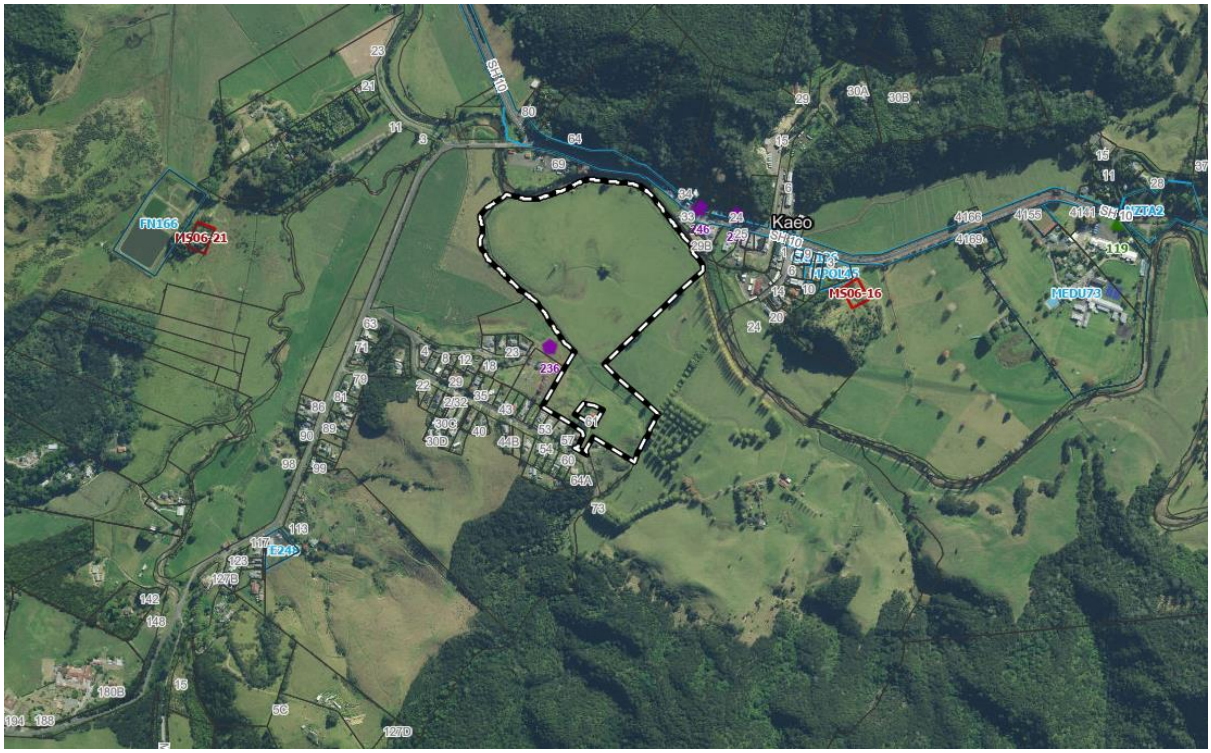

Figure 1: The location of the site

3 Description of Site

The site is as described in the application documents being the Assessment of Environmental Effects (AEE) titled “Northland Regional Council – Kaeo Stage II. Rev A” prepared by BAY OF ISLANDS PLANNING (2022) LIMITED, dated December 2024.

I concur with this description and make the following additional comment.

The Kāeo Township, State Highway 1 (SH1) and surrounding land is subjected to regular flooding from the Kāeo River and tributaries, with historic and more recent flood events.

The proposal is located across five Record of Titles as shown in Figure 2 below.

The sites are located south of the Kaeo Township and runs adjacent and along a short extent of the Kaeo River. The sites are largely in pasture and are vacant where the works are proposed. The site is low lying and largely flat.

The entire development area is subject to river and coastal flood hazards.

Protected Natural Areas are located to the north and south of the site and development area at Ngarahu P04036 and Kaeo Bush P04052. Kaeo is considered as being within a Kiwi Present Area.

The AEE report notes *one of the sites is located off Waikare Avenue where the works tie in with Stage I development.* The proposed works also include extending the 2014 embankment downstream to prevent the Kāeo River from flowing back into the Waikara Stream to protect Kāeo township.

Figure 2: Proposed sites

Record of Title

The Record of Title has the following interests/consent notices that are relevant to the site:

Estate	Fee Simple
Area	7335 square metres more or less
Legal Description	Part Snowdens Grant
Registered Owners	

Third View Investments 2014 Limited

Interests

Subject to a right of way over part created by Conveyance 123933 (R42/452)

Subject to a right of way over part created by Conveyance 144047 (R60/493)

Subject to a right of way over part created by Conveyance 196787 (R159/487)

Subject to a water supply easement over part marked A on DP 375063 created by Easement Instrument 7064882.4 - 11.10.2006 at 9:00 am

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked N, stop bank over part marked B on SO 459897 and right of way in favour of Northland Regional Council created by Easement Instrument 9482600.3 - 31.10.2013 at 9:35 am

Estate	Fee Simple
Area	83.7699 hectares more or less
Legal Description	Part Allotment 1 Parish of Kaeo
Registered Owners	

Leslie Kelman Jackson and Jeanette Yvonne Jackson

Interests

579204 Transfer being a grant of water easement over Lots 1, 2 & 4 Plan 36214 appurtenant to the land in CT NA578/197 Henry Robert Leslie to The Public Trustee - produced 9.1.1953 at 12.00 pm Term 10 years commencing from 1.3.1947

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked R on SO 459897 in favour of Northland Regional Council created by Easement Instrument 9482600.1 - 31.10.2013 at 9:35 am

Subject to a right (in gross) to convey electricity and telecommunications over part marked B on DP 535420 in favour of Top Energy Limited created by Easement Instrument 11506097.2 - 3.9.2019 at 12:16 pm

Estate	Fee Simple
Area	3.7827 hectares more or less
Legal Description	Lot 7-8 Deposited Plan 80257 and Part Allotment 1 Deposited Plan 21540

Registered Owners

Leslie Kelman Jackson and Jeanette Yvonne Jackson

Interests

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked O, P and Q on SO 459897 in favour of Northland Regional Council created by Easement Instrument 9482600.1 - 31.10.2013 at 9:35 am

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Estate	Fee Simple
Area	2.2915 hectares more or less
Legal Description	Part Snowdens Grant

Registered Owners

Leslie Kelman Jackson and Jeanette Yvonne Jackson

Interests

Subject to a right of way over part created by Conveyance 146201 (R.55/895)

9356749.1 Notice pursuant to Section 23 Public Works Act 1981 - 3.4.2013 at 7:00 am

Subject to a right (in gross) to flood (flow path) over part marked M and stopbank (flow path) over part marked C on SO 459897 in favour of Northland Regional Council created by Easement Instrument 9482600.1 - 31.10.2013 at 9:35 am

10148434.1 Notification that a building consent issued pursuant to Section 72 Building Act 2004 identifies inundation as a natural hazard - 7.8.2015 at 7:00 am

There are no relevant interests to consider, however it is noted that some of the landholdings are subject to instruments relating to the Stage I works.

4 Description of Proposed Activity

The activity is as described in the application documents being the Assessment of Environmental Effects (AEE) titled ""Northland Regional Council – Kaeo Stage II. Rev A" prepared by BAY OF ISLANDS PLANNING (2022) LIMITED, dated December 2024 at pages 3-5.

In summary, the proposal is for Stage II Kaeo flood protection works with a total of 55,214m3 of earthworks.

The proposed works are considered to align with public flood control / flood protection as provided for within s133 of the Soil Conservation and Rivers Control Act 1941. The works are also specifically provided for as Regionally Significant Infrastructure under Appendix 3 of the Regional Policy Statement for Northland

As part of ongoing flood protection works for Kāeo township, Northland Regional Council (NRC) is proposing to realign the Kāeo River, so that the confluence of the Kāeo River and the Waikara Stream is further downstream of Kāeo township. This will reduce the frequency and scale of potential future flooding of the township.

The project works is proposed to be carried out over two summers (Stage 1 & 2).

Stage 1 consists of cutting 90% of the new river channel and stop bank material placement and compaction.

Stage 2 would happen over the second summer season and includes opening the transition (moving the old river channel into the new alignment) after in-stream ecological measures have been constructed. Additional ecological management actions may also be required in other parts of the site to fully address ecological effects.

5 Distribution and Correspondence

Internal Specialists

The proposal has been reviewed and assessed by the following Council specialists and the matters within the scope of this application have been taken into account in the assessment below.

Internal Specialist	Date Sent	Date Received
Roading	14th Jan 2025	27th Jan 2025
Reserves	14th Jan 2025	15th Jan 2025

External Party

Correspondence has been received from the following external parties, and the matters within the scope of this application have been considered in this assessment below.

External Party	Date Sent	Date Received
Iwi	14th Jan 2025	15th Jan 2025
Waka Kotahi (NZTA)	14th Jan 2025	23rd January 2025

6 Reasons for the Application

Rule Assessment

The proposal requires resource consent for the following reasons:

Operative Far North District Plan

section 9(3) – Land use

Rule Number and Name	Non Compliance Aspect	Activity Status
12.3.6.1.1 Excavation and/or Filling, Excluding Mining and Quarrying, in the Rural Production Zone	*Permitted* Excavation and/or filling, excluding mining and quarrying, on any site in the Rural Production (a) it does not exceed 5,000m3 in any 12 month period per site; and (b) it does not involve a continuous	Discretionary

	cut or filled face exceeding an average of 1.5m in height over the length of the face i.e. the maximum permitted average cut and fill height may be 3m. *Proposed* Within the Rural Production Zone and in relation to earthworks, each site is permitted up to 5,000m3 of cut and fill works to be undertaken. There are five Records of Title subject to the development. The proposal seeks a total of 55,214m3 of earthworks. The stopbank heights are proposed to be ~3m in height.	

Proposed Far North District Plan

The Proposed Far North District Plan (PDP) was notified on 27 July 2022. A summary of submissions and further submissions to the Proposed District Plan (PDP) as originally notified has been released and is available on Council's website.

Proposed Plan Variation 1 (Minor Corrections and Other Matters) to the PDP was notified on 26 November 2024, with the submission period closing on 10 December 2024. These provisions replace the corresponding provisions in the PDP as originally notified.

Due to the breadth of submissions received, the FNDC District Plan team has advised that no rules can currently be considered operative under section 86F of the Resource Management Act 1991 (the Act). While hearings are progressing, no decisions have yet been released. Decisions are anticipated by mid-2026.

Rules in the PDP that have immediate legal effect under section 86B(3) of the Resource Management Act remain relevant to the assessment of proposals. Although not operative, these rules must be considered, as they carry legal effect. In the PDP, such rules are identified by an orange 'gavel' symbol. Rules without immediate legal effect (i.e. no gavel symbol) do not apply.

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

Overall Activity Status

Overall, the application is a Discretionary activity.

7 National Environmental Standards

The following National Environmental Standards are considered relevant to the site; however, resource consent is not required under the standard as addressed below.

National Environmental Standard for Assessing and Managing Contaminants in Soils to Protect Human Health 2011 (NESCS)

Based on my review of Northland Regional Councils selected land use register and historical imagery available on Retrolens, the piece of land to which this application relates is not a HAIL site, and therefore the NESCS does not apply.

National Environmental Standards for Freshwater 2020 (NESFW)

While the NESFW is enforced by the regional council, it is still relevant to consider whether the activities subject of this application may have implications in terms of the NESFW regulations.

The Kāeo River has a catchment area of 114 square kilometres, with 88 square kilometres of catchment area situated above Kāeo Township.

An ecological report prepared by NZ Environmental Management February 2025 noted:

- *The proposed works would divert the Kāeo River into a new constructed riverbed that could incorporate parts of an older river channel. The excavated material would be used to extend the floodwall embankment constructed in 2014 on the true right bank of the current Kāeo River channel to protect the Kāeo township and State Highway 10 (SH10) from a 1:100 + climate event.*
- *it is recommended that that resource consent conditions are included in the consent to ensure that sufficient ecological redress is provided.*
- *With the right mix of ecological management actions, the overall outcomes would reduce adverse effects and could provide a significant improvement in freshwater, riparian, and wetland habitat and potentially human recreation and aesthetic improvements also.*
- ***Conclusion***

  The realignment of the Kāeo River into a new constructed channel is seen as the best option to reduce flood effects on Kāeo township. This is a complex and multifaceted project, with the potential to result in significant ecological effects. At this stage it is not yet possible to fully quantify potential adverse ecological effects. Therefore, it is also not possible to confirm the ecological management and mitigation actions that might be required to redress these potential adverse effects. Moreover, the local community needs to be consulted about the best mix of ecological management actions and mitigation options.

  The works will be split into two earthworks seasons. It is therefore anticipated that the various ecological management actions and mitigation options will be fleshed out and reported on between earthworks season 1 and two and implemented as part of earthworks season 2, as well as any subsequent monitoring requirements.

Earthworks within 100 m of a natural inland wetland, vegetation clearance or earthworks or land disturbance within, or within a 10 m setback from, a natural inland wetland are all discretionary activities if it is for the purpose of constructing specified infrastructure.

8 Notification Assessment

Section 95A – Public Notification Assessment

Section 95A requires a decision on whether or not to publicly notify an application and sets out a step by step process by which to make this decision.

Step 1: Mandatory public notification in certain circumstances

s95A(3)(a)	Has the applicant requested that the application be publicly notified?	No
s95A(3)(b)	Is public notification required under section 95C?	No
s95A(3)(c)	Has the application been made jointly with an application to exchange recreation reserve land under section 15AA of the Reserves Act 1977?	No

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

s95A(5)(a)	Is the application for a resource consent for one or more activities and each activity is subject to a rule or national environmental standard that precludes public notification?	No
s95A(5)(b)	Is the application for a resource consent for 1 or more of the following, but no other, activities; a controlled activity; a restricted discretionary, discretionary, or non-complying activity, but only if the activity is a boundary activity?	No

Step 3: If not precluded by step 2, public notification required in certain circumstances not

s95A(8)(a)	Is the application for a resource consent for one or more activities, and any of those activities is subject to a rule or national environmental standard that requires public notification?	No
s95A(8)(b)	In accordance with section 95D, will the activity have, or is it likely to have, adverse effects on the environment that are more than minor? The assessment below addresses this matter.	No

Assessment of Environmental Effects

To determine whether the activity will have or will be likely to have adverse effects on the environment that are more than minor, an assessment of environmental effects carried out in accordance with section 95D of the Act is required.

The assessment of effects in pages 17- 22 of the AEE is comprehensive and considered to address all relevant matters. I agree and adopt this assessment for the purposes for this assessment.

Effects that must be Disregarded

Adjacent Land

Pursuant to section 95D(a) the consent authority must disregard any effects on the land in, on, or over which the activity will occur, and on persons who own or occupy any adjacent land.

The land adjacent to the subject site is identified in Table 1 and Figure 1 below.

Table 1: Adjacent Land

Legal Description	Address
NA1176/6, NA819/46	Lot 49, Omaunu Road, Kaeo 0479
Lot 20 DP 38451,	Cemetery Road, Kaeo 0479
NA110D/53	61 Turner Street, Kaeo 0479
NA4D/903	11 Waikare Avenue, Kaeo 0478
NA55C/374	27 Leigh Street, Kaeo 0448
NA132C/498	29B Leigh Street, Kaeo 0448
NA30B/584	31 Leigh Street, Kaeo 0448
NA77D/861	69 State Highway 10, Whangaroa 0478

Figure 2: Adjacent Land

Restricted Discretionary Activities

Pursuant to section 95D(c) in the case of a restricted discretionary activity, the consent authority must disregard an adverse effect of the activity that does not relate to a matter for which a rule or national environmental standard restricts discretion.

The application is not for a restricted discretionary activity and therefore the consent authority can take into account any relevant matter when assessing the environmental effects.

Written Approvals

Pursuant to section 95D(e) the consent authority must disregard any effect on a person who has given written approval.

In this instance, **no written approvals** have been provided.

Effects that may be Disregarded

Permitted Baseline

Pursuant to section 95D(b) the Council has the discretion to disregard effects of an activity if a rule or national environmental standard permits an activity with that effect, this is known as the permitted baseline.

The permitted baseline is not relevant to the application as this proposal is a Discretionary activity meaning it is not anticipated by the FNDC District Plan.

Assessment

Receiving Environment

The receiving environment beyond the subject site includes permitted activities under the relevant plans, lawfully established activities (via existing use rights or resource consent) and any unimplemented resource consents that are likely to be implemented. The effects of any unimplemented consents on the subject site that are likely to be implemented (and which are not being replaced by the current proposal) also form part of this reasonably foreseeable receiving environment. This is the environment within which the adverse effects of the application must be assessed

In this case the receiving environment, the surrounding environment is predominantly used pastoral land surrounding the Kaeo Township. The Kaeo Township is made up of various commercial and residential elements along the State Highway.

This is the environment within which the adverse effects of the application must be assessed.

Adverse Effects Assessment

Taking into account the above, the following assessment determines whether the proposed activity will have, or is likely to have, adverse effects on the environment that are more than minor.

Earthworks

The proposal seeks a total of 55,214m3 of earthworks, involving 30,248m3 cut and 24,966m3 of fill to establish the site and construct the flood measures across 6 RoTs.

The approximate earthworks volumes are as follows

New river channel

- Total Excavated Volume: 30,787 m3

- Construction Phase 1: 20,610 m3
- Construction Phase 2: 10,177 m3

Current but to be abandoned channel

- Total Infill Volume: 7,502 m3

New embankment

- Total Stopbank Volume: 15,137 m3
- Construction Phase 1: 9,015 m3
- Construction Phase 2: 6,122 m3

Excess material

- The difference between the cut and fill is 8,148 m3

The site will be accessed from Turner Street and no pedestrian access will be impacted. Hours of work will be 7am- 5pm Monday through to Saturday.

The AEE report notes:

- *The proposal takes into account climate change considerations to ensure that the works are fit for purpose for future generations.*
- *While not a driving factor, the works will have incidental economic and employment benefits for the district and region through the various service providers involved and goods brought.*
- *The proposal is likely to result in effects to soils temporarily whilst works are being undertaken. This will include the cut, and fill works to establish the site and construct the flood measures.*
- *Over time these temporary effects will subside, and during works will be mitigated appropriately through construction management and soil and erosion controls measures.*

It is noted that earthworks are temporary in nature and has temporary effects on the surrounding environment. A consent condition to submit a Construction Management Plan (CMP) including details of all erosion and sediment controls including diagrams and/or plans will be imposed shall the consent be granted. This will appropriately manage construction and mitigate soil and erosion.

Furthermore, the proposal does not introduce more floodwater or stormwater into the system, it moves the confluence downstream.

It is considered that any adverse earthworks effects will be less than minor as it will provide a higher level of service and reduce flooding effects at certain locations.

Ecological

Works in freshwater environments, including natural inland wetlands, is controlled by the National Policy Statement–Freshwater Management (NPS-FM, 2024) and the National Environmental Standards-Freshwater (NES-F, 2020).

Because the works are classed as specified infrastructure assessment of natural inland wetlands is subject to NES-F Clause 45 Construction of specified infrastructure.

The ecological report notes the *terrestrial works area is currently exotic pasture with negligible ecological value, apart from potential natural inland wetlands and historic river meanders. The area is bounded by the Kāeo River on the east and a tributary of the Kāeo River on the west. The Kāeo River has a catchment area of 114 square kilometres, with 88 square kilometres of catchment area situated above Kāeo Township.*

The proposed works would divert the Kāeo River into a new constructed riverbed that could incorporate parts of an older river channel.

The potential effects identified in the ecological report notes:

Permanent effects	**Temporary effects**	**Construction effects**
Loss of river habitat	Stranded fish	Exposed soil and faces
Loss of habitat in 'abandoned' reach	Recolonisation by fish species	Stranded fish
Loss of wetland habitat	Sediment control for dewatering	Introduction of pest animal and plant species
Loss of terrestrial habitat	Sediment plume	Ensure that the as-built structures are functioning as intended

The ecological report further notes:

- *Due to the considerable uncertainty with regard to the quantum of effects and the yet to be developed ecological management actions package, it is recommended that that resource consent conditions are included in the consent to ensure that sufficient ecological redress is provided.*

A consent condition to submit an Ecological Management Plan (EMP) in accordance with report Ecological Impact Assessment (EcIA) for realignment of Kāeo River prepared by NZ Environmental Management dated February 2025 prepared by a suitably qualified ecologist is imposed shall the consent be granted. This will appropriately manage ecological management and mitigation actions.

Overall, implementation of the EMP as part of earthworks season 2, as well as any subsequent monitoring requirements, it is considered that any adverse ecological effects will be less than minor.

Archaeological

There are four sites recorded in the vicinity of the project area, P04/428 Pohue Pā, P04/633 the Wesleydale Mission, P04/765 the Spickman family cemetery and P04/767 the "Dromedary Road" and the project area is dominated by Pohue Pā at the eastern end of the Kaeo township.

An Archaeological assessment of the proposed Kaeo Flood Mitigation Stage II works dated 5 February 2025, prepared by Geometria-Heritage Management notes:

- *The Northland Regional Council should apply for an archaeological authority on a precautionary basis for the proposed Kaeo Flood Mitigation Stage II project.*

- *Any such an Authority application will also require consultation with the Tangata Whenua, and consent of the landowners.*

- *Management and mitigation of archaeological effects will require: Pre-start/site induction for contractors and crew.*
    - *Archaeological monitoring of any site establishment/sediment control.*
    - *Archaeological monitoring of stripping for haul roads, spillways, channels and stopbanks.*
    - *Processes to manage variations and work requests.*
    - *Processes to manage accidental finds and damage, through on-call procedures.*

- *Due to the project scope, nature and uncertainty of the potential archaeological effects and the range of features which might be encountered, an archaeological site instruction is required but a research strategy is not necessary.*

- *All final plans issued for construction should be reviewed by the archaeologist prior to commencement. Any borrow areas or other works outside the project area identified in the attached plans will require additional assessment and may require a separate authority if not included beforehand.*

- *If archaeological remains or buried cultural deposits are encountered elsewhere during works, such as layers of shell midden, oven stones, artefacts etc, the Northland Regional Council or their agents, should cease work in the immediate vicinity and Heritage New Zealand and Geometria Ltd should be contacted for advice on how to proceed.*

Furthermore, the Archaeological assessment notes *Regardless of whether such features can be identified by testing prior to the consenting of the project or the start of works, there is no possibility of avoiding the features due to the purpose and scope of the project.*

HNZPTA has commented on the application and noted

- *if the application (i) is received by HNZ via the portal and; (ii) is determined in NRC favour, then Heritage New Zealand has no further concerns about the RC application to FNDC.*

The applicants are required to obtain an archaeological authority in their favour and with appropriate authority from HNZPT, the any adverse effects will be less than minor.

Adverse Effects Conclusion

In conclusion, I consider that the proposal will not have and is not likely to have more than minor adverse effects on the wider environment.

Step 4: Public notification in special circumstances

s95A(9)	Do special circumstances exist in relation to the application that warrant the application being publicly notified? The assessment below addresses this matter.	No

Special circumstances are those that are:

- Exceptional or unusual, but something less than extraordinary;
- Outside of the common run of applications of this nature, or;

- Circumstances which make notification desirable, notwithstanding the conclusion that the adverse effects will be no more than minor.

In this instance there is nothing exceptional or unusual about the application, and the proposal has nothing out of the ordinary to suggest that public notification should occur.

Section 95B – Limited Notification Assessment

Where an application is not publicly notified under section 95A, section 95B requires a decision on whether there are any affected persons (under section 95E) and sets out a step by step process by which to make this decision.

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

s95B(2)(a)	Are there any affected protected customary rights groups?	No
s95B(2)(b)	Are there any affected customary marine title groups (in the case of an application for a resource consent for an accommodated activity)?	No
s95B(3)(a)	Is the proposed activity on or], or may affect, land that is the subject of a statutory acknowledgement made in accordance with an Act specified in Schedule 11?	No
s95B(3)(b)	Is the person to whom the statutory acknowledgement is made is an affected person under section 95E?	No

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

s95B(6)(a)	The application is for a resource consent for 1 or more activities, and each activity is subject to a rule or national environmental standard that precludes limited notification.	No
s95B(6)(b)	The application is for a controlled activity (but no other activities) that requires a resource consent under a district plan (other than a subdivision of land).	No

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

s95B(7)	In the case of a boundary activity, determine in accordance with section 95E whether an owner of an allotment with an infringed boundary is an affected person.	No
s95B(8)	In the case of any other activity, determine whether a person is an affected person in accordance with section 95E. The assessment below addresses this matter.	No

Affected Persons Assessment

The following assessment addresses whether there are any affected persons that the application is required to be limited notified to, pursuant to s95B(7) or (8), in accordance with 95E. A person is affected if the activity's adverse effects on a person are minor or more than minor (but not less than minor).

Pursuant to section 95E(2)(c) the consent authority must have regard to every relevant statutory acknowledgement made in accordance with an Act specified in Schedule 11.

Effects that must be Disregarded

Controlled or Restricted Discretionary Activities

Pursuant to section 95E(2)(b) the activity is a restricted discretionary activity and the consent authority must disregard any adverse effect of the activity on the person if the effect does not relate to a matter for which a rule or a national environmental standard restricts discretion.

The application is for a Discretionary activity and therefore a full consideration of effects can be made.

Written Approvals

Pursuant to section 95E(3)(a) a person is not an affected person if they have given written approval to the application (and not withdrawn it).

No persons have given their written approval.

Effects that may be Disregarded

Permitted Baseline

Pursuant to section 95D(b) the permitted baseline may be taken into account and the Council has the discretion to disregard those effects.

The permitted baseline has not been taken into account as addressed in the section 95A Assessment above.

Assessment

Te Rūnanga o Whaingaroa

The applicants have commissioned a Cultural Impact Assessment (CIA) report to obtain information on the potential impacts on tangata whenua values as a result of proposed works.

The CIA titled Kāeo River Stage Two Flood Protection Works notes:

- *While Te Rūnanga o Whaingaroa has engaged constructively with the project team, the findings of this CIA clearly recommend that the proposed works do not proceed.*
- *This position reflects deep concerns over the cumulative cultural, environmental, and legal impacts associated with further modification of the Kāeo River.*
- *Te Rūnanga o Whaingaroa, as the Mandated Iwi Authority for Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa, submits this Cultural Impact Assessment (CIA) to emphasize the importance of ongoing assessment and review of all projects within our iwi area. The Kāeo River Stage Two flood protection works, like any development activity, require careful consideration to ensure they do not adversely affect the cultural, environmental, and spiritual well-being of the river and its surroundings. This report calls for a balanced approach grounded in Te Tiriti o Waitangi, Te Mana o te Wai, and the TROW Iwi Environmental Management Plan (2022–2027), ensuring that tangata whenua have the opportunity to comment and review every stage of the project.*
- *The application negatively impacts on the ability Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa to carry out their obligations, roles and responsibilities acting as kaitiaki. There is a need for protection of tapu sites within the sites of the projected works from degradation, excavation, and/or removal.*

The CIA further recommends that the Northland Regional Council officers and staff liaise with Te Rūnanga o Whaingaroa and beyond the projected works and consenting process to provide the following if and when required:

- *A formal MOU, or similar, must be developed and agreed upon between Te Rūnanga o Whaingaroa and the Northland Regional Council, establishing shared governance and decision-making framework over freshwater management and any future works within the Kāeo catchment.*
- *This condition reflects the core Te Tiriti o Waitangi principle of partnership and is essential for ensuring consistent engagement, transparency, and accountability. An MoU would operationalise the co-design responsibilities required under Te Mana o te Wai and affirm iwi rights as guaranteed under both the Treaty and the Resource Management Act. Without such a formal arrangement, the risk of ad hoc consultation and decision-making—without iwi consent or influence—remains high, and past injustices may continue unchecked.*

The Kaitiakitanga recommendation under s11.1 of the CIA will be incorporated as consent conditions (shall the consent be granted).

Based on the CIA report, we are unable to conclude the effects on ***Te Rūnanga o Whaingaroa*** are less than minor.

Miro Tapui ltd

The applicants have commissioned another Cultural Impact Assessment (CIA) report to evaluate the potential cultural impacts associated with the Northland Regional Council's Kaeo Stage II Flood Protection Works.

The CIA titled Cultural Impact Assessment Proposed Kāeo River Stage Two Flood Mitigation Plan recommends:

- *Correctly identify, consult, and engage with a proper "Whangaroa Whakaminenga".*
- *That this area of land be purchased to create a World Heritage Site, with culturally based solutions to protect and enhance the Kāeo asset. For the sake of a 200mm delayed advantage in a normal flood event, a culturally based design, and solutions, may better protect and benefit the Kāeo asset.*
- *That a thorough archaeological report be conducted before any works begin, as well as the inclusion of a trusted archaeologist alongside cultural monitors during any works, should works proceed.*
- *Correct the Cultural Impact Assessment process to ensure these happen at the conception of a project proposal and are resourced to be the consenting agency for proposals.*
- *Create opportunities for kaitiaki tikanga that protect, restore, and enhance mauri ora and Te Mana o te wai. These range from respective karakia and ritual, considering Mana Atua, Mana Tangata and Mana Whenua, to creating native habitat.*
- *Create a project narrative that includes the planning process, execution of the plan, and desired outcomes which impact on the mauri ora and Mana o te Wai. This narrative would include Te Whakaputanga and Te Tiriti o Waitangi intentions and Matauranga Māori contributions to the desired outcomes of mauri ora and Te Mana o te Wai protecting the asset of Kāeo township.*

- *Adjust and correct all NRC policies, indices, and interactions to say instead that, "cultural affects (not environmental effects) are considered to be significant in the Kāeo River area".*
- *Review NRC Organisational Strategy.*
- *Support the correction of Whangaroa Māori place names such as 'Waikare' Stream, and acknowledge the notion of Te Mana o te Wai, that the harbour and her tributaries are a 'Mauri', a living person. Further, that the Whangaroa harbour environment be acknowledged and registered as a person, a living being.*
- *That the project design creates opportunities for recreation and education that support the cultural narrative such as waka and boat travel, swimming, educational discovery, etc.. This would include culturally based solutions from Tane te waiora and Tangaroa in reestablishing native environments such as wetlands and taonga species.*

Based on the CIA report, we are unable to conclude the effects on ***Miro Tapui ltd*** are less than minor.

Whangaroa Maori Trust Board, Ngati Pakahi, and Ngati Uru

The applicants have commissioned another Cultural Impact Assessment (CIA) report to evaluate the potential cultural impacts associated with the Northland Regional Council's Kaeo Stage II Flood Protection Works.

The CIA titled CULTURAL IMPACT ASSESSMENT (CIA) FOR KAEO STAGE II FLOOD PROTECTION WORKS recommends:

- *NRC to give effect to the "Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru Cultural Values Assessment"*
- *NRC to acknowledge "Ngati Pakahi & Ngati Uru Mana Whenua*
- *NRC to employ "Cultural Monitors " as assigned by the WMTB for the duration of the project. Such Cultural Monitors will be inducted to the site and attend all "pre-start" meetings held on-site.*
- *Site protection and preservation: NRC to work with Heritage New Zealand and Hapu to protect any identified cultural sites or wahi tapu. Where necessary, establish buffer zones to prevent damage. NRC to ensure there is a buffer zone of a minimum of 50 meters from the base of the Pohue Pa site and remains free from any earthworks for the duration of the project.*
- *Cultural impact management plan: If deemed necessary i.e. to avoid or mitigate adverse effects, NRC to develop a management plan that integrates Māori perspectives on environmental stewardship, ensuring that the river and surrounding landscape are cared for according to tikanga Māori (Māori customs).*
- *Consultation on alternative options: If significant cultural impacts are identified, work with the Whangaroa Maori Trust Board, Ngati Pakahi & Ngati Uru to consider alternative locations or methods of development that better respect cultural values*

Based on the CIA report, we are unable to conclude the effects on ***Whangaroa Maori Trust Board*** are less than minor.

Mangaiti Marae

Mangaiti Marae is on the western side of Kaeo on Omaunu Road and less than 2km from the proposed site.

The CIA titled Kāeo River Stage Two Flood Protection Works prepared by Te Rūnanga o Whaingaroa, as the Mandated Iwi Authority for Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa notes:

- *Hapū affected include Ngāti Pou, Ngāti Uru, Pupuke-Kaingapipiwai, Mangaiti and others.*
- *Settlements such as Mangaiti, Rātāroa and Pupuke supplied suitable environments by early Māori.*

Considering the close proximity of the Marare to the proposed site we are unable to conclude the effects on ***Mangaiti*** are less than minor.

There are no other affected persons because:

- Te Runanga o Ngati Rehia does not have any concerns with the RMA application at this stage not in our Rohe.
- The proposal promotes continued investment into the Kaeo Township and community through flood protection / mitigation.
- The proposal takes into account climate change considerations to ensure that the works are fit for purpose for future generations.
- Ecological effects will be managed through the Ecological Management Plan and recommendations of the Ecological Impact Assessment (EcIA) for realignment of Kāeo River.
- Any potential adverse noise, dust and sedimentation effects generated during the land disturbance and construction phase will be temporary in nature and can be suitably managed through appropriate erosion and sediment control measures.
- Overall, there are no other persons that are deemed to be an affected person as all activities are deemed to have less than minor adverse effects within the matters of discretion within the district plan. The assessment laid out above concludes that any effects on persons have, or will be, effectively mitigated to result in less than minor effects.

Step 4: Further notification in special circumstances

s95B(10)	Do special circumstances exist in relation to the application that warrant notification of the application to any other persons not already determined to be eligible for limited notification under this section (excluding persons assessed under section 95E as not being affected persons)?	No

I do not consider there are special circumstances that would warrant the notification of the application to any other person. The proposed activity is not out of the ordinary within this zone.

9 Notification Recommendation

Based on the assessment above under section 95A of the Act, this application may be processed without public notification. In addition, under section 95B of the Act, limited notification is not required.

I therefore recommend that this application is processed non notified.

Swetha Maharaj Date: 26/05/2025

Senior Planner

10 Notification Determination

Acting under delegated authority, and for the reasons set out in the above assessment, under sections 95A and 95B this application shall be processed on a non-notified basis.

Name: Nick Williamson Date: 26th May 2025

Title: Resource Consent Team Leader

TE RŪNANGA
O WHAINGAROA

CULTURAL IMPACT ASSESSMENT

KĀEO RIVER PHASE TWO FLOOD MITIGATION WORKS

Prepared by Te Ūkaipō Environmental Unit
on behalf of Te Rūnanga o Whaingaroa

Rārangi Take | Table of Contents

TE RŪNANGA O WHAINGAROA

1. Applicant and Project Details

Description	Details
Applicant:	Northland Regional Council – Community Resilience Team
Project:	Kāeo River Stage Two Flood Protection Works
Location:	Kāeo Township and Surrounding Catchment Area, Whangaroa, Te Taitokerau
Legal Description	
Contact	Meg.taylor@nrc.govt.nz

2. Executive Summary

The Northland Regional Council (NRC) commissioned this Cultural Impact Assessment (CIA) to assess the cultural impacts of proposed flood mitigation and for inclusion in works being completed on the Kāeo River.

The CIA also assess the cultural significance of the sites and location of the proposed works to assure hapū, iwi and other tangata whenua stakeholders that an adequate assessment had been completed.

The applicants have commissioned this CIA report to obtain information on the potential impacts on tangata whenua values as a result of proposed works. The report will enable the applicants to file more comprehensive consent application in the future that satisfies the Northland Regional Councils own requirements to assess the application against Resource Management Act section 6 (e) relationship of Māori with ancestral lands, waters and sites, 6 (f) protection of historic (including cultural) heritage from inappropriate use and development, 7 (a) kaitiakitanga and section 8 Te Tiriti o Waitangi[1].

The ecological vulnerability and cultural significance of many landscapes today necessitates the careful consideration of development activities that may adversely impact natural, ecological, or cultural values. While the applicants are not tangata whenua, they are considered committed to ensure that there is balance of all local Māori aspirations to preserve the lands for future generations.

A further objective of this report is to provide recommendations to avoid, remedy or mitigate adverse effects on tangata whenua values. The recommendations are provided in this report.

While Te Rūnanga o Whaingaroa has engaged constructively with the project team, the findings of this CIA clearly recommend that the proposed works do **not proceed**. This position reflects deep concerns over the cumulative cultural, environmental, and legal impacts associated with further modification of the Kāeo River

[1] Resource Management Act 1991

The CIA report intends to provide information that can assist the applicant in understanding the potential impacts of the proposal on tangata whenua values. The report serves as a basis for future communications and cooperation between the applicant and Te Rūnanga o Whaingaroa.

Te Rūnanga o Whaingaroa, as the Mandated Iwi Authority for Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa, submits this Cultural Impact Assessment (CIA) to emphasize the importance of ongoing assessment and review of all projects within our iwi area. The Kāeo River Stage Two flood protection works, like any development activity, require careful consideration to ensure they do not adversely affect the cultural, environmental, and spiritual well-being of the river and its surroundings. This report calls for a balanced approach grounded in Te Tiriti o Waitangi, Te Mana o te Wai, and the TROW Iwi Environmental Management Plan (2022–2027), ensuring that tangata whenua have the opportunity to comment and review every stage of the project.

3. Introduction

3.1 Te Rūnanga o Whaingaroa

Te Rūnanga o Whaingaroa is the mandated iwi organisation in the Māori Fisheries Act 2004, an Iwi Aquaculture Organisation in the Māori Aquaculture Claims Settlement Act 2004 and represents Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa as an "Iwi Authority" for the Resource Management Act 1991, registered as a Charitable Trust.[2]

Te Rūnanga o Whaingaroa represents our people within the tribal lands, shores and islands which is generally described as commencing at the river mouth of the Oruaiti River in the North, moving in a southerly direction encompassing the Ōtangaroa Forest, the Pūketī Forest, and then moving in a north-easterly direction in the Tākou River area.[3]

The coastal boundary commences at the mouth of the Oruaiti River, follows the eastern side of the Mangōnui Harbour, then directly out to sea moving in a south-easterly direction along the coast to Rūpurapura (the Needles) and includes Whangaroa Harbour, its rivers, estuaries, and islands within this rohe.

The rohe is further described as those areas that the hapū of the marae within the above boundaries exercise mana whenua and mana moana.

As affirmed in Te Tiriti o Waitangi, Whangaroa hapū act as kaitiaki of all resources, including land, coastal areas, waterways, and seas within their tribal region. This also covers foreshore and

[2] Resource Management Act 1991
[3] Te Rūnanga o Whaingaroa Trust Deed https://whaingaroa.iwi.nz/wp-content/uploads/2017/10/Trust-Deed.pdf

seabed areas extending from the coast and harbours, which are currently debated over ownership and management.

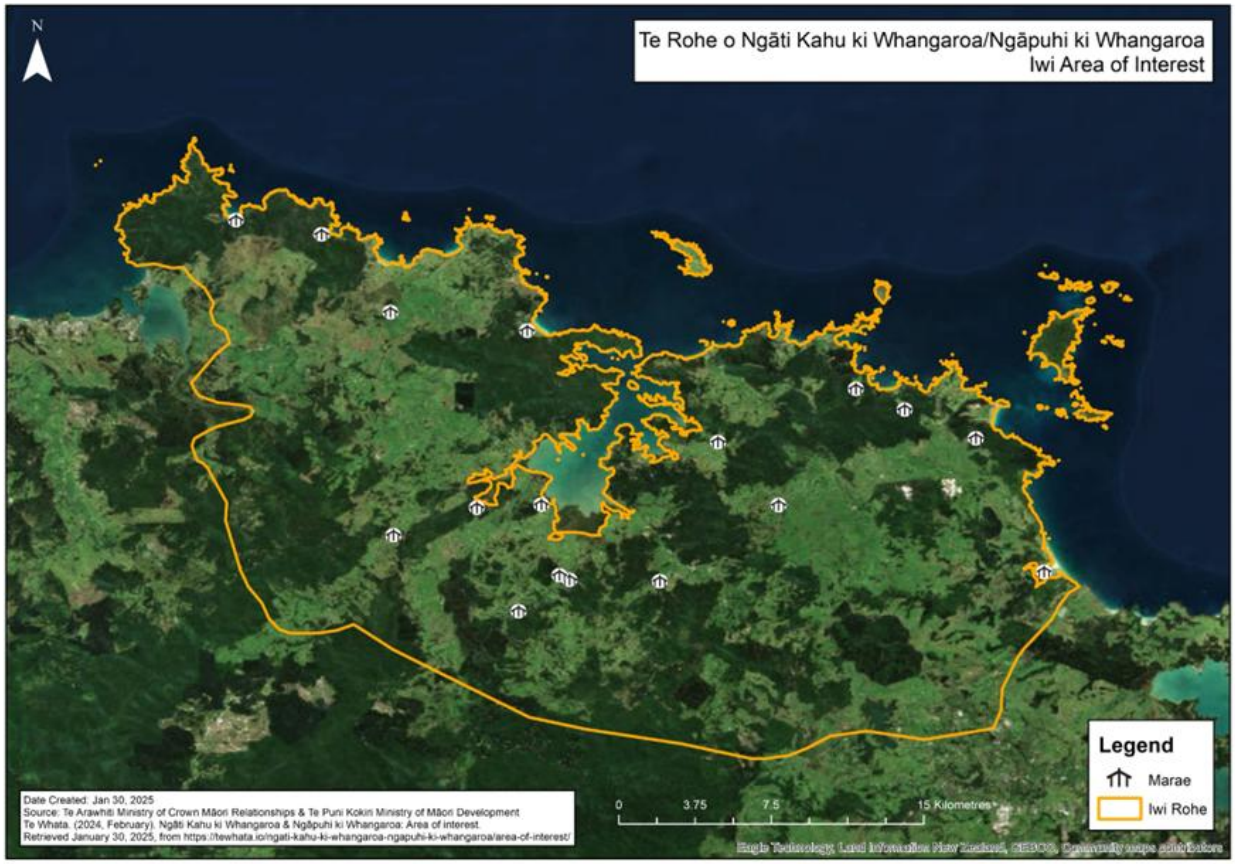

Figure 1 Te Rohe o Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa Iwi Area of Interest
Image: Te Whata https://tewhata.io/ngati-kahu-ki-whangaroa-ngapuhi-ki-whangaroa/area-of-interest/

Whangaroa hapū actively exercise their customary rights and responsibilities of kaitiakitanga throughout our district. Traditional cultural practises closely tie Whangaroa to our forests, coastal, shores, waters, and whenua.

3.2 Te Rūnanga o Whaingaroa Cultural Impact Assessment statement

Te Ūkaipō Iwi Environmental Management Unit conducted a Cultural Impact Assessment (CIA) for Te Rūnanga o Whaingaroa, on behalf of Northland Regional Council. The council seeks consent to realign Kāeo River as part of Phase Two Flood Mitigation works.

Te Rūnanga o Whaingaroa engaged early with Northland Regional Council, recognising this as best practice. The engagement has been cooperative and collaborative, resulting in a reciprocal and positive relationship. This Cultural Impact Assessment was prepared after extensive discussions with NRC staff and officials. Te Rūnanga o Whaingaroa remains hopeful

that the relationship will remain positive throughout the project's duration, regardless of the team and officials involved.

This CIA concludes that the proposed works represent an unacceptable risk to the cultural and ecological wellbeing of the Kāeo River and its people. Te Rūnanga o Whaingaroa therefore opposes the continuation of the project in its current form

4. Objectives

4.1 What is a Cultural Impact Assessment?

Cultural Impact Assessments (CIA) have become recognised as valuable tools for assessing the potential impacts of a project on tangata whenua. They typically include a description of the relationship of Māori with the area proposed for development, the relevant cultural values, and details of who the kaitiaki are for those values and landscapes. They usually also suggest how adverse effects on these relationships might be avoided, remedied, or mitigated.

Because there is no defined process for CIAs in the Resource Management Act (RMA), a common misconception has arisen that "cultural effects" are limited to issues around wāhi tapu or heritage. Although these matters are of great significance to tangata whenua, they are merely one element of a far greater range of effects that could be considered. Effects on the environment are specifically defined in Section 3 of the RMA as including: any positive or adverse effect; and any temporary or permanent effect; and any past, present or future effect; and any cumulative effect that arises over time or in combination with other effects regardless of scale, intensity, duration or frequency; and any potential effect of high probability and any potential effects of low probability which has a high potential impact.

A comprehensive cultural impact assessment should cover the effects of the proposed activity, as identified by the tangata whenua, over this range of values.

While there is no statutory requirement upon an applicant to prepare a CIA, such an assessment can assist Councils and applicants to meet statutory obligations in a number of ways, such as:

- Preparation of an Assessment of Environmental Effects (AEE) in accordance with section 88(2)(b) and Schedule 4 of the Resource Management Act 1991 ('the RMA').
- Requests for further information under section 92 of the Act in order to assess the application.
- • Providing information to assist the council in determining notification status under sections 93 to 94D of the RMA.
- • Providing information to enable appropriate consideration of the relevant Part II matters when deciding on an application for resource consent under section 104 of the RMA.
- • Consideration of appropriate conditions of resource consent under section 108 of the RMA.

- • Informing Councils of an applications implications in relation to any relevant Iwi Management Plans
- • Meeting any specific requirements for councils arising from particular Treaty of Waitangi Settlement legislation.

4.2 When to prepare a CIA?

It is well recognized that early engagement with tangata whenua in the application process can assist the applicant in developing the proposal and preparing a complete application. Early input also provides opportunities for tangata whenua to influence or have input into the design and planning of project to address potential adverse effects on cultural values before commitments are finalised. Early engagement promotes the development of good working relationships between tangata whenua, councils, and developers. Undertaking a CIA is appropriate when the proposed activity is on, adjacent to, or likely to impact on:

- a site of historical or cultural significance to tangata whenua such as urupā (burial sites), wāhi tapu (sacred sites), known archaeological sites, or nohoanga sites (seasonal occupation sites)
- flora and fauna of cultural significance to tangata whenua such as a mahinga kai (food) resources or species used for other cultural practices such as weaving (raranga) or traditional medicine (rongoā)
- areas of historical or spiritual importance to tangata whenua
- areas with significant landscape values to tangata whenua
- water ways or wetlands of importance to tangata whenua
- significant areas for tangata whenua within the coastal environment such as tauranga waka (canoe landing sites), mahinga kai areas (food resources and gathering) or wāhi tapu.

A CIA may also be constructive where:

- applications are for large, intensive, or complex projects.
- there is not enough information included in a resource consent application to assess the effects of the activity on tangata whenua.
- an assessment of potential impacts on cultural values and associations would take a lot of time for tangata whenua to complete.
- the cultural values associated with the site or in relation to the proposal are not easily assessed or are unknown to tangata whenua and new or additional research is required to identify the effects of the activity.
- the proposed activity may be precedent setting.

4.3 Objectives of this CIA

It is hoped that this report will enable the applicants to file a more comprehensive consent application that satisfies Council requirement to assess the application against the following sections of the Resource Management Act 1991:

- the protection of outstanding natural features and landscapes from inappropriate use, and development (s. 6 (b))
- the relationship of Māori with ancestral lands, waters, and sites (section 6 (e))
- the protection of historic (including cultural) heritage from inappropriate use and development (section 6 (f))
- the protection of recognised customary activities (section 6 (g))
- kaitiakitanga (section 7 (a))
- the efficient use and development of natural and physical resources (s. 7 (b))
- the maintenance and enhancement of amenity values (s. 7 (c))
- the maintenance and enhancement of the quality of the environment (s. 7 (f))
- any finite characteristics of natural and physical resources (s. 7 (g))
- the effects of climate change (s. 7 (g))
- the Treaty of Waitangi (section 8).

Further objectives include;

- to ensure that tangata whenua aspirations, potential issues and values are identified and documented in relation to the Northland Regional Council projected works.
- gather cultural impact information for Northland Regional Council in relation to their proposed resource consent lodged with the Far North District Council.
- that the officials of Northland Regional Council, as the applicants, are fully informed of any potential effects on tangata whenua values that the development of Northland Regional Council may have.
- to identify how relationships between tangata whenua, their culture and their traditions and ancestral land, water, sites, wāhi tapu and other taonga might be affected by the proposed works.
- to identify the implications for the knowledge and practice of kaitiakitanga by tangata whenua over their taonga of the proposal.
- to assess whether the principles of the Treaty of Waitangi are affected by the proposal.

This report aims to provide recommendations to avoid, remedy or mitigate adverse effects on tangata whenua and provide conditions to which Te Rūnanga ō Whaingaroa would appreciate NRC following.

5. Consultation with Tangata Whenua

5.1 Interviews and Engagement

Interviews with the following local experts and descendants of Ngāti Uru

Patricia Tauroa, descendant of original occupants of Kāeo

Te Rūnanga o Whaingaroa Engagement

Stephen Rush, Te Ūkaipō Sub-committee member & Te Rūnanga o Whaingaroa representative, Kāeo Catchment Flood Committee Member

Eljon Fitzgerald, Te Ūkaipō Sub-committee member, Te Rūnanga o Whaingaroa

5.2 Intellectual Property

The CIA Report remains the intellectual property of Te Rūnanga o Whaingaroa, its hapū and those who whakapapa to the rohe.

6. Methodology

A methodology including three specific research objectives has been constructed to inform the CIA and achieve the purpose as described above.

The methodology includes the following three research objectives:

1. Literature Review
2. Key Informant Interviews
3. Hui with local hapū and marae

The overall research methodology is guided by a research framework that aims to capture information germane to two specific Māori cultural domains related to the Kāeo River Catchment, specifically the Kāeo River and its streams in the Kāeo town district.

6.1 Te Ūkaipō Cultural Impact Assessment Research Framework

Research Domain	Focussed area of inquiry
Te Taiao (Whenua, Awa, Moana)	Written history Oral history
Tangata whenua	Socio-cultural Impact Assessment Potential impact on whānau, hapū, iwi, marae Written history Oral history

7. Description of Activity

7.1 Description of Proposed Activity

The proposed flood protection project seeks to divert the Kāeo River into a newly constructed riverbed, which may partially follow the path of an historic channel. Earth excavated during this process would be repurposed to extend the floodwall embankment established in 2014 along the true right bank of the current river. This embankment is intended to reduce flood risk to Kāeo township and State Highway 10, with design parameters based on a 1-in-100-year flood event, adjusted for climate change.

7.1.1 The land use consent application

Earthworks, excavation, and newly constructed riverbed work require a land use consent from the Far North District Council for flood protection at Kaeo.

7.1.2

The proposed works fall within multiple zoning classifications under the Far North District Plan, including Rural Production, Flood Hazard, and Conservation Zones. These zones collectively require resource consent for large-scale earthworks, river realignment, and construction activities due to the environmental sensitivity and flood risk of the area. The activity involves modification of land and water bodies within these zones, triggering the need for specific mitigation measures and iwi engagement in accordance with both district and regional planning frameworks.

8. Planning Framework

8.1 Ngā Tikanga

The shared values of Te Rūnanga o Whaingaroa guide our behaviours and decisions, grounded in He Whakaputanga o Te Rangatiratanga o Nu Tireni and Te Tiriti o Waitangi

- Kia ū mārika ki ngā **tikanga** – to be **duty bound**
- Kia pau pai ki te **manaakitanga** – to **care wholeheartedly**
- Kia **mana** ai ngā mahi – to act with **integrity and honesty**
- Kia tika te **tūāpapa** – to act **accountable**

8.2 Ngā Tauhere

Te Rūnanga o Whaingaroa The binding of our waka creates a foundation from which Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa governors and staff can identify operational activities that drive the achievement of our iwi's plan.

The four tauhere align specifically with our tūpuna kōrero, Rauruiti, and the formation of our tūpuna moana. The unique narrative of Whangaroa and Whaingaroa shapes our strategic priorities and defines this special relationship within our iwi.

Kāeo River represents a living expression of our identity and whakapapa. The protection and restorations of its mauri ensures that Whangaroa continues to "navigate into future horizons" with cultural integrity, environmental health, and community well-being at its centre.

- Whangāia Supporting whānau to achieve their own aspirations by equipping them with the necessary knowledge, skills, and experience to reach their potential and navigate life confidently through their Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa.
    - The CIA upholds the priority of whānau by ensuring their voices shape how environmental resources are governed. It acknowledges intergenerational aspirations to reconnect with kai, whenua and wai – by protecting the Kāeo River, we safeguard the nutritional, spiritual and cultural rights for future generations.
- Whaiao Nurturing the oranga of our taiao and our connection to our maunga, wai and whenua; leveraging our understanding of our taiao to transform whānau.
    - Te Ūkaipō Environmental Unit leads the work to protect ecosystems like Kāeo River. This CIA activates the Iwi Environmental Management Plan, and directly supports taiao priorities such as
        - Fostering kaitiakitanga;
        - Decreasing ecological harm;
        - Empowering marae to use environmental tools;
        - Advancing the role of Te Rūnanga o Whaingaroa in shaping regional environmental policy
- Whaitū Whangaroa Strengthening cultural identity and whanaungatanga deepening our knowledge and connection to our history, tikanga and kawa; celebrating our culture and inspiring purpose.
    - This CIA ensures Whangaroa tikanga, kōrero tuku iho, and mātauranga are central to all decision-making. The protection of the river is a direct act of cultural resilience, validating and reinforcing our identity, our reo and our practices,
- Whaiaro Supporting a thriving and sustainable Whangaroa economy.
    - By contributing to regional development plans and projects and advocating for local-led resilience models, the CIA affirms the commitment of Te Rūnanga o Whaingaroa in economic practices grounded in mana Motuhake and whenua-based sovereignty. It ensures environmental investments will deliver social, cultural, and intergenerational returns.

8.3 Ko Ngā Tai o Whangaroa – Strategic Vision

Ko ngā tai oWhangaroa
Terenga waka-a-iwi
He waihoe tuku iho

E aru ki te rangi

Ki Taihoronukurangi
Kia rite – kia eke
Whangaroa, whakaterea!

Whangaroa, Whakaterea sets a clear vision and purposeful mission that aligns our services to the aspirations of our whānau and iwi of Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa. Te Rūnanga o Whaingaroa operatives a well-established organisation that provides valuable services to our iwi members, whānau, marae, and iwi. Furthermore we operate as a sustainable business and our goals seek to deliver on specific objectives in each of the strategic priority areas as we drive towards our 2030 ambition.

8.4 Te Rūnanga o Whaingaroa Te Ūkaipō Iwi Environmental Management Plan

The Iwi Environmental Management Plan (IEMP) was developed by Te Ūkaipō – the Iwi Environmental Management Unit at Te Rūnanga o Whaingaroa[4]. Relevant policies have been extracted in relation to the application.

8.4.1 Whangaroa Harbour

Te Rūnanga o Whaingaroa declares the Whangaroa Harbour to be a ***tino taonga*** of all iwi and hapū of Whangaroa.

Te Rūnanga o Whaingaroa are opposed to contamination of any kind deliberately or accidentally being introduced into the harbour. This includes the impact of any development or activity including forestry, agriculture, horticulture, farming, commercial aquaculture, mining, pest control, domestic and commercial sewerage, stormwater run-off, marine commercial and recreational craft discharge and any other development or activity that may introduce harmful foreign bodies into the Whangaroa harbour.

8.4.2 Freshwater in Whangaroa

Te Rūnanga o Whaingaroa asserts that local, regional, and national authorities should ensure that hapū and iwi of Whangaroa will have:

- Access to good quality freshwater for domestic use as a basic human right
- Reasonable access to good quality/quantity freshwater in Whangaroa for recreational purposes
- Confidence that the quality/quantity of freshwater in Whangaroa is guaranteed for future generations
- Confidence that natural aquifers in Whangaroa are not impacted by an activity and are protected from the impacts of climate change

[4] Te Rūnanga o Whaingaroa Iwi Environmental Management Plan 2022-2027
https://indd.adobe.com/view/510fc973-15f6-4dfa-aef9-b85c0a68cc62

- Confidence that any freshwater extracted for farming, business or commercial purposes shall be prohibited if this is deemed to impact negatively on the natural environment

Te Rūnanga o Whaingaroa expects relevant local government agencies and authorities to work collaboratively with Ngā Hapū o Whangaroa and the Rūnanga to enforce laws and regulations designed to protect the quantity and quality of freshwater in Whangaroa and freshwater tributaries that feed into the Whangaroa Harbour. The protection and utilisation of riparian water rights to filter freshwater must be enforced to this end.

8.4.3 Flora and Fauna

Te Rūnanga o Whaingaroa is committed to the protection and preservation of native flora and fauna. Pest and weed control are a central concern. The Rūnanga expects to be consulted in a timely manner on any proposed development or activity that impacts on native flora and fauna. Furthermore, we expect appropriate measures to control pests and weeds will be addressed.

8.4.4 The Freshwater, River, Streams, and Estuary Environments

Issues:

- Stormwater runoff from roads, commercial and residential developments
- River, estuary, and harbour siltation through land erosion caused by natural events, poor land use management practices, including poor exotic forestry management practices
- Poor to non-existent riparian management reducing water quality through erosion and siltation of waterways
- Damage to puna primarily through poor farming and forestry practices
- Concern around biosecurity for Whangaroa.

8.4.5 The Forest and Bush Environments

Issues:

- Impact of pest and weeds on indigenous biodiversity and related ecosystems and habitats
- Loss of access to important indigenous forests, trees, plants and animals for food, medicinal and other cultural purposes.
- Infestation of animal pests such as possums, goats, feral cats, rats, and other rodents
- Declining health of native forests.

8.4.6 The Land, Hill, and Mountain Environments

Issues:

- Impact of subdivision, housing developments, commercial and industrial developments on the environment e.g. waste management, earthworks, siltation, installation of power supply, storm-water management, and related work.

- Absence of long-term spatial planning and/or a 'master plan' for the Whangaroa catchment by local and regional authorities
- Impact of pests and weeds on land, hill, and mountain environments
- Concern around biosecurity for Whangaroa
- Impact of earthmoving and the taking of metal e.g. aggregate (tier 2) for foundation work for roads
- Impact of the building of structures such as transmission towers on tapu mountains and sights of significance
- Impact of building structures and the planting of trees that restrict or block the direct line of sight to maunga from marae and papakainga
- Infrastructure such as roading, power supply, both public and private land can cause long-term damage to soil systems. Roads are necessary but proper consideration as to their effects on soil systems needs to be considered

8.5 The Resource Management Act 1991

The purpose of the Resource Management Act (RMA) 1991 is to promote the sustainable management of natural and physical resources, which on the basis of the definition of sustainable management contained in section 5a(2), clearly includes the "cultural wellbeing" of people and communities. In addition, the RMA recognises the relationship of Māori and their culture and traditions with their ancestral lands, water, sites, wāhi tapu and other taonga as a matter of national importance (Part II s 6(e)), including the protection of site of significance to Māori, including wāhi tapu (s. 6(f) historic heritage). Section 7 of the Act identifies kaitiakitanga as a matter that particular regard must be given in relation to managing the use, development and protection of natural and physical resources, and section 8 establishes that all persons exercising functions and powers under the Act shall take into account the principles of the Treaty of Waitangi.

8.6 Te Tiriti o Waitangi – The Treaty of Waitangi

Te Tiriti ō Waitangi (The Treaty of Waitangi) is Aotearoa's (New Zealand's) founding document. Over 500 Māori Chiefs, including more than five women, signed the Treaty in 1840. It is an agreement drawn up between representatives of the British Crown and representatives of Māori, Iwi and Hapū.

While Article 1 of the Treaty enables the Crown to govern and make laws, Article 2 provides for Māori rangatiratanga over their lands and taonga. Māori values, associations, and interests with their taonga applies regardless of property titles or other constructs, and the Treaty requires that the Crown actively protect these associations and interests (including through but not limited to statutes).

Like all treaties it is an exchange of promises: the promises that were exchanged in 1840 were the basis on which the British Crown acquired New Zealand

The Treaty is in Māori and English. Great Britain intended the Treaty to be an exchange of sovereignty to be in return for a guarantee of the authority of the chiefs and the protection of Māori land and resource rights. The Treaty also extended to Māori the same rights and privileges of British citizens.

The principles of the Te Tiriti o Waitangi being Partnership, Participation and Protection underpin the relationship between the Government and Māori. These principles are fundamental to developing relationships, including involvement and participation in statutory policies and plans regarding the management of natural resources within the area.

8.7 Far North Council Operative District Plan

District plans set out the policies and rules that a Council will use to manage the use of land in its area. The District Plan has been operative effective of 14 September 2009[5]

8.8 Te Rūnanga o Whaingaroa Iwi Environmental Management Plan 2022-2027

The Te Rūnanga ō Whaingaroa Iwi Environmental Management Plan (IEMP) is based on the tikanga and kawa of the iwi and hapū it represents. The IEMP is driven by all relevant tikanga and kawa to protect moana, whenua and all tribal taonga as a holistic view of the environment is at the very core of its resource management.

8.9 Northland Regional Policy Statement

The Regional Policy Statement (RPS) provides an overview of resource management issues in the Northland Region. It provides policies and a range of methods to achieve integrated management of natural and physical resources across resources, jurisdictional boundaries, and agency functions, and guides the development of sub-ordinate plans (Regional as well as District) and the consideration of resourc0e consents. The Regional Policy Statement provides a framework for resource use, which enables the regional community to achieve its social and economic aspirations within the capacity of the environment. Where resource quality is high, it is the intention of objectives and policies to retain high resource quality. Where resource quality has been degraded through inappropriate use, the quality of such resources is intended to be improved over time.

The Regional Policy Statement (RPS) for Northland covers the management of natural and physical resources in the Northland Region, from Kaiwaka in the south, to Cape Reinga in the north, and out to the twelve nautical mile (22.2 km) limit.6

The RPS provides the broad direction and framework for managing the region's natural and physical resources. It identifies significant resource management issues for the region and sets

[5] Operative Status of District Plan https://www.fndc.govt.nz/your-council/district-plan/Operative-plan

out how resources such as land, water, soil, minerals, plants, animals, and structures will be managed.

8.9.1 Statue of Northland Regional Policy Statement

The Regional Policy Statement was made operative on 9 May 2016, except for;

a) Issue 2.6(g) and related parts of the explanation
b) Policy 6.1.2 and explanation
c) Method 6.1.5 and explanation

These provisions relate to the use of genetic engineering and the release of genetically modified organisms for the environment, and were, and operative on 14 June 2018.

8.10 Te Mana o Te Wai

Te Mana o Te Wai places the health of water as the first priority, then the needs of people, then the economy. As a foundational element of the National Policy Statement for Freshwater Management[6], Te Mana o te Wai establishes a hierarchy of obligations that affirms the mana and mauri of freshwater bodies. It recognises the intrinsic value of water and acknowledges the relationship between iwi and freshwater as both spiritual and functional.

Under the NPS-FM, regional councils are required to engage with tangata whenua in the development of freshwater management plans. This includes actively identifying the values, priorities, and tikanga associated with waterways. Te Mana o te Wai positions iwi as essential partners in decision-making and requires that the design of freshwater policy gives effect to their rights and interests.

Any proposed modifications to a river like Kāeo must demonstrate that they uphold this principle, not merely as a procedural step, but as a binding national obligation. Failure to do so undermines the legitimacy of the planning process and contravenes the very principles on which New Zealand's freshwater policy framework is now built. It places the health of water as the first priority, then the needs of people, then the economy.

9. Cultural Context and Historical Significance

The Kāeo River (Te Awaroa) is a taonga tuku iho – a treasure passed down through generations. It is intimately tied to local hapū identities, mahinga kai practices, and spiritual rituals. The river was named for the once plentiful kaeo (freshwater mussel), and its tributaries supported tuna, inanga, and kokopu.

Anecdotal evidence recounts:

[6] Ministry for the Environment (2020), National Policy Statement for Freshwater Management
National Policy Statement for Freshwater Management | Ministry for the Environment

- Abundant pipi beds near the quarry prior to quarrying;
- Loss of navigable waterways used for waka;
- Disrupted burial rituals due to redirection of streams;
- Disappearance of seasonal kai indicators.

Hapū affected include Ngāti Pou, Ngāti Uru, Pupuke-Kaingapipiwai, Mangaiti and others.

9.1 Tangata Whenua Associations with Kāeo

The Kāeo River, formerly Waikare, is integral to the whakapapa and origins of Whangaroa iwi and hapū. It is considered a living ancestor, central to the identity of Whangaroa tangata whenua.

The name change is believed to have resulted from a mistranslation by early Whangaroa chiefs when missionaries inquired about the name of the area near Pōhue, a small hill significant to the Ngāti Uru. The chiefs responded by indicating the location where the Kāeo beds were situated.

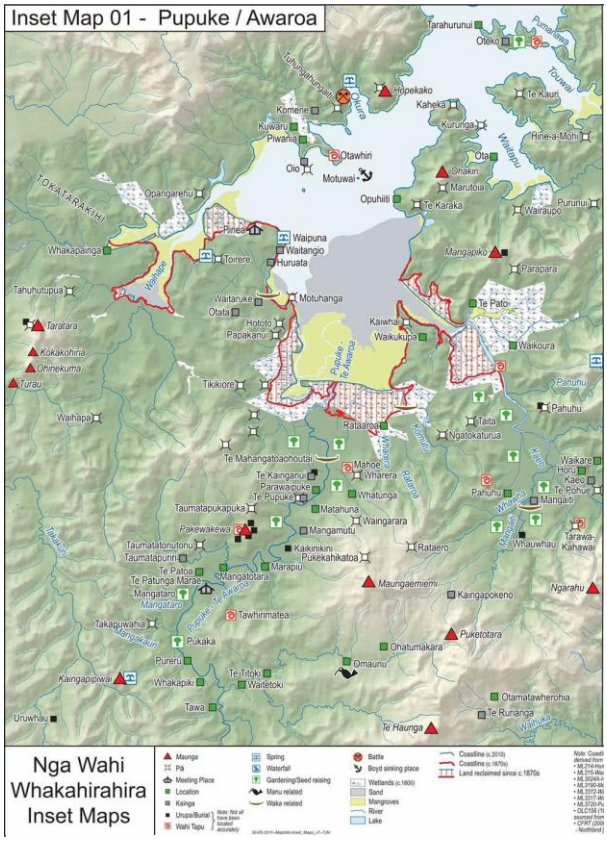

Figure 2: Ngā Wāhi Whakahirahira, Whangaroa Oral & Traditional History of Te Rohe o Whangaroa. Waitangi Tribunal Wai1040 Report

The very name Kāeo speaks to the abundance of the freshwater mussel that once lined the river's beds, serving as both sustenance and symbol for hapū such as Ngāti Pou, Ngāti Uru, Ngāti Roha, and Ngāti Pakihi.

The river's catchment is imbued with immense significance. Whakapapa places the Kāeo within the broader life cycle of maunga and awa, linking it to the sacred maunga Tangitu, from where waters spring that feed into four harbours: Whangaroa, Hokianga, Mangōnui, and Pewhairangi.

The spiritual essence of these waters is said to converge at Te Reinga, the leaping place of spirits, and return as mist to Tangitu, symbolizing an eternal cycle of life, death, and renewal. A local narrative underscores the intrinsic knowledge of local hapū and their relationship with the environment. The saying "ka hua te pōhue, te kāeo ka hua" links the blooming of the pōhue flower, after which the hill Pōhue is named, to the season when Kāeo (freshwater mussels) are in season.

Settlements such as Mangaiti, Rātāroa and Pupuke supplied suitable environments by early Māori. The sheltered valleys had abundant freshwater, freshwater shellfish resources, the climate is mild and adequate rainfall, as well as fertile areas of alluvia soils for cultivation[7]. Numerous clearly defined pā sites surround what is now known as Kāeo, supporting the oral recollections that is has been a significant area of Māori settlement for many centuries.

The people who traditionally occupy the Kāeo area are of Ngāti Pou, Ngāti Uru and Ngāti Pakahi hapū. The hapū traditionally have close association with the land around the Kāeo to the edges of the valley, the adjacent valleys and along the southern and western sides of the Whangaroa harbour. They have lived in these areas from at least the early 1600s until today.

The Kāeo River and its tributaries sit within one of the most densely settled and culturally

significant landscapes in Te Rohe o Whangaroa. As evidenced by the wāhi whakahirahira maps commissioned by the Whangaroa Papa Hapū, for the Oral and Traditional Histories Report for Te Rohe o Whangaroa[8], the river corridor is surrounded by a high concentration of named pā sites, kāinga, mahinga kai, wāhi tapu, and traditional travel routes.

These sites form part of a living ancestral network that reflects the deep intergenerational occupation and sustained relationship of hapū such as Ngāti Uru, Ngāti Pou, Pupuke-Kaingapipiwai, and Mangaiti with the awa. The distribution and density of these sites confirm that the Kāeo River was not simply a natural feature but a cultural artery—integral to the social, economic, and spiritual lifeways of Whangaroa tangata whenua.

Each bend, tributary, and surrounding ridgeline holds its own whakapapa and stories, many of which are still actively remembered and recited today. The proposal to further alter this river risks

[7] Cant, G. (2015) Crown Sponsorship of Mass Deforestation in Whangaroa and Hokianga 1840-1990, Crown Forestry Rental Trust
[8] Harris, A. (Te Uira Associates), 2012 Oral and Traditional Histories of Te Rohe o Whangaroa, Waitangi Tribunal, Ministry of Justice.

severing these remaining connections and contributes to the ongoing displacement of cultural memory from the landscape.

Figure 3: Whānau enjoying swimming and eeling in Kāeo River. ***(Supplied C. Morunga. 2018)***

9.2 Cultural Continuity

Historical accounts confirm that freshwater resources, including the once flourishing kaeo, kokopu, and tuna populations of the Kāeo River, were vital to Whangaroa sustenance[9].

Mahinga kai was more than a food source—it was a practice of whakapapa, a transmission of knowledge, and a means of reaffirming identity. Families would return seasonally to the same sites, using maramataka and tohu from the environment to time their harvest. Harvesting was communal and governed by tikanga to ensure sustainability and respect for the mauri of the water.

The degradation and diversion of tributaries such as Komutu and Wharerā Streams have already led to a measurable decline in customary gathering. Many elders speak of a time when you could gather a bucket of pipi or catch several tuna with ease. Today, those activities are limited, if not impossible, due to sedimentation, pollution, and engineered modifications to the river system.

[9] Hepata Renata, Northern Minute Book No.45 3 November 1910

The proposed flood protection works, which include backfilling part of the existing channel and increasing machinery traffic across sensitive wetland areas, threaten to erase what little remains of this ancestral practice. If the Kāeo River is further straightened and confined, it will alter flow regimes and habitat conditions critical for aquatic species. This not only restricts present-day access but risks extinguishing the intergenerational transmission of mahinga kai knowledge altogether.

Protecting mahinga kai is not simply about restoring ecological conditions—it is about restoring the ability of Whangaroa whānau to live in accordance with their tikanga, to provide for their whānau, and to teach their mokopuna about their role as kaitiaki. The continued erosion of this practice would amount to cultural loss of the highest order.

Tributaries such as the Komutu Stream and the Wharerā Stream were historically significant sources of kai and ritual cleansing, now disconnected or degraded through modern flood interventions.

The oral traditions note that seasonal migrations of fish and birds were understood intimately by Whangaroa whānau, aligning with maramataka[10] (lunar calendars) and whānau harvest patterns. This knowledge is an ancestral taonga now under severe threat.

9.3 Historical Observations: Crown Interference and Loss

The Crown's interventions — especially mass deforestation and infrastructure building from the 19th to mid-20th centuries — caused profound damage to Whangaroa's rivers and wetlands.

The Kāeo River, once a thriving arterial life-force, was progressively narrowed, dammed, straightened, and polluted without regard for its status as an ancestral being. These injustices form part of a long history of resource alienation addressed in Whangaroa's Waitangi Tribunal claims.

"Whangaroa tangata whenua descend not from conquest alone, but from profound interconnectedness with land, waters, and the spiritual whakapapa of our whenua."[11] Ngāti Pou kuia, Pat Tauroa, maintains the kōrero tuku iho of her mother's people. Her wide-ranging presentations to Courts, the Waitangi Tribunal, Councils, and the United Nations include sections on the environment which looks in turn at: deforestation, land reclamation and links to a section on health. Whaea Pat helps to establish the timing;

> As migrant began to come to Whangaroa the milling of timber for the building of houses began to take its toll on the native forests, the rivers, and streams, and indeed our moana (harbour).

[10] Hepata Renata, Northern Minute Book No. 45 3 November 1910
[11] Cant, G. (2015) Crown Sponsorship of Mass Deforestation in Whangaroa and Hokianga 1840-1990, Crown Forestry Rental Trust

Along with the milling of timber from the 1870's onwards, there was a massive drive to clear land for farming. "Much was felled indiscriminately for farming as the European settlers simply wanted the trees out of the way so they could operate their farms." Whaea Pat spoke that "consequently there was huge impact on waterways that has not ceased."

10. Assessment of Cultural Impacts on Tangata Whenua

The following section outlines key areas of concern that are identified through consultation, interviews and through a literature review specifically of iwi planning documents.

10.1 Kaitiakitanga

Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa and more specifically the hapū of Whangaroa act as kaitiaki of the lands, waters and other taonga within the rohe of Whangaroa. Te Rūnanga o Whaingaroa and Te Ūkaipō Environmental Unit have developed positive relationships with Council officers and acknowledge shared values on a of topics pertaining to the project.

It is clear that the Northland Regional Council are committed to considering the views of Te Rūnanga o Whaingaroa. Te Rūnanga o Whaingaroa and the Northland Regional Council are more than aware of their responsibilities as acting kaitiaki and it is likely that these obligations will be implemented effectively if close relationships are maintained over time.

10.2 Clear and effective communication

Planning and developments have always been openly shared with the Kāeo Catchment Community Committee, of which Te Rūnanga o Whaingaroa has a sitting and active representative. It is recommended should works begin, Te Rūnanga o Whaingaroa are continuously updated and advised with the option to assess any works to be completed in there is suspicion any sites or areas of cultural significance are at risk.

As best practice, where a specific recommendation is sought from Te Rūnanga o Whaingaroa, this will be clearly outlined in any materials that should be distributed to Te Ūkaipō at least ten working days before any response is required. This gives Te Rūnanga o Whaingaroa te opportunity to clarify any information in materials, to consult with necessary hapū members and to provide direction. Clear and accurate data relating to any monitoring shall also be supplied in a timely manner.

10.3 Monitoring

It is recommended that Te Ūkaipō are actively engaged in any monitoring of the project. In particular ensuring that if there are wāhi tapu, middens or other sites of significance are found on the projected sites of works that at least one representative of Te Rūnanga o Whaingaroa is contacted to manage and/or ensure that appropriate tikanga and processes required. Water and earthworks monitoring should be completed to create base readings to compare future testing results. Results to be provided to Te Rūnanga o Whaingaroa.

10.4 Loss of access to traditional food-gathering and ceremonial sites

The redirection and modification of the Kāeo River would further alienate tangata whenua from long standing mahinga kai sites used for the harvesting of kāeo, tuna, kokopu, and other taonga species. These areas have been accessed by Whangaroa hapū for generations and are intimately tied to seasonal practices governed by maramataka and tikanga. The diversion of the river, combined with the construction vehicle activity and backfilling of current waterways threatens to make these remaining gathering locations permanently inaccessible.

Ceremonial practices such as karakia and tohi and other water-based rites also rely on uninterrupted access to clean and flowing water. Many of these rituals are specific to particular parts of the river and its tributaries. The loss of these access points would not only interrupt spiritual practice but sever the intergenerational transfer of cultural knowledge embedded in the use and care of these sites.

10.5 Disruption of ecosystem services and habitats

The river and surrounding wetlands provide vital ecosystem functions such as natural flooding absorption, sediment filtering and habitat provision for native species. By altering the rivers course and introducing heavy machinery across sensitive landscapes, the proposed works threaten to collapse fragile ecosystems already under stress from the past development and deforestation.

The proposed flood control method fails to consider the importance of hydrological balance. Changes to water flow and sedimentation patterns can destroy spawning grounds for native

Figure 4: Members of Ngāti Pou & Ngāti Uru and archaelogists join at the summit of Pōhue pā, looking over Waikare (Kāeo River) after a formal karakia. Left to Right: Pat Tuaroa, James Robinson, Stuart Bedford, Cathy Burr, Judy Steele, Aggie Hemi, Hiwi Tauroa, Leo Bowman, Tata Morgan and Sid Kira (*The Northern News 4 December 2001)*

species and encourage invasive flora and fauna. These cumulative effects undermine both biodiversity and the mana of iwi and hapū in their kaitiaki actions who are responsible for these life-supporting systems. Stephen Rush recalls growing up in the 50s-60s, “there used to be tuna the size of our leg in these waters. Now, it is just sludge.”

10.6 Diminishment of cultural identity linked to the awa

The Kāeo River is not simply a natural feature – it is a taonga, or a cornerstone of identity for Whangaroa Māori. Its name, flows, kai and kōrero tuku iho shape the worldview of those who descend from the area. Continued modification of the river path risks erasing the visual, ecological, and spiritual markers that tie people to place.

When cultural landscapes are altered or destroyed, so too tis the language, ritual and mātauranga associated with them. The diversion of the Kāeo River without iwi-led restoration processes contributes to cultural erosion, weakening of community’s ability to uphold tikanga, exercise tino rangatiratanga, and pass these responsibilities on to future generations. As expressed by local hapū “ka kore te awa, ka kore wā mātou kōrero. Ko wai hoki mātou?”[12].

10.7 The Principles of Te Tiriti o Waitangi

10.6.1 Partnership

The principles of partnership have been honoured through ongoing consultation and engagement with Te Rūnanga o Whaingaroa throughout the process. It is advised that a formal process is followed in the shape of a Memorandum of Understanding, or similar, to ensure the relationships is maintained and preserved regardless of works or future works in the Whangaroa District.

10.6.2 Participation

The principle of participation has been honoured to date and through the MoU (or similar) can be continuously honoured by inviting iwi and hapū involvement in further development, sharing stories, site visits and updates on progress. Invitation to contribute to the works through story sharing for example will benefit all parties involved, including contractors, NRC, and iwi.

It is imperative that the relationship under Te Tiriti o Waitangi respects the full rights of iwi as kaitiaki, not merely as representatives on advisory committees without substantive authority. Genuine partnerships must empower iwi with decision-making capacities, recognising their intrinsic connection to the land and waterways. This partnership must go beyond perfunctory consultation, ensuring that iwi have the authority to protect their taonga and exercise their mana motuhake in all aspects of river management and restoration.

[12] Wai 1040, #B30, Brief of Evidence of ARENA Wiremu Heta, Te Paparahi o Te Raki Inquiry. Ministry of Justice

10.6.3 Protection

It is understood that the protection of rights, access and taonga (including the restoration of efforts of NRC) are to be upheld. Through the development of a MOU (or similar) this can be formalised and perpetuated between the iwi and NRC over the lifespan of the Council.

11. Recommendations and Conditions

This cultural impact assessment and report has identified that any cultural impacts that will hinder the proposed Kāeo River Stage 2 works can be addressed through the relationship between Te Rūnanga o Whaingaroa, on behalf of Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa and the Northland Regional Council.

The following are recommendations of this report;

11.1 Kaitiakitanga Recommendations

The application negatively impacts on the ability Ngāti Kahu ki Whangaroa/Ngāpuhi ki Whangaroa to carry out their obligations, roles and responsibilities acting as kaitiaki. There is a need for protection of tapu sites within the sites of the projected works from degradation, excavation, and/or removal.

NRC in good faith, engaged with iwi and provided opportunity to present the CIA and it is recommended the relationship with the Northland Regional Council and Te Rūnanga o Whaingaroa is formalised to support perpetuation of the current working relationship.

If significant sites (including wāhi tapu or middens) are discovered, immediately contact Te Rūnanga o Whaingaroa to ensure cultural safety and protection of the site.

Additional conditions;

11.1.1 Prohibition of Riverbed Modifications

i. No future straightening, deepening, infilling of the Kāeo River beyond the current alignment
ii. This condition aligns with the hierarchy of obligations under Te Mana o Te Wai and supports the legal obligation to protect the health and mauri of the river as the highest priority. Modifying the river would only exacerbate ecological instability and cultural disconnection.

11.1.2 Cultural Monitoring Panel

i. Representatives from affected hapū must be engaged as full cultural monitors with the decision-making authority throughout all phases of construction. Te Rūnanga o Whaingaroa are to appoint those representatives.

ii. This ensures compliance to the RMA s6(e) and gives practical effect to rangatiratanga, acknowledging tangata whenua as experts in identifying and protecting wāhi tapu and culturally sensitive landscapes.

11.1.3 Mahinga Kai and Taonga Recovery Fund

i. A fund of substance, amount to be negotiated, must be established to support ecological and cultural restoration, including repopulating kāeo, replanting wetlands, and enabling hapū to carry out mātauranga-led projects.
ii. This fund is essential for addressing past harms and ensuring that any further development includes a pathway for the return of mana and mauri to the river and its dependant species.

11.1.4 Joint Freshwater Governance Board

i. A co-governance framework must be formalised between Te Rūnanga o Whaingaroa and Northland Regional Council for the Kāeo River and its catchment.
ii. This reflects the Treaty obligations and rights of Iwi for partnership and allows Whangaroa iwi to co-lead restoration access and decision-making platforms, and ensure future developments are aligned with iwi priorities.

11.1.5 Formal Apology and Education Resource

i. NRC must deliver a formal apology acknowledging historic and ongoing impacts on the Kāeo River, accompanied by co-designed educational materials to raise awareness of Whangaroa's natural landscape.
ii. Education and acknowledgement are necessary steps towards restorative action. These measures support reconciliation and the intergenerational transmission of cultural knowledge that the river sustains.

11.1.6 Other conditions

i. Best practise sediment and wastewater systems are implemented, and any discharge is not directly into the river, and therefore the harbour.
ii. Regular 3monthly reports regarding invasive species management and cultural site health maintenance are received by Te Rūnanga o Whaingaroa
iii. Any discovery of cultural sites of significance are immediately shared with Te Rūnanga o Whaingaroa to provide appropriate tikanga in a timely manner

11.2 Communication Recommendations

It is recommended that the Northland Regional Council officers and staff liaise with Te Rūnanga o Whaingaroa and beyond the projected works and consenting process to provide the following if and when required;

11.2.1 Memorandum of Understanding (or similar)

i. A formal MOU, or similar, must be developed and agreed upon between Te Rūnanga o Whaingaroa and the Northland Regional Council, establishing shared governance and decision-making

framework over freshwater management and any future works within the Kāeo catchment.

ii. This condition reflects the core Te Tiriti o Waitangi principle of partnership and is essential for ensuring consistent engagement, transparency, and accountability. An MoU would operationalise the co-design responsibilities required under Te Mana o te Wai and affirm iwi rights as guaranteed under both the Treaty and the Resource Management Act. Without such a formal arrangement, the risk of ad hoc consultation and decision-making—without iwi consent or influence—remains high, and past injustices may continue unchecked.

12. Caveat Clause

This Cultural Impact Assessment was conducted to assist Northland Regional Council with their Resource Consent Application to the Far North District Council. While we have strived to cover all cultural values, interests, and associations tangata whenua and Māori have with the site, there may be additional issues not included in this report.

13. Copyright

14. References

- Harris, A. (2017) *Oral and Traditional History of Te Rohe o Whangaroa*. Waitangi Tribunal WAI1040 Report.
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