Access Structure in the Bed of the Koukoupo Stream

Resource Consent Application

Prepared for

Ricky and Evelyn Alabaster

31 October 2025

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Environmental and Urban Planning

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1 Summary

This application is made by Evergreen Consulting Limited on behalf of Ricky and Evelyn Alabaster (herein referred to as 'the applicant'). The relevant forms are enclosed within **Appendix 1**.

This application is made in respect of the following:

1. Retrospective consent application for a multi-barrelled culvert structure (herein referred to as an 'access structure') and associated earthworks; and
2. Proposed modifications to the access structure and associated earthworks to facilitate fish passage.

The application and associated assessment of effects make the following findings:

- The works to construct the access structure within the bed of the Koukoupo Stream were undertaken following the collapse of a bridge used as a primary access to the farm.

- Following a complaint, an infringement notice was issued by Les Crate, Senior Consents Monitoring Officer, Manawatu-Whanganui Regional Council (MWRC) that required its removal by 1 August 2025. Following discussions with the Regional Council it was determined that the access structure could stay in place while an alternative solution was developed but must be removed on or before 11 December 2025.

- It has been recognised that the Koukoupo Stream is part of the catchment of the Whangaehu River, Te Waiū o Te Ika and the statutory recognition afforded as part of the recently signed Treaty of Waitangi settlement legislation Rukutia Te Mana. Consultation with Ngāti Rangi confirms a desire to retain the access structure rather than its removal, noting damage to the awa this would result in. Approval in principle has been received from Ngāti Rangi for modifications to the access structure to enable fish passage by way of constructing an additional culvert to the side of the access structure on the true left-hand bank of the Koukoupo Stream. The feedback from Ngāti Rangi is included in **Appendix 2**.

- The access structure (as constructed) has been assessed by Mr Jon Bell (refer to **Appendix 5**) as being structurally sound and does not impede flood flows. The banks have been stabilised with planting and mulch to mitigate erosion. To reinstate fish passage, it is proposed that the access structure is modified to include an additional culvert which is 1600mm in diameter and 25m in length, on the true left side of the stream. This approach is supported by both Dr Mark Heath and Mr Bell (refer to their reports in **Appendix 4 and 5** respectively)

- The effects of the activity are discussed in section 5. However, in summary:
    - The works will enable fish passage to be maintained within the Koukoupo Stream,
    - The works can be undertaken in a manner that minimises sediment release through diverting the stream and use of a cofferdam and post work remediation of the banks. An Erosion and Sediment Control Plan (ESCP) is contained within **Appendix 6** detailing the methods,
    - The works will maintain the integrity of the access structure and

- The works are supported by Ngāti Rangi.

- Consent is able to be granted on a non-notified basis both retrospectively for the access structure and for the proposed modifications.

2 Background

2.1 Description of Activity

Ricky and Evelyn Alabaster own and operate a large dry stock farm known as Kowhainui Station. The station is some 1,800 hectares in area and has access from both Koukoupo Road and Turakina Valley Road with large woolsheds and mustering areas located at each end of the property. The woolshed at the Koukoupo Road end of the property is accessible via a bridge over the Koukoupo Stream, which is also the functional boundary of the property.

Early in 2025 the bridge failed and collapsed as a stock truck crossed. Unaware of the requirements in respect of replacing the bridge, coupled with the need to move the stock, an access structure was constructed in place of the bridge. The concrete structure contains 5, 500mm PVC culverts, is approximately 1.2 metres deep and provides a surface approximately 6m x 6m (i.e., 36m^2). The invert of the culverts, within the access structure, fall 20mm between their inlets and outlets.

An image of the access structure, following construction is shown below as **Figures 1 and 2**.



Figure 1: Downstream end of access structure



Figure 2: Upstream end of access structure.

Following the construction of the access structure, it appears a complaint was made to MWRC and an infringement notice[1] was issued by Mr Les Crate, Senior Consents Monitoring Officer, that required its removal by 1 August 2025. Following discussions with the Regional Council, it was determined that the access structure could stay in place while an alternative solution was developed but must be removed on or before 11 December 2025[2].

The applicant is committed to finding an appropriate solution to access the property and engaged the following experts to provide advice and assistance:

- Mr Jon Bell, Principal Engineer, e2 Environmental Limited
- Dr Mark Heath, Freshwater Scientist, Traverse Environmental

Consultation has occurred with local iwi, being Ngāti Rangi. This consultation has been undertaken in good faith giving recognition of the connection between Ngāti Rangi and Te Waiū o Te Ika (the Whangaehu River catchment) and the framework set out under the Ngāti Rangi Settlement Act. At the outset Ngāti Rangi indicated a strong preference to retain the structure due to the damage removal would cause to the awa.

Following an assessment of the site (including the wider and local environment), and the structure itself, several alternative options were assessed. These included the installation of a bridge, a large singular culvert,

[1] Infringement notice 1256, dated 11 June 2025
[2] Email between Tina Malone and Lara Blomfield, Thursday, 10 July 2025 2:44 pm

installation of a multi-barrelled culvert embedded in the bed, and modification to the existing structure including installation of a side 'fish bypass' culvert.

After carefully weighing up these options including cost, practicality, effects on the environment, and the wishes of iwi, it was determined that the best option would be the installation of an additional culvert to act as a fish bypass. This was further discussed with iwi during a meeting on site between Dr Michael Morris and Fred Clark of Ngāti Rangi along with the applicant and Dr Mark Heath. Following this meeting a letter of approval in principle for the concept was received from Ngāti Rangi and is included within **Appendix 2.**

Designs and assessment of this concept have been further developed by Mr Bell and Dr Heath whose assessments are respectively contained within **Appendix 4 and 5**.

It is recommended that a 1600mm diameter culvert, 25m in length be installed on the true left-hand bank. **Figure 3**, below, shows the approximate location of the culvert.



Figure 3: Approximate Location of Bypass Culvert with the blue circle representing the culvert inlet and the dashed lines showing the alignment of the culvert which will be buried in the true left bank of the stream.

The works are proposed to be undertaken in a manner that minimises sediment release through diverting the stream and use of a cofferdam and post work remediation of the banks. An Erosion and Sediment Control Plan (ESCP) is contained within **Appendix 6** detailing the methods.

3 Site Description

The site is located north of Taihape and is a large dry stock farm known as Kowhainui Station. Locality images are shown below as **Figures 4, 5 and 6**.

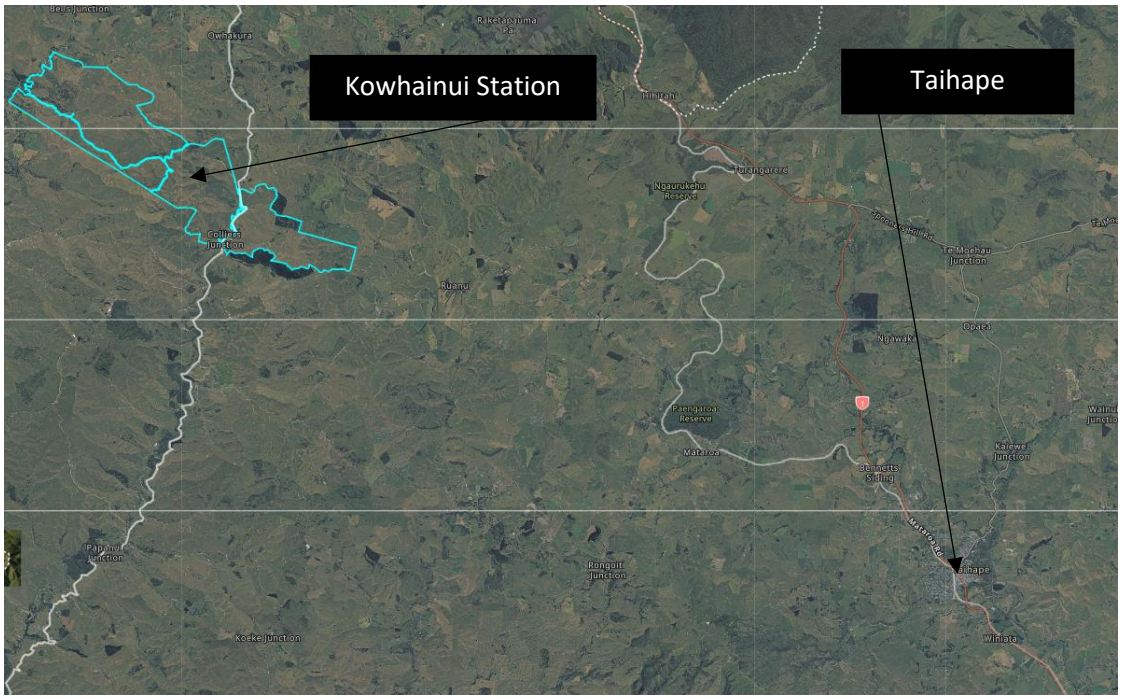


Figure 4: Property location in relation to surrounding towns and settlements.

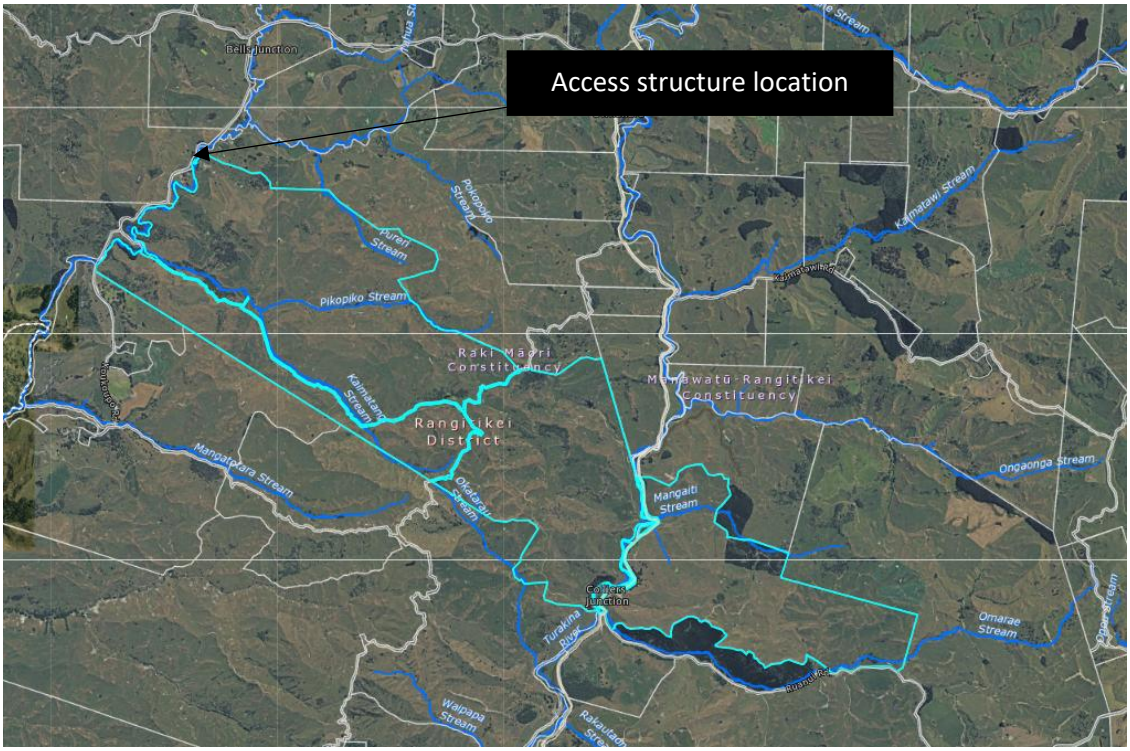


Figure 5: Aerial image of property (outlined in light blue) and access structure locality.



Figure 6: Access structure locality.

The entrance where the access structure has been constructed is adjacent to the property legally described as Lots 2 & 4 Deposited Plan 15432 and Otaroro 2B Block (held in RTWN586/49).

The station spans across 1,800 hectares and has access from both Koukoupo Road and Turakina Valley Road with large woolsheds and mustering areas located at either section of the property. The surrounding environment consists of properties that tend to be large in nature and farmed with dry stock (i.e. cattle and sheep). The terrain is generally hilly in nature.

With respect to the location of the access structure, it is located adjacent to Koukoupo Road, a dead-end road providing access to several large farms. The access structure is located within the bed of the Koukoupo Stream. The site is located to the northwest of Taihape and is located within the Whangaehu Catchment. MWRC holds data about the stream and the immediate vicinity of the culvert as follows:

- The stream is located within the Whangaehu Catchment and is within the Middle Whangaehu (Whau_2) surface water management zone.
- The Regional Plan assigns values with streams to assist with determining consent categories. The only value associated with the stream is 'domestic food supply' meaning the water is valued for its use for vegetable growing.

Dr Heath further explores the stream environment in his report within **Appendix 4**. Here, Dr Heath notes:

> "*The Koukoupo Stream, a tributary of the Whangaehu River, originates in the hill country east of Taihape. It flows westward through steep pastoral terrain typical of the upper Whangaehu*

catchment. Throughout its length, the stream is confined within narrow valleys with moderately incised channels and occasional exposures of soft mudstone and sandstone. Near its confluence with the Whangaehu River, the Koukoupo Stream remains relatively steep and confined, reflecting the rugged topography of the Rangitīkei/Ruapehu hill country. […] At the reach directly upstream and downstream of the vented ford, the stream is steep and confined, resulting in high water velocities. Natural waterfalls exceeding 3 metres in height occur both directly upstream and downstream of the site, forming significant natural barriers to fish passage. […] The Whangaehu River's source is Te Wai ā-moe (Mount Ruapehu's Crater Lake), which periodically releases highly acidic, metal-rich water into the headwaters. These discharges strongly influence downstream water quality and aquatic ecology"

The topography of the stream is also supported by the findings of Mr Bell with his report (**Appendix 5**) also noting:

"[…] the 240m reach upstream of the crossing location is steep, with an average gradient of 0.08m/m (or 8%). The reach immediately around the crossing is much shallower in grade at around 0.01m/m (or 1%). The reach downstream of the crossing then has a gradient of approximately 0.02m/m (or 2%). The localised shallow grade is likely why the original crossing point was located here."

These details are important in the context of the site, and also the fish species found at the site with Dr Heath noting that longfin eel, shortfin eel, and koaro are likely to be the species present given the natural barriers and steep terrain.

4 Reason for Application

4.1 Statutory Framework

The works to date have included both land disturbance and works within the bed of a river.

Section 9 of the Resource Management Act 1991 states:

9. Restrictions on use of land

[…]

(2) No person may use land in a manner than contravenes a regional rule unless the use –

(a) is expressly allowed by a resource consent; or

(b) is an activity allowed by section 20.

The One Plan restricts the disturbance of land within the rules contains in the LF-LAND section, which are further discussed below.

Section 13 of the Resource Management Act states:

13. Restriction on certain uses of beds of lakes and rivers

(1) No person may, in relation to the bed of any lake or river, —

(a) use, erect, reconstruct, place, alter, extend, remove, or demolish any structure or part of any structure in, on, under, or over the bed; or

(b) excavate, drill, tunnel, or otherwise disturb the bed; or

(c) introduce or plant any plant or any part of any plant (whether exotic or indigenous) in, on, or under the bed; or

(d) deposit any substance in, on, or under the bed; or

(e) reclaim or drain the bed—

unless expressly allowed by a national environmental standard, a rule in a regional plan as well as a rule in a proposed regional plan for the same region (if there is one), or a resource consent.

The National Environmental Standard for Freshwater provides restrictions on various specifications relating to the installation of culverts, this again is discussed further below.

4.2 Rule Assessment – The One Plan

4.2.1 Land disturbance

An application is made for both retrospective and future land disturbance. As part of this assessment, it was also confirmed with the biodiversity team at Horizons that no rare, threatened or at-risk habitats are located within a 300m vicinity of the site. A copy of this correspondence is included within **Appendix 3**.

Rule LF-LAND-R1 allows land disturbance as a permitted activity subject to conditions. In this instance Condition 5 is unable to be met as the works have occurred, and will occur in future, within 5m of a bed of a river which is permanently flowing. As such consent is required as a **Discretionary Activity** under Rule LF-LAND-R8.

4.2.2 Works in the bed of a river

An application is made for both the retrospective works undertaken to install the access structure and for future works to install the fish bypass culvert.

Retrospective consent

Access structures are allowed as a permitted activity under Rule LF-AWBD-R64 subject to conditions. In this instance, Condition 2 would not be able to be met as the catchment area above the structure exceeds 200ha. As such consent is required under Rule LF-AWBD-R76 as a **Discretionary Activity.**

Future works

Modification of the existing structure to add in an additional fish bypass culvert is considered to follow the same framework as outlined above for the retrospective consenting. It is considered the additional modifications would also require consent under Rule LF-AWBD-R76 as a **Discretionary Activity.**

4.3 National Environmental Standards

The following National Environmental Standards are currently in effect within New Zealand.

- *National Environmental Standards for Air Quality* (NESAQ)
- *National Environmental Standards for Telecommunication Facilities (NESTF)*
- *National Environmental Standards for Electricity Transmission Activities (NESETA)*
- *National Environmental Standards for Plantation Forestry (NESPF)*

- *National Environmental Standards for Marine Aquaculture (NESMA)*
- *National Environmental Standards for Freshwater (NESFW)*
- *National Environmental Standards for Sources of Human Drinking Water (NESDW)*
- *National Environmental Standards for Assessing and Managing Contaminants in Soil to Protect Human Health (NESCS)*
- *National Environmental Standards for Storing Tyres Outdoors (NESSTO)*

In this instance it is considered that the National Environmental Standards for Sources of Human Drinking Water and National Environmental Standards for Freshwater are the only applicable standards. They are discussed in turn below.

4.3.1 National Environmental Standards for Sources of Human Drinking Water (NESDW)

With respect to the NESDW, no public water supplies are recorded in the catchment downstream of the access structure location. Therefore, this standard is not applicable to this application.

4.3.2 National Environmental Standards for Freshwater (NESFW)

In respect to the NESFW the installation of culverts is permitted under Regulation 70 providing several conditions are met. As with the One Plan, the requirements have been assessed for both the retrospective consenting aspect along with the proposed modifications.

Retrospective consent

Table 3 below provides discussion around each of the conditions and the relevant site specifics for the existing access structure and the culverts contained within, along with an assessment of the access structure following the installation of the fish passable culvert.

Table 3: Assessment of conditions under NESFW Regulation 70(2)

Condition of NESFW *Regulation 70(2)*	**Discussion - access structure as constructed.**	**Discussion - access structure following modification.**
2a) the culvert must provide for the same passage of fish upstream and downstream as would exist without the culvert, except as required to carry out the works to place, alter, extend, or reconstruct the culvert; and	***Standard not met***	***Standard met*** The modification of the access structure with the additional fish bypass culvert will enable fish passage to be maintained.
2b) the culvert must be laid parallel to the slope of the bed of the river or connected area; and	***Standard met*** the culverts are parallel to the slope of the bed	***Standard met*** the culverts will all remain parallel to the slope of the bed

Condition of NESFW *Regulation 70(2)*	**Discussion - access structure as constructed.**	**Discussion - access structure following modification.**
2c) the mean cross-sectional water velocity in the culvert must be no greater than that in all immediately adjoining river reaches, and	***Standard not met*** Due to the culvert size the velocity is quickened through the access structure.	***Standard partially met*** The culvert size within the access structure will not change. However, the addition of the new, appropriately sized, culvert will provide a velocity consistent with the surrounding environment.
2d) the culvert's width where it intersects with the bed of the river or connecting area (s) and the width of the bed at that location (w), both measured in metres, must compare as follows: i) where $w \leq 3$, $s \geq 1.3 \times w$: ii) where $w > 3$, $s \geq (1.2 \times w) + 0.6$; and	***Standard not met***	***Standard not met***
2e) the culvert must be open-bottomed or its invert must be placed so that at least 25% of the culverts diameter is below the level of the bed; and	***Standard not met***	***Standard partially met*** The culverts within the access structure will not change. However, the addition of the new, appropriately sized, fish bypass culvert will be embedded 25%.
2f) the bed substrate must be present over the full length of the culvert and stable at the flow rate at or below which the water flows for 80% of the time; and	***Standard not met***	***Standard partially met*** The culverts within the access structure will not change. However, the addition of the new, appropriately sized, fish bypass culvert will be embedded 25% enabling substrate to settle.
2g) the culvert provides for continuity of geomorphic processes (such as the movement of sediment and debris)	***Standard met***	***Standard met***

As the proposal does not meet all the Permitted Activity conditions of Regulation 70, consent is required under Regulation 71 as a **Discretionary Activity.**

4.3.3 Conclusion

Retrospective consenting of the access structure requires consent as follows:

- Land disturbance - Rule LF-LAND-R8 **- Discretionary Activity**,
- Installation of the structure - Rule LF-AWBD-R76 as a **Discretionary Activity; and**
- Installation of culverts which form the structures - Regulation 71 of the NESFW as a **Discretionary Activity**

Modifications to the access structure requires consent as follows:

- Land disturbance - Rule LF-LAND-R8 **- Discretionary Activity**,
- Modification of the structure - Rule LF-AWBD-R76 as a **Discretionary Activity; and**
- Installation of an additional culvert - Regulation 71 of the NESFW as a **Discretionary Activity**

Overall, the consents can be bundled and assessed as a **Discretionary Activity**

5 Assessment of Environmental Effects

As a discretionary activity, the Council's discretion is not limited as to what effects it considers.

However, given the nature of the proposed works it is considered that the following potential or actual effects could arise.

- Positive effects
- Flood levels and integrity of flood protection structures
- Fish passage
- Sediment loss
- Cultural effects

These are considered in turn below in respect of both the access structure that is already in place along with the proposed modifications.

Input into these matters has been provided from the following experts and is referenced as necessary:

- Jon Bell, Principal Engineer, e2 Environmental Limited
- Dr Mark Heath, Freshwater Scientist, Traverse Environmental; and
- Dr Michael Morris, Kaitātari Taiao, Ngāti Rangi.

5.1 Positive effects

As noted above the previous crossing failed when a stock truck crossed over it. The new access structure will have positive outcomes for the applicant in that it will provide access to the farm through varying river flows.

In addition, the area has been extensively planted, with further planting proposed. This will assist with stabilisation of the stream bank and ecological enhancement[3] not previously present.

5.2 Flood levels and integrity of flood protection structures

Mr Bell has provided an assessment of the existing structure along with the proposed modifications within his report in **Appendix 5**.

Mr Bell has assessed the access structure and notes:

> *"The existing ford is currently in an excellent condition structurally. There are no signs of any damage, nor settlement of the ford structure. The approaches have been well compacted and there are no signs of the structure having been outflanked by flows in the Koukoupo Stream.*
>
> *The outlets of the ford are perched approximately 200mm above the bed of the Koukoupo Stream. However, it would appear that the stream bed at this location is on the underlying bed rock and as such further degradation of the stream bed is not considered to be likely."*

Mr Bell also assesses the fish bypass culvert which involves placement of a 1600mm diameter, 25m length, culvert on the true left-hand side of the bank.

Mr Bell has demonstrated that a culvert of this size and length will ensure velocities are consistent with those up and downstream of the structure.

In addition, it is proposed that the fish bypass culvert be:

- Embedded 25% into the stream bed,
- Supported by rock riprap to prevent any erosion of the banks immediately downstream of the access structure, and
- Have baffles installed at intervals of 2.0m spacing along the length of the culvert to assist with settling of materials.

Following the installation of the culvert, Mr Bell also recommends the addition of a rock riprap lining for a length of approximately 10 metres downstream of the ford crossing, until the stream and the road diverge from each other. Mr Bell also advises the rock used for this riprap should have a median weight of 300kg, which is of a similar size to that which has already been successfully placed around the ford.

Mr Bell notes that riprap is not required upstream of the site because flow velocities in this reach are no greater than those which were seen before the construction of the ford crossing.

Overall, the existing access structure combined with the proposed modifications are expected to have a less than minor effect on the environment.

[3] Note this is not being proposed as a formal offset.

5.3 Fish passage

Dr Heath has provided an assessment of the existing access structure along with the proposed modifications. A copy of his report is included within **Appendix 4.** As detailed in Section 3, Dr Heath has examined the immediate and wider environment and notes:

> "*The Koukoupo Stream, a tributary of the Whangaehu River, originates in the hill country east of Taihape. It flows westward through steep pastoral terrain typical of the upper Whangaehu catchment. Throughout its length, the stream is confined within narrow valleys with moderately incised channels and occasional exposures of soft mudstone and sandstone. Near its confluence with the Whangaehu River, the Koukoupo Stream remains relatively steep and confined, reflecting the rugged topography of the Rangitīkei/Ruapehu hill country. […] At the reach directly upstream and downstream of the vented ford, the stream is steep and confined, resulting in high water velocities. Natural waterfalls exceeding 3 metres in height occur both directly upstream and downstream of the site, forming significant natural barriers to fish passage. […] The Whangaehu River's source is Te Wai ā-moe (Mount Ruapehu's Crater Lake), which periodically releases highly acidic, metal-rich water into the headwaters. These discharges strongly influence downstream water quality and aquatic ecology"*

These details are important in the context of the site and also the fish species found at the site with Dr Heath noting that longfin eel, shortfin eel, and koaro are likely to be the species present given the natural barriers and steep nature of the terrain.

Dr Heath has further assessed the access structure and proposed modifications with a fish bypass culvert. He notes that the culvert design will enable the velocity to be consistent with adjoining reaches, bed substrate to settle, and ensure hydraulic and ecological connectivity between upstream and downstream. The addition of this fish bypass culvert will provide safe and effective passage for fish moving both upstream and downstream and is consistent with the design principles outlined in the New Zealand Fish Passage Guidelines. In addition, Dr Heath expresses confidence that this modification will restore upstream and downstream connectivity for both climbing and swimming fish species potentially present in the Koukoupo Stream.

Overall, the effects on fish passage as a result of the structure as a whole (i.e. as currently constructed with the fish bypass modification added in) will be no more than minor.

5.4 Sediment loss

Works within and adjacent to the bed of a river have the potential to mobilise sediment. Sediment can cause several adverse effects on freshwater and ecosystems health in several ways including alteration and smothering of habitat, temperature changes and increased turbidity.

During the construction of the access structure the Koukoupo Stream was temporarily diverted. Following construction, the banks were planted and mulch was laid in and around the planting and banks to assist with stabilisation. **Figures 7 and 8** below show the site following planting and mulching.





Figures 7 and 8 – planting and mulching in and around the access structure.

For the additional modifications it is proposed that the works be undertaken in low flows and the stream once again be diverted away from the worksite through the existing access structure, to allow for the installation of the additional fish bypass culvert. Mr Bell recommends that the installation of the culvert shall be undertaken in general accordance with the NZ Forest Roads Engineering Manual[4].

Following completion of the works it is proposed that rock riprap be placed downstream to assist with bank stabilisation. Additional mulch or hay will also be placed on the banks in any areas where there is bare earth. Lastly it is also proposed that further planting will take place to provide additional resilience to the banks. Details of this are outlined in the erosion and sediment control plan (ESCP) attached within **Appendix 6**. This approach is also supported by both Dr Heath and Mr Bell in their respective assessments.

With these measures in place, it is considered that sediment loss will be mitigated to the extent that it is less than minor.

5.5 Ongoing maintenance

Mr Bell has also assessed what might be expected in regard to ongoing maintenance of the structure. He noted that it is expected that some maintenance will be necessary to ensure that any large debris mobilised

[4] https://docs.nzfoa.org.nz/live/nz-forest-road-engineering-manual/7-erosion-sediment-and-slash-control-structures/7.4-drainage-culverts/

during high flows do not become lodged against the upstream end of the structure. To this end, it is anticipated that conditions of consent will include the matters detailed in Regulation 69 of the NESFW.

In addition, Mr Bell notes that the site will need to be assessed from time to time for structural integrity ad repaired as necessary. It is anticipated that conditions of consent will be included to this effect.

5.6 Cultural effects

As discussed above consultation has occurred with Ngāti Rangi recognising their connection with Te Waiū o Te Ika (the entire Whangaehu River catchment) and the framework set out under the Ngāti Rangi Settlement Act. Ngāti Rangi have expressed a desire to retain the structure as opposed to its removal and replacement.

options, as discussed above, were explored with iwi during a meeting on site between Dr Michael Morris and Fred Clark of Ngāti Rangi along with the applicant and Dr Mark Heath. Following this meeting, a letter of approval in principle for the concept was received from Ngāti Rangi and is included within **Appendix 2**.

It is expected that the relationship between the applicant and Ngāti Rangi will be ongoing throughout the process with iwi requesting:

- Cultural induction of all workers prior to works recommencing,
- Cultural monitoring of the site throughout the works, and
- Additional planting of at least 100 further plants adjacent to the site along the bank of the Koukoupo Stream.

The applicant is agreeable to conditions to this effect and offers them on an Augier basis. This is further discussed below in Section 13.

Overall, it is considered that cultural effect will be less than minor.

5.7 Conclusion

Overall, based on the assessment above that the effects are no more than minor.

6 National Policy Statements

The following National Policy Statements (NPS) are currently in effect within New Zealand

- *National Policy Statement for Renewable Electricity Generation 2011*
- *National Policy Statement on Electricity Transmission 2008*
- *National Policy Statement for Freshwater Management 2020*
- *National Policy Statement on Urban Development 2020*.
- *National Policy Statement for Greenhouse Gas Emissions From Industrial Process Heat 2023*
- *National Policy Statement for Highly Productive Land 2022*
- *National Policy Statement for Indigenous Biodiversity 2023*

The only National Policy Statement of relevance to this application is the National Policy Statement for Freshwater Management (NPSFM).

6.1 National Policy Statement for Freshwater Management 2020

The NPSFM, it is split onto sections containing Objective and Policies, Implementation, and Attributes.

The NPS-FM (2020) contains 15 policies. I have identified the following policies as being of relevance to this application:

- Policy 3: Freshwater is managed in an integrated way that considers the effects of the use and development of land on a whole-of-catchment basis, including the effects on receiving environments.
- Policy 9: The habitats of indigenous freshwater species are protected, and
- Policy 15: Communities are enabled to provide for their social, economic and cultural well-being in a way that is consistent with this National Policy Statement.

The policies are further supported by the proceeding sections of the policy statement which describes the actions that need to be taken by councils in respect of their plans.

With respect to fish passage the NPSFM addresses this in section 3.26. Fish passage where it states:

(1) Every regional council must include the following fish passage objective (or words to the same effect) in its regional plan: "The passage of fish is maintained, or is improved, by instream structures, except where it is desirable to prevent the passage of some fish species in order to protect desired fish species, their life stages, or their habitats." [5]

The proposed culvert is intended to replace a bridge which previously crossed the Koukoupo Stream. The access structure will enable trucks to cross the stream without entering water, providing for further protection of the health and wellbeing of the stream.

Furthermore, the crossing is to be modified to enable fish passage to the extent that it is maintained to the level prior to the access structure being installed. This work will be undertaken during summer months when there is low or no flow in the stream minimising any effects on the stream.

Once installed, the habitat of indigenous fish species, including tuna (eels), will be maintained, and such species will be able to migrate up and downstream through the new structure.

Overall, I consider the proposed works are consistent with the relevant objectives and policies of the NPSFM (2020).

7 New Zealand Coastal Policy Statement

The New Zealand Coastal Policy Statement applies to activities within the Coastal Marine Area. This activity is not located within the Coastal Marine Area therefore the New Zealand Coastal Policy Statement does not need to be considered.

[5] Inserted as LF-AWBD-O6 into the One Plan (2025)

8 Regional Policy Statement

The relevant Regional Policy Statement is contained within Part 1 of the Manawatū-Whanganui Regional Council's One Plan. The following Objectives and Policies have been identified as relevant to this proposal.

RP-LF-LAND

- *LF-LAND-O2 Regulating Potential Causes of Accelerated Erosion*
- *LF-LAND-P2 Regulation of Land Use Activities*
- *LF-LAND-P3 Supporting Codes of Practice and Providing Information on Best Management Practices*

LF-LAND-O2 aims to ensure land is managed in manner that accelerated erosion and increased sedimentation in water bodies caused by vegetation clearance and land disturbance is avoided, remedied or mitigated.

LF-LAND-P2 outlines the requirements for the Regional Council to regulate land disturbance activities to minimise the risk of accelerated erosion, discharges of sediment to water, and maintain the benefits of riparian vegetation for water bodies.

With regards to *LF-LAND-P3*, works already undertaken have been actively managed with planting and use of mulch to stabilise the banks. For future proposed works only the true left hand side bank of the stream will be disturbed. During works the water will be diverted away from the left bank and through the existing culvert structure using a cofferdam. Following works the banks will be once again stabilised with grass seed and topped with mulch and/or hay. In the next available planting season, the banks will then be planted with shrubs. This approach is consistent with the requirements of the One Plan including the Greater Wellington Guidelines for Erosion and Sediment Control Guide for Land Disturbing Activities in the Wellington Region noting that the use of coffer dams is provided for in section G4.2.3 and the use of mulching for stabilisation is provided for in section E3.4.

Lastly, with respect to LF-LW-P21, this policy applies to discharges of contaminants that might enter freshwater. Sediment can cause several adverse effects on freshwater and ecosystems health in several ways including alteration and smothering of habitat, temperature changes and increased turbidity. As discussed above, the works will be carried out in accordance with an ESCP designed to reduce any sediment losses from the site thereby minimising any possible adverse effects on freshwater and ecosystems.

RP-LF-FW

- *LF-FW-O3 Water Management Values*
- *LF-FW-O4 Water Quality*
- *LF-FW-O6 Beds of Rivers and Lakes*
- *LF-FW-P4 Water Management Zones and Values*
- *LF-FW-P25 General Management of the Beds of Rivers and Lakes*

Objective *LF-FW-O3* aims to ensure surface water bodies, and their beds are managed in a manner which safeguards their life supporting capacity and recognises and provides for the values in Schedule 2. Objective *LF-FW-O4* aims to ensure water quality is managed in a manner where it is maintained or enhanced to

support the values in Schedule B. Objective *LF-FW-O6* aims to ensure the beds of rivers and lakes are managed in a manner that sustains their life-supporting capacity and recognises and provides for the Schedule 2 Values.

Policy *LF-FW-P4* outlines the management of water quality and activities in the beds of rivers and lakes through division of catchments with Water Management Zones, sub-zones, in safeguarding the life-supporting capacity of waterbodies and providing for Schedule B Values. It is proposed that the enclosed ESCP (within **Appendix 6**) will mitigate any actual and potential adverse environmental effects to manage any effects on water quality and freshwater ecology.

Overall, I consider the proposed activity is consistent with the relevant Objectives and Policies of the RP-LF-LAND and RP-LF-FW sections of the One Plan.

9 Regional and District Plans

Rangitikei District Plan

Rangitikei District Council (RDC) has an operative District Plan. The site is located within the rural zone where there are no limits on earthworks. As such there are no restrictions on the activities under the District Plan.

Regional Plan

The One Plan – Part 3: Regional Plan

Part 2 of the One Plan is the relevant Regional Plan to this application. I consider the only relevant sections of the Regional Plan are RP-IO, RP-LF-AWBD and RP-LF-LAND.

I consider the following objectives and policies are considered applicable to this application:

RP-IO & IP: Integrated Objectives and Policies

- *Objective IO-O2: Consent duration, review and enforcement*
- *Policy IP-P5: Consent durations*
- *Policy IP-P6: Consent review*

RP-IO, particularly Objective IO-O2 sets out the framework for consent durations and reviews. This is guided further through Policy IP-P5 which states that consent durations will generally be set to the next common catchment expiry date, being 1 July 2029 for the Middle Whangaehu (Whau_2) surface water management zone. The plan guides that consents should be granted to the next common catchment expiry date, or in 10-year increments where a term longer than 10 years can be granted.

A consent duration of 35 years is requested. This will allow the remedial works (expected to take up to 5 days) to take place during summer and/or low flows within the stream (ie. January – April) and planting to take place in the first planting season (ie. May – September).

Following this the structure will be legal and plan rules will allow for it to legally remain in place. However consent will be required in order to implement the ongoing monitoring of the structure per Regulation 69 of the NES-FW.

LF-AWBD – Activities in artificial watercourses, beds or rivers and lakes and damming

- *LF-AWBD-O5 – Regulation of structures and activities in artificial watercourses and in the beds of rivers and lakes and damming*
- *LF-AWBD-O6: Fish Passage*

Objective LF-AWBD-O5 outlines the management required for the regulation of structures and activities in the beds of rivers where it safeguards the life supporting capacity and recognises and provides for the Schedule B Values.

As discussed above the modification of the access structure will allow for fish passage. The culverts are sufficiently sized for the channel, allow for fish passage and won't impede flow and velocity will be maintained. This is supported by the memos of Dr Heath and Mr Bell attached respectively as **Appendices 4 and 5**.

RP-LF-LAND: Land Use Activities

- *LF-LAND-O1 Accelerated Erosion – Regulation of Vegetation Clearance, Land Disturbance, Forestry and Cultivation*
- *LF-LAND-P2 Consent Decision Making for Vegetation Clearance, Land Disturbance, Forestry and Cultivation*
- *LF-LW-P21 Consent decision making requirements from the National Policy Statement for Freshwater Management*

LF-LAND-O1 aims to ensure the regulation of vegetation clearance and land disturbance is managed in a manner that ensures accelerated erosion and increased sedimentation is avoided or mitigated as far as practicable. LF-LAND-P2 builds upon this and outlines considerations for managing the effects of land disturbance by requiring ESCPs, allowing activities that result in improved land stability or enhanced surface water quality, and by requiring erosion and sediment control measures to reasonably minimise adverse effects.

It is proposed that an ESCP is used to manage the works to avoid the discharge of sediment. As discussed above, this ESCP is consistent with the requirements of the One Plan. As such, it is considered that the proposed earthworks will not cause any actual or potential adverse effects on surface water quality.

Policy LF-FW-P25 outlines the general management required for activities in, on, under or over beds of rivers where any significant reduction in the ability of a river and its bed to convey flood flows need to be avoided, significant adverse effects on the stability and function of beds of rivers need to be avoided or mitigated and provides for the safe passage of fish both upstream and downstream.

Above the existing access structure is well designed with the ability to convey floods. Erosion of the banks, as a result of the structure is not expected. It is proposed that an additional fish passable culvert is installed on the true left-hand bank. This culvert is to be appropriately sized, embedded and will enable fish migration. An ESCP is contained within **Appendix 6** and is expected to manage any effects during and post construction.

Overall, it is considered that the proposed works are consistent with the relevant objectives and policies of sections RP-IO, RP-LF-AWBD and RP-LF-LAND of the One Plan.

10 Ngāti Rangi Claims Settlement Act 2019

The Ngāti Rangi Claims Settlement Act 2019 (the act) establishes a framework for managing the Whangaehu River (Te Waiū-o-Te-Ika). This settlement recognises the River's intrinsic values, Te Mana Tupua and Ngā Toka Tupua.

As discussed above, consultation has occurred with Ngāti Rangi recognising its connection with Te Waiū o Te Ika (the Whangaehu River) and the framework set out under the Ngāti Rangi Settlement Act. It is considered that this consultation has been undertaken in accordance with the requirements of the Ngāti Rangi Settlement Act and the letter of support indicates that cultural effects will be less than minor.

11 Part 2 of the RMA

Part 2 of the Resource Management Act outlines the purpose and principles of the Act. Following the decision RJ Davidson Family Trust v Marlborough District Council [2018] Court of Appeal Decision, there is the ability to recourse to Part 2 when it is appropriate to do so. In this case, recourse to Part 2 is not required as it is not considered there is any illegality, uncertainty or incompleteness in the relevant part of the Horizons Regional Plan.

Recourse to Part 2 does not provide any further guidance to the decision maker for this consent application. Furthermore, no such issues have been identified and as such no further assessment against Part 2 of the Resource Management Act is considered necessary.

12 Notification Assessment

12.1 S95A – Public Notification Analysis

The Council must follow the steps outlined under Section 95A, in order, to determine whether to publicly notify an application for resource consent.

Step 1: Mandatory notification – section 95A(3)	
Has the applicant requested that the application be publicly notified?	No
Is public notification required under s95C (following a request for further information or commissioning of report)?	No
Is the application made jointly with an application to exchange reserve land?	No
Step 2: If not required by Step 1, notification is precluded if any of these apply – section 95A(5)	
Does a rule or NES preclude public notification for all aspects of the application?	No

Is the application a controlled activity?	No
Is the application a boundary activity (other than a controlled activity)?	No
Step 3: Notification required in certain circumstances if not precluded by Step 2 – section 95A(8)	
Does a rule or NES require public notification?	NA
Will the activity have, or is it likely to have, adverse effects on the environment that are more than minor?	NA
Step 4: Public notification in special circumstances – section 95A(9)	
Do special circumstances exist that warrant the application being publicly notified?	No

Section 95A Conclusion

As detailed above it is considered the effects of the works will result in a structure which has a no more than minor effect on the environment. No special circumstances are considered to apply that would warrant public notification of the application.

The application should not be publicly notified.

12.2 Section 95B – Limited Notification Analysis

The Council must follow the steps outlined under Section 95B, in order, to determine whether to notify an application on a limited basis.

Step 1: Certain affected groups/persons must be notified – section 95B(2) and (3)	
Are there any affected protected customary rights groups or customary marine title groups?	No
If the activity will be on, adjacent to, or might affect land subject to a statutory acknowledgement made in accordance with an Act specified in Schedule 11 – is there an affected person in this regard?	Yes
Step 2: If not required by Step 1, notification is precluded if any of these apply – section 95A(6)	
Does a rule or NES preclude public notification for all aspects of the application?	No
Is this a land use application for a controlled activity?	No
Step 3: Notification of other persons if not precluded by Step 2 – sections 95B(7) and (8)	
Are there any affected persons under s95E (persons on whom the effects are minor or more than minor, and who have not given written approval)?	No
Step 4: Further notification in special circumstances – section 95B(10)	
Do special circumstances exist that warrant notification to any other persons not identified?	No

Comment:

Effects on persons

As discussed above consultation has occurred with Ngāti Rangi recognising its connection with Te Waiū o Te Ika (the Whangaehu River) and the framework set out under the Ngāti Rangi Settlement Act. A letter of approval in principle for the concept proposed here was received from Ngāti Rangi and is included within **Appendix 2**.

On this basis it is considered that the effects on Ngāti Rangi and Te Waiū o Te Ika are less than minor.

In addition, the above sections have assessed the actual and potential effects on the environment including effects on the land surrounding activity site. The memorandum of Mr Bell indicates that the structure is sound, and erosion is not anticipated as a result of the proposal.

Overall, the effect on any other person is expected to be less than minor and limited notification is not required.

Section 95B Conclusion

Overall, limited notification is not required under Steps 1 or 3, limited notification is precluded under Step 2, and there are no special circumstances or effects which warrant public notification of the application.

13 Proposed conditions

A number of conditions have been proposed above. The following is a summary of what has been proposed.

- Cultural induction of all workers prior to works recommencing,
- Cultural monitoring of the site throughout the works,
- Undertaking the works in general accordance with the details of this application including the methodology described in the memorandum of Mr Bell in **Appendix 5** and the ESCP contained in **Appendix 6**.
- Additional planting of at least 100 native plants adjacent to the Koukoupo Stream on or before 1 September 2026.
- Completion of works in relation to the modification of the access structure with a fish bypass culvert, on or before 1 May 2026.
- Monitoring and maintenance per the requirements of Regulation 69 of the NESFW.

14 Conclusion

This application is made by Evergreen Consulting Limited on behalf of Ricky and Evelyn Alabaster (herein referred to as 'the applicant'). The relevant forms are enclosed within **Appendix 1**.

This application is made in respect of the following:

1. Retrospective consenting of a multi-barrelled culvert structure (referred to as an 'access structure') and associated earthworks; and
2. Proposed modifications to the structure and associated earthworks.

The access structure (as constructed) has been assessed by Mr Bell as being structurally sound and does not impede flood flows. The banks have been stabilised with planting and mulch to mitigate erosion. In order to reinstate fish passage, it is proposed that the access structure is modified to include an additional culvert on the true left side of the stream. This approach is supported by both Dr Heath and Mr Bell.

The effects of this activity are discussed in Section 5. However, in summary:

- The works will enable fish passage to be retained within the Koukoupo Stream,
- The works are able to be undertaken in a manner that minimises sediment release through diverting the stream and post work remediation of the banks.
- The works will maintain the integrity of the access structure, and
- The works are supported by Ngāti Rangi.

The proposal has been assessed against the relevant objectives and policies of the One Plan, other statutory planning documents and is considered to be consistent. Consent can be granted on a non-notified basis both retrospectively for the access structure and for the proposed modifications.

Evergreen Consulting
Environmental and Urban Planning

Appendix 1: Application Form A

Application for **Resource Consent**

Form A: Administration Form

horizons REGIONAL COUNCIL

The purpose of this Administration Form (Form A) and the relevant Activity Information and Assessment Form (Form B) is to provide the applicant with guidance on information that is required under the Resource Management Act 1991. Please note that these forms are to act as a guide only, and Horizons Regional Council reserves the right to request additional information.

Failure to provide the required information and payment will delay the processing of your application. If you do not provide adequate information then we will not be able to process your application, and will return it to you. If you do not pay the required fees, we may stop processing your application until payment is received.

1 APPLICANT DETAILS

CONTACT DETAILS – This section applies to the applicant ONLY. Please use Section 2 for consultant details. Should any of these details change, at any time, please notify us as soon as possible.

For **individuals**, you must provide the full legal names of all individuals (such as John Robert Smith and Mary Jane Williams). For **companies and other incorporated entities** you must provide the company name, registration number and registered office details. You must also provide the name of a person or persons who will represent your company and be responsible for the consent.

For **partnerships and unincorporated entities** (such as private or family trusts or unincorporated societies) we must have the details of all authorised partners, trustees, members or officers. We may also request a copy of your society's rules to verify your status as a formal body or society.

Full legal name/s of applicant . Ricky and Evelyn Alabaster

This is the name/s that the consent will be issued to. There is space in part 2 to complete consultant/contractor details

Director/Chief Executive .....

Company registration number .....

We will not accept applications made in the name of unregistered companies

Applicant's postal address 852 Ruanui Road, RD 1, Taihape

.....

Applicant's residential address

.....

If different from postal address above

Applicant's email address . . ricknev@farmside.co.nz .....

Applicant's phone number/s

Home ..... Business ..... Mobile . . 0275198162 ..... Fax .....

2 APPLICANT CONSULTANT/AGENT DETAILS

(If applicable)

Name/Company name . Evergreen Consulting Ltd .....

Contact person . Natasha Adsett .....

Postal address

.....

Email address . natasha@evergreenconsulting.co.nz .....

Phone number/s

Home ..... Business ..... Mobile . 0223096105 ..... Fax .....

3 PARTNERSHIP/UNINCORPORATED ENTITY DETAILS

For partnerships or unincorporated entities (such as private or family trusts or unincorporated bodies or societies) you must provide details of all authorised partners, trustees or members. Any consent granted will then include these names (where possible), and all individuals will be legally responsible for the consent and any associated costs. Should these persons, or their contact details change, then you must notify us. Include details of all further partners/trustees/members on a separate page if necessary.

Name of person .....

Status .....
(Such as partner or trustee)

Residential address .....

Name of person .....

Status .....
(Such as partner or trustee)

Residential address .....

Name of person .....

Status .....
(Such as partner or trustee)

Residential address .....

4 WHO SHOULD WE SEND APPLICATION CORRESPONDENCE TO?

☐ Applicant ☑ Consultant/Agent

Preferred address for service:

☐ Residential address ☐ Postal Address ☐ DX number ☑ Email ☐ Fax

Note: *All further costs will be invoiced directly to the Applicant unless otherwise specified*

5 RESOURCE CONSENT/S SOUGHT

Please select each of the following consents you are applying for. **Please note all prices are GST inclusive.**

☐ Drilling of a Well
Fixed initial deposit $575.00

☐ Surface Water Take
Fixed initial deposit
Stock Water: $977.50
Irrigation: $1,207.50
Other: $1,150.00

☐ Groundwater Take
Fixed initial deposit
Stock Water: fee $885.50
Irrigation: $1,863.00
Other: $1,115.00

☐ Dairyshed Discharge
Fixed initial deposit $885.50

☐ Land use Intensive Farming and Associated Discharges
Fixed initial deposit $1,725.00

☐ Land Disturbance/Vegetation Clearance (e.g. Earthworks)
Fixed initial deposit $920.00

☐ Land Disturbance/Vegetation Clearance (e.g. Forestry activities including NES Production Forestry)
Fixed initial deposit $920.00

☐ Transfer of Consent
Fixed initial deposit $100.00

☑ Works in a Waterbody
Fixed initial deposit $885.50

☐ Gravel Extraction
Fixed initial deposit $1,667.50

☐ On-site Wastewater discharge
Fixed initial deposit $885.50

☐ Discharge to Air
Fixed initial deposit $1,150.00

☐ Discharge to Land
Fixed initial deposit $885.50

☐ Discharge to Water
Fixed initial deposit $1,150.00

☐ Change of Consent Conditions
Fixed initial deposit
Administration conditions: $500
All other conditions: $885.50

☐ Transfer of activity location
Fixed initial deposit $885.50

☐ Intensive Winter Grazing
Fixed initial deposit $885.50

☐ Other
Fixed initial deposit $885.50

5A PROVIDE A BRIEF DESCRIPTION OF THE ACTIVITY TO WHICH THIS APPLICATION RELATES

1. Retrospective consenting of a multi-barrelled culvert structure (herein referred to as the 'access structure') and associated earthworks; and
2. Proposed modifications to the access structure and associated earthworks.

5B ARE THERE ANY CURRENT OR EXPIRED CONSENTS RELATING TO THIS PROPOSAL?

If yes, please provide consent number(s) and description.

◯ YES ◯ NO

5C IF THIS IS A RENEWAL OR REPLACEMENT APPLICATION, DO YOU AGREE TO SURRENDER YOUR CURRENT CONSENT SHOULD THIS APPLICATION BE GRANTED?

◯ YES ◯ NO

n/a

5D ARE THERE ANY OTHER CONSENTS REQUIRED FROM HORIZONS REGIONAL COUNCIL?

If yes, please state the type of consent required and status.

◯ YES ◯ NO

5E DO YOU REQUIRE ANY OTHER RESOURCE CONSENT FROM ANY LOCAL AUTHORITY FOR THIS ACTIVITY?

If yes, please state the relevant authority, type of consent required and status.

◯ YES ◯ NO

6 VALUE OF INVESTMENT (RENEWAL APPLICATIONS ONLY)

Please complete this section ONLY if your application is to renew an existing consent. Select the value below of your investment which is dependent on this consent. Please note this must be on the book/market value (as opposed to replacement value).

◯ < $10,000	☐ $50,000 TO $250,000	◯ $1M TO 5 M	◯ >$50 M
◯ $10,000 – 50,000	◯ $250,000 - $1,000,000	◯ $5M - $50M	◯

If the scope of the investment relating to the activity(ies) which is reliant on the granting of this application is significant, you will need provide evidence of this valuation with the application; such as a valuation or other credible indication of current/recent market value.

7 LOCATION OF PROPOSED ACTIVITY

Is the activity in a coastal marine area? ◯ **YES** ☐ **NO**
(As defined in the RMA 1991)

Property address ....Koukoupo Road.....

Legal description
(This can be found on your rates invoice) LOT 1 DP 517892 LOTS 2 4 DP 15432 LOTS 9-11 DP 18140 LOT 4 DP 19241 LOT 3 DP 30837 LOTS 3-7 DP 32760 LOT 1 DP 56706 MAUNGAKARETU 5B2B2C 5B2B2D 5B2B2E2 PT 5B2B1 5B2B2A PT TE RUANUI 1,9 OTARORO 2B PT OKEHU 2A BLOCKS SECS 4-7 80 81 PT SEC 2 BLK V MAUNGAKARETU SD

Valuation number/s

13310 098 03

Map reference (NZTM 2000) ..... E ....1816814.43..... N ....5617666.93.....
(If known)

7A IF THE OWNER AND/OR OCCUPIER OF THE ACTIVITY SITE DIFFERS FROM THE APPLICANT, PLEASE PROVIDE THEIR NAMES AND CONTACT DETAILS

Owner Name .....

Postal address

.....

Email address.....

Phone number/s

Home..... Business..... Mobile ..... Fax.....

Please note that written approval is required from this landowner and should accompany this application.

8 FIXED INITIAL DEPOSIT FOR APPLICATION

Please refer to the table in Section 5 for the relevant lodgement fee required with your application.

This fee is **REQUIRED** when an application is submitted and is an initial deposit towards the final cost of processing the application. Failure to pay the fee upon lodging your application may result in rejection of your application.

Please note that this initial deposit payment may not cover the full cost of processing the application. In accordance with Section 36(3) of the RMA, Council reserves the right to recover actual and reasonable costs for consent applications where the costs exceed the initial preliminary deposit. In some instances, where additional information is sought by either party, costs can increase and additional charges may be invoiced. Any additional charges will be payable in accordance with the schedule of additional charges laid out in our Annual Plan. Any additional costs will be invoiced following a decision on your application.

If a refund is due, you will be notified by letter or email advising you of the process to receive this.

Payment Methods for Deposit

- Internet banking to Horizons Regional Council bank account (see below)
- Over the counter – payments can be made at any of our offices listed on our website, using credit card, EFTPOS or cash

Please note – you will be liable for any current charges associated with this consent up until Horizons Regional Council receives a surrender or transfer form.

Name of account	Bank	Branch	Account No.	Suffix
Horizons Regional Council	02	0630	0024883	003

Note:
Payer Particulars – Applicant surname or party making payment on behalf of applicant
Payer Code – CONSENTS
Payer Reference – Company name or surname of applicant

Please write below what you have entered for the PayerCode/Payer Reference details when making your deposit online.

C O N S E N T S

Payer Particulars Alabaster | Payer Code CONSENTS | Payer Reference – Name of Applicant Alabaster

Total amount paid $ ..885.50..... Payment date .....

Is the Council required to quote a purchase order number on future invoices for this application?
All Local and Central Government Agencies will require a Purchase Order

◯ Yes ☐ No Order Number .....

9 FINAL CHECKLIST

Have you attached the following?

- ☑ Activity Information and Assessment form/s as ticked above (Form B)
- ☑ Detailed map showing location and all required points of reference as requested on the activity application form.
- ☑ Fixed initial deposit payment

If you have already dealt with a member of Horizons Regional Council regarding your application, please specify their name.

Jasmine Mitchell

Please contact the consents team on freephone **0508 800 800** if you require assistance with your application.

10 APPLICANT DECLARATION

I Natasha Adsett confirm the information contained within this application and additional information is true and correct at the time of submission.

Signature of applicant ..... Date 29 October 2025

(Or person authorised to sign on behalf of the applicant)

Please email your application to **regulatory.administrator@horizons.govt.nz** or alternatively you can post your application to:

Horizons Regional Council
11-15 Victoria Avenue
Private Bag 11025
Manawatu Mail Centre
Palmerston North 4442

IMPORTANT INFORMATION – PLEASE READ CAREFULLY

Official Information

Horizons Regional Council takes your privacy seriously. Any information you provide with this application, including documentation provided in support of your application, is official information. It will be used to process your resource consent application and, together with other official information, assist in the management of the region's natural and physical resources.

This information will be held and administered by Horizons Regional Council in accordance with the Local Government Official Information and Meetings Act 1987 and the Privacy Act 1993.

Your information may be disclosed in accordance with the terms of these Acts. It is therefore important you advise the Council if your application includes trade secrets and/or commercially sensitive material. You have the following rights with regard to the information held about you:

- To access your personal information.
- To request incorrect information to be amended.
- To expect the information to be safely stored and used by or disclosed to authorised users only.
- To expect your personal information to be accurate and consistent in accordance with sound practices of record keeping and information systems management.

Failure to provide the necessary information will mean that Horizons Regional Council will be unable to process your application.

Consent Holder Costs – All Consents

Once granted, most resource consents will incur an annual research and monitoring charge and a compliance monitoring charge pursuant to Section 36 of the Resource Management Act. Application charges involve payment of an initial fixed deposit (minimum application fee) at the time an application is lodged with Council. Where an application is to be limited or publicly notified, a further fixed deposit is required to be paid to Council one week prior to notification occurring. In instances where the total cost of processing an application is not fully covered by the fixed deposit(s), an additional charge(s) will be made under Section 36(5) of the RMA to recover the actual and reasonable costs incurred by the Council in carrying out its statutory functions.

Ongoing Responsibilities

If your application is granted you will be responsible for complying with your consent conditions and payment of your consent charges until your consent expires. If you wish to cancel (surrender) your consent, transfer responsibility to another party, or make changes to your consented activity before it expires, you must submit notice to us in writing or make an application to change your consent.

Evergreen Consulting
Environmental and Urban Planning

Appendix 2: Feedback from Ngāti Rangi

15 Hiringa-ā-nuku (October) 2025
Ricky Alabaster
185 Koukoupo Rd

ricknev@farmside.co.nz

Ngā Waihua o Paerangi Trust
1 Mountain Road, PO Box 195
Ohakune 4660, New Zealand

0800 N RANGI
Office: +64 (0)6 385 9500
Email: office@ngatirangi.com
www.ngatirangi.com

Tēnā koe Ricky

OPTIONS ASSESSMENT KOUKOUPO STREAMS CROSSING – LETTER OF SUPPORT

Tēnā tātau me ngā tini ahuatanga o te wā.

Thank you for your application to Ngā Waihua o Paerangi Trust.

Ngāti Rangi is based on the southern slopes of Matua te Mana (Ruapehu). Our cultural identity is linked to his essence; the lifeblood of our people cascades as waters from his slopes; his peaks above are our sacred altar. The vision statement for Ngāti Rangi is:

"Kia mura ai te ora o Ngāti Rangi nui tonu ki tua o te 1,000 tau.
Ngāti Rangi continues to vibrantly exist in 1,000 years.''

This vision statement means Ngāti Rangi will continue to thrive and prosper for a thousand years and beyond. It is a testament to our role and responsibility to be active tāngata tiaki for our environment to ensure our descendants in 1,000 years have clean water, fresh air, and healthy land.

The Koukoupo Stream is part of the catchment of the Whangaehu River, Te Waiū o Te Ika. This has statutory recognition as part of our recently signed Treaty of Waitangi settlement legislation Rukutia Te Mana.

The origin of the Whangaehu River is Te Wai-ā-Moe, the Crater Lake of our ancestral maunga Koro Ruapehu. This is our most significant awa culturally and spiritually due to its origin and the different qualities it provides for our people; wai ora, wai tapu, wai mouri, wai mana and wai mate. Te Waiū-o-Te Ika upholds the mana of the statutory recognition as a catchment-based approach, an indivisible whole.

Because of the special significance of Te Waiū-o-Te-Ika and in keeping with Te Mana o Te Wai framework, our first priority is the health of the wai and the awa.

<u>Ngati Rangi assessment</u>

After visiting the site and discussing the options for re-establishing fish passage on the Koukoupo Stream with yourself and Dr Mark Heath from Traverse, we are prepared to provide **approval in principle** for the construction of a side passage and culvert that will allow passage of all fish that may be present, without having to demolish the existing culvert.

Any such construction will require correct sediment management and remedial planting to ensure kōura habitats are established and the mouri of the stream is preserved and enhanced.

We will also require a cultural induction for all workers involved with construction, an onsite whakatau at the commencement and conclusion of works, and cultural monitoring.

We consider this a better option than removing the existing culvert as the removal would cause a great deal of damage to the stream. The excess silt from the demolition could cause death of fish downstream.

Once a resource consent for the works has been submitted we will be in a better position to examine the details of the proposed works before making a final decision. In particular, we will need to evaluate the sediment management plan, planting plan and any other necessary steps to prevent scouring.

Heoi ano,



Dr Michael Morris
Kaitātari Taiao
Pae Whakahā

Appendix 3: Correspondence with Biodiversity Team

From:	Amy MacDonald
To:	Natasha Adsett
Cc:	Laura Hickey
Subject:	RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)
Date:	Monday, 4 August 2025 3:27:19 pm
Attachments:	image001.png image002.png image003.png image004.png image005.png

Hi Natasha,

Laura Hickey asked me to get in touch with you regarding any potential biodiversity sites within the vicinity of the bridge construction site on Koukoupo Road, Tangiwai.

I have completed a desktop assessment of the site of interest, and it is my opinion that there are no areas of biodiversity within a 300m radius of the site that would meet the criteria of threatened, at-risk or rare habitat type as defined by Schedule 6 of the One Plan.

There are a couple of sites, one to the east and one to the south, that could potentially meet the criteria of threatened, at-risk or rare habitat type as defined by Schedule 6, but a habitat assessment completed by a Horizons ecologist or a suitable qualified ecologist would be required to confirm.

I am happy to provide a map showing the indicative boundary of these potential sites if required.

Cheers,
Amy

AMY MACDONALD | Pou whakamahiri Rangahau | Mātai Hauropi | Research Associate - Ecology
Horizons Regional Council
M +64 21 2277294

From: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Sent: Thursday, 31 July 2025 2:29 PM
To: Laura Hickey <Laura.Hickey@horizons.govt.nz>
Cc: Tina Malone <Tina.Malone@horizons.govt.nz>; Les Crate <Les.Crate@horizons.govt.nz>; Natasha Adsett <natasha@evergreenconsulting.co.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Thanks Laura,

That is helpful and will be taken into consideration in our options assessment.

On that note are you able to advise of (or put me in touch with someone who can) any biodiversity sites at or near the site ie. on the biodiversity map layer are there any indicative sites here?

Many thanks
Natasha

Natasha Adsett
Senior Planner (BRP Hons, Int.NZPI)
Evergreen Consulting Limited
Phone: 0223096105

From: Laura Hickey <Laura.Hickey@horizons.govt.nz>
Sent: Monday, 28 July 2025 3:46 pm
To: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Cc: Tina Malone <Tina.Malone@horizons.govt.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Hi Natasha,

Yes we have been working very hard to remove and remediate barriers such as these for the last five years.
I worked in the fish passage team for several years so am very familiar with the installation and maintenance of fish passage remediation tools.

Remediation is not a suitable option for this structure as fish passage would not be able to be fully restored to the level that a correctly installed structure would provide. This is particularly relevant given it was installed under the current legislative framework – retrofitted remedial tools are useful at historic structures where improvement is needed but it must be acknowledged that they often only achieve improvement i.e. not fully unimpeded passage. Remedial options cannot always fully restore fish passage depending on the nature of the barrier.

I don't believe that remediation of this structure could be undertaken in a way that eliminates the apron perch and the culvert perch, addresses the water velocity issues in the barrels or achieves substrate retention through the barrels.
Raised, multi-barrel fords are particularly difficult to remediate and in fact, the fish passage guidelines recommend avoiding the installation of these structures where possible.

Furthermore, any remediation option would be intensive, expensive and would require ongoing maintenance and investment over time.

The cost of this would be better spent replacing the structure.

To summarise my rather long-winded response, retrofit remedial options are not considered appropriate for use here given:

a) The high cost of installation (which would be better spent replacing the structure);

b) The intensive monitoring and maintenance that would be required to maintain these fish passage elements; and

c) The fact that the structure would still impede the passage of some species at some flows i.e. fish passage would not be 100% achieved.

Please sing out if you need anything more,

Cheers,
Laura

From: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Sent: Monday, 28 July 2025 2:04 PM
To: Laura Hickey <Laura.Hickey@horizons.govt.nz>
Cc: Tina Malone <Tina.Malone@horizons.govt.nz>; Natasha Adsett <natasha@evergreenconsulting.co.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Thanks Laura,

So in terms of mitigations for the migratory species I know HRC have undertaken a lot of work in recent years with installation of rock ramps, spat ropes etc on perched culverts. What are your thoughts around these mitigations at this site if we are able to find an appropriate engineering solution?

Many thanks
Natasha

Natasha Adsett
Senior Planner (BRP Hons, Int.NZPI)
Evergreen Consulting Limited
Phone: 0223096105

From: Laura Hickey <Laura.Hickey@horizons.govt.nz>
Sent: Monday, 28 July 2025 1:14 pm
To: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Cc: Tina Malone <Tina.Malone@horizons.govt.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Hi Natasha,

Thanks for getting in touch, hope all is well with you.

With regards to the fish species list I have provided to Tina, these species have been identified as potentially present in the stream, as there is no fish data available from this stream and very limited data for this catchment.
This was done to help answer the question of "how long could this structure remain in place without disrupting critical migration periods?".

As you know, fish passage is a key aspect of providing for freshwater ecosystems and is legislatively required to be provided for regardless of what specific species are present.

With regards to the species list, this was derived based on:

a) Habitat characteristics of the stream;
b) Monitoring data available from similar tributaries of the Whangaehu River; and
c) The NES Fish Spawning Indicator Tool – while the specific reach is not identified for fish spawning, there is brown trout spawning habitat flagged in a downstream reach, indicating brown trout may be present.

The species predicted to be present in the stream led to the conclusion that at least one species is likely undertaking upstream migration at any given time of the year.

Please let me know if you have further questions.

Kind Regards,

Laura

From: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Sent: Monday, 28 July 2025 9:36 AM
To: Tina Malone <Tina.Malone@horizons.govt.nz>; Laura Hickey <Laura.Hickey@horizons.govt.nz>
Cc: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

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Thanks Tina,

Hi Laura,

I have received the below from Tina. Can you please elaborate which fish spawning indicator you have used? The only one we are aware of is the one under the NES-PF which indicates no values at this site.

We have also reviewed the One Plan, and this indicates no values aside from domestic food supply.

It would be good if you could please supply some more information in respect of the below.

Many thanks
Natasha

Natasha Adsett
Senior Planner (BRP Hons, Int.NZPI)
Evergreen Consulting Limited
Phone: 0223096105

From: Tina Malone <Tina.Malone@horizons.govt.nz>
Sent: Monday, 28 July 2025 9:17 am
To: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Morning Natasha

Based on the habitat characteristics, the NES Fish Spawning Indicator Tool and fish data available from similar tributaries of the Whangaehu, the following fish species are likely present in the stream:

- Common bully: December – March
- Kaharore bully: Non-migratory

- Koura: Non-migratory
- Shortfin eel: November to April
- Longfin eel: November to April
- Brown trout: December to May
- Rainbow trout: May to September

If you require more information you can contact our fresh water scientist, Laura Hickey. I have cc'ed her into this message for your information.

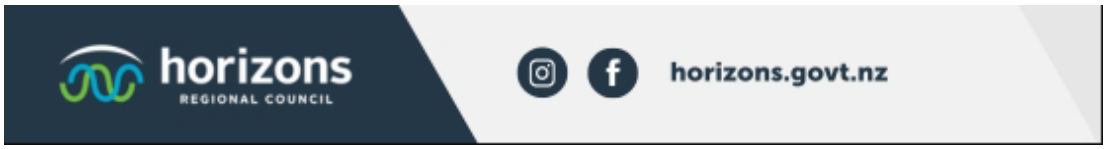
Thank you for the update regarding reporting prior to 1 August 2025.

Kind Regards

Tina Malone | Kaitirotiro Matua | Senior Investigator

Investigations and Incidents

M 021 22 77 169 | Horizons Regional Council | 0508 800 800



Monday	Tuesday	Wednesday	Thursday	Friday
In office	WFH	In office	WFH	In office

From: Natasha Adsett <natasha@evergreenconsulting.co.nz>
Sent: Monday, 28 July 2025 8:00 AM
To: Tina Malone <Tina.Malone@horizons.govt.nz>
Cc: Les Crate <Les.Crate@horizons.govt.nz>; lara.blomfield@icloud.com; ricknev@farmside.co.nz; Natasha Adsett <natasha@evergreenconsulting.co.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Some people who received this message don't often get email from natasha@evergreenconsulting.co.nz. Learn why this is important

Morena Tina,

I have been engaged by Ricky and Evelyn Alabaster to assist with consenting matters in respect of the Earthworks and bridge construction on Koukoupo Road, Tangiwai.

You have mentioned to Lara below that there are a number of species of fish identified instream. Are you able to elaborate on this with the specific species – or place me in contact with the freshwater scientist you spoke to please?

Ricky and Evelyn have also asked me to respond to your request for an update on or before 1 August 2025. I will be in contact later this week to formally do so.

Many thanks
Natasha

Natasha Adsett
Senior Planner (BRP Hons, Int.NZPI)
Evergreen Consulting Limited
Phone: 0223096105

From: lara.blomfield@icloud.com <lara.blomfield@icloud.com>
Sent: Thursday, 10 July 2025 3:05 pm
To: 'Tina Malone' <Tina.Malone@horizons.govt.nz>
Cc: 'Les Crate' <Les.Crate@horizons.govt.nz>
Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Hi Tina,

Sorry to have missed your call. Thanks for getting back to me so promptly on this.

I appreciate the Council taking a pragmatic approach. I will stress to my client the importance of addressing this matter as soon as possible.

Kind regards

Lara Blomfield
m. 021 864 625
e. lara.blomfield@icloud.com

From: Tina Malone <Tina.Malone@horizons.govt.nz>
Sent: Thursday, 10 July 2025 2:44 pm
To: lara.blomfield@icloud.com
Cc: Les Crate <Les.Crate@horizons.govt.nz>

Subject: RE: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Good afternoon Lara

I have just tried to call you regarding the construction of an unconsented river crossing at Mr Alabaster's property, Koupoupo Road Rangiwai.

During your phone call yesterday, you informed that Mr Alabaster has carried out planting of the area and is obtaining planning advice to obtain a Resource Consent to construct a lawful crossing.

My understanding is that is essence your query is whether the existing structure can remain and as such be remedied sufficiently to comply with the requirements of the National Standards for Fresh Water 2020, and the Horizons One Plan, or conversely whether the structure can remain in place during the Resource Consent process.

I have spoken to our Fresh water scientist who informs that there are no sufficient remedial options that would support the structure remaining. The structure remains a severe barrier to fish passage, with several species identified within the area undertaking migration throughout most of the calendar year.

As Mr Crate informed the structure must be removed pursuant to Horizons One Plan Rule LF-AWBD-R59.

Regarding timeframes, I am cognisant of the fact that you have informed that this is Mr Alabaster's farm access route however this must not be a barrier to complying with the requirements of the National Environmental Standards for Freshwater 2020 or the rules set out within the Horizons One Plan.

After careful consideration I can inform that the date of 1 August 2025 should remain, however this date will be the required reporting date to Horizons Regional Council Compliance Officer Mr Les Crate informing:

- the engagement of a suitably qualified planner to undertake the engineering design
- timeframe for provision of the engineering design to council
- a rigid time frame for the removal of the structure that does not extend past 11 December 2025.

The expectation is that this will he a high priority for remediation.

Although I will not go into detail regarding the requirement of resource consent for the construction of a compliant replacement crossing, I will inform that there is a

possibility that this undertaking may fall within a permitted activity, not requiring consent, if several factors are satisfied. The planner Mr Alabaster engages will be able to assist further with this.

If Mr Alabaster has any queries relating to the process for Resource Consent he can contact the consents team at consents.enquiries@horizons.govt.nz or alternatively call Horizons and request to speak to the duty consent planner.

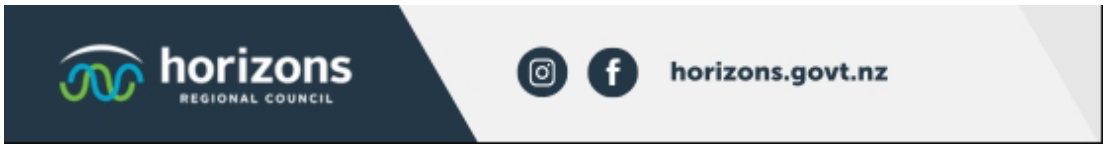
I will reiterate that this does not allow for a relaxed approach to the required compliance rather a pragmatic approach to remedy to the non-compliance.

Kind Regards

Tina Malone | Kaitirotiro Matua | Senior Investigator

Investigations and Incidents

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Monday	Tuesday	Wednesday	Thursday	Friday
In office	WFH	In office	WFH	In office

From: lara.blomfield@icloud.com <lara.blomfield@icloud.com>
Sent: Monday, 7 July 2025 10:32 am
To: Tina Malone <Tina.Malone@horizons.govt.nz>
Subject: FW: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

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Hello Tina,

I was hoping to speak to Les Crate about a letter he sent my client Ricky Alabaster on 11 June. I received an out of office reply to the email I sent Les (see below). I understand Les is away until 28 July. The out of office reply suggested that I contact you about anything

needing attention.

I have your cell phone number, but wanted to give you a heads up about why I was calling. It might be helpful for you to read Les's 11 June letter before I call you.

I would be grateful if you could read the email I sent Les this morning (below) and let me know when it would suit for me to call you.

Kind regards

Lara Blomfield
m. 021 864 625
e. lara.blomfield@icloud.com

From: lara.blomfield@icloud.com <lara.blomfield@icloud.com>
Sent: Monday, 7 July 2025 10:17 am
To: 'les.crate@horizons.govt.nz' <les.crate@horizons.govt.nz>
Subject: Infringement Notice 1256 and Letter sent to Ricky Alabaster (Earthworks and bridge construction on Koukoupo Road, Tangiwai)

Hello Les,

I've recently been engaged to assist Ricky Alabaster. He has forwarded me a copy of your 11 June 2025 letter, which was sent with an infringement notice (1256) for discharging sediment onto land which resulted in it entering the Koupoupo Stream. I understand the infringement fee was paid late last month.

Your 11 June letter recommends that the unconsented concrete bridge be removed by 1 August, and a resource consent be obtained for a replacement structure. It would be really helpful for me (and Ricky) if you and I could have a discussion about that. I tried calling this morning, but realise you might be out in the field.

Can you please let me know when it would suit for me to give you a call?

Kind regards

Lara Blomfield
m. 021 864 625
e. lara.blomfield@icloud.com

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Evergreen Consulting
Environmental and Urban Planning

Appendix 4: Freshwater assessment - Dr Mark Heath

MEMO

Traverse Environmental

Date:	30 October 2025
To:	Natasha Adsett (Evergreen Consulting Limited)
From:	Dr Mark Heath – Traverse Environmental
Subject:	Ecological impact assessment – fish passage structure, Koukoupo Stream, 185 Koukoupo Road, Rangiwaea

1 Introduction

This memorandum provides an assessment of ecological effects as part of Ricky and Evelyn Alabaster's resource consent application to construct a fish passage bypass channel and to retrospectively obtain consent for the construction of a multi-barrelled vented ford in the Koukoupo Stream, located at 185 Koukoupo Road, Rangiwaea. The site is located within the headwaters of the Whangaehu River catchment, near Taihape.

2 Description of the existing environment

2.1 Stream characteristics

The Koukoupo Stream, a tributary of the Whangaehu River, originates in the hill country east of Taihape. It flows westward through steep pastoral terrain typical of the upper Whangaehu catchment. Throughout its length, the stream is confined within narrow valleys with a moderately incised channel and occasional exposure of soft mudstone and sandstone. Near its confluence with the Whangaehu River, the Koukoupo Stream remains relatively steep and confined, reflecting the rugged topography of the Rangitīkei/Ruapehu hill country.

At the reach directly upstream and downstream of the vented ford, the stream is steep and confined, resulting in high water velocities. Natural waterfalls exceeding 3 metres in height occur both directly upstream and downstream of the site, forming significant natural barriers to fish passage (see section 2.2 and Figure 1).

The Whangaehu River consists of two main branches:

- the main Whangaehu River, which includes tributaries such as the Koukoupo and Mangamahu Streams, and
- the Mangawhero River to the northwest, which in its upper reaches flows through the township of Ohakune.

The two rivers converge approximately 15 kilometres from the coast and about 10 kilometres north of Fordell, before the Whangaehu River continues its course toward the Tasman Sea, south of Whangaehu Beach.

The Whangaehu River's source is Te Wai ā-moe (Mount Ruapehu's Crater Lake), which periodically releases highly acidic, metal-rich water into the headwaters. These discharges strongly influence downstream water quality and aquatic ecology, as discussed in Section 2.2.

2.2 Fish present in the Koukoupo Stream

The only fish species confirmed in the Koukoupo Stream are eels of unidentified species (personal communication: Ricky Alabaster), which have been observed upstream.

There are no records for the Koukoupo Stream in the New Zealand Freshwater Fish Database (NZFFD). Similarly, the Mangamahu Stream — a major tributary of the Whangaehu River located downstream of the Whangaehu/Koukoupo confluence — has only a single eDNA record indicating the presence of longfin eel (*Anguilla dieffenbachii*).

Within the Whangaehu River downstream of the Koukoupo confluence, only three fish records exist in the NZFFD, representing shortfin eel (*A. australis*), longfin eel (*A. dieffenbachii*), common bully (*Gobiomorphus cotidianus*), inanga (*Galaxias maculatus*), and redfin bully (*G. huttoni*). Further upstream, in the upper Whangaehu catchment north of State Highway 49, there are over twenty records exist across the mainstem and its tributaries — including the Tokiahuru, Waihianoa, Waitaiki, and Omarare Streams — but these records are limited to rainbow trout (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*), with no native species recorded.

The Whangaehu River (Whangaehu arm) originates from Te Wai ā-moe, whose periodic acidic and metal-rich discharges create conditions unsuitable for most aquatic life. These flows prevent the establishment of resident fish populations and support only sparse macroinvertebrate communities. Occasional migratory species, such as eels or inanga, may enter the mainstem but are considered transient due to the persistent chemical barrier to recolonisation.

In contrast, non-acidic tributaries such as the Mangawhero and Tokiahuru Streams support self-sustaining fish populations and are recognised trout-fishery reaches (TF3) under the Horizons One Plan. These tributaries act as refugia within the catchment, sharply contrasting with the highly acidic Whangaehu mainstem, where low pH (< 5) and elevated dissolved metals (e.g., Fe, Al) limit recruitment by both migratory and non-migratory species (Gray & Harding, 2012). Following crater-lake overflow events, pH values as low as 3 have been recorded near the estuary (Deely & Sheppard 1996), with fish kills periodically reported (Chisnall & Keys, 2002).

The Mangawhero River arm, in comparison to the Whangaehu arm, supports a comparatively diverse fish community. Lower reaches contain longfin eel, kōaro (*Galaxias brevipinnis*), common bully, and inanga (believed to be transient), while upper reaches near Ōhakune host longfin eel, shortfin eel, kōaro, common bully, rainbow trout, brown trout, and kōura (*Paranephrops planifrons*).

Across the broader Whangaehu catchment, species recorded in the NZFFD include brown trout, rainbow trout, kaharore bully, common bully, kōaro, kōura, inanga, and redfin bully. These species occur mainly in non-acidic tributaries such as the Mangawhero arm and are treated as potentially present in the Koukoupo Stream for assessment purposes, though the likelihood varies. Longfin eel, inanga, redfin bully, and kōaro are classified as *At Risk – Declining* (Dunn et al., 2017), while other native species in the catchment are *Not Threatened*.

Of these, inanga (poor climbers) and redfin bully — typically restricted to lowland rivers below about 400 m elevation — are unlikely to occur in the steep, elevated Koukoupo Stream (McDowall, 1990; Crow et al., 2016).

2.2.1 Fish present in the Koukoupo Stream at 185 Koukoupo Road

The waterfalls located both upstream and downstream of the site act as significant natural barriers to fish passage. Kaharore bully and common bully are poor climbers and are therefore unlikely to navigate such barriers (Franklin et al., 2024). Trout are also poor climbers but are strong jumpers; however, they are unlikely to successfully navigate waterfalls exceeding 2 metres in height (see McDowall, 1990; Franklin et al., 2024).

In contrast, longfin eel, shortfin eel, and kōaro are recognised as excellent climbers. Juveniles of these species have been documented ascending steep, wet, and even vertical surfaces several metres high (McDowall 1990; McDowall 2003; Jellyman 1977). Their climbing success depends on factors such as water velocity, surface wetness, and the presence of rough or vegetated surfaces that provide grip and resting areas.

Given these characteristics, the waterfalls at the Koukoupo Stream site are likely to restrict the movement of poor-climbing species such as common and kaharore bully, as well as trout, unless deliberately introduced upstream. The species most likely to persist above these barriers are therefore longfin eel and shortfin eel, which are strong climbers and relatively tolerant of a range of water conditions.

Kōaro are also capable climbers and are found elsewhere in the wider Whangaehu catchment; however, they have been detected only in the Mangawhero arm, which is hydrologically separate and has more neutral water chemistry. Their presence in the Whangaehu arm — including the Koukoupo Stream — is considered highly unlikely, as this branch receives acidic, metal-rich water from *Te Wai ā-moe*. Being diadromous, kōaro require access between freshwater and the sea to complete their life cycle, meaning that any individuals seeking to recolonise the upper Whangaehu or Koukoupo Stream would need to migrate through the mainstem Whangaehu River. The consistently low pH and high metal concentrations in this system act as a strong chemical barrier, limiting recruitment of kōaro and other sensitive species (Allibone et al., 2010).

Kōura may also be present upstream, as they are capable of limited overland movement.



Figure 1: Waterfall directly upstream (left) and downstream (right) of the multi-barrel vented ford and fish passage bypass.

2.3 Recognised surface water management values

The Koukoupo Stream is located within the Whau_2 Middle Whangaehu Surface Water Management Sub-zone (SWMSZ) and the Whau_2 Surface Water Management Area (SWMA), as identified in the Horizons Regional Council's One Plan. The surface water management values identified in the One Plan for the Koukoupo Stream are summarised in Table 1.

Of the SWMA values, only life-supporting capacity and aesthetic values are assessed in this memorandum. The remaining values are either not affected by the proposed activity or cannot be assessed within the scope of this freshwater ecological impact assessment (for example, mauri).

Table 1: Koukoupo Stream One Plan Surface Water Management Zone and subzone values

Zone-wide Surface Water Management Values – Whau_2 Middle Whangaehu	Reach-specific Surface Water Management Values – Koukoupo Stream
Life-supporting capacity (Hill Soft Sedimentary - HSS)	Domestic food supply
Aesthetics	
Contact recreation	
Mauri	
Industrial abstraction	
Irrigation	
Stockwater	
Existing infrastructure	
Capacity to assimilate pollution	

3 Proposal outline

The proposal involves the retrospective consenting of an already constructed multi-barrelled vented ford and the modification of the ford with a fish passage bypass culvert. The vented ford was constructed by the applicant following the structural failure of the previous bridge at the site and prior to obtaining resource consent.

The proposed fish passage bypass is designed to provide safe and effective passage for eels and other native or introduced fish species that may be present in the Koukoupo Stream at 185 Koukoupo Road.

Together, the multi-barrelled vented ford and the fish passage bypass constitute the activities for which resource consents are being sought.

4 Structure dimension and details

Components of the multi-barrelled vented ford and fish-passage bypass culvert design that are relevant to this ecological assessment are summarised below. Engineering drawings and full details are provided in Jon Bell's (e2 Environmental) engineering assessment.

4.1 Multi-barrelled vented ford

The vented ford consists of five 500 mm-diameter PVC culverts encased in reinforced concrete. The concrete structure is approximately 1.2 metres deep and provides a trafficable surface measuring approximately 6 m × 6 m, over which the stream is forded (see Figure 2). The culverts within the ford fall by 20 mm between their inlets and outlets; this slight downstream gradient is consistent with the natural stream gradient.

At the outlet, the culverts are perched approximately 200 mm above the concrete apron, and the apron itself is raised about 200 mm above the natural stream bed of the Koukoupo Stream.



Figure 2: Multi-barrelled vented ford constructed following the structural failure of the previous bridge at the site.

4.2 Fish passage bypass culvert

The proposed fish-passage bypass culvert will be constructed on the true left side of the stream, as shown in Figure 3. It will be embedded approximately 25 percent into the riverbed to allow for the natural deposition of cobbles and gravels within the culvert and will be aligned with the natural stream gradient to maintain consistent hydraulic conditions. Baffles will be installed to reduce internal water velocity and promote deposition suitable for fish passage. The design ensures hydraulic and ecological connectivity between upstream and downstream.

Overall, the fish bypass is expected to provide safe and effective passage for fish moving both upstream and downstream and is consistent with the design principles outlined in the New Zealand Fish Passage Guidelines (Franklin et al., 2022).



Figure 3: Proposed fish passage bypass. The blue circle indicates the upstream culvert inlet, while the dotted lines show the approximate alignment of the culvert (source: personal communication, Jon Bell).

5 Assessment of effects

5.1 Effects on fish passage

5.1.1 Multi-barrelled vented ford (without modification)

The existing multi-barrelled vented ford is generally inconsistent with national fish passage guidelines (Franklin et al., 2022) and does not fully provide for safe upstream and downstream fish movement.

At the outlet, there is a vertical drop of approximately 200 mm from the culvert barrels to the ford apron, and a further 200 mm drop from the apron to the natural streambed. These vertical drops create barriers to upstream migration. For eels, which are strong climbers, these drops may not be insurmountable; however, for other species that may occur in the Koukoupo Stream, these structures are likely to present a permanent obstacle to passage.

Each of the five culvert barrels is constructed with a smooth PVC interior surface and lacks baffling or internal structure to reduce stream velocity or provide resting areas. As a result, stream velocities within the culverts are expected to remain higher than in the adjoining stream reaches. The absence of natural substrate or baffling in the culverts further limits passage opportunities, as species such as eels and bullies typically rely on gravel and cobble substrates to grip and rest against during upstream migration.

Although fish passage may still occur for some species during periods of low flow, the smooth culvert surfaces, flow constriction, and elevated velocities are likely to significantly restrict overall passage opportunities. Consequently, the existing multi-barrelled vented ford presents a moderate to high fish passage barrier for fish species potentially present in the Koukoupo Stream.

5.1.2 Fish passage bypass

The fish passage bypass has been designed, as far as practicable, to comply with the National Environmental Standards for Freshwater (NES-F), the Horizons One Plan permitted activity conditions, and best-practice guidance outlined in the New Zealand Fish Passage Guidelines (Franklin et al., 2022).

Key design features include:

- The bypass will be aligned parallel to the natural slope of the riverbed to maintain consistent hydraulic conditions.
- The mean cross-sectional water velocity within the culvert will be consistent with that of the immediately adjoining stream reaches.
- The culvert will be embedded at least 25% of its diameter below the bed level to allow for natural sediment retention.
- Natural bed substrate will be present throughout the full length of the culvert to support fish passage and maintain ecological connectivity.
- The culvert diameter will be as large as practicable for the site to minimise hydraulic constriction and replicate natural stream conditions.
- The structure is designed to maintain fish passage comparable to natural stream conditions, supporting both upstream and downstream movement.

While the bypass will provide for safe and effective fish passage, the combined configuration of the multi-barrelled vented ford and bypass culvert means that the overall culvert width relative to the natural streambed width does not meet the recommended culvert-to-stream width ratio specified in current best-practice guidelines and the permitted activity standards of the One Plan and NES-F.

Despite this, the proposed bypass structure will restore upstream and downstream connectivity for both climbing and swimming fish species potentially present in the Koukoupo Stream.

5.1 Construction effects

It is my understanding that the contractor will undertake the construction of the fish-bypass channel in a dry work environment by first diverting the main flow towards the true-right bank via a cofferdam (most likely constructed using sandbags), ensuring that the working area remains isolated from flowing water. The diversion will be established prior to any excavation or disturbance within the channel, and stream connectivity and flow will be maintained at all times.

The contractor will carry out the works only during the summer low-flow period (December to April inclusive). Throughout construction, the contractor will minimise the area and duration of disturbance and will sequence activities to ensure that any disturbance to the channel bed and banks is kept to the shortest practicable duration. The works are expected to be completed within approximately five days.

All disturbed surfaces — including the channel bed, banks, access tracks, and spoil stockpiles — will be promptly stabilised (using re-vegetation, mulch, or riprap) once works in each section are complete. Ancillary works, such as access tracks, stockpiles, and plant areas, will be managed using stabilised entrances, silt fences, or bunds, as appropriate.

By working in the dry, maintaining stream flow, controlling sediment-bearing water, minimising disturbance, and promptly stabilising disturbed surfaces, the contractor's proposed methods are expected to minimise the risk of sediment generation and discharge to the Koukoupo Stream.

5.2 Life-supporting capacity value

The 'life-supporting capacity' value in the Horizons One Plan is applicable to all natural water bodies and their beds and is associated with a management objective that the water body and its bed support healthy aquatic ecosystem. This value recognises the need to safeguard the life-supporting capacity of the waterbodies to a satisfactory (i.e. healthy) level. It is not intended to support or justify a return to a pristine or natural state (Ausseil & Clark, 2007). Planning provisions associated with this value are intended to maintain the water quality, quantity and habitat requirements necessary to support aquatic life. They focus on managing contaminant discharges, reducing sediment runoff, ensuring safe fish passage, and minimising channelisation and habitat modification.

The potential effects of the proposed multi-barrelled vented ford and fish passage bypass on the life-supporting capacity of the Koukoupo Stream include localised changes to physical habitat and potential disruption to fish passage.

An assessment of the fish community in the Koukoupo Stream indicates that the stream is unlikely to support a diverse assemblage of species, with eels being the only species confirmed and likely to be present, upstream of the site. Nevertheless, the proposed fish passage bypass has been designed to provide safe passage for eels and any other fish species potentially present, particularly during low to moderate flow conditions when water velocities are conducive to upstream movement.

Localised habitat disturbance associated with the construction of the multi-barrelled vented ford, bypass culvert, and any associated scour protection works will be offset through riparian planting of native vegetation directly upstream and downstream of the structures. This planting was recommended and endorsed by Ngāti Rangi to enhance ecological habitat values, particularly for eels (tuna) and koura and bring mana back to the stream. The riparian vegetation will also play an important role in stabilising stream banks and mitigating erosion. The native riparian vegetation will vastly improve the stream bank habitat and natural aesthetics compared to its previous state.

6 Conclusion

The proposed fish passage bypass has been designed to provide safe passage for fish moving both upstream and downstream within the Koukoupo Stream. While the existing multi-barrelled vented ford is unlikely to provide consistent fish passage to all species potentially present in the Koukoupo Stream, the construction of the bypass will, in my opinion, effectively mitigate this limitation by restoring aquatic connectivity and maintaining the stream's life-supporting capacity.

The bypass will also avoid the substantial sediment generation and habitat disturbance that would result from the removal of the vented ford. In addition, native riparian vegetation, both recently planted by the applicant and proposed, will stabilise stream banks and enhance ecological habitat that was not previously present.

It is therefore concluded that the adverse effects on the aquatic environment — including those on fish passage and life-supporting capacity — will be no more than minor.

7 References

- Allibone, R. M., David, B. O., Hitchmough, R. A., Jellyman, D. J., Ling, N., Ravenscroft, P., & Waters, J. M. (2010). *Conservation status of New Zealand freshwater fish, 2009.* New Zealand Journal of Marine and Freshwater Research, 44(4), 271–287. https://doi.org/10.1080/00288330.2010.514346

- Ausseil, O. M. N., & Clark, M. (2007). *Water management zones and values: Horizons Regional Council One Plan Technical Report.* Horizons Regional Council, Palmerston North, New Zealand.

- Chisnall, B. L., & Keys, H. J. R. (2002). *Whangaehu River ecology and lahar impacts.* Department of Conservation Science Internal Series 42, Department of Conservation, Wellington, New Zealand.

- Crow, S., Snelder, T., Jellyman, P., Greenwood, M., Booker, D., & Dunn, A. (2016). *Temporal trends in the relative abundance of New Zealand freshwater fishes: Analysis of New Zealand Freshwater Fish Database records (NIWA Client Report No. CHC2016-049).* National Institute of Water & Atmospheric Research (NIWA). https://www.mfe.govt.nz/sites/default/files/media/Fresh%20water/temporal-trends-report.pdf

- Deely, J. M., & Sheppard, D. S. (1996). *Whangaehu River, New Zealand: Geochemistry of a river discharging from an active crater lake.* Applied Geochemistry, **11**(3), 447-460. https://doi.org/10.1016/0883-2927(96)00023-6

- Dunn, N. R., Allibone, R. M., Closs, G. P., Crow, S. K., David, B. O., Goodman, J. M., … & Rolfe, J. R. (2017). *Conservation status of New Zealand freshwater fishes, 2023.* Department of Conservation, Wellington, New Zealand.

- Franklin, P., Baker, C., Gee, E., Bowie, S., Melchior, M., Egan, E., Aghazadegan, L., & Vodjansky, E. (2024). *New Zealand Fish Passage Guidelines* (v2.0). NIWA, Taihoro Nukurangi. Retrieved from https://www.niwa.co.nz/sites/default/files/2025-01/NZ_Fish_Passage_Guidelines_2024_v4.4_FINAL_Jan2025.pdf

- Gray, D.P., & Harding, J.S. (2012). *Heavy metals: confounding factors in the response of NZ freshwater fish assemblages to acidity. Environ. Toxicol. Chem.*, 31(10), 2300–2308.

- Jellyman, D. J. (1977). *Summer upstream migration of juvenile freshwater eels in New Zealand rivers.* New Zealand Journal of Marine and Freshwater Research, 11(1), 61–71. https://doi.org/10.1080/00288330.1977.9515661

- McDowall, R. M. (1990). *New Zealand freshwater fishes: A natural history and guide.* Auckland, New Zealand: Heinemann Reed.

- McDowall, R. M. (2003). *The key to climbing in the kōaro. NIWA Water & Atmosphere*, 11(1), 16-17. Retrieved from https://niwa.co.nz/sites/default/files/import/attachments/climbing.pdf

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Appendix 5: Engineering assessment – Jon Bell

Memo

To:	Natasha Adsett (Evergreen Consulting Limited)	From:	Jon Bell
Cc:		Date:	30 October 2025
Subject:	Engineering Assessment – Koukoupo Stream Crossing, 185 Koukoupo Road, Rangiwaea		

1 INTRODUCTION

This memorandum provides an engineering assessment of effects to support an application for resource consent to construct a fish passage bypass culvert and to retrospectively obtain resource consent for the construction of a multi-barrelled vented ford in the Koukoupo Stream, located at 185 Koukoupo Road, Rangiwaea.

2 EXISTING ENVIRONMENT

2.1 River Characteristics

The Koukoupo Stream, a tributary of the Whangaehu River, originates in the hill country east of Taihape. It flows eastward through steep pastoral terrain typical of the upper Whangaehu catchment. In its upper reaches, the stream is confined within narrow valleys with moderately incised channels and occasional exposures of soft mudstone and sandstone. Further downstream, the valley widens slightly, and the stream meanders through grazed pasture. Near its confluence with the Whangaehu River, the Koukoupo Stream remains relatively steep and confined, reflecting the rugged topography of the Rangitīkei/Ruapehu hill country.

The Whangaehu River consists of two main arms:

- the Whangaehu arm, which includes tributaries such as the Koukoupo and Mangamahu Streams, and
- the Mangawhero arm to the northwest, which in its upper reaches flows through the township of Ohakune.

The two arms converge approximately 15 kilometres from the coast and about 10 kilometres north of Fordell, before the Whangaehu River continues its course toward the Tasman Sea, south of Whangaehu Beach.

2.2 Lingitudinal Profile of the Stream Channel

The reach directly upstream and downstream of the vented ford is steep and confined. Natural waterfalls exceeding 3 metres in height occur both directly upstream and downstream of the site.

A longitudinal profile covering a reach of approximately 400 metres around the site has been extracted from the LINZ 8m DEM dataset[1]. This dataset has been derived from topographic map contours and spot heights. This means that it is not as precise as DEMs derived from LiDAR surveys, however, it is the most accurate representation of elevations available for use at this time.

The extent of the profiled reach is shown in Figure 1, and the profile itself in Figure 2



Figure 1 - Longitudinal Profile Reach of the Koukoupo Stream

[1] *Land Information New Zealand (LINZ). (2012). NZ 8m Digital Elevation Model. LINZ Data Service. Retrieved from https://data.linz.govt.nz/layer/51768-nz-8m-digital-elevation-model-2012/. Licensed under CC BY 4.0.* [data.linz.govt.nz]

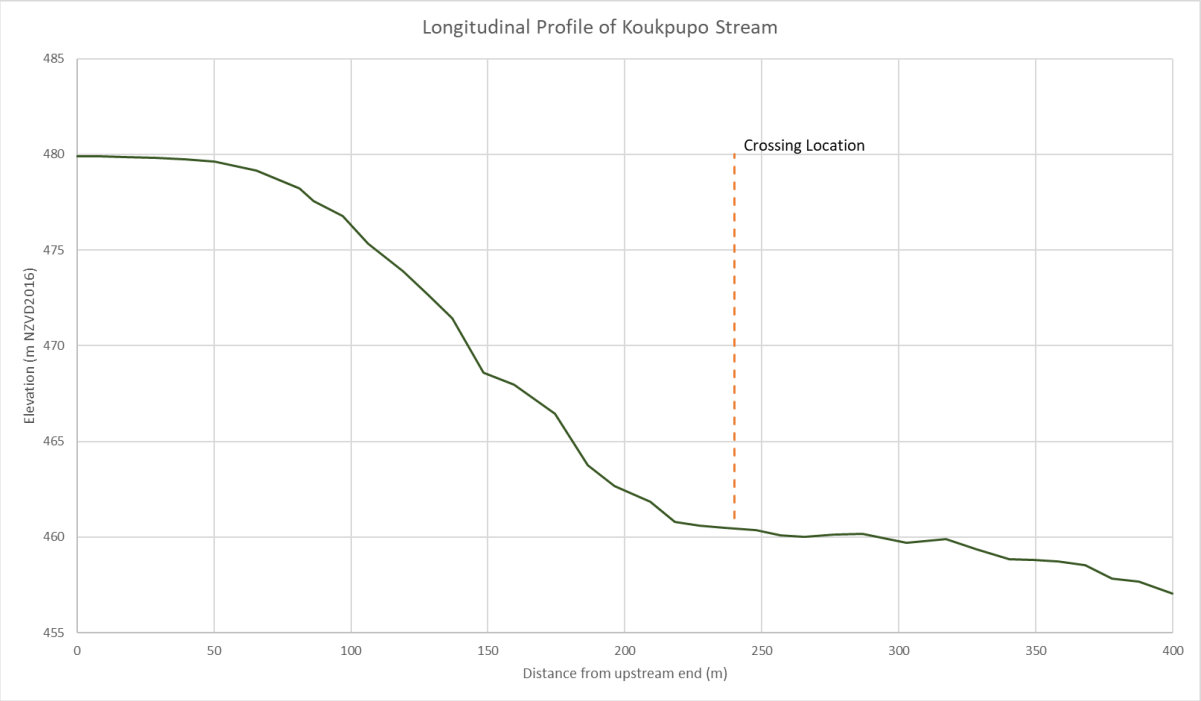


Figure 2 - Longitudinal Profile of the Koukoupo Stream

As shown in Figure 2 the 240m reach upstream of the crossing location is steep, with an average gradient of 0.08 m/m (or 8%). The reach immediately around the crossing is much shallower in grade at around 0.01 m/m (or 1%). The reach downstream of the crossing then has a gradient of approximately 0.02 m/m (or 2%). The localised shallow grade is likely why the original crossing point was located here.

3 HYDROLOGY

At the location of the crossing the stream has a catchment area of approximately 20.7 km^2. NIWA[2] have estimated the flows at this location for a range of flood events, which are shown in Table 1.

Table 1 - Estimated Koukoupo Stream Flows

Annual Recurrence Interval (Years)	**Annual Exceedance Probability**	**Flow (cumecs)**
Mean Annual Flood		6.60
5	20%	8.11
10	10%	9.34
20	5%	10.53
50	2%	12.05
100	1%	13.20

[2] Henderson, R., & Collins, D. (2019). *New Zealand River Flood Statistics App*. NIWA. Available at: https://dc.niwa.co.nz/niwa_dc/srv/api/records/50b975cd-6181-468f-9780-9e45b80b54e2

3.1 Flow Velocities

3.1.1 Upstream of crossing

The reach above the Ford Crossing is fairly steep, particularly as it follows the inside bend of the road. As previously discussed the 240 m reach of the stream upstream of the crossing has an average gradient of 0.08 m/m. To be able to quantify flow velocities in the stream the channel was assumed to be trapezoidal in cross-section, with a bed with of 4m, and side slopes of 1:1 (H:V). A conservative manning's n value of 0.064 has been assumed to represent the roughness of the channel.

NIWA's Flood Estimation Tool suggests that the Mean Annual Flood (MAF) in the Koukoupo Stream is 6.6m3/s. If a typical low flow is assumed to be in the range of 1-10% of MAF, this would suggest that a typical low flow would be between 66 and 660 l/s.

Using manning's equation flow average flow velocities associated with these low flow values have been calculated, and are summarised below:

Table 2 - Average flow velocities in the Koukoupo Stream upstream of crossing

Flow (l/s)	Average velocity (m/s)
66	0.47
660	1.14

3.1.2 Downstream of Crossing

The reach below the Ford Crossing noticeably shallower in grade that the upstream reach with a grade of 0.02m/m.

To be able to quantify flow velocities in the stream the channel was assumed to be trapezoidal in cross-section, with a bed with of 4m, and side slopes of 1:1 (H:V). A conservative manning's n value of 0.05 has been assumed to represent the roughness of the channel.

NIWA's Flood Estimation Tool suggests that the Mean Annual Flood (MAF) in the Koukoupo Stream is 6.6m3/s. If a typical low flow is assumed to be in the range of 1-10% of MAF, this would suggest that a typical low flow would be between 66 and 660 l/s.

Using manning's equation flow average flow velocities associated with these low flow values have been calculated, and are summarised below:

Table 3 - Average flow velocities in the Koukoupo Stream downstream of crossing

Flow (l/s)	Average velocity (m/s)
66	0.36
660	0.87

4 EXISTING STRUCTURE

The existing structure is essentially a vented ford that consists of five 500 mm diameter pvc culverts that have been encased with concrete. The concrete structure is approximately 1.2 metres deep and provides a surface approximately 6m x 6m over which the stream is forded. These dimensions

have been overmarked on the photograph of the structure in Figure 3. The invert of the culverts fall 20mm between their inlets and outlets.

The existing ford is currently in an excellent condition structurally. There are no signs of any damage, nor settlement of the ford structure. The approaches have been well compacted and there are no signs of the structure having been outflanked by flows in the Koukoupo Stream.

The outlets of the ford are perched approximately 200mm above the bed of the Koukoupo Stream. However, it would appear that the stream bed at this location is on the underlying bed rock and as such further degradation of the stream bed is not considered to be likely.

The ability of this structure to convey flood flows has been analysed using HY-8 software. This found that the culverts can convey a total flow of 2.5 cummecs before water will flow over the ford. This flow is approximately 37% of the mean annual flood, meaning that the ford surface will be regularly inundated by fresh flows in the Koukoupo Stream.



Figure 3 - Approximate dimensions of the existing ford structure

5 FISH PASSAGE BYPASS CULVERT

To provide for fish passage at the crossing it is proposed to construct a culvert that by passes the vented ford on the true left bank of the stream. The approximate location of this culvert has been indicated on Figure 4 with the blue circle representing the culvert inlet and the dashed lines showing the alignment of the culvert which will be buried in the true left bank of the stream.



Figure 4 - Approximate Location of Bypass Culvert

5.1 Sizing of the Bypass Culvert

The key design constraints for this bypass culvert have been defined by fish passage requirements. These design constraints, which have been developed from the NES-FW, are shown below:

Table 4 – Design Requirements for Bypass Culvert

Design Constraint	Requirements
Water velocity	Mean water velocity inside the culvert must not exceed that of the adjoining river reaches
Invert placement	The invert of the culvert must be placed so that at least 25% of its diameter is below the bed level
Bed substrate	Natural bed substrate must be present throughout the culvert and be stable at flow rates occurring 80% of the time

It is proposed that the bypass culvert will be a 1600 mm diameter PVC culvert with a total length of 25m.

5.1.1 Invert placement

The culvert will be laid so that the invert at both the inlet and outlet will be 400mm below the bed level of the Koukoupo Stream. This will mean that the requirement for at least 25% of its diameter to be below bed level will be met.

Additionally, this will mean that the gradient of the culvert will be approximately the same as the channel gradient in this reach.

5.1.2 Water Velocity

HY-8 software has been used to model how the addition of the bypass culvert will affect flows at the crossing in low flow conditions. The amount of flow calculated through the bypass culvert and vented ford in the two low-flow scenarios is shown in Table 5 and
Table 6 shows the calculated low flow velocities through the bypass culvert.

Table 5 - Low flow distribution between culverts

Total Flow	Bypass Culvert	Vented Ford
66 l/s	33 l/s	33 l/s
660 l/s	280 l/s	380 l/s

Table 6 - Low flow outlet velocity

Flow	Bypass Culvert velocity
66 l/s	0.49 m/s
660 l/s	1.06 m/s

These flow velocities have been compared with those calculated to occur upstream and downstream of the crossing in Table 7.

Table 7 - Comparison of low flow velocities

Flow	Upstream Velocity (m/s)	Downstream Velocity (m/s)	Bypass Culvert Velocity (m/s)
66 l/s	0.47	0.36	0.49
660 l/s	1.14	0.87	1.06

Whilst the flow velocities through the culvert are higher than those in the reach downstream, it is noted that during very low flows (1% MAF) the flow velocity in the culvert is approximately the same as those that would be seen upstream (0.49m/s cf. 0.47m/s) and in more common low flows (10% MAF) the velocities seen in the bypass culvert will actually be lower that those seen upstream.

As such it is concluded that the requirement for velocities not to exceed those in adjoining reaches has been satisfied.

5.1.3 Bed Substrate

As discussed in the previous section, it has been demonstrated that in low flow conditions the velocity of flows through the bypass culvert will be no greater than those seen in the upstream reach. It is therefore assumed that, since the culvert will be embedded by 400mm, the substrate will remain stable during these flows.

It is noted that during high flows that this bed material will be mobilised and flushed out of the culvert. To ensure that this material is replaced by material deposited as the flood recedes, and flow velocities decrease, it is recommended that a series of baffles are placed on the invert of the culvert, at 2m spacings along its length. This will ensure that this deposition occurs as each baffle will create a small eddy, or pocket of slower moving water, downstream thus creating a deposition zone.

Therefore the requirement for natural bed substrate to be present throughout the culvert and be stable at flow rates occurring 80% of the time will be met.

6 EROSION RISKS

6.1 Upstream erosion

The risk of erosion upstream of the crossing is considered to be low. This is because flow velocities in this reach are no greater than those which were seen before the construction of the ford crossing. The stream banks in this reach have been stable for a long time, and as such it can be assumed that they will remain so.

6.2 Downstream erosion

The construction of the ford crossing has exposed a section of the true right bank of the stream to an increased risk of erosion due to the realignment of the stream in this area, which could potentially direct high flows towards the toe of the Koukoupo Road embankment.

As such it is recommended that the embankment is protected with a rock riprap lining for a length of approximately 10 metres downstream of the ford crossing, until the stream and the road diverge from each other. The approximate location of the rock riprap has been indicated on the photograph shown in Figure 5 - Approximate location of rock riprap to be installed downstream of ford.

The rock used for this riprap should have a median weight of 300 kg, which is of a similar size to that which has already been successfully placed around the ford.



Figure 5 - Approximate location of rock riprap to be installed downstream of ford

7 ON-GOING MAINTENANCE REQUIREMENTS

The ongoing maintenance of the ford and bypass culvert are outlined below:

1. Regular Inspections
    - Frequency: annually or after major storm events.
    - Purpose: Identify blockages, structural damage, erosion, and fish passage issues.
    - Methods: Visual checks
2. Clearance of blockages
    - Remove debris, sediment, vegetation, and rubbish from inlets and outlets.
3. Structural Repairs
    - Address cracking, joint failures, spalling, and invert deterioration promptly.
    - Common causes include heavy loads, and abrasion from sediment.

- Repairs may involve patching, joint sealing, or lining to extend service life.

4. Erosion and Scour Control

- Check for scour at inlets and outlets and install rock armouring if needed.
- Maintain stable ground at culvert outlets to prevent undermining.

8 CONSTRUCTION METHODOLOGY

The construction methodology has been described in the ecological assessment by Dr. Heath. This methodology is reproduced below.

> "*The contractor will undertake the construction of the fish-bypass channel in a dry work environment by first diverting the main flow towards the true-right bank via a cofferdam (most likely constructed using sandbags), ensuring that the working area remains isolated from flowing water. The diversion will be established prior to any excavation or disturbance within the channel, and stream connectivity and flow will be maintained at all times.*
>
> *The contractor will carry out the works only during the summer low-flow period (December to April inclusive). Throughout construction, the contractor will minimise the area and duration of disturbance and will sequence activities to ensure that any disturbance to the channel bed and banks is kept to the shortest practicable duration. The works are expected to be completed within approximately five days.*
>
> *All disturbed surfaces — including the channel bed, banks, access tracks, and spoil stockpiles — will be promptly stabilised (using re-vegetation, mulch, or riprap) once works in each section are complete. Ancillary works, such as access tracks, stockpiles, and plant areas, will be managed using stabilised entrances, silt fences, or bunds, as appropriate.*
>
> *By working in the dry, maintaining stream flow, controlling sediment-bearing water, minimising disturbance, and promptly stabilising disturbed surfaces, the contractor's proposed methods are expected to minimise the risk of sediment generation and discharge to the Koukoupo Stream*."

The installation of the culvert shall be undertaken in general accordance with the NZ Forest Roads Engineering Manual - https://docs.nzfoa.org.nz/live/nz-forest-road-engineering-manual/7-erosion-sediment-and-slash-control-structures/7.4-drainage-culverts/

9 CONCLUSION

It has been demonstrated that the construction of a 1600mm diameter bypass culvert will meet the design requirements to enable fish passage past the vented ford that has already been constructed.

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Appendix 6 – Erosion and Sediment Control Plan

Plan 1: ESCP - Aerial view



Figure 123: Sandbag coffer dam installed to complete stormwater outfall

Plan 2: ESCP - Ground view

