

## **APPENDIX I** Planting Offset Location Report



## Memorandum

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From	Wayne Teal Planning and Ecology Team Leader
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Subject	Brynderwyns Recovery - Piroa Stream Offset Fencing and Planting

### The Piroa Stream Offsetting Requirement

The Brynderwyn Hills Recovery Project Ecological Impact Assessment (EclA; Appendix E) report dated 15 August 2024 identifies the area of proposed stream offset planting as 332 *lineal meters (LM)* to address the impacts to streams and waterways through the course of the recovery project (Figure 1). The summary states... ***"The stream loss would be offset by enhancing and restoring the riparian area on 332 LM of the Piroa Stream, a length equating to the stream length lost to permanent works."***

Figure 1 shows the original proposed offset suggested in the EclA report. This proposal was adjusted in response to issues identified during a walkover and feedback from the landowner. This memo documents these amendments to the original proposal.



Figure 1 Original stream offset layout proposal (since amended).

## The Revised Proposal

### Process resulting in the Revised proposal

- The initial proposal in Figure 1 was produced as a desktop exercise, before any onsite consideration (including site walkover, neighbour feedback, length requirement) was accounted for.
- The above Plan shown in Figure 1 from the ecological report was shown to Kim Voss (neighbouring landowner to NZTA Brynderwyns). While supportive of the intent of the offset, she was not supportive of the suggested location.
- A site visit (site visit 1) was undertaken with Kim to agree an area immediately downstream along what was considered 'a more suitable location', where an equivalent alternative would be situated.
- From the walkover and neighbour feedback, a new plan was developed and discussed on site with Kim (landowner), NZTA, Fulton Hogan, WSP and The Property Group during the second site visit.
- During this second site visit (site visit 2) additional areas were considered for inclusion. These being Area A, a larger Area B, and a margin to the east along the forest edge to incorporate a Kahikatea (*Dacrycarpus dacrydioides*) stand (Figure 8).

Subsequently, the offset layout proposal was further amended to meet the **exact 332 LM specified in the EclA Appendix E**. It also took into account topography, existing vegetation and infrastructure such as fences and accessways.

The amended offset proposal incorporates:

- Better protection of the riparian margins (10 m either side of the stream where practicable - Figures 2, 3 & 8)

- Better habitat for the Hochstetter's frog (*Leiopelma hochstetteri*),
- Improved provision of ecosystem services, and
- Better alignment with the requirements of the landowner and existing onsite constraints.

The amended proposal therefore offers better outcomes overall than the original proposal.

### Ecological Value of the Amended Offset Location

The revised location provides opportunities for significant areas of bank protection and reinstatement of riparian vegetation. Plant species selected for revegetation of this area (Table 1) have been matched to those species from the Waipu Ecological District and to species lists observed and recorded during the walkover. There are patchy existing trees and shrubs, which will be included behind fencing as part of the overall revegetation.

PIROA STREAM OFFSET AND MITIGATION PLANT MIX					Area A	Area B	Area C	Area D1&D2	Area E	Total Area	
					2893	1099	1906	370	372	6,640	m2
Botanical Name	Common Name	Plant% Mix	Spacing (m)	Grade (L)	Plant Qty						
<i>Carex geminata</i>	rautahi	3.0%	0.7	0.5	174	66	114	22	22	398	
<i>Carex virgata</i>	pukio	2.0%	0.7	0.5	116	44	76	15	15	266	
<i>Cordyline australis</i>	tī kōuka	20.0%	1	0.5	579	220	381	74	74	1,328	
<i>Cyperus ustulatus</i>	giant umbrella sedge	2.0%	0.7	0.5	116	44	76	15	15	266	
<i>Dacrycarpus dacrydioides</i>	kahikatea	6.0%	1.5	1	78	30	51	10	10	179	
<i>Knightia excelsa</i>	rewarewa	1.0%	1.5	1	13	5	9	2	2	31	
<i>Kunzea robusta</i>	kānuka	49.0%	1.5	0.5	638	242	420	82	82	1,464	
<i>Leptospermum scoparium</i>	mānuka	10.0%	1.5	0.5	130	49	86	17	17	299	
<i>Podocarpus totara</i>	tōtara	2.0%	1.5	0.5	26	10	17	3	3	59	
<i>Schefflera digitata</i>	patatē	5.0%	1.5	1	65	25	43	8	8	149	
		<b>100%</b>		<b>TOTAL</b>	<b>1,935</b>	<b>735</b>	<b>1,273</b>	<b>248</b>	<b>248</b>	<b>4,439</b>	<b>no.</b>

Table 1 Piroa Stream Offset and Mitigation Plant Mix.

A series of streams emanate from the Brynderwyns Forest Complex, upslope of the site. Each of these streams, by way of an alluvial fan, meet the Piroa Stream on this floodplain where the offset is proposed. The alluvial fans are somewhat elevated above the surrounding riparian area but exhibit hydromorphic soils indicating substantial subsurface flow in areas, and are functionally an important part of the broader riparian complex.

Each of these streams support high numbers of Hochstetter frogs as indicated by the ecological scoping surveys undertaken as part of the Recovery project and as observed by landowner Kim Voss. Currently there is potential for stock (horses and cattle) to access these areas. Planting and fencing of these areas will protect the sensitive wet habitats of these stream reaches. The stock exclusion will maintain and enhance existing vegetation communities and will prevent ungulate pugging of soils, potential sediment mobilisation during rainfall events.

The revised offset proposal (Figure 8) also incorporates an established kahikatea stand (Figure 2 & 3) on the floodplain (a rare hydrophytic forest habitat type from the Ecological District to be fenced out and protected with appropriate planting).



*Figure 2 The image shows the kahikatea stand proposed to be protected. The catchment and stream immediately above offer high quality frog habitat. During the wet season there are overland flow paths that run through the stand and exit onto the floodplain and Piroa Stream.*



Figure 3 Within the Kahikatea stand. Frogs have been found within 5 meters of this image.



Figure 4 'Area A' which is a higher terrace of the flood plain, which is very wet and exhibits hydromorphic / redoximorphic soil features indicating substantial subsurface flow into the Piroa Stream, emphasising the importance of this area for stream ecosystem services.



Figure 5 'Area A' viewed from the opposite bank of the Piroa Stream. Gorse and Blackberry will be controlled to enable a selection of appropriate eco-sourced riparian plantings to establish.



Figure 6 Riparian margin showing proposed fence placement for Area B



Figure 7 Existing fencing (Area C) will be utilised after refurbishment to be stock proof. Plantings will be established within this riparian extent.

## Conclusion

This revised proposed offset provides more than adequate mitigation for the extent of stream habitat lost as a result of the recovery works. While the 10 m riparian buffer length is not always achieved both sides of the stream throughout the 332 LM extent, this is adequately compensated by the larger areas afforded in areas A, B, C, and the kahikatea stand. The kahikatea stand area in particular, where Hochstetter frogs are present, provides high quality habitat protection that will be enhanced by the proposed weed removal, fencing and planting. These areas are all within the Piroa flood plain extent and are linked to the streams for which culvert extensions resulted in functional loss of stream habitat during the recovery works.

Overall, the revised proposal incorporates better protection of the riparian margins and habitats for the Hochstetter's frog, provides improved ecosystem services over the original proposal and better aligns with the requirements of the landowner and existing onsite constraints. WSP ecologists fully support the new proposal.



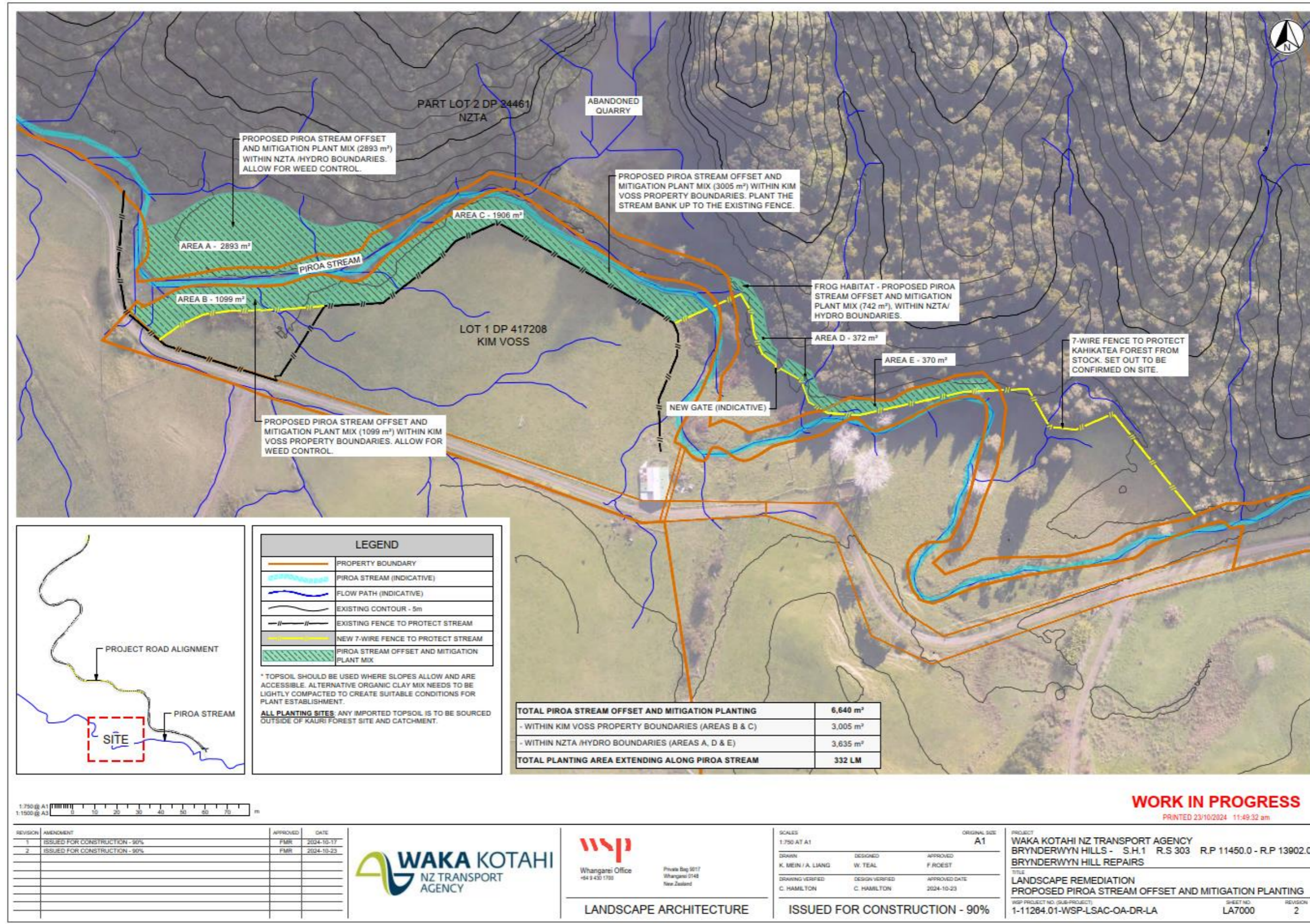


Figure 8 The current revised 90% IFC drawing showing existing features fencing and proposed 332 LM of Offsetting requirements.