

Mt Welcome alternative wetland and stream offset

To: Pukerua Property Group LP

From: Dr Vaughan Keesing

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Project title: Mt Welcome

Alternative wetland and offset proposal

Following discussions about the dual use of the proposed retention wetlands A, B, C and E, and the potential difficulties perceived with the establishment of a natural wetland without future sediment management, an alternative approach has been considered for the achievement of the wetland and stream effects management.

Original/ preferred approach

Table 6 of my ecological assessment (Appendix 15 to the Substantive Application)¹ summarised the remedy and offsets and is copied below as Table 1. Table 6 also included the terrestrial SNA offsets but I have not repeated that below given it is not relevant this memo.

Feature	Total effect area	Area remedied	Remedy area	Area requiring offset	Offset ratio	Offset area required
Natural inland wetland	22,211 m ²	6,900m ²	12,000m ²	15,311m ²	1:1	15,311m ²
Stream	560m stream length	450m stream length	12,000 m ² (>450m)	110m (Taupo Stream Culvert)	1:1.75 (Taupo Stream Culvert)	193m

Table 1: Original summary statistics of effects areas and type and the remedies and offsets

Under the establishment of the retention wetlands regime, all stream effects other than that of the SH59 culverting of the Taupo Stream tributary (110m stream length which is being separately offset) were proposed to be remedied by the retention wetland (450m stream length). The retention wetlands remediated 6,900m² of wetland effect and a further surplus 5000m² of wetland contributed to the wetland offset total.

Alternative proposal

¹ Available at: https://www.fasttrack.govt.nz/_data/assets/pdf_file/0017/24461/Appendix-15-Ecological-Assessment.pdf.

Feature	Total effect area	Area remedied	Remedy area	Area requiring offset	Offset ratio	Offset area required
Natural inland wetland	22,211 m ²	N/A		22,211m ²	1:1	22,211m ² required. A total of 24,600m ² is available for offsetting consisting of: • 12,500m² (on-site) (Sheets 1-3 of Proposed Ecological Remediation and Offset plans) • 12,100m² (Kakaho east valley)
SH59 Taupo Stream Culvert	110m stream length	N/A	N/A	110m	1:1.75	193m (Kakaho West main stem)
Other streams affected	450m stream length	N/A	N/A	450m	1:1	450m (Kakaho East main stem)

Table 2: Statistics of the remedy and offset of the alternative proposal

If, as per the alternative proposal, the retention wetlands are to be stormwater basins with machine access and sediment management, and not fully vegetated deeper wetlands with fish habitat, then those remedial and offset functions need to be provided elsewhere.

I note that where, as per the alternative proposal, fish habitat is no longer created and enhanced by wetlands A, B and C then fish passage into those basins is no longer required because at the heads of those tributaries in the absence of these retention wetlands there is no or virtually no fish habitat remaining. Therefore, fish passage is not required to allow fish into the stormwater basins. This is not the case for former retention wetland E, and fish passage remains important in that location.

Alternative offsetting location

The Applicant has engaged with the owner of the balance allotment Lot 5003 in the Kakaho East catchment to negotiate additional land for offsetting areas that could be made available to the project for ecological effects management. The Kakaho Catchment flows to the Pāuatahanui Inlet and as such is a different and more sensitive catchment to the Taupo Stream with arguably greater benefits than the retention wetlands in the Taupō catchment. I have examined the valley floor in that area and mapped out an area that can return 700m of the Kakaho East main stem and the valley floor in which there are pasture-natural wetlands and areas in ground suitable to create natural inland wetlands. A view is shared below in the photograph.



Looking northwards up stream at the Kakaho East valley and the potential new area of stream and wetland offsetting (Lot 5003)

Stream offset

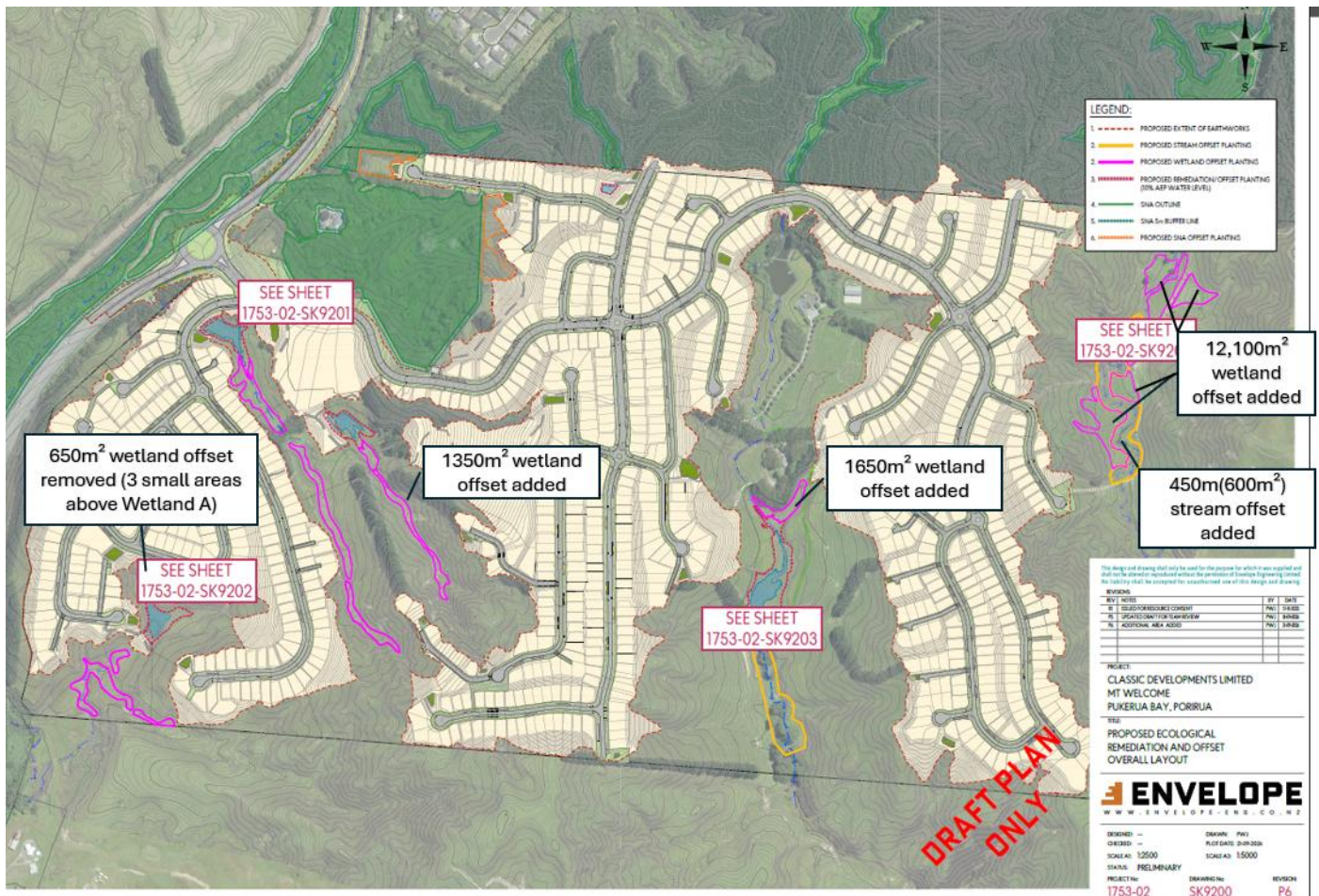
The alternative proposal still includes a separate offset area of 195m in the Kakaho West main stem to offset culverting of 110m of the Taupo Stream (1:1.75 ratio), as shown in Figure 28 of Ecological Assessment (Appendix 15) submitted with the Substantive Application and Sheet 3 of the Proposed Ecological Remediation and Offset plans.

The new Kakaho East main stem proposal involves 1:1 offset ratio of stream enhancement where 450m (stream length) of the eastern Kakaho (shown in Sheet 4 of the Proposed Ecological Remediation and Offset plans) could receive 10m of planting on either side of the stream of appropriate woody native riparian revegetation. Ten meters either side on flat land would bring functional improvements to the stream, especially where beyond the 10m of new planting there would be new areas of native wetland created.

Compared to a 1:1.75 ratio for the Taupo Stream culverting, the ratio of 1:1 offset for the Kakaho East main stem is supported by the very poor condition of the streams being offset. No SEV has been undertaken for those streams requiring offsetting, but while the Taupo stream had an SEV of 0.5, these streams, with existing stock access and a range of pollutants and modifications, will mostly likely have an SEV of around 0.35. The loss is not zero as there will still be a shallow water body where the streams are currently, but I do not account any remedial or offset value to that managed system. Fencing, removal of stock and fertilisers, and creation of a valley floor with 20m of riparian woody vegetation and wider wetlands will move the SEV of the existing farmed stream in the Kakaho East valley upward of 0.3 SEV points. SEV gains will begin immediately with the fencing and removal of stock, and as such the lag time is not all about the growth of the woody riparian vegetation, which will take around 5 years to begin offering shade and organic matter input. I consider a ECR of 1:1 is a reasonable offset ratio given the proposed whole of the stream improvements.

Wetland offset

The requirement for the additional wetland offset component is 1ha to account for areas that would not be counted as remediated natural inland wetlands within wetlands A, B, C and E (shown in Sheets 1-4 of the Proposed Ecological Remediation and Offset plans) under this alternative proposal. Additional areas (as per discussions with Ms Dixon) have located a further 0.3ha of exotic poor condition wetland within the Applicant's site that can be revegetated and improved to indigenous representative wetland on site (see Sheets 1-3 of Proposed Ecological Remediation and Offset plans, 12,500m² total), these areas are shown in an annotated excerpt of the plans shown as Map 1 below.

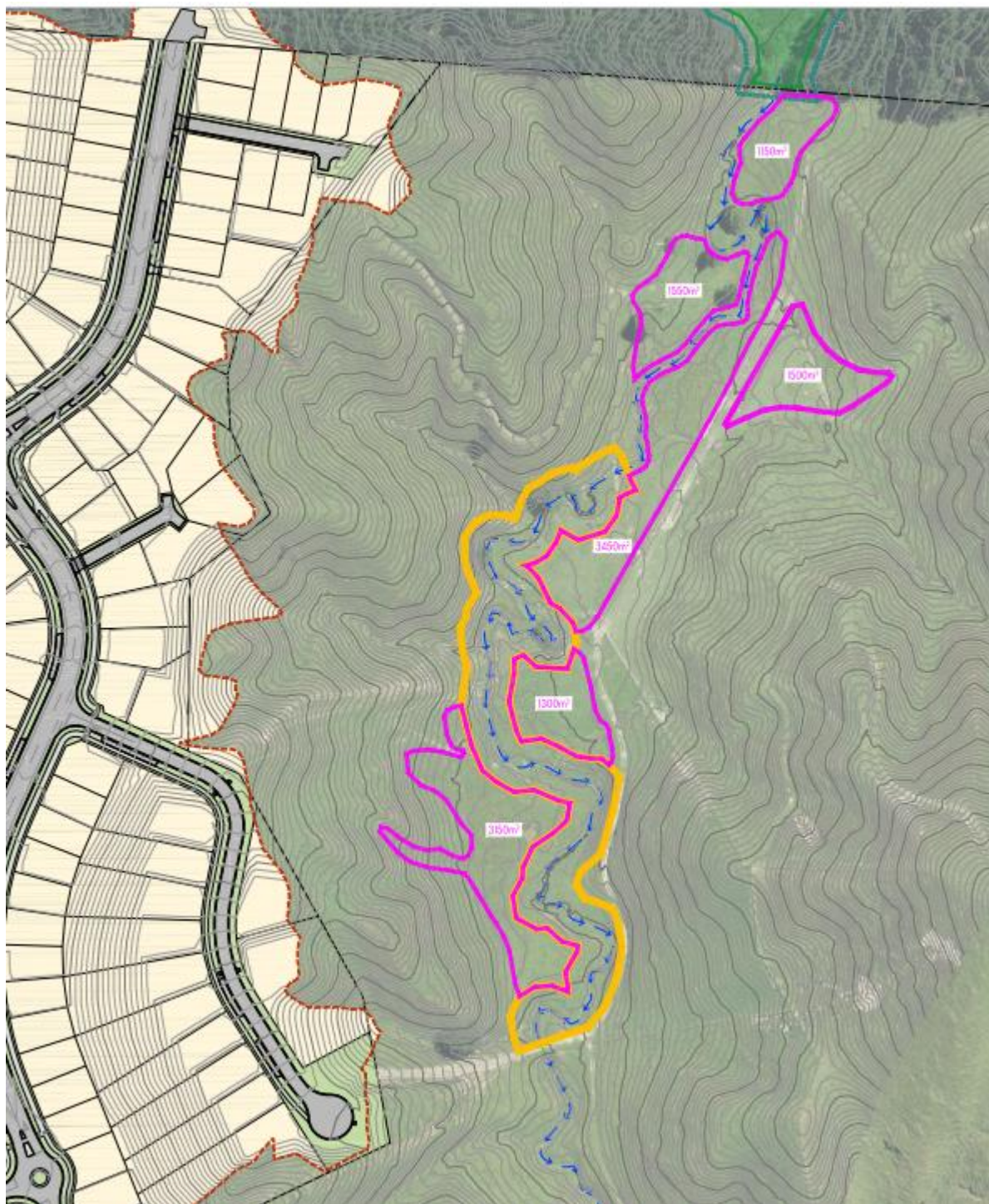


Map 2: Annotated ecological remediation and offset plans (adapted from 1753-02-SK9200 P6)

Therefore, in addition to the on-site offset of 1.25ha of wetland, approximately 1ha of additional wetland needs to be created in the Kakaho East valley floor to achieve the offset as shown in Map 2 below. In addition to enhancement of exotic pasture-natural wetlands, there will be creation of new wetland through minor excavation in areas of the valley floor currently raised 100-300mm above upper groundwater levels. In total, and without impinging on the riparian enhancement, just over 1ha (12,100m²) of wetland is achieved through the pattern of establishment outlined in Map 2 below (pink areas). A few additional areas of woody riparian enhancement are included to ensure that the waterway always has a buffer from the farming on the other side of the fence. In this way a comprehensive valley floor restoration is achieved which is of greater value than the sum of the parts and in a more sensitive catchment with arguably greater benefits than the retention wetlands in the Taupo catchment.

The additional wetlands are shown in Sheet 4 of the Proposed Ecological Remediation and Offset plans.

The 22,211 m² (assuming the pasture exclusion applies) of total affected wetland is now managed by 12,500m² on site and 12,100m² in the Kakaho east valley (i.e. within Lot 5003) giving a surplus of 2,389m² of wetland created.



Map 2: Kakaho East, northern valley proposed site of 450m of woody native riparian revegetation extending 10m either side of the stream (orange) and just over 1 ha (12,100m²) of adjacent wetland revegetation / creation (pink).

Staging

With respect to staging, this offset area continues to have the ability to be created bit by bit or all at once. As I understand, the current intention is that the on-site and within catchments offsets will be developed in tandem with effects and each stage of the effect has a corresponding offset action (note this is covered by the proposed ecology and hydrology management plan). Moving part of the offset to Kakaho East does not alter that pattern, nor the need to follow effects with commensurate offset actions and amounts. That said, I assume that the Kakaho East, once accepted as a part of the offset package, will be fenced entirely when any part of the offset here commences.

Yours Sincerely

Dr Vaughan Keesing

BlueGreen Ecology.

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