

The Bears Home Project Management Ltd

710 Muriwai Road

Muriwai Valley 0881

Attention: Mimouk Hannan, Auckland Council

Copy: Muriwai Golf Project Team

To whom it may concern

Muriwai Downs: information request regarding Stream P3

We refer to the Section 92 letter dated 24 February 2022 from Auckland Council requesting further information on the Muriwai Golf Project at 670 Muriwai Road, Muriwai.

We have been asked to provide a response to paragraphs 71a and 73 of the s92 request. The queries regarding ecological matters are presented below, with Council's request, followed by our reply.

Request 71a and 73

71. The applicant has currently applied for a culvert under E3.4.1(A33) for the piping of Stream P3. This should be checked for two presumptions – the classification of the waterbody as a 'stream' versus a 'natural wetland':

- a) After reviewing the information supplied by the applicant and having undertaken a site visit escorted by the applicant's team (including ecologist), we have noted that the applicant's ecologist has classified Stream P3 as a 'stream' as opposed to a potential 'natural wetland'.

On the basis of the information supplied and the site visit undertaken 22 June 2021, we consider it much more likely to be defined as a 'natural wetland' (including having passed the rapid habitat test on site) and should be classified as such. It is also noted within the application material that every tributary of the Ōkiritoto Stream and Raurataua Stream occurring within the site also have riverine wetlands, which have been assessed as Natural Wetlands. If Stream P3, were a stream, it would also be the only tributary within the entire site that does not have riverine wetland. We consider that a full delineation protocol in accordance with the Wetland Delineation Tool should be applied for this wetland and provided to us for review. If the proposal stands as it is, we note reclamations of 'natural wetlands' are a prohibited activity under the NES:FW.

73. Please provide in full for area denoted as 'Stream P3' and the adjacent wetland ecological feature the information and assessment determined in accordance with the Ministry for the Environment (2020) Wetland Delineation Protocols for the feature, and your assessment of that feature in accordance with those protocols as to whether this meets the definition of 'natural wetland' in accordance with the NES:FW.

Our reply

Stream P3 has been modified significantly over several decades. We have evidence of the channel being excavated at least three times since the 1970s such that it is now a vertically-sided, U-shaped channel (this was clearly demonstrated by one of the Council officers placing their foot just off the edge of P3 at a site visit and sinking up to their knee in liquid sediment). The depth of the stream from the water level to the bed is at least 1.5 m (the length of our hand auger up to the handle).

The stream channel currently supports a sediment/water slurry with flow paths through it. The banks are vertical and the margins support a narrow, 1-plant wide edge of soft rush and pasture grasses, before abruptly changing to ryegrass-clover dryland pasture grasses (**Plates 1 and 2**).

The slurry-filled channel supports a thick, almost complete cover of wetland plant species including *Isolepis prolifera*, and creeping bent, water pepper, and swamp millet – all of which are obligate or facultative wetland plants. Most of these plants have their roots within the sediment slurry of the channel. During our site visit in winter 2021 (12-16 July) *Isolepis prolifera* comprised at least 50 % of the vegetative cover within the stream channel. During our site visit in summer (15 February 2021) creeping bent dominated the plant cover within the channel. Plant cover and dominance therefore changes seasonally. Spring/ summer season is regarded by MfE as a more appropriate period in which to assess wetland vegetation (due to the active growth period), although the winter survey was right on the date considered appropriate by MfE for wetland assessments (which is 12 July onwards for the active growing season in the Auckland region).

How does this channel wetland vegetation differ from wetlands that we have mapped nearby, and why do we consider this to be a stream channel?

Wetlands W4 and W5 nearby also have similar wetland plant species growing within them, although the species richness is far greater, the growing medium is natural soils that are waterlogged (compared to water in Stream P3 that has had sediment washed through it), and the wetland extents lack obvious flow channels through them (the water percolates through). Wetland W6 upstream of Stream P3 is similar, with the addition of ponded, standing water (caused by retention from a downstream farm culvert) and raupo rooted into the bed of the wetland.

We regard the channel of Stream P3 to be a very disturbed, modified and degraded stream channel. The degradation that has occurred includes the mobilisation of sediment into the channel such that wetland vegetation has become established. We appreciate that wetlands can occupy a mid-point in the continuum between streams and dry land, and that wetlands can exhibit characteristics that show a transition over time. For this feature, we regard the underlying hydrology to be a stream, which has been degraded through stock access, pugging, sediment discharge, and repeated excavation; however, it still operates as a stream. Reliance on a Rapid Test alone (to assess FACU or OBL plant presence and automatic determination as a natural inland wetland) is not appropriate, as the site has been severely degraded and modified – such that it is not representative of a natural state. In such instances, the NS-FM wetland guidance (and Clarkson *et al.* 2013 technical guide on wetland classification) recommends that the full suit of tests be applied (Dominance, Prevalence Index, soils and hydrology) as well as applying professional judgment regarding the context of the site.

An independent assessment of this watercourse by Puhoi Stour Ltd notes that the watercourse has elements of both a stream and a wetland; however, the presence of clear flowing water in the channel along the full 190 m reach led the author to conclude that Stream P3 is more typical of a river environment than a wetland. We agree

with that assessment, as we too have noted a network of flowing water channels within the wider channel that clearly indicates that the water is not stagnant or slow flowing as water is in adjoining natural wetlands and river margins elsewhere on the site.

Overall, we have treated Stream P3 as being a modified watercourse with channel and banks, and a vegetated margin.

The vegetated margin supports a narrow band of soft rush and dryland pasture grasses (**Plates 1 and 2**). This band of vegetation is where we consider that a wetland could occur – in keeping with the composition of stream margins across most of the site. The margins of Stream P3 cannot be sampled using the NPS-FM stipulated methodology as a 2m x 2 m quadrat does not fit within the distinct community (it would spill over into dryland pasture community and stream channel). The stream margin comprises around 60 % soft rush with the balance as sweet vernal, ryegrass, Yorkshire fog, lotus and clover (i.e. a mix of facultative upland and facultative plant species).

Soils underlying this margin are non-hydric – they are topsoils in the top 200 mm (no mottling) with clays beneath (no mottling or low chroma colours). If soils are not hydric, the NPS-FM classification chart states that the site cannot be wetland. Even if the soils and vegetation indicated a possible wetland, the MfE advice on size of qualifying wetlands (as directed to the Greater Wellington Regional Council definition of a wetland) is such that the narrow band can be crossed in one easy stride by a person – thereby removing it from consideration as a wetland.

Council notes in request 71a that:

It is also noted within the application material that every tributary of the Ōkiritoto Stream and Raurataua Stream occurring within the site also have riverine wetlands, which have been assessed as Natural Wetlands. If Stream P3 were a stream, it would also be the only tributary within the entire site that does not have riverine wetland.

This is not correct. There are parts of tributary streams where the stream margin vegetation that would qualify as a wetland is so narrow that it cannot meet the definition, or where qualifying wetland vegetation (and soils) are absent. Stream P3 does have wetland vegetation (as shown in **Plates 1 and 2**), however as discussed above, the soils do not qualify and the narrow form of the margin also does not qualify this as wetland. Other streams on the site have a mix of riverine qualifying wetlands, narrow non-qualifying wetland plants and pasture margins – Stream P3 is not special or different, apart from the degree of modification that it has experienced, and continues to experience from stock impacts.

In terms of undertaking a full classification according to the NPS-FM, we therefore note:

- The stream channel is a watercourse, and is not a potential wetland. Hand augering of the channel demonstrated that the material in the channel is water with a sediment slurry (our hand auger disappeared to 1.5 deep with little resistance, and it proved impossible to take a sediment sample through the slurry).
- The margin of the stream cannot be sampled using the standard NPS-FM method. Assessment of a linear, narrow vegetation transect and soils, together with the narrow width discount the margin as wetland.



Plate 1. Stream P3 looking downstream. Photo taken July 2021 when *Isolepis* is dominant in the channel.



Plate 2. Stream P3 looking upstream. Photo taken July 2021 when *Isolepis* is dominant in the channel.

We trust that this provides the information that Council has requested.



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Graham Ussher

Principal Ecologist