

Before the Western Bay of Plenty District Council's Hearing Panel

IN THE MATTER

of the Resource Management Act 1991

AND

IN THE MATTER

of Plan Change 93 (Te Puna Springs) to the Western Bay
of Plenty District Plan

**REBUTTAL EVIDENCE OF FIONA JOYCE WILCOX
ON BEHALF OF TE PUNA SPRINGS ESTATE LIMITED
(SUBMITTER 04)**

4 JULY 2022

RESPONSE TO EVIDENCE PROVIDED BY BOPRC

1. I have read the evidence of the environmental scientists contracted by Bay of Plenty Regional Council (BOPRC) with respect to the proposed plan change. These personnel being **Ms Susan Ira** (hydrology and water quality) and **Mr Keith Hamill** (ecology). This rebuttal evidence provides comment on some statements and points contained within the evidence of the BOPRC experts.
2. The overarching issue that underpins the approach taken by the BOPRC environmental scientists and my own appears to be one of scale. That is, Wildland Consultants was engaged to undertake an assessment of the existing ecological values at the site, and provide high-level suggestions on options to protect and enhance the existing values for the purposes of informing the proposed plan change. The level of detail provided in that assessment was written based on the understanding that it would provide a baseline assessment, which would go on to inform a more detailed ecological analysis in the form of an Assessment of Ecological Effects (AEE) at the resource consenting phase, and a restoration and enhancement plan at a later date. This later AEE analysis would list, describe, and discuss the potential adverse ecological effects and options to avoid, remedy, or mitigate those effects as part of the mitigation hierarchy, which would then inform the more detailed industrial design and stormwater requirements of the site.
3. The proposed developable building footprint and layout as shown in the Boffa Miskell site masterplan was therefore understood to be indicative only, not locked in stone as is being suggested by the Regional Council. Discussions with the applicant and the applicant's other experts indicated that the final design and layout will be subject to an AEE process with input from all necessary experts, so that loss of stream and values is able to be avoided as per the directive in the National Policy Statement for Freshwater Management (NPS-FM) (2020).
4. Overall net benefits in stream quality from restoration and enhancement is a key element of the proposal which will be undertaken as part of the future development of the site. The intent is to achieve these benefits under land-use and subdivision controls and a future discharge consent, with the expected level of assessment and detail dealt with through a consent rather than Plan change process. The May (2022) Wildlands report was therefore written on this basis.
5. On the basis of the above, I therefore did not undertake an analysis of ecological values as per the Environmental Institute of Australia and New Zealand (EIANZ) as referenced in Paragraph 17 of Mr Hamill's evidence. Paragraphs 22 and 24 of Mr Hamill's evidence also discuss detail normally considered with an AEE for a resource consent. It is my view that, although all of the points raised in respect of an ecological assessment of effects are valid, labouring these points at the plan

change stage are 'putting the cart before the horse' and is the level of effects assessment expected through a consent process. Further points of difference on Mr Hamill's evidence are provided below.

6. In Paragraph 15, Mr Hamill states that the riparian margin zone of the northern stream reach will be reduced by the commercial zoning to a width that will no longer provide functional riparian vegetation value. As stated in Paragraph 3 above, the footprints in the Boffa Miskell site masterplan are indicative only and it is my understanding that the riparian buffer along the northern stream reach will extend to the top of the slope. Retaining a buffer to the top of the slope would result in a buffer width of between 10 and 15 metres (and in some places greater width (see additional information on this point in Paragraph 17 below)) which is sufficient to maintain good riparian function in a stream system of this size.
7. In Paragraph 16, Mr Hamill states that the riparian margin of the Southern Tributary contains dense grasses and rushes which currently provide good riparian habitat and shade to the stream. Unless the vegetation has grown significantly since April, I do not agree with this statement. When I visited the site in April, the riparian margin vegetation along the Southern Tributary was very short and did not provide much shade to the stream channel.
8. As referenced in Paragraph 4 above, Mr Hamill references the EIANZ guidelines for determining ecological values of the stream systems within the site. On the basis of longfin eel utilising habitat within the site, Mr Hamill considers that the ecological values of the stream should be elevated to high in both the northern and main southern reaches of the stream. Whilst this could reasonably be argued for the northern stream reach, it is my view that this is not a suitable assessment for the southern reach.
9. Although I agree with Mr Hamill that the upper extent of the southern reach is of comparatively higher ecological integrity and value than the middle extent near the pond, there was no eDNA evidence that longfin eel utilise any of the habitats above the culvert and therefore I still consider this reach to be of moderate ecological value in its current state.
10. Paragraph 20 and 21 of Mr Hamill's evidence references the definition and status of wetland habitat in the RMA. Whilst I agree that, as Mr Hamill says "*ideally* [the proposal] should involve avoidance and at least no net loss of raupō wetland extent and values", raupō reedland and the contiguous rautahi sedgeland habitat is very easy to reinstate following removal. This is evidenced by the natural development of these habitats within 2-3 years of the pond construction and the authors personal experience of restoration and enhancement trajectories of lowland

wetland in the Tauranga Ecological District. I am therefore of the view that, as long as the pond and two proposed wetlands are appropriately designed consistent with good engineering and ecological practice, the existing raupō and rautahi wetland extent will at least be reinstated if not exceeded.

11. In Paragraph 24, Mr Hamill discusses extent of stream and wetland loss. The potential for raupō wetland loss is discussed in Paragraph 9 above.
12. Paragraph 24.b) states that approximately 170 metres of stream loss will occur based on the current stormwater design. Mr Neill Raynor has developed further detailed pond and wetland location designs, which will reduce/avoid the necessity for any stream loss. Irrespective of the final design options provided by Mr Raynor however, the extent of stream length within the current extent of the proposed pond, but outside the boundaries of the current pond is only c.53.3 metres. Prior to, and following, discussion with BOPRC staff during the pre-hearing meeting, the extent of the pond was significantly revised. The particulars of this revision are presented by Mr Raynor.
13. Paragraph 24.c) states that some stream diversion will be required for the proposed development. As discussed in Paragraph 3 above, the footprints are indicative only and the applicant has stated that, following redesign of the commercial layout, no streams will need to be piped or stream channels modified outside of the pond location. The details of the developable layout will be finalised at the consenting stage.
14. Paragraph 24.d) briefly discusses the proposed buffer width zones and states that the plan change will result in permanent loss of future stream restoration potential. Although, to some extent, the marking of the lot boundaries in the plan could be seen to be 'locking in' the future use and character of these riparian zones, the converse is also true. That is, there is no certainty that, without the plan change, any restoration or enhancement of the riparian margin habitat would happen at any point in the future.
15. The potential future states of the riparian margins are many and varied and could conceivably revert to grazed pasture if the land retains a rural zoning. Whilst the riparian buffers suggested for the plan change may not represent an 'ideal' scenario, there will be certainty that the restoration and enhancement will occur. The restoration and enhancement plan should be sufficiently prescribed as part of the resource consent conditions and be consistent with the plan provisions related to stream enhancement previously noted in my evidence and as proposed by Mr Collier.

APPROPRIATE BUFFER WIDTH DISCUSSION

16. In Paragraph 27, Mr Hamill expands upon the proposed buffer widths for each stream section within the site. I agree with Mr Hamill's suggestion that, *ideally*, 10 metres on each side of each stream channel is the appropriate minimum buffer width. Extensive research has been undertaken in the past two decades to determine appropriate riparian buffer widths to achieve a variety of targets for water quality, biodiversity, ecosystem function, and self-sustainability.
17. Most of this research agrees that a buffer width of >10 metres on each side of a stream is the minimum necessary for the development of sustainable indigenous vegetation, and that most aquatic functions will also be achieved by this width (Parkyn *et al.* 2000). However, other research has shown that a single line of trees and rank grass still confers some ecological benefit to streams (i.e. a narrow buffer strip is better than no buffer) (Meleason and Quinn 2004, Davies-Colley *et al.* 2009), and that the suitable buffer width is variable dependent on adjacent land use, riparian margin slope, catchment characteristics, and location within the catchment (Fenemore and Samarasinghe 2020).
18. Current and proposed future contours of the riparian margin habitats associated with each section of the stream provides the potential for net ecological enhancement through restoration planting, weed control, and permanent protection from future development. Constraints and opportunities within each reach are discussed further below.

Northern stream reach

19. Due to the steep riparian slopes adjacent the northern stream reach, planting to the top of the slope should be undertaken to protect and enhance all of this area. For most of the stream reach, the top of the slope will equate to a buffer width of ≥ 10 metres, however a few small areas may be slightly less than 10 metres. The presence of a few small areas below the recommended 10 metre minimum will not, in my view, significantly reduce the effectiveness of the planned buffer.
20. Ensuring that the entire slope down to the stream edge is restored to appropriate indigenous vegetation will ensure the current instream and riparian margin values will be protected. That is, the entire stream width will continue to be shaded, wood and leaf debris will still enter the stream, trees and shrubs will provide bank stability and slope erosion protection, and the vegetation will provide avifauna habitat and food sources.

21. Restoring the northern riparian margin to indigenous dominated vegetation will improve the indigenous biodiversity values within the area, will provide a wider range of woody and leaf debris to the stream, has the potential to improve seasonal food availability for avifauna, and will be visually more appealing than the current situation.
22. Consideration will also be given to whether additional habitat complexity could, and should, be added to the stream course to provide additional habitat for indigenous freshwater fish and macroinvertebrates. The particulars of the restoration and enhancement programme will be subject to future discussion with community, iwi, and council representatives.

Southern stream reaches

23. The southern stream reaches are reasonably narrow (0.3-0.8 metres) and, in general, the banks down to the stream margin are moderate- to gently-sloping. Exceptions to this are present on the western side of the southern tributary, the southern side of the main stream channel from the confluence with the southern tributary and the pond, and the eastern side of the southwestern tributary.
24. In these locations, the slope down to the stream is reasonably steep due to recent (<2 years) earthworks undertaken to create a platform on the land between the two stream tributaries and an access road/track to that platform. As a result of these earthworks, the buffer width may be reduced to between 2 and 5 metres, however the buffer zone along all other stream margins is likely to average at least 10 metres (range 5-20 metres).
25. Although a narrow buffer zone is not ideal for vegetation self-sustainability and will not confer the same instream benefits as wider zones, the restoration of these areas will significantly improve the instream and riparian margin ecological and biodiversity values compared with the current state. Additionally, because the stream width in these areas is small, a 2 metre strip of well-designed planted vegetation on one side, along with a wider strip on the other side, will ensure that the water column should be shaded throughout the day, which is a key target for improving instream values.
26. Consideration will also be given to improving instream habitat heterogeneity within the southern stream reaches. This could take the form of anchoring coarse woody debris within the stream channel/on the stream bank. Determining appropriate instream structures for use in this instance will be the subject of future consultation, design, and consideration as part of regional consents which will be required.

TECHNICAL DISCUSSION POINTS

27. Discussion with Mr Hamill during a pre-hearing meeting on 16 June 2022 raised the issue of considering not just the current state and location of the stream channels but also enabling the future state, capacity, and morphology of the stream channels to change over time. Mr Hamill was particularly concerned with:
 - a. The location of the 'southwestern tributary' as shown on Figure 2 of the Wildland Consultants report, in particular the indication that one of the lot boundaries will intercept the stream channel.
 - b. The width of the proposed buffers and the capacity to accommodate any change in stream morphology.
 - c. The potential for increased water flow rates during periods of high rainfall into the stream channels as a result of the speed of water flow off impervious surfaces.
28. As previously discussed in Paragraph 3 above, stream locations shown in the figure in the May 2022 Wildlands report were approximate only based on the aerial imagery available for mapping. As indicated in the legend of the figure, the stream location is approximate. The exact location of the stream should therefore be determined as part of the final design of the commercial area using a high accuracy method applied by a land surveyor.
29. The lot boundaries presented in Figure 2 are also only indicative at this stage and will be further refined through the design and consultation process required as part of the resource consent process.
30. Although the stream channel location is likely to be constrained in some locations by the proposed building platforms, and engineered structures required to provide site stability, in my opinion the proposed buffer widths along the southern stream margins should be sufficient to allow for some degree of change to the stream channel morphology.
31. It should be noted, however, that the likelihood of major shifts in stream channel morphology for the two small tributaries is relatively low in my opinion, due to the following:
 - a. The headwaters of each tributary of the stream are either located within the site, or are within 100-200 metres of the southernmost point of the tributary on the site.

- b. The part of the wider catchment area immediately upstream of the site which directs overland and subsurface flow into the streams on the site is reasonably small and has a reasonably low gradient between the top of the catchment and the start of the stream system within the site (c.24 metres change in elevation over a distance of c.343 metres).
 - c. Some of the overland flow from the upper catchment area may be intercepted by stormwater systems along State Highway 2, which further reduces water flow volumes into the stream system.
 - d. The overland flow hydrology of this area is also going to be further modified by construction of the Takitimu North Link.
 - e. Overall, it is a relatively low energy system which is unlikely to result in significant changes in channel morphology which will exceed the planned buffer widths and therefore there is sufficient 'space' within the buffer zones to accommodate some degree of natural change.
32. Mr Hamill's concern about the potential for flash flooding of the waterways as a result of increased water flow volumes and velocity off impervious surfaces, and subsequent changes in stream morphology and erosion potential is a valid point for any new development which results in a significant increase in impermeable surfaces. However, the evidence of Mr. Raynor is that this risk has been conservatively managed for this plan change area, based on overall design and planned management of stormwater on the site development areas. To the extent there is a risk of flash flooding of the streams due to an increase in the area of permeable surfaces, a range of mitigation options are available to be included as part of the consenting process. These potential options are discussed further in the evidence of Mr Neill Raynor.
33. The Wildlands report produced in May 2022 was not intended to be an assessment of the potential ecological effects of the proposed development, which is normally addressed in an assessment of ecological effects produced as part of the resource consent process. The scope of the May report was to ascertain the current ecological values within the waterway system on the site, and to provide a foundation for the suggested planning pathway of potential restoration and enhancement.

CONCLUSION

34. The site contains the riparian margins and stream channel of an unnamed tributary of the Oturu Stream. The stream channel has been split into four separate units based on ecological values, characteristics, and degree of modification.
35. Watercourses and riparian margins in the southern part of the property have been heavily modified over many years and currently have low to moderate ecological value. Although degraded, they are still nevertheless used by indigenous fish. As part of urbanisation through this plan change, the area has high potential for restoration and enhancement opportunities as part of future land-use and subdivision consents.
36. The instream character of the northern stream reach retains a high degree of naturalness and provides good habitat for indigenous freshwater fauna. Restoration of the riparian margins would significantly improve indigenous biodiversity and habitat values.
37. The width of the riparian margin buffer zone for restoration and enhancement should be ≥ 10 metres wherever possible. Although some areas will need to be narrower than 10 metres, the restoration of these areas will still result in indigenous biodiversity and instream ecological value gains compared with the current state.
38. Although the wetland habitat on site does not meet the definition of a 'natural inland wetland' under the NPS-FW, it does have ecological values that I understand were only recently established as part of the DMZ existing stormwater discharge consent and related conditions. However, these ecological values can be re-created and improved through ecologically sensitive stormwater design.
39. Potential restoration and enhancement measures for the stream system within the site include pest plant control and restoration planting with appropriate indigenous species. Consideration will also be given to enhancement actions which could improve instream habitat for indigenous freshwater fauna.
40. The likelihood of any significant changes in stream morphology compromising the long-term viability of the buffer zones is low due to the stream location and catchment characteristics.
41. There is potential for an increase in impervious surface areas due to industrial use of the site to increase stormwater flows and result in adverse effects on the stream system. However, these

effects can be mitigated through the use of a range of design features as requirements within the resource consenting phase.

42. Overall, there is good potential for ecological enhancement of the stream system and riparian margins on the site as part of the PPC 93. I am confident that the restoration and enhancement of the stream and wetland habitat can be suitably provided for through the resource consenting process. For these reasons, I see no reason on ecological grounds why PPC93 should not be granted.

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