

Before the Fast-track Panel

Under: The Fast-track Approvals Act 2024
In the matter of: FTAA- 2603-1181 Mt Welcome, Pukerua Bay, Porirua

Statement of advice

Name: Tayla Hooker

Area of expertise: Terrestrial ecology flora

Role: Technical advisor flora and ecosystems for Department of Conservation (DOC)

Date: 21/07/2026



Department of
Conservation
Te Papa Atawhai

**Te Kāwanatanga
o Aotearoa**
New Zealand Government

Introduction

1. My full name is Tayla Jane Hooker.
2. I am providing ecological advice to the Director-General of Conservation in relation to the fast-track application for the Pukekura Property Group Limited Partnership application for the development of a 949 lot subdivision near Pukerua bay referred to as Mt Welcome.

Instruction

3. I am providing expert advice on behalf of DOC on the Mt Welcome subdivision – Fast-track application.

Qualification and Experience

4. I have a bachelor's degree in environmental science (Wildlife and Conservation Biology) from Deakin University, Melbourne, Australia.
5. I have been employed by the Department of Conservation since 2020. For five years I was employed as Biodiversity Ranger based in Twizel/Te Manahuna, working closely with managing and monitoring threatened plant populations within the area. For the past year I have been employed as a Technical Advisor for flora and ecosystems, where I facilitate threatened plant and ecosystem work over the Lower North island.
6. During this time, I have surveyed 18 different pastoral leases in the Mackenzie Basin for their inherent biodiversity values as a part of the Crown Pastoral Lease Act (CPLA).
7. I have provided evidence and attended a hearing for Balmoral solar array within the Mackenzie basin. Within the Lower North Island I have provided advice for various fast-track applications.
8. I assist in the monitoring and management of New Zealand's threatened plant flora and their associated ecosystems within the districts of Ngāmotu (New Plymouth), Whanganui, Te-Papa-i-Oea (Palmerston North), Te Whanganui-a-Tara (Wellington), Whakaoriori (Masterton) and Ahuriri (Napier).

Code of conduct

9. Whilst it is acknowledged this is not an Environment Court Proceeding; I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. I have complied with the Code of Conduct in the preparation of this advice. Unless I state otherwise, this assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Scope of advice and expert opinion

10. I am a terrestrial ecologist and my comments will be based on the terrestrial flora and ecosystems that the site represents and any impacts associated with these values.

11. My expert advice will cover the following matters:
- i. Vegetation mapping across the entire site.
 - ii. Wetland delineation and naturally uncommon seepage and fen ecosystems.
 - iii. Review and comments of the ecological significance assessment provided in Appendix 15.
 - iv. Comments on Significant Natural Area Values.
 - v. EIANZ criteria for assessing ecological value and impacts.
 - vi. Loss of extent of Significant Natural Area (SNA).
 - vii. Offset proposals on wetlands and significant vegetation.
 - viii. Potential losses to naturally uncommon ecosystems.
 - ix. Wetland remediation and restoration plan.
 - x. Wetland buffer considerations.
 - xi. Proposed monitoring and compliance requirements of plantings and offset measures.
12. In preparing this advice I have reviewed:
- i. Appendix 15 Ecological assessment by Blue Green Ecology, henceforth referred to as Appendix 15.
 - ii. Appendix J Wildlands Ecological Review and Blue Green Response

Vegetation mapping across the entire site

13. I agree with Appendix J that mapping of vegetation and habitat types across the site has not been provided. Appendix 15 has limited mapping to cover SNA areas and wetland habitat types. It then is assumed that throughout the site the area is pasture. However, there is indigenous vegetation outside of these areas, which is briefly described as east of SH59. Although some representation of this vegetation is given in Figures 12 and 16, the extent nor area covered has been quantified.
14. A succinct way to show vegetation across a site is to provide various polygons that describe different vegetation types across a map. This can then be overlaid alongside areas proposed for development, to provide the appropriate clarity of the extent of vegetation loss proposed to occur. A table would then be provided that details the extent of loss in each of the proposed vegetation types and where they occur. This clarity is currently lacking and makes understanding the extent of indigenous vegetation clearance and impact to wetlands confusing and other significant areas difficult to ascertain. Consequently, the magnitude of ecological effects is uncertain. This is a consistent problem throughout the application.

Wetland delineation and naturally uncommon seepage and fen ecosystems

15. The Appendix 15 has applied both the pasture exclusion test and wetland delineation test across the site. It is important to note that 'the purpose of the NPS-FM pasture exclusion clause is to support the continuing use of pasture for grazing purposes. The exclusion is not targeted at pasture being converted for urban development or for other land uses.'¹ The pasture exclusion test deems that any area with more than 50% cover of exotic pasture species is then excluded from the definition of a natural wetland. Where areas fail to meet the pasture exclusion test

¹ as stated in Section 3 page 9 of Ministry for the Environment 2022, *Pasture exclusion assessment methodology*, Ministry for the Environment, Wellington, viewed 24 July 2026,

then wetland delineation protocols should be followed. Areas that meet wetland delineation protocols are then considered natural wetlands.

16. As the intention behind the pasture exclusion test is to allow for continued grazing rather than facilitating development of wetlands, its application within this project warrants consideration. An environmentally conservative approach to assess wetland extent would be to apply the wetland delineation protocols alone, in alignment with this principle. This approach has not been adopted in Appendix 15.
17. Natural inland wetland are wetlands defined by the wetland delineation protocols.² The meaning of natural inland wetland is then applied both in the National Policy Statement for Freshwater Management³ and other relevant statutory provisions. The application of the wetland delineation protocols and the definitions of natural inland wetland have not been accurately applied in Appendix 15. As a result, areas that meet the criteria for natural inland wetlands have been excluded from management effects assessment. Furthermore, the ecological significance of natural wetlands has been understated and has resulted in an underestimated magnitude of effects for those areas.
18. Appendix 15 undertook 12 wetland delineation plots to delineate wetlands.⁴ These plots were only conducted in the north-western section of the site and are shown in Figure 1 of this document. Five of these 12 plots met the pasture exclusion test, which in theory excludes them from the definition of natural wetland. The predominant species that is considered an exotic pasture species found in all plots is Yorkshire fog (*Holcus lanatus*) This includes:
 - Plot 1: *Holcus lanatus* 55%, *Trifolium repens* 2%
 - Plot 2: *Holcus lanatus* 20%, *Lotus pedunculatus* 30% and *Trifolium repens*, 10%
 - Plot 5: *Holcus Lanatus* 20%, *Lolium perenne* 70%, *Trifolium repens* 2%
 - Plot 8: *Holcus lanatus* 65%, *Lotus peduncularis* 2%.
 - Plot 10: *Holcus lanatus* 95%, *Lotus peduncularis* 1%, *Trifolium repens* 1%.
19. The applicant has applied the wetland delineation protocols to these areas and all areas meet the wetland delineation criteria except plot 5. Some consideration is required for areas within Plots 1, 2, 8 and 10 to be defined as natural wetlands to apply the intention behind the pasture exclusion test as discussed at paragraph 16 above.

² Ministry for the Environment. (2022). *Pasture exclusion assessment methodology*.

³ Ministry for the Environment. (2020). *National Policy Statement for Freshwater Management 2020*.
Ministry for the Environment.

⁴ Appendix 1 of Appendix 15 Ecological Assessment



Figure 1. extracted from Appendix 1 as Figure 32 from Appendix 15. Showing vegetation plot locations where the pasture exclusion test was conducted.

20. Confusion is created when some areas that do meet the pasture exclusion test are included as wetlands in Figure 2 (i.e. plot 10), whilst other areas that do not meet the pasture exclusion test and do meet the wetland delineation protocols are mapped as 'Wet excluded pasture.' This applies to wetlands 38 = near plot 4, 40 = near plot 4, 43 = plot 11, 44 = Plot 7 and in part 45 and 41 (containing plots 3 and 6 respectively). No explanation is provided for this differing treatment. A conservative approach would map all areas that meet the wetland delineation protocols as wetlands. The only area then that could be considered 'wet excluded pasture' would be plot 5 based off the information provided.
21. As a consequence, it is then unclear to what extent the area defined as 'wetland excluded by pastoral exclusion rule' in Table 1 is accurate. No justification has been provided to explain this contradiction whereby areas have been assessed as natural wetland via both the pasture exclusion rule and wetland delineation tool are nevertheless mapped as being excluded. Based the data provided in Appendix 1 of Appendix 15 it appears that a number of the areas mapped as excluded wetlands are in fact natural wetlands. The area of wetlands then impacted by the proposed development site is likely to have been underestimated and the full extent of wetland loss at this stage is uncertain until these inconsistencies are resolved.

Row Labels	Sum of Area (ha)	Sum of other (ha)
Natural inland wetland	4.4	
Artificial wetland		0.078
Wetland excluded by pastoral exclusion rule		0.631
Grand Total	4.4	0.71

Table 1. Extracted from Appendix 15 Table 1 under section 3.3 page 9.

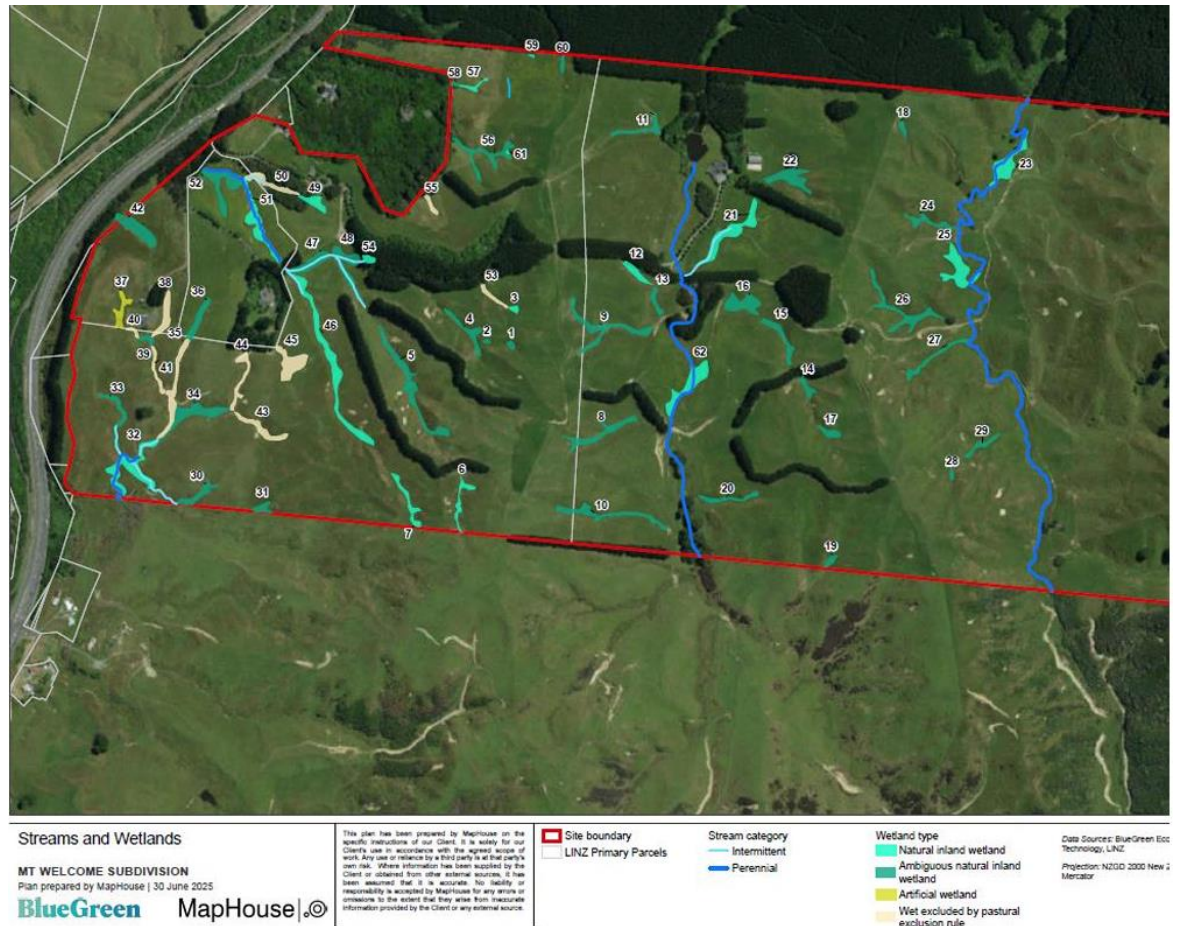


Figure 2. extracted from Appendix 15 under Figure 6 section 3.3, showing the wetlands mapped from rapid and plot delineations.'

22. Appendix 15 states that 16 areas are clearly natural wetlands. It is contended that a further 35 marginally meet the wetland delineation criteria and have been mapped as 'Ambiguous natural inland wetland' in Figure 2. This was stated to be because either the prevalence scores (occurrence of hydrophytic type vegetation) were just 'acceptable' but soils were wet or the dominant vegetation was 'wet grasses,' specifically referring to creeping buttercup (*Ranunculus repens*) and creeping bent (*Agrostis stolonifera*) as examples.
23. I disagree with these areas being defined as 'ambiguous' natural wetlands and it is correct to treat such areas as natural wetlands. Proceeding the failure of the pasture exclusion test, the wetland delineation protocol is a three-pronged approach that includes both vegetation and soil hydrology to ensure all wetland types are captured. Areas will meet the wetland delineation test from only vegetation assessment if two tests are passed. These are:

- Dominance test: There is 50% or more cover of Obligate (OBL), Facultative wetland (FACW) or Facultative (FAC) flora species these species do not have to be indigenous to be included in this cover⁵ and
 - The area has a prevalence score of under 3 (meaning hydrophytic vegetation).
24. Both Creeping bent (*Agrostis stolonifera*) and creeping buttercup (*Ranunculus repens*) are recognised indicator species, with statuses of FACW and FAC respectively and are not in the national list of exotic pasture species.⁶ The dominance of these species over an area is then a clear delineation of a wetland rather than an uncertain one.
 25. Furthermore, if it is uncertain if an area meets the required dominance or prevalence score then wetland hydrology and hydric soil tests should be conducted as part of the 3 phased approach. The presence of wet ground in conjunction with acceptable prevalence scores is then confidently classified as a wetland. The applicant does not apply these further methodologies because the prevalence scores and dominance tests are met.
 26. Based on the information provided I disagree that the further 35 natural wetland areas are marginal. They instead confidently meet the criteria for a natural wetland.
 27. The applicant notes that all of the features on site are exotic dominated.⁷ The premise for delineating wetlands is intentionally not based on diversity and/or abundance of indigenous flora. This is because the hydrology of these ecosystems is not always captured in their relative indigenous vegetation composition and to overlook this undermines the importance of wetlands as an ecosystem and the services they provide.
 28. Many of the wetland areas described appear to fit the hydrological condition of a seepage or a flush and are referred to as such in part by the applicant.⁸ Wetlands numbered 55 – 61 are directly referred to as seepages or drains, with wetland 56 directly identified as a seepage.⁹ Seepages and flushes occur where groundwater is able to emerge on hillsides, this is a more periodic occurrence for flushes which are formed by periodic rain pulses, whereas seepages are more permanently wet.¹⁰
 29. Given the nature of these wetland types, confirmation through the assessment of hydric soil indicators is particularly important. The results of any hydric soil assessment is not provided. The provision of this information would provide additional evidence to support the classification of these wetland types.
 30. The characteristics of seepages and flushes are well documented. Flushes commonly occur on peat substrates, generally have low to moderate nutrient status and are typically associated with acidic conditions (pH 4-6). Seepages occur on a

⁵ Ministry for the Environment. (2022). *Wetland delineation protocols*. Ministry for the Environment. <https://environment.govt.nz/assets/publications/Wetland-delineation-protocols.pdf>

⁶ Ministry for the Environment. 2022. *Pasture exclusion assessment methodology*. Wellington: Ministry for the Environment.

⁷ Section 3.3 page 9 of Appendix 15 Ecological Assessment

⁸ As stated in 3.3.3 page 13 of Appendix 15 Ecological Assessment

⁹ as stated under section 3.3.3 Northern Wetland in Appendix 15 Ecological Assessment

¹⁰ Manaaki Whenua – Landcare Research. (n.d.). *Seepages and flushes*. Retrieved July 17, 2026, from <https://www.landcareresearch.co.nz/publications/naturally-uncommon-ecosystems/wetlands/seepages-and-flushes>

variety of substrate; peat, mineral or rock, have a range of nutrient conditions and generally exhibit a pH between 4 – 7).¹¹

31. The areas that can be or have been referred to seepages has not been mapped or displayed. It is important to do so as these wetland types are naturally uncommon ecosystems with the threat status of 'Nationally Endangered'.¹²
32. Seepage wetlands can also occur under forested vegetation which is the historic vegetation cover of this site. This is important to note as the applicant stipulates that the wetlands throughout the site would not have historically been wetlands due to forest cover.¹³ It's difficult to ascertain to what extent this is true as the wetland typologies across the site have not been well defined and mapped.

An independent ecological assessment of the wetland features using Greater Wellington Regional Council ecological significance criteria.

33. Appendix 15 provides a brief assessment of the site using significance criteria that are not identified. The Environment Institute of Australia and New Zealand criteria (EIANZ) criteria are referred to in other areas of Appendix 15, it is assumed that this is the criteria that is used. The more appropriate criteria for identifying areas of significant biodiversity would be the Greater Wellington Regional Council (GWRC) criteria for assessing ecological significance across the site.¹⁴
34. The GWRC criteria applies 4 criteria, a site need only meet one of these criteria to be considered significant, these criteria include: Representativeness, Rarity, Diversity, Ecological context and Tangata whenua values.

Representativeness

35. This area would have once been broadleaf kohekohe forest of which there is currently no representation of this found on site outside of the Significant Natural Areas (SNA). The applicant refers to this historic vegetation type to contest the natural wetlands on site are therefore not representative. I disagree with this assessment. I consider that any wetland delineated as a natural wetland as per the wetland delineation protocols¹⁵, and where they do not meet the definition of improved pasture as per the pasture exclusion test,¹⁶ is regarded as a significant ecosystem in accordance with the Natural Resources Plan for the Wellington region 2023.¹⁷ In addition to this, within Wellington as noted in the definition of "natural wetland" in the Operative Greater Wellington Natural Resources Plan (pages 34-35), 'all natural wetlands will meet representativeness and rarity criteria listed in Policy 23 of the *Regional Policy Statement 2013*.' As such, all the natural wetlands in this application meet at least two of the criteria listed in Policy 23 of the Regional

¹¹ Johnson, P., & Gerbeaux, P. (2004). *Wetland types in New Zealand*. Department of Conservation. <https://www.orc.govt.nz/media/xalnctf3/wetland-types-in-new-zealand-johnson-gerbeaux-2004.pdf>

¹² Holdaway, R.J., Wiser, S.K., & Williams, P.A. (2012). *Status assessment of New Zealand's naturally uncommon ecosystems*. Conservation Biology, 26(4), 619–629.

¹³ Section 4.2 page 33 of Appendix 15 Ecological Assessment

¹⁴ Greater Wellington Regional Council. (2016). *Identifying and protecting significant indigenous biodiversity in the Wellington region: A guide to interpreting criteria in the Regional Policy Statement*. Greater Wellington Regional Council.

¹⁵ Ministry for the Environment. (2022). *Wetland delineation protocols*. Ministry for the Environment.

¹⁶ Ministry for the Environment. (2022). *Pasture exclusion assessment methodology*. Ministry for the Environment.

¹⁷ Greater Wellington Regional Council. (2023). *Natural Resources Plan for the Wellington Region: Operative version 2023*, see pages 34-35

Policy Statement 2013¹⁸. Those criteria are listed as representativeness and rarity. In my opinion, I consider that the wetlands in the application site meet the representative criteria.

Rarity

36. I disagree with the assessment¹⁹ that these natural wetlands do not meet the criteria for rarity and distinctiveness as this directly contradicts the aforementioned statement from the Natural resources Plan for the Wellington Region that states natural wetlands meet the criteria for rarity. The fact that these wetlands have little to no indigenous vegetation does not subtract from their ecosystem status as a wetland. The exclusion of indigenous biodiversity as a criteria for delineating wetlands is intentionally not included because a wetland's ecological function and eco services are not entirely captured in its vegetation composition. In addition to this, the development site sits primarily with an Acutely threatened Land Environment New Zealand (LENZ).^{20 21} These are land environments that have less than 10% indigenous vegetation across the country.

Diversity and Pattern

37. The diversity and pattern of the landscape is largely unknown due to a lack of information. It is unknown the extent of the wetland types that occur across the site as they have not been mapped or described. Some of the descriptions are fitting of that of a seepage or fen, the presence of these wetland types would increase the diversity and pattern of the ecosystem types across the area even if they are lacking in indigenous biodiversity. Individually these wetlands contain little to no indigenous biodiversity and do not meet this criteria.

Ecological context

38. In regard to ecological context, the applicant argues that the area has a low ecological context because it does not provide significant linkages or movement corridors for species due to the relatively low indigenous flora biodiversity. However, many of the catchments within the site flow into areas of significant ecological value and contribute to the streams and wetlands associated with those habitats.
39. While it is likely the existing farming activities on the site have adverse ecological effects, the extent to which the proposed development, whether negative or positive is unknown at this point of the assessment. Comparative impacts of current management practices versus those in the future are not directly relevant to the assessment of ecological context. Ecological context relates to the presence of ecological connections and relationships to adjacent areas whether or not the current management is beneficial or detrimental.
40. The site connects hydrologically to areas of significant biodiversity and to other water bodies. There is a relationship between changes on the site influencing either negative or positive impacts to adjacent area. Ecological context is an attribute to the site and meets the criteria for significance. Therefore, the wetlands ecological

¹⁸ Greater Wellington Regional Council. (2013). *Operative Regional Policy Statement for the Wellington Region: Operative version 2023*

¹⁹ Under 4.2 page 34 of Appendix 15 Ecological assessment

²⁰ The Land Environments of New Zealand describe geological and climatic conditions that are indicative of a certain vegetation type cover and therefore an ecosystem. Acutely threatened land environments have less than 10% indigenous cover remaining.

²¹ Manaaki Whenua – Landcare Research. (n.d.). *LENZ – Land Environments of New Zealand*. Retrieved 20 July 2026, from <https://www.landcareresearch.co.nz/tools-and-resources/mapping/lenz>

context should be taken into consideration for any development or management activities.

Tangata Whenua values

41. Appendix 15 does not refer to any engagement with local iwi.²² Therefore there is no ability to comment on these values without proper iwi liaison that should otherwise occur for a site to ascertain an appropriate ecological significance assessment.
42. In summary, I disagree with the low to negligible ecological value assigned to the natural wetland features of the site, this is predominantly on the basis that these wetlands are exotic and highly modified. Whilst this is true, they meet the criteria for representativeness and rarity on the basis that they are natural wetlands as per Policy 23 of the Regional Policy Statement for Wellington as discussed above. Furthermore, these wetlands meet the criteria for ecological context.
43. The diversity of the wetland typologies throughout the site needs to be appropriately captured and classified, particularly where seepages may be found. These natural wetlands are defined as significant²³, they are numerous and interlinked throughout the application site. This is in addition to some of these areas potentially being defined as naturally uncommon ecosystems with the threat status of Nationally Endangered, in the form of seepages or fens. These areas are moderate in ecological value and the significance of these values has been understated.

Comments on Significant Natural Area Values

44. I have applied ecological significance criteria in Appendix 1 of this report to the areas of indigenous vegetation that are described in Appendix 15. I conclude the SNA027 and SNA029 are of very high ecological significance, and the indigenous vegetation described east of SH59 is moderate-high.
45. Appendix 15 describes SNA 027 as seral broadleaf forest the newer addition of kohekohe recruitment is of note as this indicates the introduction of a forest type that was dominant but now greatly reduced across the region. Some confusion is created in the application as the author notes the state of the east side of the highway to be weedy and it is implied that this is SNA027, it is later confirmed that this area is in fact SNA 029.²⁴ This distinction is important, as the ecological characteristics and condition of relevant SNA areas should be assessed separately to avoid any misunderstanding regarding values.
46. I disagree with the statement 'the eastern area by the road should not have been identified and mapped as SNA (SNA029) nor habitat for highly mobile taxa, as it is not representative of an SNA because it is largely weed species.'²⁵ The applicant goes further argues the area does not meet other significance criteria, including rarity and distinctiveness, diversity and ecological functions.
47. This assessment overlooks the further context of the site. While the area contains some weed components it also contains older indigenous vegetation (estimated to be under 30 years old). The area is part of the remainder of SNA029 which contains

²² Tangata whenua participation is referred to in section 6.6.2 page 59 of Appendix 15 Ecological Assessment as having had 'no engagement'

²³ Greater Wellington Regional Council. 2023. *Natural Resources Plan – Operative Version 2023 (including maps)*. Greater Wellington Regional Council, Wellington, New Zealand.

²⁴ Section 3.6 page 32 of Appendix 15 Ecological Assessment

²⁵ Section 3.6 page 32 of Appendix 15 Ecological Assessment

representative kohekohe-tawa forest and is in close proximity to SNA 027 and SNA 225.

48. The indigenous vegetation found in this area also meets criteria for rarity and distinctiveness as the SNA is situated on acutely threatened land environments (LENZ), acutely threatened environments currently have less than 10% indigenous vegetation remaining nationally.
49. I disagree with the notion that SNA 027 is of moderate value and is instead of very-high value.²⁶ It is speculated that the value in this area is due to its age and condition, given that the area is 20 years old and planted adjacent to a pine band. However indigenous broad-leaf forest is rare, and this is identified by the Acutely Threatened LENZ environment of which this SNA is found. I therefore also disagree with the indigenous vegetation east of SH59 as being negligible to no value and is instead high due primarily to its occurrence of this same LENZ category.

EIANZ criteria for assessing ecological value and impacts

50. Appendix 15 has evaluated wetlands and their ecological value using the non-statutory EIANZ guidelines.²⁷ Within the Greater Wellington Regional Council Significance Assessment Criteria,²⁸ a site only needs to meet one of the criteria (Representativeness, Rarity and Distinctiveness, Diversity and Pattern, Ecological Context) to be considered significant. This is one of the major discrepancies when using the EIANZ for assessing ecological impact. Often, as is the case in its use for this application, the EIANZ criteria results in a lower value than a sites highest marker. For example, all wetlands are correctly identified all impacts on these environments are assessed as low to negligible.²⁹ Natural wetlands are rare ecosystems, and these areas meet the criteria for representativeness and rarity. This value should not be drawn down due to other assessment factors, but has consistently been misapplied throughout Appendix 15 in my opinion. Additional consideration should be given to the wetlands that do meet the pasture exclusion test and the wetland delineation test, as to whether these too should be defined as natural wetlands as is discussed in paragraph 16 of this report, and therefore have the same principles applied.
51. The magnitude of the impacts is also based on the percentage area lost of each wetland type rather than the permanent and irreversible loss of a threatened ecosystem (wetlands). This often results in a low to negligible impact. When the ecological value as determined by the applicant is also applied this further minimizes the magnitude of effects.
52. As noted in the definition of “natural wetland” in the Operative Greater Wellington Natural Resources Plan, ‘all natural wetlands will meet representativeness and rarity criteria listed in policy 23 of the *Regional Policy Statement 2013* and are therefore ecosystems and habitats with significant indigenous biodiversity values

²⁶ Section 4.1 page 33 of Appendix 15 Ecological Assessment

²⁷ Roper-Lindsay, J., Fuller, S. A., Hooson, S., Sanders, M. D., & Ussher, G. T. (2018). *Ecological impact assessment (EclA): EIANZ guidelines for use in New Zealand: Terrestrial and freshwater ecosystems* (2nd ed.). Environment Institute of Australia and New Zealand. <https://www.eianz.org/document/item/4447>

²⁸ Greater Wellington Regional Council. (2016). *Identifying and protecting significant indigenous biodiversity in the Wellington region: A guide to interpreting criteria in the Regional Policy Statement*. Greater Wellington Regional Council.

²⁹ Displayed in Table 11 page 94 of the Appendix 23 Assessment of Ecological Effects.

managed under Policy P42.³⁰ Any permanent loss of such ecosystems should therefore be regarded as a moderate to high magnitude of effect.

Loss of extent of Significant Natural Area (SNA) and other shrubland areas

53. In the first instance, avoidance of clearance of indigenous vegetation both within SNA 027 and east of SH59 is preferred. It is not clear if all reasonable options for roading have been exhausted and these options have not been mentioned or assessed within Appendix 15. This is despite multiple intersection options having been provided within the Transport Assessment provided by Stantec.³¹ A signalised intersection is an option in the Transport Assessment and is considered to have reduced adverse effects to the environment than the current roundabout layout, but this option has not been referred to in Appendix 15. As a result comments from this report have focused on the current proposal that still applies a roundabout to this intersection.
54. Appendix 15 applies a consistent principle of percentage of area loss to assess the magnitude of effects on SNA values. The applicant therefore equates a 1% loss in extent of natural SNA 027 as a low magnitude of impact.³² I disagree with the use of proportionality to assess the magnitude of effects. The magnitude of an effect should consider permanence and reversibility, alongside the area's ecological characteristics. The clearance of vegetation is one of the most significant forms of ecological modification and so the magnitude of effect should be assessed accordingly. This type of impact should be regarded as a high magnitude of effect irrespective of the proportion of area effected.
55. This is further applied to the vegetation clearance on the eastern side of SH59, where the magnitude of permanent loss of vegetation is considered to have negligible effects. It is unclear the amount of area lost in this section as the applicant has only equated indigenous vegetation loss with what pertains to SNA 027. This area is undefined and looks to be significantly large. This area is indigenous scrub on acutely threatened LENZ environments and needs to be appropriately described, with an amount in hectares proposed to be lost.
56. Having mapped this area myself using what is provided in Figure 16, this area could be anywhere between 0.4 hectares and 1.7 hectares. It's not understood the total area of this part of the development that also coincides with SNA029 and so the extent of loss on SNA extent is also undefined.
57. I concur with the peer review from Wildlands section 4.1.3 that the extent of loss occurring on SNA 027 is an incorrect figure.³³ Having also created mapped a polygon of this area using Figure 16, the extent of loss on SNA 027 is at least 0.2 to 0.3 hectares. It is unclear where the figure 0.14 hectares has come from.

³⁰ Greater Wellington Regional Council. (2023). *Natural resources plan for the Wellington region: Operative version 2023 (including maps)*, page 34-35. <https://www.gw.govt.nz/assets/Documents/2023/07/CORRECT-Natural-Resource-Plan-Operative-Version-2023-incl-maps-compressed.pdf>

³¹ As outlined page 30 in Table 7-1: SH59 Intersection Options in the Integrated Transport Assessment for Mt Welcome Residential Subdivision, Stantec New Zealand.

³² Section 5.4 page 41 of Appendix 15 Mount Welcome ecological impact assessment

³³ Section 4.1.3 Appendix J Wildlands Ecological Peer review

58. Based on the rationale that these areas are significant indigenous biodiversity as either identified by their SNA status or in the occurrence on Acutely Threatened LENZ environments, the magnitude of impacts should be regarded as high. The seral broadleaf hardwood forest described by the applicant has experienced significant loss. 1187 hectares of this forest type was lost between 1996/97 to 2000/2002, and losses have continued to occur at this time.³⁴ Hence the current classification of this LENZ environment as 'Acutely Threatened.'

Offset proposals on wetlands and significant vegetation

59. The consistent assessment of a low to negligible magnitude of impacts thereby directly influences the offset proposal, whereby the vegetation clearance on the eastern side of highway 59 is offered no remediation, wetlands are given a bespoke offset ratio of 1:1 and the clearance for SNA 027 is given a slightly better offset ratio of 3:1 but without any appropriate calculations. Given that the area to be lost is approximately 60 years old there will be significant time lags in what indigenous area is lost to what will be gained. This would likely result in a significantly larger area required to be offset than the 3:1 ratio that is currently proposed. Rather than the bespoke application of a ratio, an appropriate offsetting model should be applied to calculate the area required to offset this loss, for example the Department of Conservation's 'Biodiversity Offsets Accounting Model' (BOAM) and associated guidance³⁵ as discussed below.
60. All biodiversity offset calculations fail to use reliable offset models. An appropriate biodiversity offset should be calculated that reflects the ecological values being lost. In the case for offsetting impacts on SNA027, the affected ecosystem should be assessed as being of very high ecological value where the magnitude of effect is also considered to be very high. Offsets for terrestrial ecosystems should be determined using recognised best-practice methods, as provided by the Department of Conservation's Biodiversity Offsets Accounting Model (BOAM) and associated guidance.³⁶
61. The offset compensation for the permanent loss of vegetation within SNA 027 is provided as an offset ratio of 3:1 quoting the use of such offset provisions in Transmission Gully. This should again be appropriately calculated using BOAM modelling with a magnitude of impact as very high. The current placement is however suitable in that it connects SNA029 and SNA225, the extent of this however needs appropriate justification.
62. This principle also needs to be applied to the loss of indigenous vegetation east of highway 59 which currently has no offset or mitigation provided.
63. While there is currently no widely accepted accounting model specifically designed for wetland offsetting in New Zealand, the application of BOAM for

³⁴ Ministry for the Environment. (2007). *Protecting our places: Information about the national priorities for protecting rare and threatened biodiversity on private land* (Publication No. ME 805). Ministry for the Environment. <https://environment.govt.nz/assets/Publications/Files/protecting-our-places-detail.pdf>

³⁵ Department of Conservation. (2014). *Guidance on good practice biodiversity offsetting in New Zealand*. Department of Conservation.

³⁶ Department of Conservation. (2014). *Guidance on good practice biodiversity offsetting in New Zealand*. Department of Conservation.

wetland offsetting would provide a transparent starting point for a favourable offset outcome. In contrast, the use of an estimated offset ratio provides limited transparency regarding assumptions made, risk involved, time lag considerations and confidence of success.

64. The time lags are spoken to in the assumption that wetland restoration can occur fully within 3 – 5 years. This doesn't account for uncertainty and so the discount rate is based on this being the outcome. In a BOAM model, this scale of uncertainty is added, with the consideration of whether the technique has been successful in the past, the rate of success and other relevant issues. This has not been accounted for in the current modelling.
65. For accounting time lags the applicant has implemented a very small discount factor of 0.1 (1%) on the premise that wetlands will be constructed in sufficient time as they are remediated, and that these wetlands will be successful.³⁷ Whilst wetland restoration plantings have been done before and can be successful there is still some degree of uncertainty of the overall outcome, a discount factor 0.1 does not adequately reflect this.

Potential losses to naturally uncommon ecosystems

66. As a threatened and naturally uncommon ecosystem, a seepage or fen wetland is unlikely to be feasibly offset in accordance with good-practice biodiversity and aquatic offsetting principles because the loss of this rare ecosystem cannot readily be replaced elsewhere, their hydrology (that of seepage from groundwater) cannot be recreated. Consequently, these ecosystems should be avoided and if avoidance is not possible compensated for. It is not clear to what extent these seepages may occur and therefore is difficult to assess any associated impacts of the application.

Wetland remediation and restoration plan

67. A comprehensive restoration plan has not been developed but some basic comments are provided in Appendix 15.
68. The revegetation plan for the offset removal is currently proposed as needing a maintenance period of 3 years with additional weed control for a total of 5 years.
69. Clarification is needed for suggested planting species such as "Manchuria". Is this meant to be "Machaerina" species to be proposed as is listed in the species planting proportions?³⁸ I am not aware of any indigenous species with the name Manchuria, only the exotic Manchurian rice grass (*Zizania latifolia*) which is listed as an environmental weed.³⁹

³⁷ Appendix 2 page 77 of Appendix 15 Ecological assessment

³⁸ 8.2 page 62 of Appendix 15 Ecological Assessment

³⁹ McAlpine, K. G., & Howell, C. J. (2024). *List of environmental weeds in New Zealand 2024* (Science for Conservation No. 340). Department of Conservation.
<https://www.doc.govt.nz/globalassets/documents/science-and-technical/sfc340.pdf>

70. The broad species suggested for offset planting of SNA 027 of targeting kohekohe-tawa canopy is appropriate. The species listed under appendix 5 of Appendix 15 appear appropriate.

Wetland buffer considerations

71. Auckland Regional Council commissioned the study 'Review of information on riparian buffer widths necessary to support sustainable vegetation and meet aquatic functions'⁴⁰ to determine the appropriate buffer widths for riparian areas. This concludes that a buffer of at least 10 metres is generally necessary for indigenous vegetation succession that should require minimal maintenance and the achievement of most aquatic functions. A 15 – 20 metre buffer will be highly likely to support self-sustaining indigenous vegetation requiring little or no maintenance.
72. An alternative review by the Ministry for the Environment suggests that an absolute minimum width of 15 – 20m is necessary.⁴¹ These principles provide a useful benchmark in assessing the adequacy of the proposed wetland buffers.
73. Appendix 15 currently states 5 metre buffer for wetland retention lakes⁴², given the above findings a bare minimum of 10 metres is needed for minimal future maintenance. This is especially important as the appendix 15 currently only accounts for 5 years of weed management across revegetated areas.

Proposed monitoring and compliance requirements of plantings and offset measures

74. Currently Appendix 15 sets out monitoring measures for the compliance and success of the offsets proposed. This is currently stated to be done bi-annually for a 3-year period. Infill planting will only be conducted during this timeframe. A 5-year maintenance period is proposed for SNA 027.^{43,44} It is not justified why the maintenance period for wetland or SNA offset differs.
75. Management in perpetuity is a concern for all offset areas. For wetlands in particular, many riparian areas will not have an adequate buffer area to be self-sustaining.⁴⁵ The offset proposal should be managed to secure outcomes that last as long as the impacts of the development and preferably in perpetuity. Given that housing development is a permanent setting, management of offsets should be done in perpetuity.

⁴⁰ Parkyn, S., Shaw, W., & Eades, P. (2000). *Review of information on riparian buffer widths necessary to support sustainable vegetation and meet aquatic functions* (Technical Publication No. 350). Auckland Regional Council.

⁴¹ Ministry for the Environment (2000). *Managing waterways on farms: A guide to sustainable water and riparian management in rural New Zealand*. Ministry for the Environment, Wellington, New Zealand.

⁴² Appendix 2 page 77 of Appendix 15 Ecological Assessment

⁴³ 11.2 page 67 of Assessment of effects.

⁴⁴ Appendix 5 Terrestrial Offset, SNA buffer, Connectivity and lizard transfer plan in Appendix 15 Ecological assessment.

⁴⁵ Ministry for the Environment (2000). *Managing waterways on farms: A guide to sustainable water and riparian management in rural New Zealand*. Ministry for the Environment, Wellington, New Zealand.

- 76. The proposed ecological restoration plan does not provide any contingency measures should plantings fail to reach the 80% indigenous canopy cover benchmark after the 3-year or 5-year management period proposed.
- 77. This scenario should be readily addressed and substantive measures to rectify offset failure should be provided within the application.

Conclusion

- 78. This project results in significant and adverse impacts on a variety of significant natural areas and threatened ecosystems, likely including naturally uncommon ecosystems that are Nationally Endangered. These ecosystems include natural wetlands, indigenous vegetation on Acutely Threatened LENZ environments and Naturally Uncommon seepage wetlands.
- 79. Currently the ecological values found on the site are not assigned appropriate ecological significance nor is the appropriate amount of area proposed to be lost given. As a result, this has resulted in underestimated impacts relative to what would otherwise be expected. This has subsequently led to an offset proposal that does not adequately align with, remedy or appropriately offset the proposed ecological losses at site. Naturally uncommon ecosystem types in the form of seepages and fens have not been identified and mapped across the site. Any damage to these rare ecosystem types have not been adequately recognised or protected in this application.

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Appendix 1 *Ecological significance criteria applied to indigenous vegetation values described in Appendix 15 as occurring within the site.*

Area		Ecological significance criteria
SNA 027	Described as planted 60 year old ngaio, mahoe, karamu, mamaku, Hoheria, kanuka and five finger. Kohekohe establishment is present.	Representativeness. The area contains seral broadleaf tree and shrub species, with the historic vegetation cover Kohekohe beginning to re-introduce itself. The vegetation is approximately 60 years of age. Criteria Met - high Rarity and distinctiveness The area is dominated by indigenous tree and shrub species and is situated on an Acutely Threatened land environments (LENZ). Acutely threatened environments currently contain less than 10% indigenous vegetation nationally. The area also contains a natural wetland dominated by indigenous vegetation, including raupō (<i>Typha orientalis</i>) with kiokio (<i>Parablechum novae-zelandiae</i>) and <i>Carex secta</i> at its edges. Less than 3% of natural wetlands remain in Willington region. Criteria met – very high Diversity and Pattern The area has a diverse array of small trees and shrubs with evidence of recruitment of canopy trees, particularly kohekohe (<i>Didymocheton spectabilis</i>). However, it has a low diversity of ferns and ground cover types are not documented in Appendix 15. The presence and recorded dominance of <i>Tradescantia flumenensis</i> is likely suppressing indigenous ground cover diversity. Criteria met – moderate. Ecological context. The area borders and provides a buffer to the northern Taupō stream and is potential habitat for numerous freshwater fish including: Nationally Vulnerable inanga (<i>Galaxias maculatus</i>), At Risk - Declining giant kokopu (<i>Galaxia argenteus</i>) and longfin eel (<i>Anguilla dieffenbachii</i>) and At Risk – Naturally Uncommon redfin bully (<i>Gobiomorphus huttoni</i>). Additionally, barking gecko (<i>Naultinus punctatus</i>; At Risk - Declining) has been recorded at site. The area is also habitat to indigenous bird species. Criteria met – very high

SNA 029	Described as a māhoe-kohekohe-tawa forest remnant. Comprised of kohekohe, tawa, rewarewa, titoki and pūkatea, kahikatea and tōtara.	Representativeness The area represents the historic land cover and forest type that once dominated Wellington region and has since been much reduced. Criteria met – Very high Rarity and distinctiveness. The area contains an indigenous old growth forest that is situated on acutely threatened land environments (LENZ), acutely threatened environments currently have less than 10% indigenous vegetation remaining nationally. Criteria met – Very high Diversity and Pattern The area has a diversity of indigenous canopy species rarely found in Wellington region. Criteria met – high. Ecological context The area has small streams running through the area that flow into Taupō stream. The area is in close proximity to SNA 027 and links directly with SNA 225. Criteria met -high.
East of SH 59	Mixed pine and native regenerated stand of shrubs of 30 years of age. The indigenous shrub described includes mahoe, kanuka, kawakawa, hangehange, mapou, karamu, harakeke and shining spleenwort. Non-indigenous components include gorse, blackberry, fennel, cherry, Lucerne	Representativeness The indigenous shrublands of this area are representative of indigenous cover that is greatly reduced throughout greater wellington. Criteria met – moderate Rarity and distinctiveness. The area contains dominant indigenous vegetation and is situated on Acutely Threatened land environments (LENZ), Acutely Threatened environments currently have less than 10% indigenous vegetation remaining nationally. Criteria met – high Diversity and pattern The area has a relatively low number of species and high proportion of introduced exotics with few fern or various sub shrub or ground cover species described. Criteria not met. Ecological context

		The area described is a buffer to and in fact part of SNA 029 which is of very high ecological value. Criteria met – moderate.
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Appendix 2 - Mapping of vegetation east of SH59



Figure 3: A polygon of the estimated area impacted east of SH 59 by the proposed roundabout based off the information provided in Appendix 15.

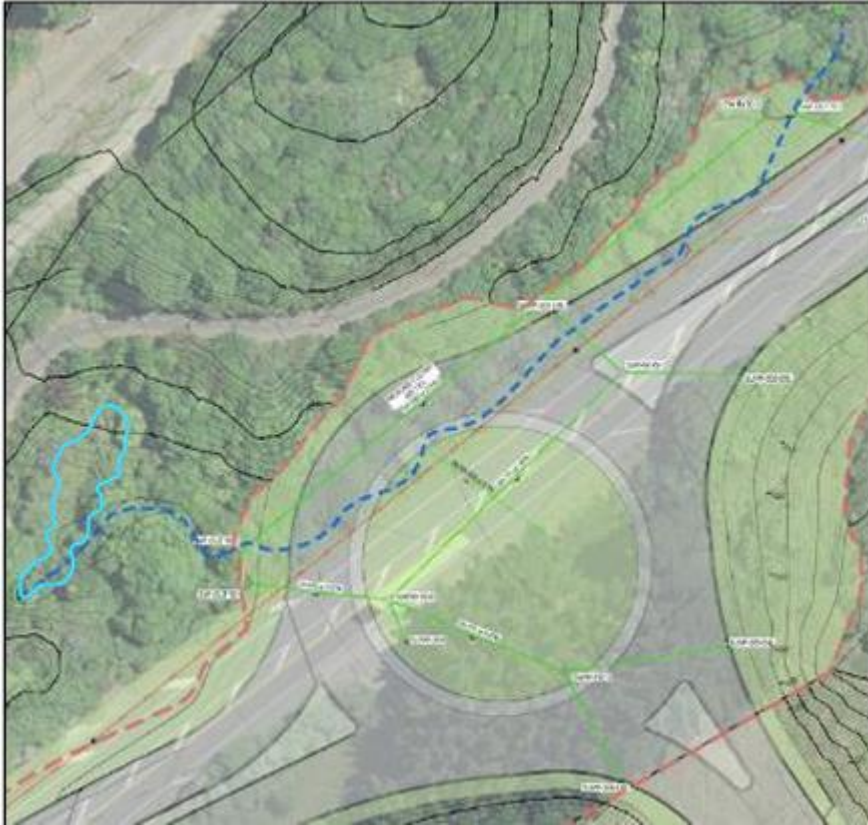


Figure 4. The roundabout clearance area as provided in figure 16 within Appendix 15.