

Memorandum

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Attention:	Andrew Guerin, Micah Sherman
Company:	Meridian Energy Limited
Date:	21 December 2023
From:	Tanya Cook, Dr Sarah Flynn
Message Ref:	Summary of Boffa Miskell position regarding the Council Ecologist's review for Ruakākā Solar Park development
Project No:	BM210988A

Rural Design Limited (RDL) have undertaken an ecological peer review of Boffa Miskell's ecological effects assessment for Meridian Energy Limited's proposed solar park development at Ruakākā. RDL conclude in their memo dated 11 December 2023 that the adverse ecological effects associated with the proposed development "*will be more than minor and potentially significant*". RDL's rationale for their conclusion appears to be based on three key points of disagreement:

- Difference in wetland extent,
- Significance of the wetlands, and
- Irreplaceability of the wetlands.

This memo outlines our position with respect to these three key points.

Executive summary

With respect to wetland extent, there is agreement between ecologists that Boffa Miskell appropriately applied the MfE wetland delineation protocols, which state that the methods should be applied under normal climatic and hydrological conditions. Our key point of disagreement is with RDL's apparent contention that the wetland delineation should encompass the maximum extent of surface pooling observed under unusually wet conditions.

With respect to the significance of wetland features, we acknowledge that the Project Site is situated within a "*chronically threatened land environment*", which has been considered in our assessment. However, assessment also takes into account the significance of the wetlands in their existing state (i.e. rather than their past or potential state). The majority of the wetland features present are not indigenous remnants of the original dune slack ecosystem and in their current condition are not significant wetlands under the PRP-N. Our effects

With respect to the irreplaceability of the wetlands, RDL offered no technical reason to explain their doubts as to the feasibility of wetland restoration on Site 3. The wetland features to be removed do not retain representative dune slack characteristics in their current state, and would require a high-level of intervention and management to restore.

The essential point of difference appears to be that RDL places a high value on the project site on the basis of its historic and potential value (but doesn't acknowledge its current state); and is dismissive of any prospective ecological or biodiversity benefits of proposed mitigation and compensation measures.

Our more detailed response is set out below.

Difference in wetland extent

RDL accepts that Boffa Miskell has carried out the wetland delineation in accordance with the Ministry for the Environment (MfE) wetland delineation methodology, but notes that the wetland extent will fluctuate seasonally and with climatic conditions. As covered in Sections 3.2.1 and 4.2.4 of our Ecological Effects Assessment Report (*Report*), we agree with RDL that the wetland extent is variable. Our assessment approach was carried out over multiple site visits to ensure our sampling was representative of normal conditions. None of our surveys were undertaken during or following a dry summer or unusually dry conditions.

Data compiled from these site visits and used to delineate the wetlands included:

- Rapid visual assessments during comprehensive site walkovers;
- 72 vegetation plots undertaken on Site 1;
- 21 plots on Sites 2 and 3; and
- Satellite and drone imagery and 1 m contour data.

While Boffa Miskell have not been provided with RDL's plot data, based on RDL's letter dated 3 October 2023 and the meeting on 9 November 2023, it appears that RDL's estimated wetland extent is based on a small number of vegetation plots undertaken in one site visit in one area of Site 1, and google earth satellite imagery captured in March 2023.

As set out in our letter dated 20 November 2023, steps 3 and 4 of the MfE wetland delineation protocols require that the procedure is undertaken when 'normal circumstances' are present, with respect to weather, climatic conditions and hydrology. We note that the hydrological conditions were not 'normal' when the March 2023 satellite imagery that RDL have used was captured.

Two of the most extreme rainfall events (Cyclones Hale and Gabrielle) to affect Northland in the last 15 years occurred in January and February 2023. Those rainfall events also followed an unusually wet November and December in 2022. The rainfall recorded in the 4 months prior to March 2023 was 1,292 mm¹, equivalent to the annual average of 1,300 mm for the previous 15 years, and 820 mm was recorded in the 2 months of January and February 2023. Groundwater levels recorded over the 2022/2023 summer were about 1 metre higher than previous annual maximum levels² and the wetland and/or water pooling extent in the March 2023 satellite imagery is the greatest extent captured in the last 22 years of google earth imagery (since 2001).

It is also relevant that during normal conditions, a large portion of Site 1 is cultivated, maintained and used for pastoral grazing. As such, the 'pasture exclusion' to the National Policy Statement for Freshwater Management (*NPSFM*) definition of 'natural inland wetland' was a relevant component of our assessment. This is because the pasture exclusion overrules the wetland delineation protocol (i.e., features that might otherwise qualify as wetlands are not 'natural inland wetlands' if they are more than 50% pasture species). The use of the site for pastoral grazing does not appear to have been considered in the RDL review.

Significance of the wetlands

We agree with RDL that indigenous wetlands are rare in the Waipu Ecological District, indigenous dune slack wetlands are classified as nationally endangered, and that the remnant wetland features within the

¹ Total rainfall recorded at Waiwarawara at Wilsons Dam rainfall gauge from 1 November 2022 to 28 February 2023.

² Groundwater levels in NRC Ruakaka Racecourse bore site <https://www.nrc.govt.nz/environment/environmental-data/environmental-data-hub/?moduleId=4&collectionId=45&displayId=1&siteId=1740&measurementId=139&daysOfData=1826>

proposed Sites are highly modified and degraded systems. We also agree that some of the wetland features are being used by and provide habitat for Threatened bird species, especially the ~2 ha open water habitat on the south-eastern side of Site 1. These factors have been considered in our assessment and associated effects management recommendations.

Drained pastoral land that was previously wetland is common in the surrounding landscape and Ecological District, and includes much of the Project Site.

About 13 ha (~70%) of the wetlands identified by Boffa Miskell on Site 1 are features that were drained and converted to improved pasture, but where drainage has not been fully effective as they are in low-lying areas of the Site that have a seasonally high water table. These features qualify as natural inland wetlands, but are dominated by exotic wet-tolerant vegetation and are highly modified and degraded. They do not meet the Proposed Regional Plan for Northland (PRP-N) definition of a significant wetland, according to the Regional Policy Statement for Northland criteria.

The RDL review describes wetland features within the Project Site as rare and threatened. This appears to be on the basis that they are a nationally endangered dune slack ecosystem within a “*chronically threatened’ land environment*”. We understand that RDL is referring to the threat category 2 areas of the Threatened Environment Classification³, which identifies land environments where very little of the original indigenous biodiversity remains, in order to prioritise protection of remnant indigenous communities in these areas. An area can have no residual ‘original’ ecological features present and still be identified as a threatened land environment, i.e., not all parts of threatened environments are ecologically significant.

The Threatened Environment classification and Naturally Uncommon Ecosystems of the Project Site are addressed in section 1.4 of our Report. As covered in our assessment, very little indigenous vegetation or associated biodiversity remains within the proposed Sites, and the ecosystem present is fundamentally altered by the site’s history of drainage and pastoral use to the extent that an indigenous dune slack ecosystem is no longer present. The only substantial remnant of indigenous vegetation within the proposed sites is the kanuka shrubland on the south-east side of Site 1A, which will be avoided and enhanced as part of the proposed development.

We also note that the ~2 ha open water wetland on the south-eastern side of Site 1 will be retained, enhanced and protected as part of the proposed development. As covered in section 5.3.2 of our Report, while this wetland in its current state is also modified and degraded and not representative of an indigenous dune slack wetland, the original dune slack landform is reasonably intact, and encompasses the highest value habitat for Threatened birds on the site. This wetland meets the definition of a significant wetland under the PRP-N and was assessed as having high ecological value in our Report.

Irreplaceability of the wetlands

RDL concludes that the wetlands to be removed as part of the proposed development are irreplaceable because “*the ecosystem type affected is dependent on a complex array of ecological, geological, and hydrological functions*”. As above, this conclusion appears to rely on indigenous dune slack wetlands being classified as nationally endangered and the Threatened Environment classification that encompasses the land environment that the Project Site is a part of.

We note that the majority (over 90%) of the ~17 ha of wetlands that will be lost as part of the proposed development are dominated by invasive exotic species, drained and degraded, either due to stock access, resulting in pugging, nutrient inputs and sedimentation, (Figure 1), or recent four-wheel drive access, to the extent that their ecological and hydrological functions are highly modified.

We consider that the ‘restoration potential’ of the proposed restoration site is broadly equivalent to that of Site 1. While we acknowledge that the relict ‘dune slack’ contours of Site 1 are absent from the proposed

³ Walker, S., Cieraad, E., & Barringer, J. (2015). *The Threatened Environment Classification for New Zealand 2012: A guide for users* (Landcare Research Contract Report No. LC2184). Landcare Research.

restoration location on Site 3, both have the same underlying soils (mesic organic or recent sands⁴), both have a modified wetland hydrosystem, and restoration of either would provide substantively better habitat for threatened bird species and other native fauna. We have relied on the technical advice from Beca with respect to the feasibility of reinstating wetland hydrology in Site 3. We do not see any ecological or technical reasons why the restored wetlands should not be regarded as functionally equivalent to those on Site 1.



Figure 1: Exotic dominated wetlands on Site 1 in June 2022, showing stock access, severe pugging, dominance of exotic vegetation and drainage channel bisecting wetland feature in top photo.

⁴ <https://soils-maps.landcareresearch.co.nz/>