

Before Independent Hearings Commissioners  
appointed by the Northland Regional Council

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*under:* the Resource Management Act 1991

*in the matter of:* an application by Meridian Energy Limited for resource consents for earthworks, associated stormwater diversion and discharges, vegetation clearance, and wetland removal for the construction of a solar farm at Ruakākā, Northland (APP.045356.01.01)

*between:* **Meridian Energy Limited**  
*Applicant*

*and:* **Northland Regional Council**  
*Consent Authority*

Summary statement – Mandy McDavitt (Hydrogeology)

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Dated: 5 August 2024

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## **SUMMARY STATEMENT OF MANDY MCDAVITT**

### **INTRODUCTION**

- 1 My full name is Mandy Trina McDavitt.
- 2 My qualifications, experience and confirmation I will comply with the Code of Conduct are set out at paragraphs 3, 4, and 10 of my statement of evidence.

### **SUMMARY OF EVIDENCE**

#### **Groundwater levels during wetland assessment dates**

- 3 There was no site-specific groundwater monitoring to make a direct comparison of groundwater levels on Site 1 during the wetland delineation assessment dates. Long-term monitoring data from the Ruakākā racecourse can however be used to provide likely groundwater conditions in the general area.
- 4 Of the five periods (Table 1 on pages 29-31 of my statement evidence), of wetland delineation assessment:
  - 4.1 NRC's internal hydrogeologist is in agreement that for assessments completed in September 2022 and March 2023, groundwater levels in the Ruakākā bores were likely elevated (above the 90<sup>th</sup>ile of the groundwater record) above 'normal' levels. NRC defines groundwater levels in their hydrology climate report as above 'normal' in the Marsden - Ruakaka Aquifer for these periods. Above 'normal' is defined by NRC as above 60<sup>th</sup>ile.
  - 4.2 The groundwater levels in the Ruakākā bores during October and November 2021 were close to the 90<sup>th</sup>ile of the groundwater record). NRC defines groundwater levels in their hydrology climate report as above 'normal' for these periods.
  - 4.3 Groundwater levels in the Ruakākā bores for May and June 2022 were above the 60<sup>th</sup>ile. Noting groundwater levels in May 2022 were above the 60<sup>th</sup>ile of the record up to that date only. NRC defines groundwater levels in their hydrology climate report as above 'normal' for these periods.
  - 4.4 Groundwater levels in the Ruakākā bores for September and October 2023 were between the 75<sup>th</sup>ile and 90<sup>th</sup>ile for the groundwater record. NRC defines groundwater levels in their hydrology climate report as above 'normal' for these periods.
  - 4.5 Groundwater may have been locally higher / exacerbated on Site 1 following rainfall events (especially during September/October 2023 delineation assessment) due to the condition of the Bercich Drain.

- 4.6 I therefore do not agree with NRC's internal hydrogeologist's statement that most of Boffa Miskell's assessments occurred during classically 'dry' periods.
- 4.7 Groundwater levels in the Ruakākā bores for March 2024 were 0.32 m below average for March. NRC defines groundwater levels in their hydrology climate report as 'normal' for these periods.
- 4.8 Groundwater levels in the Ruakākā bores for June 2024 were 0.18 m below average. NRC defines groundwater levels in their hydrology climate report as 'normal' for these periods.

### **Hydrogeology of Site 1**

- 5 Existing and recent groundwater levels on Site 1 are likely to have been significantly modified by the previously installed drainage system, Whangarei District Council's (*WDC*) treated wastewater discharge and blocked drains (historic and current).
- 6 Further changes in groundwater levels are likely as a result of the ongoing and proposed increase in *WDC*'s wastewater discharge and suggested drainage modifications to be completed by *WDC*.
- 7 Groundwater naturally breaks out in a few low-lying areas, and wetlands in these areas are likely partially or wholly supported by groundwater. Other wetland areas across the site are likely to have a surface water component supporting them.
- 8 Recent groundwater monitoring shows groundwater levels on the southeastern boundary of Site 1 range from 3.2 to 3.4 m above sea level (*asl*) or 2.3 to 3.1 m below ground level (*BGL*) and 3.4 to 3.7 masl or 0.3 to 0.6 m *BGL* on Site 1A. This is consistent with the Stantec modelling during average conditions. No tidal influence was noticeable during the eight days of monitoring.
- 9 I consider the development of a new groundwater supported wetland in the southeastern boundary of Site 1 to be feasible from a hydrogeological perspective, as there is already a wetland in existence at that location that appears partially or wholly supported by groundwater. The proposed wetland lateral extent would however need to be sufficiently deep to encounter seasonal low groundwater levels.
- 10 The wastewater discharge to the south-east will likely influence water levels in that area; as will the introduction of further drainage such as the proposed collector drain which may reduce groundwater levels. This will need to be taken into consideration in detailed design.

### Hydrogeology of Site 3

- 11 The drainage channels on Site 3 and the presence of the tidal Ruakākā River to the south, will likely influence groundwater levels.
- 12 Limited groundwater monitoring in two piezometers recently installed on site show groundwater levels close to the surface (within 0.1 to 0.5 m) or 1.5 masl to 1.9 masl, and confirms a small tidal influence on groundwater.
- 13 I consider the site would be suitable for construction of a groundwater supported wetland, if the wetland invert level is at or below the seasonal groundwater low and levels have taken into account tidal range and existing drainage invert levels.

### CLARIFICATIONS TO EVIDENCE

- 14 To clarify paragraph 53 of my evidence, average and 'unseasonable' recharge conditions do not include the application of treated wastewater at WDC's disposal site.
- 15 Paragraph 56.1 should be corrected to say "*Groundwater levels range from 3.2 to 3.4 masl (S1P1 and S1P2), and 3.4 to 3.7 masl (S1P3). This is equivalent to a depth range of 0.3 m mbgl to 0.6 mbgl at S1P3 and 2.3 to 3.1 mbgl at S1P1 and S1P2 across the site.*"
- 16 The last sentence in paragraph 56.2 should be removed, which read "~~This is expected as rainfall would sit on the peat before slowly percolating down to the water table~~". On review of the latest borelogs that are now available and reviewed, the peat is unlikely to be a contributing factor to limiting infiltration at the piezometer locations.
- 17 In paragraph 89 the final sentence should read "*Of which one area is two of the areas are similar to the 'holding water' areas identified by Voss 2009*".
- 18 For completeness, I confirm that these minor corrections do not change the substance and conclusions of my evidence.

5 August 2024

**Mandy McDavitt**