

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of a Board of Inquiry appointed under s146 of the Resource Management Act 1991 to consider an application by Mighty River Power Limited for resource consents to construct, operate, and maintain a wind farm at Turitea

REBUTTAL EVIDENCE OF BRIAN THOMAS COFFEY

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1. Introduction

1.1 My name is Brian Coffey. My qualifications and relevant experience are set out in my evidence in chief. I confirm that I have prepared this rebuttal evidence in accordance with the Environment Court Code of Conduct for Expert Witnesses (July 2006).

1.2 I am providing this rebuttal evidence to comment on and respond to some of the primary evidence presented in respect of these applications that relates to aquatic ecology matters. In particular, I will comment on the evidence of:

- Dr Paul Michael Blaschke (Palmerston North City Council (PNCC)); and
- Mr Jeffrey Alan Baker (PNCC).

In the preparation of this rebuttal evidence I also read the evidence of:

- Mr John Roland Male (PNCC);
- Mr Christopher Mark Taylor (PNCC);
- Dr Michael Kevin Joy; (Tararua Aokautere Guardians (TAG) and Friends of Turitea Reserve (FOTR)
- Helen Isobel Gabites (TAG and FOTR); and
- Emeritus Professor John Flenley (for himself).

1.3 Specifically, I shall address the following matters:

- (a) Adequacy of the assessment of potential effects of the proposed Wind Farm on aquatic ecology.
- (b) Status of the Greater Wellington Regional Council's Erosion and Sediment Control Guidelines (Denton and Robson, 2002).
- (c) Use of flocculants in sediment control ponds.

1.4 I will also comment on a change to the proposed construction-related activities that has been made since I prepared my evidence in chief. Mr Levy (paragraph 2.6 of his rebuttal

evidence on behalf of the Applicant) has stated that in response to submissions, the applicant has reviewed its proposal and now removed any spoil disposal sites from within the PNCC Water Supply Catchment. Furthermore, vegetation from site clearance will now be stockpiled outside of the water supply catchment area (except locally where it may be used as mulch cover to avoid erosion and to trap sediment).

2. Adequacy of the Assessment of Potential Effects of the Proposed Wind Farm on Aquatic Ecology

- 2.1 In paragraphs 4.31, 4.48 and 7.2 of his evidence Dr Blaschke has stated that, in his opinion, my assessment of the likelihood and magnitude of aquatic ecological effects associated with the construction of the proposed Wind Farm is inadequate. He specifically states in paragraph 4.48 of his evidence that my assessment “*contains no analysis of the location of sediment sources and the location of areas in the wind farm site where they could affect aquatic ecosystems. It contains no analysis of the efficiency or likely success of the proposed erosion control methods. For this reason, the aquatic ecology effects analysis gives me no confidence to accept its conclusion that the aquatic ecology effects would be less than minor*”.
- 2.2 The purpose of my evidence was to describe the sensitivity of instream communities to potential effects of the construction and operation of the proposed Wind Farm.
- 2.3 My evidence, together with the evidence of Dr Blaschke (paragraph 4.50), identifies that the most significant adverse aquatic ecological effects associated with the proposal would likely come from factors associated with the impact of erosion and sediment generated as a result of construction earthworks entering surface receiving waters within the project area.
- 2.4 Where insufficient information was available to fully describe instream community structure in receiving waters for the wind farm, I assumed such communities were of the highest quality and greatest sensitivity to potential sedimentation effects associated with Wind Farm construction. This conservative approach can be revisited once recommended baseline monitoring results become available.
- 2.5 My findings from the sampling undertaken, along with the conservative approach (detailed above) for sites where the instream community structures was not available, were communicated to engineering experts retained by the Applicant. These engineers

undertook to prepare representative Erosion and Sediment Control Plans for five separate areas within the proposed footprint of the Wind Farm. These plans were designed using methods that were consistent with current “best practice” engineering principles, to avoid or remedy the generation of suspended sediment in surface receiving waters during the construction of the proposed Wind Farm. These plans will be revisited and refined during the detailed design phase of the project.

- 2.6 The analysis of the location of sediment sources and the location of areas in the wind farm site where they could affect aquatic ecosystems, together with the analysis of the efficiency or likely success of the proposed erosion control methods, has been undertaken by those engineers who were qualified to do so. In this respect, I refer to the evidence of Mr Levy for further detail on the analysis undertaken.
- 2.7 I then satisfied myself that given the principles upon which the Erosion and Sediment Control Plans were based, the likelihood of adverse aquatic ecological effects being associated with the construction of the Wind Farm would be very low and therefore that the aquatic ecology effects would be less than minor.
- 2.8 I do not consider there is a scientifically robust rationale for Dr Blaschke to conclude in paragraphs 4.50 and 7.11 of his evidence that *“there is a reasonably high probability that enough sediment to cause significant adverse effects will reach the receiving environment of the principal streams draining the wind farm site”*.
- 2.9 My comments also relate to paragraph 46 of Mr Baker’s evidence where he references the evidence and findings of Dr Blaschke.

3. Status of the Greater Wellington Regional Council’s Erosion and Sediment Control Guidelines

- 3.1 In paragraph 6.6 of his evidence, Dr Blaschke has stated that in general *“there is an over-reliance on Greater Wellington Regional Council’s Erosion and Sediment Control Guidelines”*.
- 3.2 I do not agree, as advocated by Dr Blaschke in paragraph 6.6 of his evidence, that these guidelines no longer represent “best practice”. They are guidelines, not a prescriptive recipe for all situations and can be added to or amended to suit differing situations. Recent wind farm consents, including the resource consents for the West Wind and Mill

Creek wind farms, have required additional conditions of consent that were not specifically included in these guidelines.

3.3 Detailed Erosion and Sediment Control Plans have been proposed for:

- South Range Road;
- Water Catchment Access Road;
- Western Ridge;
- Browns Flat; and
- Out of Reserve (farmland north of the Reserve).

Representative versions of these plans were included in Appendix E of the Assessment of Environmental Effects (August 2008) for the project.

3.4 The Erosion and Sediment Control Plans are consistent with the Greater Wellington Regional Council's Erosion and Sediment Control Guidelines but they also necessarily account for the specific and particular conditions within each respective area.

3.5 In my opinion, the Greater Wellington Regional Council's Erosion and Sediment Control Guidelines do represent current best practice, provided their use takes into account the local conditions in which they are to be applied.

4. Use of Flocculants in Sediment Control Ponds

4.1 I disagree with Dr Blaschke's engineering recommendation in his paragraph 6.7 (b) that *"Flocculation of all sediment ponds will be required in order to improve sediment retention performance"*.

4.2 The instream disposal of sludge and filter backwash from water treatment plants where flocculants (usually alum) have been used to treat water is a significant issue for instream community structure. Spent alum floc is very much more of an issue in terms of the adverse effects listed in paragraph 4.32 of Dr Blaschke's evidence than the inorganic suspended solids that would be associated with the need to use this material.

4.3 There may be specific situations where some silt retention ponds are best treated with flocculants but such ponds would require de-silting programmes and diversion channels to

ensure there is no washout of spent floc to the headwaters of streams during storm events.

- 4.4 The consequence of failure for stormwater ponds treated with flocculants relative to stormwater ponds that are not treated with flocculants are much higher in terms of adverse impacts on instream biota and I therefore do not support Dr Blaschke's recommendation.

5. Relocation of Proposed Spoil and Vegetation Disposal Sites From Within the Palmerston North City Council Water Supply Catchment

- 5.1 Mr Levy (paragraphs 10.3 and 10.4 of his rebuttal evidence) has concluded, on behalf of the Applicant, that not placing any spoil disposal areas within the water supply catchment is justified as additional risk mitigation to avoid potential sedimentation effects within the PNCC water supply reservoirs (as advocated in paragraphs 52 and 75a of the evidence of Mr Male on behalf of the PNCC).

- 5.2 I agree this would avoid the risk of sediment from spoil disposal sites within the water supply catchment entering the water supply reservoirs and accordingly I support this approach.

- 5.3 However, it is noted that this change will involve the transport of spoil and vegetation from the water supply catchment to the headwaters of other catchments that are within the footprint of the proposed wind farm.

- 5.4 As mentioned in paragraphs 3.39 and 3.40 of my evidence in chief, equivalent high habitat quality to that described at reference sites in the forested headwater catchments of the Turitea and Kahuterawa Streams could be expected in the forested headwaters of the Otangane Stream, Tainui Stream and some of the southern tributaries of Matarua Creek that are also in the northern Tararua Range. Additional spoil disposal sites in the headwaters of these catchments would therefore be of some potential concern.

- 5.5 In order to lessen the potential effects on other catchments, in relation to effects associated with sediment, I recommend that ephemeral reaches of some of the headwater tributaries of the Tainui Stream, Matarua Creek and the un-named tributaries of the Manawatu River be used primarily for spoil disposal. These particular reaches are colonised by reed and sedge communities in seeps and swampy areas. These ephemeral

channels and wetlands would be expected to provide a buffer zone for moderate sediment discharges between proposed works and the lowland reaches of these watercourses. Therefore, they would appear to be the most appropriate localities in which to locate additional spoil disposal sites. Further, subject to the implementation of the Erosion and Sediment Control Plans (detailed above), I believe the potential risks to aquatic ecology in these neighbouring catchments is considerably reduced.

6. Conclusions

6.1 Having considered the evidence of Dr Blaschke, Dr Joy, Mr Male, Professor Flenley, Mr Taylor, Mr Baker and Ms Gabites, I am satisfied that I can re-state the conclusions I reached in my evidence in chief.

6.2 Provided best industry practices are adopted and implemented (as proposed), and given the location of wind turbines and the majority of accessways are on ridgelines and spurs that are separated from perennial reaches of surface receiving waters, the effects of constructing the proposed Wind Farm on aquatic ecology are expected to be less than minor.

6.3 This outcome will rely on:

- adoption of measures detailed in Greater Wellington Regional Council's Erosion and Sediment Control Guidelines that take in to account site specific conditions for earthworks within the footprint of the proposed Wind Farm;
- adoption of best management practices for instream works;
- pre-construction descriptions of water quality and instream community structure in watercourses that are the potential receiving waters for stormwater from the wind farm footprint;
- monitoring of water quality and instream community structures in watercourses that are receiving waters for stormwater from the Wind Farm footprint during the construction phase of the Wind Farm; and
- the adoption of an adaptive aquatic management response to the findings of monitoring programmes that I have recommended in my evidence in chief.

Brian Thomas Coffey

5 June 2009