S92 Response to Hauraki District Council: Kaimai Wind Farm - Ecology

Prepared for Ventus Energy (NZ Limited)

23 October 2018

ECOLOGY NEW ZEALAND

MEMORANDUM

Attention:	Ventus Energy (NZ) Limited C/O Glenn Starr
Date:	23 October 2018
From:	Simon Chapman and Marc Choromanski, Ecology New Zealand Ltd
Project:	1708069-04 Kaimai Wind Farm

1. Introduction

As part of the proposed Kaimai Wind Farm (KWF) project located on the north-western flanks of the Kaimai Ranges, Ecology New Zealand Limited ('ENZL') prepared a Supplementary Ecological Report (1708069-02, June 2018) (SER) which provided accompanying ecological assessments to support the project's principal Ecological Effects Assessment (EEA) prepared by Kessels Ecology (VEN.00113, March 2018). Subsequent to this report being submitted to the consenting authority, Hauraki District Council (HDC) commissioned a peer review of the ecological aspects of the application including the Kessels Ecology EEA and ENZL's SER. The ecology review was carried out by Aecom New Zealand Limited. The review led to HDC request further ecological information as part of a broader information request made under section 92 (s92) of the Resource Management Act 1991.

Since the submission of the Kessels Ecology report, Kessels Ecology has ceased operating as an ecological consultancy, and former personnel are no longer available to work on the KWF project. It is therefore intended that this memorandum (memo)[1] will provide responses to all requests for further ecological information, including requests made with regard to the Kessels EEA.

2. HDC Information Request and ENZL Response

HDC **Report No 6 - Ecology Report (Kessels)**
P8 1.2 notes that the use of Rotokohu Road is proposed for post construction operation and maintenance, yet no corresponding details are provided within the AEE in relation to the number, frequency, type of traffic and the effects of this, along with any mitigation measures.

ENZL Please refer to the Integrated Transport Assessment (ITA): 3.2 states that - "we would expect ongoing operation on the windfarm is likely to result in 1-2 vpd". These are likely to be small service vehicles (e.g., vans) and with such low numbers no assessment is required.

The ITA also says the proposed site access is from Rawhiti Road (see 1.1 of the report).

[1] This report is subject to the Report Limitations provided in Appendix A.

HDC *P15 There is a reference to Rotor Impact Zone in Figures 4 and 5, is this the same as the "rotor sweep zones" referred to in 6.3 (P35) and the RSA Strike Area referred to elsewhere within the report? If so what do these terms mean?*

ENZL There does appears to be some inconsistency within the Kessels EEA in regards to these terms. Some do appear interchangeable terms, but the definition of some terms e.g. rotor sweepzone, appears to have dual meaning, i.e. both the actual rotational area of each turbine where collisions may occur, and areas that may be impacted by the sweep (wind throw) generated by the operating turbine. Though these terms may not be consistently applied, it is in general clear as to what is being referenced within context of where these terms are being applied in text, being one or both meanings as above.

HDC *P15 The rotor impact zone circles (shown as light blue in Figures 4 and 5) for turbines 5, 11, 15, 16, 21, 22 and 23 appear to extend out over the various SNA areas. Can you please clarify if this is the case, what potential impact this will have on these areas and where the potential effects of this have been considered within the documentation.*

ENZL No rotors will extend over the SNA areas. We understand a condition of consent will be proposed to require that (including that all turbines and rotors be within the site boundary) The ecological reports are indicative only. All turbine locations are approximate and may vary slightly depending upon ground and soil conditions. However, note that at this stage our assessment is that the closest turbine (23) is 79m (base of turbine) from the SNA area and the next closest are 88m (22) and 89m (15) from the SNA areas

HDC *P31 Bottom paragraph refers to Waikato District Plan rather than Hauraki District Plan.*

ENZL Noted.

HDC *P49 68.3 Fill disposal sites recommends that "any fill disposal sites avoid seepage zones and indigenous vegetation remnants where possible and that any wetland and stream infills are adequately mitigated for habitat loss." Are any of the fill sites as shown on the civil drawings within seepage zones, wetland areas or streams, and if so have these been "adequately mitigated"?*

ENZL There is no plan to deposit fil in seepage zones or indigenous vegetation remnants or wetlands. Neither is there any plan to infill streams on the properties. All fill areas will be at the tops of catchments generally adjacent to the access roads, often in small depressions normally found at the top of catchments just below ridges. Note that significant areas of watercourse (over one km in the Waitoki Stream headwaters) will be retired from stock and vegetated with native species to offset any effects of works on the Romaru watercourse (see the separate S92 report on freshwater ecology).

HDC *P51 7.2 Recommended Amelioration Measures talks about allowing for "quantifiable risk minimisation contingencies if required". What are these and how would they be determined and implemented, given that this is proposed for post construction and the wind turbines would already be in place?*

ENZL A potential response could be a condition requiring the consent holder to create a panel of ecology experts appointed by the client and DOC to review monitoring results, and if strike rates are high/exceed agreed numbers, to recommend further management/mitigation/offset strategies for approval by the Council, and then their implementation. This would reflect conditions as detailed in for the Waverly Wind Farm.

HDC *There appears to be no discussion regarding the effects from turbulence created by the windfarm on SNA's and the like. Please confirm why this has not been addressed.*

ENZL To most efficiently convert wind energy to power, the position of each wind turbine takes advantage of ridgelines where windspeeds and gusts are high. The vegetation

communities within the vicinity of these turbines are, for this reason, largely adapted to this high windspeed environment. Though the localised increase in turbulence at these specific areas (turbine 5,11,16, 21, 22, and 23) may increase, it is not expected to cause significant impacts to these already adapted plant communities. A slight exacerbation of existing vegetative growth suppression, and rate of senesce of trees already in poor condition, may occur but this is considered to be a minor impact. The below photo taken of the Kaimai-Mamaku forest edge demonstrates the windswept nature of the site's ridgeline vegetation communities.

Photo plate 1: Windswept forest edge of the Kaimai-Mamaku forest.

HDC ***Report No 7 - Ecology Report (ENZL)***
Who was the author of the ENZL report? There is no name or qualifications and so on included as a reference within the report.

ENZL Marc Choromanski (Bsc, PGDipSci), Senior Ecologist;
Connor Whiteley (BSc,Hon), Senior Ecologist; and
Simon Chapman (BSC, PgDipAppSci), Principal Ecologist

HDC ***Ecological Review (both Reports 6 and 7)***
For your information appended to this letter is the initial ecological review of the proposal undertaken by AECOM New Zealand Limited. This review looked at survey design, presentation of result, interpretation of results, conclusions in relation to impacts and the approach to the development of mitigation.

For clarification purposes the information requested and required within this review is briefly summarised below:

1. Methodology to Assessment

The Environment Institute of Australia and New Zealand (EIANZ) produced the Ecological Impact Assessment Guidelines for use in New Zealand: terrestrial and freshwater systems (1st edition 2015, 2nd edition 2018). The guidelines provide a framework for assessment that aims to:

- *Improve the scientific rigour, objectivity and consistency of Ecological Impact Assessment (EcIA).*
- *Assist consultants and officers in local and central government working with AEEs.*
- *Improve community confidence in the ability of professionals to undertake impartial assessments.*

- *Guide policy around biodiversity management.*
- *Contribute to better decision-making on environmental matters.*

The Ecological Effects Assessment (and subsequently the Supplementary Ecological Report) has not followed the EIANZ guidelines. This has meant that the assessment process is not clear, stages of the assessment have been missed and conclusions are made without clarity around how these have been reached.

ENZL An assessment of effects has now been carried by ENZL in accordance with the EIANZ guidelines and is provided with this memo. The results support the findings of the ecology reports submitted with the application.

HDC *2. Scoping*

A Scoping Report is not provided within the documentation submitted to Council. This documentation may provide clarity to the reader around decisions made in relation to the ecological survey methodology.

ENZL Noted.

HDC *3. Consultation*

The AEE in section 4.2 indicates that the Department of Conservation (DOC), HDC and Waikato Regional Council (WRC) were consulted in relation to the development. Has the information obtained during consultation with DOC, and other organisations, been integrated into the survey design and subsequently project design?

ENZL Yes, consultation with the various agencies mentioned has helped inform the project design.

HDC *4. Plans and Policies*

The Ecological Effects Assessment includes a section titled Policy Context in section 1.3. However, this section is very high level and does not go into detail about the legislation, plans and policies for which the EcIA is aiming to provide evidence that the proposed project is compliant.

ENZL Noted. An assessment of the relevant policy and planning documents, as required by S104, has been provided in the AEE document.

HDC *5. Description of Existing Environment 5*

5.1 Study Area

The Ecology Effects Assessment does not clearly indicate (e.g. map), what it considers to be the extent of the project and what is considered to be the study area.

ENZL The maps provided within the Kessels EEA and ENZL Supplementary provide clear illustration of where all survey/study effort was undertaken (i.e. the 'study area'). Details of the project footprint are provided at a high level within these reports and in further detail by the civil drawings.

HDC *5.2 Desk Study*

The reporting indicates that a desk study was undertaken, but there is no clear presentation of this information.

ENZL The results of the desktop investigations are summarised across several tables within the Kessels report. Specifically, these include: **Table 6.** Vascular plant species; **Table 9.** Threatened and notable bird species; **Table 10.** Lizard and frog species; **Table 11.** Invertebrate species; and **Table 12.** Fish species. The results of the desktop investigations are then discussed further, where relevant in the subsequent sections of the report.

HDC *5.3 Survey Methodology*

It is acknowledged that there are no guidelines within New Zealand as to the level of effort that is required for the completion of ecological surveys for windfarms. However, international guidelines exist and have been developed in response to the particular issues caused by windfarm developments (e.g. Rodrigues et al., 2014, BCT, 2016, SNH, 2014). It is not evident from the Ecological Effects Assessment that consideration was given to international best practice.

ENZL We are familiar with the Kessels EEA report and, assessed against our experience and understanding of wind farms in NZ and the ecological effects, we believe appropriate assessment methodologies were utilised with a proportionate degree of effort, and the findings presented in the EEA report are sound. This is reinforced by the EIANZ assessment we have since carried out.

HDC *5.4 Results*
It would be beneficial if there was a clear separation between desk study information and field survey information. This separation will highlight where the Effects Assessment has not presented all of the species desk study data (e.g. migratory birds) and highlight where there are gaps in existing knowledge that are then filled by the survey works completed for the project.

ENZL With the exception of migratory birds, there is a clear separation of desktop results within the Kessels report, specifically within the tables presented in sections 3.0 and 4.0. The assessment of ecological effects for migratory birds clearly describes in text the results of robust desktop assessment and identifies current knowledge gaps with regard to flight characteristics (e.g., altitude, flock size, collision avoidance) and migration routes of both threatened and non-threatened migratory waders species through New Zealand. Kessels Ecology conducted species-specific surveys to address those knowledge gaps.

HDC *6. Evaluation*

An EcIA should include a section that confirms the species and habitats that are known to be present or likely to be present and assign a value to them. It is not clear how the significance test has then been undertaken.
In the assessment of effects the significance of the bat population is discussed in section 6.5.1, but this assessment is not undertaken for other species.
The Supplementary Ecological Report does not include any assessment of the value of the streams to be impacted.

ENZL The species significance within the Kessels report is based on the national conservation status of each species which has been described in the EEA report either in text or summarised in tables for each species. Similarly, the value of a species as attributed within the EIANZ EcIA guidelines is also directly drawn from this national classification in addition to the species presence within the Zone of Influence (i.e., the project footprint).

A more in-depth assessment of the site's freshwater ecological values is detailed within the Supplementary Culvert Assessment Report prepared by ENZL and provided with this memo (1708069-03).

HDC *7. Assessment of Effects*

The Ecological Effects Assessment does not follow current guidance (EIANZ, 2015 & 2018) therefore the assessment of effects is not comprehensive.
The Effects Assessment does not identify at the start of the assessment the works that are to be considered and this leads to potential routes of impact being forgotten by the assessment e.g. the development includes the installation of a substation with lattice transmission towers and overhead power cables and these are not considered/referred to in the assessment of effects. It may be possible that these structures could provide additional strike risk for birds.

There is no assessment of effects prior to mitigation as is normal practice within an EcIA
The Supplementary Ecological Report looks at the majority of impacts that could occur as a result of the upgrade of culverts, but it is not clear what the value of the impacted streams are, the footprint of the works and whether culverts are perched. Where on site was fish passage restricted and what area of stream do the culvert upgrade works create access to?

ENZL An assessment of effects has now been carried by ENZL in accordance with the EIANZ guidelines and is provided with this memo. The results support the findings of the ecology reports submitted with the application.

A more in-depth assessment of the sites stream value is detailed within the Supplementary Culvert Assessment Report prepared by ENZL (1708069-03).

HDC *8. Mitigation*

EcIA requires that impacts are identified prior to mitigation. This does not occur in the Ecological Effects Assessment.

It is unclear as to how this project has followed the mitigation hierarchy; avoid, reduce, mitigate, offset and then finally compensate. It appears from the information provided that compensation is the main route of mitigation?

ENZL Potential impacts have been assessed and mitigation measures have been recommended accordingly. Although the Kessels EEA report does not assign specific values to each predicted impact (negligible, moderate, etc.), it does describe the predicted effects in detail and then goes on to provide specific recommendations to manage the predicted effects. We consider that the approach taken by Kessels Ecology is appropriate and does not lead to different conclusions than would be reached by applying the EIANZ guidelines (which we note have not been widely adopted in New Zealand until the recent May 2018 revision which addressed some of the major flaws in the previous iteration of the guidelines).

HDC *Although research in New Zealand is limited in relation to the effects of windfarms on bats it is not within Europe and America. Best practice guidelines indicate that windfarm turbines should be located 200m from a forest edge (tip of blade should be 200m from forest) to avoid significant impacts to bats (Rodrigues 2014). It is recommended that this international best practice is considered and commented upon due to the presence of a threatened bat species adjacent to a forest edge.*

ENZL Unlike European and North American bats species, New Zealand's native bats are primarily forest-dwellers. They are therefore likely to require a much narrower corridor along forest edges. While such setbacks are typically selected arbitrarily, they are a suitable way to substantially reduce bat-turbine interactions. We believe that a 100m setback of turbines from forest edges is appropriate in the New Zealand context. We note that several of the turbines present at the Te Uku Wind Farm (also has a bat population; operational since 2011) are positioned less than 80m from a forest edge, with one turbine approximately 50m from a forest edge.

Turbines only pose a threat to bats at higher wind speeds during which air pressure changes caused by spinning turbine blades can affect bats by causing barotrauma. Bat-turbine interactions are likely to be rare during such high wind conditions as bats avoid exposed windy areas such as those where the turbines are proposed. Bat monitoring at the Te Uku Wind Farm showed that bat activity was unaffected by wind farm construction. Two additional years of bat monitoring would have been required at that site if monitoring indicated a decline in bat activity post-construction, or if any evidence of adverse effects on bats was obtained through strike monitoring. DOC, Meridian Energy and the Councils involved elected to end the Te Uku bat monitoring programme after three years rather than require the full five years of bat monitoring allowed for by consent conditions.

We consider that the effects of the wind farm on bats are unlikely to be significant. However, given the 'Nationally Critical' threat status of long-tailed bat combined with the fact that it is impossible to eliminate uncertainty around potential effects on bats, we have adopted a cautious approach by recommending pest control to benefit bats (and many other ecological values) in the wider area. Predation by introduced pests is by far the most significant factor in the ongoing decline of native bats therefore pest control is an appropriate response address any residual uncertainty.

HDC *Are the culverts within the 1-2 streams highlighted by the AEE perched? Will there be loss of stream length or any instream works? There is no indication as to where stream restoration will occur and the scale of works. It is not evident as to whether this is mitigation for impacts, enhancement works or compensation for other effects of the development. Please clarify.*

ENZL Please refer to Supplementary Culvert Assessment Report prepared by ENZL (1708069-03).

HDC *9. Assessment of Residual Effects*

It is good practice after the implementation of mitigation to assess residual effects. This assessment is presented in part within the assessment of effects, however, it is not always clear as to how the conclusions have been reached.

The Ecological Effects Assessment does not include a summary table of residual effects. However, one is presented within the Supplementary Ecology Report, which is then represented within the Assessment of Environmental Effects.

In the Ecological Effects Assessment it states that 'after mitigation effects on bat mortality are uncertain'. However, in Table 3 of the Supplementary Ecology Report it is indicated that residual impacts are non-significant with uncertainty.

It is unclear how the Supplementary Ecology Report can present an assessment of residual ecological effects as this document is not an EcIA and has not gone through the assessment process.

ENZL An assessment of effects has now been carried by ENZL in accordance with the EIANZ guidelines and is provided with this memo. The results support the findings of the ecology reports submitted with the application.

HDC *10. Conclusion*

The information submitted to date is not fit for purpose.
• It is not clear from the information provided that the survey design has been appropriate to establish the true ecological baseline for the site.
• A clear evaluation of the value of habitats and species on site has not been completed.
• The impact assessment does not consider impacts from all aspects or stages of the development.
• The impact assessment is not completed prior to mitigation.

• The mitigation does not present how the development has worked through the mitigation hierarchy to reach proposed mitigation for each of the species and habitats that are significantly impacted.
• There is no clear assessment of residual impacts post mitigation.

Please provide sufficient ecological information to meet the requirements as laid out within the appended ecological review. It is suggested that the applicant's ecologist confers with the Council's ecologist to determine the best way forward to address all of these matters.

ENZL We consider that the issues raised in the ecology review have now been addressed by a combination of:

- The EcIA carried out by ENZL in accordance with EIANZ guidelines;
- The Supplementary Culvert Assessment Report prepared by ENZL (1708069-03);
- Discussions with Council's ecologist (and the wider Council and Applicant teams) during a full-day visit to the site; and
- The responses and clarifications provided in this memo.

3. Conclusion

This memorandum and accompanying documents, prepared by ENZL, provide a detailed formal response to the S92 request for further information issued by WDC in relation to the proposed Wind Farm on the north-western flanks of the Kaimai Ranges, Waikato. We trust that our responses adequately address the ecology-related queries and provide clarity around the assessment and management of the project's potential ecological effects. Please do not hesitate to contact Simon Chapman (simon.chpman@ecologynz.nz; 021 436 841) or Marc Choromanski (marc@ecologynz.nz; 021 311 657) to discuss these matters further if required.

APPENDIX A:

Report Limitations

This Report/Document has been provided by Ecology New Zealand Limited (ENZL) subject to the following limitations:

i) This Report/Document has been prepared for the particular purpose outlined in ENZL's proposal and no responsibility is accepted for the use of this Report/Document, in whole or in part, in other contexts or for any other purpose.

ii) The scope and the period of ENZL's services are as described in ENZL's proposal and are subject to restrictions and limitations. ENZL did not perform a complete assessment of all possible conditions or circumstances that may exist at the site referenced in the Report/Document. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by ENZL in regards to it.

iii) Conditions may exist which were undetectable given the limited nature of the enquiry ENZL was retained to undertake with respect to the site. Variations in conditions may occur between investigatory locations, and there may be special conditions pertaining to the site which have not been revealed by the investigation and which have not therefore been taken into account in the Report/Document. Accordingly, if information in addition to that contained in this report is sought, additional studies and actions may be required.

iv) The passage of time affects the information and assessment provided in this Report/Document. ENZL's opinions are based upon information that existed at the time of the production of the Report/Document. The Services provided allowed ENZL to form no more than an opinion of the actual conditions of the site at the time the site was visited and cannot be used to assess the effect of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

v) Any assessments, designs and advice made in this Report/Document are based on the conditions indicated from published sources and the investigation described. No warranty is included, either express or implied, that the actual conditions will conform exactly to the assessments contained in this Report/Document.

vi) Where data supplied by the client or other external sources, including previous site investigation data, have been used, it has been assumed that the information is correct unless otherwise stated. No responsibility is accepted by ENZL for incomplete or inaccurate data supplied by others.

vii) The Client acknowledges that ENZL may have retained subconsultants affiliated with ENZL to provide Services for the benefit of ENZL. ENZL will be fully responsible to the Client for the Services and work done by all of its subconsultants and subcontractors. The Client agrees that it will only assert claims against and seek to recover losses, damages or other liabilities from ENZL and not ENZL's affiliated companies. To the maximum extent allowed by law, the Client acknowledges and agrees it will not have any legal recourse, and waives any expense, loss, claim, demand, or cause of action, against ENZL's affiliated companies, and their employees, officers and directors.

viii) This Report/Document is provided for sole use by the Client and is confidential to it. No responsibility whatsoever for the contents of this Report/Document will be accepted to any person other than the Client. Any use which a third party makes of this Report/Document, or any reliance on or decisions to be made based on it, is the responsibility of such third parties. ENZL accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this Report/Document.