

31 January 2024



Horizons Regional Council

Greater Wellington Regional Council

Tararua District Council

Masterton District Council

c/- Lauren Edwards, Senior Consents Planner, Horizons Regional Council

By Email Lauren.Edwards@horizons.govt.nz

Tēnā Koutou

Response to 20 December 2023 Section 92 Additional Information Request

This letter provides a comprehensive response to the matters raised in your additional information request dated 20 December 2023.

Some of the matters raised require additional investigation before Meridian will be able to provide the requested information. The matters subject to further investigation are:

- 3 and 4, regarding effects on groundwater – Meridian has engaged a hydrogeologist to address these matters;
- 14, regarding dust – Meridian has engaged a dust specialist to provide a FIDOL assessment;
- 17 and 18, regarding highly productive land – Meridian has engaged an agricultural expert to address these matters;
- 21, 24 and 25, regarding traffic and transport – Meridian has instructed the project traffic/transport experts to answer these matters; and
- 29, regarding social wellbeing and health – Meridian is currently seeking advice on this matter.

As soon as the reports and memoranda addressing the above matters are completed they will be passed through to you.

Meridian's response to the balance of the matters detailed in the additional information request is as follows.

1. *There are relic landslide features (identified via aerial photograph interpretation) on slopes that are crossed by some of the proposed road corridors and within proposed fill areas (refer Google Earth snip below for an example). Please make a comment on these features for the entire wind farm site and advise of considerations related to the stability of road cut batters through and fill placement on the relic landslide features where appropriate, such as targeted pre-construction investigations, slope stability analysis and geotechnical advice during design/construction. Would any necessary stability adjustment related to the features be within the bounds of the existing project?*

The project's civil engineers (Tonkin + Taylor) provided a report entitled *Mount Munro Windfarm – Geological and geotechnical information to support civil engineering report* reference 1016884.1000 v2 dated May 2023 which was lodged as part of the original resource consent application. Section 5 of that report provides information about slope instability and considered relic landslide features. Sections 5.4 and 5.5 detail how slope instability will be managed. Further information was provided in response to questions 96c and d of the original s92 request regarding expected slope instability and how it will be managed.

Nick Peters, Geotechnical Engineer at Tonkin + Taylor, who authored the aforementioned report and s92 response, advises as follows in response to the above question:

During detailed design the final road alignment will be mapped by Engineering Geologists and any evidence of slope instability would be specifically assessed. If required, specific investigations will be undertaken to support any necessary slope stability analysis. Specific recommendations as to how the instability should be managed during construction will be detailed. Slope instability can be managed in a number of ways, for example: ongoing maintenance by removal of debris as required, for example if it constrains access or blocks surface drains; slope reprofiling; or engineered solutions including catch walls, soil nails or rock anchors / meshing. Where roads or fill are to be placed in areas of mapped instability, unstable soils may be excavated and replaced with engineered fill and specifically designed subsurface drainage installed. These options are as per Section 5.5 of the geotechnical report. Slope instability was managed in a similar way during the construction of the Mill Creek Windfarm which was also constructed in Greywacke terrain and where the same mechanisms of slope instability and hazards were encountered. At the Mill Creek Windfarm, shallow landslides were typically managed by debris clearance and local slope reprofiling. Where there were space constraints (i.e. property boundary lines or other infrastructure) then unstable slopes were stabilised with rock anchors. This was undertaken at only a small number of locations.

Given the relic features were taken into account in the Mount Munro Windfarm – Geological and geotechnical information to support civil engineering report, that the civil engineering report relied on that information, and that the AEE relies on the civil engineering report, Meridian considers stability adjustment has been appropriately considered and therefore is within scope of the resource consent application.

- 2. Please provide a plan showing the location of the 'super bin' identified in the PSI within the turbine envelope zone and confirm that earthworks (for example, associated with internal roads) avoid this area.*

The following is a high-resolution image showing the location of the 'super bin' identified in the PSI within the turbine envelope zone.



Figure 1: Image showing turbine envelope zone (blue lines and hashed area) in relation to the ‘super bin’ area

As stated in the response to the Section 92 Additional Information Request dated 25 October 2023, *while the ‘super bin’ is located within the Turbine Envelope Zone, the earthworks are proposed to be managed within this zone so that this area is avoided.* Part of the purpose of the envelope approach is that when areas are constrained or need to be avoided, such as the ‘super bin’ area, there is scope to do so.

5. *One of the submissions highlighted the importance of the watercourses, particularly the Makakahi River and the Kupoaranga River, for trout spawning and migration. Have you given consideration to any potential impacts of the proposal on this, and any potential monitoring that could be undertaken to assess any effects?*

This is addressed in the responses from the freshwater ecologist attached in Appendix 1 and from the earthworks engineer attached in Appendix 2. Meridian does not consider that there will be any adverse effects on these features.

6. *Please clarify if there is any and/or the nature of any discharge from turbines/nacelles and how the effects of these discharges would be expressed in the receiving environments, including the wetlands.*

There are no proposed discharges from turbines/nacelles. It is noted that there have been occasional instances of turbines/nacelles leaking small quantities of oil at Meridian's Te Apiti wind farm. This has not occurred at any other of Meridian's wind farms, and is not expected to occur at Mt Munro. Turbines installed at Mt Munro are likely to be direct drive machines, which do not have gearboxes, so discharges from oil leaks are not anticipated.

Investigations at Te Apiti following such incidents, undertaken by Tonkin + Taylor, confirmed that contamination levels would not pose a risk to groundwater, or an unacceptable risk to human health. These reports were provided to Horizons at the time.

In any instance, in the unlikely event leaks should occur, the effects on receiving environments are addressed in the response from the freshwater ecologist attached in Appendix 1.

7. *Concerns have been raised in several submissions as to the classification of the waterways as intermittent. It has been raised that these waterways do not stop flowing even through the summer months, and should not be classified as being intermittent. In light of this, please advise if this changes your assessment as to the classification of these waterways and amend if required.*

Based on the response from the freshwater ecologist attached in Appendix 1, no changes are sought to the classification of waterways in response to these submissions.

8. *To manage fire risk, please provide an assessment of potential effects from the risk of fire on the site and the surrounding area, and confirm how any fire risk will be managed (including matters such as firefighting water supply and access). Please also advise whether there is a firefighting contingency plan that seeks to mitigate any adverse discharges resulting from nacelles catching fire.*

Meridian has extensive experience in managing fire risk at its other wind farms, which are based in a similar rural context to the Mt Munro site.

It is important to acknowledge that nacelle fires are rare, and that there have been no such fires at a Meridian site in over 20 years of wind farm operation. To our knowledge there has been only one nacelle fire at a windfarm in New Zealand. This fire, at Mercury's Tararua windfarm in 2021, was left to burn out, and was effectively contained to the turbine nacelle.

Meridian has read the submission from Fire and Emergency NZ (FENZ), and is committed to working with FENZ to discuss the concerns raised in their submission during the detailed design, construction and operational stages of the Mt Munro wind farm. This includes consultation with FENZ on an Emergency Fire Response Plan. These discussions should also address how the Code of Practice relates to our proposed construction and operating activities at Mt Munro. It should be noted that SNZ PAS 4509:2008 is a Code of Practice and is not mandatory (*Clause 1.2, Legal Context*).

It is noted that much of the FENZ submission is based on the consent application not providing the detail that they require. The final detail of the building construction materials, methodology and electrical infrastructure will support Meridian's own operational requirement to minimise the risk of fire.

The following advice on fire risk at the Mt Munro site is from Ross Berry who is the Site Manager of Meridian's Harapaki Wind farm and also a local FENZ Back Country and Rural Fire Fighter. Advice has also been provided by the Site Managers of Meridian's other wind farms and the Construction Project Manager of the Harapaki wind farm, which together informs this response.

To illustrate Meridian's commitment to minimising fire risk, at its Harapaki wind farm site Meridian has a number of measures in place to manage fire risk. Similar measures will be used at the Mt Munro wind farm site:

- An Emergency Fire Response Plan has been prepared by Meridian and distributed to FENZ, including the local Rural Fire Brigade.
- Construction materials have been selected to minimise the risk of fire, for example
 - concrete panels for the substation building; and
 - the use of alternatives to mineral oils for electrical insulation.
- The use of a DSPA fire suppression system in the substation building, requiring no water.
- In addition to automated fire protection systems for the substation and O&M building, fire extinguishers are located at site buildings and there is a fire extinguisher in each site vehicle and on all machines.
- Substation switchyards are paved in aggregate which minimises the risk of the spread of fire.
- A pond created for concrete batching plant water was available as a source of firefighting water during construction.
- Two 25,000 litre water tanks at the O+M Building are dedicated to fire fighting and supplied with fire hose connection fittings to allow easy filling of FENZ tankers. These tanks are near to the State Highway, and about fifteen to twenty minutes driving time from the back of the wind farm.
- No hot work is allowed on site when the fire danger is very high or extreme.

As stated above, Meridian will prepare an Emergency Fire Response Plan for Mt Munro that will be distributed to FENZ, and which will appropriately manage the risk of fires on site, and responses to them should they occur.

Several submitters raised the issue of turbine gearboxes leaking oil and stated that there have been 'many turbine fires'. Turbines installed at Mt Munro are likely to be direct drive machines, which do not have gearboxes. Therefore, the comment/concern in relation to gear boxes leaking oil, and the implication that this might increase fire risk, is unlikely to apply to the Mt Munro situation. Oil and grease are used elsewhere in the nacelle. In any event, if any oil leaks were to occur from the nacelle, this would be noted and investigated by a suitably qualified person (as has been the case when such a leak has occurred at Te Apiti – the only example to date of such a failure across all of Meridian's windfarms).

Several submissions also state that due to the height of the nacelles, fire services cannot douse the blades and are limited to dampening down the surroundings, and that fire residue mixed with this water will pollute waterways. It is understood that this 'residue material' may be the discharge referred to in this further information request.

'Fire residue' discharge appears to refer to any turbine debris left from a fire. While the submitters are correct about FENZ having limited ability to extinguish nacelle fires, this limited ability to put water on a burning turbine would also limit the risk of any debris flowing from the source of a fire into the local water ways. Any firefighting on the area surrounding a turbine would be limited to dampening the area surrounding the gravel hard stand, rather than flooding it. Dr Keesing's responses in relation to Matter 6 are relevant to understanding the risk to, and effects on, waterways in the extremely unlikely event that such an incident occurs.

9. *Many submissions raised concerns about the timing of construction noise, and the submitted noise assessment shows that some construction works would infringe the 45 dba limit for night works, Sundays and public holidays. Please confirm the proposed timing of construction works and explain if/what nightworks are anticipated and why.*

This is addressed in the responses from the acoustic expert attached in Appendix 3.

10. *Submissions also raised concerns around noise from the proposed concrete batching plant and aggregate crushing. Please provide an updated assessment that includes the likely location, duration of the activity in that location, and hours of operation for these activities to determine potential effects, noting these activities will not meet the definition/standard of a temporary activity under the Tararua District Plan and the Wairarapa Combined District Plan.*

This is addressed in the responses from the acoustic expert attached in Appendix 3, noting that the acoustic expert has stated that *noise from these activities is consistent with normal daytime activities in this area, the daytime permitted activity noise limit, and would not cause adverse noise effects.*

11. *Conditions offered as part of the application include a Controlled Blasting Management Plan, but rock blasting has not been assessed as part of the application. Please confirm if there will be any rock blasting as part of the proposal and if so, provide an assessment of this activity.*

Section 2.4.12 of the Assessment of Environmental Effects states that *based on advice received through the preliminary geotechnical appraisal, hydraulic excavators, large dozers with ripping attachments and motor scrapers are likely to be used for the earthworks. In the event that harder material is encountered, it may be necessary to use controlled blasting operations.*

Controlled blasting has been included as a construction method as it may be a necessary or appropriate option to facilitate the excavation of harder earth. It is also possible that it may not be required.

By definition in the Horizons One Plan, blasting is land disturbance. Likewise, under the Greater Wellington Natural Resources Plan, earthworks include excavation. Controlled blasting is a tool used to excavate earth.

Land disturbance/earthworks have been provided for and assessed in the Assessment of Environmental Effects.

The resultant noise effect from any controlled blasting used to facilitate earthworks has been assessed in the responses from the acoustic expert attached in Appendix 3, who has noted that *it is possible this type of blasting would just be audible, but unlikely to be easily discernible* at dwellings near the project.

12. *If the Operations & Maintenance building is proposed to be placed on the terminal substation site, please provide an assessment of its likely noise effects (noting the submitted acoustic assessment currently only assesses this building at the entrance to the core wind farm site).*

Through this response, Meridian confirms it is no longer proposing that the Operations and Maintenance Building will be placed at the terminal substation site. It will be located within the alternate location identified at the site entrance to the core wind farm site on Old Coach Road, as mentioned above.

13. *Many submissions identify an issue with disturbance caused by the previous wind mast that "whistled" in certain winds. Some submissions stated that Meridian ignored complaints in relation to this. Please confirm the background to these complaints and any steps taken by Meridian, and identify any mitigation measures proposed given a taller wind mast is to be constructed.*

Meridian undertook an assessment of noise from the mast in 2014. The report on this matter is attached in Appendix 4. By way of a brief summary of that report, noise complaints were received by Masterton District Council, Meridian undertook noise monitoring, and based on the data available *concluded that any contribution from the mast to the overall sound level is less than the 45 dB $L_{A,10}$ permitted noise standard for night time noise.*

The responses from the acoustic expert attached in Appendix 3 identifies the mitigations that can be used.

15. *In relation to questions 10 and 14 above, please advise the likely locations of the concrete batching plant and the aggregate crushing facility. The scale and locations of these will feed into the dust and noise assessments referred to above.*

A mobile aggregate crusher is shown on the following image (red machine in the centre):



Figure 2: Image of Mobile Aggregate Crusher during construction of the Harapaki wind farm

If a mobile aggregate crusher is used at Mt Munro, it will be of a similar model and size to the one shown above.

Essentially the mobile aggregate crusher moves along as construction progresses, typically sitting in a location for a period of time, before moving to where it is next needed. They are usually positioned in valleys and gullies.

The concrete batching plant will only be needed for the construction of the turbine foundations. As is stated in the *Response to the Mt Munro Proposed Wind Farm Resource Consent Application Section 92 Additional Information Request* dated 7 September 2023, it will likely be located within the Turbine Envelope Zone along the ridgeline, where it is closest to the turbine foundations it will be producing concrete for. However, it may be located in the Turbine Exclusion Zone. The condition proffered under Question 88 of the aforementioned response confirms it will not be located in the construction laydown area, and that the final location must be certified by the relevant regional council.

As mentioned above, Meridian has engaged Tonkin + Taylor to provide a FIDOL assessment of the dust generated on site, including from the concrete batching plant. There may be recommendations made regarding the locations of the concrete batching plant arising from this assessment, which Meridian will communicate to the Council when this report is available. However, in advance of that, Rob Van de Munckhof, Environmental Risk Management Specialist at Tonkin + Taylor, has advised that:

The establishment of separation areas, which separate industrial activities from more sensitive activities, is a recognised land use planning tool. These separation distances serve both to protect industrial activities from reverse sensitivity effects as well as to minimise potential effects on sensitive activities from the legitimate operation of industrial activities. With the use of filter socks and controls during filling, any discharges from cement silos associated with concrete batching plants would be limited but the risk of unintended emissions resulting from factors such

as equipment failure, accidents or unusually adverse weather conditions. The existence of these risks forms the basis for establishing separation distances.

There are no relevant New Zealand guidelines for separation distances from industrial facilities to protect against air quality effects. In the absence of New Zealand guidelines, the Victorian EPA guidance (Recommended separation distances for industrial residual air emissions, March 2023) is commonly used which recommends a separation distance of 100 metres between sensitive activities (which would include dwellings) and a concrete batching plant producing more than >5,000 tonnes of concrete a year. There is no specific guidance for smaller plants, but in our experience a separation distance of 50 metres would typically be appropriate.

We note that the dwellings below and south of the ridgeline where a concrete batching plant might be located are considerably further away than 50 m.

16. It has been raised by submitters that the rainfall levels have potentially been underestimated for the Mt Munro area by relying on the rainfall levels for Masterton. Please review whether the rainfall levels used are appropriate and revise if necessary. Is there any intention to undertake monitoring on the site?

This is addressed in the response from the earthworks engineer attached in Appendix 2.

19. To assess the proposal against NPS-HPL clause 3.9(3)(b) and respond to wider reverse sensitivity concerns raised in submissions, please outline how you intend to avoid/mitigate any actual or potential reverse sensitivity effects on land-based primary production from the proposal. Please specifically address concerns raised in submissions such as reduced weed and pest control/ difficulties applying fertiliser due to aerial spraying restrictions, and effects on nearby stock.

Reverse sensitivity has been defined by the Environment Court¹ as:

the legal vulnerability of an established activity to complaint from a new land use. It arises when an established use is causing adverse environmental impact to nearby land, and a new, benign activity is proposed for the land. The "sensitivity" is this: if the new use is permitted, the established use may be required to restrict its operations or mitigate its effects so as not to adversely affect the new activity.

The proposal does not give rise to a reverse sensitivity effect on land-based primary production. Meridian has six wind farms, all located in rural environments, and all of which comfortably exist within and adjacent to land-based primary production activities. There are no known issues at any of these existing wind farms in terms of the landowner and neighbours' ability to control weeds and pests. Weed and pest control can easily be undertaken around turbines.

¹ *Ngatarawa Development Trust Limited v The Hastings District Council* W017/2008 [2008] NZEnvC 100 (14 April 2008)

The airstrip within the windfarm site is privately owned. The only party with legal access to the airstrip is the landowner.

In Meridian's experience, wind farms on rural sites have generally enhanced landowner farming activities through improved access, fencing and access to capital.

- 20. Many submitters raised concerns around shadow flicker, and modelling submitted as part of the application indicates that shadow flicker will go over 30 hours for some dwellings, meaning a curtailment strategy will be required (as provided for in offered conditions). Please outline how this will work in practice - will curtailment be automated or managed manually?*

Any curtailment which might be required to comply with the shadow flicker duration limits will be automated, and the turbine manufacturers being considered for the project provide this automation capability as part of the wind farm SCADA (operation and control) system. The modelled shadow flicker will be reassessed for the final layout and turbine dimensions, taking into account shielding by any structures or vegetation present, to determine whether and how much curtailment might be required to comply with the limit. The SCADA will then be programmed to shut down the relevant turbines at enough of the relevant times to meet the shadow flicker limit.

- 22. Please provide an assessment of potential construction traffic effects (in particular if aggregate is sourced along the route) on Opaki Kaiparoro Road, and identify any mitigation.*

Any aggregate sourced from the Masterton District will be transported to the site via State Highway 2. Meridian now propose that the only section of Opaki Kaiparoro Road which may be used by the project is the section between SH2 and Mount Munro Road. Traffic effects on this section are currently being assessed by Tonkin + Taylor and the outcome of this assessment will be provided in due course.

- 23. Please provide an indicative map showing the location of potential aggregate sources. Please also provide an assessment of traffic effects on public roads associated with haulage to and from (movement of rock and also crushed material if using public roads) an on-site crusher, if one is intended. We note that you may need to consider a number of options if there is more than one possible location.*

A map showing the location of potential aggregate sources has been provided in Section 4 of the Aggregate Supply Memorandum included as Appendix 5 to the *Response to the Mt Munro Proposed Wind Farm Resource Consent Application Section 92 Additional Information Request* dated 7 September 2023.

Any material which is transported to site will be appropriately crushed at source before arrival. None of the imported material will be crushed at the Mt Munro site. All potential traffic movements associated with the transport of aggregate to site have been accounted for in the transportation assessments which have already been provided as part of the application and s92 responses to date. Meridian has assessed the worst case scenario, which assumes that all aggregate will need to be transported to the site (i.e. that no aggregate is able to be sourced on site).

A mobile aggregate crusher would only be used to crush suitable material found within the proposed earthworks areas. There are benefits from this as recycling waste/cut material on site is a more sustainable and economic method and to the extent material can be found on site there will be a corresponding reduction in construction effects from reduced transport movements and carbon emissions.

26. *The submitted archaeological assessment recommends creating an exclusion zone within the construction laydown area around the former location of a potential pre-1900s dwelling where excavations should be avoided, or if this is not avoidable then having archaeological monitoring of groundworks within the area to identify and record any archaeological features if they are exposed. Will you be updating your plans or offering a condition that reflects this recommendation in your technical assessment?*

Meridian intends to seek a general Archaeological Authority from Heritage New Zealand Pouhere Taonga for activities that could disturb the construction laydown area. Works in this area will not commence until this Authority has been obtained. Meridian considers this process will be sufficient to address any potential effects on this area.

27. *Please clarify the sought lapse dates and expiry dates for the land use consents vs the works within the beds of rivers and provide justification for each.*

Meridian is seeking a 10 year lapse date for the construction and related consents. This allows Meridian a pipeline of potential generation activities to respond to changing demand in New Zealand's electricity supply. A 10 year lapse date for works within rivers is sought to align with the other construction related consents. The 35 year term for the completed works in the beds of rivers allows for the operation and maintenance of culverts, as well as the associated permanent diversions.

28. *Please provide a thorough assessment of the application against the proposed Wairarapa Combined District Plan which was notified in October 2023.*

Under the Proposed Wairarapa Combined District Plan (PWCDP), the portion of the site that is within the Masterton District is zoned *General Rural*, and the proposal is a *large-scale renewable energy generation activity*².

Like the Operative Wairarapa Combined District Plan, the definition of a *large-scale renewable energy generation activity* is comprehensive and encompasses both the construction and operational aspects of the proposal that are within the Masterton District.

² Defined in the PWCDP as *Means electricity generation activities utilising renewable energy sources for the purpose of exporting electricity directly into the distribution network or National Grid. It includes all ancillary components and activities such as substations, battery energy storage systems, climate/environmental monitoring equipment, earthworks, roading, maintenance buildings, temporary concrete batching plants, internal transmission and fibre networks, vegetation clearance, and site rehabilitation works.*

Large-scale renewable energy generation activities are provided for in the Energy chapter of the PWCDP. It is stated in the Energy chapter introduction that *the provisions of this chapter apply on a district-wide basis. As such, the rules in the zone and district wide chapters do not apply to renewable electricity generation unless specifically stated within a rule or standard in this chapter. The objectives and policies in district-wide overlay chapters and the objectives, policies and rules of the subdivision chapter apply to renewable electricity generation where applicable.*

There are no overlays in the PWCDP that apply to the site, and no subdivision is proposed. As such the Energy chapter is the sole chapter for consideration under the PWCDP.

Rule ENG-R6.1 provides for *large-scale renewable energy generation activities* in the General Rural Zone as a **Discretionary Activity**. There are no standards related to this rule.

The following objectives and policy in the Energy chapter of the PWCDP are relevant to the proposal:

- *ENG-O1 – Benefits of renewable electricity generation:
The significant local, regional, and national benefits of renewable electricity generation are recognised and provided for.*
- *ENG-O2 – Adverse effects of renewable electricity generation:
Renewable electricity generation activities are designed and located to minimise adverse effects on communities and the environment while recognising their operational or locational constraints.*
- *ENG-P4 – Large-scale renewable electricity generation activities:
Provide for large-scale renewable electricity generation activities where effects are appropriately managed, by having regard to:*
 - a. benefits of large-scale renewable electricity generation;*
 - b. any locational, technical, or operational constraints;*
 - c. transport and infrastructure capacity to accommodate the activity;*
 - d. earthworks and construction effects;*
 - e. the design and site layout of the activity and its ability to internalise effects;*
 - f. potential adverse effects from the activity, including traffic generation, visual, light, safety, and noise;*
 - g. whether there is adequate separation from sensitive activities to ensure adverse effects, including potential adverse reverse sensitivity effects, are minimised;*
 - h. cumulative effects from multiple renewable electricity generation activities;*
 - i. potential for adverse effects on natural features and landscapes, waterbodies, indigenous biodiversity, historic heritage, and sites of significance to Māori;*
 - j. potential effects on the productive capacity of the land, including the ability to protect the productive capacity of highly productive land;*
 - k. consideration of long-term management and responsibilities for the development; and*
 - l. any adaptive management measures proposed.*

This objective and policy framework is similar to the Operative Wairarapa District Plan. Therefore, for the reasons provided in the Assessment of Environmental Effects, the proposal is consistent with the relevant objectives and policy.

The following strategic objectives of the PWCDP are also relevant:

- *CCR-O1 – Climate change mitigation:
The Wairarapa develops and functions in a way that assists in the transition to a low-carbon future.*
- *CCR-O2 – Adapting to climate change:
The Wairarapa is resilient, adapts to the effects of climate change, and recognises the opportunities and risks associated with those effects.*
- *RE-O2 – Productive capacity:
The General Rural Zone remains available for primary production activities and productive capacity is protected.*
- *RE-O4 – Character of the rural environment:
The character of the rural environment is maintained and enhanced.*
- *INF-O1 – Infrastructure:
The benefits of infrastructure are recognised, while ensuring its adverse effects are well managed, and infrastructure is protected from incompatible land use, subdivision and development, including reverse sensitivity effects.*

Again, for reasons provided in the Assessment of Environmental Effects, the proposal is consistent with the relevant strategic objectives.

30. *For all questions in this further s92 request, please identify if any of the responses trigger the need for further consents, and provide an assessment of any infringement.*

At this stage, the response to this further s92 request does not trigger the need for any further resource consents as a result of the proposal.

Yours sincerely

Incite

A handwritten signature in blue ink, appearing to read "Tom Anderson".

Tom Anderson

Director/Principal Planner

tom@incite.co.nz

04 801 6862 or 027 231 0246



APPENDIX 1
FRESHWATER ECOLOGIST MEMO

Memo.

Ecological Responses to additional S92 questions for Mt Munro

To: Lynley Fletcher
Meridian

From: Vaughan Keesing

Date: 12 January 2024

Project title: Mt Munro

Introduction

I provide the following responses to the additional ecological questions Council has posed based on submitter queries.

Question. The importance of the watercourses, particularly the Makakahi River and the Kupoaranga River, for trout spawning and migration. Have you given consideration to any potential impacts of the proposal on this, and any potential monitoring that could be undertaken to assess any effects?

Response. We are aware that these systems contain trout and that the smaller gravel bottom reaches of tributaries are areas of trout spawning. No spawning habitat was recorded in the various small headwater tributaries on the property for either catchment, and no trout were revealed in surveys.

In the assessment we considered the only potential effect (to downstream systems and trout) was related to potential discharge of sediments from culvert installations and the creation of the access road. Given the headwaters of all of the tributaries of both catchments are fully farmed, stock have access to all features and the steep headwater catchment lands are prone to slips there is already a history of substantive periodic sediment release into the various waterways. This results in a current level of tolerance for sedimentation effects.

The roading and culvert installation must be managed to a high standard so as to not release typically, or under rain events, sediment into the waterways. That consideration overlaps the work of Mr Graeme Riddley. Where those works and controls are well managed the assessment concluded that the risk to such areas and features was very low (including given the distance of works to the majority of spawning areas).

My assessment is that any potential residual effects on these features during high rainfall events would not be materially different from the current natural release during storms. It is deposition of any released sediment that causes the impact to spawning sites and with good ESC measures in place the risk of lower tributary and main stem deposition of any measurable sediment would be very low. Monitoring (if required) could be by way of an event trigger, a magnitude of release measure by the sediment management team would trigger a SMA2 (Clappcott et al 2011) assessment in lower reaches. This will be confirmed through the proposed SEMP process.

Question. Please clarify if there is any and/or the nature of any discharge from turbines/nacelles and how the effects of these discharges would be expressed in the receiving environments, including the wetlands.

Response. With regard to the potential for oils to seep down a turbine and across the hard stand and pasture to a wetland, I note that the predominantly exotic sedge and herb wetlands are extremely tolerant of water quality and most wetland plants have systems that regulate their uptake of a range of possible contaminants, such as heavy metals and anions and cations and therefore are able to grow in relatively high concentrations of a range of "contaminants" without adverse effect.

For lower catchment streams we consider that oil leakage, if it occurs and if it somehow makes it past the turbine base to a headwater wetland, by the time it gets there the oil would be in very low concentration. Given the headwater wetlands are dense deep sediment grassed sedges, any oil is likely to be buried into the wetland and not travel or at worst could travel very slowly downhill.

Where it passed south in to the Kupoaranga catchment it would need to pass through the fully vegetated gully wetlands for over 500m before it could reach an intermittent stream section and even further before it would threaten fish populations in perennial reaches. At that range with the level of filtration both of surface flow and wetland we can not see a valid basis for concern about a potential effect.

Question. Concerns have been raised in several submissions as to the classification of the waterways as intermittent. It has been raised that these waterways do not stop flowing even through the summer months and should not be classified as being intermittent. In light of this, please advise if this changes your assessment as to the classification of these waterways and amend if required.

Response. The assessments were undertaken from the headwaters of the catchments down to the property boundary and all of the systems progress from areas of ephemeral flow to intermittent flow to perennial flows as they progress down the catchment. As the extent of intermittent flow varies based on rainfall in any season and in any year, no one season of survey can conclude exactly the areas of intermittency, only the core or general area of intermittency. The mapping undertaken for this assessment shows, from several survey periods, where the ecologists, working from a range of ecological cues, consider the likely boundaries between ephemeral intermittent and perennial watercourses. I remain confident of the classifications made and the assessed extents of intermittent versus perennial. Minor variance in extent or indeed major variances will not change the assessment, because a lesser value or importance was not placed on an intermittent reach over a perennial one, the only difference being its tolerance to drying times. Given the assessment in intermittent reaches is not about water takes but of direct disturbance (culverts) and the potential discharges of sediment, the assessment remains valid for either intermittent or perennial reaches.

Ngā mihi/Yours sincerely



Dr Vaughan Keesing



APPENDIX 2
RIDLEY DUNPHY TECHNICAL MEMORANDUM

Technical Memorandum

From: Graeme Ridley, Ridley Dunphy Environmental Limited.

Date: 25th January 2024

Re: Meridian Mt Munro Wind Farm – Further information Response related to Erosion and Sediment Control

1.0 ASSESSMENT

Following the application notification, a number of submissions were received. Councils determined that in order to fully assess the effects of the project, additional information was required with this documented in correspondence to Meridian Energy Ltd dated 20th December 2023.

With respect to erosion and sediment control I confirm as below.

2.0 CLARIFICATION QUESTIONS AND RESPONSE

Item # 5

One of the submissions highlighted the importance of the watercourses, particularly the Makakahi River and the Kupoaranga River, for trout spawning and migration. Have you given consideration to any potential impacts of the proposal on this, and any potential monitoring that could be undertaken to assess any effects?

Response

Dr Keesing has provided an ecological response to this question. In addition, I have referred back to the Construction Water Management Plan and Effects Assessment Report as lodged and also the s92 response from Meridian Energy Ltd which included the RDE memorandum dated 24th October 2023. This s92 response in particular highlights the culverts to be installed and the associated risk and consequential methodologies that will apply. I note that each of these culverts and methodologies will also be confirmed, prior to any works occurring, within the SEMP process.

I remain comfortable that the assessment I have undertaken is robust. I understand (and the report envisages) that such works will be undertaken in accordance with best practice. On that basis I conclude that the effects of the Project will be managed appropriately and remain minor.

Monitoring and responsiveness are a key considerations for all land disturbance, including culvert installation and earthworks. This includes both qualitative and quantitative monitoring and importantly includes a key step whereby in response to certain triggers, actions will be undertaken. This includes a continual feedback loop until it has been verified that the implemented responses have been successful.

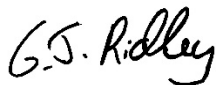
Item # 16

It has been raised by submitters that the rainfall levels have potentially been underestimated for the Mt Munro area by relying on the rainfall levels for Masterton. Please review whether the rainfall levels used are appropriate and revise if necessary. Is there any intention to undertake monitoring on the site?

Response

The Construction Water Management Plan and Effects Assessment Report confirms and describes the annual rainfall for the Masterton area. It is acknowledged that the on-site rainfall may differ from this. The Construction Water Management Plan and Effects Assessment Report notes that to assist with identification of higher risk periods, such as during rainfall events, the Project will utilise on site manual rainfall gauges to provide rainfall quantity data which will assist with confirming adequacy of the ESC measures and methodologies.

In addition, the SEMP process requires specific design to be established for all ESC measures such as clean water and dirty water diversions. This SEMP process will be required to utilise site rainfall records. NIWA High Intensity Rainfall Design will likely be utilised in this regard for the design of all ESC measures with this specific to the Project site.



Graeme Ridley
Ridley Dunphy Environmental Limited



APPENDIX 3
ACOUSTIC EXPERT RESPONSE

30 January 2024

Meridian Energy
Level 11
157 Lambton Quay
Wellington 6011

Attention: Lynley Fletcher

Dear Lynley

S92 RESPONSE - ACOUSTICS

I have reviewed the additional questions posed by the reviewing Council and respond as follows. In this response I refer to my Noise Effects Assessment report Rp 002 R03 20210951 as “my report”, and also to letter Lt 001 R02 20210951 as “letter Lt 001”, in which I provide some initial additional information around noise effects.

- 9. Many submissions raised concerns about the timing of construction noise, and the submitted noise assessment shows that some construction works would infringe the 45 dba limit for night works, Sundays and public holidays. Please confirm the proposed timing of construction works and explain if/what nightworks are anticipated and why.**

The construction activity noise levels summarised in Table 5 of my Report show that most construction activities are calculated to produce less than 45 dB L_{Aeq} (the night-time / Sunday / Holiday noise limit) at most dwellings. As noted in this query, several activities exceed this limit, although all are less than the daytime construction noise limit.

There are two activities which are calculated to produce more than 45 dB L_{Aeq} – construction of internal roads and establishment of the project Village. Both of these activities relate to the initial establishment of the site, and are expected to be of limited duration (around 6-months).

Both of these activities will be constrained to weekday daytime operation. Aside from the requirement to comply with noise rules, safety and efficiency factors are relevant to this decision.

As a general comment around night-time works, there are significant costs and difficulties associated with night works and in my experience with wind farm construction these are generally only undertaken when absolutely necessary. Most notably, it is often necessary to complete the pouring of concrete in turbine foundations as a single continuous pour, and it may be necessary to do much of this at night to take advantage of lower temperatures. Turbine erection also must be completed as a single continuous activity, and may need to take advantage of still conditions at night.

Concrete pours and associated works at the 20 proposed individual turbine sites are calculated to produce less than 40 dB L_{Aeq} at all dwellings; even if all turbine sites were active simultaneously this activity would produce less than 45 dB L_{Aeq} at all dwellings. This work would therefore be in compliance with the night-time noise standard, should the work occur at night or at other times controlled by the 45 dBA noise limit.

To ensure that noise from vehicles on public roads is minimised during concrete pours, it is reasonable to require in conditions that material and machinery involved in these pours is brought to site during daylight or evening hours as best as practicable – aggregate, water, mixers – in preparation for night works.



Turbine erection produces very little noise – it is generally limited to the operation of cranes and wrenches, which I have previously observed to be inaudible at distances relevant to residential locations at Mt Munro.

- 10. Submissions also raised concerns around noise from the proposed concrete batching plant and aggregate crushing. Please provide an updated assessment that includes the likely location, duration of the activity in that location, and hours of operation for these activities to determine potential effects, noting these activities will not meet the definition/standard of a temporary activity under the Tararua District Plan and the Wairarapa Combined District Plan.**

I have discussed the use of the concrete batching plant and the mobile aggregate crushing plant with the applicant. I understand that the mobile aggregate crushing plant would be used only to process material found on site, and that this would occur at times during the first 15 months of construction, while earthworks are underway. Most notably, this crushing operation would be limited to daytime hours.

I have measured noise from coarse and fine crushing plants used at the Harapaki wind farm site. The operation of this plant at the Mount Munro site would produce levels of 52 dB L_{Aeq} or less at dwellings – 52 dBA is calculated for dwellings with a clear view to the crushing operation, but where the view is obscured the noise level would be significantly less. This is consistent with normal daytime activities in this area, and with the daytime permitted activity noise limit, and would not cause adverse noise effects.

The concrete batching plant is expected to operate for a total of approximately 30 days over the course of construction, and would only operate during times that turbine or anemometer platforms are being constructed.

- 11. Conditions offered as part of the application include a Controlled Blasting Management Plan, but rock blasting has not been assessed as part of the application. Please confirm if there will be any rock blasting as part of the proposal and if so, provide an assessment of this activity.**

I understand that blasting is proposed as a fallback method if discovered rock is harder than can be managed by rippers. I have observed this type of blasting at the Harapaki wind farm site, and note that noise can be very well controlled by good blasting practice, to the point that noise at 1 – 2 km from the blast site was inaudible. At Mount Munro, with dwellings around 1km from working areas, it is possible this type of blasting would be just audible, but unlikely to be easily discernible.

Blasting can be very loud when carried out in open air – for example clearing rocks from hillsides facing noise sensitive activities. The proposal does not anticipate this type of blasting.

It is prudent to require that a blasting noise management plan is required if and when the need for blasting is known. This critically requires good means of communication with neighbours around the timing and duration of blast events.

- 12. If the Operations & Maintenance building is proposed to be placed on the terminal substation site, please provide an assessment of its likely noise effects (noting the submitted acoustic assessment currently only assesses this building at the entrance to the core wind farm site).**

I understand that the applicant is no longer considering the option of siting the O&M building at the substation.

13. Many submissions identify an issue with disturbance caused by the previous wind mast that “whistled” in certain winds. Some submissions stated that Meridian ignored complaints in relation to this. Please confirm the background to these complaints and any steps taken by Meridian, and identify any mitigation measures proposed given a taller wind mast is to be constructed.

Although I am not familiar with this issue at this site, I have observed similar noise at a different site. I also have reviewed a report prepared by Paul Botha regarding noise emissions from the mast in question.

The Botha report correctly points out that there are difficulties with measuring this type of noise during windy conditions, and draws conclusions about the likely noise level of the mast noise based on background sound measurements carried out in the area.

I note that noise from the met mast is required to comply with District Plan permitted activity noise limits, including any penalties for tonality, and it is also required that BPO is employed to reduce noise if practicable. There are technical means of reducing such noise, which likely relates to turbulence around guy wires supporting the mast. As part of taking the best practicable option to reduce noise, it is recommended to investigate the use of aerodynamic spoilers such as spiral wrappings around guy wires to minimise aerodynamic noise.

Yours faithfully

MARSHALL DAY ACOUSTICS LTD



Miklin Halstead

Associate



APPENDIX 4

MT MUNRO ASSESSMENT OF NOISE FROM ANEMOMETER MAST 2014



Mt Munro
Assessment of noise from anemometer mast.

Version: 1.0

Author: Paul Botha (BSc(Eng), MSc(Eng), CEng, MIMechE, MIOA)

Date: 18 August 2014

Assessment of Mt Munro Meteorological Mast Noise

1 Background

Meridian Energy has an operational 80m meteorological mast located on the Mt Munro ridge at the grid location 2,738,300mE, 6,052,900mN. Meridian has applied to the Masterton District Council for consent to continue operation of the mast for a further 5 year period.

2 Noise complaints in relation to the operational mast

Masterton District Council has received noise complaints in relation to audible noise from the wind monitoring mast and has requested that Meridian undertake an assessment of the noise from the existing mast. The complaints were recorded at the property at [REDACTED]. A list of the noise complaints provided to Meridian, are listed in Table 1. Meridian has added the wind speed conditions measured at 80m at the Mt Munro mast to this table to determine the wind speed conditions at the mast, when the noise complaints were made.

| Date | Comment | Wind speeds (m/s) | | |
|-----------|--|-------------------|---------|-------|
| | | 24 hr | 24 hr | 24 hr |
| | | minimum | maximum | mean |
| 20-Apr-14 | NW wind, breezy in the valley. Mast noise heard over wind in the trees. | 11.7 | 25.3 | 18.0 |
| 25-Apr-14 | NW wind, raining with no wind in the valley. Mast noise loud | 2.0 | 26.4 | 15.6 |
| 28-Apr-14 | NW wind, slight breeze in the valley, rain. Mast noise constant | 11.8 | 19.0 | 15.1 |
| 3-May-14 | NW wind, no wind in the valley, fine. Mast noise intermittent throughout the day | 5.5 | 17.7 | 12.7 |
| 22-May-14 | NW wind, breezy in the valley. Mast noise heard throughout the day | 0.2 | 18.4 | 10.7 |
| 23-May-14 | NW wind, breezy in the valley. Again heard on and off throughout the day | 7.3 | 33.8 | 18.5 |
| 25-May-14 | As above | 13.8 | 40.1 | 26.7 |
| 28-May-14 | Northerly wind, slight breeze in the valley. Mast noise very loud could be heard inside dwelling | 13.9 | 27.3 | 19.7 |
| 29-May-14 | Northerly wind, breezy in the valley. Mast noise heard intermittent throughout the day | 3.0 | 26.5 | 15.6 |

Table 1. List of noise complaints and associated wind speeds at the 80m mast.

It is evident that the times that the mast is reported to be audible is generally associated with higher wind speeds. More importantly, the complaints on the 3rd May and 22nd May were made when the average wind conditions at the mast were 12.7 m/s and 10.7 m/s respectively. It is also noted that the majority of the noise complaints refer to the "mast noise being heard". Audibility is not the assessment criteria under the District Plan, rather the "Standards for Permitted Activities" sets out a daytime limit (7am to 7pm) of 55 dBA L₁₀ and a night time limit (7pm to 7am) of 45 dBA L₁₀.

3 Measurement of Noise Levels

The noise Standard for Permitted Activities requires that all sound levels shall be measured in accordance with NZS6801:1999 "Acoustics – Measurement of Environmental Sound", and assessed in accordance with NZS6802:1991 "Assessment of Environmental Sound".

There are two relevant paragraphs in NZS6801:1999 that relate to the measurement of noise generated from the mast guy wires under windy conditions. The two paragraphs are 7.4.3 and 7.4.5. Those two paragraphs have been included below:

7.4.3 *Wind conditions*

7.4.3.1

Measurements should be undertaken within conditions ranging from nil wind up to 5 m/s regardless of wind direction relative to the source and receiver locations. Downwind, i.e. where propagation of sound is from a source to a receiver, if the mean wind speed does not exceed 3 m/s, conditions will be appropriate for measurements unless a strong inversion is also present. In downwind conditions, if the mean wind speed is 3 – 5 m/s, measurements may not be appropriate unless such conditions occur frequently.

7.4.3.2

Wind speed and direction shall be measured at the location of the microphone. Where this is judged to be significantly different from wind speed and direction between the source and area of interest, additional wind speed and direction measurements or estimation may be required and should be reported.

7.4.3.3

For all outdoor measurements, windscreens should be fitted to the microphone.

7.4.5 *Natural noise sources*

Measurements should not be attempted where wind noise on the microphone windscreen, wind induced noise or natural sound sources are at a level which interferes with measurement of the sound under investigation. Examples are wind-generated noise on structures or cables, leaf rustle, cicadas, the sound of surf, wave-slap on shorelines or objects, the sound of running water or geothermal activity. If there is no alternative, then the conditions of measurement should be reported and an assessment made of the effect of background sound on the measurement results.

Paragraph 7.4.3 requires the noise of interest to be measured under low to calm wind conditions to ensure that the wind induced background noise does not contribute to the noise level being investigated or measured. As the mast guy wires will only be producing noise in higher wind speed conditions it is not possible for the Standard to apply as any measured noise will also contain background noise levels.

Paragraph 7.4.5 addresses natural noise sources and specifically mentions wind induced noise over cables as being a natural noise. This is exactly the noise that is being assessed in this report.

4 Available Noise Measurements

During May and June 2011, Meridian undertook a background noise survey in the vicinity of the Mt Munro ridge on which the meteorological mast is sited. The measurements undertaken at a location identified as MTMH16 and situated at the Smiths Line, to the south-east side of the mast, represent noise measurements at the closest proximity to the mast. That house is located at a distance of 1.25 km from the meteorological mast and it is noted that the dwelling at [REDACTED] is some [REDACTED] km from the meteorological mast. The location of the two houses and meteorological mast are shown in Figure 1.

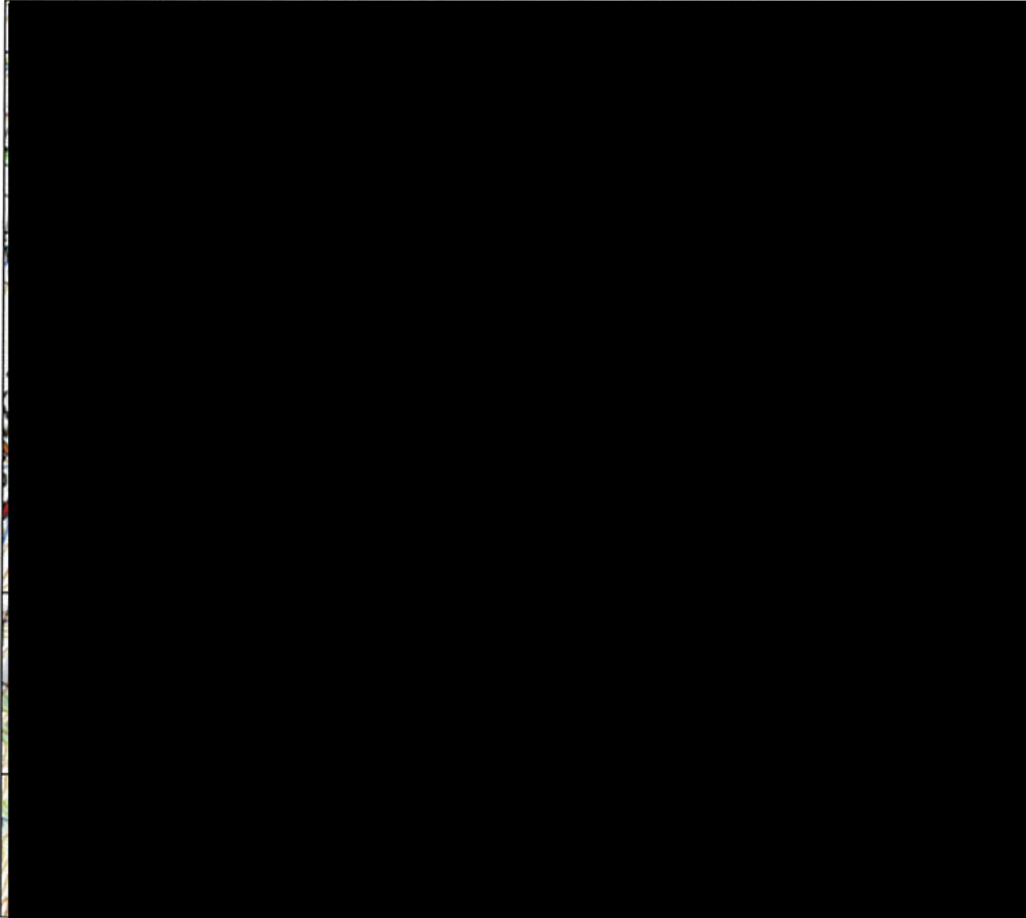


Figure 1. Location of mast, noise measurement location and location of complaints.

The noise data measured by Meridian Energy is represented in the format required by NZS6808:2010, the New Zealand Standard specifically compiled for measuring noise in a windy environment. While that standard is specifically for wind turbine noise, aspects of the procedures used are appropriate for undertaking an assessment of the reported noise from the meteorological mast. The noise data recorded at night from the closest location in Smiths Line is represented in Figure 2 and the wind rose for the night time during this period of data collection is shown in Figure 3.

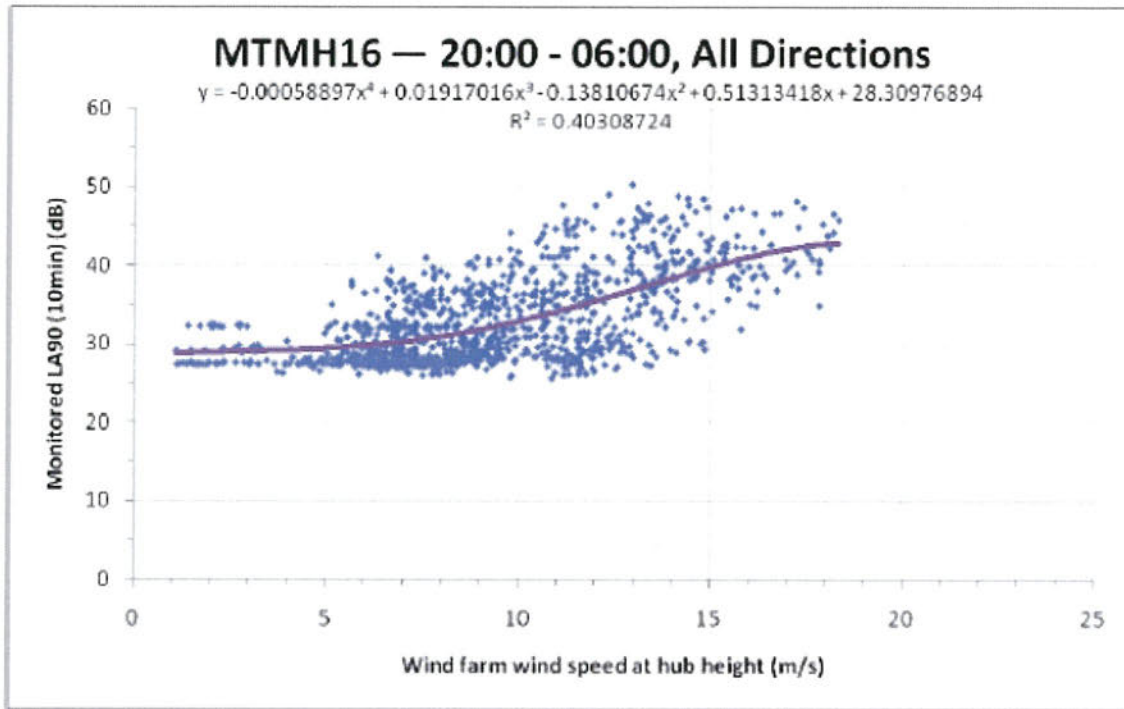


Figure 2. Noise measurements at MTMH16 in Smiths Line.

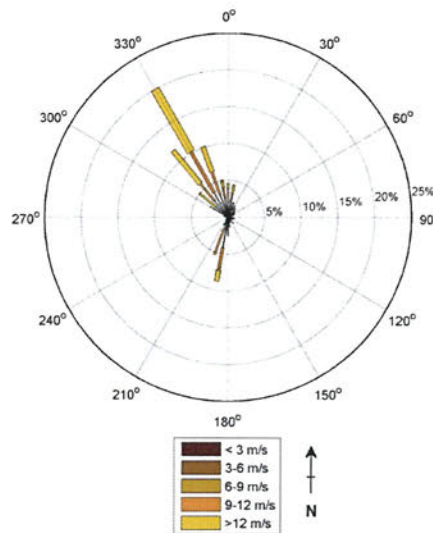


Figure 3. Wind rose for noise monitoring period shown in Figure 2.

The data shown in Figure 2 represents 10 minute samples of the $L_{A,90}$ noise level, plotted against the 80 m wind speed measured at the Mt Munro mast. The blue dots are individual 10 minute samples and the purple line is the best-fit regression line through the data, which represents the total background noise in different wind conditions. It should be noted that all these measurements include any contribution to the background from the meteorological mast, which existed at the time the measurements were taken.

Conclusions that can be drawn from this data include:

- At a wind speed of 11 m/s (the lowest wind speed at which a noise complaint was received) the average background noise level, including any contribution from the mast is approximately 34 dB $L_{A,90}$.

- At 15m/s the average background level is 40 dB $L_{A,90}$.
- Between 15 m/s and 18 m/s the average background level varies between approximately 40 dB and 43 dB $L_{A,90}$.
- Between 15 m/s and 18 m/s the variation in individual $L_{A,90}$ levels is typically between 35 dB and 47 dB.

While the District Plan sets permitted noise limits in terms of $L_{A,10}$ levels, typically background sound levels will have a $L_{A,90}$ about 3 -4 dB lower than its corresponding $L_{A,10}$ level for reasonably constant noise sources.

Based on the 4 conclusions above and the relationship between an $L_{A,90}$ and an $L_{A,10}$ the total average noise (background including any mast contribution) at 11 m/s is approximately 37 - 38 dB $L_{A,10}$ and at 15 m/s is approximately 43 - 44 dB $L_{A,10}$. The total levels comply with the permitted activity **night time** noise levels in the District Plan, so in the highly unlikely event that the total noise is all due to the meteorological mast, it will comply with the District Plan permitted night time noise levels. It is noted that the majority of the noise complaints were made during the day when the permitted noise levels are 55 dB $L_{A,10}$.

Meridian also notes that the prevailing wind direction is north-westerly as shown in the wind rose in Figure 3. This places the measurement position at MTMH16 in Smiths Line, in a down-wind position in relation to the meteorological mast under prevailing wind directions. It is further noted that the measurements at 1.25 km from the meteorological mast, which show the mast to meet the permitted activity noise standard, would be reduced by approximately 6 dB for any further doubling of distance. This would result in a lower contribution from the mast at properties further than 1.25 km away.

5 Summary

Measurement of audible noise from the wind monitoring mast pursuant to NZS6801:1999 "Acoustics – Measurement of Environmental Sound", and assessed in accordance with NZS6802:1991 "Assessment of Environmental Sound" excludes structure and cable noise and is otherwise incompatible and contrary to the application of the Standard. In particular the Standard may only apply in calm wind speeds (nil up to 5 m/s) and measurements should not be attempted where wind noise will interfere with the sound level measurements.

Notwithstanding the inability to apply the Standard (and therefore the Permitted Activity Status for noise), based on the noise measurements available to Meridian, taken at approximately 1.25 km down-wind of the meteorological mast at Mt Munro, it can be concluded that any contribution from the mast to the overall sound level is less than the 45 dB $L_{A,10}$ level allowed by the permitted noise standard for night time.

Signed: 

Paul Botha, CEng, MIMechE, MIOA

Date: *18 August 2014*