23 February 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

Further Response to 20 December 2023 Section 92 Additional Information Request

Further to our response sent on 31 January 2024 to your 20 December 2023 Section 92 Additional Information Request, we are now in a position to close out all matters that were raised.

For completeness, our 31 January 2024 Response covered Matters 1, 2, 5 to 13, 15, 16, 19, 20, part of 22, 23, and 26 to 29.

We responded to Matters 3 and 4 via email on 14 February 2024.

This letter therefore provides our response to Matters 14, 17 and 18, 21, 22, 24 and 25, and 29.

14. *Please prepare and provide a FIDOL based dust assessment. We note that you intend to prepare a dust management plan, and while that will be required, our view is that this cannot be appropriately prepared within an assessment being undertaken to determine what sensitive receptors need to be protected. This is in reference to the whole site, but of particular concern is if the concrete batching plant is going to be on the ridgeline, and therefore has the potential to spread dust over a wider area due to its exposed and windy position.*

The FIDOL based dust assessment is provided in Appendix 1 to this letter.

17. *Thank you for confirming that the Manaaki Whenua Landcare Research Mapping shows LUC3 land within the site. Please confirm if/why you consider this mapping to be of a sufficient scale and detail to accurately locate all highly productive land on the site. If you do not believe it is sufficient, please provide a soil classification assessment with updated mapping, and an updated assessment that addresses any changes.*

The sufficiency of the mapping is addressed in the NPS-HPL report provided in Appendix 2 to this letter.

18a. *For clause 3.9(2)(j)(i) – Comment on the operational need for the proposed water storage tank, on-site wastewater treatment, storage facilities, carparking, and operation and maintenance building to be on highly productive land along with the substation (noting that the application already states that the operation & maintenance building could be placed at the Old Coach Road entrance of the site instead), and quantify the total amount of hardstand required for these activities (is this 1.25ha or larger?).*

Meridian has reviewed the option put forward in the resource consent application to locate the Operations and Maintenance Building and associated activities/structures off Kaipororo Road (on land identified as Highly Productive), and determined that this will no longer be pursued. This confirms that the Operation and Maintenance Building will be located off Old Coach Road. Given this decision, Matter 18a is no longer considered applicable.

18b. *For clause 3.9(3)(a) – Quantify the amount of highly productive land in Tararua District and the % loss to that land from this application.*

The NPS-HPL report provided in Appendix 2 has calculated a 0.0013% loss of highly productive land in the Tararua District as a result of the application.

Regarding Matter 19 (reverse sensitivity effects on primary production), while this was answered in our 31 January Response, the report in Appendix 2 also covers this matter, and concludes such effects are minimal and can be mitigated.

21. *Many submitters raised concerns around the potential effects from increased traffic from the construction phase of the proposal. Please provide an assessment of traffic effects in the Eketāhuna township and identify any mitigation needed, including any change in safety for pedestrians crossing the main street as a result of increased traffic flows during construction.*

Construction traffic effects in the Eketāhuna township are addressed in the letter from Meridian's transport and traffic experts attached in Appendix 3.

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.*

Effects on Opaki Kaiparoro Road are identified and discussed in the letter attached in Appendix 3.

The use of Opaki Kaiparoro Road by Heavy Commercial Vehicles is limited to the section that exists between its northern intersection with State Highway 2, and its intersection with Mt Munro Road. Given this, the following condition is proffered:

> *Heavy Commercial Vehicles associated with the construction of the wind farm must not use Opaki Kaipororo Road between its intersection with Mt Munro Road and its southern most intersection with State Highway 2.*

This condition means that no construction traffic will travel pass Mauriceville School (submitter 51).

24. *Please provide an assessment of road safety effects on Old Coach Road if the road was to be sealed to assist with mitigating dust effects, and identify any mitigation.*

It is stated in the letter attached in Appendix 3 that *sealing is likely to improve the ride quality and increase average speeds along Old Coach Road. However, a sealed surface does provide a higher friction surface better for stopping and also improves visibility by reducing dust (which reduces visibility when following another vehicle)*.

25. *During the construction period, will there be an impact (safety or otherwise) on rural delivery, and if so is there a proposal to manage these potential effects? Have you sought feedback from Rural Mail to understand whether they have safety concerns delivering mail to properties and if so whether these could be mitigated?*

The letter attached in Appendix 3 outlines the traffic safety mitigations that will be in place along Old Coach Road during the construction period, and will apply to all traffic using this road during that time.

In addition, Meridian has contacted New Zealand Post to explain the proposal and discuss Rural Mail delivery on Old Coach Road, and is awaiting a response.

29. *Many submitters raised concerns around their social wellbeing, and potential adverse health effects associated with the construction and operation of the windfarm (for example, sleep deprivations, migraines, asthma). Please provide an assessment of the proposal's potential social and health effects.*

Social wellbeing and health effects are addressed in the memo attached in Appendix 4 to this letter.

Yours sincerely

Incite

Tom Anderson

Director/Principal Planner

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APPENDIX 1

FIDOL DUST ASSESSMENT

REPORT

Tonkin+Taylor

Mt Munro Dust Assessment

Prepared for
Meridian Energy
Prepared by
Tonkin & Taylor Ltd
Date
February 2024
Job Number
1016884.004 v2

Together we create and sustain a better world
www.tonkintaylor.co.nz

Document control

Title: Mt Munro Dust Assessment					
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by:**
Feb 24	1	Draft	R Van de Munckhof	J Simpson	J Simpson
Feb 24	2	Final	R Van de Munckhof	J Simpson	J Simpson

Distribution:

Meridian Energy	1 electronic copy
Tonkin & Taylor Ltd (FILE)	1 electronic copy

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1 Introduction

Meridian Energy Limited (Meridian) is proposing a new wind farm project (Mt Munro Project or Site) in the Lower North Island, approximately 5 km south of Eketāhuna. The Site is situated within the Tararua and Masterton Districts and the Horizons and Greater Wellington Regions.

Meridian received a Section 92 request dated 20 December 2023 which requested a FIDOL based dust assessment with particular concerns raised over the concrete batching plant. In addition, submissions received on the application have raised concerns regarding dust from on-site crushing of rock.

Tonkin & Taylor Ltd (T+T) have been engaged to undertake a FIDOL-based dust assessment of the effects associated with the construction of the proposed wind farm, to support the S92 response.

The purpose of this report is to describe the activities and the resulting discharges of dust to air from the proposed construction including vehicle access, construction yards, construction activities and on-site concrete batching plant.

1.1 Project description

1.2 Project location

The proposed windfarm development is situated approximately 5 km south of Ekatahuna, as shown in Figure 1.1 below.

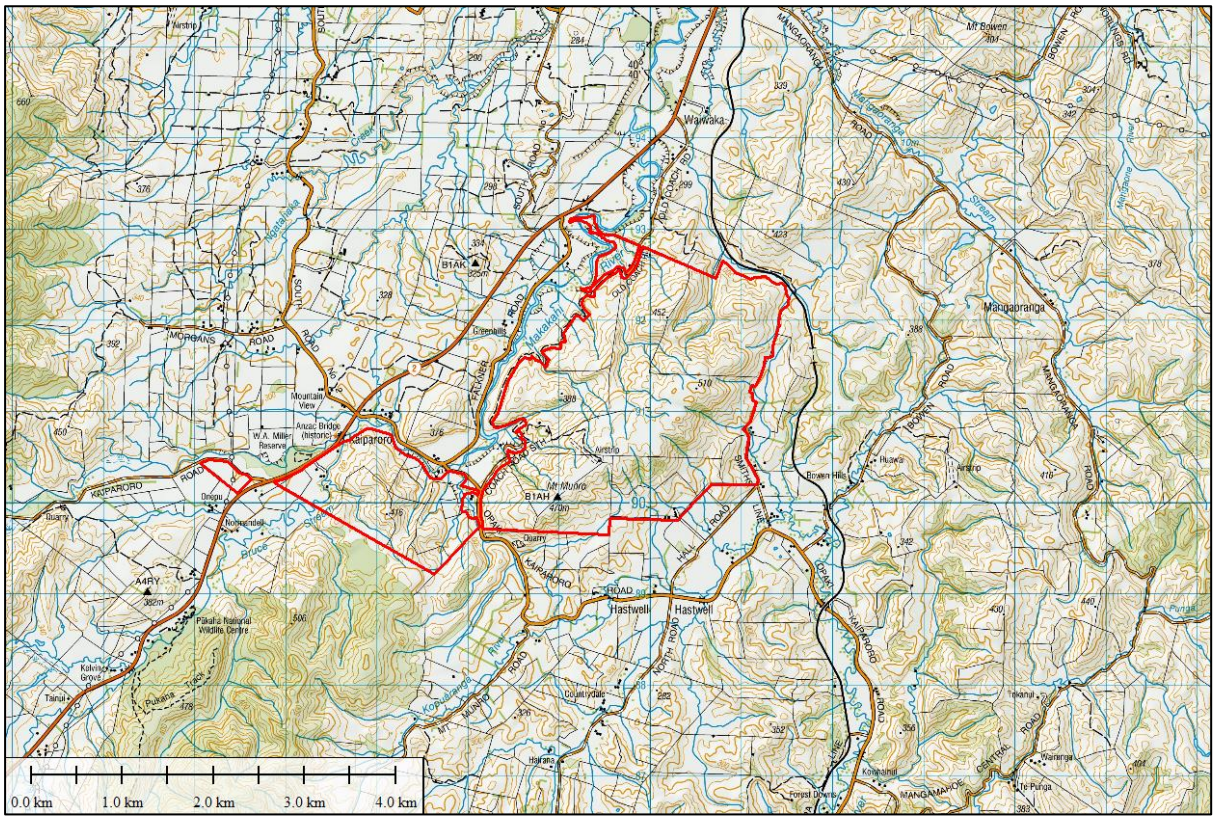


Figure 1.1 Site location shown in red outline (Topomap sourced from Land Information New Zealand (crown copyright reserved))

1.3 Proposed works

The construction of Mt Munro will require the establishment of the following permanent components:

- Wind Turbines – Including, the tower, nacelle and rotor & hub, as well as the foundation and hardstand area.
- Internal Access Roads - Required from the Site Entrance to the Ridge lines, and interconnecting the wind turbines. The access roads are through privately owned farms and typically follow / upgrade existing farm tracks where gradients and alignments permit.
- Electrical Infrastructure – Including but not limited to a 33 kV underground cable network, an onsite substation, a 33 kV or 110 kV overhead transmission line on pylons, and a terminal substation connecting to the 110 KV network on Transpower's network including associated buildings.
- Operation & Maintenance buildings.
- Meteorological (met) Mast for recording wind data (covered in AEE)
- Security fencing and gates.

Construction of these components will require the following activities:

- Construction of Laydown Areas.
- Erection of Temporary site office buildings.
- Erection of a Concrete batching plant.
- Investigation works, including Geotechnical.
- Earthworks.
- Construction of Internal site roads.
- Establishment of Fill disposal areas.
- Establishment of a water supply reservoir for construction activities.
- Environmental control measures.

2 Nature of discharges

The main discharge to air associated with the Mt Munro Project will be dust from construction activities and vehicle movements as well as the operation of the proposed concrete batching plant and mobile rock crusher on-site. Potential effects of dust emissions mainly relate to nuisance and soiling effects. Nuisance dust effects are most commonly associated with coarse particles larger than 20 micrometres (µm)[1] and can include the following effects:

- Soiling of clean surfaces;
- Dust deposits on vegetation;
- Contamination of roof-collected water supplies; and
- Visibility impacts.

Dust from construction activities can include can contain a small component of fine particles (less than 10 micron diameter, referred to as PM_{10}) that can have effects on people's health.

Dust deposited on vegetation may also create ecological stress within the sensitive plant communities, particularly during long dry periods where dust can coat plant foliage adversely affecting photosynthesis and other biological functions. Cement dust can also increase the alkalinity,

[1] 1 µm equals 1/100,000th of a metre

which in turn can hydrolyse lipid and wax components, penetrate the cuticle, and denature proteins, finally causing the leaf to wilt. These effects generally only occur where there are high dust loadings (e.g. visible dust coating leaves).

The key factors influencing the discharge of dust associated with earthworks and construction activities are as follows:

- The amount of fine material in the material being handled. Coarse material with very little fine material content is unlikely to give rise to dust emissions whereas soil or aggregate with a high fines content will pose a greater risk of dust emissions;
- The moisture content of the material. A high moisture content will act to bind dust particles and control emissions;
- Strong winds blowing across exposed surfaces on dry days resulting in entrainment of dusty material; and
- The extent of exposed areas.

Typically, the most significant source of dust associated with earthworks and construction projects arises from the movement of vehicles along unpaved surfaces during dry weather. This occurs because of the action of the wheels disturbing dust from the unpaved surface. Dust from vehicle movements can occur irrespective of wind speed conditions but the scale of dust emissions will be dependent on the moisture content and proportion of fine material in the haul road / surface, as well as the number of wheels and weight and speed of vehicles.

Other less significant sources of dust that may be associated with the Project include the following:

- Vegetation removal;
- Excavator or motor-scraper cutting and shaping of ground;
- Pavement construction (grading, compaction etc.);
- Forming and compaction of fill and spoil sites; and
- Handling and stockpiling of dusty material.

In addition, the project includes a concrete batching plant on-site. Dust from the cement silo refilling, if not properly controlled, can be a source of dust.

3 Receiving environment

3.1 Sensitive receptors

3.1.1 Identification of sensitive receptors

Ministry for the Environment good practice guidance[2] describes the sensitivity of different landuse types to dust effects. This identifies hospitals, schools, childcare facilities, rest homes and marae along with residential as having a high sensitivity to dust effects. None of these landuses are located within the vicinity of the site as the wind-farm site is located within a rural area. Rural areas are generally considered to have a low sensitivity to dust effects although dwellings and associated curtilage within these areas will have a high sensitivity to dust effects.

Therefore, the most sensitive receptors around the site to dust effects are existing dwellings. A plan showing the location of all dwellings within the vicinity of the site was prepared by Boffa Miskel and submitted with the application[3]. The closest neighbours to the site boundary are located on Falkner

[2] Ministry for the environment, Good practice guide for assessing and managing dust, November 2016
[3] Boffa Miskel, Figure 6, revision 1 dated May 2023.

Road to the west, Old Coach Road to the north, Crombies Road to the south west and Hall Road to the south.

3.1.2 Screening assessment of potential effects at sensitive receptors

While, dwellings are inherently sensitive to dust effects, the distance from the dust source has an impact on the potential risk of dust effects. Guidance on the assessment of dust from demolition and construction has been prepared by the UK Institute of Air Quality Management (IAQM).[4] This guidance indicates that a detailed dust assessment would only be required where there are "human receptors" (dwellings) within 250 metres from the site and 50 metres from any roads used. For ecological receptors a detailed assessment would only be required where there is a sensitive ecological area within 50 metres from works and construction routes.

There are four dwellings located within 250 metres of the site boundary but these are over 250 metres from any proposed work areas. There are five dwellings located on Old Coach Road which is proposed to be the main access to the site. The length of Old Coach Road from SH 2 is currently unsealed and therefore has the potential for dust to be generated during vehicle movements to and from the site.

The Victoria (Australia) EPA has developed recommended separation distances for industrial residual air emissions[5] that includes recommended a separation distance of 100 metres for concrete batching plants where production exceeds 5,000 tonnes per year. There is no specific guidance for rock crushing with the closest activity being "quarrying, screening, stockpiling and conveying of rock" with a recommended separation distance of 250 metres. The locations for the proposed concrete plant and crushing plant are in the middle of the project area over 1,000 metres from any site boundary, well in excess of the recommended separation distances.

The ecological assessment for the project[6] has concluded that the existing ecological values associated with the Mt Munro Project area are low. The majority of the area within 50 metres of the proposed works area is pasture with low ecological values identified. Therefore, the ecological sensitivity to dust of areas with 50 metres of the works areas and the main access is low.

From this screening assessment based on separation distance it is concluded that the receptors with the greatest potential to be impacted by dust emissions from construction activities, specifically dust from vehicles on the unsealed road, are the dwellings located along Old Coach Road. All other dwellings are considered to have a low risk of being impacted by dust effects because of the significant separation distances between the proposed works areas and the dwellings, which mitigates the risk of dust effects.

3.2 Meteorology and topography

The occurrence of strong winds during dry weather can exacerbate dust emissions from earthworks operations. Furthermore, the orientation of sensitive locations to dust sources and the degree that they are downwind under strong, dry wind conditions will affect the exposure of identified sensitive locations to potential dust impacts.

The proposed wind farm is located on a number of ridges to the east of the Tararua Ranges. Due to the topography and exposed nature of this location, it will be particularly susceptible to sustained periods of high winds, making the location suitable for a wind farm but also providing frequent conditions for the generation of windblown dust from exposed surfaces.

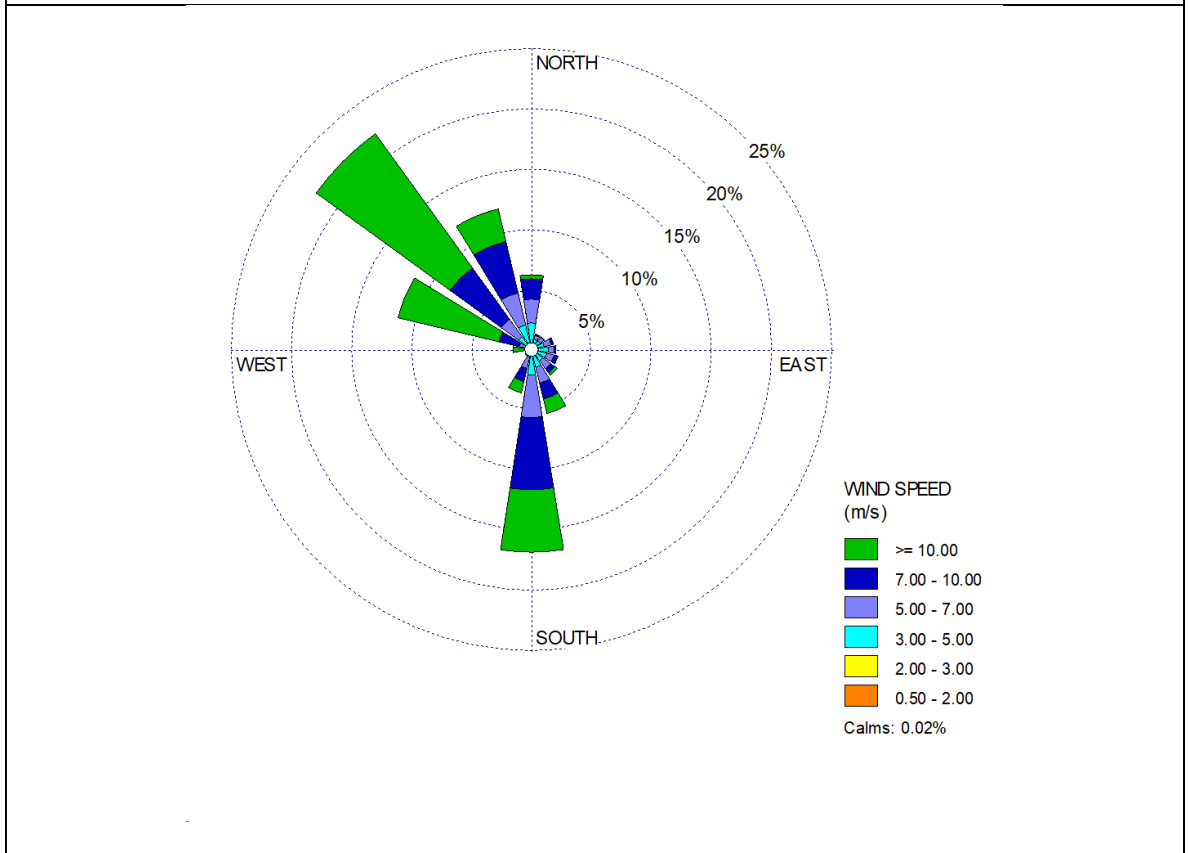
[4] IAQM, Guidance on the assessment of dust from demolition and construction, January 2024 (Version 2.2)
[5] Victorian EPA, Recommended separation distances for industrial residual air emissions, March 2013
[6] Mt Munro Wind Farm, Ecological Assessment, Boffa Miskell, 19 May 2023

Meteorological data has been provided by the Meridian for the Site for the period June 2020 to January 2024. A summary of the data for the site is presented as wind roses in Figure 3.1. Wind roses graphically summarise wind speed and direction data over a period of time. The petals of the wind rose show the direction that winds come from – their length indicating the frequency of winds from that direction. The different colour bands within each petal indicate the frequency of wind speeds from that direction. The predominant wind directions at the site are from the northwest and directly from the south.

Wind entrainment of dust from exposed earthworks areas or stockpiles occurs under higher wind speeds and 7 m/s is commonly used as a threshold wind speed for wind entrainment. Figure 3.2 is a further wind rose showing only strong winds that are 7 m/s (hourly average) or greater and clearly demonstrates the prevalence of strong winds from the northwest and south, which is the same pattern as for overall winds. There is a high frequency of strong winds at the site, with 65% of the winds greater than 7 m/s.

Therefore, areas north and southeast of the areas of proposed works have the greatest potential to be exposed to dust generated from the Project.

Meridian Wind Farm (Mt Munro). 16/06/2020 0:00 – 10/01/2024 5:00.



Meridian Wind Farm (Mt Munro). 16/06/2020 0:00 – 10/01/2024 5:00. Strong winds only

Figure 3.1: Summary of Meteorological data for the period June 2020 to January 2024

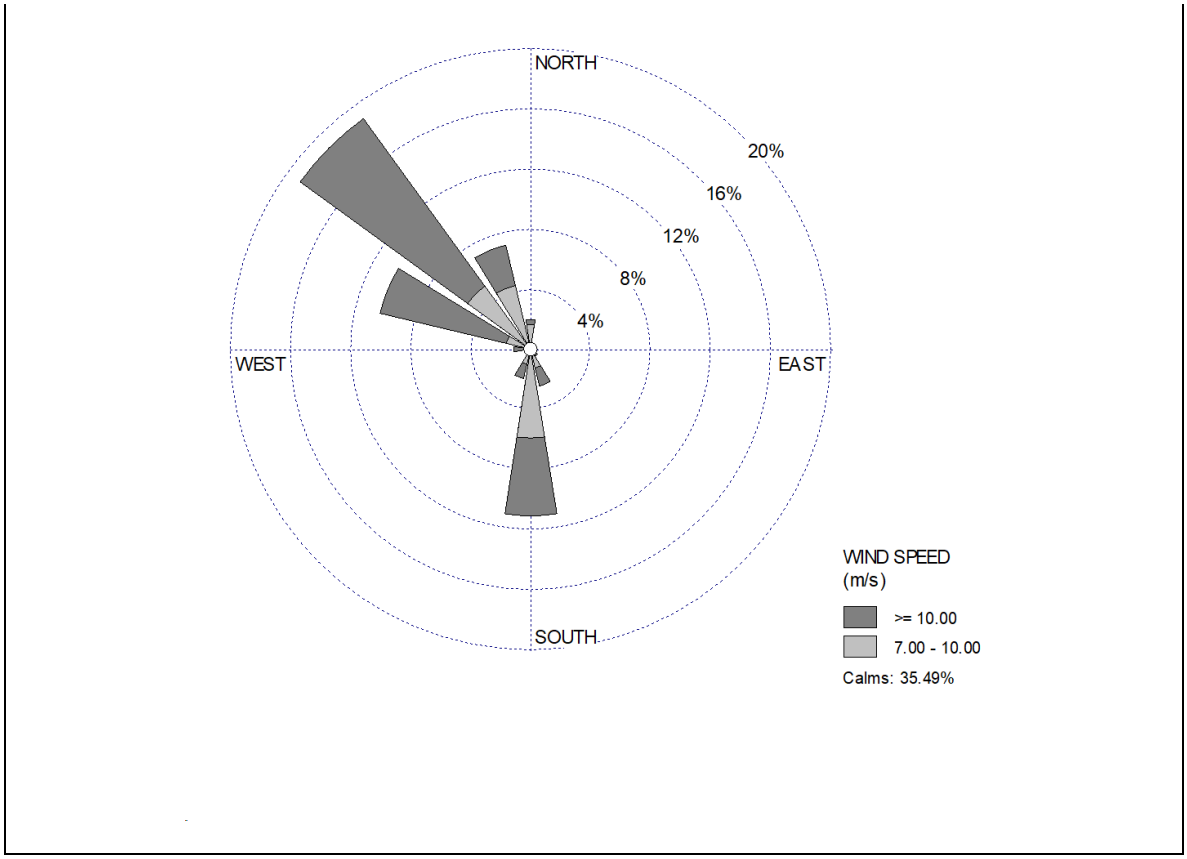


Figure 3.2: Summary of Meteorological data showing strong winds that are 7 m/s (hourly average) or greater

4 Assessment methodology

The Ministry for the Environment guidance states that the emphasis in a dust assessment should be on the appropriate management and control of dust to avoid adverse effects and that a qualitative assessment approach (rather than quantitative techniques such as dispersion modelling) is most appropriate[7]. The key consideration when assessing nuisance dust effects is whether the discharge gives rise to an 'offensive or objectionable' effect beyond the proposed designation boundary by considering the FIDOL factors, which are detailed further below.

The assessment approach comprises an initial screening to identify potentially affected locations based on the separation distance between sensitive activities and potential dust sources (see Section 3.1.2) followed by a more detailed assessment for those locations identified in the initial screening evaluation.

The detailed assessment of identified locations evaluates the risk of impacts based on a consideration of five factors, being frequency, intensity, duration, offensiveness and location (the "**FIDOL factors**") for each location from unmitigated sources of dust.

The FIDOL factors provide an objective framework for evaluating dust effects and are described as follows:

Frequency: The frequency of exposure to dust impacts experienced at a given location. The frequency of exposure depends on both the frequency of occurrence of discharges and the frequency of weather conditions that could transport any discharge towards a sensitive location.

[7] Ministry for the Environment, Good Practice Guide for Assessing and Managing Dust, November 2016

Intensity: The intensity of dust impacts depends on the degree to which dust sources are controlled but also the separation distance between a source and the receptor.

Duration: The duration of exposure depends on how long a sensitive location may be exposed to dust from a source.

Offensiveness: The offensiveness of dust relates to the nature of the dust in terms of its character or ability to soil or cause abrasion of surfaces.

Location: The location factor relates to the sensitivity of the location being assessed, and is typically expressed as low, medium or high. With regard to receptor types, I have attributed the following sensitivities to dust impacts:

- Residential dwellings: high sensitivity; and
- Pastoral grazing land/forestry: low sensitivity.

The FIDOL assessment is informed by a review of exposure of sensitive locations to certain wind conditions to inform the potential frequency and duration of potential effects. This focuses on the occurrence of strong winds during dry weather, as these are typically the most conducive weather conditions for causing significant unmitigated dust emissions from earthworks and construction activities.

5 Assessment of effects

5.1 Introduction

A separate FIDOL assessment has been carried out for the into three main project activities as follows:

- effects associated with the construction activities and construction yard, including the access roads on-site;
- effects associated with vehicles on Old Coach Road; and
- effects associated with the on-site concrete batching plant.

Table 5.1: FIDOL evaluation construction activities

FIDOL Factor	Evaluation
Frequency	Frequency of exposure to dust impacts depends on the frequency of activities that could generate dust and the frequency that a sensitive location (sufficiently close to be impacted) is downwind. As the construction activities will occur over the project construction period including potential stockpiling of materials and open earthworks during dry periods, the frequency of dust generation is assumed to be continuous. When considering the frequency of winds, as shown in Section 3.2, the predominant wind directions are from the northwest and south, meaning that properties to the north and southeast of the Site are the most frequently downwind.
Intensity	The intensity of impacts depends on the scale of emissions from the dust source and the distance a sensitive location is from that source. Assuming that standard dust control measures are in place and the separation distances from the works areas to dwellings being over 200 metres any dust exposure would be very low or negligible.
Duration	The duration of impacts is a function of the duration that dust generating activities are undertaken and the duration that a sensitive location may be downwind of those activities. As for frequency, it is assumed that potential sources will operate for the duration of works within an area. The duration of wind events is largely linked to the frequency that a given sensitive location is downwind of a dust sources.

FIDOL Factor	Evaluation
Offensiveness	The offensiveness factor relates to the nature of the dust that may be generated. The nature of dust from the site will be largely inert soil and aggregate derived dust, typical of dust generated in the wider receiving environment. As such, the dust will not be especially offensive in character when compared with the likes of coal dust or other hazardous dusts.
Location	In terms of location, no receptors were identified as having a moderate or high sensitivity to dust effects due to the separation distances.

Overall, based on the FIDOL evaluation, the risk of dust effects from construction activities is low, with separation distances sufficient to mitigate any residual dust from construction activities.

Table 5.2: FIDOL evaluation concrete batching plan

FIDOL Factor	Evaluation
Frequency	The main potential discharge of dust from the operation of the concrete batching plant is associated with the filling of the cement silo. The concrete batching plant will primarily be used for the construction of the foundations for the turbines and some ancillary activities. Overall, it is expected it would be used on approximately 30 occasions with refilling of the silo required during these periods.
Intensity	The concrete batching plant will be fitted with a silo filter, and refilling interlocked from the cement tanker to the silo. This ensures that during normal operation any discharges are minimal. In the event of filter sock failure, the discharge of cement dust may occur which could have moderate dust effects within 100 metres of the cement silo.
Duration	Discharges to air will only occur during refilling of the cement silo. The duration of filling would not exceed one hour at a time.
Offensiveness	The offensiveness factor relates to the nature of the dust that may be generated. Cement dust has a high pH and would be considered more offensive in character when compared to other sources of dust such as inert soil and aggregate derived dust.
Location	The concrete batching plant is proposed to be located on the ridgeline in the middle of the site. There are no sensitive receptors within 1km of the plant.

Overall, based on the FIDOL evaluation, the risk of dust effects from the concrete batching plant is low, with separation distances sufficient to mitigate any dust from the operation of the concrete batching plant.

Table 5.3: FIDOL evaluation rock crushing

FIDOL Factor	Evaluation
Frequency	As rock crushing will occur over the site establishment, bulk earthworks and civils phases of project where suitable material is identified, the frequency of dust generation is assumed to be continuous. When considering the frequency of winds, as shown in Section 3.2, the predominant wind directions are from the northwest and south, meaning that properties to the north and southeast of the Site are the most frequently downwind.
Intensity	The intensity of impacts depends on the scale of emissions from the dust source and the distance a sensitive location is from that source. Assuming that standard dust control measures are in place and the separation distances from the crushing operations to dwellings being over 250 metres any dust exposure would be very low or negligible.
Duration	Discharges to air will only occur during the operation of the crusher. Depending on the nature of the rock identified, this could be operated throughout the project.

FIDOL Factor	Evaluation
Offensiveness	The offensiveness factor relates to the nature of the dust that may be generated. The nature of dust from the crusher will be largely aggregate derived dust, typical of dust generated in the wider receiving environment. As such, the dust will not be especially offensive in character when compared with the likes of coal dust or other hazardous dusts.
Location	The rock crushing plant is proposed to be located within valleys and gullies away from the property boundaries and not closer than 250 metres from the property boundaries.

Overall, based on the FIDOL evaluation, the risk of dust effects from construction activities is low, with separation distances sufficient to mitigate any residual dust from rock crushing activities.

Table 5.4: FIDOL evaluation site access

FIDOL Factor	Evaluation
Frequency	The frequency of dust impacts from the site access road during construction is dependent on the number of vehicle movements. The proposed light traffic movements vary over the project and would be up to a maximum of 40 to 100 movements per day depending on the phase of the works with 80% of these during the morning and evening peak. Heavy vehicle movements are predicted to be between 106 and 522 movements per day, with the highest movements during the civil works and turbine installation, which will occur over 16 weeks of the 32 week construction programme.
Intensity	Road dust can result in both nuisance and health effects to dwellings adjacent to unsealed roads. The effects are greater the closer dwellings are to the road, with the highest intensity of dust occurring at dwellings closest to the road compared to those set back away from the road (studies have shown that road dust can extend more than 80 metres from the road[8]).
Duration	Each vehicle will result in dust effects over the duration of the movement across the road, assuming each vehicle takes one minute to traverse a section of road and for dust to settle. Dust impacts could occur over the whole duration of the construction works.
Offensiveness	Similar to dust from construction activities, dust from unsealed roads will not be especially offensive in character when compared with the likes of coal dust or other hazardous dusts. However, it may contain a higher fraction of very fine material due to the pulverising effect of the wheels on heavy vehicles. As such dust clouds may be more visible and persistent than for construction activities and there is a greater risk of health effects from exposure to fine articulate matter.
Location	There are 5 dwellings located within 120 metres from Old Coach Road that are expected to be sensitive to dust effects from vehicle movements.

Overall, based on the FIDOL evaluation, the potential effects associated with dust from the vehicle movements along old coach road, without any mitigation or controls would be more than minor with 5 dwellings likely to be impacted from the proposed traffic movements.

5.2 Summary

Based on the FIDOL evaluation of the different activities that could generate dust, the risk of adverse effects of dust from the construction activities and yard areas as well as the concrete batching plant and mobile rock crushing plants is very low. Conversely, without further controls or mitigation, there is a significant risk of adverse dust effects at houses along Old Coach Road from heavy vehicle movements on the unsealed road.

[8] Impacts of exposure to dust from unsealed roads, April 2017, NZ Transport Agency research report 590

6 Mitigation

There are a number of possible mitigation methods that could be used to reduce or avoid dust effects from vehicle movements on Old Coach Road which are discussed below.

Table 6.1: Evaluation of possible mitigation methods

Possible method	Effectiveness in reducing/ avoiding dust
Wet suppression using water.	This can be moderately effective but is dependent on the frequency of water application and availability of sufficient water. A reliable water supply would be required to maintain the road in a damp state.
Reduction/ control of vehicle speeds.	By itself, control of vehicle speeds is moderately effective for light vehicles, but is less effective for heavy vehicles unless vehicle speeds are kept very low (< 15 km/hr). Could be used in conjunction with other methods such as wet suppression or chemical treatment.
Chemical treatment of road surface.	The effectiveness of chemical treatment varies depending on the type of chemical used and the traffic volumes and types. The most common chemical used is Lignin sulphate which is moderately effective for roads with light traffic, but requires frequent refreshing particularly following rainfall.
Sealing of the road	Sealing of the road is the most effective solution as this eliminates the source of the dust (being the aggregate road surface). It is also effective for all vehicle types and would be effective over the full duration of works.

Overall, the most effective method to control dust would be to seal the road. As the road is required to be upgraded as part of the project, this could be incorporated into the works. Sealing the road would remove the potential dust source and therefore dust impacts from the use of Old Coach Road would be negligible. This would also reduce the overall vehicle movements required as a proportion of the vehicle movements would be associated with water trucks to suppress dust on the road.

The use of the either chemical treatment or wet suppression (or both together) along with control of vehicle speeds would reduce the intensity of dust, but would require on-going application of water and/or chemicals and enforcement of vehicle speed limits. The use of wet suppression would be challenging during dry months due the volume of water required and the speed at which the road can dry out. If chemical treatment was applied, this would require regular application and may not be effective during wet periods. Overall, the use of wet suppression or chemical treatment with speed controls would reduce the intensity of dust, but the risk of dust effects would remain.

7 Conclusion and recommendations

The assessment of dust effects has identified that the risk of dust effects from construction activities, including the yard/ laydown area and the concrete batching plant and rock crushing, is low due to the separation distances between the proposed works areas and sensitive activities.

The main risk of dust effects is associated with construction traffic using Old Coach Road to access the Site. Old Coach Road is unsealed and with the predicted vehicle movements of up to 622 movements per day the effects of road dust on adjacent dwellings off Old Coach Road could be significant without additional controls. With the effective application of wet suppression and/or chemical treatment along with speed limits for vehicles, the effects could be managed. However, the risk of dust effects during particular hot and windy weather conditions cannot be avoided. If section of Old Coach Road from SH2 to the Site access point was sealed, dust effects from vehicle movements along Old Coach Road would be negligible.

8 Applicability

This report has been prepared for the exclusive use of our client Meridian Energy , with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd
Environmental and Engineering Consultants

Report prepared by:	Authorised for Tonkin & Taylor Ltd by:
.....	.....
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APPENDIX 2

NPS-HPL REPORT

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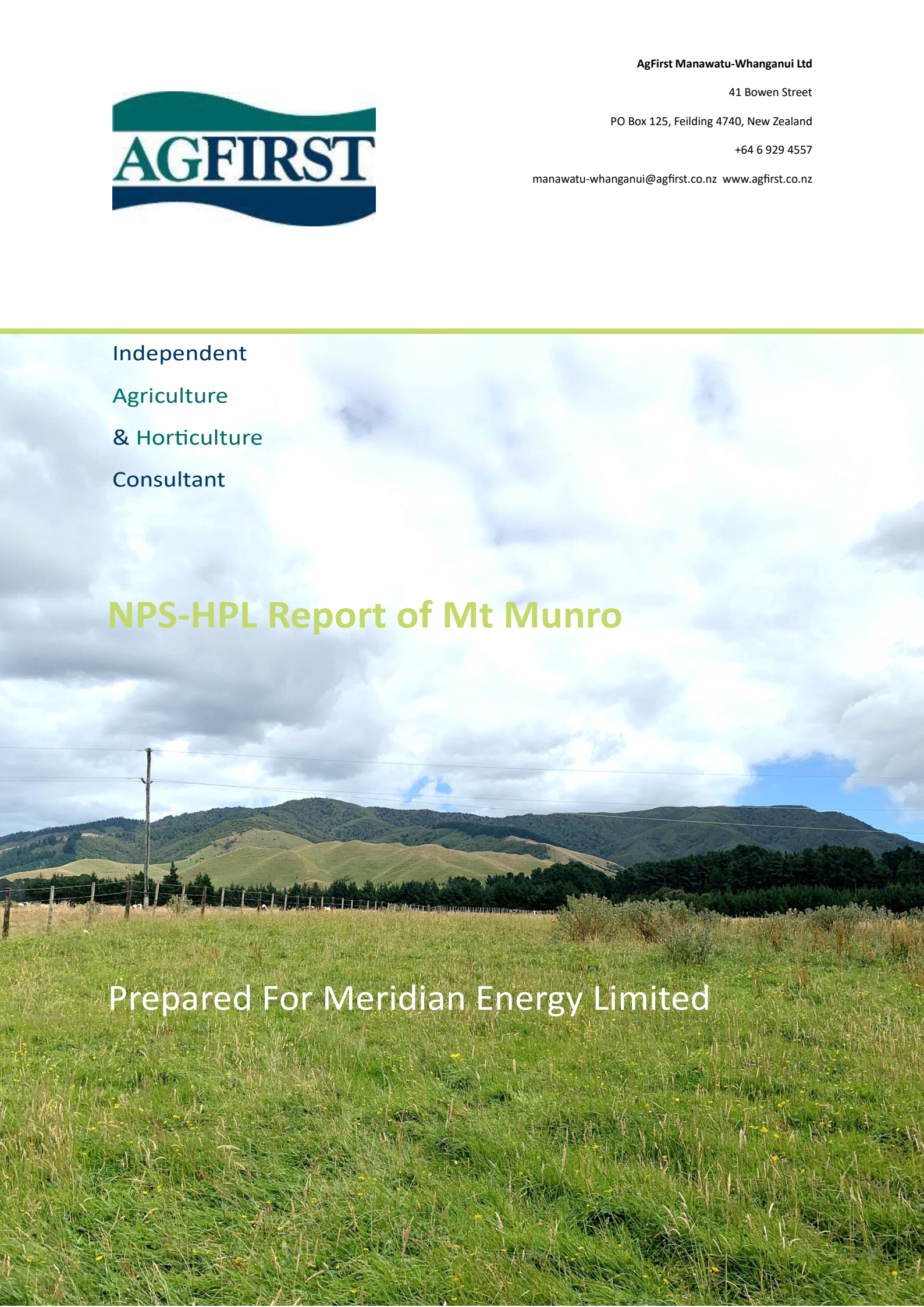
NPS-HPL Report of Mt Munro



Prepared For Meridian Energy Limited

Disclaimer:

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1.0 INTRODUCTION

AgFirst Manawatu-Whanganui has been engaged by Meridian Energy Limited to advise on whether and to what extent the National Policy Statement for Highly Productive Land (NPS-HPL) is engaged by the resource consent application for the proposed Mt Munro windfarm. AgFirst was engaged following the processing Council's issuing an *Additional Information Request* on 20 December 2023. This information request sought:

- Considerations on the sufficiency of the Manaaki Whenua Landcare Research Mapping (Matter 17);
- Quantification of the amount of highly productive land in the Tararua District, and the % loss to that land from the proposal (Matter 18(b)); and
- Reverse sensitivity effects resulting from the proposal on land-based primary production (Matter 19).

As set out in more detail below, AgFirst considers that:

- the Meridian Energy proposal for the Mt Munro windfarm satisfies the applicable specified pathway of the NPS-HPL, including that there is an operational need for the substation on HPL;
- Land Use Capability mapping is of sufficient scale to locate HPL on the site; and
- there is insignificant loss of HPL in the district and the reserve sensitivity concerns are minimal and will be mitigated.

2.0 LAND USE CAPABILITY AND SOIL TYPE

Matter 17 of the *Additional Information Request* is as follows:

> *Thank you for confirming that the Manaaki Whenua Landcare Research Mapping shows LUC3 land within the site. Please confirm if/why you consider this mapping to be of a sufficient scale and detail to accurately locate all highly productive land on the site. If you do not believe it is sufficient, please provide a soil classification assessment with updated mapping, and an updated assessment that addresses any changes.*

LUC Class 1, 2 or 3 land is defined in Clause 1.3(1) of the NPS-HPL as "*land identified as Land Use Capability Class 1, 2, or 3, as mapped by the New Zealand Land Resource Inventory or by any more detailed mapping that uses the Land Use Capability classification*". This means that if a region or district has more detailed LUC mapping than the original New Zealand Land Resource Inventory (NZLRI - held by Manaaki Whenua), then that can be used by the relevant local authority to identify HPL. The region currently has no more detailed mapping, and therefore, NZLRI is of sufficient scale as it is currently the only approved mechanism to locate HPL as per the NPS-HPL. Individual site-specific assessments are currently unable to be used to inform the LUC class as per the NPS-HPL.

The methodology of the AgFirst assessment is using the NZLRI to inform the LUC units. The main resources used were the New Zealand Land Use Capability Survey Handbook[1] and the Land Use Classification of the Taranaki-Manawatu Region[2]. Prior to the assessment, the initial LUC classification

[1] Lynn, I. H., Manderson, A. K., Page, M. J., Harmsworth, G. R., Eyles, G. O., Douglas, G. B., Mackay, A. D., Newsome, P. J. F. (2009). Land Use Capability Survey Handbook – a New Zealand handbook for the classification of land 3rd ed. Hamilton, AgResearch; Lincoln, Landcare Research; Lower Hutt, GNS Science. 163p. Retrieved from: https://www.tupu.nz/media/jzbjrpy4/land-use-capability-luc-survey-handbook-3rd-edition.pdf

[2] Fletcher J.K., Land Use Capability Classification of the Taranaki-Manawatu Region (1987)

of the land was identified using regional council mapping and the national LUC mapping data from the Manaaki Whenua website[3].

As per Figure 1 below, 41 hectares of the overall 900-hectare area on which the wind farm is proposed is claimed to be LUC 3s2 which is all HPL under the NPS-HPL. LUC 3s2 occurs on Pleistocene aged terraces in hill country with varying land uses. The soil is loess, volcanic ash and/or fine textured greywacke and volcanic alluvium overlying gravels. Soil has stones throughout the profile which are generally small so do not hinder cultivation. Common land uses include intensive grazing, cereal cropping, root, and green fodder crops. Land use options could be intensified to include cropping and horticulture with shelterbelts and irrigation. According to the LUC handbook, the average stocking rate is 16 stock units per hectare[2].

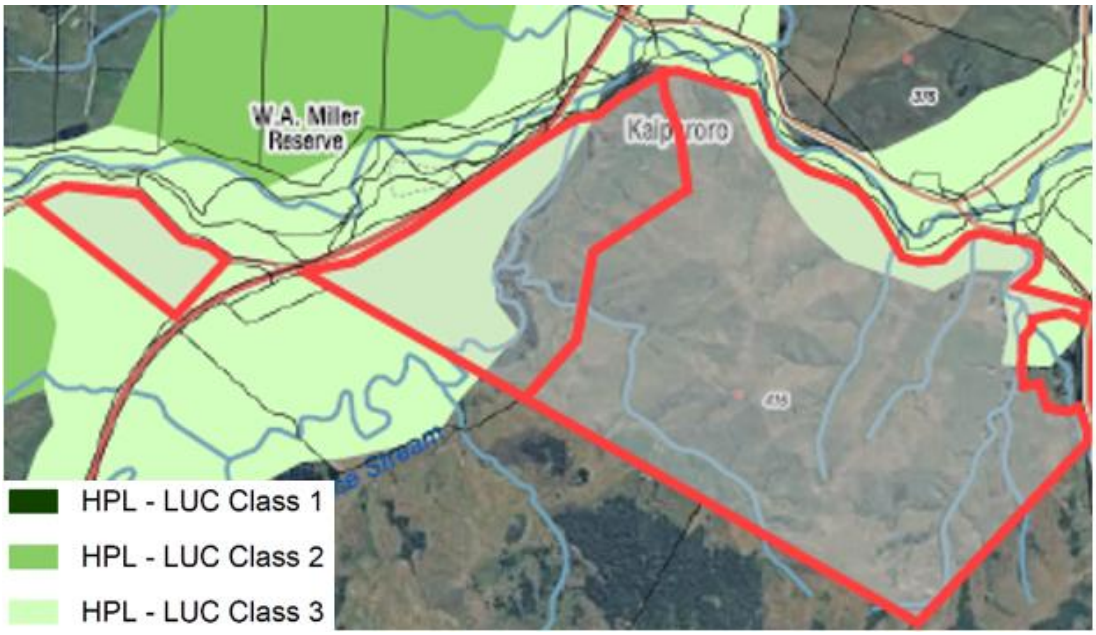

Figure 1: HPL on Mt Munro

There are two main resources used to identify soil type including Horizons Regional Council soil maps and Manaaki Whenua SMaps. Kopua stony loam is the predominant soil type of this site identified using Horizons Regional Council maps[4] which is a shallow and stony soil. This soil occurs in upper valleys of rivers draining the Western ranges. Kopua stony loam is located in a cool, wet climate in higher rainfall areas. Suitable land uses include pastoral farming and forestry. This soil is not suitable for intensive cropping due to its soil properties. Good soil fertility is required for high production pastoral land use on this soil. Soil fertility on this site, however, is unknown.

In accordance with SMaps[3], the predominant soil type is Eketahuna_17a.1 which is a brown soil. These soils have a brown or yellow-brown subsoil below a dark-grey topsoil. It is formed in alluvial sand silt or gravel deposited by running water, from hardstone parent material. The soil is moderately deep and is well drained with very low structural vulnerability, medium N leaching potential and very low waterlogging vulnerability. The topsoil has a silt texture and is slightly stony, and the subsoil has silt textures and a gravelly layer at 45cm and below.

A site visit on January 25th, 2024, was used to confirm the soil characteristics, inform productive capacity and any potential limitations. Both the LUC unit and soil type was confirmed on the site visit as the soil type was stony and had a silt topsoil (Photos 1-3). The stony flats have a soil limitation which

[3] https://ourenvironment.scinfo.org.nz/maps-and-tools/app/Land%20Capability/lri_luc_main
[4] https://maps.horizons.govt.nz/Viewer/?map=fabf5ddf297242c8b4d76519e6b61f26

confirms the major restriction or hazard to its use is a limitation within the rooting zone. The degree of stoniness within the profile determines the LUC class. The increase in size and number of stones equals an increase in the LUC class i.e. from LUC 2 to 3.

Photos 1-3: Soil profile from visit

3.0 QUANTIFICATION OF HIGHLY PRODUCTIVE LAND IN THE TARARUA DISTRICT

Matter 18(b)[5] states:

> *For clause 3.9(3)(a) – Quantify the amount of highly productive land in Tararua District and the % loss to that land from this application.*

The Tararua District is 436,421 hectares in area, of which 78,272 hectares or 17.9% (Table 1) is HPL (defined as Land Use Capability (LUC) 1, 2 or 3). The location of HPL in the District is shown in Figure 2 below. Figure 3 provides an image of HPL regarding structures associated with the proposed wind farm.

District	Tararua	
LUC	Area (ha)	%
1	549	0.1%
2	31,370	7.2%
3	46,353	10.6%
4	22,247	5.1%
5	1,375	0.3%
6	211,112	48.4%
7	105,472	24.2%
8	16,851	3.9%
Unclassified/Other	1,092	0.3%
Total	436,421	

Table 1: Tararua District LUC Distribution

[5] Meridian will directly respond to Matter 18(a).

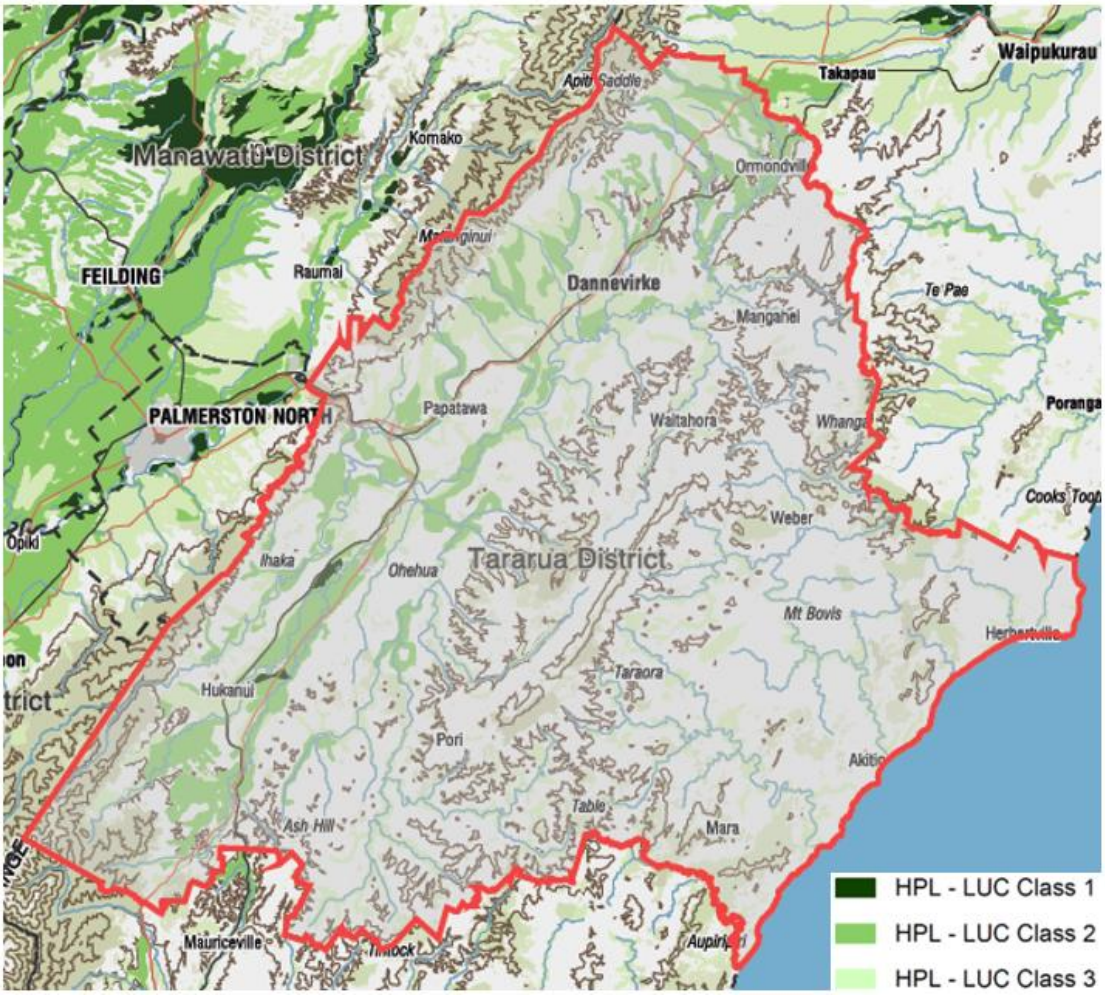

Figure 1: Tararua District HPL Map

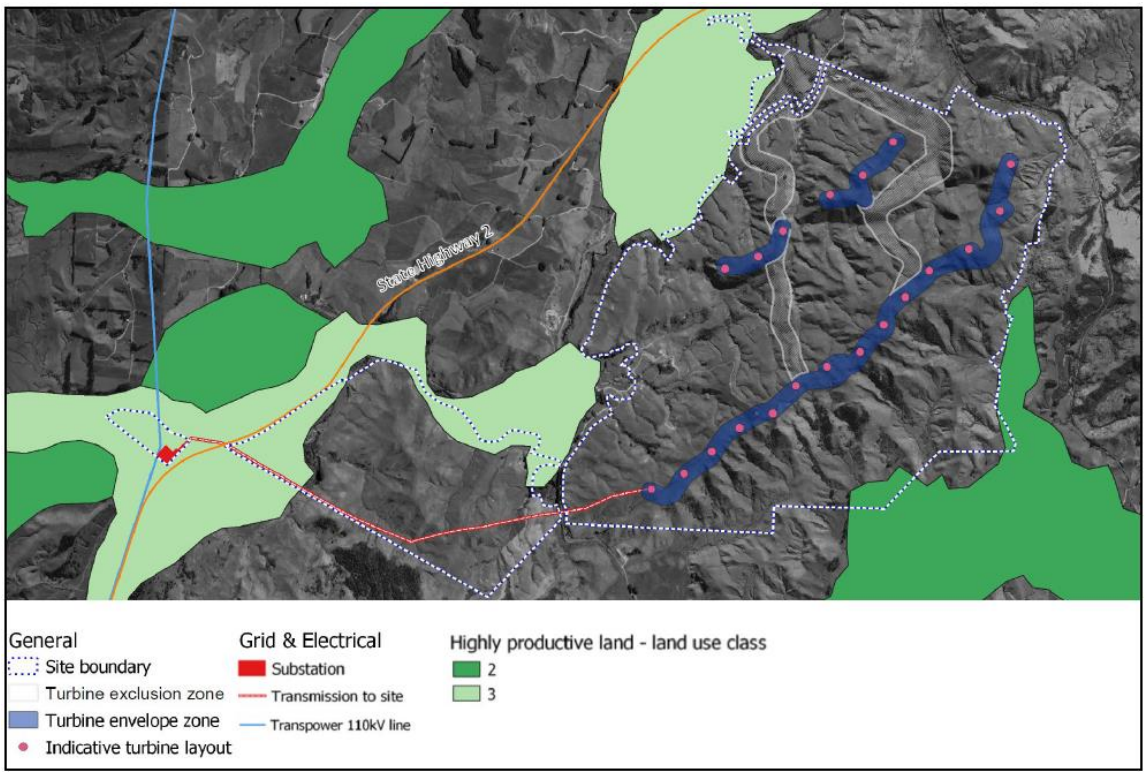

Figure 3: Mt Munro HPL Map

In total, there is 41 hectares of HPL on the Mt Munro site. Of the HPL, only 1 hectare will be impacted by wind farm structures (specifically the substation). The balance will remain in pastoral land use.

Images showing the location of the substation are as follows.

Photos 4-7: Location of substation

Based on the above, there is a 0.0013% decrease in HPL in the Tararua District as a result of the proposal. This is minimal to insignificant from a district level. The 1-hectare area of the substation will be permanently removed from land based primary production, but the surrounding land will continue to be used for primary production. There will be minimal loss of the availability of HPL from the installation of the transmission line which will be 0.001 hectares which is will not cause any noticeable effects. Land based primary production can continue at full capacity with no reduction in stock carrying capacity required as a result. As the location of the transmission line is adjacent to the fence line it is unlikely land productivity will be affected as a result.

4.0 REVERSE SENSITIVITY EFFECTS ON LAND BASED PRIMARY PRODUCTION

Matter 19 states:

> *To assess the proposal against NPS-HPL clause 3.9(3)(b) and respond to wider reserve 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.*

Actual or potential reverse sensitivity effects on land based primary production from the proposed wind farm are minimal and will be mitigated. As the land parcels will continue to be used for land

based primary production post the construction of the wind farm, weed and pests still need to be controlled, and fertiliser needs to be applied to maintain soil fertility and pasture production.

Weed control can still occur through quad bike or tractor spraying methods. Pest control is also undertaken via ground-based applications including trapping, poisons, and culling methods. Fertiliser applications can be spread by ground spread methods i.e. trucks, motorbikes on flat to gentle hill country. Steep hill country is applied using aerial spreading technology. Most truck and aerial spreading methods have advanced GPS technology to ensure placement of fertiliser is accurate and avoids unproductive and environmentally sensitive areas. Reverse sensitivity effects are minimised using pest and weed control, and fertiliser application methods that use GPS technology and ground spreading methods. Nearby livestock are unlikely to be impacted by the installation of a wind farm due to noise limits being met, and livestock being removed from the paddocks while wind farm construction works are being undertaken. At completion of the project, livestock will be able to graze up to and around the turbines and buildings.

5.0 NPS-HPL ASSESSMENT

Clause 3.9 includes Policy 8 where territorial authorities must avoid the inappropriate use or development of HPL that is not land-based primary production. Clause 3.9(2) provides a specific list of activities that may be appropriate on HPL – provided the measures relating to cumulative loss of the availability and productive capacity of HPL and reverse sensitivity effects in Clause 3.9(3) are applied.

Examples of activities include 3.9(2)(j) which it is associated with one of the following, and there is a functional or operational need for the use or development to be on the HPL:

(i) the maintenance, operation, upgrade, or expansion of specified infrastructure

The Mt Munro windfarm falls under this definition as the infrastructure delivers a service operated by a lifeline utility and it is recognised as regionally or nationally significant in a National Policy Statement, Regional Policy Statement, or regional plan. The wind farm is significantly important to the district and would produce around 300 GWh of renewable energy which would supply up 42,000 average homes.

The substation is associated within the operation of specified infrastructure under the NPS-HPL and there is an operational need for it to be on HPL, due it needing to remain close to where the transmission line connects with the existing Transpower 110kV line. The substation needs to be on Class 1-3 land due to the flat to undulating slope being the only land appropriate for the scope of these works.

6.0 CONCLUSION

In conclusion, AgFirst conclude that the Meridian Energy proposal for the Mt Munro windfarm satisfies the applicable pathway of the NPS-HPL. Land Use Capability mapping is of sufficient scale, there is an operational need for the substation on HPL, there is insignificant loss of HPL in the district and the reserve sensitivity concerns are minimal and will be mitigated.

Contact

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APPENDIX 3

TRAFFIC AND TRANSPORT EXPERT RESPONSE

22 February 2024
Job No: 1016884.0003P

Meridian Energy
Level 11, NTT Tower
157 Lambton Quay
Wellington 6011

Attention: Nick Bowmar

Dear Nick

Further S92 responses to transport-related issues for the proposed Mount Munro Windfarm Application APP-2022203902.00

1 Background

Tonkin & Taylor Ltd (T+T) was commissioned by Meridian Energy Limited (Meridian) to undertake an Integrated Transport Assessment (ITA) of the effects of a proposed wind farm (Mount Munro) in the Wairarapa. Meridian proposes to construct a 20-turbine (90 MW) wind farm on an 8.9 km^2 site, located east of State Highway 2 (SH2), approximately 35 km north of Masterton and 4 km south of Eketāhuna.

The resource consent application was lodged with Horizons Regional Council (HRC), Greater Wellington Regional Council (GWRC), Tararua District Council (TDC), and Masterton District Council (MDC) on 26 May and 9 June 2023. The application numbers with each consenting authority are as follows:

- HRC – APP-2022203902.00.
- GWRC – WAR230312 [39005, 39006, 39007, 39008, 39009].
- TDC - 202.2023.53.1.
- MDC – RM 230068.

Additional information was requested under Section 92(1) of the Resource Management Act 1991 (RMA) on 6 July 2023. A previous letter issued 8 September 2023 addressed transport-related information requests numbered 5, 7, 8, 9, 10, 18, 22, 25, 32, 33, and 34 in the Section 92 request. This letter addresses transport-related information requests numbered 21, 24, and 25 in the Section 92 request, as well as a further question raised during engagement.

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PO Box 13055, Christchurch 8141 P +64-3-363 2440 F +64-9-307 0265 E chc@tonkintaylor.co.nz

2 S92 Responses

Number in S92 Request	S92 Request	Response
21	*Many submitters raised concerns around the potential effects from increased traffic from the construction phase of the proposal. Please provide an assessment of traffic effects in the Eketāhuna township and identify any mitigation needed, including any change in safety for pedestrians crossing the main street as a result of increased traffic flows during construction.*	As a result of construction there will be an increase in traffic on SH2, as stated in the Transport Assessment report. During the period of construction when construction traffic is highest the forecast additional traffic is 311 vehicles per day (261 heavy vehicles and 50 light vehicles). The recent traffic volume estimate on SH2 at this location is 3,477 vehicles per day. If all construction traffic travels through Eketāhuna (noting that the most likely quarry locations are south of the site and therefore construction vehicles would not travel through Eketāhuna) the construction traffic represents a small increase and the total forecast traffic is within the expectations for a state highway. There is an existing pedestrian crossing on Main Street in Eketāhuna that provides a safe crossing point. This facility will continue to provide a safe crossing point with the forecast construction traffic. The effects of transporting the turbine components are documented in the Port to Site Assessment which indicates that both route options (from the ports of Wellington and Napier) will pass through Eketahuna. The assessment found that a diversion is required using Newman Road instead of SH2. Other mitigations include changes to fences and vegetation. The number of vehicles generated for transporting turbine components is very low relative to the existing traffic, and so too is the effect on pedestrians.
24	*Please provide an assessment of road safety effects on Old Coach Road if the road was to be sealed to assist with mitigating dust effects and identify any mitigation.*	Sealing is likely to improve the ride quality and increase average speeds along Old Coach Road. However, a sealed surface does provide a higher friction surface better for stopping and also improves visibility by reducing dust (which reduces visibility when following another vehicle). The project proposes a temporary speed limit of 30 km/hr on Old Coach Road during construction. This will reduce vehicle speeds and improve safety on Old Coach Road.
25	*During the construction period, will there be an impact (safety or otherwise) on rural delivery, and if so, is there a proposal to manage these potential effects? Have you sought feedback from Rural Mail to understand whether they have safety concerns delivering mail to*	Mitigations proposed by the project include. • A temporary speed limit of 30 km/hr (applying to all traffic) on Old Coach Road during construction. – This is typically a safe speed for interactions with other road users such as vehicles, pedestrians, and cyclists. – It is safest and simplest to restrict all traffic (including residents, visitors, deliveries, etc) to 30 km/hr with a temporary speed limit. This will increase the travel time for the most affected residents at the

Number in S92 Request	S92 Request	Response
	properties and if so whether these could be mitigated?	end of Old Coach Road from approximately 2 minutes to 3 ½ minutes (an increase of 1 ½ minutes). Other residents who live closer to SH2 will be less affected by this delay (for instance #47 will experience an increase of less than ½ a minute). • Parts of Old Coach Road will be widened to two way, to allow opposing vehicles to easily pass, particularly around corners where sight distance is limited. In total, over half the length of Old Coach Road is proposed to be widened. • Passing bays will be provided just before the SH2 intersection. – Another potential cause of delay is waiting to turn at SH2. Trucks especially will be slower and need a larger gap to enter SH2 traffic. To mitigate this, we propose installing a passing bay near the SH2 intersection (about Ch100) where construction traffic would pull over to let any vehicles behind pass so they can turn into SH2 first. This will generally remove this potential source of delay for residents. – Similarly, a passing point is proposed for vehicles travelling towards the site near the SH2 intersection (at about Ch100). This will allow any residents who have caught up behind construction traffic on SH2 to pass rather than attempting a passing manoeuvre on SH2 prior to reaching Old Coach Road. The Waka Kotahi Code of Practice for Temporary Traffic Management (CoPTTM) does not specifically define excessive delay but does refer to 5 minutes of delays to traffic as a typical maximum time permitted. Therefore, the up to 1 ½ minutes of delays expected is not considered to excessively impact residents or other services using Old Coach Road. Other services, such as rural delivery, visitors, or other businesses, will experience similar delays to residents. Overall, the proposed widening and temporary speed limit is expected to improve safety along Old Coach Road during the construction project. The CoPTTM may also consider temporary speed limits at other locations, although this is not expected at this stage.

3 Other items raised

Question	Response
Will there be any construction traffic effects on the section of Opaki-Kaipararo Road between Falkner Road and Mount Munro Road?	Table 2.2 in the Transport Assessment records the existing traffic volumes on Opaki-Kaipararo Road between Mt Munro Road and Falkner Road as approximately 130 vehicles per day. Even allowing for an increase as a result of the construction traffic described in Section 3 in the Transport Assessment, capacity along this section of Opaki-Kaipararo Road is not anticipated to be an issue as the low traffic volume (including construction traffic) is less than the assessment threshold capacity of 600 vehicles per hour stated in the transport assessment. Most construction traffic is expected to travel between SH2 and the internal transmission line access on Opaki-Kaipararo Road to the east of the Makakahi River bridge. Trucks are expected to be the largest vehicle to use this access. Tracking has been completed which showed that while it is technically possible for a truck and trailer unit to turn left out of the existing entrance, they would be required to fully cross into the opposing traffic lane across the adjacent Makakahi River bridge with limited visibility to opposing traffic. The report recommended that this entrance be restricted to truck units only, which is expected to mitigate safety concerns at this entrance. Meridian have advised that traffic associated with the construction of the wind farm will not use Opaki-Kapororo Road between its intersection with Mt Munro Road and its southern most intersection with State Highway 2. Therefore, no construction related traffic effects are expected on this section of Opaki-Kaipororo Road.

4 Applicability

This report has been prepared for the exclusive use of our client Meridian Energy Limited, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

We understand and agree that our client will submit this report as part of a S92 request for the resource consent application (APP-2022203902.00) and that Horizons Regional Council, Greater Wellington Regional Council, Tararua District Council, and Masterton District Council as the consenting authorities will use this report for the purpose of assessing that application.

Tonkin & Taylor Ltd

Report prepared by:

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Senior Civil & Transport Engineer

Report prepared by:

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Sam Wilkie
Senior Principal Transport Planner

Authorised for Tonkin & Taylor Ltd by:

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Nick Peters
Project Director

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APPENDIX 4

SOCIAL WELLBEING AND HEALTH MEMO

Memorandum

Incite (Wellington) Limited
PO Box 2058
Wellington
Tel 04 801 6862

To: Lauren Edwards, Horizons Regional Council

From: Tom Anderson, Incite

Date: 22 February 2024

Re: Proposed Mount Munro Wind Farm – Social Wellbeing and Health Effects Assessment

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1. Introduction

This memorandum provides Merdian's response to Matter 29 of the 20 December 2023 *Additional Information Request for Application APP-2022203902.00* from Horizons, Greater Wellington, Tararua District and Masterton District Councils on Merdian's resource consent application to establish, operate and maintain a wind farm at Mt Munro, south of Eketāhuna.

Matter 29 stated:

> *Many submitters raised concerns around their social wellbeing, and potential adverse health effects associated with the construction and operation of the windfarm (for example, sleep deprivations, migraines, asthma). Please provide an assessment of the proposal's potential social and health effects.*

2. Social Wellbeing Effects

Submissions received on the Mt Munro resource consent application raised a mix of issues which relate to social wellbeing.

Some submissions raised general concerns about social wellbeing effects, a lack of reporting on social impacts from the proposal, resultant effects on the wider Eketāhuna community in terms of business and employment, a lack of community resilience to deal with a proposal of this nature, and the lack of benefit to the community.

Other submissions considered there would be positive social effects, such as opportunities created for local contractors and businesses, from both a construction and ongoing maintenance perspective, and the ability for Meridian's 'Power Up' funding program to deliver positive community outcomes which could be accessed by schools, sports clubs and local organisations.

The New Zealand Wind Energy Association has produced a guidance document titled *Wind farm development in New Zealand – A framework for best practice* (2013, ISBN 978-0-473-24952-6). The

document is intended to provide *a common point of reference for all involved with a wind farm proposal to have access to an independent source of information about wind farm development in New Zealand*.

With regard to social impacts, the document states that:

> *Inevitably some people in a community will benefit from a proposal, some will be adversely affected, and others will neither benefit nor be adversely affected. As individual behaviour and community dynamics vary considerably it is a complex process to accurately predict the social impact of a wind farm development.*

The various opinions on social impact expressed in the submissions received reflect this statement. People's opinions on wind farms vary widely; while some individuals appreciate or do not mind the presence of wind farms in their community, others hold reservations or dislike them for various reasons. This is not uncommon for any large project introducing change to an area. People's attitudes can also change over time, typically with some of those initially opposed, becoming more favourably (or less negatively) inclined. It is important to recognise and respect that everyone is entitled to their own personal opinion, as perspectives may be shaped by diverse values, experiences, and priorities.

The variety of opinions that exist is also evident through the community engagement which Meridian has undertaken on Mt Munro (as documented and provided to Council).

The *Wind farm development in New Zealand – A framework for best practice* also states that:

> *Any evaluation of social impact should be based on the particular community that may be affected. Often local people and communities raise concerns about their connection with the surroundings and landscape as a potential social impact. However, such perceptions are best incorporated into an evaluation of the effect on landscape and amenity values.*

As such, concerns raised in submissions regarding, for example, landscape and amenity values are better responded to directly by a landscape expert, rather than being considered social impacts. To do otherwise may result in a double counting of effects.

A positive social wellbeing effect arises from the project for climate conscious members of the community, who may appreciate the increased contribution to the growth in renewable energy output. Again, we question whether this is a material additional benefit when the project's positive contribution to renewable energy outcomes is properly acknowledged.

Matters raised regarding the economic effect of the proposal are also not direct social wellbeing effects, although economic matters can influence social wellbeing. As was stated in the resource consent application, construction of the wind farm is likely to create between 100 and 150 new jobs, with the operation of the wind farm likely to create eight permanent new jobs. Likewise, the landowners who have a turbine or network connection on their properties will benefit though additional revenue.

As such, the proposal is likely to result in a larger and more economically active community. There are generally more resources, services and fundraising opportunities in communities with higher employment, which are positive social wellbeing effects.

Further, construction of the windfarm can result in potential training prospects and a career path through the project. This is an aspect that has been discussed with Ngāti Kahungunu ki Tamaki nui a Rua, and is supported by them.

In terms of other potential social impacts, the proposal is not on land which is used for public leisure and recreation, and therefore has no direct effects on these matters.

In summary, we do not anticipate any material adverse social effects will arise from the proposal, additional to effects arising in relation to direct effects such as visual amenity, noise and construction traffic. There will be a range of positive economic outcomes which are likely to contribute to social and community wellbeing.

To the extent that submitters are concerned about issues such as social division arising from Meridian seeking consent for a proposal some members of the community support and others oppose, these are subjective matters which are outside Meridian's control. In Meridian's experience to the extent they actually arise, these 'tensions' are unlikely to be enduring beyond the consenting and construction phases and are likely to be associated with most, if not all, proposals of this nature.

3. Health Effects

Process Effects

Several submissions raised the uncertainty and stress of the application process as a mental health effect. Meridian acknowledges that the resource consent process can be stressful, and that community members may be concerned about the potential impacts of this process on their daily lives and overall well-being.

Meridian has been engaging with the community to provide good quality information on the project and its effects, both positive and adverse. However, stress experienced through the application process, which is the process set out in statute, should not be considered an adverse effect of the proposed activity. It is a consequence of the public participatory process. Not providing the surrounding community and wider public an opportunity to participate in the consenting process for a project of this nature would also be likely to give rise to concerns from some sectors of the community.

Operational Effects

Several submissions raised concerns about physical health effects from the operation of the windfarm. It is not the norm now for dedicated health assessments to be required, or health evidence to be presented in relation to the operational effects of wind farms. To our knowledge, evidence on the health effects of wind turbines has not been presented in any recent windfarm applications.[1]

As recognised by the Environment Court, '*the overwhelming weight of evidence'* is that the NZS6808 standard provides an appropriate level of protection of both amenity and health arising from noise,[2]

[1] See, for instance, Contact Energy Limited's Southland Windfarm application, New Zealand Windfarm Limited's Te Rere Hau Windfarm repowering application, New Zealand Windfarm Limited's Aokautere extension application, Tilt Renewable Limited's Omamari Wind Farm application, Tararua Wind Power's Kaiwaikawe Wind Farm application, Tararua Wind Power Limited's Waipipi Wind Farm application, Tararua Wind Power Limited's Kaiwera Downs variation application, LET Ca pita l Number 3 Limited Partnership's Waiuku Wind Farm, and Taumatatotara Wind Farm Limited's (Ventus's) Taumatatotara Wind Farm variation application.

[2] *Motorimu Wind Farm Ltd v Palmerston North Council* [2009] NZEnvC 33 at 328.

including protection against sleep disturbance. This does not necessarily mean that all receivers will be satisfied with the outcome, but that is not required and would be an unworkable approach. An approach to noise management that provides an objectively reasonable outcome is appropriate and is what district plans and NZ Standards are intended to achieve. The acoustics assessment prepared by MDA confirms that compliance with the standard will be achieved for this windfarm, and Meridian has proposed conditions which require such compliance. The noise levels produced will therefore be of a sufficiently low level to avoid adverse health effects from noise. Likewise, the potential for shadow flicker has also been assessed and will be appropriately managed through the proffered curtailment condition.

Construction Effects

Submitters have expressed concern as to the potential health effects caused by construction traffic generating noise and dust. These effects have been considered by the noise and air quality experts, will be subject to mitigation and traffic management protocols recommended by the traffic engineers, and will be appropriately mitigated and managed through protocols in management plans and via consent conditions. In particular, as noted in the response to the December 2023 Additional Information Request Matter 14, air quality experts from T+T consider that if Old Coach Road is sealed, effects from dust will be negligible.

4. Conclusion

Overall, the proposal is not considered to give rise to any material adverse social or health effects.