




Meridian.

Harapaki Wind Farm Dust Management Plan

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Revision Approved by

Name	Position on Project	Signature	Date
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Document History

Version	Details	Author	Reviewer	Approver
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Note: Any additions or alterations to the Plan arising during the course of the Project are to be documented and attached to this Plan. This Plan will be reviewed annually or sooner as required.

Minimum Document Register

1	Project Manager – Meridian Energy
2	Project Environmental and Compliance Advisor – Meridian Energy
3	Environmental Manager – Meridian Energy
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5	Project Manager – Civils Contractor
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1.0 INTRODUCTION

This Dust Management Plan (DMP) has been prepared on behalf of Meridian Energy Limited (MEL) to identify and outline specific dust management methods to be employed at the Harapaki Wind Farm (Wind Farm) during construction.

Preparation of this DMP is required by the conditions of the resource consents granted for the project. The Wind Farm is consented via two consents, these being the Titiokura Windfarm RMA20190212 (TWF) and Hawkes Bay Windfarm RMA20190211 (HBWF).

Both consents¹ require the preparation of and implementation of a DMP as part of the overall Construction Environmental Management Plan (CEMP) for the project.

The Hawkes Bay Regional Resource Management Plan (HBRRMP) also outlines policies and rules² relating to discharges to air from dust. This DMP accounts for the appropriate management to achieve compliance with the HBRRMP.

The overall objectives for this Dust Management Plan are:

- All practicable steps will be taken to identify and reduce potential sources of dust effects on site.
- Monitoring of all earthworks areas and site working conditions is carried out to ensure that the potential for adverse dust effects is minimised.
- Dust control measures will be implemented on site to suppress any dust effects and contain effects within the boundaries of the Wind Farm construction zone and Wind Farm site boundaries (including potential effects on SH5).
- Any dust effects that do arise will be effectively recorded, reported and mitigated to prevent ongoing occurrences.

Overall, the key objective of this plan is to ensure that no nuisance dust effects occur outside of the Wind Farm site boundaries over the course of the construction activities.

2.0 POTENTIAL DUST SOURCES AND DUST EFFECTS

Construction of the Wind Farm will require large scale earthworks activities associated with establishment of access roads and tracks, building platforms as well as 41 turbine pads and associated earthworks disposal fill areas.

The location of these activities on elevated and exposed ridgelines creates a potential for the mobilisation of dust into the atmosphere and associated effects over the Wind Farm construction period. The Wind Farm is generally isolated from residential dwellings, however, is located in a highly visible location to the surrounding countryside and users of State Highway 5.

Specific areas where dust generation effects could occur during dry, windy conditions include:

¹ Condition 6E (TWF) and 5E (HBWF)

² Policy 69 and Rule 25.

- Construction of access roads.
- Construction activity on access roads including transportation of wind turbine components and other plant for installation.
- Construction of turbine and building platforms.
- Fill disposal sites.
- Stockpiles.
- Mobile crushing plant; and
- Concrete batching plant.

2.1 Main Site Area

The bulk of the construction activities will occur upon elevated plateaus and isolated ridge tops within Meridian's landholding, of essentially a large-scale hill country farm property. Surrounding land is also of large-scale farm properties, including plantation forestry. While the exposed nature of the Wind Farm core construction area creates a high potential for mobilisation of dust particles into the atmosphere during the road construction and bulk earthworks period, potential effects/affected parties are largely mitigated by the isolated nature of the site and the minimal potential for dust clouds or deposits to occur on any distant dwellings.

However, adverse dust effects could occur to other site users including landowners (e.g. dust settlement on pasture/farm buildings/water supply systems etc) as well as potential visual effects if significant dust clouds are generated on ridge top areas over the course of the construction activities.

The closest property to the site is the Mohaka Rafting site located to the south. While the prevailing wind will generally mean dust effects on this property will be avoided, monitoring of dust generation in northerly winds should be undertaken.

Furthermore, involvement in previous Wind Farm construction projects have identified that the highest potential for dust effects over the bulk earthworks period is upon the health and safety of construction staff and thus it is primarily in the interest of Meridian and the chosen site contractors to ensure that effective dust management methods are implemented over the course of the construction earthworks period.

2.2 Concrete Batching Plant

The Wind Farm construction includes the operation of a concrete batching plant (CBP) on an elevated plateau that is relatively exposed. The nature of the DMP is that potential dust issues could arise at the plant from dry sand stockpiles or potential cement spillages during dry, windy conditions.

Should potential dust issues arise from sand stockpiles they will immediately be wetted down with a hose or by a sprinkler truck and shall be continuously monitored and wetted down until windy conditions subside. Alternatively, stockpiles can be covered with secured geotextile, polythene or similar fabric.

The closed cement system (pneumatic transfer from tanker to silo) will minimise the potential for dry cement material becoming a dust nuisance. Furthermore, the cement

silos will be fitted with an automatic level control alarm to warn contractors of overfilling and reduce the potential for any spillage during transfer from tanker to silo. In the event that any spillages occur, spilt material will be immediately dampened with water to prevent it becoming airborne and scraped off the ground surfaces for disposal in an appropriate contained area ie. within the interceptor pond or within a covered area.

The CBP area comprises a low speed environment due to the confined area and site configuration including the batching plant machinery, interceptor pond and stockpile areas. At all times vehicles within the CBP area will be required to maintain speeds below 5km/hour. For these reasons, vehicle generated dust effects are not anticipated.

2.3 Work in proximity to SH5

For the construction of the Operations and Maintenance Building and the Substation, substantial works are required to form the necessary building platforms. If works are not managed effectively, there is the potential for dust mobilisation to affect the users of State Highway 5 to the west of the site.

The mobilisation of sediments from the Wind Farm site via the main entry access point will also be monitored to ensure dust generation potential is avoided.

3.0 DUST MANAGEMENT

Dust management will be the responsibility of the main site contractor. It is a key principle of the project that the contractor will take a proactive approach to dust management on the site, rather than a reactive approach once any potential effects are evident.

General principles to be adopted to ensure that potential dust effects are avoided include:

- Staging of earthworks activities as much as possible and progressive stabilisation of completed surfaces to ensure that exposed areas at any one time are minimised.
- Managing the route and speed of vehicles traversing the site taking into account potential dust mobilisation and effects.
- Monitoring and maintenance of potential nuisance dust effects.
- Implementation of appropriate control measures to suppress dust generation effects to within the windfarm works zone should dry/windy conditions be encountered.

Further details of these proposed dust management methods are outlined as follows.

3.1 Earthworks Staging/Progressive Stabilisation

Typically, earthworks throughout the site will comprise stripping of topsoil, shaping of underlying loess and weathered limestone materials followed by spreading of aggregate on road surfaces or re-placement of topsoil on batters/fill areas. Where possible, a progressive approach to covering and stabilisation of earthworks surfaces will be undertaken with surfaces being covered with either aggregate or topsoil within 10 working days (as a maximum) of completion or as soon as practicable.

Once either an aggregate or topsoil cover is established on completed earthworks surfaces it is considered that the potential for dust effects will be significantly reduced and all efforts will be made to promote vegetation of completed surfaces as soon as possible once a topsoil cover is achieved.

Access road upgrades and new road construction will generally include a cut and cover approach with aggregate along with the wetting of surfaces to help the material bed in. Utilising water carts where necessary will also provide benefits in reducing dust mobilisation.

3.2 Vehicle/Machinery Use

Core Site Area

Within the core site area, the highest potential for dust effects is associated with construction vehicles traversing haul roads/site access tracks during dry, windy conditions. Specific site management requirements which will be implemented to minimise potential vehicle/traffic generated dust effects will include:

- Controlling all vehicle speed on site (max 30km/h).
- Location/use of haul routes to minimise dust generation taking into consideration current weather conditions.
- Ensuring all traffic leaving the site is in a clean condition to avoid tracking of fine sediments onto State Highway 5. This measure is considered appropriate to ensure that the tracking of sediment onto SH5 and creating potential dust effects, is avoided. However, if site monitoring identifies that sediment tracking is occurring, a contingency comprising immediate employment of a sweeper truck/power broom to clean the road surface and installation of a truck wash at the site exit point will be implemented to prevent any further effects; and
- Ensuring any dry material being carted by trucks is adequately covered/secured.

At least one water cart will be established on site at the start of the access road construction works to dampen down any potential dust generating surfaces during dry, windy conditions and will be kept on site at all times with additional water carts being available on call if required. One water cart (minimum 6000 litre capacity) is considered sufficient to dampen surfaces along the initial length of the access road works which will occur closest to SH5.

Additional water carts will be on call at all times, for immediate deployment when an increased risk of dust is identified through weather monitoring and daily works programming. It is anticipated that at least two water carts will be present over bulk site construction works within the core site to suppress dust from exposed works surfaces.

3.3 Monitoring and Maintenance/Dust Control

Education of site staff on potential dust sources, effects and management requirements will form part of the site induction procedures required to be undertaken by all staff working at the site.

Dust monitoring throughout the project will be the responsibility of all workers and plant operators at the site with overall responsibility lying with the main Contractor Project Manager. Dust monitoring methods will occur through daily monitoring of weather forecasts/conditions and active works areas and through visual observations to check dust for any mobilisation within the site over the course of daily construction activities.

Site weather conditions and operative works areas will be monitored each morning by the Main Contractor and discussed at toolbox meetings to identify any areas at risk of creating dust effects and the required management measures to prevent effects occurring. Wind strength, wind direction, type of works, soil conditions and proximity to affected parties will be taken into account in making these decisions. Ongoing monitoring will also be undertaken by site staff throughout the day as conditions will change.

Should a high potential for dust effects be identified through routine weather monitoring and site working conditions, the first response will be to deploy a water cart to wet down potential dust generating surfaces to prevent any dust effects from extending beyond the site boundary where it may impact neighbouring properties.

- Water supply for dust control will be obtained from strategic water cart filling locations on site to minimise cartage and transportation around the site. The locations will be supplied from consented water sources established at the site at the outset of construction. If required off-site tanker deliveries will also be available.

Storage of water abstracted from the consented sources within either tanks or ponds will ensure that sufficient water is available for dust control under all weather conditions (i.e. via low rates of take pumped to storage over an extended period).

While unlikely, should dust suppression through water cart deployment be unsuccessful, with ongoing adverse dust effects being experienced, contingency methods to control dust effects will be employed to ensure that the effects cease. Contingency methods will include:

- Deployment of additional water carts.
- Further limiting vehicle speed/numbers within the subject area.
- Covering of problematic dust generating surfaces with topsoil, aggregate, geotextile, hydroseeding as required.
- Ceasing works within problematic areas until wind speed decreases or changes direction; and
- The use of dust suppression agents (subject to resource consent, if required) for example, chloride salt additives or polymers.

3.4 Utilisation of Suppressant Agents

If required a dust suppressant product may be utilised and applied at recommended levels to help mitigate against dust effects over a longer time period than treating dust with water alone. Dust suppressant agents are typically a ligno-sulphonate based

product and the product selected will be based on low environmental toxicity and effects and best for project use.

The utilisation of dust suppressants assists reducing water use and demand especially through the dryer months when need for dust control increases.

4.0 COMPLAINTS RESPONSE

It is a core principle of the DMP that liaison with adjacent landowners is undertaken throughout the duration of works to provide for updates on construction activities that could lead to high levels of dust generation and/or in times of dry weather. Any concerns that neighbours have can be rapidly communicated to site management and addressed.

Any dust complaints received will be taken seriously and matters raised shall be investigated and responded to as quickly as possible. The standard procedure for responding to any complaints received will be as follows:

1. Dust complaint received.
2. Details of complaint/complainant will be immediately forwarded to the Meridian Office for the Project Administrator to enter into the Complaints and Compliments Register (see CEMP Section 2.4.4), and forward to the appropriate person on site for a report.
3. The Meridian Project Manager is responsible for liaison with complainants and will oversee the complaints assessment procedure. The Project Manager will contact complainant to discuss the issue and determine the need for any specific mitigation requirements.
4. The Project Environmental and Compliance Advisor will liaise directly with the Contractor's Project Manager to implement dust control measures on site immediately to prevent any ongoing effects (e.g. cease works, deploy additional water carts/road sweeper).
5. Any additional dust control measures required to prevent any ongoing effects from the works will be maintained until the risk of further effects is removed.
6. The incident will be communicated to site staff through toolbox meetings and within site management reporting to ensure awareness of the potential issues and that similar incidents do not occur throughout the site.
7. The incident report, actions undertaken and close out of the complaint will be logged within the Complaints and Compliments Register.
8. Complaints received and assessed indicating non-compliance with the conditions of the resource consent and /or permitted activity rules shall be forwarded to Council(s).