Dust Management and Monitoring Plan – Burnham Quarry

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- Prepared for

Winstone Aggregates

- 2023

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1.0 Introduction

This Dust Management Plan - Burnham Quarry (DMP) has been prepared by Pattle Delamore Partners Ltd (PDP) on behalf of Winstone Aggregates (Winstones) for the proposed quarry near Burnham.

This document is a draft DMP and provides a draft framework for managing dust emissions from the proposed quarry. Following the consent being granted, the DMP will be reviewed and updated to reflect any consent requirements.

1.1 Purpose

The purpose of the DMP is to provide a framework for managing dust emissions from the proposed quarry to avoid or mitigate potential dust effects and in particular to:

- facilitate the avoidance, remediation, and mitigation of any adverse effects of discharges of dust generated from the reclamation and construction works associated with the expansion, and;
- promote proactive solutions to the control of dust discharges from the site.

1.2 Background

The proposed Burnham Quarry will produce a wide variety of aggregates, including basecourse, concrete aggregates and sealing chip that will be used in civil infrastructure projects in the Canterbury region. The site activities will include, overburden removal and bund construction, gravel extraction, aggregate processing, stockpiling and reinstatement of quarried land.

An assessment of the sensitivity of the receiving environment and identification of the location of highly sensitive receptors is provided in Section 2.5 of the Air Quality Assessment of Environmental Effects (AEE), dated XXX 2023). The location of the proposed quarry and the location of the nearby sensitive receptors are shown in Figure 1.

Figure 1: Site location and nearby receptors

1.3 Objectives

The objectives of the DMP are to inform the quarry operations and site personnel of management and mitigation measures for quarry activities to minimise the adverse impacts of potential dust discharges on the receiving environment.

The DMP methods are designed to be practical for Winstones to implement, while the document is intended to be continuously improved to adapt mitigation where needed to ensure the required outcomes.

2.0 Consent Compliance and Key Performance Indicator

The environmental objective of the DMP is to ensure that the site will be managed to comply with the consent conditions related to the discharge of dust to air. The relevant performance indicator to ensure that the site activities will not result in dust that is objectionable to the extent that it causes an adverse effect beyond the boundary of the site.

Relevant consent condition(s) will be included here if applicable.

3.0 Site Activities

There are a number of activities that will be undertaken in the course of quarrying the proposed site, this includes the following:

- Site Establishment and Enabling Works – Overburden material is removed for the establishment of the quarry entrance, site office, amenities, parking and weigh bridge, production zone and stockyards. Overburden material from this activity will be used to form a permanent bund along sections of Aylesbury Road and Grange Road.
- Creation of the Pit - The first extraction of material will create the production zone and stockpiling areas. Extraction will use the top-down method utilising excavators, wheel loaders and trucks.
- Entrance and Site Access - The entrance and exit of the site will be located on Aylesbury Road. The entrance to the site will include offices, meeting rooms, amenities, light vehicle parking and the weigh bridge. From the entrance platform there will be a ramp leading down to the quarry floor which will include a wheel wash and a flood wash. The site entrance and the ramp down to the quarry floor will be sealed.
- Production Zone - The production zone will house the processing plant which will include fixed plant as well as mobile plant as required.
- Primary and Secondary Stockyards - The primary stockyard will contain those products which have a higher risk of dust emissions, whereas the secondary stockyard is intended to contain products with a lower risk of dust emissions, bulk volume base coarse products, or slow-moving products.
- Extraction Zone – Before accessing the resource overburden will be removed first during a stripping campaign, with this material being stored in temporary bunds along the border of the site. Extraction of the resource will be undertaken using excavator, front-end loaders or wheel bucket excavators. Extracted material will be transported to the Production Zone using either trucks or conveyors.
- Silt Management – That exact methodology is yet to be confirmed, however it is most likely to be in the form of mechanical settling.

4.0 Sources, Management, and Mitigation Measures

4.1 Factors influencing dust discharge

The key factors influencing the discharge of dust from the proposed Burnham Quarry are:

- The size and the density of the material being handled. Coarse aggregate material content is unlikely to give rise to dust emissions when compared to fine clay material that might be found in overburden;
- The moisture content of the material. A high moisture content will act to bind particles and control any dust emissions;

- Strong winds blowing across exposed surfaces on dry days resulting in entrainment of dust material; and
- The extent of exposed areas.

4.2 Sources of Dust

The Site's key dust sources are as follows:

- Development and remediation of the site;
- Excavation of gravel;
- Site access road and other unsealed surfaces;
- Disturbing stockpiles; and
- Stockpiling.

4.3 Dust Control

Water will be the primary mitigation tool that Winstones will implement to control dust. The use of water prevents (or suppresses) fine particulate from leaving the surface and becoming airborne through the action of mechanical disturbance or wind. In effect, the water acts to bind the small particles to the larger material, thus reducing the emission potential.

While it is still unknown exactly how the water will be applied, it is expected to be undertaken using a combination of methods such as water carts, fixed and mobile sprinklers, etc., with water being applied at a rate as required to suppress dust.

As a benchmark for dust suppression the Ministry for the Environment Good practice guide[1] on assessing and managing dust recommends a water application one litre/m^2/hr.

4.4 Tiered Mitigation Measures

The proposed dust prevention on site uses a two-tiered approach. Tier 1 controls are employed routinely, and Tier 2 controls are implemented additionally in the unlikely situation that the Tier 1 controls do not prove to be fully effective. These control measures are summarised in Table 2.

Application of water for dust suppression as described in the Tier 1 and Tier 2 controls should be prioritised as shown in Table 2.

[1] Ministry for the Environment. 2016. *Good Practice Guide for Assessing and Managing Dust.* Wellington: Ministry for the Environment.

Table 1: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Tier 1 Controls (Routine)**	**Tier 2 Controls (Additional, as needed)**
Unpaved surfaces such as site access roads	• Limit the area of exposed surfaces as much as practical. • Cover surfaces with coarse materials where practicable. • Compact all unconsolidated surfaces where practicable. • Trafficked unsealed surfaces will be watered on a regular basis using sprinklers and/or water cart system. • An onsite speed limit of 30 km/hr will be enforced.	• Increase water application rate to ensure that in-use unpaved roads are kept damp. • Use polymer additives or chemical stabilisation to assist in forming a surface crust on site access roads only in rare occasion all other options are insufficient. • Further reduce speed limits.
Vehicles	• Limit load sizes and ensure even loading to avoid spillages. • As far as practical minimise travel distances and/or maximise buffer distances between site access roads and site boundary through appropriate site layout and design. • Deep sided trucks (dump trucks) are used for transport within the site to reduce spills. • As above, an onsite speed limit of 30 km/hr will be enforced. • The main haul road into the site is sealed to prevent dust.	• Limit vehicle speeds on unsealed surfaces to 10 km/hr when traveling within 250 m of the site boundary or when vehicle generated dust plumes approach the boundary of the site. • Dry soil material in trucks will be covered or wetted.

Table 1: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Tier 1 Controls (Routine)**	**Tier 2 Controls (Additional, as needed)**
	• Sweeping of the sealed road is undertaken as required. • Any spills of soil from vehicles are swept up and washed down on the same day as the spill. • All vehicles exiting the quarry will pass through the wheel before leaving the site.	
Disturbing all materials including the working faces	• The loading on to or removal of material from stockpiles will be only undertaken during low dust risk wind conditions (one hour average windspeed < 7.5 m/s). • Good practice machine operation will be implemented including minimizing drop heights and wetting dusty materials when needed (wind speeds above 5 m/s). • No materials will be disturbed when wind speeds are above 7.5 m/s.	• Adequate water suppression systems must be available at the site to dampen areas that are to be worked prior to any earthwork commencing and shall be used on the site until further earthworks in that area are not required.
Aggregate Processing	• Fitting water sprays and/or misters on the screens, crushers and conveyor transfer points. • Minimise drop heights from the loading of raw materials into the feed hopper and from stacking of stockpiles. • Locate mobile processing plant away from dwellings and below ground-level where possible (only applicable during the intimal phase if mobile plant is used).	• Dampen down raw material before entering the processing plant. • Reduce material throughput until any dust emissions can be controlled. • Use fog cannons as required.

Table 1: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Tier 1 Controls (Routine)**	**Tier 2 Controls (Additional, as needed)**
	• Enclosing dry screens.	
Stockpiles (including placement and removal)	• Locate stockpiles as far away as practicable from identified sensitive receptors, with high-risk material stored within the primary stockpile area and lower risk material within the secondary stockpile area. • Orientate stockpiles to maximise wind sheltering as much as possible. • Maintain the height of gravel stockpiles to a practical height, but no more than 5 metres above the surround ground-level. • Maintain the height of bunds to a practical minimum of 3 metres. • Load and remove stockpiled material from site as soon as practical. • No materials will be disturbed when wind speeds are above 7.5 m/s.	• Use polymer additives or chemical stabilisation to assist in forming a surface crust on stockpiles only in rare occasion all other options are insufficient. • Further limit the height and slope of stockpiles to reduce wind entrainment. • Vegetation of long-term stockpiles and bunds. • Dampen stockpiles if they are producing visible dust emissions.
Bund removal and rehabilitation	• Areas are incrementally backfilled at regular intervals and re-grassed with suitable grass species as soon as practicable to limit potential for dust generation from exposed surfaces.	• Use polymer additives or chemical stabilisation to assist in forming a surface crust on soil surfaces if delays in vegetation. • Addition of nutrients (fertiliser) to increase fertility and promote and maintain even revegetation.

Table 1: Sources of Dust and Tiered Controls to be Employed		
Source of Dust	**Tier 1 Controls (Routine)**	**Tier 2 Controls (Additional, as needed)**
		• Soil moisture management via irrigation (if available) to promote and maintain even revegetation.
Miscellaneous	• Plan site layout so that mobile machinery and dust causing activities are located away from receptors as far as is practicable. • Ensure sufficient water is available on site. • Take account of daily forecast wind speed, wind direction and soil conditions before commencing an operation that has a high dust potential. • All site machinery should be regularly maintained to ensure optimal operation. • Targeted watering on areas within 250 m of sensitive receptors during high dust risk conditions.	• Targeted watering on areas identified as high-risk for dust discharge as a result of visual inspections.

Table 2: Priority of Water Application for Dust Suppression			
Water Priority	**Type of Source**	**Proximity to Boundary**	**Wind Direction**
1	Overburden removal and bund construction/deconstruction	Any	Any
2	Active Haul Roads and Site Access	Any	Any
3	Processing Plant and Stockpiles	Within 250 m of the site boundary	Towards closest boundary with nearby receptors.
4	Working Area	Any	Towards closest boundary with nearby receptors.

5.0 Monitoring

To ensure that dust mitigation measures are implemented and are effective at minimising dust emissions, presented in Table 3 is a monitoring plan developed for Winstones. The frequency of the monitoring is defined but it must be noted that in the instance of strong winds, dust emissions off-site, or a complaint, the monitoring programme should be undertaken more regularly.

Table 3: Visual Dust Monitoring Programme	
Monitoring Activity	**Frequency**
Check weather forecasts for strong winds and rainfall to plan appropriate work schedule and dust management response.	Daily
Inspect land adjacent to the site, site exits and adjoining roads for the presence of dust deposition.	At least daily and more frequently if the wind is blowing from a potentially dust operation towards the boundary or sensitive receptor and the TSP or meteorological monitoring conditions are triggered (See Table 4)
Ensure instrumental monitors are operating correctly.	Daily
Observe weather conditions including wind and rain via observations and data outputs from weather stations.	Daily and as conditions change
Inspect all exposed surfaces for dampness and to ensure that the exposed un-stabilised area is minimised.	Daily and as conditions change
Inspect dust generating activities to ensure dust emissions are effectively controlled.	Daily and as new activities are commenced
Inspect watering systems (sprays and water carts) to ensure equipment is maintained and functioning to effectively dampen exposed areas.	Weekly

5.1 Instrumental Monitoring and Trigger Levels

Winstones will continuously monitor meteorological conditions including wind speed, direction and rainfall as well as PM_{10}. The dust monitors will be located along each boundary near where sensitive receptors might be located. The monitors will be located in accordance with AS/NZS 3580.1.1:2007 “Methods for sampling and analysis of ambient air Part 1.1: Guide to siting air monitoring equipment”. The monitors will be maintained and calibrated by a suitably qualified person such as the instrument provider and in accordance with the manufacturer’s instructions.

The meteorological site will be co-located with the dust monitor located on the southern boundary and will be installed and maintained where practicable in accordance with AS/NZS 3580.14 Methods for sampling and analysis of ambient

air - Part 14: Meteorological monitoring for ambient air quality monitoring applications.

The instruments will provide continuous, real-time information on PM_{10} concentrations and wind conditions. Trigger values will be set for PM_{10} concentrations, wind speed and rainfall, and if reached will require additional dust mitigation measures as described in Section 4. There will be two dust trigger levels; a lower value which warns that dust concentrations are increasing above "normal" levels and an upper limit trigger level which should not be exceeded. The recommended trigger levels are shown in Table 4

The trigger level thresholds in Table 4 are preliminary values and may need to be adjusted depending on the monitor type and any subsequent feedback from neighbours. If there are any exceedances of the trigger level, Winstones will undertake an investigation to determine the reasons for the exceedance and identify any remedial measures that can be taken to prevent further exceedances.

Table 4: Monitoring Trigger Levels

Trigger		Value
TSP Trigger Levels	Warning	120 µg/m³ (1-hour average)
	Stop Work	150 µg/m³ (1-hour average)
Meteorological Trigger Levels	Wind speed	5 m/s (1 hour average)
	Rainfall	Less than 1 mm for previous 24 hours

6.0 Contingency measures

The following contingency measures have been identified to ensure the dust management is working as intended:

- Break-down or failure of water suppression systems: As this is a vital control method, all dust generating activities may need to be ceased until the system can be restored if an alternative way of watering the surface is not available.
- If dust impacts or there are a large number of complaints occur, Winstones will reduce the trigger levels presented in Table 4.
- If the monitoring equipment is offline either due to planned maintenance, equipment malfunction or power failures, Winstones will use the water cart on all potentially dusty surfaces within close proximity of the boundary or dwelling whether or not dust is being generated, unless raining. This will continue until the instrument is back online.

- Water supply for dust suppression. In the extremely unlikely situation of not having the required level of water for dust suppression during prolonged dry periods, all dust generating activities will be ceased until an alternative water supply can be obtained.
- Ensure vehicles moving on-site have undergone regular maintenance so that vehicle emissions are kept to a minimum.

7.0 Roles and Responsibilities

7.1 Site Manager and Staff

The Quarry Manager will have day-to-day responsibility for the implementation of the DMP. The Quarry Manager will have the following responsibilities in respect of the management of dust. They shall ensure:

- That the conditions of all relevant resource consents are complied with at all times;
- That the dust control and mitigation measures and procedures outlined in the DMP are implemented effectively;
- That there are adequate personnel and equipment on-site at all times to enable the prescribed dust control;
- That the meteorological and dust monitoring programmes are carried out as required, including recording of daily observations;
- There is sufficient water supply for dust management;
- That any complaints received are investigated and resolved as far as practicable; and
- That all records are kept and are available for the relevant regulatory authorities.

All personnel working on the site have responsibility for the requirements of the air discharge consent conditions and the DMP and reporting to the Site Manager on these issues.

7.2 Staff Training

Successful dust management depends on appropriate actions by site personnel in the day-to-day operations of the site. Environmental training for all staff will be undertaken as part of the site induction programme. The environmental induction will include the following information specific to this DMP:

- Information about the activities that may cause dust discharges within the site with the potential to impact neighbouring areas;
- Consent requirements;

- Dust mitigation procedures;
- Description of dust and meteorological monitoring for the site; and
- Complaints management procedures.

Staff training records will be maintained on-site. The records will include:

- Who was trained;
- When the person was trained; and
- General description of training content and whether follow-up/refresher courses are required at a later date.

8.0 DMP Review

The DMP will be reviewed once per year and updated, with the necessary approval from Environment Canterbury. Approval will be required for any relevant revisions of a material nature for the DMP. The review will take into consideration:

- Any significant changes to dust management activities or methods;
- Key changes to roles and responsibilities;
- Changes in industry best practice standards or recommended dust controls;
- Results of inspection and maintenance programmes, logs of incidents, corrective actions, internal or external assessments;
- The outcome of investigations into discharges of dust or other air pollutants; and
- Changes to site operations i.e. once the site starts undertaking container operations.

Reasons for making changes to the DMP will be documented. A copy of the original DMP document and subsequent versions will be kept for the project records and marked as obsolete. Each new/updated version of the DMP documentation will be issued with a version number and date.

9.0 Complaints

While the measures in the DMP are aimed at preventing dust emissions as a result of on-site activities, there may be occasions when an incident occurs and a complaint from the public is received. Any complaint made will be promptly investigated to resolve the source of the dust emission and implement appropriate actions to mitigate the effects.

The following outlines guidance for receiving and keeping records of any complaints made.

9.1 Receipt Procedure

It is important to ensure that any complaints are recorded and promptly investigated to identify and resolve the cause of the complaint. Requirements and procedures for complaints are detailed below.

The Quarry Manager has the responsibility to respond to and follow up on all complaints regarding dust, and to ensure that suitably trained personnel are available to respond to complaints at all times.

Actions to be taken as soon as possible, following the receipt of a complaint, by the Quarry Manager include:

- Undertake a site inspection. Note all dust-producing activities taking place and the mitigation methods being used, and take photographs for reference as appropriate. If the complaint was related to an event in the recent past, where possible, note any dust-producing activities taking place at that time;
- Initiate any remedial action necessary, which may include a stop work period;
- Note the time and date of the complaint/s and (unless the complainant refuses to provide them) the identity and contact details of the complainant. Ask the complainant to describe the discharge:
  - Is it constant or intermittent?
  - How long has it been going on for?
  - Is it worse at any time of day?
  - Does it come from an identifiable source?
- Meteorological data from the on-site station shall be downloaded;
- Note if the complaint has been referred to Environment Canterbury;
- As soon as possible (within 1 hour, where practicable), visit the area from where the complaint originated to ascertain if dust is still a problem;
- If it becomes apparent that there may be a source of dust other than the quarrying activities causing the complaint, it is important to verify this. Photograph the source and emissions;
- As soon as possible after initial investigations have been completed, contact the complainant to explain any problems found and remedial actions taken. Initiate a damage assessment if required; and

- If necessary, update any relevant procedures to prevent any recurrence of problems and record any remedial action taken.

9.2 Response Procedure

Following the receipt of the complaint, the following actions will be undertaken:

- Fill out the appropriate complaint form, attached as Appendix B to this DMP;
- Advise Environment Canterbury within 48 hours that a complaint has been received, what the findings of the investigation were, and any remedial action taken;
- Advise site personnel as soon as is practicable that a complaint has been received, what the findings of the investigation were, and any remedial action taken; and
- Call or visit the complainant to update them on the actions taken and to check that the issue has been resolved.

10.0 Emergency Contacts

Internal contacts for the site in the event of an emergency of other problems are provided in Table 4 and Table 5 below.

Table 5: Internal Environmental Emergency Contact Details

Role	Name	Organisation	Phone	Email
Quarry Manager	TBC	Winstones	TBC	TBC
After Hours Contact	TBC	TBC	TBC	TBC

Table 6: External Environmental Emergency Contact Details

Role	Name	Organisation	Phone	Email
Consents Compliance Team	TBC	Environment Canterbury	TBC	TBC

11.0 References

Institute of Air Quality Management (IAQM). (2016). *Guidance on the assessment of mineral dust impacts for planning.*

Ministry for the Environment. (2016). *Good Practice Guide for Assessing and Managing Dust*. Available at www.mfe.govt.nz.

Pattle Delamore Partners Ltd, *Air Quality Assessment – Burnham Quarry,* August 2023.

Appendix A: Daily Log Form

Daily Dust Inspection Log

Date: _____ Time: _____
Inspection by: _____
Current weather conditions (e.g., sunny, cloudy, rainy):_____
Wind speed and direction (e.g., light, moderate, strong):_____
Weather forecast for next 24 hours (e.g., rainy, windy):_____
Area(s) inspected: _____

Scope of Inspection	Circle Relevant Item	Comments
Is there visible dust from site work activities, stockpiles, earthworks areas or haul roads?	Y N N/A	
Are unsealed surfaces dry and need spraying with water cart?	Y N N/A	
Are any exposed earthworks visibly dry and need water spray?	Y N N/A	
Stockpiles covered/stabilised where needed?	Y N N/A	
Are there any signs of dust going off site as a result of site activities? [Inspect land adjacent to the site exits and adjoining roads for the presence of dust deposits.]	Y N N/A	
If wind speeds are strong or forecast to be strong (over 5 m/s) are additional inspections, activity restrictions and mitigation measures being put in place? (e.g., increase water application, restrictions on dusty activities)	Y N N/A	
Are watering systems (e.g., water carts, wheel wash) operating effectively to minimise dust?	Y N N/A	
Are trucks carrying loose (uncovered) material entering or leaving the site?	Y N N/A	

Scope of Inspection	Circle Relevant Item	Comments
How frequently has water sprinkling/spraying been used today (i.e., number of water carts, time, area watered)		
Note and dust control equipment malfunctions (and remedial actions taken as appropriate)		
Any unusual on-site activities today?		
Complaints received / community feedback		

Appendix B: Complaint Record

DUST COMPLAINT & ASSESSMENT FORM

PART A: Complaint Details

Date: Time:

Complaint Received By:

Name:

Address:

Contact phone numbers:

Possible source:

Anonymous: Y/N

Is dust occurring now?

Complaint details (include impacts/effects experienced by complainant:

PART B: Complainant Location Assessment

Date: Time:

Assessors Name:

Person spoken to at complaint location:

Reason for investigation: COMPLAINT/PROACTIVE

Complaint details (include impacts/effects experienced by complainant:

INITIAL IMPRESSIONS:

Type of dust

Time of the intial impression:

Any visible dust deposits: Y/N

Plume width (if known):

VISIBLE DUST DEPOSITS

Describe approximate quantites and extent

When was surface last cleaned?

Frequency of cleaning:

Describe the appearance of the deposits:

Colour

Shape

Size

Crystalline or powdery

Hard, soft

Any odour

Water soluble

Other

Weather Data (see over)

Wind direction:
Wind velocity:
Cloud cover:
Temperature:
Rainfall in past 24 hrs:

Photos Taken: Y/N

Samples taken Y/N

Diagram/description of where photos were taken.

Diagram/description of where samples were taken:

Sample collection: Use a small paintbrush (clean) to sweep samples of the dust onto a sheet of paper and then into a clean plastic bag. At least half a teaspoonful will be required for analysis. Lesser amounts may be colected on strips of clear cellotape, which should then be stuck onto sheets of clear plastic to preserve the samples. Label all samples and record date, time, location, etc on a separate sheet of paper if required.

Based on your assessment on this occasion, which of the following applies:

- ☐ I did not find any dust
- ☐ I did find dust and consider it would not be objectionable at any location for any duration or frequency
- ☐ I did find dust and consider it would be objectionable if it became continuous
- ☐ I did find dust and consider it would be objectionable if it occurred on a regular or frequent basis
- ☐ I did detect dust and consider it to be objectionable even in periods of short duration.

FINAL CHECKLIST

- ☐ Upwind assessment completed. Record details below. If not, detail reason: _____
- ☐ Aerial photo/sketch showing location of assessment and upwind assessment attached
- ☐ Are there potential witness statements to obtain YES/NO

REMARKS

PART C: Off-site dust and 360° assessment

Assess the dust upwind of the suspected source and if possible conduct a 360° sweep around the source assessing the odour at different points

OTHER POTENTIAL SOURCES **Time:** _____

Check for road works, ploughing, construction activities, burn-offs, unsealed roads, unsealed sites

Site 1:
Wind direction: Wind strength: Wind stability: GPS Loc:
Visible dust: Desciption of dust
Comment:

Site 2:
Wind direction: Wind strength: Wind stability: GPS Loc:
Visible dust: Desciption of dust:
Comment:

Site 3:
Wind direction: Wind strength: Wind stability: GPS Loc:
Visible dust: Description of dust:
Comment:

Diagram of Suspected source, dust assessment sites and dust plume:

N

COMMENTS

PART D: Source On-site Investigation

If source of dust identified, visit site, identify yourself and show warrant. Explain the findings of your investigation to staff.

Date: Time: Source Identified:

Staff spoken to:: Position:

Staff contact phone number:

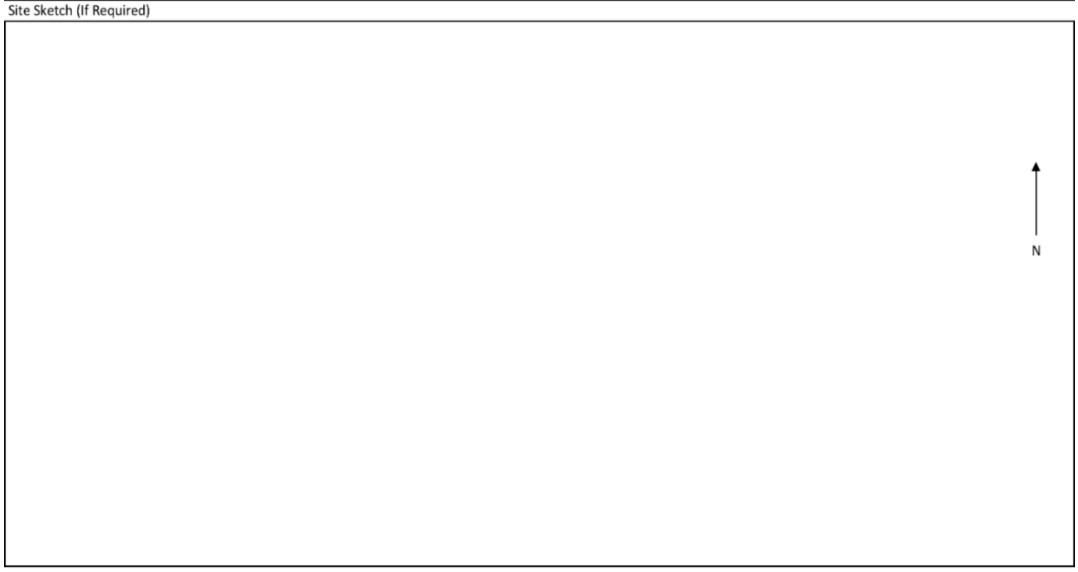
Current site operations:

Reason/explanation given for dust

Other Comments

Monitoring results/samples/other records

Site Sketch (If Required)



SIGNED BY ASSESSOR _____ DATE: _____

PART E: Dust Reference Sheet

Definitions

Objectionable The term objectionable is the term used in consent conditions and is an ingredient of any subsequent enforcement action. It is a subjective term and is open to interpretation. There is guidance from case law which defines objectionable as: unpleasant or offensive or repugnant; open to objection or undesirable or disapproved of; noxious or dangerous. A test will be applied by the court that the term objectionable will be as it applies to "the minds of a significant cross section of reasonable people in the community". The assessor must bear this test in mind when completing their assessment.

Frequency How often an individual is exposed to dust nuisance events

Intensity As indicated by dust quantity/concentration and the degree of nuisance

Duration The length of the particular dust event

Character How objectionable the dust is, having regard to the nature of the dust

Land Beaufort Wind Scale

B. No.	Description	How to Recognise
0	Calm	Smoke rises straight up
1	Light Air	Smoke drifts
2	Light Breeze	Wind felt on face; leaves rustle
3	Gentle Breeze	Flags flap; twigs move all the time
4	Moderate Breeze	Papers blow; small branches move
5	Fresh Breeze	Small trees sway
6	Strong Breeze	Large branches move, wind whistles
7	Near Gale	Whole trees sway

Measuring Temperature

Use descriptions below or obtain local meterological data, especially temperature from websites such as www.metservice.govt.nz

Cold
Cool
Mild
Warm
Hot

Measuring Cloud Cover

Okta No.	Description
0	Clear Sky
1	Sunny
2	Mostly sunny
3	
4	Half the sky is covered in cloud
5	
6	Mostly cloudy
7	Considerable cloudiness
8	Overcast
F	Fog / Mist

During the day the sun is always shining, so the amount of sunshine reaching the ground depends on the amount and duration of any cloud cover. The amount of cloud cover is usually given in units called oktas. Each okta represents one eighth of the sky covered by cloud.