MATAKANUI

GOLD LIMITED

Air Quality Management Plan:

Bendigo Ophir Gold Project

Date 18 June 2026

DOCUMENT CONTROL

Revision	Author	Comments	Date	Approved
DRAFT 1	Jeff Bluett	**DRAFT Status** This version of the AQMP has not been through the PDP review or quality assurance processes. The purpose of this DRAFT is to provide an update on progress to date and allow us to identify any key omissions from the content of the AQMP	04 February 2024	
DRAFT 2	Jeff Bluett	**FINAL DRAFT** This version of the AQMP has been updated to match the final Draft Bendigo-Ophir Gold Project: Assessment of Environmental Effects from the Discharge of Contaminants into Air PDP document number: C051440001R003 Final Draft 240425 Dated: April 2025	30 April 2025	
DRAFT 3	Jeff Bluett	**Revising Draft 3 to address BOGP review comments on DRAFT 2.**	16 May 2025	
FINAL	Jeff Bluett	**Aligning Stage 2 Assessment with updated AQMP following review comments from Daiman Spring**	5 June 2025	
FINAL-R1	Jeff Bluett	**Minor edit – updated soil contamination data**	2 July 2025	
FINAL-R2	Jeff Bluet	**Revised to align with proposed consent conditions**	5/09/2025	
FINAL -R3	Jeff Bluett	**Revised to incorporate ORC review comments, Fast Track Panel review comments and Invited Party review comments.**	17 April 2026	
FINAL -R4	Jeff Bluett	**Revised to capture the updates and changes agreed at expert conferencing.**	18 June 2026	

1. INTRODUCTION

1.1. Plan purpose and scope

Pattle Delamore Partners Ltd (PDP) produced the Bendigo-Ophir Gold Project: Assessment of Environmental Effects from the Discharge of Contaminants into Air [1] on behalf of Matakanui Gold Limited (MGL). That assessment report can be used as a reference for this Air Quality Management Plan (AQMP) as it presents full details on the sources, mitigation, monitoring and effects of the air contaminants discharged from the Bendigo-Ophir Gold Project (BOGP).

This AQMP has been prepared by PDP on behalf of MGL and presents a summary of the key information on the sources, mitigation and monitoring of the air contaminants discharged from the BOGP.

The overarching objective of this AQMP is to set out actions and measures that will be taken by MGL to ensure that air discharges from the BOGP comply with the proposed air discharge conditions of consent and do not result in noxious, dangerous, objectionable, or offensive dust or gases beyond the site boundary. Health and safety measures for MGL employees and contractors working within the BOGP are outside the scope of this AQMP.

1.2. Key Objectives

The key objectives of the AQMP are:

- Identify and categorise sources of air contaminants, including dust and gaseous emissions.
- Outline mitigation strategies for managing air quality impacts during the establishment, operation, and restoration phases of the project.
- Establish monitoring protocols for assessing the effectiveness of air quality controls.
- Promote proactive and adaptive management of air quality risks.

1.3. Key Outcomes

The key outcomes from executing the AQMP will be:

- Implementing best practicable options for controlling air contaminant emissions from all site activities.

[1] Bendigo-Ophir Gold Project: Assessment of Environmental Effects from the Discharge of Contaminants into Air. Pattle Delamore Partners report number C051440001R003. Dated April 2025.

- Establishing a robust environmental monitoring programme that provides real-time data to assess the effectiveness of air emission control strategies.
- Providing a proactive framework for managing air quality across the development, operational, and restoration phases of the BOGP.
- Aligning with industry best practice and meet the requirements of relevant consents and environmental standards.
- Defining the types and maximum scale of activities permitted to discharge contaminants into the air.
- Establishing environmental bottom lines and performance measures, including the requirement that no air discharges cause offensive, objectionable, noxious, or dangerous effects beyond the site boundary.
- Requiring implementation of mitigation measures outlined in the AQMP, including dust suppression, buffer distances, and dust emission controls.
- Mandating an environmental monitoring programme to verify the effectiveness of mitigation measures and compliance with performance standards.
- Including provisions for complaints management, reporting of monitoring programmes, and AQMP review and updates.

2. KEY ENVIRONMENTAL FACTOR: DUST

2.1. Introduction

The activities which have the potential to generate dust within the BOGP are in relation to the establishment, operation and (where required) the restoration of:

- Site access, haul and public roads;
- Ore crushing;
- Tailing storage facility;
- The four open pits;
- Soil and ore stockpiles; and,
- Engineered landforms.

Figure 1 shows the footprint of the BOGP and the location of each of the dust sources.

Using the spatial scale, location, frequency and duration of dust discharges and the buffer distances between BOGP dust sources and sensitive receptors, each of the six dust sources have been categorised as either:

- **Priority 1** – Large scale constant dust source requiring routine and intensive dust suppression. Priority 1 dust source will be the focus of the day-to-day routine dust management programme and likely require intensive dust management.

- **Priority 2** – Small scale constant dust source requiring routine dust suppression. Priority 2 dust sources will be part of the day-to-day routine dust management programme but require less intensive dust management.
- **Priority 3** - Small scale intermittent dust source requiring intermittent dust suppression. Due to the intermittent nature of these dust sources, and the site's buffer distances to sensitive receptors, Priority 3 dust sources will be mitigated on a as needed basis.

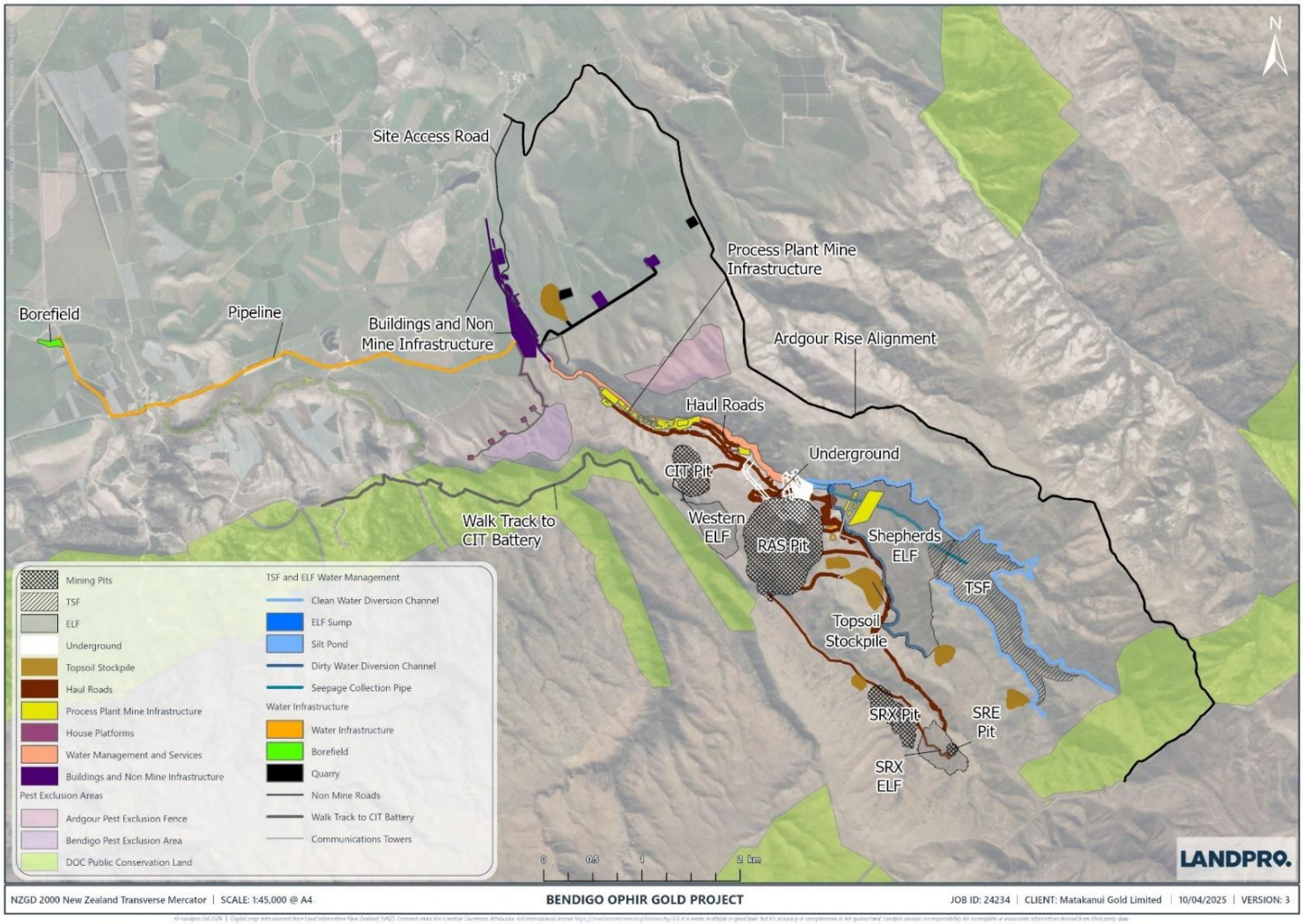

Figure 1 BOGP general site layout and dust sources

The following sections detail BOGP's Priority 1, 2 and 3 dust sources and describe the characteristics of the dust discharged from each source.

2.2. Priority 1 Dust Source – Site Access, Haul and Public Roads

The BOGP includes the development and use of site assess and on-site haul roads which will be travelled by machinery to transport soil, rock, ore and tailings from the pits to stockpiles, Engineered Landforms (ELFs), the processing plant or the Tailings Storage Facility (TSF). The project will also require some small sections of new or re-aligned public roads outside of the site footprint to efficiently connect the BOGP with the local roading network. The consent holder will be responsible for controlling the dust generated from the construction of the affected public roads, however the consent holder is not responsible for controlling the dust generated from the operation of public roads.

The roading works included in the BOGP include:

- Upgrades to the Ardgour and Thomsons Gorge Roads (TGR) from SH8 to the entry point of Shepherds valley;
- A new road from TGR through the "neck" of the lower Shepherds gorge into the process plant area;
- Ardgour Rise - Re-alignment of the western portion of the TGR to follow the Ardgour ridge through to an existing easement in the DOC reserve and then re-joining with the TGR at Thomsons saddle;
- Site access road running north/south approximately parallel to Thomson's Gorge Road for the last 2 km before the site boundary; and,
- Haul roads – the establishment of haul roads on the project site.

The surfaces of the haul and re-engineered public roads will be unsealed gravel. The sources and characteristics of the haul road dust particles are outlined in **Table 1**.

Table 1: Sources and characteristics of unsealed road dust

Activity	Dust type	Relative size of dust source
Haul, site access and public road construction	Soil dust. Brown in colour. Brown rock dust. Brown in colour Mainly TSP (total suspended particulate matter) with a small component of PM_{10}.	Medium
Haul and site access road use	Brown rock dust. Brown in colour. Mainly TSP with a small component of PM_{10}.	Large

2.3. Priority 2 Dust Sources

2.3.1. Ore Processing Plant

Table 2 describes the sources and characteristics of ore processing plant dust.

Table 2: Sources and characteristics of ore processing plant dust		
Activity	**Dust type**	**Relative size of dust source**
Run of Mine (ROM) pad.	Grey/black rock dust. Mainly TSP with a small component of PM_{10}.	Small
ROM bin.	Grey/black rock dust. Mainly TSP with a small component of PM_{10}.	Small
Covered crushed ore stockpile.	Grey/black rock dust. Mainly TSP with a small component of PM_{10}.	Medium
Reagent make-up	White dust. Mainly TSP with a small component of PM_{10}.	Small
Lime silo.	White dust. Mainly TSP with a small component of PM_{10}.	Small

2.3.1. Tailings Storage Facility

The sources and characteristics of the TSF dust particles are outlined in **Table 3.**

Table 3: Sources and characteristics of ore processing plant dust		
Activity	**Dust type**	**Relative size of dust source**
TSF construction.	Grey/black rock dust. Mainly TSP with a small component of PM_{10}.	Small.
TSF operation.	Grey/black rock dust. Particulates < 100 μm.	Small.
TSF remediation.	Brown soil dust. Mainly TSP with a small component of PM_{10}.	Medium.

2.4. Priority 3 Dust Sources

Due to the size of the site footprint and distances to off-site receptors, some large dust sources are considered as posing a negligible risk of off-site dust effects. These Priority 3 Dust Sources are detailed below:

2.4.1. Soil Overburden Removal and Replacement

The BOGP mine development will require a large volume of topsoil being removed to expose the areas for the open pits, forming the foundations of access and haul roads, building the foundations for the processing plant, ore stockpiles, buildings and other mine infrastructure and for mine remediation. Table 4 shows the characteristics of soil overburden dust.

Table 4: Characteristics of soil overburden dust

Activity	Dust type	Relative size of dust source
Soil overburden removal and replacement	Soil dust. Brown in colour Mainly TSP with a small component of PM_{10}.	Large

2.4.2. Excavation of Ore from Open Pits

The BOGP mine includes four open pits, RAS, CIT, SRX and SRE. **Table 5** shows the sources and characteristics of pit dust.

Table 5: Sources and characteristics of pit dust

Activity	Dust type	Relative size of dust source
Drilling and Blasting	Brown waste rock dust or grey ore dust. Mainly TSP with a component of PM_{10}.	Medium
Rock overburden and ore removal	Brown waste rock dust or grey ore dust. Small amounts of TSP with a minor component of PM_{10}.	Small

2.4.3. Soil Stockpiles

The BOGP mine includes six stockpiles where overburden soil will be stored until it is used for remediation. **Table 6** shows the sources and characteristics of soil stockpile dust.

Table 6: Sources and characteristics of soil stockpile dust		
Activity	**Dust type**	**Relative size of dust source**
Soil overburden	Soil dust. Brown in colour. Mainly TSP with a small component of PM_{10}.	Medium

2.4.4. Ore Stockpile

The BOGP mine includes one stockpile where ore will be stored until it is transported to the processing plant. **Table 7** shows the sources and characteristics of ore stockpile dust.

Table 7: Sources and characteristics of ore stockpile dust		
Activity	**Dust type**	**Relative size of dust source**
Ore rock stockpiling	Ore dust. Black in colour. Mainly TSP with a small component of PM_{10}.	Small

2.4.5. Engineered Landforms

The sources and characteristics of the ELF dust particles are outlined in **Table 8.**

Table 8: Sources and characteristics of ELF dust		
Activity	**Dust type**	**Relative size of dust source**
ELF construction	Brown rock dust. Brown in colour Mainly TSP with a small component of PM_{10}.	Small
ELF rehabilitation	Soil dust. Brown in colour. Mainly TSP with a small component of PM_{10}.	Moderate

3. KEY ENVIRONMENTAL FACTOR: GASEOUS AIR CONTAMINANTS

3.1. Introduction

The BOGP activities which have the potential to discharge gaseous air contaminants are:

- Ore processing plant;
- Machinery and vehicles; and
- Underground mine exhaust portals.

The following sections detail BOGP's sources of gaseous air contaminants and describe the characteristics of the gases discharged from each source.

3.2. Ore Processing Plant

The are three potential sources of gaseous air contaminants and one source of particulate from the ore processing plant:

- Leaching and adsorption tanks;
- Acid wash and elution columns; and,
- Electro-winning cells.

Table 9 describes the sources and characteristics of ore processing plant gaseous and particulate air contaminants.

Table 9: Sources and characteristics of ore processing plant gaseous pollutants		
Process	**Pollutant type**	**Quantity of Emission**
Leaching and adsorption tanks	HCN	Zero – subject to mitigation.
Gold recovery Acid wash and elution columns	HCN	Zero – subject to mitigation.
Electro-winning cells	NH_3	Minor
Induction furnace	Particulate and base metals	Minor

3.3. Machinery and Vehicles

The key combustion products discharged from the burning of diesel in machines and vehicles are PM_{10} and NO_X. PDP's experience with large quarry and mining sites shows that the operation of diesel-powered machinery and vehicles are usually a minor source of gaseous contaminants and impacts are always less than minor. For this reason, the effects of combustion products discharged from the burning of diesel in machines and vehicles are not considered further in this AQMP. All machinery and vehicles should be routinely serviced and maintained to minimise exhaust emissions.

3.4. Underground Portals

In the underground mine the following diesel-powered machinery will be operated:

- Two twin boomed development jumbos;
- Three 50-t dump trucks; and
- One 17-t bucket underground loader.

As for the above-ground machines, the key combustion products discharged from the underground machines are PM_{10} and NO_X. Workplace exposure to these emissions will be controlled and monitored in accordance with the Health and Safety Plan.

4. RESPONSIBILITIES

4.1. Site Manager and Staff

The Site Manager has the day-to-day responsibility for implementing the AQMP. The Site Manager has the responsibility to ensure that:

- The conditions of all relevant resource consents are complied with at all times;

The dust control and mitigation measures and procedures outlined in the AQMP are implemented effectively;

- There are adequate personnel and equipment on site at all times to implement the dust control;
- Processes and equipment are in place to enable water application outside BOGP operational hours when required;
- The meteorological and dust monitoring programmes are carried out as required, including recording of daily observations;
- Any complaints received are investigated and resolved as far as practicable;
- All records are kept and are available to the relevant regulatory authorities; and
- All personnel working on the Project have responsibility for following the requirements of the air discharge consent conditions and the AQMP and reporting to the Site Manager on these issues.

4.2. Staff Training

Successful dust management depends on appropriate actions by site personnel in effective day-to-day and after-hours 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 AQMP:

- 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.

5. MANAGEMENT OBJECTIVES: DUST MITIGATION

5.1. Good Practice Mitigation – All Dust Sources

All Priority 1, 2 and 3 dust sources will, as far as practical, be constructed, operated and (where required) decommissioned using good practice dust mitigation as detailed in **Table 10.**

Table 10: Good Practice Mitigation – Design Measures

Mitigation and Design	Description
Phasing of extraction activities	As far as practicable, dust-generating activities have been located away from highly sensitive receptors. Minimisation of dust through site design is addressed through extraction of ore in 3 stages, minimising unconsolidated areas.
Design and location of dust-generating activities	Stockpiles, site access road, haul roads and exposed areas have been located distant from sensitive receptors.
Management	An AQMP has been produced and will be adhered to. Effective site management practices are critical to demonstrate the willingness of the operator to control dust emissions and provides a mechanism for auditing site operations. Such management procedures are outlined within the AQMP. This includes recording of all dust and air quality complaints, identification of cause(s), appropriate measures taken to reduce emissions in a timely manner, and record of the measures taken.

Table 10: Good Practice Mitigation – Design Measures	
Mitigation and Design	**Description**
Provision for water supply	Planning and design of the scheme has made provision for water supply to meet the site demand for mitigation and dampening.
Equipment and vehicles	The site has been designed to minimise haul route distances and to locate haul routes away from sensitive receptors.
Planting	Soil stockpiles will have surfaces stabilised by planting of vegetation.
Training	MGL will provide training to the site personnel on dust mitigation. Training will also cover 'emergency preparedness plans' to react quickly in case of any failure of the planned dust mitigation.
Monitoring	An appropriate monitoring scheme will be implemented. This includes a range of monitoring methods from visual inspections, wind monitoring and real-time PM_{10} continuous monitoring locations. MGL will undertake daily on-site inspections, audit the monitoring programme, carry out regular site inspections to monitor compliance with the AQMP and adjust the frequency of site inspections according to dust risk (higher frequency in dry and windy conditions)
Communication	MGL aims to maintain good communication to help alleviate anxieties between the operators and the surrounding communities.
Planning of activities	Some activities should ideally be planned only during favourable weather conditions. Where possible, particularly dusty activities should be avoided during extended periods of dry and windy conditions. Excavation of ore from open pits and earthworks activities will cease dust can be seen blowing over the site boundary.
Vehicle movements	Standard good practices for site haulage include: ⁘ Regular clearing, grading and maintenance of haul routes and site access road. ⁘ When sensitive receptors are within 250 m of a highly trafficked area lay down a bed of pea metal (<6mm stone), which keeps the truck tyres out of contact with fine dust. ⁘ Setting a site-specific and enforceable speed limit of 60 km/hour. ⁘ The speed limit reduces to 20 km/hour on sections of road when the road surface and/or wind conditions are such that dust plumes are likely to be blown across the site boundary. ⁘ Evenly loading vehicles to avoid spillages. ⁘ Regular application of water in dry conditions.

5.2. Priority 1 Dust Source - Site Access Road, Haul Roads and Public Road Works

Table 11: Unsealed road dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
Site access and haul road construction. ∴ Upgrades to Ardgour and Thomsons Gorge Roads (TGR) from SH8 to the entry point of Shepherds valley. ∴ A new road from TGR into the process plant area. ∴ Re-alignment of the western portion of the TGR to follow the Ardgour ridge.	Establishing site access and haul road foundation by backhoe excavator and tracked dozer. Establishing roadway surface dumping surface material from rigid body dump truck and rolling surface. Wind erosion on unconsolidated surfaces.	Identifying the location of and distance to sensitive receptor Dwelling 3 (218 Thomson Gorge Road) in relation to the site access road. Apply due caution to dust generation, dust monitoring and dust mitigation when dust is being generated during the construction of the access road within 300 m of Dwelling 3 and the wind is from the easterly quarter. Not undertaking haul road construction activities when windspeeds are greater than 7.5 m/s and toward sensitive receptors within 500 m of the site boundary or when dust can be seen blowing over the site boundary. Minimising drop heights from excavator and dump truck. Dampen surface of construction surfaces using a water cart. Maintain adequate buffer distance (>250 m) to sensitive receptors.
Site access and haul road use	Up to 420 vehicle movements per day. 68% light duty vehicles. - <3,500 kg tare weight	Knowing the location of and distance to sensitive receptor Dwelling 3 (218 Thomson Gorge Road) in relation to the site access road. Apply due caution to dust generation, dust monitoring and dust mitigation when dust is being generated during the use of the access

Table 11: Unsealed road dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
	32 % heavy duty vehicles - >3,500 kg tare weight.	road within 300 m of Dwelling 3 and the wind is from the easterly quarter. Engineered surface which minimises free fine material which can generate dust. Maintain site access and haul road surfaces to avoid excess fines and potholes. Maintain site access road from the site exit to 218 Thomson Gorge Road in a damp state with a water cart when heavy duty vehicle movements are occurring and weather conditions are dry with winds from the easterly quarter. Reduction of speed limit to 20 kph when dust can be seen blowing over the site boundary. Dampen surface of site access and haul roads in response to any discharged road dust blowing over the site boundary.

5.3. Priority 2 Dust Sources

5.3.1. Ore Processing Plant

Table 12: Ore processing plant dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
Run of Mine (ROM) pad.	ROM ore is stockpiled on the pad for blending into the plant feed. ROM ore is deposited by trucks and moved by front-end Loader (FEL).	Maintain adequate buffer distance (>500 m) to sensitive receptors. Dust mitigation by water truck or sprinkler in response to any ROM dust blowing over the site boundary.

Table 12: Ore processing plant dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
ROM bin.	ROM Ore is deposited into the open ROM bin by FEL.	Dust mitigation by water sprays. Feed out of this bin is by apron feed, water sprays at transfer points Automated as FEL approaches bin and over jaw crusher.
Covered crushed ore stockpile.	Material is deposited into the crushed ore stockpile by conveyor. Ore is removed by apron feeders located in a tunnel below the stockpile.	Water sprays at transfer points to mitigate dust. Ore crusher fitted with high pressure low volume misting system. Dust mitigation in tunnel is by extraction at transfer points and extraction along tunnel length to a wet scrubber.
Lime silo.	Silo delivers lime into mill feed conveyor which is transporting primary crushed ore via a screw feeder.	Silo dust collector is reverse pulse baghouse with felt bags and will return collected dust to the silo. Lime transfer to the conveyor belt by a screw feeder with minimal drop height.
Reagent make-up.	Dry reagents are unloaded from bulk bags.	All dry reagents are unloaded from bulk bags inside an enclosed bulk bag breaker located directly above the make-up tank to contain dust.

5.3.2. Tailings Storage Facility

Table 12: Tailings Storage Facility dust generating activities and dust mitigation strategies		
Activity		Mitigation measures
TSF construction.	Rock overburden dumped by dump truck and ELF formed by tracked dozer.	Maintain adequate buffer distance (500 m) to sensitive receptors.
TSF operation.	The tailings are pumped to the TSF as a slurry and are wet when they arrive and are deposited.	The continuous delivery of the tailings slurry to the TSF keeps the surface damp. Spraying water on the dry tailing beaches; Redirecting incoming high moisture tailings toward exposed dry beach areas;

Table 12: Tailings Storage Facility dust generating activities and dust mitigation strategies		
Activity		Mitigation measures
		Covering dry beach areas area with non-dusty materials e.g. small waste aggregate; or Accelerated soil toping and vegetative remediation of dry beach areas.
TSF remediation.	Dumping soil from dump truck. Shaping soil covering by backhoe excavator and tracked dozer. Wind erosion on unconsolidated surfaces.	Targeting the soil stockpile building or disturbance for the cooler and wetter months of the year when soil moisture content is relatively high (March to October). Not undertaking soil stockpile building or disturbance when: ⁘ Windspeeds are greater than 7.5 m/s; **and** ⁘ Winds are blowing toward sensitive receptors within 500 m of the site boundary; **and,** ⁘ Dust can be seen blowing over the site boundary toward sensitive receptors located within 500 m of the dust source. Minimising drop heights from excavator and dump truck. Dampen surface of soil in response to any ROM dust blowing over the site boundary. Maintain adequate buffer distance (500 m) to sensitive receptors. Establish vegetative cover on stockpile surface which is resistant to wind erosion.

5.4. Priority 3 Dust Sources

5.4.1. Soil Overburden Removal

Table 13: Soil Overburden dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
Building access and haul roads. Establishing Foundations for mine. infrastructure Exposing ore pits. Site rehabilitation.	Soil scraping by tracked dozer. Soil loaded into dump truck by backhoe excavator or wheeled FEL.	Not undertaking soil overburden removal when windspeeds are greater than 7.5 m/s **and** toward sensitive receptors within 500 m of the site boundary **and** when dust is seen blowing over the site boundary. Minimising drop heights from excavator to dump truck. Dampen surface of soil where dry soil is seen to be causing dust discharges. Maintain adequate buffer distance (500 m) to sensitive receptors.

5.4.2. Open Pits

Table 14: Pit dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
Drilling and Blasting	Bulk waste drilling Ore drilling	Not undertaking drilling or blasting when windspeeds are greater than 7.5 m/s **and** toward sensitive receptors within 500 m of the site boundary **and** when dust is seen blowing over the site boundary.

Table 14: Pit dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
		Maintain adequate buffer distance (500 m) to sensitive receptors.
Rock overburden and ore removal	Rock overburden and ore loaded into dump truck by backhoe excavator or wheeled FEL.	Not undertaking rock overburden and ore removal when the rock material is coated with fines **and** windspeeds are greater than 7.5 m/s **and** toward sensitive receptors within 500 m of the site boundary **and** when dust can be seen blowing over the site boundary. Maintain adequate buffer distance (500 m) to sensitive receptors.

5.4.3. Soil and Ore Stockpiles

Table 15: Soil stockpile dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
Soil overburden	Dumping soil from dump truck Shaping soil stockpile by backhoe excavator or tracked dozer.	Targeting the soil stockpile building or disturbance for when the soil moisture and/or wind conditions are such that dust plumes are unlikely to be blown across the site boundary. Minimising drop heights from excavator and dump truck. Dampen surface of soil in response to any soil dust blowing over the site boundary. Maintain adequate buffer distance (500 m) to sensitive receptors. Establish vegetative cover on stockpile surface which is resistant to wind erosion.

Table 15: Soil stockpile dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
	Wind erosion on unconsolidated surfaces.	Build soil stockpiles to a maximum height of 30 m.
Elevated arsenic soil overburden		Keep elevated arsenic soil overburden in a separate stockpile. Do not mix with uncontaminated soils. Document the location and quantity of elevated As soil stockpiles. Dampen surface elevated As soil stockpiles in response to any soil dust witnessed. Minimise time elevated As soil is stockpiled. Where practical direct transfer elevated As soils to rehabilitation areas where the native material was high in As. Establish vegetative cover on elevated As soil stockpile surfaces which is resistant to wind erosion. Use elevated As soil overburden for rehabilitation in areas with naturally elevated levels of these contaminants (i.e. Soil from SRX pit used on SRX ELF, Soil from southwest side of CIT returned to SW side during rehabilitation of CIT).

Table 16: Ore rock stockpile dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
Ore rock stockpiling	Dumping Rock from dump truck Shaping ore stockpile by wheeled FEL. Wind erosion on unconsolidated surfaces.	Minimising drop heights from excavator and dump truck. Maintain adequate buffer distance (500 m) to sensitive receptors.

5.4.4. Engineered Landforms

Table 17: ELF dust generating activities and dust mitigation strategies		
Activity	**Dust generation method**	**Mitigation measures**
ELF construction	Rock overburden dumped by dump truck and ELF formed by backhoe excavator or tracked dozer.	Maintain adequate buffer distance (500 m) to sensitive receptors.
ELF rehabilitation	Dumping soil from dump truck. Shaping soil covering by backhoe excavator or tracked dozer. Wind erosion on unconsolidated surfaces.	Targeting the soil stockpile building or disturbance for when wind conditions are such that dust plumes are unlikely to be blown across the site boundary. Minimising drop heights from excavator and dump truck. Dampen surface of soil in the working area in response to any soil dust blowing over the site boundary. Maintain adequate buffer distance (500 m) to sensitive receptors. Establish vegetative cover on stockpile surface which is resistant to wind erosion.

6. MANAGEMENT OBJECTIVES: WATER FOR DUST SUPPRESSION

6.1. Water Demand

One of the key dust mitigation measures is the application of water. As a benchmark for dust suppression the Ministry for the Environment Good practice guide on assessing and managing dust recommends a water application rate 1 mm/hour (or 1 litre/m^2 per hour). This recommended water application rate often proves to be conservative because site evapo-transpiration data usually peaks at 0.8mm/hour on the hottest part of the hottest days over summer.

Three stages of the mine life cycle have been identified as providing representative scenarios for assessing the water demand for dust mitigation. The three stages of the mine life cycle assessed are detailed in **Table 17** which shows the volume of water per hour required for dust suppression for each of the three assessment scenarios.

Table 18: Mine life cycle stages for assessing dust mitigation water demand		
Stage of mine life cycle	**Timing (years)**	**Dust Sources**
Startup and Project Development	0 to 2	Accommodation area development, site access roads, haul roads and public roads development Ore Processing plant development RAS site prep Soil stockpiles
RAS pit mining on its own	3 to 5	Site Access Road and Haul Roads use RAS pit Processing plant Soil stockpiles
RAS Pit plus RAS UG, plus CIT (CIT Pit mined months 102 to 114) (SRX Pit mined months 145 onwards)	6 to 11	Site Access Road and Haul Roads use RAS pit CIT Pit Processing plant Soil stockpiles

The dust suppression water demand volumes have been calculated for the three assessment scenarios using the following assumptions:

- Water application rate 1 mm/hr (1 L/m^2/hr);
- Water applied to roads for 8 hours per day;
- 10 % of infrastructure construction site areas may need water suppression at any one time;
- 50% of active ELF area may need water suppression at any one time;
- 50% of site access road and haul roads may need water suppression at any one time; and,
- Processing plant requires 10 m^3/hr for dust suppression.

Table 19 shows the volume of water per hour required for dust suppression for the key dust sources associated with each of the three site-development and operational scenarios.

Table 19: Dust mitigation water demand				
Stage of mine life cycle	**Dust Sources**	**Area of dust source (ha)**	**Dust suppression area (ha)**	**Volume of water (m^3/hr)**
Startup and Project Development Years 1 and 2	Accommodation area development	15	1.5	15
	Site access road	4	2	20
	Ore Processing plant development	10	1	10
	Haul Road RAS to Plant	3.2	1.6	16.2
	Haul Road RAS to ELF	8.7	4.4	43.5
	ELF	1	0.5	5
	Haul road length to topsoil outside	3.9	1.9	19.3
	Infrastructure area	2	1	10.2
	Haul road to TS stack	2	1	10.2
	Total volume of dust suppression water (m^3/hr)			**149 (42 l/s)**
RAS pit mining Years 3 to 5	Site access road	4	2	20
	Haul Road RAS to Plant	**3.2**	**1.6**	16.2
	Haul Road RAS to ELF	**8.7**	**4.4**	43.5
	ELF	**1**	**0.5**	5
	Haul road length to topsoil outside	**3.9**	**1.9**	19.3
	Dust suppression infrastructure area	**2**	**1**	10.2
	Average haul road to TS stack	**2**	**1**	10.2
	Processing plant	**NA**	**NA**	10
	Total volume of dust suppression water (m^3/hr)			**134 (37 l/s)**
RAS pit plus CIT or SRX pit mining Years 6 to 11	Site access road	4	2	20
	Haul Road RAS to Plant	**3.2**	**1.6**	16.2
	Haul Road RAS to ELF	**8.7**	**4.4**	43.5
	ELF	**1**	**0.5**	5
	Haul road length to topsoil outside	**3.9**	**1.9**	19.3

Table 19: Dust mitigation water demand				
Stage of mine life cycle	**Dust Sources**	**Area of dust source (ha)**	**Dust suppression area (ha)**	**Volume of water (m^3/hr)**
	Dust suppression infrastructure area	**2**	**1**	10.2
	Average haul road to TS stack	**2**	**1**	10.2
	Processing plant	**NA**	**NA**	10
	CIT or SRX to Plant/ELF	**7.5**	**3.7**	37.4
	Total volume of dust suppression water (m^3/hr)			**171 (48 l/s)**

6.2. Water Supply

The BOGP water supply system will need to be designed to deliver up to 50 l/s, 180 m^3/hr or 4,320 m^3/day for the purposes of dust suppression. In addition to the BOGP water supply system, two years after the start of the site development, a minimum of 5 l/s water will be available for dust suppression from the dewatering of the pits.

6.3. Applying Water to the Site

MGL will ensure that 50 l/s of water is available daily for potential dust suppression purposes for the first two years of site development and a minimum of 55 l/s in subsequent years. There will be two dust suppression water carts on site. Use of a cart rather than fixed sprinkler lines allows dust suppression target areas to move around with staging of ore extraction. Should the need be identified by visual dust monitoring, this AQMP will be reviewed to determine the need for fixed sprinklers, mobile k-line sprinkler system, and water truck with cannon for site access road, haul roads and active mine areas in addition to the water cart.

During the period of peak demand for dust suppression water (summer for RAS pit plus CIT or SRX pit mining) the water demand is estimated to be 42 l/s. The water supply during that period will be at least 55 l/s. This means there will be at least 12 l/s (43 m^3/hr) available for dust suppression for any dust sources beyond those identified in **Table 19** which may on occasion require suppression (e.g. soil overburden removal, soil stockpiles, soil bunds).

In summary, the site provides sufficient water for typical and for high demand dust suppression. All water supply and dust mitigation systems installed will be designed to ensure 1 mm water per hour over mine operation target areas on dry days at any stage of the mine's life.

7. MANAGEMENT OBJECTIVES: GASEOUS AIR CONTAMINANTS

Table 20 details the ore processing plant gaseous air and particulate contaminants generating activities and gas mitigation strategies.

Table 20: Ore processing plant gaseous pollutant generating activities and mitigation measures

Activity	Gas generation method	Mitigation measures
Leaching and adsorption tanks	CN^- ions in solution may combine with H^+ ions to produce HCN gas.	OHS requirements. pH maintained at >10.5. pH Alarms and HCN sensors.
Gold recovery Acid wash and elution columns	CN^- ions in solution may combine with H^+ ions to produce HCN gas.	OHS requirements. pH maintained at >10.5. pH Alarms and HCN sensors.
Electro-winning cells	During the electrowinning process a small amount of NH_3 may be generated.	Gases from the electrowinning cells are captured by a hood and then are fan forced and vented to the atmosphere and from a 15 m high stack for adequate dispersion.
Induction furnace	The gold smelting process removes impurities from gold ore. These could be the original impurities found in gold deposits in the earth, or impurities added to gold in manufacturing. To remove these impurities, extremely high temperatures, pressure and a number of fluxes are used. In these extreme conditions, particulate matter can be produced and discharged from	Fume hood. Glass silica curtains. Furnace Bag Filter System. Comprehensive dust extraction system. Environmental and OHS requirements. Reverse Jet self-cleaning polyester filter bags. Any fumes are captured by a hood and then are fan forced and vented to the atmosphere and

Table 20: Ore processing plant gaseous pollutant generating activities and mitigation measures		
Activity	**Gas generation method**	**Mitigation measures**
	the liquid mixture of metals and slag (SiO_2) contained in the furnace curable.	from a 15 m high stack for adequate dispersion.

The vehicle, machine and generator engines and all associated emission control systems will be routinely maintained in accordance with the manufacturer's instructions.

The underground mine will be served by two inlet ventilation portals fitted with 110 kW ventilation fans. Two fans will draw air down into the mine and two fans to drive air back up and discharge via the by two ventilation portals. The underground mine ventilation system will draw up to 200 m^3/s which PDP understands from MLG's ventilation engineers is more than sufficient to meet the health and safety requirements for the miners working underground. The ventilation portals will be 3 m wide and 3 m high and discharge horizontally at ground level.

Given the number of vehicles and machines used on the surface and underground on site, the vehicle maintenance programme and underground ventilation system will be sufficient to ensure no off-site adverse effects will occur from this source of contaminants.

8. MANAGEMENT OBJECTIVES: COMPLAINTS

8.1. Receipt Procedure

MGL acknowledges the importance of ensuring 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 Site Manager is responsible for response to and follow up all complaints regarding dust or any other air quality matters, and to ensure that suitable trained personnel are available to respond to complaints at all times.

Following the receipt of a complaint the Site Manager must, and in the mind of the Site Manager there are reasonable grounds that a breach of the consent conditions is possible as soon as is possible, respond as follows:

- Undertake a site inspection. Check the required dust controls are in place. Note all dust-producing activities taking place and the mitigation methods being used, 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 and review on site weather records and shift plan and report;

- 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?
- Review meteorological data from the on-site station;
- Note if the complaint has been referred to the ORC;
- 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 BOGP activities causing the complaint, it is important to verify this, for example, photograph the source and emissions and/or make notes;
- As soon as possible after initial investigations have been completed, contact the complainant to explain any problems found and remedial actions taken; and,
- If necessary, update any relevant procedures to prevent any recurrence of problems and record any remedial action taken.

8.2. Response Procedure

Following the receipt of the complaint, and in the mind of the Site Manager there are reasonable grounds that a breach of the consent conditions is possible, the following actions will be undertaken:

- Complete the dust complaint and assessment form (Appendix B);
- 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.

9. ENVIRONMENTAL MONITORING

The environmental monitoring that will be undertaken to achieve the air quality management objectives are detailed in the following sections.

10. Dust Monitoring - Visual

10.1. Method

Visual monitoring of dust must be undertaken to assess the level of dust emissions on the site and beyond its boundary. The visual monitoring will:

- Identity source(s) of dust (e.g. from vehicle movements, stockpiles, earthworks or material disturbance, etc.);
- Identify if the dust plume is crossing the site boundary;
- Identify any areas of deposited dust from the site on surrounding roads and properties;
- Assess the extent and direction of any dust plumes (e.g. within boundary, cross-boundary, or covering a large extent);
- Identify receptors potentially impacted by the plume (e.g. properties downwind to the northeast);
- Assess overall impact as high, medium, or low.

All staff are required to continuously monitor activities to identify dust events. The Site Manager or delegate undertakes site visual dust monitoring at least once per day, in the early afternoon, to assess the overall effectiveness of the AQMP and ensure compliance with the requirements of the resource consent conditions. An example Daily Dust Inspection Log to be completed by the Site Manager or delegate is provided at Appendix A.

10.2. Description of Visible Dust Plumes

To enable BOGP staff to more effectively allocate dust suppression resources to visible dust plumes it would be beneficial to enhance the description of any dust plumes observed. PDP suggests that the dust plumes are classified by three criteria each of which has three sub-classes.

- Colour: brown, light grey, or dark grey/black;
- Opacity: low opacity (little visual impairment - can easily see through plume), medium opacity (some visual impairment – like looking through a dirty window), or high opacity (high visual impairment - cannot see through the plume); and
- Size: low (< 50 m long), medium (50 to 150), large (< 150 m).

These three factors can be combined to provide a qualitative assessment of dust plume impact. By assigning a low classification a value of 1, a medium classification a value of 2

and a high classification a score of three, the three criteria scores can be tallied to give the total impact of the dust plume as shown below:

- Low impact – total of three risk factor scores is 3-4.
- Medium impact – total of three risk factor scores is 5-6.
- High impact. – total of three risk factor scores is 7- 9.

The above information provides a three-level dust impact assessment based on three visual criteria assessed in the field by BOGP. BOGP staff will convey the dust impact assessment to the site manager as part of their visual dust observations. The dust risk assessment will used by the site manager to identify and allocate appropriate dust suppression resources. The three level dust impact assessment process and reporting will be added to the Daily Dust Inspection Log (Appendix A).

Site observations are recorded in a daily log form and the daily log forms will be kept for at least 3 years.

10.3. Communication of and Response to Dust Observations and Impact Assessment

BOGP staff will convey the dust impact assessment via phone call or text message to the site manager as part of their visual dust observations. The dust risk assessment and will used by the site manager to identify and allocate appropriate dust suppression resources.

10.4. Dust Observation and Reporting Workflow Process

The anticipated dust observation and reporting workflow Process is shown in Figure 2.

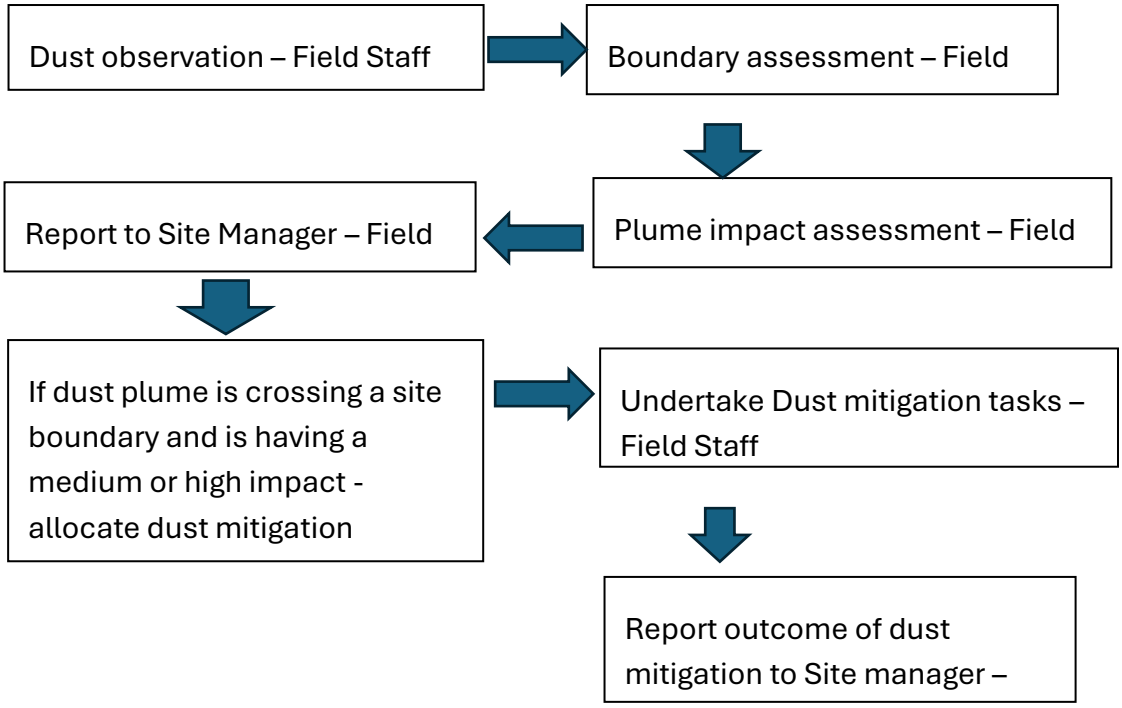

Figure 2: Dust observation and reporting workflow process

10.5. Identifying Site Boundaries During Dust Observations

There are no fences or boundary markers for the majority of the site boundary which would enable BOGP staff to assess whether dust plumes are travelling over the boundary. Therefore, they will be required to understand and identify the site boundaries using landmarks. The BOGP site boundary is shown in Figure 3.

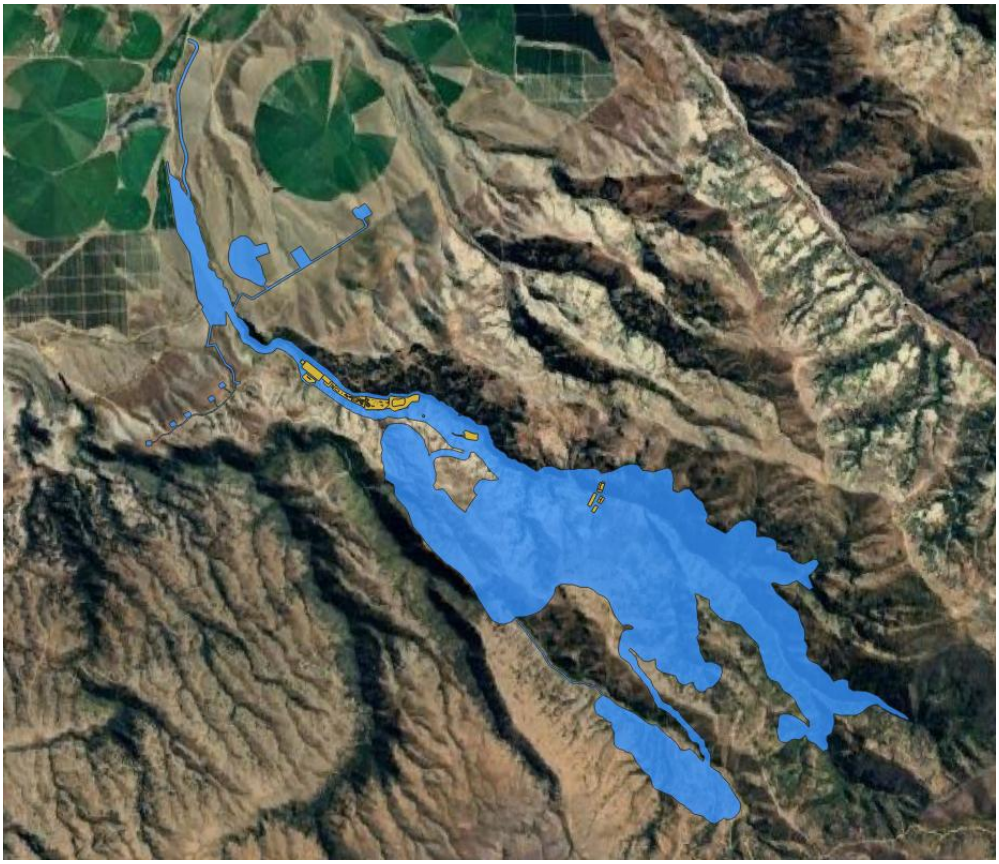

Figure 3: BOGP site boundary

The main impact area is contained within two valley systems, the RAS Creek Valley and the Shepherds Creek Valley. **Figure 4** shows a plan view of the two valleys within which the BOGP mine will sit. Shepherds Creek valley floor is shown by a green line, the Rise and Shine Creek valley floor is shown by a yellow line. The project outline is shown in blue. Shepherds Creek valley floor is at an approximate elevation of 595 m asl with the northern valley wall rising 290 m over a distance of 1,000 m and the southern valley wall rising high valley wall to the north and 253 m high valley wall to the south. The Rise and Shine Creek valley floor is at an approximate elevation of 756 m asl with the northern valley wall rising 100 m over a distance of 250 m.

The key landmarks which BOGP staff will use to visually identify the approximate location of the site boundary with the two-valley system (red oval in **Figure 4)** are:

- The northern floor of Shepherds Valley forms the northern site boundary;
- The eastern floor of Shepherds Valley forms the northeastern part of eastern site boundary;
- Jean Creek indicates the middle part of the northeastern part of eastern site boundary;
- Rise and Shine Creek and the Clear Water Creek indicate the approximate location of the southern site boundary; and
- The southern floor of Shepherds Valley forms the western part of the southern site boundary.

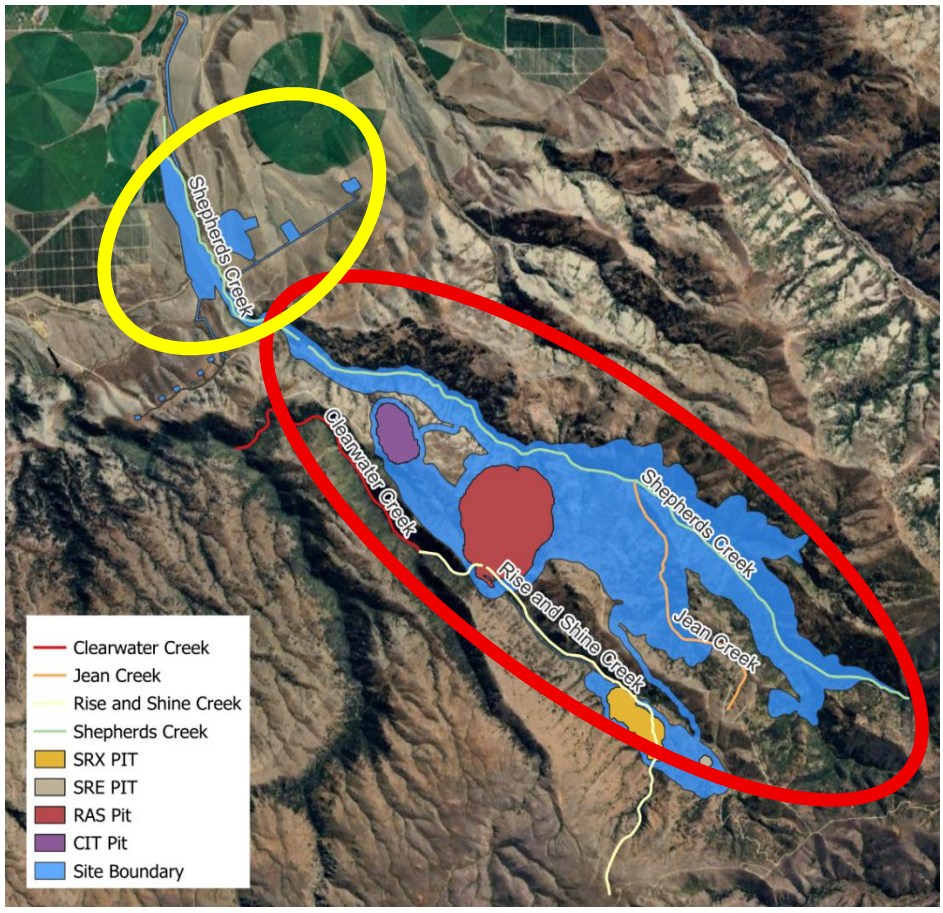

Figure 4: BOGP layout in the RAS Creek valley and the Shepherds Creek valley

The key landmarks which BOGP staff will use to visually identify the approximate location of the site boundary located on the plains to the north of the two-valley system (yellow oval in **Figure 4)** are:

- The fence lines of the accommodation and administration buildings located to the northeast of Thomson Gorge Road;
- 1.5 km Thomson Gorge Road north from the intersection of Matilda rise defines the northern boundary; and,
- 200 m west of Thomson Gorge Road 1.5 km north from the intersection of Matilda rise defines the northern boundary.

10.6. Potential Use of Boundary Dust Cameras

PDP recommend quarterly assessments on the effectiveness of visual observations. The assessment of effectiveness of visual observations should be undertaken by the site management team and consider:

- Staff visual observations as described in Sections 2.1 to 2.4;
- Any dust complaints from public; and,
- Any ORC compliance reports or non-compliance notices.

In the unlikely situation where the quarterly assessment shows that visual dust observations are not being effective then PDP recommend that BOGP consider the installation of a camera to provide an additional supporting input into the dust observations and dust mitigation responses. Any dust camera would be located to capture images of:

- Downwind dust plumes from the problematic dust source/s; and,
- The dust plume moving across the closest boundary.

Any use of boundary dust cameras will be added to a revision of this AQMP.

10.7. Action and Responses

Recording relevant inspection results, as well as the conditions of external and internal factors on the log forms, must be used to help assess if control measures are effective and to define appropriate corrective or preventative actions in the event that adverse effects occur. If any of the log form factors suggest that dust is not being well managed then the operators must:

- Identify the key source/s of dust; and,

- Review and if needed improve the dust mitigation measures being used on the relevant dust sources.

If a dust plume is observed blowing over the boundary a stop work will be issued for the source of that dust. E.g. haul road building, haul road operation or building a soil stockpile.

11. Dust Monitoring – Deposition

11.1. Sites and equipment

The Consent Holder must undertake the following dust deposition monitoring :

a. Background concentration of deposited dust must be determined prior to any significant soil or rock excavation starts; and

b.

c. Operational dust deposition monitoring must commence start as significant soil or rock excavation begins.

Figure 5 shows the location of the five dust deposition monitoring sites that have been installed to collect dust data to assess and manage the impact of dust discharged from BOGP. The sampling method will as closely as practical, follow the requirements of Australia/New Zealand is AS/NZS 3580.10.1:2016 (Deposited matter - Gravimetric method). This monitoring programme must be undertaken for the duration of this consent unless the review process determines otherwise. A photograph of a dust deposition gauge is shown in **Figure 6.** The metadata for each of the dust deposition monitoring sites is shown in **Table 21.**

Figure 5: Locations of dust deposition monitoring sites

Figure 6: Photograph of a dust deposition gauge.

Table 21: Metadata for dust deposition monitoring sites			
Site name	**Install date**	**Equipment**	**Site Type**
Ardgour Flats	11 September 2024	Dust Deposition Gauges to meet the requirements of AS/NZS 3580.10.1:2016	Background
CIT Valley			Impact
CIT Stamper			Impact
CIT Valley North			Impact
RAS			Impact

11.2. Triggers and Responses

The dust deposition data will be used for two purposes:

- Assessing the pre-development dust deposition rates; and,
- Determining if the BOGP dust mitigation measures are being effective.

Typically for a sensitive receptor, an increase in dust disposition rate of 4 g/m^2 over 30 days above background dust deposition rates is accepted as an indicator that additional dust mitigation is likely required. Given the low sensitivity of the on-site locations of the dust deposition gauges and distances to off-site receptors, the indicator that additional dust mitigation is required will be 6 g/m^2 over 30 days above background dust deposition rates.

For the BOGP the Ardgour Flats dust deposition monitoring site has been identified as providing the most useful indicator of the wider area's background dust deposition rates.

The increase in dust disposition rate due to the BOGP activity will be estimated as either the difference between the deposition rate measured at each:

- Of the four impact sites and the deposition rate measured at the Ardgour Flats in the same period; or.
- Monitoring site location's background and operational period measurements.

Should the increase in dust disposition rate at any of the four impact sites be calculated as greater than 6 g/m^2 over 30 days then the following actions will be taken:

- Identify the key source/s of dust impacting the sites which have exceeded the dust deposition trigger level; and

- Review and if needed improve the dust mitigation measures being used on the relevant dust sources.

11.3. Process for review of dust deposition

The process for the review of the dust deposition monitoring programme results is as follows.

After the first 12 consecutive months of background monitoring, the Consent Holder must engage a suitably qualified and experienced independent air quality practitioner chosen in consultation with Otago Regional Council to review and interpret the monitoring data and determine what the background deposition monitoring rates are.

After the first 12 consecutive months of operational monitoring, the Consent Holder must engage a suitably qualified and experienced air quality practitioner chosen in consultation with Otago Regional Council to review and interpret the monitoring data and determine what the operational deposition monitoring rates are.

Having reported on the first 12 months of operational monitoring, the suitably qualified and experienced air quality practitioner will make a recommendation as to the necessity of continued operational monitoring. MGL may:

a. Advise Otago Regional Council of its intention to cease the monitoring, and the date by which it intends to do so; or

Elect to continue monitoring. If this option is selected, the Consent Holder may choose to follow the review process in part (d)(ii) annually to determine if monitoring should continue for subsequent years.This AQMP shall be revised in response to any changes to the deposited dust monitoring programme.

12. Dust Monitoring – Real Time

12.1. Sites and equipment

Figure 7 shows the location of the three real-time dust monitoring sites that have been installed to collect dust data to assess and manage the impact of dust discharged from BOGP. A photograph of the current real-time dust monitoring equipment is shown in **Figure 8.** The Lake Clearview monitor will be shifted to the site's administration offices on Ardgour Terrace when those buildings have been set up. The new site is approximately 2 km due east of the current Lake Clearview site and is shown by the yellow circle in **Figure 7**. The new site will meet the requirements of usefully assessing any off-site dust impacts of the mining operation. The metadata for each of the sites is shown in **Table 22.**

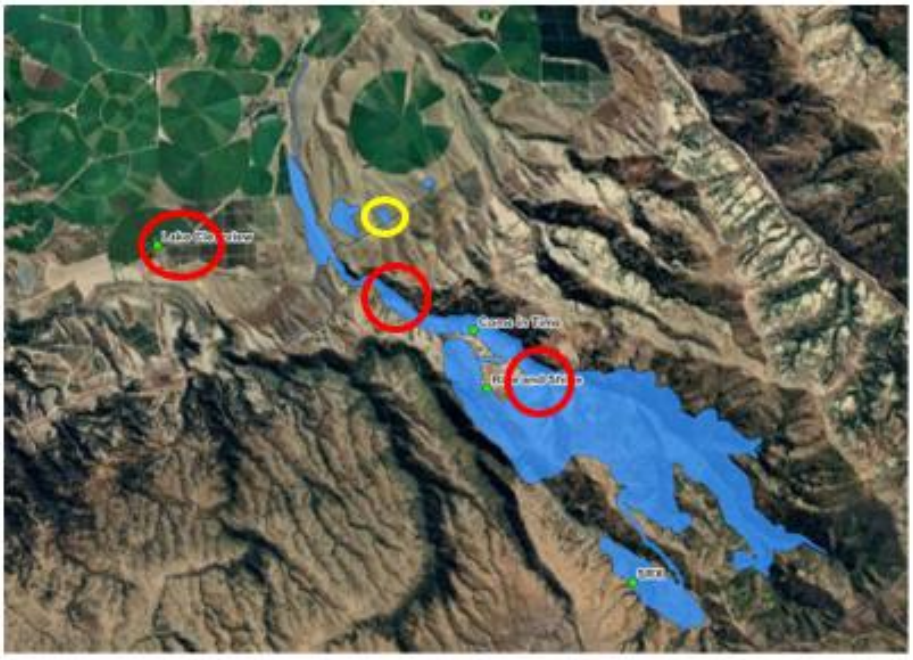

Figure 7: Locations of real-time particulate monitors (red circles)

Figure 8: Photograph of real time dust monitoring equipment

Table 22: Metadata for PM_{10} dust monitoring sites			
Site name	**Install date**	**Equipment and PM measurement type**	**Data capture rate (%) to June 2026**
Lake Clearview	11 February 2023	e-BAM Plus	99.1
CIT valley North	11 December 2024	ES-642 - TSP	97.5
TBC Processing plant	TBC	TBC	TBC

12.2. Triggers and Responses

The dust monitoring instruments will provide real time data to the site staff. This information will be used to assist with the dust management of the site. The dust monitoring system must be set up to send email and SMS text alerts to site staff. The monitors provide real-time PM_{10} or TSP data each minute and will send an alert to the site's Environmental Manager when concentrations exceed the trigger level as shown in Table 23 for TSP and Table 24 for PM_{10}.

Table 23: TSP Trigger level	
1-hour rolling average concentration	**Actions**
300	⁘ Identify the key source/s of dust impacting the sites. ⁘ Review and if needed improve the dust mitigation measures being used on the relevant dust sources. ⁘ Continue reviewing dust monitoring data until the 1 -hour rolling average TSP concentration drops below 300 µg/m^3.
500	⁘ Identify the key source/s of dust impacting the sites. ⁘ If on-site dust sources are identified, halt these dust generating activities until the 1 -hour rolling average TSP concentration falls below 500 µg/m^3.

Table 24: PM_{10} Trigger level	
1-hour rolling average concentration	**Actions**

100	⁘ Identify the key source/s of dust impacting the sites. ⁘ Review and if needed improve the dust mitigation measures being used on the relevant dust sources. ⁘ Continue reviewing dust monitoring data until the 1 -hour rolling average PM_{10} concentration drops below 100 µg/m^3.
250	⁘ Identify the key source/s of dust impacting the sites. ⁘ If on-site dust sources are identified, halt these dust generating activities until the 1 -hour rolling average PM_{10} concentration falls below 250 µg/m^3.

Upon receipt of the dust alert message the site manager will undertake the relevant action/s that are defined in **Table 26.** The dust data will be logged and archived and will be used in the complaint response procedure (see Section 8.2).

12.3. Review Process

The following process will be followed for reviewing the real time TSP and PM_{10} results and to determine if the mitigation trigger values need to be revised.

After 12 consecutive months of operational monitoring, the Consent Holder should engage a suitably qualified and experienced air quality practitioner to review the real time TSP and PM_{10} data alongside the site operational records. The purpose of this review is to determine if the TSP and PM_{10} monitoring locations and mitigation trigger levels are effective for dust control while not unnecessarily constraining the site operational activities.

If the finding of the independent suitably qualified and experienced person is that the TSP or PM_{10} mitigation trigger levels are not being effective for dust control or are unnecessarily constraining on the site activities, MGL may advise Otago Regional Council of its intention to revise the TSP or PM_{10} mitigation trigger levels which would be detailed by a revision of this AQMP.

13. Arsenic Dust Monitoring

13.1. Objective

Elevated levels of arsenic in soils across parts of the BOGP area has been identified by the Preliminary Site Investigation report (Geocontam Risk Management Ltd, 05/08/2025). The Air Quality Assessment determined that the off-site risks posed by dust containing elevated levels of arsenic is less than minor. The expert conferencing Joint Witness Statement agrees with this conclusion.

In order to demonstrate this absence of effects, MGL is proposing to provide Arsenic Ambient air quality monitoring data to inform Stakeholders of the actual impacts of the BOGP.

Matakanui Gold has considered these views and is proposing to provide Arsenic Ambient air quality data to inform Stakeholders of the actual impacts of Matakanui Gold's proposed activity.

13.2. Sites and equipment

Figure 7 shows the location of the two arsenic monitoring sites that will be installed to collect dust data to assess the impact of dust with elevated levels of arsenic discharged from BOGP. The two monitoring sites will be located at:

- Crushing plant.
- Elevated As soil stockpiles, within the CIT Valley.

The most practical method for monitoring airborne arsenic at BOGP is US EPA Method IO-3.1.

PDP has been involved in projects where this method has been used to quantify the amount of metals contained in ambient dust downwind of a metal recycling plant. Our experience with this monitoring method is:

- A filter and pump air sampler system is required; and;
- On Site meteorological monitoring data will be available to assist with the analysis of the data collected by the air sampler.

Very briefly this method takes pre-field tared filters, runs sample air through them, and after exposure the filters are reweighed to determine total mass of particulate matter, then the filter and particulate matter are digested in acid and analysed by a laboratory by for metals including Arsenic.

As a starting point the filters will be exposed for a period of 30 days. This exposure period may be varied depending on the amount of material collected so that enough material is captured for arsenic to be detectable above the laboratory's analytical detection limits.

MGL will collect filters across a 12-month period to provide an annual average concentration to be compared against the MfE ambient air quality guideline for airborne inorganic arsenic of 0.0055 µg/m^3 as an annual average.

The two on-site particulate samplers detailed at section 12.1 will be utilised during the operational phase of BOGP to collect the filters if the instruments can be configured to do so. Alternatively, a separate pump and filter system will be installed at these monitoring sites to expose the arsenic sampling filters

Pre-activity (background) sampling will start at the CIT Valley North monitoring site as soon as practical prior to the commencement of bulk earthworks to establish baseline Arsenic Ambient Air concentrations. It was agreed with ORC that a baseline measurement at one site within the valley system should be sufficient. Background measurements will be completed prior to the disturbance of any areas of topsoil with relatively high Arsenic content. If it is not practical to collect 12 filters for the background measurement a minimum of six filters will be collected over the months of October to March to provide a worse case estimate of the annual average concentration.

When the activity starts on site, arsenic in air will be measured at two locations. Downwind of:

- Crushing plant; and,
- Elevated As soil stockpiles.

A photograph of the current real-time dust monitoring equipment is shown by the red circles in Figure 9**.** Figure 10 shows a photo of a generic arsenic dust monitor. The metadata for each of the sites is shown in Table 25

Figure 9: Approximate Locations of real-time particulate monitors for airborne arsenic monitoring (red circles)

Figure 10: Generic photograph of arsenic dust monitoring equipment

Table 22: Metadata for arsenic dust monitoring sites			
Site name	**Install date**	**Equipment and PM measurement type**	**Data capture rate (%)**
Background	TBC	TBC	TBC
Crushing Plant	TBC	TBC	TBC
As soil stockpiles	TBC	TBC	TBC

13.3. Triggers and Responses

The Environmental Performance Indicator for airborne arsenic dust will be the MfE Ambient Air Quality Guideline value, 0.0055 µg/m^3 as an annual average. This will be reviewed and if needed amended during the reviews of the background and operational data.

13.4. Review Process

The following process will be followed for reviewing the arsenic monitoring results and determining if the arsenic monitoring programme will be continued.

After the completion of the pre-operation background monitoring, the Consent Holder must engage a suitably qualified and experienced air quality practitioner chosen in consultation withOtago Regional Council to review and interpret the monitoring data and determine the background concentrations of arsenic in air.

After 12 consecutive months of operational monitoring, the Consent Holder must engage a suitably qualified and experienced air quality practitioner chosen in consultation withOtago Regional Council to review and interpret the monitoring data and determine the operational concentrations of arsenic in air. If the operational arsenic monitoring shows that arsenic concentrations in ambient air are not above the arsenic Environmental Performance Indicator or if the recommendation of the independent suitably qualified and experienced person is that arsenic monitoring is not required, MGL may:

a. Advise Otago Regional Council of its intention to cease the monitoring, and the date by which it intends to do so; or
b. Elect to continue monitoring. If this option is selected, the Consent Holder may choose to follow the review process annually to determine if monitoring should continue for subsequent years.

This AQMP shall be revised in response to any changes to the arsenic dust monitoring programme.

14. Meteorological Monitoring

14.1. Sites and equipment

Figure 11 shows the location of the four meteorological monitoring sites (green dots) that have been installed to collect wind data to inform the dust assessment. The location and design of the meteorological stations are, as far as practicable, consistent with the AS/NZS 3580.1.1:2016. A photograph of the monitoring equipment is shown in **Figure 12**. It is important to note that the Lake Clearview monitor will be shifted to the site's administration offices on Ardgour Terrace when those buildings have been set up. The new site is approximately 2 km due east of the current Lake Clearview site and is shown as the green circle in **Figure 11**. The new site will meet the requirements of usefully assessing the wider Bendigo area wind conditions. The metadata for each of the sites is shown in **Table 25.**

Figure 11: Locations of meteorological monitoring sites

Figure 12: Photograph of the Lake Clearview meteorological monitoring equipment

Table 25: Metadata for meteorological monitoring sites				
Site name	**Install date**	**Equipment**	**Anemometer height (m)**	**Data capture rate (%)**
Lake Clearview	11 Feb 2023	The Gill Windsonic Ultrasonic Wind Sensor is a high-end meteorological grade wind speed and direction sensor. The Harvest Air Temperature/Relative Humidity/Barometric The sensor has a calibrated accuracy of ±0.1°C (temperature), ±1.5% relative humidity, and ±1.5mbar barometric pressure. The HyQuest TB3 is a high-quality tipping bucket rain gauge with	10	99.9
CIT	11 Feb 2023		6	99.8
RAS	13 Dec 2024		6	NA
SRX	11 Feb 2023		6	100

Table 25: Metadata for meteorological monitoring sites				
Site name	**Install date**	**Equipment**	**Anemometer height (m)**	**Data capture rate (%)**
		accuracy of ±2% for measuring rainfall.		

14.2. Actions, Triggers and Responses

Monitoring weather forecasts will be undertaken daily and used to inform the potential need for additional mitigation measures (e.g. in the event that strong winds are forecast).

Before the daily briefing meeting, the Site Manager must obtain the weather forecast for the day and identify whether high dust risk conditions (see **Table 26**) may occur. If high dust risk conditions are forecast, the Site Manager will highlight this to other on-site staff and instruct whether any additional dust mitigation is to be implemented for that day.

The forecast occurrence of high dust risk conditions shall be noted in the daily log along with any outcomes from the daily briefing meeting.

The meteorological station will provide real time data to the site staff. This information will be used to assist with the dust management of the site. The meteorological system will be set up to send email and SMS text alerts to site staff. An alert will be sent when 1-hour average windspeeds exceed 5 m/s which will prompt site staff to carefully monitor dust sources and implement additional mitigation measures if required. An alert will be sent when 1-hour average windspeeds exceed 7.5 m/s, which will prompt site staff to stop work on dust generating activities if dust discharges are witnessed that cannot be adequately controlled **and** are toward sensitive receptors within 500 m of the site boundary **and** when dust is seen blowing over the site boundary.

Table 26 shows a summary of the meteorological conditions contributing to different dust risk levels, the associated notifications, and required responses.

Table 26: Dust Risk Levels, Meteorological Conditions and Responses				
Dust Risk Level	**Wind Speed**	**Wind Direction (blowing from)**	**Notification**	**Response**
Low	< 5 m/s	All directions	-	-

Table 26: Dust Risk Levels, Meteorological Conditions and Responses				
Medium	5 – 7.5 m/s		Text & email	Prepare for mitigation actions, visual inspection of dust discharges and implement water application for dust suppression if required
High	5-7.5 m/x	Easterly quarter	Text & email	Apply due caution to dust generation, dust monitoring and dust mitigation when dust is being generated during the construction or use of the access road within 300 m of Dwelling 3.
High	≥ 7.5 m/s	All directions	Text & email	Operators to visually identify any dust discharges and sensitive receptors within 500 m in downwind direction. Dust mitigation measures are to be implemented as appropriate in response to any dust discharges witnessed. If dust is observed crossing the boundary and blowing toward sensitive receptors which are located within 500 m of the source, the dust generating operation is to cease.

Meteorological data will be logged and archived and will be used in the complaint's response procedure (see Section 8.2).

14.3. Ore Processing Plant Gaseous Air Contaminant Monitoring

The ore processing plant gaseous air and particulate contaminants discharges are continuously monitored at the control room. This monitoring includes instrumental monitoring of the pH within the leaching and adsorption tanks to avoid the generation of HCN. Instrumental HCN monitors with set trigger alarm points are in the ore processing plant for health and safety purposes. Any instance of elevated HCN concentrations leads to a shut-down of the process.

The airflow from the electro-winning cell and induction furnace is continuously monitored. The induction furnace reverse jet furnace bag filter system includes a pressure-drop gauge to monitor for clogging and bag tears.

15. Frequency of Monitoring

Table 27 outlines the frequency of the activities undertaken as part of the monitoring programme.

Table 27: Monitoring Programme Activities and Frequency	
Monitoring Activities	**Frequency**
Check weather forecasts for strong winds and rainfall to plan appropriate activities and dust management response (7-day forecasts also available on www.metvuw.com and www.metservice.com).	Daily and as conditions change
Visual dust monitoring early afternoon site assessment.	Daily
Daily log form for visual monitoring of dust.	Daily
Monitor ore processing plant operational conditions, including the pH of the leaching and adsorption tanks, furnace bag filter system, and extraction fans operation.	Ongoing
Monitor workplace exposure to HCN with alarms for detection.	Ongoing
Record the pressure drop across the induction furnace fabric filter baghouse emission control system to detect any blinding or tears.	Daily
Inspect and calibrate ore processing plant pH monitors, HCN alarms, and emission control systems.	Monthly
Inspect watering systems (water cannon, sprinklers, water carts and any other spray system) to ensure equipment is maintained and functioning to effectively dampen exposed areas.	Weekly
Inspect dust generating activities (as listed in Section 2) to ensure dust emissions are effectively controlled.	Ongoing
Monitor dust concentrations in air, with alerts for high concentrations.	Ongoing
Monitor dust generating activities and water application rate.	In winds over 7.5 m/s blowing all directions.

16. Reporting of Monitoring Programme

The following information must be recorded in a daily dust inspection log (Appendix A) or an equivalent system:

- Results of the daily site inspections of visible dust emissions;
- Likely source(s) of any observed dust;
- General weather conditions during the day (i.e., windy, calm, warm, rain etc.);
- The frequency of use of the sprinkler system, water cannon and any water carts (if needed);
- Dust and ore processing plant emissions control equipment malfunctions and any remedial action(s) taken;
- Any unusual on-site activities; and
- Records of any complaints or other community feedback.

The log forms will be collated and stored on site and will be made available to ORC staff upon request.

Data from the dust and meteorological monitors is to be continuously recorded to an electronic system at a minimum of 10-minute resolution. The data is to be held for at least two years from the date recorded.

17. CHANGE MANAGEMENT

The AQMP will be reviewed and updated, with the necessary re-certification, throughout the course of the mining activity timeline to reflect changes in dust management techniques, staging of excavation and fill areas, or changes to the receiving environment. Re-certification by ORC will be required for any relevant revisions of a material nature for the AQMP. 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 option for dust controls;
- Results of inspection and maintenance programmes, logs of incidents, corrective actions, internal or external assessments; and
- The outcome of investigations into discharges of dust/odour/air pollutants.

Reasons for making changes to the AQMP will be documented and version tracking will be recorded in the 'Document Control' register at the start of this report. A copy of the original AQMP document and subsequent versions will be kept for the project records and marked

as obsolete. Each new/updated version of the AQMP documentation will be issued with a version number and date and the following version update table be completed and added to the Exec summary of the AQMP.

Item	Section	Summary of change	Reason for change	Complexity of change	Date
1.				☐ Minor ☐ Moderate ☐ Major	
2.				☐ Minor ☐ Moderate ☐ Major	
3.				☐ Minor ☐ Moderate ☐ Major	

18. Appendix A: 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 material disturbance areas or site access roads?	Y N N/A	
Are unsealed surfaces generating visible dust that could pose a safety risk or nuisance and need spraying with water?	Y N N/A	
Are any exposed earthworks or material disturbance areas generating visible dust that could pose a safety risk or nuisance 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? See Section 10.5 of the AQMP on identifying site boundaries.	Y N N/A	
If dust is going off site, is the plume: ⁘ Low impact – total of three risk factor scores is 3-4. ⁘ Medium impact – total of three risk factor scores is 5-6. ⁘ High impact. – total of three risk factor scores is 7- 9.		

Scope of Inspection	Circle Relevant Item	Comments
See section 10.2 of the AQMP for plume impact assessment method.		
If wind speeds are strong or forecast to be strong (over 7.5 m/s) are additional inspection and mitigation measures necessary? Has the shift superintendent been advised? (e.g. increase water application, restrictions on dusty activities)	Y N N/A	
Are watering systems (e.g. sprinklers, water carts, wheel wash) operating effectively to minimise dust?	Y N N/A	
Note and dust control equipment malfunctions (and remedial actions taken as appropriate)		
Any unusual on-site activities today?		

19. APPENDIX B – Dust Complaint and Assessment Form

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 Any odour

Shape Water soluble

Size Other

Crystalline or powdery

Hard, soft

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.