



Air Quality Management Plan

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Department	Environment and Social Performance
Location/Site	Macraes

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1 REFERENCE AND COMPLIANCE

Level	Source
Legislation, Guidelines, Resource Consents	Ministry for the Environment. 2016. Good Practice Guide for Assessing and Managing Dust. Wellington: Ministry for the Environment
	Discharge Permit 96785_V5 - To discharge contaminants from mining operations and post mining rehabilitation to air in the vicinity of Macraes Flat.
	Discharge Permit RM10.351.52.V4 - To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations
	Discharge Permit RM12.378.15 - To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations (Coronation Waste Rock Stack, Coronation Pit and associated haul roads, utility areas and stockpiles).
	Discharge Permit RM16.138.19_V1 - To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations (Coronation North Project).
	Discharge Permit RM20.024.12 - To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations (Deepdell North Stage III Project).
	Discharge Permit RM20.130.01_V1 - To discharge contaminants to air for the purpose of ventilating the Golden Point Underground Mine – Application dated March/April 2020 and GPUG Extension and Expansion application dated October 2023
	[Placeholder for MP4 FTAA permit conditions]
Corporate	Oceana Gold Environmental Performance Standards Manual – Operational Environmental Standard Air Quality
Site	Annual Oceana Macraes – Ambient Air Monitoring Report – 2010 to 2025.

2 PURPOSE

The purpose of this Air Quality Management Plan (AQMP) is:

To facilitate the avoidance, remediation and mitigation of any adverse effects of contaminant discharges to air beyond the boundary of the site that may be generated from mining activities and to promote proactive solutions to the control of those discharges from the site.

The AQMP gives effect to MP4 consent conditions **x, y, z** in the following sections **[to be inserted when consents are granted]**.

The AQMP includes information on the following:

- The sources of contaminant discharges to air at the Macraes Operation;
- Mitigation and prevention measures;
- Monitoring methods;
- Mechanisms for remediation of adverse effects (should this be required);
- Methods for managing complaints regarding air quality and keeping records related to compliance; and
- Key responsibilities, consultation and reporting.

The AQMP is intended to be a working document and is to be reviewed annually and updated as necessary from those reviews. OGNZL may lodge an amended monitoring plan, management plan or other document for recertification at any time. Minor/administrative changes may be implemented without recertification where written notice is provided to ORC no less than 5 working days prior to publication of the amended document in accordance with Condition xx

Minor/administrative changes are limited to corrections of errors, updates to contact details, updates to reflect changes in organisational structure, formatting improvements, or other changes that:

- Do not alter the objectives, performance standards, mitigation methods, monitoring methodology, or reporting requirements of the certified document; and
- Do not materially affect the scale, location, or nature of activities authorised by these consents.

3 SCOPE AND OBJECTIVES

This AQMP applies to the entire OceanaGold (New Zealand) Limited (**OGNZL**) Macraes Operation and includes the activities authorised under the Macraes Phase Four Project (MP4), which extends the life of mining at the Macraes Operation for at least 10 years.

The objectives of this management plan are:

- To describe current and proposed air quality (mainly dust) management methods and procedures;
- To enable OGNZL to operate in full compliance with resource consent requirements including managing any adverse effects within the boundary of the site; and
- To describe the air quality monitoring regime and reporting of results.

4 AIR DISCHARGE CONSENTS

This AQMP covers (or, as part of previous iterations, has covered) the following areas/projects:

- The original mining operation at Macraes (up until May 2012);
- Macraes Phase III mine expansion area;
- Frasers Underground;
- Coronation Project area;
- Coronation North Project area;
- Frasers West Project (variation to the Macraes Phase III consent);
- Deepdell North Stage III project area;
- Frasers Co-Disposal Project;
- Continuity Consents Project Stage 2 (precursor consents to Macraes Phase 4);
- Golden Point Underground (including 2023 Variation); and
- MP4.

This AQMP has been prepared by a suitably qualified and experienced person, to meet the requirement for an AQMP, which is a resource consent condition in:

- Multiple air discharge consents held by OGNZL. Two air discharge consents are also held for the ventilation of the Frasers and Golden Point Underground mines. Details of these consents are summarised in **Table 4-1**.
- Resource consent for the discharge of contaminants to air associated with MP4 to authorise discharges from the new and existing active mining areas (Innes Mills, Golden Bar, Coronation, Coronation North and Golden Point Underground) together with the continued operation of the Processing Plant, for which the existing consents expire in 2032.

Table 4-1: Air Discharge Consents held by OGNZL.

Consent Number	Details
Discharge Permit 96785_V5	To discharge contaminants from mining operations and post mining rehabilitation to air in the vicinity of Macraes Flat. (All the mine site pre-May 2012)
Discharge Permit 2006.689	To discharge contaminants to air for the purpose of ventilating Frasers Underground Mine.
Discharge Permit RM10.351.52_V4	To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations
Discharge Permit RM12.378.15	To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations (Coronation Waste Rock Stack, Coronation Pit and associated haul roads, utility areas and stockpiles).
Discharge Permit RM16.138.19_V1	To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations (Coronation North Project).
Discharge Permit	To discharge contaminants from mining operations and post mining rehabilitation to air for the purpose of undertaking mining operations (Deepdell North Stage III Project).

RM20.024.12	
Discharge Permit RM20.130.01_V1	To discharge contaminants to air for the purpose of ventilating the Golden Point Underground Mine – Application dated March/April 2020 and GPUG Extension and Expansion application dated October 2023.
[placeholder for MP4 consent]	

Discharge Permits 96785_V5, RM10.351.52_V4, RM12.378.15, RM16.138.19_V1, RM20.024.12, and RM20.130.01_V1 include a condition requiring a dust management plan (DMP). However, this AQMP is considered to fulfil the DMP requirements of these permits as well as any additional requirements under the MP4 project.

5 SITE OVERVIEW

5.1 Description of the Macraes district

5.1.1 Topography, Land Use and Receptors

The Macraes Operation sits within a rural upland landscape of fluvially dissected rolling hills of moderate relief and with characteristic broad ridge crests; being the coastal extent of Central Otago's basin and range topography.

Prominent regional landscape features include the Nenthorn Valley, Taieri Ridge, Taieri Valley and the Rock and Pillar Range, which lie to the south and west, the Shag Valley and Horse Range to the east and the coastal hills and extinct volcanic cones of Palmerston and Waikouaiti to the south.

Pastoral farming is the broad land use in the area, followed by gold mining; the latter has a history in the area dating back to the 19th century. Macraes lies on the eastern edge of the schist country and the broader historic goldfields of Central Otago. The presence of the relatively large scale Macraes Operation is a noticeable and culturally significant element in the current landscape. The Macraes Operation is the modern 'face' of open pit gold mining; its presence and effect relative to landscape change is now an important factor contributing to the local landscape character.

The long-term, focal and cultural landscape feature of Macraes Flat is the Macraes Village with its hotel, school, churches, cemeteries and small clusters of houses and various outbuildings and shelterbelts. The village sits in isolation within 'the flat' and various local roads lead to even more isolated farms and homesteads. Scattered and isolated habitation is a feature of the open, rolling, landscape on the edge of basin and range topography that expands through to the upper Taieri and Maniototo.

The locations of sensitive receptors to the Mine are shown in **Figure 5-1** and **Figure 5-2**.

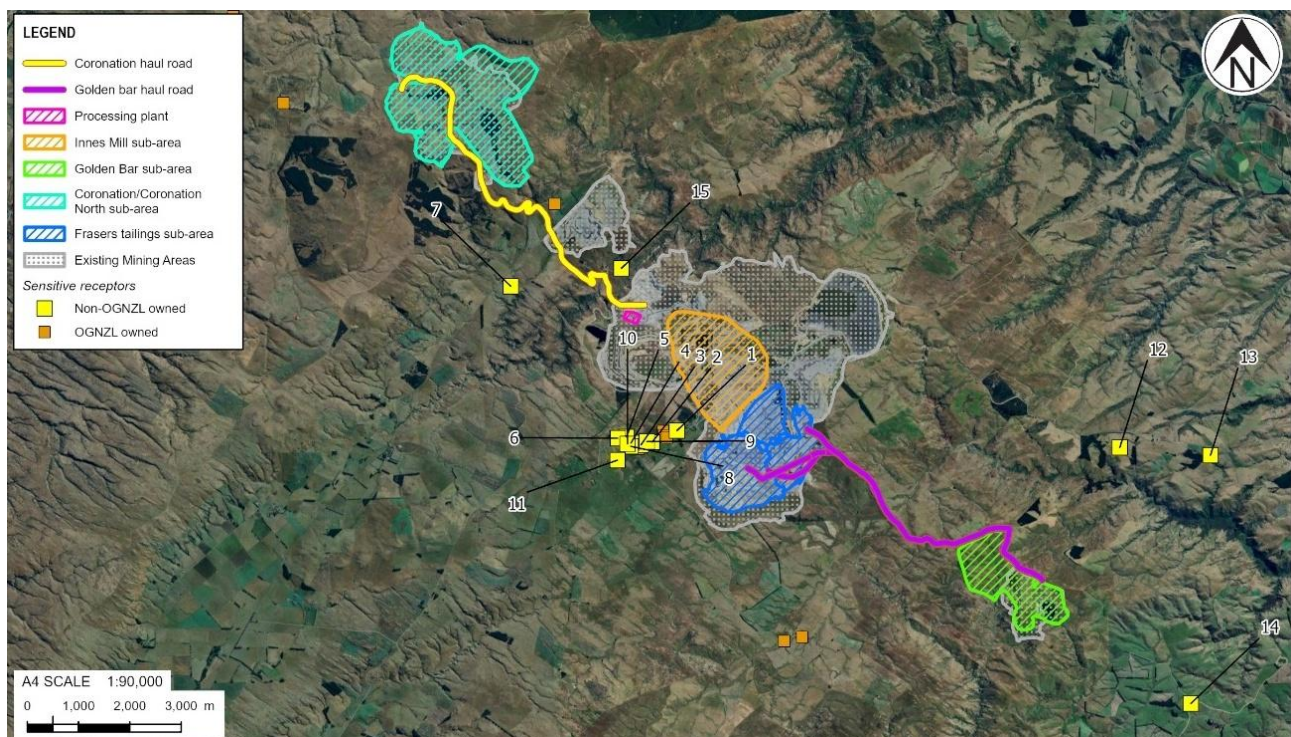


Figure 5-1: Sensitive receptor locations.



Figure 5-2: Sensitive receptor locations – Macraes Village.

5.1.2 Site Weather Conditions

The main features of the Macraes Flat climate are the relatively low rainfall (site average annual rainfall is 634 mm) and the moderately strong average wind speed of 3.77 m/s¹. Both features can contribute to the generation and transport of dust. OGNZL measures wind speed and wind direction at a weather station located on Golden Point Road and at a second site adjacent to dust monitoring site 15 near the Macraes Village. A wind rose for the Macraes Village site for the period from 2017 to 2025 is shown in **Figure 5-3**. The predominant wind directions are from the west-southwest, northwest and east.

¹ Macraes Mining Company Ltd. Macraes Gold Project Discharges to Air Assessment of Environmental Effects December 1996.

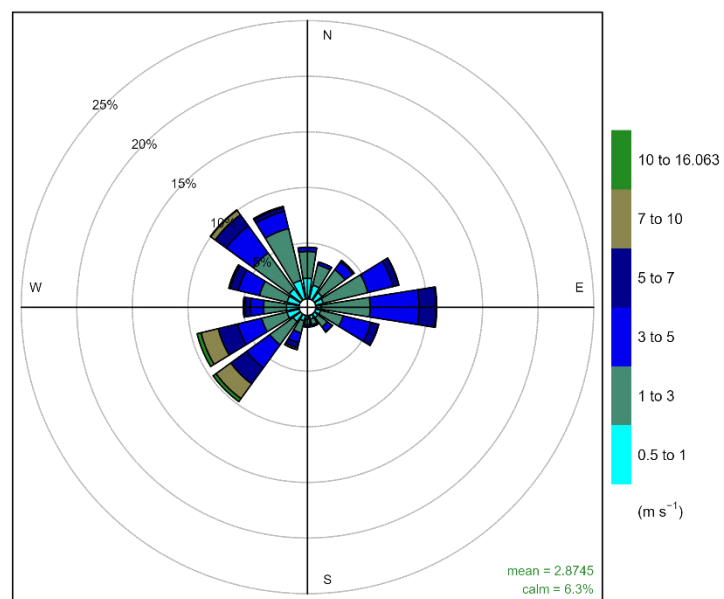


Figure 5-3: Wind rose (hourly average) for dust monitoring site DG15 (Macraes Village) from 2017 to 2025.

5.2 Macraes Operation

5.2.1 Key features

The Macraes Operation has been operational since 1990. The existing mining area extends to the north and south of Macraes-Dunback Road as shown on **Figure 5-4**.

The key features of the Macraes Operation² up to March 2026 are:

- The Deepdell South (now fully backfilled), Deepdell North, Golden Point, Round Hill, Innes Mills, Frasers, Golden Bar (currently a pit lake), Coronation, Coronation North, and Gay Tan Open Pits;
- Frasers and Golden Point Underground (Frasers is now closed);
- The Mixed Tailings, Southern Pit 11, Top Tipperary, and Frasers Tailings storage facilities;
- The Deepdell West and East, Northern Gully North and South, Frasers West, East, and South, Golden Bar, Coronation, Coronation North and Trimbells Waste Rock Stacks;
- A processing plant;
- Various offices, workshops and ancillary buildings or facilities;
- The Lone Pine Fresh Water Reservoir;
- Haul roads, light vehicle access roads, assorted silt ponds, topsoil stockpiles, oxide stockpiles and low-grade stockpiles;
- Works associated with road realignments of Macraes-Dunback Road and Golden Bar Road; and
- Dams in Camp Creek and Coal Creek (yet to be constructed).

The Coronation and Coronation North projects commenced in 2015 and 2017 respectively and are located on the Taieri Ridge. Mining consists of the Coronation and Coronation North Pits and associated waste rock stacks. Coronation and Coronation North are linked to the Processing Plant via a haul road and a culvert crossing across Deepdell Creek.

The Frasers West Project commenced in 2020 and established a new 16.5 ha Frasers West Pit, disposal of waste rock in Frasers Pit and Frasers South Pit; backfilling of the newly established Frasers West Pit using waste rock from the neighbouring Innes Mills and Frasers Slip Pits; and establishment of a new noise bund between the Frasers West Pit and Macraes Flat Township.

The Deepdell North Project area commenced in 2020 and involved re-mining the Deepdell North Pit and expanding it from 18.7 ha to 38 ha, creation of the Deepdell East Waste Rock Stack and backfilling of the existing Deepdell South Pit. Mining at Deepdell North is mostly completed.

The Top Tipperary Tailings Storage Facility (TTTSF) is located to the east of the Frasers-Innes Mills Pit. In late 2025 tailings disposal moved to the Frasers in-Pit Tailings Facility (FTSF) which is now the primary operational TSF. The Mixed Tailings Impoundment and the Southern Pit 11 tailings storage are currently in the process of being rehabilitated, whilst also providing some water storage.

The processing plant is centrally located on the southern side of Deepdell Creek and below the Southern Pit and Mixed Tailings facilities.

The Deepdell Pit, Round Hill/Golden Point Pit, the associated waste rock stacks, the Southern Pit 11 and Mixed Tailings Storage Facilities and sections of Coronation Pit and Waste Rock Stack lie in the Deepdell Creek Catchment, whilst the Frasers Pit and associated rock stacks lie predominantly in the North Branch of the Waikouaiti River catchment. The TTTSF and a small portion of Frasers East Waste Rock Stack lie in the Tipperary Creek Catchment. Coronation North Pit and Waste Rock Stack and sections of Coronation Pit

² The MP3 extension was not constructed and therefore this AQMP does not include the extension consented under the MP3.

and Waste Rock Stack lie in the Māori Hen Creek and Trimbells Gully Creek (tributaries of the Mare Burn in the Taieri River catchment).

To date, the mining footprint of the Macraes Operation totals 2,150 ha in disturbance, of which 650 ha has been rehabilitated.

The MP4 Project will extend the life of the Macraes Operation for at least 10 years. The key activities comprising MP4 are as follows:

- Open pit mining extensions at Golden Bar, Coronation, Coronation North and Innes Mills (including extensions to existing pits and pit backfilling where appropriate).
- Further development of the Golden Point Underground mine.
- Construction of the Frasers Tailings Storage Facility (FTSF) Stage 3 to accommodate an additional 153 million tonnes of tailings, together with mining and relocation of tailings from the Mixed Tailings Impoundment (MTI), Southern Pit Option 10 (SP10) and Southern Pit Option 11A (SP11A) to the FTSF.
- Increased waste rock storage within open pits and at existing waste rock stacks at Coronation, Coronation North, Innes Mills, Golden Bar, Golden Point and Frasers.
- Water management infrastructure including the consented Camp Creek and Coal Creek water storage dams; realignment of Macraes Road; relocation of the Open Pit Mining Workshop; and progressive mine closure and rehabilitation.
- The Processing Plant will continue to operate, processing ore through a pressure oxidation (POX) circuit to produce gold doré.

Elements of the MP4 project are shown in **Figure 5-5**.

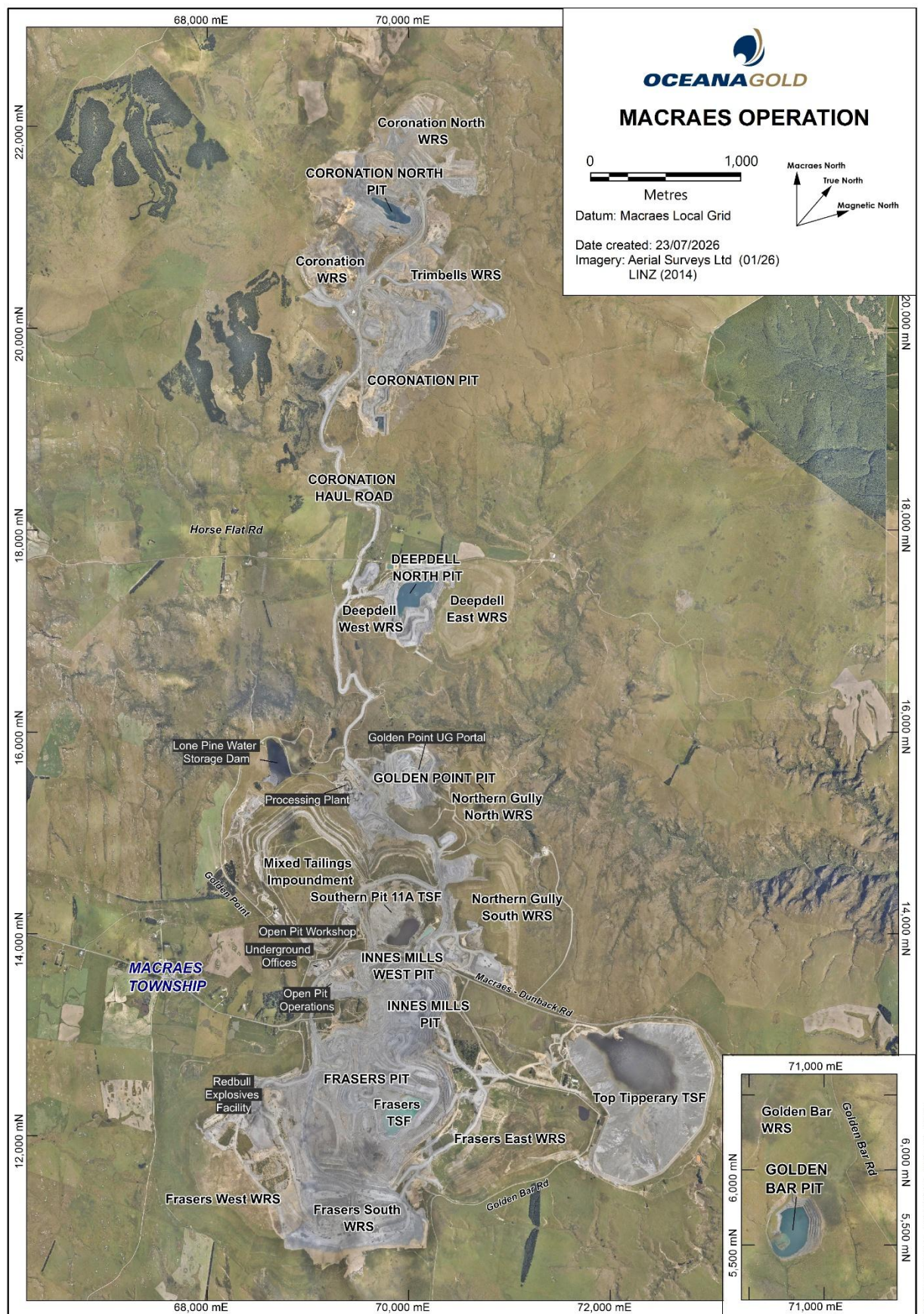


Figure 5-4: Macraes Operation Existing Mine Elements

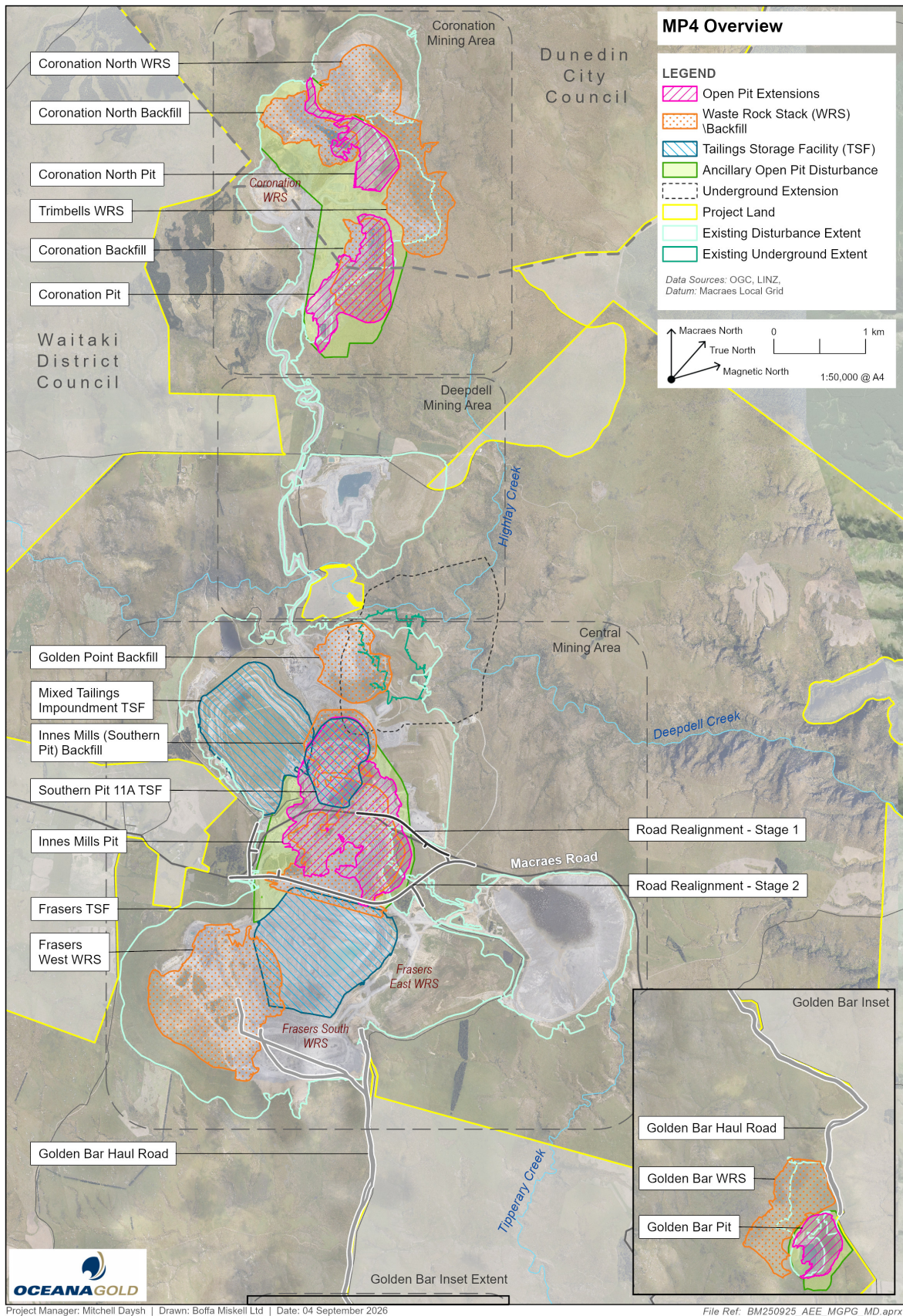


Figure 5-5: MP4 Elements

5.2.2 Mine Site Environment

The land in the vicinity of the Macraes Operation is rural and is of a similar character to the land surrounding the existing mine. The topography of the area is dominated by the large waste rock stacks and mine pits. More recently rehabilitated waste rock stacks have been shaped so that their profile, contours, skylines, and transitions blend with the surrounding natural landforms. The land to be mined is all owned by OGNZL, except for the Camp Creek Dam (yet to be constructed) site.

Figure 5-6 shows the areas of land in the vicinity of the mine which are owned by OGNZL, including areas of land leased and the boundaries of land owned by neighbours. The map also shows the locations of the existing and proposed mine activities and demonstrates the distances from the mining activities to the boundaries with neighbouring properties.

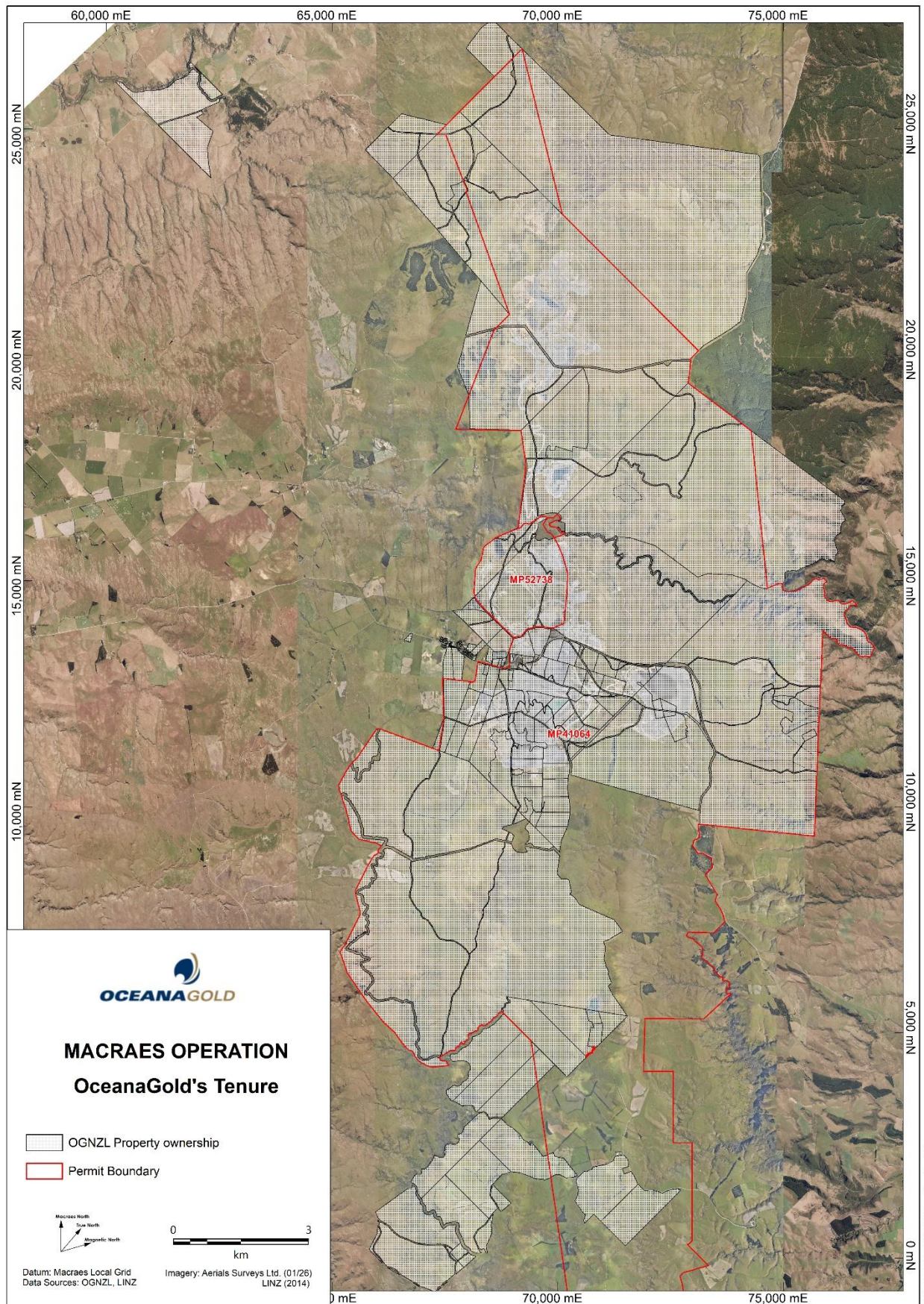


Figure 5-6: Land Owned and Leased by OGNZL

6 AIR DISCHARGE SOURCES

6.1 Dust

6.1.1 Potential Dust Sources

The following activities have the potential to generate particulate matter (i.e., dust) discharges:

- Blasting of rock;
- Excavation, including stripping of overburden and topsoil;
- Vehicle movements on unpaved surfaces (i.e. haul roads);
- Loading and unloading of materials;
- Wind generated dust from dry exposed surfaces such as stockpiles, tailings impoundment surfaces and non-rehabilitated surfaces;
- Crushing of materials;
- Drilling of blast holes; and
- Excavation and relocation of tailings.

Dust emissions from exposed surfaces generally increase with increasing wind speed. However, dust picked up by wind is only significant at wind speeds above 5 m/s. The smaller the particle size of the material on an exposed surface, the more easily the particles are able to be picked up and entrained in the wind. Moisture binds particles together preventing them from being disturbed by winds or vehicle movements. Similarly, vegetated surfaces are less prone to wind erosion than bare surfaces. The larger the areas of exposed surfaces the more potential there will be for dust emissions.

Vehicles travelling over exposed surfaces (i.e., haul roads) tend to pulverise any surface particles. Particles are lifted and dropped from rolling wheels and the surface. Dust is also sucked into the turbulent wake created behind moving vehicles.

The discharge of dust from haul roads has the potential to have effects on two scales. The first is individually from a source where the effects are localised in the immediate area surrounding the activity. Secondly, cumulative effects may be observed where the dust generated from all the nearby dust sources (such as machinery operating in the pit and adjacent haul roads) combine to affect the air quality of the area as a whole. Therefore, it is important that all dust sources be minimised as far as practical, including those well separated from sensitive locations, as all dust generated will influence the overall air quality in the area.

Key areas relating to point source dust emission and generation are tailings, active open pits, active waste rock stacks, primary haul roads and ancillary facilities outside of active mining areas.

6.1.2 Factors Influencing Dust Generation

There are five major factors which influence the potential for dust to be generated at the Macraes Operation. These are:

- Wind speed across the surface;
- The percentage of fine particles in the material on the surface;
- Moisture content of the material;
- The area of exposed surface; and
- Disturbances such as traffic, excavation, loading and unloading of materials and blasting.

Systems for controlling dust emissions need to include methods that modify the condition of the materials so that they have a lesser tendency to lift with the wind or disturbances such as vehicle movements, and methods that reduce the velocity of the wind at the surface.

Watering of exposed surfaces and materials that may be disturbed is a primary method of control.

The dust mitigation methods detailed in Section 7 are the methods that have been found to be effective over the last 30 years of operation at the Macraes site. They are used alone or in combination depending on the circumstances.

6.2 Processing Plant

6.2.1.1 Overview

Gold present in the Macraes ore is generally only visible when viewed under a microscope. The Macraes ore predominantly contains sulphide minerals with which the gold is bound. To extract the gold, the sulphide ore is treated through a series of stages that includes:

- Crushing;
- Grinding;
- Flotation;
- Pressure oxidation (POX);
- Carbon-in-Leach (CIL) elution;
- Electrowinning; and
- Smelting.

Tailings streams from flotation and detoxified CIL are discharged to the tailings storage facility (TSF), with decanted water recovered and recycled to the Processing Plant.

Potential air emission sources are associated primarily with crushing and materials handling, the POX autoclave off-gas (via the vent scrubber and stack), and smaller exhaust points from carbon regeneration, electrowinning ventilation, and smelting.

Discharge to air sources from the processing plant include the following:

- The POX plant stack;
- The Barring furnace stack;
- Fume hood collection above the electrowinning cells:
 - Electrowinning 1 (EWIN1);
 - Electrowinning 2 (EWIN2);
 - Electrowinning 3 (EWIN3);
- Carbon regeneration kiln 1 stack;
- Carbon regeneration kiln 2 stack;
- Carbon regeneration kiln 3 stack; and
- The retort oven.

7 DUST MITIGATION MEASURES AND PROCEDURES

7.1 Introduction

The following measures and procedures are implemented as necessary. Where relevant, the measures and procedures are also incorporated into contractors' responsibilities. Responsibilities for the implementation and monitoring of mitigation measures are set out in Section 10.

7.2 Unpaved Surfaces

Unpaved surfaces can include haul roads, waste rock stacks, and pits. Tailings impoundments are considered separately in Section 7.6.

- Limit the area of exposed surfaces.
- Retain as much vegetation as possible.
- Keep tailings impoundment, pit and haul road maintenance up to date, such as repair of potholes and the laying of fresh gravel or surfacing material.
- Keep haul road and exposed surfaces damp during dry conditions with water carts or fixed sprinklers. Monitor routinely through each day of operation (visual observations) during dry conditions to ensure water cart and/or sprinkler operation is effective. During particularly dry weather (which can be informed by weather forecasts) when there is a risk of dust being carried towards off-site sensitive receptors, water suppression using water carts is prioritised. At least two water carts operate on mine haul roads following periods where there has been no rainfall and the haul road surface is visibly dry.
- Cover exposed fine fill materials with coarse materials where practicable.

7.3 Vehicles

Vehicles include light vehicles, dump trucks and earthmoving machinery.

- Minimise traffic movements and control vehicle speeds to a maximum of 60 km/h on haul roads.
- Adhere to load sizes to avoid spillages.
- Minimise travel distances through appropriate site layout and design.

7.4 Stockpiles

Stockpiles include topsoil, brown rock, ore and waste rock.

- Limit the height and slope of stockpiles to reduce wind entrainment.
- Orientate stockpiles to maximise wind sheltering.
- Minimise drop heights.
- Stabilise stockpiles of any materials that are to be left undisturbed for more than three months.
- Maximise shelter from winds as practicable.

7.5 Miscellaneous

- Stabilise exposed soil as soon as practical following completion of works.
- Install wind fences or barricades where practicable and appropriate.
- Minimise the area of surfaces covered with fine materials.
- Remove topsoil and loose material covering rock prior to blasting.
- Schedule potentially dusty operations where possible to avoid times of the day and year when conditions are likely to be particularly dry and windy.
- Schedule blasts to consider wind conditions.

7.6 Tailings

In addition to the above measures, specific dust mitigation methods exist for the tailings impoundment surfaces. These mitigation methods are detailed in the Tailings Storage Facilities Dust Control Manual presented in Appendix B.

7.7 Excessive Dust Action Plan

In the event that personnel are unable to control dust adequately on the mine site and additional measures are required in order for OGNZL to comply with the provisions of the resource consents, OGNZL shall initiate an emergency action plan. OGNZL will maintain an in-house register of persons and contractors who have suitable equipment and personnel available that can be contacted at short notice in the event of a dust emergency occurring.

The emergency procedures may include, but are not limited to, the following:

- The use of additional water carts and irrigation systems; and
- Stopping work on areas of the site that are sources of excessive dust, where practical.

The Site Personnel Contacts list is included in Table 10-1.

8 MONITORING

The monitoring regime will be updated to reflect the recommendations of the T+T Air Quality Assessment (AQA) submitted as part of the substantive MP4 application. In summary, the existing dust deposition monitoring and meteorological monitoring will continue, the continuous total suspended particulate (TSP) monitoring at Macraes Village (DG15) will be replaced with continuous reference-standard PM₁₀ monitoring, and a PM₁₀ nephelometer will be established on OGNZL land near the residence at 1668 Macraes Road to provide an early-warning regime.

Under the existing air discharge consents 96785_V5, RM10.351.52_V4, RM12.378.15, RM16.138.19_V1, RM20.024.12, and the MP4 consent, the following monitoring will be undertaken:

- Dust deposition rate monitoring at monthly intervals at 16 sites;
- Continuous real-time PM₁₀ monitoring at DG15 (Macraes Village) using a reference grade instrument (refer to Table 8-2);
- Continuous real-time PM₁₀ monitoring on OGNZL land near the residence at 1668 Macraes Road using a nephelometer instrument (refer to Table 8-6);
- Continuous meteorological monitoring of conditions at two representative locations (Sites DG03 and DG15);
- Real time total suspended particulate (TSP) monitoring at located near DG07 (Woolshed TSP) for a period of at least 12 months following commencement of works at Frasers West and Deepdell North Stage III. ORC gave permission after completion of 12 plus months monitoring and review of the data by a suitably qualified expert that monitoring at DG11 (Macraes Road) could cease. Monitoring may be amended or suspended at DG07 after at least 12 months with the approval of the ORC; and
- Daily record kept of water used for dust suppression.

Note: Real time monitoring of TSP at site DG15 is replaced by the new PM₁₀ monitoring instrument described above.

In addition to the resource consent monitoring, OGNZL has a process of checking weather forecasts and advising key operational personnel if strong winds are forecast. This process is set out in the *Tailings Storage Facilities Dust Control Manual*, included as **Appendix B**.

To ensure that controls are implemented and are effective in minimising dust emissions, OGNZL monitors weather conditions, the condition of potential dust generating areas and undertakes depositional dust and total suspended particulate monitoring.

Table 8-1 outlines the current dust monitoring programme.

The locations of the depositional and particulate matter monitoring sites are shown on **Figure 8-1**.

Table 8-1: Existing Dust Monitoring Programme

Monitoring Activities	Frequency
Check weather forecasts for strong winds and send electronic alerts to key personnel.	Daily
Observe weather conditions, wind via observations of wind speed effects.	Daily and as conditions change.
Inspect haul road surfaces for dampness and general condition.	Daily and as conditions change
Inspect exposed surfaces for dampness and to ensure that surface exposure is minimised.	Daily and as conditions change.
Inspect tailings impoundment surfaces for dampness.	Daily and as conditions change.
Inspect tailings impoundment dust suppression systems.	Twice daily during extended periods of no deposition.
Monitor dust deposition rates in 16 gauges surrounding the mine site.	Monthly
Monitor real time fine particulate matter (PM ₁₀) at site DG15 using a reference standard monitor and at site DG11 using a nephelometer.	Continuously
Monitor real time TSP near to DG07 (Woolshed TSP) using a nephelometer.	Continuously
Monitor meteorological conditions at Dust Sites 3 and 15.	Continuously

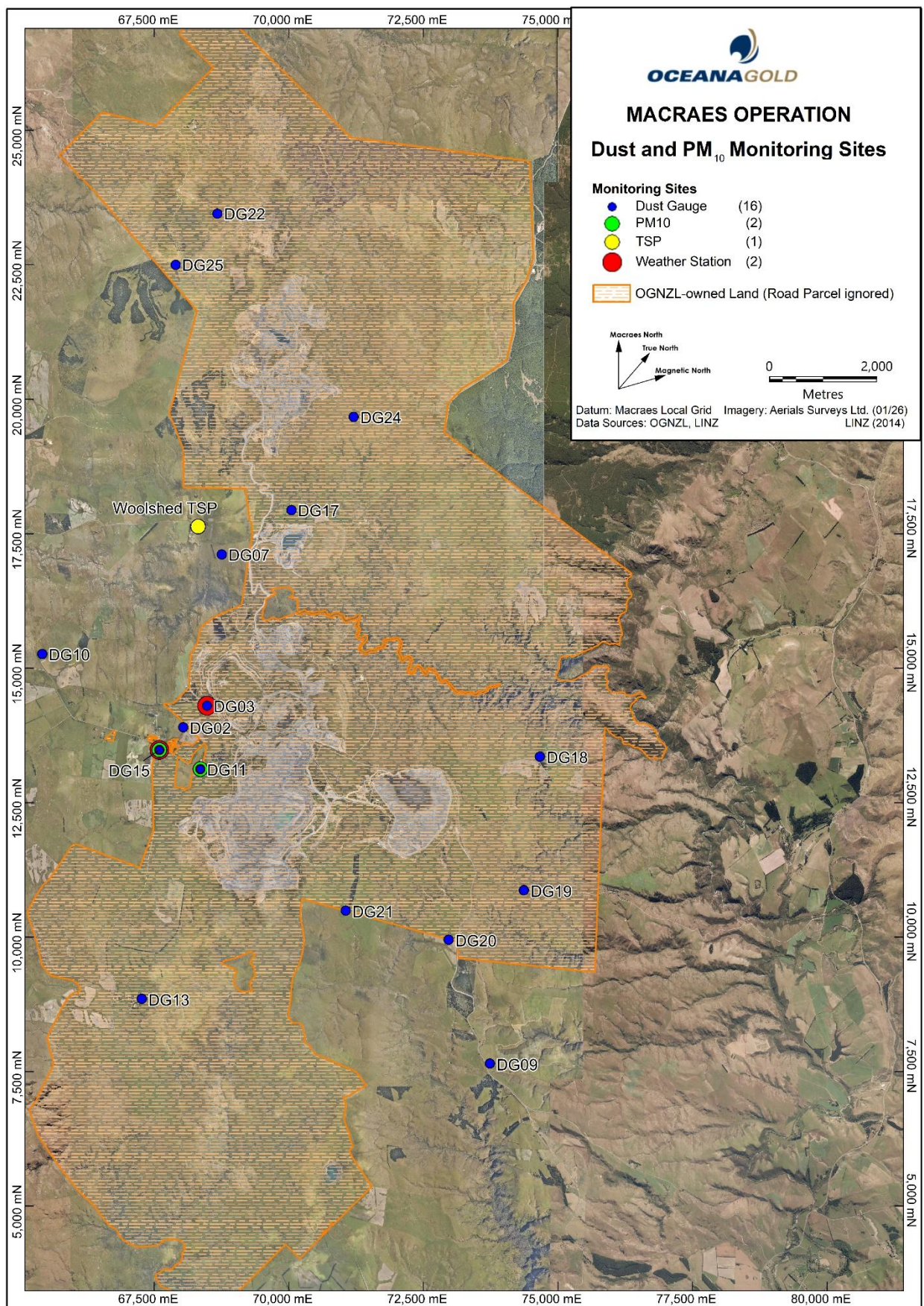


Figure 8-1: Aerial map of OGNZL air quality monitoring locations

8.1 Monitoring Equipment Specifications

Specifications of the equipment used to undertake the monitoring activities can be found in Table 8-2 to Table 8-6.

Table 8-2: Monitoring Equipment at Site DG15

Monitor Type	Monitor Specifications
PM ₁₀ monitor (real time – reference grade instrument)	[place holder] Instrument must comply with: - Schedule 2 of the Resource Management (National Environmental Standards for Air Quality) Regulations 2004; or - AS/NZS 3580.9.17:2018 Methods for sampling and analysis of ambient air – Method 9.17: Demonstration of equivalence for ambient particulate matter monitoring methods.
Atmospheric monitoring site	Temperature sensor: Campbell Scientific 107 Anemometer: Vector A101M Wind Vane: Vector W200P Rain Gauge: TB3-0.2/P
Dustfall Gauge	Standard Dust Deposition Gauge. Dust gauges are analysed using the Horizontal Deposit Gauge Method.

Table 8-3: Monitoring Equipment at the location near to DG07 (Woolshed)

Monitor Type	Monitor Specifications
Nephelometer (real time total suspended particulate monitoring)	Thermo ADR-1500 Area Dust Monitor

Table 8-4: Monitoring Equipment at Site DG03

Monitor Type	Monitor Specifications
Atmospheric Monitoring Site	Temperature Sensor: Campbell Scientific 107 Temperature and RH Sensor: Vaisala HMP50Y Anemometer: Vector A101M Wind Vane: Vector W200P Rain Gauge: Ota Keiki Seisakusho 34-T Solar Radiation: Apogee SP110 Pyranometer
Dustfall Gauge	Standard Dust Deposition Gauge. Dust gauges are analysed using the Horizontal Deposit Gauge Method.

Table 8-5: Other Dust Monitoring Locations

Monitoring Type	Specifications
Dustfall Gauge	Standard Dust Deposition Gauge. Sixteen gauges are positioned in various locations around site (see Figure 8-1 for locations). Dust gauges are analysed using the Horizontal Deposit Gauge Method.

Table 8-6: Monitoring Equipment at a location on OGNZL land near the residence at 1668 Macraes Road

Monitoring Type	Specifications
PM ₁₀ monitor (real time - nephelometer)	The instrument should be in general accordance with the instrumentation described in: AS/NZS 3580.12.1:2015 (Methods for sampling and analysis of ambient air, Method 12.1: Determination of light scattering – Integrating nephelometer method).

8.2 Data Analysis and Reporting

8.2.1 Dustfall Gauge Data

Data from dustfall gauges is collected, analysed, and reported on a monthly basis by Environmental Standards Limited. Dustfall gauges are analysed using the Horizontal Deposit Gauge method. This method is detailed in the Draft International Standard ISO/DIS 4222.2 ("Air Quality Measurement of Atmospheric Dustfall – Horizontal Deposit Gauge Method" 1980).

Depositional dust results are included in the Quarterly Monitoring Reports supplied to the ORC.

8.2.2 Meteorological and Particulate Monitoring Data

Data analysis and reporting for the particulate monitoring and meteorological monitoring is undertaken on a quarterly basis. The Quarterly Monitoring Report is produced once all the data has been collected and analysed. Details of the methods for data analysis can be found in OGNZL's latest quarterly report for the Macraes site.

TSP results have historically been included in the Quarterly Monitoring Reports supplied to the ORC. This has been replaced with PM₁₀ monitoring following the replacement of the TSP monitor at DG15.

8.3 Compliance Limits

8.3.1 Framework under MP4

Under the MP4 air discharge permit (AQA Appendix F), the following compliance and trigger framework applies. The pre- MP4 compliance limits set out below in Section 8.3.2 are retained for reference and describe the regime under the current consents until the MP4 air discharge permit takes effect.

Dust deposition monitoring

Insoluble dust deposition rates at monitoring sites DG02, DG07, DG11, DG15, DG20, DG21, DG22 and DG25 must not exceed **3 g/m²/30-days above background more than twice in any calendar year**. Background concentrations are calculated by averaging the insoluble dust deposition rates at background sites DG09, DG10 and DG24. Dust deposition monitoring is undertaken monthly in accordance with AS/NZS 3580.10.1:2016 (or its successor).

PM₁₀ monitoring

Continuous real-time PM₁₀ monitoring is to be undertaken at:

- DG15 (replacing the existing TSP monitoring); and
- Near the residence at 1668 Macraes Road on OGNZL land.

PM₁₀ monitoring results are compared against the following 1-hour and 24-hour average trigger concentration values:

- **1-hour average** trigger concentration: **150 µg/m³**
- **24-hour average** trigger concentration: **40 µg/m³**

Where an exceedance of a trigger value:

- Coincides with winds from a south-easterly to north-westerly direction (between 135° and 315° relative to true north), no further action is required.
- For the nephelometer instrument, where an exceedance coincides with a relative humidity greater than 95% no further action is required.

For all other trigger exceedances, the cause must be investigated and, if required, additional dust control measures implemented.

TSP monitoring

Continuous real-time total suspended particulate (TSP) monitoring is undertaken at a location near to DG07 (Woolshed TSP – refer to Figure 8-1) in accordance with Condition 5 of Consent RM20.024.12 until expiry of that consent in 2027 after which time monitor can be decommissioned and reporting for it suspended.

The results of TSP monitoring at DG07 are compared against the following 1-hour and 24-hour average trigger concentration values:

- **1-hour average** trigger concentration: **250 µg/m³**
- **24-hour average** trigger concentration: **80 µg/m³**

Where an exceedance of a trigger value occurs:

- An alert message must be immediately sent to the operator; and
- A review of on-site dust sources must be undertaken and reported to ORC as detailed in Section 8.5.3.

8.3.2 Framework prior to MP4

Under resource consent RM10.351.52_V4 (Macraes Phase III, Frasers West Project, Frasers Co-Disposal and Continuity Consents) and 96785_V5, the following compliance limits apply:

- Insoluble dust deposition rates at sites DG07, DG11, DG20 and DG21 must not exceed 3 g/m²/30 days of insoluble dust above background more than twice in any calendar year;
- Insoluble dust deposition rates at sites DG02 and DG15 must not exceed 3 g/m²/30 days of insoluble dust above background;
- 24-hour average total suspended particulate at Site DG15 must not exceed 120 µg/m³;
- A trigger level of 250 µg/m³ (1-hour average) and 80 µg/m³ (24-hour average) applies to the total suspended particulate readings at Site DG11. Where a trigger level is exceeded a review of dust sources and dust control must occur – Note in 2023 the ORC gave permission for monitoring to cease at DG11 in accordance with the condition of consent;

- Background concentrations are calculated by averaging the deposition rates of insoluble dust at sites DG09, DG10, DG17 and DG24. If no result is available for one of these locations, the background concentration is calculated by averaging the remaining locations.

Under resource consent RM12.378.15 (Coronation), the following compliance limits apply:

- Insoluble dust deposition rates at sites DG07, DG20, DG21, DG22 and DG23 must not exceed 3 g/m²/30 days of insoluble dust above background more than twice in any calendar year;
- Insoluble dust deposition rates at sites DG02 and DG15 must not exceed 3 g/m²/30 days of insoluble dust above background;
- 24-hour average total suspended particulate at Site DG15 must not exceed 120 µg/m³ (this is superseded by the above PM₁₀ monitoring trigger);
- Background concentrations will be calculated by averaging the insoluble dust deposition rates at sites DG09, DG10 and DG24. In the event that a result for one of these sites is unavailable, the background concentration will be calculated by averaging the remaining two sites.

Note - Development of the Coronation North Project resulted in DG23 needing to be decommissioned and a new site being established (DG25). This change is reflected in the updated consent RM16.138.19_V1, issued April 2017.

Under resource consent RM16.138.19_V1 (Coronation North), the following compliance limits apply:

- Insoluble dust deposition rates at sites DG07, DG20, DG21, DG22 and DG25 must not exceed 3 g/m²/30 days of insoluble dust above background more than twice in any calendar year;
- Insoluble dust deposition rates at sites DG02 and DG15 must not exceed 3 g/m²/30 days of insoluble dust above background;
- Twenty-four-hour average total suspended particulate at site DG15 must not exceed 120 µg/m³ (this is superseded by the above PM₁₀ monitoring trigger);
- Background concentrations will be calculated by averaging the insoluble dust deposition rates at sites DG09, DG10 and DG24. In the event that a result for one of these sites is unavailable, the background concentration will be calculated by averaging the remaining two sites.

Under resource consent RM20.024.12 (Deepdell North Stage III), the following compliance limits apply:

- Insoluble dust deposition rates at sites DG07 and DG17 must not exceed 3 g/m²/30 days of insoluble dust above background more than twice in any calendar year.
- Twenty-four-hour average total suspended particulate at site DG15 must not exceed 120 µg/m³ (this is superseded by the PM₁₀ monitoring trigger in Section 8.3.1);
- A trigger level of 250 µg/m³ (1-hour average) and 80 µg/m³ (24-hour average) applies to the total suspended particulate readings at Site DG07. Where a trigger level is exceeded a review of dust sources and dust control must occur (*This is superseded by the PM₁₀ monitoring triggers in Section 8.3.1*);
- Background concentrations will be calculated by averaging the insoluble dust deposition rates at sites DG09, DG10 and DG24. In the event that a result for one of these sites is unavailable, the background concentration will be calculated by averaging the remaining two sites.

8.4 Processing Plant Stack Emission Testing

Under MP4, stack emission testing of the POX plant stack is to be undertaken once every three years by an independent stack testing agency to determine the concentration and mass emission rate for the following contaminant emissions:

- Sulphur dioxide (SO₂)
- Mercury (gaseous and particulate phase)
- Trace metals (including, as a minimum, arsenic, chromium, lead and nickel).

An emission limit is specified for nickel of 0.0084 kg/h.

Testing is to be carried out by a suitably qualified and experienced person. Any laboratory analysis of the samples is to be carried out by a company with International Accreditation New Zealand (IANZ) accreditation. The method of sampling and analysis for SO₂ shall be:

- USEPA Method 8: Determination of Sulphuric Acid Mist and Sulphur Dioxide Emissions from Stationary Sources.

The method of sampling and analysis for mercury and trace metals shall be:

- USEPA Method 29: Determination of metal emissions from stationary sources.
- Alternative equivalent testing methods may be used, provided that such methodologies have been agreed in writing with the ORC prior to being used.

Three samples for each contaminant group are to be collected. The volumetric gas flow rate, moisture content and temperature are to be determined and recorded.

The first test is to be undertaken within 12 months of commencement of the MP4 consent and at intervals not exceeding three years thereafter.

The results of the emissions tests, including a comparison against the emission limit for nickel, and a description of the testing methods are to be provided to the ORC within 40 working days of the tests being completed.

Monitoring of the other Processing Plant discharge stacks is not required, reflecting their small scale and the very low predicted effects of those discharges.

8.5 Exceedance of a Compliance Limit

If a trigger level is exceeded, OGNZL is to undertake an immediate review to determine the likely cause of the exceedance:

- Depositional dust at DG15, DG11 or DG07;
- PM₁₀ at either of the two monitoring sites;
- TSP at a location near DG07 (Woolshed TSP – refer to Figure 8-1);
- Emission rate limits applying to the POX plant following stack emission testing.

8.5.1 Outcome of Review

If it is found that activities of OGNZL were the cause of the exceedance, then dust mitigation measures shall be reviewed by an independent consultant and a report prepared summarising the cause of the exceedance and recommending measures to improve dust mitigation, so the exceedance does not occur again. The report will be forwarded to the ORC within two months of the exceedance being identified.

8.5.2 Notification to ORC

The ORC will be notified within a 24-hour period of the exceedance becoming apparent and depending on whether the source is confirmed as likely having been from within the Macraes Site, a report detailing the findings of the investigation will be forwarded to the ORC within one month, or follow-up comment will be made in the Quarterly Monitoring Report (in the event of clear indication that the exceedance is not a result of OGNZL operational activities).

Under MP4, in the event of an **exceedance of the dust deposition limit**, ORC must be notified within 24 hours of receiving the laboratory result. An investigation must be undertaken and reported to Council within 5 days of the original notification and involves identifying the site, the result, the prevailing meteorological conditions and any likely cause. Where mining activities are identified as the likely cause, dust mitigation

measures must be reviewed by an independent consultant engaged in consultation with ORC, with the report provided to ORC within two months.

8.5.3 Monitoring of TSP at DG07

Where a **total suspended particulate trigger level is exceeded at the monitoring site located near to DG07 (Woolshed TSP)**, a review of dust sources and dust control must occur as required by Consent RM20.24.12. If the exceedance is likely to have been caused or contributed by onsite activities, then dust control management shall be revised and/or additional dust control measures implemented. Written notice of an exceedance that is caused or contributed to by site activities must be provided to the ORC within 10 working days of the exceedance.

8.6 Annual Review Report

An annual report of the ambient air monitoring results is to be forwarded to the ORC by 30 April each year. The annual report reviews and assesses the monitoring results for the previous calendar year and is to be undertaken by a suitably qualified independent reviewer, engaged by OGNZL. The relevant qualifications and experience of the reviewer can be found in Appendix B of each report.

The annual report shall include the following:

- The name, qualifications and experience of the reviewer;
- The methods used and the investigations undertaken for the review;
- Interpretation of the monitoring data reviewed;
- An assessment of the quality of the monitoring data;
- An assessment of the monitoring regime;
- A description and evaluation of each of the dust mitigation measures used;
- A record of complaints received and a summary of the responses and actions taken;
- Recommendations on whether:
 - The monitoring of dust is adequate or should be changed, and if changed the changes that are recommended;
 - The dust mitigation measures used by the consent holder are adequate, or should be changed, and the changes that are recommended; and
 - Any changes that should be made to the conditions of this consent.
- Any other matters that the reviewer considers should be drawn to the attention of OGNZL or the ORC.

9 COMPLAINTS

Complaints may be raised by one or more of the regulatory authorities, a member of the public or an OGNZL employee or contractor. It is the responsibility of the Environment and Social Performance Manager (or delegated to External Affairs and Social Performance Superintendent or Environmental Superintendent) to respond to and follow up all complaints regarding dust. The Environment and Social Performance Manager is responsible for ensuring suitably qualified personnel are available to respond to complaints at all times.

Actions to be taken as soon as possible by the Environment and Social Performance Manager

- All complaints are to be logged in the InForm Stakeholder database.
- Note the time, date, identity and contact details of the complainant. Wind direction, strength and weather conditions are to be recorded. Note if the complaint has been referred from a Consent Authority. The PM₁₀ concentrations measured at DG15 at the time of the alleged discharge are also to be recorded, consistent with the proposed MP4 air discharge permit conditions.
- Ask the complainant to describe the dust emission: whether it is constant or intermittent, how long it has been going on for, is it worse at any time of day, does it come from an identifiable source.
- As soon as possible after receipt of a complaint undertake a site inspection. Note all dust-producing activities taking place, which staff member or contractor is responsible for the site and the dust mitigation methods that are being used. Order any remedial action necessary. If the complaint was related to an event in the recent past, note any dust-producing activities that were underway at that time, if possible.
- As soon as practical (preferably within two hours) 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 activities at the Macraes Operation causing the dust nuisance it is important to verify this. Photograph and document the source and emissions.
- If the complaint is received more than 12 hours after the event, conduct an investigation including collecting relevant weather data, identifying operational activities at the time of the incident, collecting camera footage and interviewing operational staff. Investigations should endeavour to identify root cause and contributing factors.
- As soon as possible after the investigations have been completed contact the complainant to explain what has been found and remedial actions taken.
- If necessary, update any relevant procedures to prevent any recurrence of problems.
- Complete complaint form and file on complaint register.

Follow-up Actions

- Advise the ORC as soon as practical that a complaint has been received and what the findings of the investigation were, and any remedial actions taken.

10 RESPONSIBILITIES

OGNZL as the holder of consents for the Macraes Operation site has the ultimate responsibility to ensure that all statutory requirements and conditions of consent are complied with, and mining activities are carried out in accordance with the AQMP. Complaint and emergency contact details are provided in Table 10-1.

Specifically, the following roles share operational responsibility for ensuring mining activities are carried out in accordance with the AQMP:

- Asset President – Macraes
- Open Pit Mine Operations Manager
- Process Manager
- Underground Operations Manager

These roles will have the following responsibilities:

- Overall responsibility at the site for ensuring that the dust control and mitigation measures and procedures outlined in Section 7 of the AQMP are implemented effectively.
- Overall responsibility to ensure that dust emissions are avoided and mitigated as far as is practicable.

The Environment and Social Performance Manager will have the following associated responsibilities:

- Responsibility to ensure that the dust monitoring programme is carried out as required.
- Responsibility to ensure that complaints are received and investigated as outlined in Section 9 of the AQMP.
- Responsibility to ensure the AQMP is current and reviewed at least annually.

All contractors and staff working on site are to ensure that their activities comply with the requirements of the AQMP.

Table 10-1: Complaint and emergency contact details.

Name Position	Mobile	Email
██████████ Asset President – Macraes Operation	██████████	████████████████████
██████████ Open Pit Mine Operations Manager	██████████	████████████████████
██████████ Process Manager	██████████	████████████████████
██████████ Environment & Social Performance Manager	██████████	████████████████████

11 CONSULTATION, REPORTING AND REVIEW

11.1 Neighbours

OGNZL will consult with the Macraes Community Incorporated (MCI) regularly, as part of the bi-monthly meeting process, to inform them of any issues relating to dust control at the Macraes Operation that may be of interest to the community and to obtain feedback from the community.

OGNZL will advise the Macraes Community through MCI of the contact phone numbers to be used to advise OGNZL of a complaint.

The Macraes Operation has a 'Concerns, Complaints and Grievance Mechanism' to use if the community has any issues. The relevant contact phone number or email address for the community to contact, and the process to follow, are laid out in the Macraes Operation Concerns, Complaints and Grievance Mechanism Standard Operating Procedure.

11.2 OGNZL to Otago Regional Council

OGNZL will maintain a regular and formal reporting regime with the ORC to inform them of any issues regarding dust control at the site that may be of interest to them and to obtain feedback on compliance and performance.

OGNZL will provide the ORC with contact numbers to be used to advise OGNZL of a dust complaint. The contact numbers and email addresses to be used for registering a complaint are included in Table 10-1.

OGNZL will inform the ORC of the following:

- Any complaints received regarding dust as soon as practical after receipt of the complaint;
- Any non-compliances with monitoring as outlined in Section 8. Any non-compliance will be reported to the ORC through the nominated compliance contact or via the compliance email address (compliance@orc.govt.nz); and
- Provide ORC with a copy of the AQMP if any significant revisions of the AQMP are made during the year.

11.3 Otago Regional Council to OGNZL

OGNZL requests that the ORC advises them of any complaints they receive regarding dust from the Macraes Operation immediately after the complaint has been lodged.

11.4 AQMP Review Procedure

The AQMP shall be reviewed as required taking into account:

- The outcome of any reviews completed as the result of any non-compliant results;
- The outcome of the annual review of all dust monitoring data; and
- Whether management practices are resulting in compliance with the conditions of the relevant air discharge consents.

11.4.1 Recertification process

OGNZL may lodge an amended monitoring plan, management plan or other document for recertification at any time. Minor/administrative changes may be implemented without recertification where written notice is

provided to ORC no less than 5 working days prior to publication of the amended document in accordance with Condition xx.

Minor/administrative changes are limited to corrections of errors, updates to contact details, updates to reflect changes in organisational structure, formatting improvements, or other changes that:

- Do not alter the objectives, performance standards, mitigation methods, monitoring methodology, or reporting requirements of the certified document; and
- Do not materially affect the scale, location, or nature of activities authorised by these consents.

12 DEFINITIONS

Term	Definition
AQA	Air Quality Assessment
AQMP	Air Quality Management Plan
CIL	Carbon-in-Leach
FTAA	Fast-track Approvals Act 2024
FTSF	Frasers in-Pit Tailings Facility
GPUG	Golden Point Underground Mine
MCI	Macraes Community Incorporated
MP4	Macraes Phase Four Project
MTI	Mixed Tailings Impoundment
OGNZL	OceanaGold (New Zealand) Limited
ORC	Otago Regional Council
PM₁₀	Particulate matter less than ten microns in aerodynamic diameter
POX	Pressure Oxidation
ROM	Run of Mine
SAG	Semi-Autogenous Grinding
SQEP	Suitably Qualified and Experienced Practitioner
TSF	Tailings Storage Facility
TTTSF	Top Tipperary Tailings Storage Facility

APPENDIX A: RESOURCE CONSENTS

- 96785_V5
- RM12.378.15
- RM16.138.19_V1
- RM20.024.12
- RM20.130.01_V1
- 2006.689
- RM10.351.52_V4
-
- Placeholder for FTAA MP4 air discharge permit when granted

APPENDIX B: TAILINGS STORAGE FACILITIES DUST CONTROL MANUAL



Tailings Storage Facilities

Dust Control Manual

July 2026

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1 INTRODUCTION

The Macraes Operation currently has four tailings storage facilities (TSFs). Two of these, Southern Pit Tailings Option 11A (SP11A) and Mixed Tailings Impoundment (MTI), are currently in a resting state with grass seed laid for dust suppression. All tailings discharge infrastructure at the MTI and SP11A has been disestablished. Tailings are currently being deposited into Frasers Tailings Storage Facility (FTSF - Stages 1 and 2) with occasional discharge to Top Tipperary TSF (TTTSF), which had been the primary active tailings storage facility since October 2013 and is now progressing toward closure. Under MP4, the FTSF Stage 3 is to be constructed to accommodate an additional 153 million tonnes of tailings, and tailings are to be hydraulically mined and relocated from the MTI, Southern Pit Option 10 (SP10) and SP11 to the FTSF. The dust control methods in this manual apply to all active and inactive TSF surfaces, including dust generated during the mining and relocation of tailings.

This manual details dust control methods used to control and minimise the transmission of dust particles around and away from the TSFs.

The design of all four TSFs has been carried out by Engineering Geology Ltd (EGL) and a description of the embankment design is contained in the design report for each TSF.

Details of the operation, maintenance and surveillance of the tailings storage facilities can be found in the respective Operation, Maintenance and Surveillance Manuals.

2 RESPONSIBILITIES

OGNZL, as owner of the TSFs, is ultimately responsible for the control of dust.

Supervision and monitoring of the quality of construction is undertaken by OGNZL staff as is regular monitoring, maintenance and surveillance as detailed in the respective Manuals.

The installation and maintenance of dust control systems is the responsibility of the processing department.

The operation of dust control systems and the tailings distribution system is the responsibility of the Process Supervisor. A Daily Dust Decision Tree (**Figure B8-1**) is available to assist with operation of dust control systems.

Whilst the above listed departments are responsible for the control of dust, it is the responsibility of all staff to report when dust control is required. The TSFs are inspected periodically throughout the day, however conditions may change between inspections. Any reports of excess dust should be reported to the Environmental, Projects or Processing departments.

3 ENVIRONMENTAL CONDITIONS

Strong winds during dry weather are a key environmental condition that can result in dust emissions from exposed and dry tailings. Winds are typically strongest during spring, but can also occur at other times of the year. Wind gusts in excess of 28 m/s (100 km/hr) are not uncommon.

Particles begin to be mobilised at wind speeds of 5 m/s (18 km/h), but especially above 7 m/s (25 km/h). This means that lower winds also influence the tailings surface and can mobilise dust where the surface

has dried. As the wind speed increases, the mobilised particles dislodge other particles and this can result in significant dust generation.

The finer the particles are, the more prone to movement they are. At Macraes, tailings discharge occurs sub-aerially from the embankment. This results in the coarser material being located closer to the embankment and finer material further from the embankment.

When conditions have been dry and windy for extended periods of time, the surface of the embankments becomes dry. This can cause the particles to become more easily entrained by the wind. When moisture is present on the surface, this binds to the tailings and increases the cohesion between particles making them harder to move. While wind speed cannot be controlled, the moisture of the tailings surface can and so this can determine the dust suppression technique used to control dust as seen in the below section.

4 METHODS OF DUST CONTROL

4.1 Tailings Discharge

During and immediately following periods of active tailings discharge the tailings beach surface remains sufficiently damp that the potential for windborne dust generation is very low.

Tailings deposition is via spigots at maximum 50 m intervals. Spigot opening is sequentially moved around the impoundment to decrease the chance that the tailings surface could dry out and become prone to dust creation. Tailings deposition is manually redirected around the impoundment through the use of knife gate valves to direct the tailings to a general area while spigots are used to control localised tailings deposition. This method of deposition also helps to keep the tailings surface level which limits localised drying conditions. Dust control requirements will therefore be minimal as tailings will be continuously discharged to this facility and the beach is unlikely to dry sufficiently to generate dust.

4.2 Rock Mattress Cover

Experience has shown that the area of the tailings surface with the most potential for dust generation is the tailings beach adjacent to the embankment crest.

As construction of tailings storage facilities is completed, capping of the surface commences. This involves placing a rock mattress cover over the tailings surface.

The rock mattress cover typically extends over nearly the entire impoundment except for the area at the rear of the facility surrounding the decant pond. For details of the rock mattress and capping refer to the design documents and closure plan for each impoundment.

4.3 Dust Suppression System

A dust suppression system is to be established on areas of tailings facilities that have not received capping material. This system needs to be operational from August to April each year, however, it is prudent to continue to have this system in place at all times.

The dust suppression system generally consists of an outer ring main feeding sprinklers laid out over the tailings surface, however various combinations of open ended pipe discharge can be used as necessary to ensure good coverage and wetting.

A dust suppression system should be installed as soon as practicable, once tailings deposition at a facility ceases and prior to capping.

Preservation of the crust on the dam surface is to be maximised by limiting traffic on the tailings surface wherever possible.

5 OPERATION

The tailings distribution system is operated by the Processing Superintendent and follows tailings deposition methodology recommended by the design engineers, EGL.

A site-specific model that predicts hourly wind speed, direction and rainfall (provided by the MetService) is used to assist in the prediction of wind events (note – if heavy rain or rainfall warnings are indicated for Fiordland and the West Coast this will often indicate strong winds on the East Coast). It is the responsibility of the Processing Superintendent to initiate action in accordance with the Model predictions.

The tailings or dust suppression system is to be used 12 hours prior to any anticipated high wind event (defined as an event of greater than 40 km/h winds for greater than 4 hours from a west or northwest direction).

Should wind speeds increase without warning then the system will be activated as required by process operations personnel and the Processing Superintendent will be notified.

6 TRIAL DUST SUPPRESSION TECHNIQUES

6.1 Vital Bon-Matt Stonewall

Stonewall is a co-polymer that is applied to the surface of the tailings. The product is diluted in water and then applied through a spray by any method. This could be from a water cart or a knapsack sprayer. The product creates a hard surface that is similar to that which would be seen if glue was applied to the surface. The tailings surface then becomes encapsulated underneath the Stonewall surface. This limits the dust generation by removing the potential for wind to erode the surface. Trials of this dust suppression technique occurred in 2015.

6.2 Vital Strike

Strike is a co-polymer based fertiliser to promote the growth of seed below its surface and increase soil stability. After seed has been broadcast, Strike is applied in much the same way as Stonewall. However, fertiliser is incorporated into the product which aids in the germination and growth of the seed. Trials of this dust suppression technique occurred in 2015.

6.3 Ryecorn Grass Seed

Previous trials involving broadcasting grass seed directly onto the tailings surface have been promising using a seed mix of ryecorn grass seed, organic matter and fertiliser. Further trials are planned in 2026.

7 MAINTENANCE

Inspections, monitoring and maintenance activities of dust suppression infrastructure are the responsibility of process operational personnel.

It is also the responsibility of all staff to report breakages or leaks in the pipes to their supervisor or the environmental team. Reports also need to be registered as an environmental incident through INX InControl.

8 DAILY DUST SUPPRESSION DECISION TREE

The Daily Dust Suppression Decision Tree is provided in **Figure B8-1**.

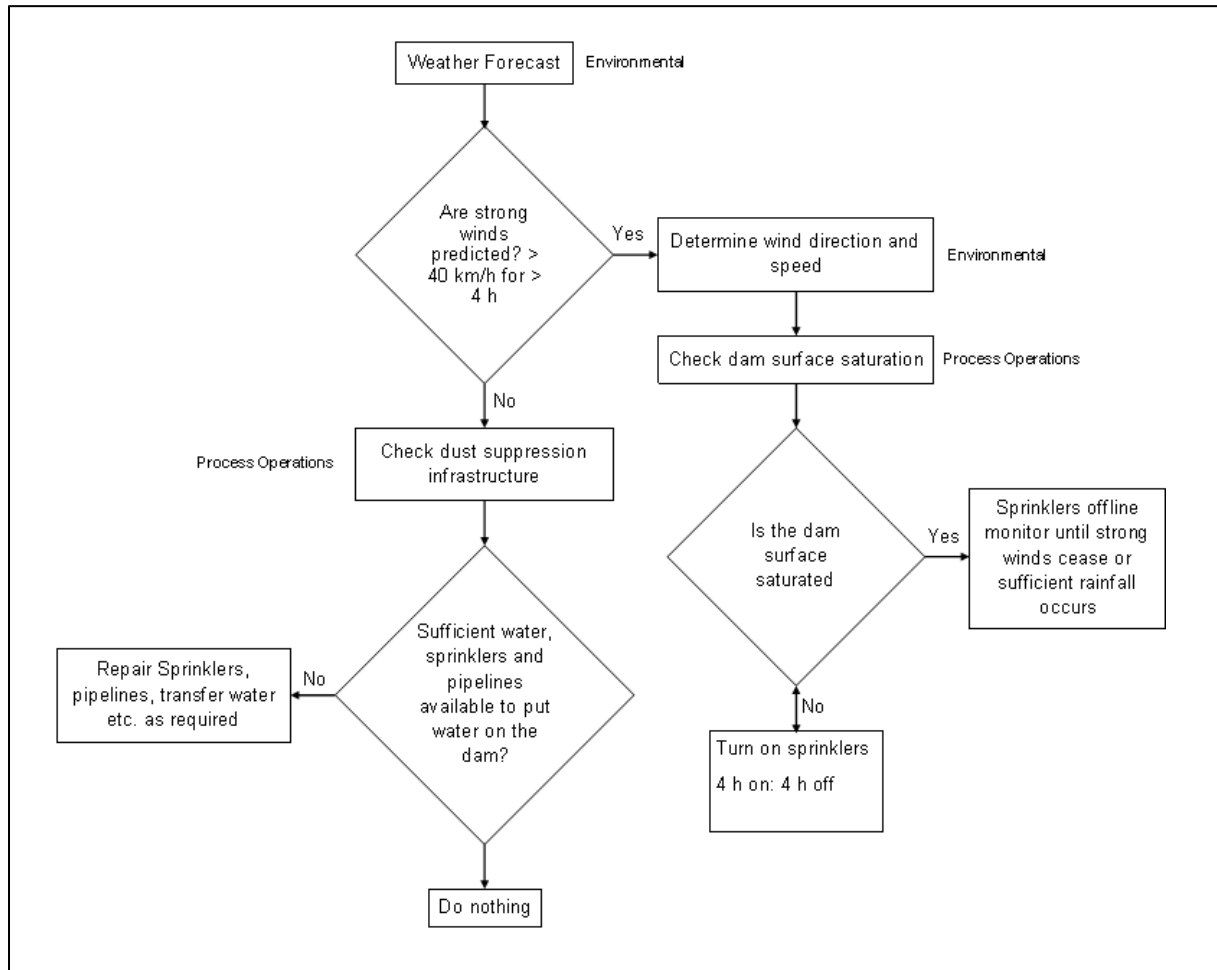


Figure B8-1: Daily Dust Suppression Decision Tree.

