



Air Quality and Greenhouse Gas Management Plan

for the

Dargues Gold Mine

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Air Quality and Greenhouse Gas Management Plan

for the

Dargues Gold Mine

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Original	PAE Holmes	17/11/2011	Francine Triffett	Christie Hill Mitchell Bland	AJ Saverimutto
Revision 1	R.W. Corkery	10/02/2012	Mitchell Bland	Mitchell Bland	DoPI
Revision 2	R.W. Corkery	30/01/2013	Mitchell Bland	James Dornan	DoPI
Revision 3	Unity Mining	2/12/2013		James Dornan	Scott Jones
Revision 4	Diversified Minerals		James Dornan	Mitchell Bland	
Revision 5	R.W. Corkery	22/08/2019	Jack Flanagan	James Dornan	
Next Review Due	Within 3 months of: <ul style="list-style-type: none"> the submission of an annual review under Condition 5(3); the submission of an incident report under Condition 5(6); the submission of an audit report under Condition 5(8); and any modification to the conditions of MP10_0054. 				

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1. INTRODUCTION

This Air Quality and Greenhouse Gas Management Plan (AQGGMP) was originally prepared by PAEHolmes for the Dargues Gold Mine (the Project) on behalf of Big Island Mining Pty Ltd (the Company). This management plan is now updated and maintained by the Company. This version of the plan is Revision 5 and has been prepared by R W Corkery & Co Pty Limited (RWC) and reviewed by the Company.

The Project is located approximately 60km southeast of Canberra, 13km south of Braidwood and immediately north of the village of Majors Creek. The Project consists of an underground gold mine, a run-of-mine (ROM) pad, temporary waste rock emplacement, processing plant, tailings storage facility and associated infrastructure and ancillary activities.

This document has been prepared in satisfaction of *Condition 3(17)* of Modified Project Approval (MP) 10_0054 MOD4 and describes the following.

- The consultation undertaken during preparation of this document.
- The legal and other requirements associated with management of air quality and greenhouse gas associated with the Project.
- Air quality and greenhouse gas management measures that would be implemented during all operations.
- Evaluation of compliance of air quality and greenhouse gas impacts.
- Incident reporting.
- Publication of monitoring information.
- Roles and responsibility.
- Competence training and awareness.
- Document review.

The Project is fully described in the following documents and no further background information is provided in this document.

- *Environmental Assessment* dated September 2010 and associated documentation prepared to support the application for Project approval.
- *Mining Operations Plan* dated July 2014.
- *Environmental Assessment – Modification 1* dated April 2012.
- *Response to Government Agency and Public Submissions for the Dargues Reef Gold Project - Modification 1* dated June 2012.
- *Environmental Assessment – Modification 2* dated July 2013.
- *Response to Government Agency and Public Submissions for the Dargues Reef Gold Project - Modification 2* dated September 2013.

- *Environmental Assessment – Modification 3* dated August 2016.
- *Response to Government Agency and Public Submissions for the Dargues Gold Mine - Modification 3* dated November 2015.
- *Statement of Environmental Effects for the Dargues Gold Mine – Modification 4* dated November 2018.
- *Response to Submissions for the Dargues Gold Mine – Modification 4* dated January 2019.

In addition, a range of management plans have been prepared to guide operations within the Project Site. These include the following.

- Noise Management Plan.
- Blast Management Plan.
- Water Management Plan.
- Biodiversity Management Plan.
- Aboriginal Heritage Management Plan.
- Traffic Management Plan.
- Waste Management Plan.
- Bushfire Management Plan.

2. CONSULTATION

The following consultation was undertaken during preparation of this document.

- An email requesting requirements for the original version of this plan was provided to the Department of Planning and Infrastructure, Office of Environment and Heritage and Palerang Council on 8 September 2011. No responses were received by 14 October 2011.
- A draft copy of the original version this document was provided to Office of Environment and Heritage and Palerang Shire Council for review and comment on 2 November 2011. Comments were received from the Office of Environment and Heritage on 14 November 2011 and a revised version of this document was provided on 16 November 2011.
 - The Office of Environment and Heritage indicated that the revised version adequately addressed all comments on 17 November 2011.

- Palerang Council advised that they did not intend to comment on the draft document on 17 November 2011.
- A draft copy of Revision 2 of this document was provided to the EPA and Palerang Council on 28 August 2012 following the approval of Modification 1. Responses were received from:
 - The EPA on 5 September 2012 highlighting one minor issue requiring clarification of the number of dust gauges installed; and
 - Palerang Council on 18 September 2012 indicating that Council would not be commenting on the draft document.
- A copy of Revision 3 of this document was provided to the Department of Planning and Environment on 15 October 2015 with minor amendments to the plan following the determination of Modification 2.
- A draft copy of Revision 4 of this document was provided to the EPA and Queanbeyan – Palerang Regional Council on 22 September 2016 following the determination of Modification 3. No responses were received by 7 November 2016 when this plan was submitted to the Department of Planning and Environment (the DPE).
 - The DPE provided comments on Revision 4 of this document on 19 December 2016. A response was provided to the DPE on 23 January 2017.
- An email requesting advice and requirements for Revision 5 of this document was provided to the NSW Environment Protection Authority (EPA) and Queanbeyan-Palerang Council on 8 August 2019. No response was received.
- A draft copy of Revision 5 of this document was provided to the NSW Environmental Protection Authority and Queanbeyan Palerang Council on 22 August 2019. Additionally, a draft copy of the Plan was provided to the Community Consultative Committee for review and comment. No response was received from the EPA, Queanbeyan Palerang Council or the CCC by 2 December 2019.

3. LEGAL AND OTHER REQUIREMENTS

The Project received Project Approval (PA10_0054) on 2 September 2011 pursuant to the *Environmental Planning and Assessment Act 1979* (EP&A Act). Following two appeals to the Land and Environment Court, the Court subsequently granted project approval on 7 February 2012. Modification 1 for the use of paste fill at the Project Site was subsequently approved by the Director-General of the Department of Planning and Infrastructure on 12 July 2012 (MP10_0054 MOD1). Modification 2 to regularise changes to the layout of the

project was subsequently approved on 24 October 2013. Modification 3 for an extension of the mine life and increase in the resource extracted was subsequently approved on 10 August 2016. Modification 4 for the relocation of the approved heavy vehicle crossing of Spring Creek and the reinstatement of the previously approved access track from the Site Access Road to the Tailings Storage Facility was subsequently approved on 23 May 2019.

The Project Approval stipulates the required criteria that the construction and operational activities of the Project must comply with and sets out the core requirements of this Management Plan. Relevant conditions associated with MP10_0054 MOD4 are reproduced in **Table 3.1**.

Table 3.1 Air Quality and Greenhouse Gas Related Conditions (MP10_0054 MOD4)

Air Quality and Greenhouse Gas																										
3(12)	Odour The Proponent shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.																									
3(13)	Greenhouse Gas Emissions The Proponent shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.																									
3(14)	The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the particulate emissions generated by the project do not exceed the criteria listed in Tables 6, 7 and 8 at any residence on privately-owned land or on more than 25 percent of any privately owned land.																									
3(14)	<p><i>Table 6: Long term criteria for particulate matter</i></p> <table><tr><th><i>Pollutant</i></th><th><i>Averaging period</i></th><th><i>^dCriterion</i></th></tr><tr><td>Total suspended particulate (TSP) matter</td><td>Annual</td><td>^a90 µg/m³</td></tr><tr><td>Particulate matter < 10 µm (PM₁₀)</td><td>Annual</td><td>^a30 µg/m³</td></tr></table> <p><i>Table 7: Short term criterion for particulate matter</i></p> <table><tr><th><i>Pollutant</i></th><th><i>Averaging period</i></th><th><i>^dCriterion</i></th></tr><tr><td>Particulate matter < 10 µm (PM₁₀)</td><td>24 hour</td><td>^a50 µg/m³</td></tr></table> <p><i>Table 8: Long term criteria for deposited dust</i></p> <table><tr><th><i>Pollutant</i></th><th><i>Averaging period</i></th><th><i>Maximum increase in deposited dust level</i></th><th><i>Maximum total¹ deposited dust level</i></th></tr><tr><td>^cDeposited dust</td><td>Annual</td><td>^b2 g/m²/month</td><td>^a4 g/m²/month</td></tr></table> <p><i>Notes for Tables 6-8:</i></p> <ul style="list-style-type: none">^aTotal impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to other sources);^bIncremental impact (i.e. incremental increase in concentrations due to the project on its own);^cDeposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and^dExcludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents, illegal activities or any other activity agree to by the Secretary in consultation with EPA.			<i>Pollutant</i>	<i>Averaging period</i>	<i>^dCriterion</i>	Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³	Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³	<i>Pollutant</i>	<i>Averaging period</i>	<i>^dCriterion</i>	Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³	<i>Pollutant</i>	<i>Averaging period</i>	<i>Maximum increase in deposited dust level</i>	<i>Maximum total¹ deposited dust level</i>	^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month
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^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month																							
3(15)	The Proponent shall ensure compliance with any pollutant limits in the EPL set after further assessment of the potential air quality impacts associated with the gold smelting process (refer to Condition 17 below).																									

Air Quality and Greenhouse Gas	
3(16)	Operating Conditions The Proponent shall: <ul style="list-style-type: none"> (a) implement best practice air quality management on site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emissions generated by the project; (b) minimise any visible air pollution generated by the project; (c) regularly assess the air quality monitoring and meteorological forecasting data, and relocate, modify and/or stop operations on site to ensure compliance with the relevant conditions of this approval; and (d) take all practical measures to minimise dust emissions from the tailings dam, to the satisfaction of the Secretary.
3(17)	Air Quality & Greenhouse Gas Management Plan The Proponent shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must: <ul style="list-style-type: none"> (a) be prepared in consultation with EPA and Council, and submitted to the Secretary for approval prior to construction; (b) include an assessment of the potential air quality impacts of the project associated with the gold smelting process; (c) describe the measures that would need to be implemented to ensure compliance with conditions 12-16 of this schedule; (d) include a program for the implementation of the measures referred to in (c) above; and (e) include an air quality monitoring program, that uses a combination high volume samplers and dust deposition gauges to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.
3(18)	METEOROLOGICAL MONITORING During the life of the project, the Proponent shall ensure that there is a suitable meteorological station operating in the vicinity of the site that complies with the requirements in the <i>Approved Methods for Sampling of Air Pollutants in New South Wales</i> guideline.

Table 3.2 presents the requirements for this plan and where each is addressed in this document.

Table 3.2 Project Approval Requirements

Requirement	Section
Condition 3 (17)	
Air Quality and Greenhouse Gas Management Plan	
The Proponent shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the project to the satisfaction of the Secretary. This plan must:	
(a) be prepared in consultation with EPA and Council, and submitted to the Secretary for approval prior to construction;	2
(b) include an assessment of the potential air quality impacts of the project associated with the gold smelting process;	7
(c) describe the measures that would need to be implemented to ensure compliance with conditions 12-16 of this schedule;	6, 7, 8, 9
(d) include a program for the implementation of the measures referred to in (c) above; and	6, 7, 8, 9
(e) include an air quality monitoring program, that uses a combination high volume samplers and dust deposition gauges to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.	8

Requirement	Section
Condition 5 (2)	
Management Plan Requirements	
The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:	
(a) detailed baseline data;	5
(b) a description of: <ul style="list-style-type: none"> the relevant statutory requirements (including any relevant approval, licence or lease conditions); any relevant limits or performance measures/criteria; the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures; 	3 8.1.2 and Table 7 8.2
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	6
(d) a program to monitor and report on the: <ul style="list-style-type: none"> impacts and environmental performance of the project; effectiveness of any management measures (see c above); 	8, 10
(e) a contingency plan to manage any unpredicted impacts and their consequences;	9
(f) a program to investigate and implement ways to improve the environmental performance of the project over time;	9, 10, 15
(g) a protocol for managing and reporting any: <ul style="list-style-type: none"> incidents; complaints; non-compliances with statutory requirements; and exceedances of the impact assessment criteria and/or performance criteria; and 	9, 10, 15
(h) a protocol for periodic review of the plan.	15
<i>Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</i>	

4. OBJECTIVES AND OUTCOMES

Table 4.1 presents the objectives and key performance outcomes for the AQGGMP and the Project.

Table 4.1 Objectives and Key Performance Outcomes

OBJECTIVES	KEY PERFORMANCE OUTCOMES
Air Quality	
To ensure compliance with all relevant Project Approval and Environmental Protection Licence criteria and reasonable community expectations.	Compliance with all relevant criteria and reasonable community expectations.
To implement appropriate air quality management and mitigation measures during all stages of the Project.	All identified air quality management and mitigation measures implemented.
To implement a monitoring program to establish compliance or otherwise with relevant criteria during all stages of the Project.	All identified monitoring undertaken in accordance with the relevant procedures and at the relevant intervals
To implement an appropriate complaints handling and response protocol	Complaints (if any) handled and responded to in an appropriate manner.
To implement appropriate corrective and preventative actions, if required.	Corrective and preventative actions implemented, if required
To implement an appropriate incident reporting program, if required.	Incidents (if any) reported in an appropriate manner.

5. EXISTING ENVIRONMENT

5.1 SURROUNDING RESIDENCES

Figure 1 displays the location of residences surrounding the Project Site as well as the air quality monitoring locations.

5.2 POTENTIAL CONTAMINANT SOURCES

The following activities have been identified as potentially resulting in emissions of dust and particulate matter during dry conditions.

- Clearing of vegetation.
- Loading, hauling and stockpiling of topsoil.
- Loading and hauling waste rock.
- Hauling ROM ore to ROM pad.

- Unloading ROM ore to stockpile.
- Rehandling ore to ROM bin.
- Crushing and screening.
- Unloading crushed and processed ore to stockpile.
- Cement handling.
- Hauling concentrate off-site.
- Wind erosion from waste rock emplacement areas, ROM pad, stockpiles, the Tailings Storage Facility, soil stockpile areas and unsealed roads.
- Grading roads.

Emissions of carbon monoxide (CO), nitrogen dioxide (NO₂) and sulphur dioxide (SO₂) would also occur from diesel-powered plant and equipment used on-site and vehicle movements to site.

5.3 PROJECT SITE WIND ENVIRONMENT

Figure 2 presents the annual and seasonal wind roses compiled from the data collected from the Project's meteorological station for the period March 2009 to February 2010. This data may be summarised as follows.

- On an annual basis, the data show a high frequency of winds from the south-southeast and from the northwest directions. The annual mean wind speed for the Project is 3.7m/s and the percentage of calms (wind speeds less than 0.5m/s) is 3.6%.
- In summer and autumn, winds are predominantly from the south-southeast and to a lesser extent from the northwest direction.
- In winter and spring, the dominant winds are from the northwest, with predominant winds also from the south-southeast in spring.

5.4 EXISTING DUST ENVIRONMENT

The Company undertakes deposited dust monitoring within and surrounding the Project Site. The following presents a summary of the monitoring data for the previous 12 months. All data collected from July 2013 is available from the Company's website (www.divminerals.com.au).

Deposited dust monitoring results for the 12 months to 26 June 2019 at monitoring locations DD1, DD2, DD3, DD4 and DD5 (see **Figure 1** and **Table 5.1**). **Table 5.2** presents the results of that monitoring. In summary, average deposited dust levels for the period were between 1.7g/m²/month and 2.4g/m²/month. The maximum monthly deposited dust level across all monitoring locations was 8.8g/m²/month at DD1 in April 2019. The average PM10 value recorded over a 24-hour period was 12.5µg/m³ based on 37 samples recorded between October 2018 and June 2019.

Table 5.1 Monitoring Locations

Monitoring Location	Land Ownership	Representative Receiver	Northing	Easting
DD-1 and HVAS-1	Private Land	R79	35.564573	149.742741
DD-2	Private Land	R29	35.555210,	149.737548
DD-3	Dargues Gold Mine Pty Ltd	Farmland	35.533939	149.744825
DD-4	Dargues Gold Mine Pty Ltd	R106	35.556491	149.747364
DD-5	Dargues Gold Mine Pty Ltd	Farmland	35.543820	149.758174

Table 5.2 Air Quality Monitoring results - (g/m²/month) – 2018/2019

		Deposited Dust (g/m ² /month)					PM10 (µg/m ³)
Year	Month	DD1	DD2	DD3	DD4	DD5	HVAS-1 ¹
2018	July	0.3	0.3	0.5	0.2	0.2	– ²
	August	0.8	0.7	0.5	0.4	0.5	– ²
	September	0.6	0.4	0.3	0.5	0.3	– ²
	October	0.5	0.7	0.3	0.4	6.2	11.4
	November	0.1	0.9	0.7	0.7	0.5	6.5
	December	2.1	3.3	4.2	2.3	2.6	15.5
2019	January	6.7	4.1	6.5	6.9	7.4	14.6
	February	2.4	3.3	7.0	4.0	4.2	24.3 ³
	March	1.3	1.2	2.2	2.6	0.8	15.8
	April	8.8	4.3	0.8	1.0	1.1	13.5
	May	2.7	0.5	2.0	0.7	3.3	7.8
	June	1.1	0.4	0.4	0.6	1.9	2.8
Average	-	2.3	1.7	2.1	1.7	2.4	12.5
Minimum	-	0.1	0.3	0.3	0.2	0.2	2.8
Maximum	-	8.8	4.3	7.0	6.9	7.4	24.3
Note 1: Results represent the average of all 24-hour samples recorded each month (average of four samples per month).							
Note 2: Sampling ceased in March 2014 and recommenced in September 2018.							
Note 3: Two samples excluded due to recorded dust storm and low volume sample.							
Source: Company website (divminerals.com.au) – accessed August 2019.							

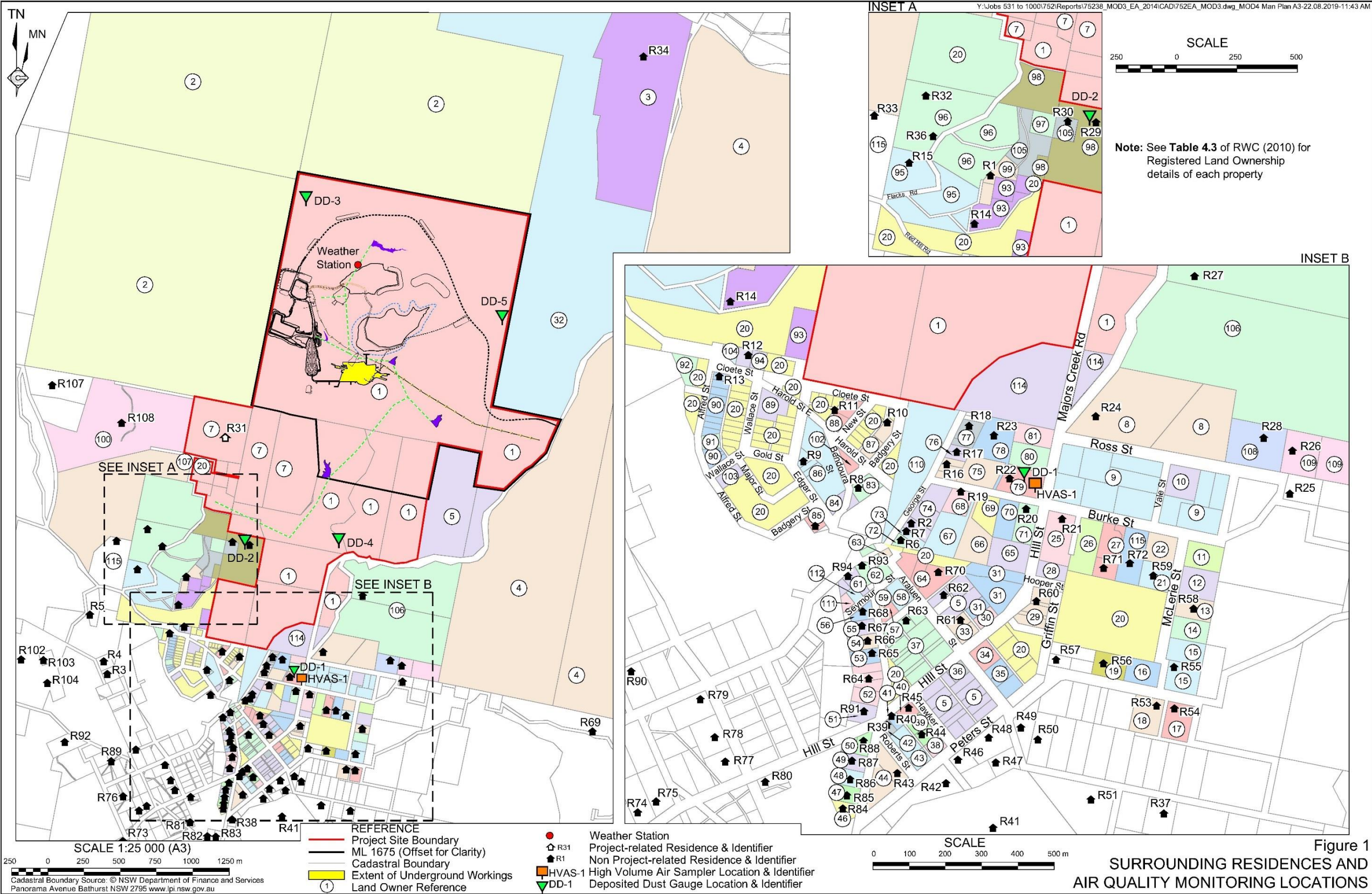
6. MANAGEMENT MEASURES

6.1 DUST AND PARTICULATE MATTER

Table 6.1 presents the management measures that will be implemented throughout the life of the Project to minimise the emission of dust and particulate matter.

Table 6.1 Management Measures – Particulate Matter

Source	Control Procedures
Wind Blown Dust	
Areas Disturbed by Mining	<ul style="list-style-type: none"> Disturb only the minimum area necessary for mining operations. Stabilise the face of the waste rock emplacement/ROM Pad, Tailings Storage Facility embankment and other disturbed sections of the Project Site that are not required for mining operations as soon as practicable following construction.
Ore Handling Areas/Stockpiles	<ul style="list-style-type: none"> Maintain ore handling areas / stockpiles in a moist condition as required using water carts to minimise wind-blown and traffic-generated dust.
Stockpiles	<ul style="list-style-type: none"> Have available water sprays/water carts on stockpiles to minimise the generation of dust.
Mine Design and Construction	
Transport of Ore	<ul style="list-style-type: none"> Use the largest practicable truck size to reduce the number of movements necessary to transport ore material. Use conveyors within the processing plant to transport crushed ore material. Establish and use water sprays on key transfer points within the processing plant.
Waste Rock Emplacement	<ul style="list-style-type: none"> Profile all surfaces to reduce surface wind speed. Contour the final landform shape to avoid strong wind flows and smooth gradients to reduce turbulence at surface.
Revegetation	<ul style="list-style-type: none"> Complete as soon as practical after disturbance. Apply vegetation as widely as practical.
Mine Generated Dust	
Roads	<ul style="list-style-type: none"> All roads and trafficked areas will be watered as required using water trucks to minimise the generation of dust. Enforce a speed limit of 40km/h or less on all roads within the Project Site. All roads will have edges clearly defined with marker posts or equivalent to control their locations. Development of minor roads will be limited and the locations of these clearly defined. Obsolete roads will be ripped and re-vegetated. Ensure that all concentrate vehicles leaving the Project Site are covered to prevent concentrate material blowing from the truck.
Topsoil Stripping	<ul style="list-style-type: none"> Access tracks used by topsoil stripping equipment during their loading and unloading cycle will be watered.
Topsoil Stockpiling	<ul style="list-style-type: none"> Long term topsoil stockpiles will be re-vegetated.
Processing	<ul style="list-style-type: none"> Establish and use water sprays on key transfer points within the processing plant. Minimise drop heights from the ROM bin to the primary crusher.
Blasting Operations	<ul style="list-style-type: none"> Ensure that all surface blasts are appropriately designed to minimise emission of particulate matter.
Cement Use and Storage	<ul style="list-style-type: none"> Ensure that a reverse pulse dust collector, as well as overpressure and vacuum sensors, are fitted to the cement storage silo and are operational to prevent dust emissions. Deliver cement in bulk and pneumatically unload directly into the storage silo.



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Annual and seasonal windroses for Dargues Reef (March 2009 to February 2010)

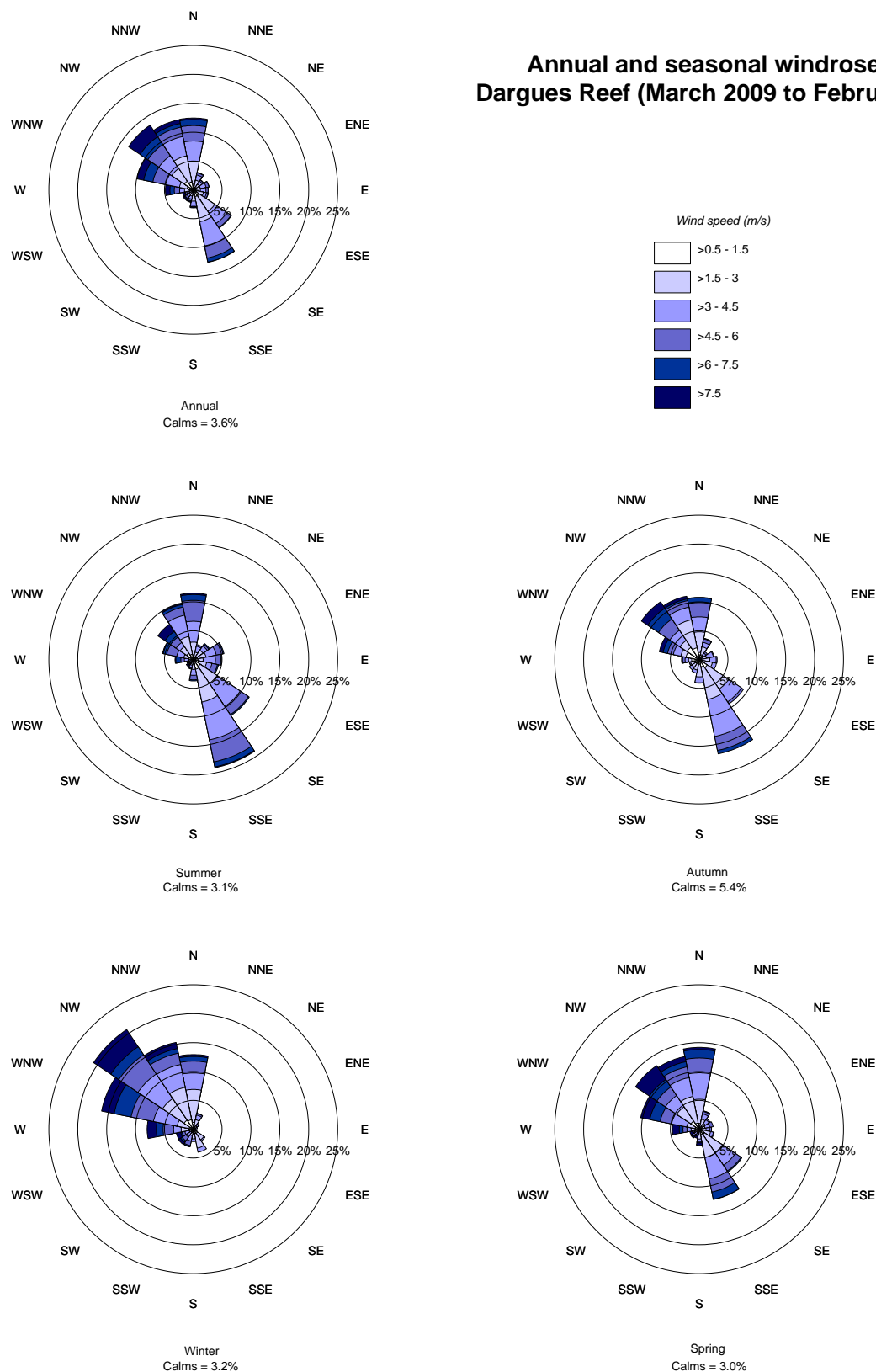


Figure 2

Annual and Seasonal Windroses

6.2 ODOUR

As the Project would not result in the production of offensive odour, no odour-specific management measures are required.

6.3 GREENHOUSE GAS

The legislative framework for the National Greenhouse and Energy Reporting Scheme (NGERS; established under the *National Greenhouse and Energy Reporting Act 2007* (DCC, 2008)) requires mandatory reporting for facilities or corporations who trigger relevant greenhouse gas (GHG) or energy consumption thresholds.

The current facility threshold is 25kt of CO₂-e or 100TJ of energy consumed, and the current corporate threshold is 50kt of CO₂-e or 200 TJ of energy consumed. The Project will exceed the facility threshold from year 1 of operation onwards, and as such will be required to report under NGERS.

As a result, the Company will implement the greenhouse gas management measures identified in **Table 6.2**.

Table 6.2 Greenhouse Gas Management Measures

Management Measure	Implementation Date	Person Responsible
Consider the efficiency of all new diesel and electric mobile and fixed equipment during procurement.	Ongoing	Purchasing Officer
Maintain equipment as per the manufacturer's specification	Ongoing	Maintenance Manager
Emissions and abatement strategies will be reported annually	Annual (within AEMR)	Environmental Representative

The Company will maintain a greenhouse gas reporting system to track energy consumption and greenhouse gas emissions, establish targets for reduction and facilitate assessment and reporting against targets for reduction. The results from the greenhouse gas reporting system will be regularly reviewed to ensure the data being collected is meaningful. Operating/management measures will be modified on the basis of the results, where appropriate.

7. AIR QUALITY MONITORING

7.1 PARTICULATE MATTER MONITORING

7.1.1 Purpose

Condition 3(17)(e) of MP10_0054 MOD4 states that the AQGGMP must include:

“...a combination of high volume samplers and dust deposition gauges to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.”

As a result, air quality monitoring will be conducted to satisfy the above Condition, and the results used for:

- evaluating and reporting project compliance;
- assessing and reporting project performance; and
- active project management, including incident and complaint management and investigation.

This will require dust and meteorological equipment to be correctly installed and operated.

7.1.2 Impact Assessment Criteria

Table 7.1 presents Impact Assessment Criteria that are consistent with *Condition 3(14)* of MP10_0054 MOD4.

The impact assessment goals for deposited dust show two levels; the allowable increase in dust deposition level over the ambient (background) level which would be acceptable so that dust nuisance could be avoided, and the maximum allowable total dust level before loss of amenity is experienced.

Table 7.1 Project – Impact Assessment Criteria

Pollutant	Averaging Period	Criterion	
Short-Term Impact Assessment Criteria			
Particulate Matter <10 μm (PM ₁₀)	24 hour	50 μg/m ³	
Long-Term Impact Assessment Criteria			
Particulate Matter <10 μm (PM ₁₀)	Annual	30 μg/m ³	
Total Suspended Particulate Matter (TSP)	Annual	90 μg/m ³	
Deposited Dust (insoluble solids)		Max Increase	Max Total
	Annual	2 g/m ² /month	4 g/m ² /month

7.1.3 Monitoring Equipment

The following monitoring equipment has been installed within and surrounding the Project Site. The locations of these equipment are presented in **Figure 1**.

- One High Volume Air Sampler (HVAS) measuring PM₁₀ for a minimum of 12 months after commencement of operations. As air quality predictions for the Project are well below the assessment criteria, should PM₁₀ monitoring at this site also show low results, the HVAS monitor may be discontinued following consultation with regulatory authorities.
- Five dust deposition gauges.

There are established relationships between PM₁₀ and TSP from extractive industry whereby if the PM₁₀ long-term impact assessment criterion is met, the TSP criterion may be expected to be satisfied. In view of this, PM₁₀ monitoring is proposed as a surrogate for demonstration of compliance with the TSP criterion in **Table 7.1**, and thus no TSP monitoring is to be undertaken.

7.2 MONITORING PROCEDURES

7.2.1 Meteorological Monitoring

A meteorological station was installed at the Project Site in late March 2009 and continues to collect meteorological data (**Figure 1**). The meteorological station collects hourly records of temperature, wind speed, wind direction and sigma-theta (a measure of the fluctuation of the horizontal wind direction). Quarterly summaries of meteorological data are available on the Company's website (www.divminerals.com.au).

The Company will ensure that the meteorological station is operated in accordance with the following guidelines.

- NSW EPA *Approved methods for the sampling and analysis of air pollutants in NSW* (EPA 2006);
- Australian Standard and New Zealand Standard (AS/NZS) 3580.1.1:2016 *Methods for sampling and analysis of ambient air - Guide to siting air monitoring equipment*;

- AS/NZS 3580.14:2014 *Methods for sampling and analysis of ambient air - Meteorological monitoring for ambient air quality monitoring applications*;
- USEPA (2000) EPA 454/R-99-005 Meteorological monitoring guidance for regulatory modelling applications.

7.2.2 Dust Deposition Monitoring

Five dust deposition gauges have been installed within or surrounding the Project Site (**Table 5.1** and **Figure 1**).

Dust deposition gauges will be installed and operated in accordance with the following.

- The dust deposition gauges were located and installed by a qualified professional in accordance with AS 2922:1987 *Ambient Air - Guide for the Siting of Sampling Units* (NSW DECCW Method AM-1) (superseded by AS/NZS 3580.1.1:2016), and the NSW EPA *Approved methods for the sampling and analysis of air pollutants in NSW* (EPA 2006).
- The dust deposition gauges are sampled in accordance with AS/NZS 3580.10.1:2016 *Methods for sampling and analysis of ambient air - Determination of particulate matter - Deposited matter - Gravimetric method*.

Dust deposition will be measured and reported on a monthly basis. Exposed gauges will be replaced on a monthly basis, with analysis conducted at a NATA accredited laboratory for insoluble solids and percentage ash.

7.2.3 HVAS Monitoring

One HVAS is to be positioned at Residence R20 (HVAS-1) (**Figure 1**). The HVAS will measure PM₁₀ on a 24-hour, one-day-in-six frequency, during operation.

The HVAS unit will be operated in accordance with the following:

- The HVAS shall be located and installed by a qualified professional in accordance with AS 2922:1987 *Ambient Air - Guide for the Siting of Sampling Units* (NSW DECCW Method AM-1) (superseded by AS/NZS 3580.1.1:2016), and the NSW EPA *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (EPA 2006).
- The HVAS shall be sampled in accordance with AS/NZS 3580.9.6:2015 *Methods for Sampling and Analysis of Ambient Air - Determination of Suspended Particulate Matter - PM₁₀ High Volume Sampler with Size-Selective Inlet - Gravimetric Method*.

The results of the HVAS monitoring will be reviewed following completion of 12 months of monitoring and continuation of the HVAS monitoring program will be determined in consultation with the relevant government agencies.

7.3 GREENHOUSE GAS MONITORING

The parameters monitored for greenhouse gas reporting include the secondary parameters of electricity and diesel usage from underground mining operations.

A summary of the frequency of greenhouse gas monitoring and the personnel responsible are presented in **Table 7.2**.

Table 7.2 Monitoring Requirements for Greenhouse Gas Reporting

Parameter Monitored	Frequency	Person Responsible
Electricity usage	Collated Quarterly	Manager of Electrical Engineering
Diesel usage	Collated Quarterly	Purchasing Officer

Monitoring for greenhouse gas reporting purposes (**Table 7.2**) will take place for the duration of the mining operation. Should mining operations cease temporarily (e.g. due to changes in market demand) greenhouse gas monitoring may be suspended until the recommencement of operations.

8. EVALUATION OF COMPLIANCE

8.1 INTERNAL DATA REVIEW

The Environmental Supervisor or their delegate will review all air quality monitoring data as it is received. In the event an air quality criteria detailed in **Section 7.1.2** or **Table 7.1** is exceeded, the Company will implement the following procedure.

- The exceedance of the air quality criteria will be reported to the Environmental Supervisor.
- The Environmental Supervisor will instigate an investigation of the exceedance to determine the likely cause. The investigation will seek to determine:
 - whether the exceedance of the criteria was directly related to a source associated with the Project or if environmental factors contributed to the exceedance;
 - the primary cause of the incident;
 - any contributing factors which led to the incident;
 - whether appropriate controls were implemented to prevent the incident; and
 - corrective and preventative measures that may be implemented to prevent a recurrence of the incident.
- In the event that the exceedance of the air quality criteria is attributable to the Project, it will be reported to the EPA and Department of Planning, Industry and Environment (DPIE) within 24 hours of the completion of the investigation.

Corrective and/or preventative actions will be assigned to relevant Company personnel. Actions will be communicated internally through planning meetings and toolbox talks and outstanding actions will be monitored for their effectiveness upon completion.

A copy of the investigation report and regular updates on the status of the identified corrective and/or preventative actions will be provided to the relevant government agencies and, if required, the complainant, in accordance with the procedures identified in **Section 11**. In addition, a copy of all reports will be included in the Annual Environmental Management Report.

8.2 INDEPENDENT REVIEW

In the event that a landowner considers the Project to be exceeding the relevant criteria, they may ask the Secretary (DPIE), in writing, for an independent review of the impacts of the Project on their land. Should the Secretary be satisfied that an independent review is warranted, within two months of the Secretary's decision, as per *Condition 4(3)* of MP10_0054 MOD4, the Proponent shall:

- (a) Commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:*
 - consult with the landowner to determine his/her concerns;*
 - conduct monitoring to determine whether the project is complying with the relevant criteria in Schedule 3; and*
 - if the Project is not complying with these criteria then:*
 - determine if more than one mine is responsible for the exceedance, and if so the relative share of each mine towards the impact on the land; and*
 - identify the measures that could be implemented to ensure compliance with the relevant criteria and*
- (b) give the Secretary and landowner a copy of the independent review.*

Should the independent review determine that the Project is complying with the relevant assessment criteria, the Company may discontinue the independent review following approval of the Secretary.

Should the independent review determine that the Project is non-compliant with relevant impact assessment criteria, as per *Condition 4(4)* of MP10_0054 MOD4, the Company shall:

- (a) implement all reasonable and feasible mitigation measures, in consultation with the landowner and appointed independent person, and conduct further monitoring until the project complies with the relevant criteria; or*
- (b) secure a written agreement with the landowner to allow exceedances of the relevant criteria, to the satisfaction of the Secretary .*

9. REPORTING

9.1 AIR QUALITY EXCEEDANCES

In the event that the Project exceeds the applicable air quality impact assessment criteria (i.e. the exceedance has not been attributed to other local or regional factors), in accordance with *Condition 4(2)* of MP10_0054 MOD4, the Company will:

- notify DPIE, the EPA and other relevant agencies within 24 hours of determining that the exceedance is Project related;
- notify the affected landowner/tenants of the exceedance and provide them with a copy of the NSW Health fact sheet entitled “*Mine Dust and You*”;
- submit a written report as described in **Section 9** to DPIE, the EPA and other relevant agencies; and
- provide the affected landowner/tenants with quarterly air quality monitoring results until the results show that the Project is complying with relevant criteria.

9.2 ANNUAL REPORTING

In accordance with *Condition 5(3)* of MP10_0054 MOD4, the Company will conduct an Annual Review of the environmental performance of the Project by the end of each year following the commencement of construction to the satisfaction of the Secretary. This report will be incorporated into the *Annual Environmental Management Report*.

The Annual Environmental Management Report will specifically address the environmental performance of the Project and will include the following.

- A description of the development (including any rehabilitation) that was carried out in the past year, and the development that is proposed to be carried out over the next year.
- A comprehensive review of the monitoring results and complaints records of the Project over the past year, which includes a comparison of these results against the:
 - relevant statutory requirements, limits or performance measures/criteria;
 - monitoring results of previous years; and
 - relevant predictions in the EA.
- Identification of any non-compliance over the past year, and describe what actions were (or are being) taken to ensure compliance.
- Identification of any trends in the monitoring data over the life of the Project.
- Identification of any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies.
- A description of what measures will be implemented over the next year to improve the environmental performance of the Project.

The report will also contain the following:

- The test method used, the air pollutants measured and the monitoring instruments used.
- The period of monitoring (start and end dates).
- Location of monitoring points.
- Appropriate long term averages.
- Any factors that may have affected the monitoring results.
- Details of any dust or odour complaints received during the monitoring period.
- Compliance test procedures for dust and odour levels above the Impact Assessment Criteria, as outlined in Section 8.2.

9.3 GREENHOUSE GAS REPORTING

The Company will report annually to the NGERS and (as required) Energy Efficiency Opportunities program, and notes that reports are made public under these schemes. The reports will contain but not be limited to the following information.

- Energy usage.
- Greenhouse gas emissions.
- Greenhouse gas reduction measures.
- Review of previous energy/greenhouse gas reduction measures.
- Investigation of future energy/ greenhouse gas reduction measures.
- Any other information required for reporting, including contextual information.

All information relating to NGERS reporting will be maintained within the document control record system. Records used for reporting are to be maintained for a minimum of 7 years in accordance with the National Greenhouse and Energy Reporting Act 2007.

10. COMPLAINTS HANDLING AND RESPONSE

The *Environmental Management System* includes a detailed complaints management procedure. This sub-section records the procedures that would be implement following receipt of an air quality-related complaint.

Air quality-related complaints may be received either via one of the following methods.

- Directly via the 24-hour, 7 day per week Community Information Line (1800 732 002). This number will be advertised widely in the local media, on signage at the Project Site entrance and on the Project web site.

- Directly via a dedicated email address (DGM.Community@divminerals.com.au) which will be advertised in a similar manner to the Community Information Line.
- Directly via the Project/Company web site (www.divminerals.com.au).
- Indirectly via the relevant government agencies.

In addition, regular public meetings will be held with the community as part of the Company's standard consultation procedures. These meetings will provide a further forum at which complaints may be received.

Following receipt of any air quality-related complaint, the Company would implement the following procedure.

1. The complaint will be reviewed by the Environmental Supervisor or their delegate to determine the nature, date and time of the emission source.
2. Activities occurring within the Project Site, as well as the meteorological conditions recorded by the meteorological station at the time of the complaint would be reviewed and the Environmental Supervisor or their delegate would contact the complainant to discuss and resolve the complaint, if possible.
3. In the event that the procedures identified in Step 2 above resolve the issues raised, no further action would be taken. In the event that the complaint is not resolved, then the complainant would be advised of their rights under *Condition 4(3)* of MP10_0054 MOD4.

11. PUBLICATION OF MONITORING INFORMATION

In accordance with *Condition 5(7)* of MP10_0054 MOD4, the Company will provide regular reporting on the environmental performance of the Project on its website (www.divminerals.com.au), in accordance with the reporting arrangements in any plans or programs approved under the conditions of the Approval and consistent with the Mines Environment Protection Licence 20095.

12. ROLES AND RESPONSIBILITIES

A summary of roles and responsibilities associated with site air quality and greenhouse gas management is provided in **Table 13.1**.

13. COMPETENCE TRAINING AND AWARENESS

Those involved in the implementation of this Management Plan are fully trained in the required aspects corresponding to their respective roles as documented in **Table 13.1**.

It is noted that Managers are responsible for ensuring that employees and subcontractors (as required) are adequately trained in relevant environmental plans and procedures.

Table 13.1 Roles and Responsibilities for Managing Site Air Quality and Greenhouse Gases

Role	Responsibilities
General Manager	<ul style="list-style-type: none"> Accountable for the overall environmental performance of the Project, including the review and outcomes of this plan.
HSEC Superintendent	<ul style="list-style-type: none"> Undertake training in relevant Management Plans and procedures as required. Ensure greenhouse gas emissions are accurately estimated and reported in the AEMR and Annual Return. Ensure adequate resources are available to enable implementation of this plan.
Environmental Advisor	<ul style="list-style-type: none"> Implement, monitor and review this Management Plan. Consult with regulatory authorities as required. Implement dust abatement and control as required. Provide measures for continual improvement to this Management Plan. Ensure all personnel undertaking works in relation to this Management Plan are trained and competent. Report air quality performance within the AEMR. Maintain a sound understanding of mine related air quality impacts and controls. Conduct, review and analyse air monitoring data. Review and analyse energy usage data. Collate data for the Annual Report and review of any outstanding actions, and subsequent notification to the action owner.
All personnel	<ul style="list-style-type: none"> Responsible for good dust management practices during construction and operation of the mine. Responsible for avoiding unnecessary energy usage in a manner consistent with this procedure.

14. ANNUAL REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

In accordance with Condition 5(4) of MP10_0054 MOD4, this Plan will be reviewed and, if required, revised within 3 months of:

- the submission of an annual review under Condition 5(3);
- the submission of an incident report under Condition 5(6);
- the submission of an audit report under Condition 5(8); and
- any modification to the conditions of MP10_0054.

This review will include the adequacy of strategies, plans and programs as required under the Project approval. Recommendations for appropriate measures or actions to improve the environmental performance of the Project and/or any assessment, plan or program will be incorporated into this Plan.

15. REFERENCES

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National Greenhouse and Energy Reporting Act 2007, Department of Climate Change, as amended September 2008.

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Approved Methods for the Sampling and Analysis of Air Pollutants in new South Wales, version dated 5 December 2006.

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