



Northparkes Mines
A century of mining together

Management Plan

Air Quality

Risk Statement: High

This document will be reviewed on a one yearly basis, unless a process change occurs earlier than this period. The information in this document relates to management, monitoring and associated reporting required by Development Consent 11_0060 and Mining Leases 1247, 1367, 1641 and 1743.

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Revision Summary

First Issue	Issue Date	Implementation Requirements	Approved By
1		Document created	NMT

Version No.	Revision Date	Summary of Revision Details	Approved By
10	Apr 14	Reviewed by A. Youssef – transfer to new CMOC template, document hierarchy added, update of content to reflect current operational status in light of approvals.	NMT
11	Oct 15	Reviewed and updated by E&H Advisor and Supt Env. & Farms.	NMT
12	Feb 16	Reviewed and included new Section 8 by B Ram. With flowcharts for assessing dust data	NMT
13	Mar 16	Reviewed and included comments from DPE. By B Ram Update sections 9.4 and Section 11. Included Appendix 1 for regulatory consultation.	NMT
14	Oct 17	Reviewed by N Jones, only minor changes.	NMT
15	Apr 18	Reviewed by M Thomas, minor changes to section 9.3.4	NMT
16	Oct 18	Reviewed by N Jones, updated to new format, update weekly weather assessment template and minor amendments	CD
17	25 Feb 20	Updated to new DCS. Revision table reduced.	M Row
18	29 Jun 20	Post 2020 Annual Review	C Higgins
19	26 Feb 21	2021 Annual Review	C Higgins
20	27 Oct 21	Review following 2021 Independent Environmental Audit	C Higgins
21	17 Jun 22	Modification 6 approval – update to reflect changes in monitoring requirements (removal of depositional dust and total suspended particle monitoring). Addition of PM2.5 calculated monitoring	C Higgins

Consultation Required	Public Copy Locations
- Department of Planning and Environment; - Environmental Protection Authority	Northparkes Website

Associated Documents to be Reviewed

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1. OVERVIEW

1.1 BACKGROUND

CMOC Mining Services Pty Limited (CMOC) is the manager of the Northparkes Joint Venture, an unincorporated joint venture between CMOC Mining Limited (80%); Sumitomo Metal Mining Oceania Pty Ltd (13.3%) and SC Mineral Resources (6.7%). Northparkes is a copper-gold operation in Goonumbla, situated 27 kilometres north-west of the town of Parkes.

Construction of the ore processing plant and associated facilities began in 1993. Open cut mining commenced on the E22 and E27 ore bodies in late 1993. Development of the E26 lift 1 block cave underground mine began in 1994, with full scale production commencing in 1997.

1.2 MINING CONTEXT

Operations at Northparkes primarily comprises underground mining from multiple ore sources that feed a processing plant with a capacity of 6.5 million tonnes per annum (Mtpa). The underground mine is accessed via a decline ramp from the surface for people and materials with ore transported to the surface via inclined conveyors and a hoisting shaft, with a nominal capacity of 7.2 Mtpa. Northparkes utilises low cost block and sub-level cave mining and exploits industry leading technology, such as semi-autonomous loaders and various cave monitoring systems.

The ore processing operation consists of four stages: crushing, grinding, flotation and thickening / filtering. In addition to producing concentrate, the ore processing team also manages tailings disposal. The concentrator was constructed in two modules. Each module consists of its own grinding circuit with a single flotation circuit, concentrate thickener and filter. After extracting the copper and gold bearing minerals, the tailings are combined in a single tailings thickener before being deposited in the active tailings storage facility.

Northparkes' copper concentrate is transported to a rail siding where it is then transported by rail to Port Kembla, for shipping to overseas customers.

1.3 AIR QUALITY

Detailed sources of environmental dust within the area are limited, and generally subject to specific activities and climatic conditions. Dusty conditions arise in periods of drought, or during specific farming activities such as harvest, sheep work or vehicle transit along unsealed roads. Throughout the remainder of the year, land is generally covered by crops or native grasslands which reduces available dust generating surfaces.

The background air quality levels adopted for the site are listed in Table 1. For each pollutant, the maximum background concentration has been selected for each relevant averaging period.

Table 1: Background air quality levels for particulate matter.

Pollutant	Averaging Period	Assumed Background Ambient Level
Total Suspended Particulate (TSP) Matter	Annual	72µg/m3
Particulate Matter < 10µm (PM10)	Annual	18µg/m3
Particulate Matter < 10µm (PM10)	24-hour	Variable
Particulate Matter < 2.5µm (PM10)	Annual	6.3µg/m3
Particulate Matter < 2.5µm (PM10)	24-hour	Variable
Deposited dust	Annual	2.7g/m2/month

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Northparkes consists of a mix of campaign open cut mining, underground block cave mines, processing plant, associated waste dumps and tailings storage facilities (TSFs). Northparkes has been operating since 1994, during this time waste rock dumps of approximately 25m in height and tailings impoundments of approximately 28m in height have been constructed within the mining lease. Key potential sources of dust on site are open areas, waste dumps, TSFs, unsealed roads and ore transfer.

Northparkes owns approximately 5,000ha of agricultural land surrounding the mining operations, providing a considerable buffer between operations and our neighbours mitigating potential nuisance impacts of environmental dust on neighbours. However, between the site and the nearest residences there is no significant change in topography deemed to influence atmospheric dispersion.

Historical monitoring data indicates that dust generated by mining activities is not extensive and generally falls out within 500m of the source.

2. SCOPE

This document applies to all activities undertaken by Northparkes including mining and exploration activities, processing of copper / gold ore resources, project development, maintenance activities, mine closure, logistics, associated service and support functions, bore fields, farming operations and products.

3. PURPOSE / OBJECTIVES

The objectives of the Air Quality Management Plan (AQMP) are:

- ensure that dust emissions from operations are minimised and appropriately controlled
- ensure that air quality impacts on surrounding residents are minimised
- keep the local community and regulators informed of activities where required and respond quickly and effectively to issues or complaints
- carryout regular monitoring to ensure compliance against air quality criteria
- adequately manage and mitigate potential air quality impacts from the construction and operational activities

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3.1 REGULATORY REQUIREMENTS

The Air Quality Management Plan (AQMP) addresses the relevant components of schedule 3 conditions 14 – 18 of the Northparkes Development Consent (PA11_0060). These conditions are outlined in Table 2 and Table 3 below.

Table 2: NSW Development Consent Conditions

Requirement	Northparkes Reference																		
Air Quality Criteria																			
Condition 14. The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not cause exceedances of the criteria listed in Table 3, Table 4 and Table 5 at any residence on privately-owned land. <i>Table 3: Long term impact assessment criteria for particulate matter</i> <table><tr><th>Pollutant</th><th>Averaging period</th><th>^{a, d, e} Criterion</th></tr><tr><td>Particulate matter < 10 µm (PM₁₀)</td><td>Annual</td><td>25 µg/m³</td></tr><tr><td>Particulate matter < 2.5 µm (PM_{2.5})</td><td>Annual</td><td>8 µg/m³</td></tr></table> <i>Table 4: Short term impact assessment criterion for particulate matter</i> <table><tr><th>Pollutant</th><th>Averaging period</th><th>^{b, e} Criterion</th></tr><tr><td>Particulate matter < 10 µm (PM₁₀)</td><td>24 hour</td><td>50 µg/m³</td></tr><tr><td>Particulate matter < 2.5 µm (PM_{2.5})</td><td>24 hour</td><td>25 µg/m³</td></tr></table> Notes to Tables 3-4: ^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources); ^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own); ^c Deleted ^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary. ^e Compliance with the assessment criteria for PM2.5 in Tables 3 and 4 may be calculated as a ratio of PM10. A protocol for demonstrating compliance with the PM2.5 assessment criteria must be detailed in the Air Quality Management Plan approved by the Secretary	Pollutant	Averaging period	^{a, d, e} Criterion	Particulate matter < 10 µm (PM ₁₀)	Annual	25 µg/m ³	Particulate matter < 2.5 µm (PM _{2.5})	Annual	8 µg/m ³	Pollutant	Averaging period	^{b, e} Criterion	Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³	Particulate matter < 2.5 µm (PM _{2.5})	24 hour	25 µg/m ³	Section 5.2.2
Pollutant	Averaging period	^{a, d, e} Criterion																	
Particulate matter < 10 µm (PM ₁₀)	Annual	25 µg/m ³																	
Particulate matter < 2.5 µm (PM _{2.5})	Annual	8 µg/m ³																	
Pollutant	Averaging period	^{b, e} Criterion																	
Particulate matter < 10 µm (PM ₁₀)	24 hour	50 µg/m ³																	
Particulate matter < 2.5 µm (PM _{2.5})	24 hour	25 µg/m ³																	
Schedule 3																			
Condition 15. The Proponent shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the project do not cause exceedances of the criteria listed in Table 3 and Table 4 at any occupied residence on mine owned land unless: a) the tenant has been notified of any health risks associated with such exceedances in accordance with the notification requirements under schedule 5 of this approval; b) the tenant of any land owned by the Proponent can terminate their tenancy agreement without penalty at any time, subject to giving reasonable notice; c) air mitigation measures such as air filters, a first flush roof water drainage system and/or air conditioning) are installed at the residence, if requested by the tenant; d) air quality monitoring is regularly undertaken to inform the tenant of the actual particulate emissions at the residence; and e) data from this monitoring is presented to the tenant in an appropriate format for a medical practitioner to assist the tenant in making informed decisions on the health risks associated with occupying the property, to the satisfaction of the Secretary.	Section 5, 10																		
Condition 16. The Proponent shall: a) implement best management practice to minimise the off-site odour, fume and dust emissions of the project b) implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site c) minimise any visible off-site air pollution generated by the project d) minimise the surface disturbance of the site	Section 6 & 7																		

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Requirement	Northparkes Reference
e) operate a air quality management system that uses a combination of predictive meteorological forecasting and real-time air quality monitoring data to guide the day to day planning of mining operations and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions of this approval f) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see Noted above under Table 4); To the satisfaction of the Secretary.	
Condition 17. The Proponent shall prepare and implement an Air Quality Management Plan for the project to the satisfaction of the Secretary. This plan must: a) be prepared in consultation with the EPA, and submitted to the Secretary for approval by 30 June 2014; b) describe the measures that would be implemented to ensure compliance with the relevant air quality criteria and operating conditions of this approval; c) describe the air quality management system; d) include an air quality monitoring program that: - adequately supports the air quality management system; - includes a trigger response/reactive management protocol; - evaluates and reports on the: - the effectiveness of the air quality management system; - compliance with the air quality criteria; - compliance with the air quality operating conditions; and - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents	Entire Plan
Condition 18. For the life of the project, the Proponent shall ensure that there is a meteorological station in the vicinity of the site that: a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline; and b) is capable of continuous real-time measurement of stability class in accordance with the NSW Noise Policy for Industry, unless a suitable alternative is approved by the Secretary following consultation with the EPA	Section 7.3
Schedule 5	
Condition 3. As soon as practicable after obtaining monitoring results showing: (a) an exceedance of any relevant criteria in schedule 3, the Proponent shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the project is again complying with the relevant criteria; and (b) an exceedance of the relevant air quality criteria in schedule 3, the Proponent shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected tenants of the land (including the tenants of any mine-owned land).	Section 10

Comments from Regulators

On 01 September 2015, Northparkes received comments from Department of Planning and Environment (DPE) requesting Northparkes to amend additional information in the Air Quality Management Plan. The comments are detailed in Table 3 along with Northparkes comments for each component of the Condition is addressed within this document.

Table 3: Regulatory Comments

Comments	Section
Additional procedures of Schedule 5 need to be incorporated.	Section 9
Last dot point of Schedule 3 Condition 17 (d) not adequately addressed.	Section 9

On 26 November 2015, Northparkes received comments from the DPE requesting Northparkes to amend further changes with the Management Plan submitted in October 2015. The comments are detailed in

Table 4 along with Northparkes responses for each component of the Condition addressed within this document.

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Table 4: Regulatory comments on 26 November 2015

Requirement	Section
Last dot point of Schedule 3 Condition 17 (d) still inadequately addressed. Section 9 defines a pollution incident and includes a protocol for managing this. However, this needs to focus on an air quality incident - essentially an exceedance of the air quality criteria. Protocols for identifying and notifying the Department and relevant stakeholders should relate to an air quality incident specifically.	Section 9

On 11 March 2016, Northparkes received comments from the DPE requesting Northparkes to amend further changes with the Management plan submitted on 17 February 2016. The comments are detailed in Table 5 along with Northparkes responses for each component addressed within this document.

Table 5: Regulatory comments on 7 March 2016

Requirement	Section
Evidence of consultation with the EPA should be provided	Appendix 1
The meteorological monitoring station has the potential to trigger early investigation and response before air quality levels are exceeded. Please identify how this is being used to facilitate proactive and adaptive management of air quality	Section 10
Section 11 refers to the frequency of updates to the Air Quality Management Plan. This should also include the requirements under Schedule 6, condition 5.	Section 12

4. RESPONSIBILITIES

Specific accountabilities in relation to management of 'air quality' at Northparkes are outlined in Table 6. Personnel carrying out work under this Management Plan must be familiar with and comply with it in full.

General role responsibilities are outlined in the Health, Safety and Environment Responsibilities and Accountabilities Procedure (PRO-0080). Personnel carrying out work under this document must be familiar with and comply with it in full. The following persons have specific responsibility:

Table 6: Responsibilities

Role	Responsibility
Operational	
Superintendent Environment	- environmental inductions and training to ensure workforce awareness - restrictions on clearing, topsoil stripping and access to disturbed areas - progressive rehabilitation - implement a program of regular monitoring
Operational Managers	- sealing high traffic roads, where possible - control mechanisms on crushing and conveying infrastructure, including complete or partial enclosure dust extraction filters and mist sprays
Manager – Ore Processing	- product transportation in sealed containers - operation of the TSFs to minimise dust and capped as early as practicable - dust controls on surface - operation of the TSFs to minimise dust and capped as early as practicable
Manager – Mining	- minimise use of haul trucks (through use of conveyors & planning) - dust controls on surface
Manager – Tech Services	reverse circulation drill rigs
Adverse Weather	
(to be applied in situations where adverse weather conditions are resulting in significant risk of dust generation)	

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Role	Responsibility
Manager – Mining	– review of the elevation of mining and dumping and, where possible, relocate equipment to lower elevations, until more suitable conditions return
Managing Director	– amended working hours – temporary cessation of work within an area
Long Term	
Superintendent Environment	– identifying major dust generating activities and implementing appropriate control methods – review monitoring trends to drive improvements and maintain compliance – maintain awareness of current dust control methods and technology
Operational Managers	– identifying major dust generating activities and implementing appropriate control methods

5. KEY ISSUES

5.1 POTENTIAL SOURCES

The potential sources of dust generated by activities include:

- Topsoil stripping
- Excavation, transportation and placement of materials
- Wind erosion from disturbed surfaces
- Exposed dried surfaces of the tailing's storage facilities
- Overland conveying of crushed ore
- Ore handling at the rill towers and ROM pad
- Crushing and screening of ore
- Open cut mining, including drilling and blasting
- Use of unsealed roads around the mine site
- Exploration activities and
- Fuel combustion emissions from onsite vehicles and plant equipment.

The primary impact of dust generation is likely to be nuisance to surrounding land owners and the subsequent community impact. Dust generated at the site has not been identified as having contaminant levels that would cause health or environmental impacts. Similarly, to date, there is little evidence to support supposition that environmental dust will have a detrimental impact on flora or fauna in the vicinity of the mine. This does not negate the possibility of future impacts, but literature reviews and monitoring results suggest that the risk is low.

5.2 AIR QUALITY CRITERIA

5.2.1 BASELINE DATA

Baseline data was collected from 2009 to 2012 prior to the Northparkes Step Change Project. The data below is taken from Appendix 6 – Air quality Impact Assessment of the Step Change Project Environmental Assessment.

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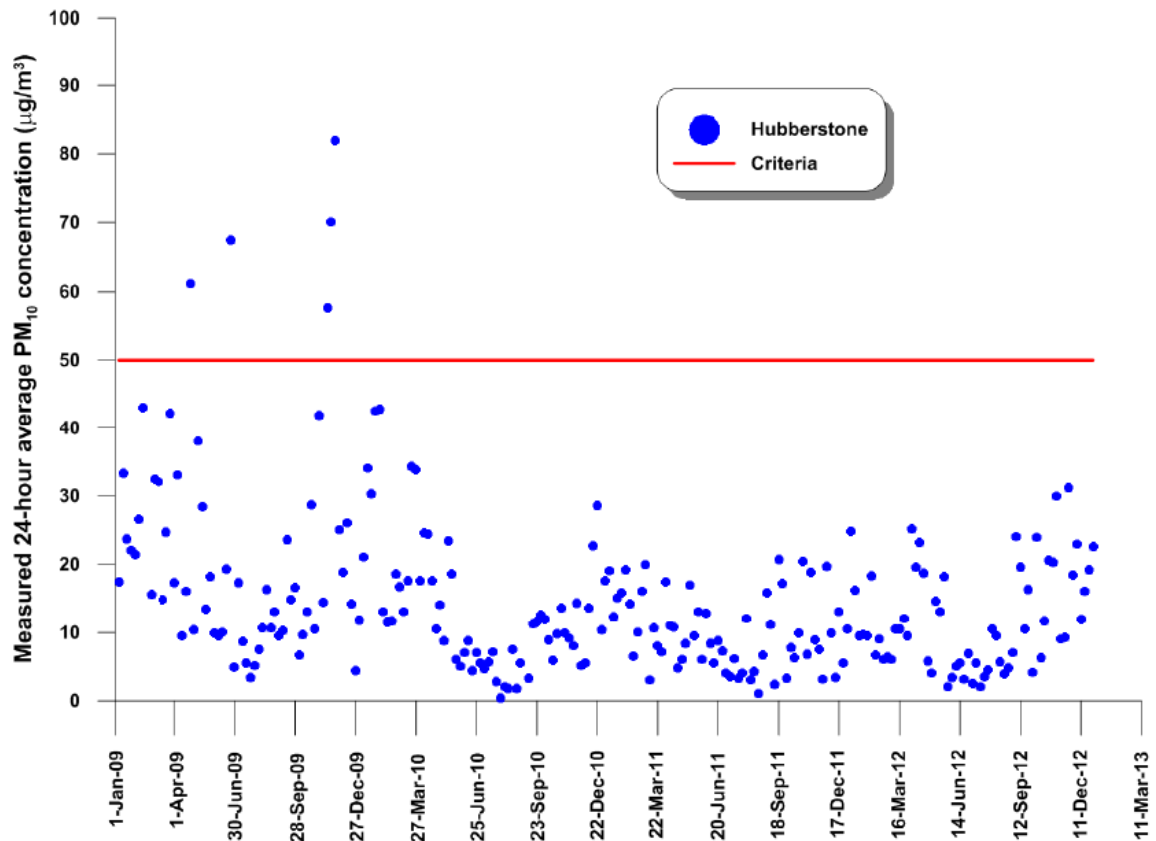


Figure 1: Baseline 24 hour average PM₁₀ concentrations at Hubberstone 2009-2012

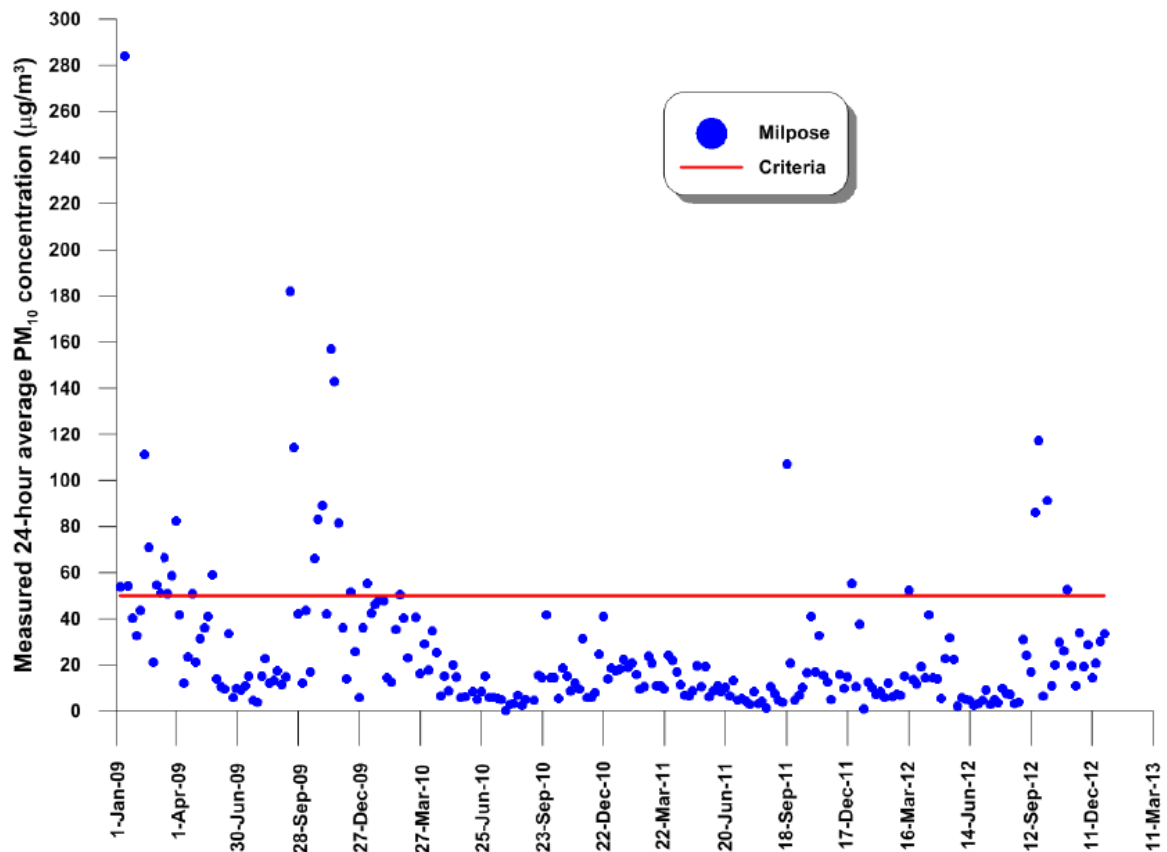


Figure 2: Baseline 24 hour average PM₁₀ concentrations at Milpose 2009-2012

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Table 7: Baseline PM₁₀ concentrations measured 2009-2012

Year	Measured PM ₁₀ concentrations (µg/m ³)							
	Hubberstone				Milpose			
	Minimum 24-hour average	Maximum 24-hour average	No. days above 50 µg/m ³	Annual average	Minimum 24-hour average	Maximum 24-hour average	No. days above 50 µg/m ³	Annual average
2009	3	82	5	22	4	284	22	47
2010	0	43	0	14	0	55	2	19
2011	1	21	0	10	1	107	2	15
2012	2	31	0	12	1	117	5	20
All data	0	82	-	14	0	284	-	25
Criteria	-	50	5 (NEPM)	30	-	50	5 (NEPM)	30

Table 8: Baseline depositional dust data 2008-2010

Site	Annual average - Insoluble solids (g/m ² /month)			
	2008	2009	2010	Average
ND19	2.0	2.3	2.3	2.2
ND20	1.9	2.1	0.9	1.6
ND21	2.0	2.4	1.3	1.9
ND22	2.3	4.4	3.4	3.4
TDE	2.1	5.8	4.2	4.0
TDE5	1.7	2.2	1.6	1.8
TDN5	3.6	3.4	3.2	3.4
TDNE	3.0	3.1	1.6	2.6
TDS5	4.1	3.6	2.9	3.5
TDSW	3.6	4.5	2.8	3.6
TDW	3.5	3.6	1.2	2.8
Average	2.7	3.4	2.3	2.8

5.2.2 NORTH PARKES DEVELOPMENT CONSENT 11_0060

As per Schedule 3, condition 14 of Northparkes Development Consent 11_0060, Northparkes shall ensure that the dust generated by the project the project does not exceed the criteria in Table 9 at any residence on privately-owned land.

Table 9: Long term impact assessment criteria for particulate matter

Pollutant	Averaging period	^{a,d,e} Criterion
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 25 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	Annual	^a 8 µg/m ³

Table 10: Short term impact assessment criterion form particulate matter

Pollutant	Averaging period	^{b,e} Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³
Particulate matter < 2.5 µm (PM _{2.5})	24 hour	^a 25 µg/m ³

Notes to Table 9 and Table 10

- ^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources);
- ^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own);
- ^c Deleted
- ^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.
- ^e compliance with the assessment criteria for PM_{2.5} in Tables 3 and 4 may be calculated as a ratio of PM₁₀. A protocol for demonstrating compliance with the PM_{2.5} assessment criteria must be detailed in the Air Quality Management Plan approved by the Secretary

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These limits do not apply if Northparkes have an agreement with the relevant owner/s of the residences or land to generate higher dust levels, and Northparkes has advised the Department of Planning and Environment in writing of the terms of the agreement.

6. CONTROL MEASURES

Control measures for the management of air quality during construction, operation and decommissioning are essential in minimising air quality impacts.

6.1 OPERATIONAL

Operational control measures include:

- Northparkes has a private agreement in place with the owners of "Avondale" that they are aware the property is not part of the monitoring program as it is unoccupied. The owners will inform Northparkes if there are plans for the occupancy to change
- major works scheduled undergo a risk assessment prior to commencing work
- environmental inductions and training to ensure workforce awareness
- purchase of equipment that meets relevant air emission standards
- maintaining plant and machinery in good working order
- maintaining haul roads in good condition
- regular contact with local residents
- sealing high traffic roads, where possible
- use of water carts on unsealed roads
- scheduling of work with attention paid to adverse weather conditions and modifications made to the work program where necessary
- implementation of best management practice to minimise the construction, operational and road air quality of the operations
- an air quality management system that uses a combination of predictive meteorological forecasting and real-time weather monitoring data to guide the day to day planning of construction and mining operations, and the implementation of both proactive and reactive air quality mitigation measures to ensure compliance with the relevant conditions and approvals
- a program of regular air quality monitoring of site operations to determine whether the operations are complying with the criteria set out in Northparkes Development Consent 11_0060. This monitoring will be undertaken as real-time dust (continuous) PM10 (with calculated PM2.5) monitoring at surrounding receivers over the life of the mine

Adverse Weather

Should adverse weather conditions exist, the following options are available to mitigate offsite, private property impacts:

- review of the elevation of earthworks or mining activities and, where possible, relocate equipment to lower elevations, until more suitable conditions return
- amend working hours where possible
- stop construction works if required for a period of time to reduce any abrupt changes in air quality.

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6.2 RISK ASSESSMENTS

The primary impact of dust generation is likely to be a nuisance to surrounding land owners and the subsequent community. Dust generated at the site has not been identified as having contaminant levels that would cause health or environmental impacts. Similarly, to date, there is little evidence to support supposition that environmental dust will have a detrimental impact on flora or fauna in the vicinity of the mine. This does not negate the possibility of future impacts, but literature reviews and monitoring results suggest that the risk is low.

7. MONITORING

An air quality monitoring program is implemented to regularly sample air quality at key locations on and adjacent to the mine site. The program is designed to measure the effectiveness of control measures and ensure compliance with consent and licence conditions, relevant standards and corporate requirements.

All monitoring is undertaken in accordance with the following procedure Environmental Monitoring and Measuring Schedule (REG-0008).

A meteorological monitoring station is maintained to provide real time and periodic meteorological data to assist in the interpretation of results. The environmental dust monitoring program is outlined in Table 11.

Table 11: Environmental Dust Monitoring Requirements

Monitoring Parameter	Monitoring Method	Frequency	Location	Accountable Person
PM10	BAMs – Real time monitors	Continuous	Milpose Hubberstone Hillview	Environment Advisor
PM2.5	Calculation derived from PM10 data	Continuous	Hillview (calculation) Hubberstone (calculation) Milpose (calculation)	Environment Advisor
Weather -Wind Speed -Wind direction -Rainfall	Meteorological monitoring station	Continuous	Northparkes Access Control	Environment Advisor

Any exceedance of the criteria deemed to be attributable to Northparkes, or if the source of the exceedance is unable to be definitively determined will constitute an environmental incident and require reporting through the internal HSE Management system. Any community complaint received in relation to dust will be reported as an environmental incident following the investigation.

Actions required because of an exceedance of the air quality criteria will be determined on a case by case basis, according to determined causal factors.

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7.1 PM10 AND PM2.5 REAL TIME DUST MONITORING

Northparkes will utilise real-time air quality monitoring with alarm / SMS capabilities at three locations as shown in Figure 3: Northparkes Air Quality Monitoring Locations (PM10). Real time air monitors will:

- monitor and record real time dust
- notify works area supervisors of dust levels encroaching criteria

Any dust that is above the air quality criteria as required by the Development Consent where the source of dust is from the mining activities will be deemed as a dust incident. A detailed investigation will be carried out and mitigation measures will be implemented to reduce the air quality impact. All exceedances and investigations will be reported to the regulators within 7 days of the incident.

7.2 PM2.5 CALCULATION DERIVED FROM PM10 DATA

Real time PM2.5 data will be derived via a calculation based on recorded PM10 data. The calculation shall use the ratio of PM10 to PM2.5 as recorded at the NSW DPE's Merriwa monitoring station (considered to be the most similar climatic conditions to Northparkes)

The ratio is 1 (PM10) : 0.35 (PM2.5)

7.3 REAL TIME METEOROLOGICAL MONITORING

Northparkes operate a meteorological monitoring station, located within ML 1367. Ten minute and 24-hour average wind speed, wind direction, air temperature, relative humidity, solar radiation, and rainfall are being monitored.

These measurements will allow identification of the periods when wind speeds of up to 3m/s at 10m above ground level and temperature inversions of up to 3°C/100m are experienced.

The weather monitoring station Northparkes is sited as required in "Approved Methods for Sampling of Air Pollutants in New South Wales", which complies with AS 2923 – 1987 – Guide for Measurement of Horizontal Wind for Air Quality Applications.

The meteorological station complies with AS 2923 – 1987 on all respects. The 10m tower located on relatively flat terrain and is at least ten times the height of obstructions, and away from those obstructions, as per Section 8.3 of AS 2923 – 1987.

Fifteen minute and 24-hour average wind speed, wind direction, air temperature, relative humidity, solar radiation and rainfall are currently being monitored. These measurements will allow cross reference with dust deposition and High-Volume Air Sampler results to aid in the identification of dust sources should exceedances of the prescribed air quality criteria are observed.

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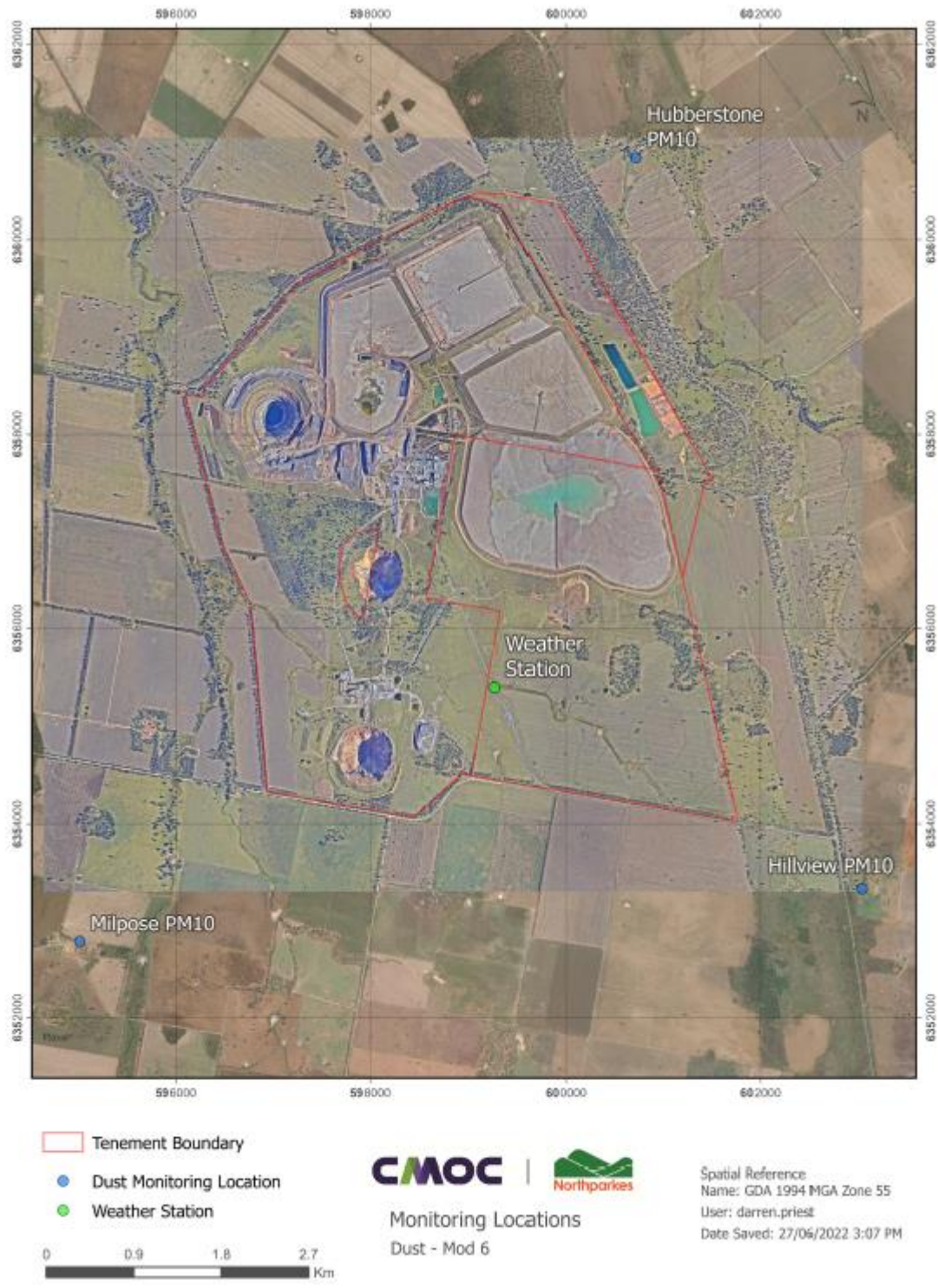


Figure 3: Northparkes Air Quality Monitoring Locations (PM10)

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8. DATA ANALYSIS

All air quality data is assessed for compliance with licence conditions in Schedule 3, Condition 14 – Air Quality Criteria, of the Northparkes Development Consent No. 11_0600. The process for assessing compliance and a potential incident are highlighted in the following flowcharts.

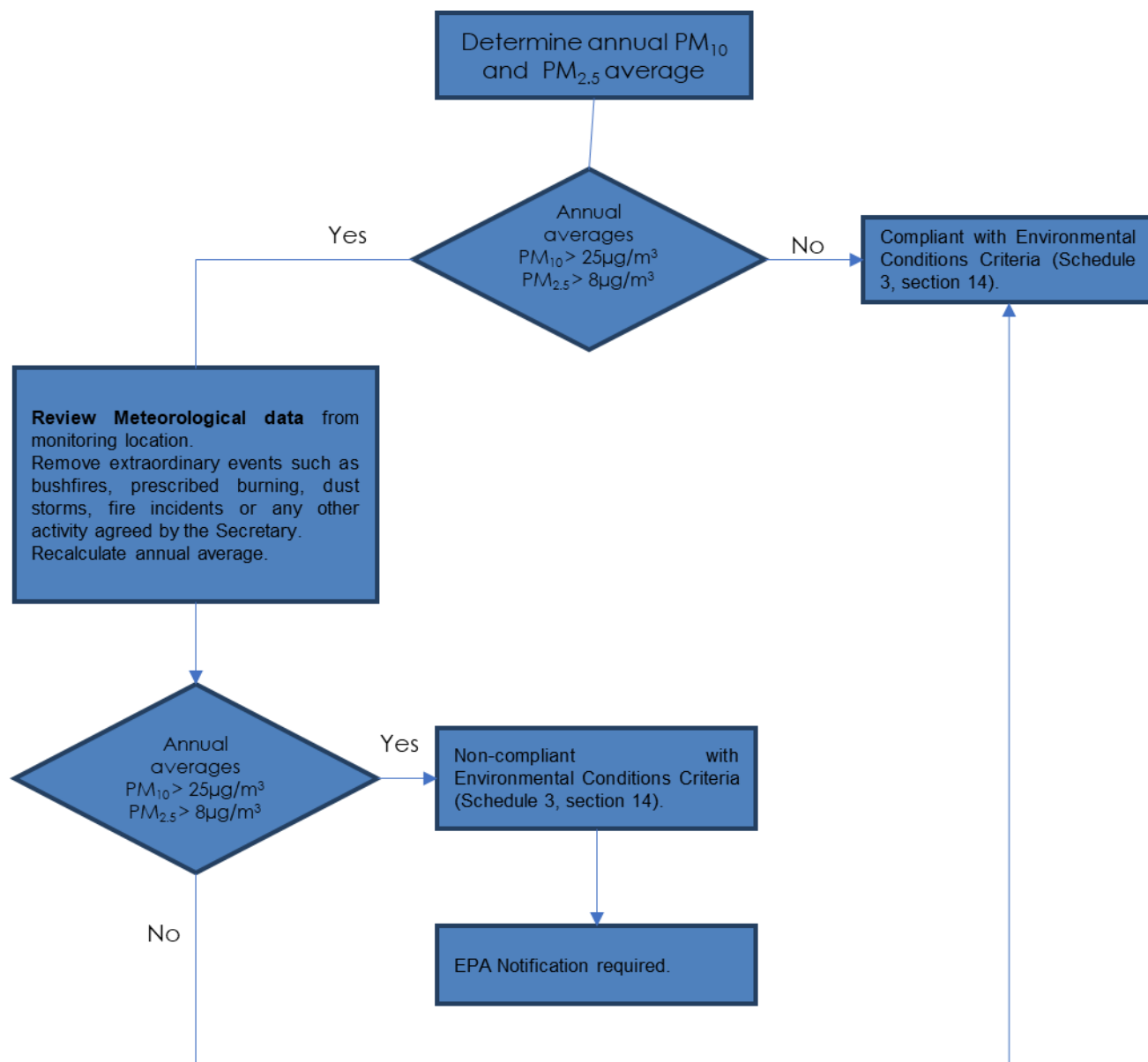


Figure 4: Flowchart for annual long-term PM₁₀ and PM_{2.5} monitoring data evaluation.

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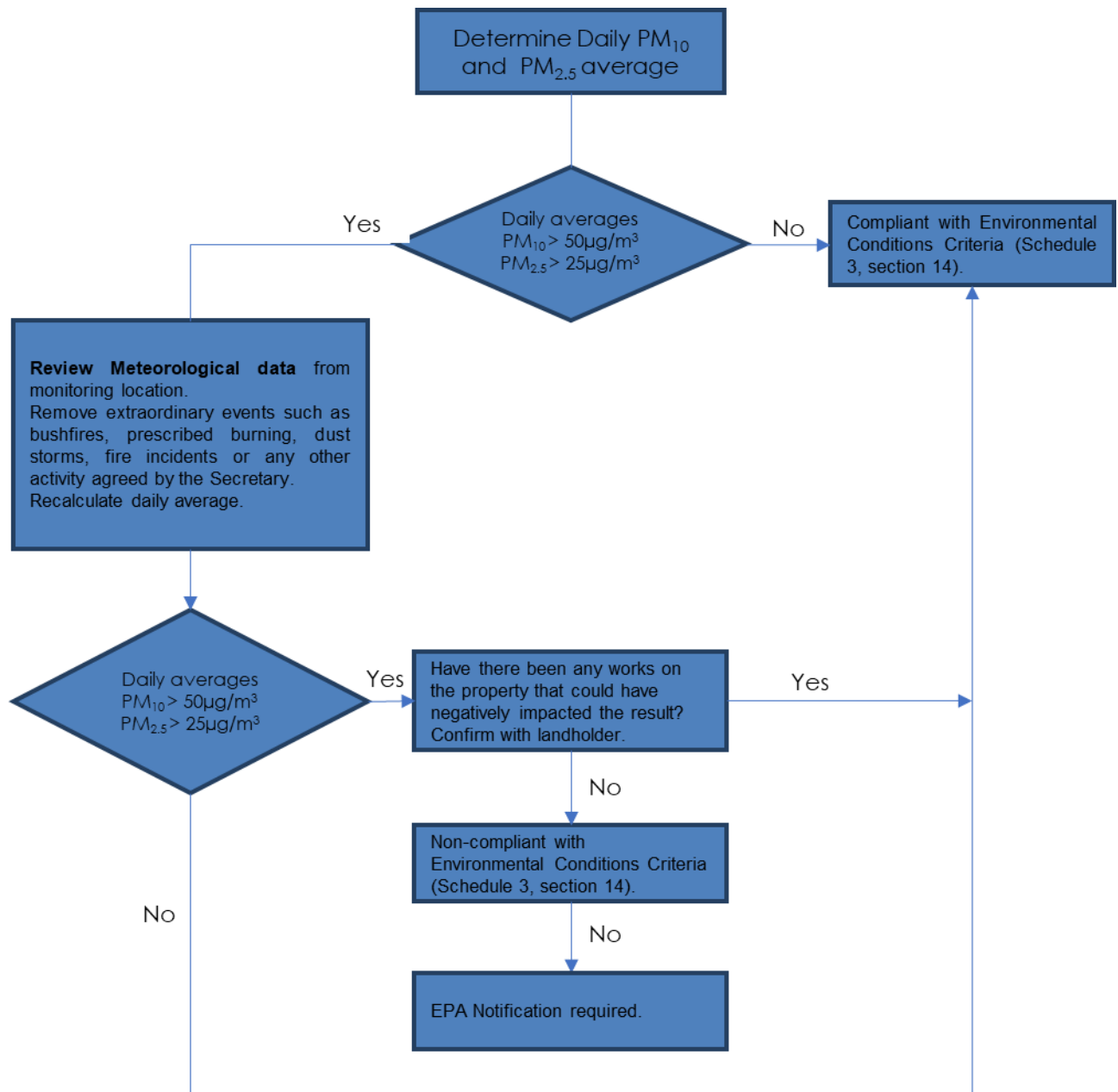


Figure 5: Flowchart for 24 hour short-term PM10 and PM2.5 monitoring data evaluation.

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9. INCIDENT MANAGEMENT PROCEDURE

The Incident Management Procedure (PRO-0148) specifies the management of any incident which occurs within the Project Area or is associated with operations at Northparkes. In addition, the response to any pollution incident is specified in the Northparkes Pollution Incident Response Management Plan (PIRMP).

All incidents must be reported by the employee or contractor who has been associated with or witnessed the incident. When required, investigations into significant incidents or non-compliances are complete in accordance with the Northparkes Investigations Guideline (GUI-0092).

In accordance with the requirements of PRO-0148, EPL 4784 and the PIRMP, Northparkes, its employees or contractors must notify the EPA of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident. Notifications must be made in accordance with the PIRMP and include telephoning the Environment Line service on 131 555. Northparkes must also provide written details about the notification to the EPA within seven days of the incident.

10. AIR QUALITY NOTIFICATIONS

Where a dust reading is deemed an incident requiring reporting, as per protocols above, then the Northparkes Pollution Incident Response Management Plan (PIRMP) is to be implemented immediately.

Under part 5.7 of the Protection of the Environment Operations Act 1997 (POEO Act), the occupier of the premises, the employer or any person carrying out the activity which causes a pollution incident must immediately notify each relevant authority when material harm to the environment is caused or threatened.

10.1 NOTIFICATION PROTOCOL

All employees and contractors are legally required to assist Northparkes to meet EPA's notification requirements detailed within EPL4784. Under the internal notification protocol, the actual/potential material harm pollution incident must:

1. Immediately notify your Northparkes supervisor or Environment Phone (0458 042 391) or the Northparkes Access Control (02) 6861 3211 per the Northparkes Emergency Procedures. **Note:** This can be any time, 24hrs per day.
2. In the event that the supervisor or the Control Room Operator cannot be immediately contacted, contact the Environmental Superintendent immediately.
3. In the event the Environmental Superintendent or PSE Manager cannot be immediately contacted, the EPA require that the supervisor/employee/contractor/agent must notify the EPA immediately.

After the internal notification protocol has been followed, the person undertaking external notification must immediately follow the below protocol:

1. Firstly, call 000 if the incident presents an immediate threat to human health or property. (Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents).
2. If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the order within the PIRMP.

In the event there is an incident which poses a potential threat to surrounding property owners and occupiers, Northparkes will notify those likely to be affected as soon as practicable.

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The effected landowners will be notified in writing of any exceedance of environment monitoring criteria for air quality as required by the Development Consent 11_0060, as soon as practicable after obtaining monitoring results. In the instance of an exceedance of the air quality criteria, Northparkes will also send a copy of the NSW Health fact sheet entitled "Mine Dust and You" to the affected landowners and/or existing tenants of the land including the tenants on mine-owned land. Following notification of an exceedance, Northparkes will provide regular monitoring results to each of these parties until the results show that the project is complying with the criteria.

Northparkes will also notify all privately-owned land owners within 2 kilometres of the approved open cut mining pits that they are entitled to request an inspection to establish baseline condition assessments of any building or structures on their land. This will be undertaken 3 months before the commencement of open cut mining operations. Northparkes will include a copy of the NSW Health fact sheet entitled "Mine Dust and You" to the all landowners and/or existing tenants of the land including the tenants on mine-owned land.

Northparkes will also inform landowners of their rights under Development Consent 11_0060 before entering into any agreement on exceedances of dust and/or noise criteria. Northparkes will also provide information of the potential health and amenity impacts associated with living on the land and give landowners a copy of the NSW Health fact sheet entitled "Mine Dust and You".

10.2 PROACTIVE MANAGEMENT – PLANNING FOR ADVERSE WEATHER

Weekly weather assessments are issued every Monday morning for the oncoming week's weather to alert the relevant departments of upcoming wind and weather events. The days are related on a traffic light system with high days rated in red. The Trigger Action Response Plan (TARP) will be implemented for any week which is high risk rated and has the possibility to cause harm to the environment or adverse impact to community.

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Table 12: Trigger Action Response Plan (TARP)

Trigger Plan

Trigger Levels and Action Response Plans			
OFFSITE DUST EVENT			
Location	Normal	Level 1	Level 2
		Triggers	Triggers
Site Wide	The day is forecast as being of normal risk, when there has been rain over the Site in the last 10 days. In addition, one or more of the following aspects should also hold true: a) winds are expected to range between 0 – 3.6 m/s b) prevailing wind direction is north, north-east, east, south-east. c) day lies in the months of November to April.	The day is forecast as being of a moderate risk, when there has been no rain for 10 – 20 days over the Site. In addition, one or more of the following aspects should also hold true: a) winds are expected to range between 3.6 – 8.8 m/s b) prevailing wind direction is south or south-westerly c) day lies in the months of May to June.	The day is forecast as being of a high risk, when there has been no rain for greater than 20 days over the Site. In addition, one or more of the following aspects should also hold true: a) winds are expected to be greater than 8.8 m/s b) prevailing wind direction is west or north-westerly c) day lies in the months of August to October.

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Response Plan

Trigger Levels and Action Response Plans			
OFFSITE DUST EVENT			
Responsibilities	Normal	Level 1	Level 2
		Response	Response
Environmental Advisor	- Track weather forecasts using online sources. - Send out weekly weather assessment to Environment advisors; Environment and Farms Superintendent; Superintendent Ore Processing; OPD Personnel; Community and External Relations Advisor; OPD shift Supervisors; Ore Processing Superintendent; Manager – Ore Processing; Manager – People, Safety and Environment; and Project Manager – Tailings. - Weekly weather forecast is reviewed daily against the latest weather predictions, and if conditions have been deemed to be significantly different (i.e. change in risk rating) to those that were originally predicted at the start of the week, then a revised weather forecast is circulated.	- Track weather forecasts using online sources. - Send out weekly weather assessment to Environment advisors; Environment and Farms Superintendent; Superintendent Ore Processing; OPD Personnel; Community and External Relations Advisor; OPD shift Supervisors; Ore Processing Superintendent; Manager – Ore Processing; Manager – People, Safety and Environment; and Project Manager – Tailings. - Weekly weather forecast is reviewed daily against the latest weather predictions, and if conditions have been deemed to be significantly different (i.e. change in risk rating) to those that were originally predicted at the start of the week, then a revised weather forecast is circulated.	- Track weather forecasts using online sources - Send out weekly weather assessment to Environment advisors; Environment and Farms Superintendent; Superintendent Ore Processing; OPD Personnel; Community and External Relations Advisor; OPD shift Supervisors; Ore Processing Superintendent; Manager – Ore Processing; Manager – People, Safety and Environment; and Project Manager – Tailings. - Weekly weather forecast is reviewed daily against the latest weather predictions, and if conditions have been deemed to be significantly different (i.e. change in risk rating) to those that were originally predicted at the start of the week, then a revised weather forecast is circulated. - If mine generated dust is witnessed offsite, notify the EPA (Dubbo) of nuisance dust outside the Mine Lease.
Community and External Relations Advisor	No action	No action	Notify all sensitive receptors in the receiving environment of potential dust impacts.
OPD Personnel	No action	- Where the option of tailings deposition is available i.e. Rosedale, ensure infrastructure is ready and operational. - Report and log any changes in dust levels on and around the TSF facilities through to shift supervisor.	- Where the option of tailings deposition is available (i.e. Rosedale, Estcourt and TSF Infill), wet TSF surface with tailings. - Report and log any changes in dust levels on and around the TSF facilities through to shift supervisor.

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Trigger Levels and Action Response Plans			
OFFSITE DUST EVENT			
Responsibilities	Normal	Level 1	Level 2
		Response	Response
OPD Team Leaders	- Adhere to daily plan - Continue with TSF inspections - Ensure all people are aware of operating procedures - Report any unforeseen dust issues..	- Notify Superintendent Ore Processing of any changes in dust levels on and around the TSF facilities within 1 hour. - Verbally notify oncoming shift supervisor of upcoming dust risk. - Make preparations (all materials on hand) to assist with TSF related dust suppression.	- As per Level 1 Response - Monitor extent and development of dust levels in area. - Report to Superintendent Ore Processing. - Verbally notify oncoming Shift Supervisor
Ore Processing Superintendent	Adhere to daily plan	- Review situation and action required with environmental support - Plan and manage operating requirements	- Plan and manage appropriate operating requirements and installation of additional support where necessary - If forecast is for continued strong wind, notify area manager - Review situation and action required with Environment team. - Facilitate the operation of tailings deposition

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10.3 COMMUNITY LIAISON

Northparkes recognises that dust generated by mining activities can impact on adjacent properties and communities.

A community relations program (via the Neighbours Meetings and Community Consultative Committee) shall be maintained to ensure two-way communication on air quality management. Neighbours will be notified as soon high risk days are predicted through weekly meteorological assessments.

Prior to construction activities, Northparkes will contact nearby residents to outline the nature and duration of works and to provide contact details should they have any queries. All dust complaints will be registered, investigated and responded to promptly.

10.4 COMPLAINTS MANAGEMENT PROCEDURE

The Stakeholder Communications Management Plan (PLN-0040) and the Community Complaint Notification Form (FRM-0152) specify Northparkes management of and response to complaints.

In accordance with the requirements of EPL 4784, Northparkes must keep a record of any complaint made to Northparkes or any employee or agent of Northparkes in relation to pollution arising from any Northparkes activities. The record of complaint must be kept for at least four years and must include the following details:

- The date and time of the complaint.
- The method by which the complaint was made.
- Any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect.
- The nature of the complaint.
- The action taken by Northparkes in relation to the complaint, including any follow up contact with the complainant.
- If no action was taken by Northparkes, the reasons why no action was taken.

11. REPORTING

Air quality monitoring results are reviewed by the Environment Advisor within two weeks of collecting the data and a results summary provided to the Environment Superintendent.

In accordance with Condition 8 and Condition 11 of Northparkes Development Consent 11_00060, a summary of monitoring results will be made publicly available at the mine and on the website and updated on a regular basis.

The results of the monitoring program and any complaints received are communicated to relevant personnel and externally communicated through the Annual Review which is made publicly available on the website (<http://www.northparkes.com>).

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12. REVIEW / CONTINUOUS IMPROVEMENT

Northparkes will strive to continually improve on the mine's environmental performance by applying the principles of best practice to mining operations, including where cost-effective and practicable, the adoption of new best practice technologies and improved air quality control measures.

The objectives of a review are:

- to maintain compliance with statutory requirements
- assess the effectiveness of control measures and performance against the Plan's objectives
- to identify opportunities for improvement in the management plan
- incorporate community considerations

The Northparkes review will include:

- this Document
- Legislation, Approval, Licence changes
- community complaints and enquiries
- Neighbour Meetings
- Community feedback.

Northparkes will review, and if necessary, revise the Air Quality Management Plan within 3 months of:

- the submission of an annual review;
- the submission of an incident report;
- the submission of an audit report; or
- any modification to the conditions of this approval.

Where this review leads to revisions in the Air Quality Management Plan, then within 4 weeks of the review the revised document will be submitted to the Secretary for approval.

13. REFERENCE MATERIALS

Table 13: Reference Materials

Document Title	ID No.
Environmental Monitoring and Measuring Schedule	REG-0008
Heggies Pty Ltd (2007) Northparkes Air Quality and Meteorological Monitoring Programs	
Minimising Dust Training Module	
Stakeholder Management Plan	PLN-0040
Annual Review	
AS3580.1.1:2007 Methods for sampling and analysis of ambient air. Part 1.1: Guide to siting air monitoring equipment.	
Northparkes Development Consent 11-0060	
Corkery, R.W. (2006) Environmental Assessment Northparkes – E48 Project.	2006
Heggies Australia Pty Ltd. (2006). Northparkes – E48 Project Air Quality Assessment	2006
Umwelt (2013) Northparkes Step Change Project, Environmental Assessment Vol. 1	31-11769
Umwelt (2013) Northparkes Step Change Project, Environmental Assessment Vol. 2	31-11761
Northparkes Environmental Protection Licence EPL 4784	
NSW Department of Environment and Climate Change (2005). Approved Methods and Guidance for Modelling and Assessment of Air Pollutants in New South Wales.	2005
NSW Department of Environment and Climate Change (2005). Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales.	2005

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14. Abbreviations / Definitions

Item	Term / Definition
µg	micogram
µm	micrometer
Adverse Weather Conditions	Moderate wind speeds prevailing from the west to southwest (blowing in the direction of the closest inhabited residences)
AQMP	Air Quality Management Plan
AS	Australian Standard
BAM	Beta attenuation monitor
CCC	Community Consultative Committee
CMOC	China Molybdenum Co. Ltd
EPA	Environmental Protection Agency
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EPL	Environmental Protection Licence
HSE	Health, Safety and Environment
m/s	Metres per second
mAHD	metres Australian Height Datum
ML	Mining lease
mtpa	million tonnes per annum
Northparkes	Northparkes Mine
NZS	New Zealand Standard
OPD	Ore Processing Department
PIRMP	Pollution Incident Response Management Plan
PM2.5	Particulate matter <2.5µm (a subset of TSP and includes all particles smaller than 2.5 µm in diameter)
PM10	Particulate matter <10µm (a subset of TSP and includes all particles smaller than 10 µm in diameter)
POEO	Protection of the Environment Operations Act 1997
Development Consent	Northparkes Mine Extension Project 11_00060
PS&E	People, Safety & Environment
ROM	Run of mine
TARP	Trigger Action Response Plan
TSFs	Tailings Storage Facilities

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15. ATTACHMENTS

15.1 APPENDIX 1 – CONSULTATION WITH ENVIRONMENT PROTECTION AGENCY (EPA)

Air Quality Management Plan



Higgins, Chris (NPM)

To  Joshua Loxley
Cc  Kelly, Stacey (NPM)

← Reply

↶ Reply All

→ Forward

⋮

Thu 30/06/2022 11:53 AM



PLN-0063 Air Quality Management Plan Tracked 2022.docx

6 MB



PLN-0063 Air Quality Management Plan Clean 2022.docx

2 MB

Hey Josh,

Has been great seeing you this week. As discussed we have updated our Air Quality Management Plan after the Modification 6 changes to Air Quality Monitoring.

I've attached a tracked version and a clean version of the 2022 updated Plan.

As required by our approval conditions for this Plan, we would appreciate a quick email back stating if you have any concerns or not. Then I can shoot that through to Dept of Planning. We will submit this to Planning today too.

Also,

We are happy to come over to Dubbo or have you back on site if you want to talk through anything further.

Thanks
Higgo

Chris Higgins
Environment and Farm Superintendent

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