Management Plan

Air Quality

Risk Statement: High

This document will be reviewed on a 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 and 1641.
# Revision Summary

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<th>Issue Date</th>
<th>Implementation Requirements</th>
<th>Approved By</th>
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<td>C L Silveira (Update with NMT feedback)</td>
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<td>Reviewed by Julie Thomas – added risk statement</td>
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<td>8</td>
<td>Feb 10</td>
<td></td>
<td>Reviewed by Bianca Marston – an exceedance analysis procedure was included, updated in line with Section 75W modification approval</td>
<td>NMT</td>
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<td>9</td>
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<td>Reviewed by N Gregory – transfer to new template, document hierarchy added, update of content to reflect current operational status</td>
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<td>Reviewed by H&amp;E Adviser Ali Youssef</td>
<td>NMT</td>
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<td>Reviewed by A. Youssef – transfer to new CMOC template, document hierarchy added, update of content to reflect current operational status in light of approvals</td>
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<td>Reviewed and updated by E&amp;H Advisor and Supt Env. &amp; Farms</td>
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<td>12</td>
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<tr>
<td>DOCID-3-3880</td>
<td>HVAS MONITORING WI</td>
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<td>DOCID-3-3877</td>
<td>ENVIRONMENTAL MONITORING AND MEASURING SCHEDULE</td>
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Northparkes
1. **OVERVIEW**

1.1 **Introduction**

Northparkes Mines (Northparkes) is a copper and gold mine located 27 kilometres North West of Parkes in the Central West of New South Wales, Australia. Northparkes is a joint venture between China Molybdenum Co., Ltd (CMOC) (80%) and the Sumitomo Groups (20%).

Northparkes has been operating since 1993 following the grant of the original development consent (504/90) by the NSW Land and Environment Court. Since that time, seven additional development consents, inclusive of modification notices have been issued and have been surrendered to Parkes Shire Council. Combined, these approvals permitted the development and operation of two open cut mines, two underground block cave mines, construction of an additional tailings storage facility (TSF) and storage warehouse, a mine and mill upgrade to increase production to 8.5 million tonnes per annum and associated works.

Northparkes was granted project approval (Northparkes Mine Extension Project 11_0060) under Section 75J of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in May 2014 in accordance with the supporting document Environmental Assessment Northparkes Mines – Step Change Project (2013). This approval permits the ongoing operation of existing activities and the continuation of underground block cave mining in two existing ore bodies, the development of underground block cave mining in the E22 resource, additional campaign open cut mining located in existing mining leases, augmentation to approved TSFs and an extended mine life of seven years until 2032 at the approved ore processing rate of up to 8.5 million tonnes per annum (mtpa).

1.2 **Location**

Northparkes Mines is located 27 kilometres North West of Parkes in the Central West of New South Wales (NSW), Australia, where it is located on the edge of the inland slopes west of the Great Dividing Range. The Northparkes site is generally flat, with some low undulations, ranging in elevation from 288 metres Australian Height Datum (mAHĐ) to 301 mAHĐ. The area surrounding the Northparkes site is also generally flat with the most significant regional feature being Goonumbla Hill, which extends to a height of 386 mAHĐ, located approximately 4 kilometres south of Northparkes.
Figure 1 Northparkes Mines Location
2. SCOPE

This Air Quality Management Plan (AQMP) applies to all activities undertaken by Northparkes Mines including mining and exploration activities; processing of copper/gold ore resources; project development; maintenance activities; mine closure; logistics; associated service and support function.

2.1 Background Air Quality

A detailed source of environmental dust within the area are limited and generally subject to specific activities and climatic conditions. Dusty conditions arise in periods of drought, 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 reduce 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>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Period</th>
<th>Assumed Background Ambient Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Suspended Particulate (TSP) Matter</td>
<td>Annual</td>
<td>72 µg/m³</td>
</tr>
<tr>
<td>Particulate Matter &lt; 10µm (PM\textsubscript{10})</td>
<td>Annual</td>
<td>18 µg/m³</td>
</tr>
<tr>
<td>Particulate Matter &lt; 10µm (PM\textsubscript{10})</td>
<td>24-hour</td>
<td>Variable</td>
</tr>
<tr>
<td>Deposited dust</td>
<td>Annual</td>
<td>2.7 g/m²/month</td>
</tr>
</tbody>
</table>

Northparkes consists of open cut pits (not currently operational), an underground block cave mine, processing plant and associated waste dumps and tailings dams. Northparkes has been operating since 1994, during this time waste rock dumps of approximately 25m height and tailings impoundments of approximately 24m height have been constructed within the mining lease. Key potential sources of dust on site are open areas, waste dumps, tailings storage facilities (TSF’s), unsealed roads and ore transfer.

Northparkes owns approximately 4,500 ha 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.

3. OBJECTIVES

The objectives of the AQMP are:

- ensure that dust emissions from operations is minimised and appropriately controlled;
- ensure that air quality impacts on surrounding residents are minimized;
- 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; and
- adequately manage and mitigate potential air quality impacts from the construction and operational activities.
3.1 Regulatory Requirements

This AQMP addresses the relevant components of conditions 14 – 18 of the NSW Project Approval (PA11_0060) for the Northparkes Mines Step Change Project. These conditions are outlines in Table 2 and Table 3 below.

**Table 2 NSW Development Consent Conditions**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Related Section in NMP</th>
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<tbody>
<tr>
<td>Air Quality Criteria</td>
<td></td>
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<tr>
<td><strong>Condition 14.</strong> 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.</td>
<td>Section 5.2.1</td>
</tr>
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</table>

**Table 3 Long term impact assessment criteria for particulate matter**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>dCriterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total suspended particulate (TSP) matter</td>
<td>Annual</td>
<td>a 90 µg/m³</td>
</tr>
<tr>
<td>Particulate matter &lt; 10 µm (PM10)</td>
<td>Annual</td>
<td>a 30 µg/m³</td>
</tr>
</tbody>
</table>

**Table 4 Short term impact assessment criterion for particulate matter**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>dCriterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter &lt; 10 µm (PM10)</td>
<td>24 hour</td>
<td>a 50 µg/m³</td>
</tr>
</tbody>
</table>

**Table 5 Long term impact assessment criteria for deposited dust**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>Maximum increase² in deposited dust level</th>
<th>Maximum total¹ deposited dust level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposited dust</td>
<td>Annual</td>
<td>² 2 g/m²/month</td>
<td>¹ 4 g/m²/month</td>
</tr>
</tbody>
</table>

Notes to Table 3-Table 5

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) Deposited 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
d) Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.

**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, Table 4 and Table 5 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 6.
**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
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 Note d above under Table 5);

to the satisfaction of the Secretary.

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**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;
   - evaluates and reports on:
     - 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 Planning & Infrastructure and relevant stakeholders of any air quality incidents.

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**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 Industrial Noise Policy, unless a suitable alternative is approved by the Secretary following consultation with the EPA.

---

**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).
Comments from Regulators

On 1st September 2015, Northparkes received comments from Department of Planning and Environment requesting Northparkes to amend additional information in the AQMP. These regulatory comments are detailed in Table 6. Northparkes has addressed these comments within this document.

Table 6 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 |
4. RESPONSIBILITY

Specific accountabilities in relation to management of ‘air quality’ at Northparkes are outlined in Table 7. Personnel carrying out work under this AQMP must be familiar with and comply with it in full.

General role responsibilities under this Procedure are outlined in ‘HSE Accountabilities’ Procedure (3-3563). Personnel carrying out work under this AQMP must be familiar with and comply with it in full.

Table 7 Northparkes responsibilities for Air Quality Management

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility</th>
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<tbody>
<tr>
<td><strong>Operational</strong></td>
<td></td>
</tr>
<tr>
<td>Superintendent Environment &amp; Farm</td>
<td>Environmental inductions and training to ensure workforce awareness</td>
</tr>
<tr>
<td>Operational Managers</td>
<td>Sealing high traffic roads, where possible</td>
</tr>
<tr>
<td>Manager – Ore Processing</td>
<td>Product transportation in sealed containers;</td>
</tr>
<tr>
<td>Operational Managers</td>
<td>Road sweeper used on sealed trafficable areas</td>
</tr>
<tr>
<td>Operational Managers</td>
<td>Applying water to internal haul roads as required by weather conditions at the time</td>
</tr>
<tr>
<td>Superintendent Environment &amp; Farm</td>
<td>Restrictions on clearing, topsoil stripping and access to disturbed areas</td>
</tr>
<tr>
<td>Superintendent Environment &amp; Farm</td>
<td>Progressive rehabilitation</td>
</tr>
<tr>
<td>Manager – Mining</td>
<td>Minimise use of haul trucks (through use of conveyors &amp; planning)</td>
</tr>
<tr>
<td>Operational Managers</td>
<td>Control mechanisms on crushing and conveying infrastructure, including complete or partial enclosure dust extraction filters and mist sprays</td>
</tr>
<tr>
<td>Manager – Ore Processing</td>
<td>Operation of the tailings storage facilities to minimise dust and capped as early as practicable</td>
</tr>
<tr>
<td>Manager – Ore Processing</td>
<td>Dust controls on surface</td>
</tr>
<tr>
<td>Manager – Underground Production</td>
<td>Reverse circulation drill rigs</td>
</tr>
<tr>
<td>Superintendent Environment &amp; Farm</td>
<td>Implement a program of regular monitoring</td>
</tr>
<tr>
<td><strong>Adverse Weather</strong></td>
<td></td>
</tr>
<tr>
<td>(to be applied in situations where adverse weather conditions are resulting in significant risk of dust generation)</td>
<td></td>
</tr>
<tr>
<td>Manager – Mining</td>
<td>Review of the elevation of mining and dumping and, where possible, relocate equipment to lower elevations, until more suitable conditions return</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Amended working hours</td>
</tr>
<tr>
<td>Managing Director</td>
<td>Temporary cessation of work within an area</td>
</tr>
<tr>
<td><strong>Long Term</strong></td>
<td></td>
</tr>
<tr>
<td>Superintendent Environment &amp; Farm</td>
<td>Identifying major dust generating activities and implementing appropriate control methods</td>
</tr>
<tr>
<td>Operational Managers</td>
<td>Review monitoring trends to drive improvements and maintain compliance</td>
</tr>
<tr>
<td>Superintendent Environment &amp; Farm</td>
<td>Maintain awareness of current dust control methods and technology</td>
</tr>
</tbody>
</table>
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 tailings 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 **Northparkes Mine Step Change Project (PA11_0060)**

As per Schedule 3, Condition 14 of Northparkes Mine Step Change Project (PA11_0060), Northparkes shall ensure that the dust generated by the project does not exceed the criteria in Table 8 at any residence on privately-owned land.

**Table 8 Long term impact assessment criteria for particulate matter**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total suspended particulate (TSP) matter</td>
<td>Annual</td>
<td>(90 , \mu g/m^3)</td>
</tr>
<tr>
<td>Particulate matter &lt; 10 µm (PM(_{10}))</td>
<td>Annual</td>
<td>(30 , \mu g/m^3)</td>
</tr>
</tbody>
</table>

**Table 9 Short term impact assessment criterion form particulate matter**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>Criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulate matter &lt; 10 µm (PM(_{10}))</td>
<td>24 hour</td>
<td>(50 , \mu g/m^3)</td>
</tr>
</tbody>
</table>

**Table 10 Long term impact assessment criteria for deposited dust**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging period</th>
<th>Maximum increase(^2) in deposited dust level</th>
<th>Maximum total(^1) deposited dust level</th>
</tr>
</thead>
<tbody>
<tr>
<td>(d) Deposited dust</td>
<td>Annual</td>
<td>(2 , g/m^2/month)</td>
<td>(4 , g/m^2/month)</td>
</tr>
</tbody>
</table>

**Notes to Table 8-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) Deposited 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

d) excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary

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” for the property to remain unoccupied over mine life
- 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 any 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 Mine Extension Project, Project Approval 11_0060. This monitoring will be undertaken as real-time dust (continuous), PM10 (6-day cycle) and depositional dust (monthly) monitoring at surrounding receivers over the life of the mine

Adverse Weather

Should adverse weather conditions exist, the following options are available to mitigate off-site, 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
6.2 Risk Assessments

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.

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.

The program is comprised of a combination of high volume air samplers (PM10) and depositional dust gauges to monitor performance. All monitoring is undertaken in accordance with the following procedures:

- Environmental Monitoring and Measuring Schedule (DOCID-3-3877);
- Depositional Dust Monitoring WI (DOCID-3-3879)
- High Volume Air Sampling Monitoring WI (DOCID-3-3880)

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

<table>
<thead>
<tr>
<th>Monitoring Parameter</th>
<th>Monitoring Method</th>
<th>Frequency</th>
<th>Location</th>
<th>Accountable Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Suspended Particulate Matter</td>
<td>Depositional Dust bottles</td>
<td>Monthly</td>
<td>Boundary and offsite monitoring locations outlined in Depositional Dust Monitoring WI (DOCID-3-3879)</td>
<td>Environment Advisor</td>
</tr>
<tr>
<td>PM10</td>
<td>High Volume Air Sampler</td>
<td>6 days</td>
<td>Milpose, Hubberstone, Hillview</td>
<td>Environment Advisor</td>
</tr>
<tr>
<td>PM10</td>
<td>BAMs – Real time monitors</td>
<td>Continuous</td>
<td>Milpose, Hubberstone, Hillview</td>
<td>Environment Advisor</td>
</tr>
<tr>
<td>Weather - Wind Speed</td>
<td>Meteorological monitoring station</td>
<td>Continuous</td>
<td>Northparkes - Rosedale</td>
<td>Environment Advisor</td>
</tr>
<tr>
<td>- Wind direction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Rainfall</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Air Quality Monitoring data analysis procedure, found in Depositional Dust Work Instruction (DOCID-3-3879) will be followed in the event of an exceedance of criteria outlined in Table 2. Any exceedence of the criteria deemed to be attributable to Northparkes, or if the source of the exceedence 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 and investigated accordingly.

Actions required as a result of an exceedance of the air quality criteria will be determined on a case by case basis, according to determined causal factors.
7.1 Real Time Dust Monitoring

Northparkes will utilise mobile real-time air quality monitoring with alarm/ SMS capabilities at four locations as shown in Figure 2. Real time air monitors will:

- monitor and record real time dust
- notify works area supervisors of dust levels encroaching criteria
- run alongside with PM10 and depositional dust monitoring to calibrate and validate the real time air quality monitoring results

Any dust that is above the air quality criteria as required by the project approval 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 exceedences and investigations will be reported to the regulators within 7 days of the incident.

7.2 Real Time Meteorological Monitoring

Northparkes operate a meteorological monitoring station, located within area ML 1367. Fifteen 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 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.
Figure 2 Northparkes Air Quality Monitoring Location (Real time, PM10 and Depositional Dust)
8. DATA ANALYSIS

All air quality data will need to be assessed for compliance with licence conditions in Schedule 3, Condition 14 – Air Quality Criteria, of the Northparkes Mines Project Approval PA11_0060. The process for assessing compliance and a potential incident are highlighted in the following flowcharts.

Figure 3 Flowchart for annual TSP monitoring data evaluation.
Figure 4 Flowchart for annual PM$_{10}$ monitoring data evaluation.
Figure 5 Flowchart for 24 hour PM$_{10}$ monitoring data evaluation.

Daily average PM$_{10}$ data

- 24h PM$_{10} > 50$ µg/m$^3$
  - Yes
  - Review Meteorological data from monitoring location.
    - Remove extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed by the Secretary.
  - No
    - Compliant with Environmental Conditions Criteria (Schedule 3, section 14).

- Wind predominantly from the direction of the Mine, Resultant vector accuracy >90%.
  - Yes
    - Have there been any works on the property that could have negatively impacted the result? Confirm with landholder.
  - No
    - Non-compliant with Environmental Conditions Criteria (Schedule 3, section 14).
      - Yes
        - EPA Notification required.
Figure 6 Flowchart for annual depositional dust data evaluation.

**Annual depositional dust average**

- **Yes**: Depositional Dust > 2 g/m²/month, above
  - **Yes**: Filter data to remove samples that are dominated by contaminants, e.g. bird droppings, leaf matter, algae, bugs etc.
  - **No**: Depositional Dust > 2 g/m²/month, above
    - **Yes**: Determine mine contribution. This is determined as the annual average at the site minus the background level. Where the background is calculated as the ash content for the average of the remaining dust gauges for the month.
    - **No**: Non-compliant with Environmental Conditions Criteria (Schedule 3, section 14).
    - **Yes**: EPA Notification required.
  - **No**: Compliant with Environmental Conditions Criteria (Schedule 3, section 14).

- **No**: Depositional dust > 4 g/m²/month, averaged annually
9. INCIDENT RESPONSE

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

9.1 Pollution Incident Response Management Plan

Northparkes Pollution Incident Response Management Plan (PIRMP) is to be immediately implemented in the event that a pollution incident occurs at the Northparkes Mines such that material harm to the environment is caused or threatened.

9.2 Pollution Incident Definition

A ‘pollution incident’ includes a leak, spill or escape of a substance, or circumstances in which this is likely to occur.

According to the POEO Act a pollution incident is defined as:

an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.

Pollution incidents causing or threatening material harm to the environment trigger the incident response measures below (including notification) and detailed in the Pollution Incident Response Management Plan.

Harm to the environment is material if:

1. it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial; or
2. it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000. Loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.

‘Material harm’ includes on-site harm, as well as harm to the environment beyond the premises where the pollution incident occurred.

9.3 Incidents Causing or Threatening Harm to Environment

Part 5.7 of the Protection of the Environment Operations Act 1997 (POEO Act) specifies requirements relating to the notification of pollution incidents.

Under Part 5.7, the occupier of premises, the employer or any person carrying on the activity which causes a pollution incident must immediately notify each relevant authority when material harm to the environment is caused or threatened.
9.3.1 Internal Notification Protocol

All employees and contractors are legally required to assist Northparkes to meet EPA’s notification requirement. Under the internal notification protocol, it is intended that the Northparkes People, Safety & Environment Manager (PS&E Manager) or Managing Director undertake external notification. The internal notification protocol allows external notification by other parties in the case that the PS&E Manager or Managing Director cannot be immediately contacted.

The potential material harm pollution incident must:

1. Immediately notify your Northparkes supervisor or Environment Phone (0418 206 471) or the Northparkes Access Control (02) 6861 3211 per the Northparkes Emergency Procedures. The supervisor or Environment Team member should then immediately notify the:
   - People, Safety & Environment Manager (PS&E Manager); or
   - Acting Manager (in the absence of the PS&E Manager).

   **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 E&F Superintendent immediately.

3. In the event the E&F Superintendent or PS&E Manager cannot be immediately contacted, the EPA require that the supervisor/employee/contractor/agent must notify the EPA immediately.

   **NOTE:** In this instance, the PS&E Manager and/or the Managing Director should be contacted as soon as possible after notifying the EPA.

9.3.2 External Notification Protocol

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

- 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).
- If the incident does not require an initial combat agency, or once the **000** call has been made, notify the relevant authorities in the following order. The 24-hour hotline for each authority is given when available:
  - the EPA Environment Line 131 555 (the appropriate regulatory authority (ARA) for the activity under the POEO Act)
  - the Ministry of Health via the local Public Health Unit – (02) 4924 6477 (diverts to John Hunter Hospital) - ask for Public Health Officer on call
  - the WorkCover Authority – phone 13 10 50
  - Parkes Shire Council – ph: 02 6861 2333 (work hours) or ph: 1800 648 585 (after hours)

The Department of Planning and Infrastructure – Manager, Mining Projects – (02) 9228 6308 will also be notified as soon as practicable.
9.3.3 Relevant Information

The relevant information about a pollution incident required under section 148 of the POEO Act consists of the following:

- the time, date, nature, duration and location of the incident,
- the location of the place where pollution is occurring or is likely to occur,
- the nature, the estimated quantity or volume and the concentration of any pollutants involved, if known,
- the circumstances in which the incident occurred (including the cause of the incident, if known),
- the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution, if known.

9.3.4 Notification to Landowners/Tenants

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. Weekly weather predictions will allow Northparkes to notify neighbours of high risk days in advance in advance of potential dust impact. This will be in conjunction with the Community Department.

The effected landowners will be notified in writing of any exceedance of environment monitoring criteria for air quality as required by the Project Approval 11_0060, within one week of obtaining results from the lab. In the instance of 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.

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 Project Approval 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”.

9.4 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) will 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. 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 Superintendent - Environment and Farming.

The results of the monitoring program and any complaints received are communicated to relevant personnel and externally communicated through the Annual Environmental Management Report and Quarterly Environmental Monitoring Results Summary Reports which are made publicly available on the website (http://www.northparkes.com).

In accordance with Condition 8 and Condition 11, Schedule 6 of the Northparkes Mine Step Change Project, PA11_0060, a summary of monitoring results will be made publicly available at the mine and on the website and updated on a quarterly basis.

Incident reporting (including any exceedences and complaints) will be in accordance with Condition 7, Schedule 6 of Northparkes Mine Extension Project, Project Approval 11_00060, and the Procedure Incident Management (DOCID-3-4345).

11. 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.

This AQMP will be reviewed and updated annually or in the case of a significant operational change. The review will include an assessment of the effectiveness of control measures and performance against the Plan’s objectives.

The objectives of a review are:
- to maintain compliance with statutory requirements;
- to identify opportunities for improvement in the management plan; and
- incorporate community considerations.

The Northparkes review will include:
- this AQMP;
- legislation, approvals, license changes;
- community complaints and enquiries;
- neighbour meetings; and
- community feedback.
12. RELATED DOCUMENTS

<table>
<thead>
<tr>
<th>Reference</th>
<th>Title</th>
<th>Document Number</th>
</tr>
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<tr>
<td></td>
<td>Environmental Monitoring and Measuring Schedule</td>
<td>DOCID-3-3877</td>
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<td>Depositional Dust Monitoring WI</td>
<td>DOCID-3-3879</td>
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<td>High Volume Air Sampling Monitoring WI</td>
<td>DOCID-3-3880</td>
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<td></td>
<td>Heggies Pty Ltd (2007) Northparkes Mines Air Quality and Meteorological Monitoring Programs</td>
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<td></td>
<td>Minimising Dust Training Module</td>
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<td></td>
<td>Communication Management Plan</td>
<td>DOCID-3-3685</td>
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<td>Annual Environmental Management Report</td>
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<td></td>
<td>AS3580.9.3:2003 Methods for sampling and analysis of ambient air. Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method</td>
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<td></td>
<td>AS3580.10.1:2003 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method</td>
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<td>Northparkes Mines Project Approval 11-0060</td>
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<td>Northparkes Mines Environmental Protection Licence EPL 4784</td>
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13. DEFINITIONS / ATTACHMENTS

13.1 Definitions

**TSP**
Total Suspended Particulate matter refers to the total of all particles suspended in the air.

**PM10**
a subset of TSP, and includes all particles smaller than 10μm in diameter

**Adverse Weather Conditions**
includes moderate wind speeds prevailing from the west to southwest (blowing in the direction of the closest inhabited residences)