

Plan

Environmental Management Strategy

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_0600 and Mining Leases 1247, 1367, 1641 and 1743.

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Revision Summary

First Issue	Issue Date	Implementation Requirements	Approved By
1	10 Jul 07	Created by Renee Morphet – document established to provide framework for ESHMS and safety Dept of Planning Project Approval conditions.	S Alexander

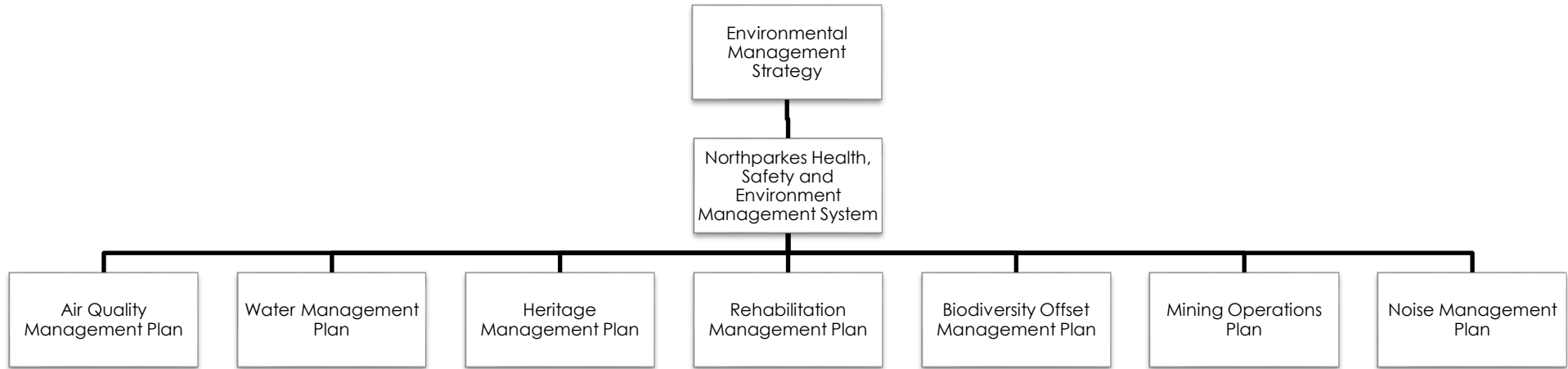
Version No.	Revision Date	Summary of Revision Details	Approved By
2		Updated by R Morphet to incorporate comments from Dept of Planning	S Alexander
3		Updated by R Morphet to incorporate additional comments from Dept of Planning	S Alexander
4		Updated by R Morphet – minor wording changes only, updated	S Alexander
5		Updated by R Morphet – minor wording changes only, updated	K Edwards
6		Updated by T. Warren – minor wording changes only updated	B Marstan
7		Review by Bharath Ramakrishnappa – changes made to comply with Project Approval 11_0060.	B Ram
8		Updated with minor changes_ MP	M Priest
9		Annual review process. Update in accordance with ISO14001 2015	M Priest
10		Annual review with no amendments	PSE Manager
11		Annual review with no amendments	PSE Manager
12		Updated to new DCS	M Row
13		Annual review	Environment & Farm Superintendent

Consultation Required	Hard Copy Locations
Not Applicable	Northparkes Website

Associated Documents to be Reviewed
Not Applicable

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Document Hierarchy



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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 Environmental Management

The Northparkes Mines (Northparkes) Environmental Management Strategy (EMS) has been prepared in accordance with the requirements of Development Consent (DC)11_0060.

DC11_0060 was granted under section 75J of the Environmental Planning and Assessment Act 1979 (EP&A Act) on 16 July 2014. In August 2019, Northparkes were issued with the fifth modification to DC11_0060.

The EMS takes into consideration the commitments stated in the Environmental Assessment, Environmental Impact Statement, Statement of Environmental Effects, EPL conditions and Mining Lease Conditions. In addition, commitments outlined in Northparkes environmental policy are also taken into account.

This document outlines the Environmental Management Strategy for Northparkes including organisational responsibilities, planning activities, procedures, processes, implementation and review. It is an integral component of the overall environmental management system for Northparkes Mines.

The subordinate plans and policies have been developed in consultation with relevant government agencies and departments, and are updated as required.

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Copies of the various strategies, plans and programs required under the conditions of DC11_0060 have been included within this EMS as follows:

DOCID-3-8951 – Environmental Monitoring Program
 PLN-0056 – Water Management Plan
 PLN-0036 – Air Quality Management Plan
 PLN-0070 – Noise Management Plan
 PLN-0052 – Blast Management Plan
 PLN-0074 – Heritage Management Plan
 PLN-0065 – Biodiversity Offset Management Plan
 PLN-0060 – Rehabilitation Management Plan

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 purpose of the EMS is to:

- provide an overall framework for environmental management;
- identify key environmental aspects to be addressed in the strategy and supporting plans and procedures;
- establish procedures for reviewing progress and implementing corrective actions; and
- provide a framework for review and continual improvement.

The EMS establishes an environmental management framework for all mining and surface activities. It includes the development and management of environmental management plans, procedures and reporting requirements.

Management of environmental aspects and issues of the mine are documented, regulated, controlled and measured through this document (EMS), the Mining Operations Plan (MOP), various environmental management plans, and the Annual Review. These plans conform to the requirements of the Division of Resources and Energy (DRE, within the Department of Trade and Investment) or Department of Planning & Infrastructure (DP&I) and reflect the overall operational mining and rehabilitation strategy contained within the MOP.

An Annual Review is prepared each year and lodged with the DRE, DP&I and relevant agencies. The Annual Review describes the overall management system for the operation and specifically reports on the progress made in implementing any specific initiatives noted in the overall MOP, previous Annual Reviews or matters raised by the DRE or DP&I. The Annual Review also sets out the program for the coming reporting period, results of environmental monitoring undertaken and assesses the environmental performance of the operation.

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4. RESPONSIBILITIES

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 1: Responsibilities

Role	Responsibility
All Workers	<ul style="list-style-type: none"> – conduct activities relating to Northparkes in compliance with this Strategy. – report any environmental hazards, risks or incidents as per this Strategy.
Environmental Team	<ul style="list-style-type: none"> – develop, implement and maintain environmental monitoring programs to comply with this Strategy. – complete reporting requirements as required by this Strategy. – maintain environmental monitoring data as per relevant environmental management plans.
Environment and Farms Superintendent	<ul style="list-style-type: none"> – complete external and internal reporting as required by this strategy – prepare budget proposals required to provide adequate resources for the implementation of this Strategy. – develop, implement and maintain the environmental components of the HSEMS. – coordinate training requirements associated with this Strategy. – liaise and report with government and other relevant stakeholders as required by this Strategy. – complete obligations, planning and auditing requirements as required by this Strategy.
PSE Manager	<ul style="list-style-type: none"> – coordinate the development and implementation of environmental management process to comply with this strategy. – complete statutory notifications as required by this Strategy
Managing Director	<ul style="list-style-type: none"> – must provide sufficient resources to comply with this document

5. ENVIRONMENTAL MANAGEMENT FRAMEWORK

Implementation of the Strategy assists in minimising the environmental impacts of mining related activities by facilitating continual improvement in environmental performance.

The Strategy outlines the minimum standard to ensure Northparkes manages these aspects and impacts in a manner that is planned, controlled, monitored, recorded and audited, using a management system that drives continual improvement.

6. ENVIRONMENTAL MANAGEMENT SYSTEM

Northparkes has developed and implemented a Health, Safety and Environment Management System (HSEMS). The environmental related system components are compliant with ISO 14001. This strategy acts as a framework document to provide an overview of the environmental components of the HSEMS.

The components of the HSEMS that are consistent with the principles of ISO 14001 are detailed in Appendix B. ISO 14001 guidelines include the following components as requirements of a certified environmental management system;

- Leadership;
- Planning;
- Support
- Operation;
- Performance Evaluation; and
- Improvement.

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6.1 Leadership

6.1.1 Environmental Policy

Northparkes is committed to meeting the requirements of the Environment, Safety, Health and Community Policy (Appendix C). This policy leads the HSEMS and defines the overall direction for HSE management at Northparkes.

All activities are conducted in accordance with the HSE Policy and are aligned with the Northparkes Environment Standards.

All inducted personnel are made aware of their responsibilities in relation to the policy and it is made readily accessible through display in prominent locations and on the Northparkes intranet.

6.1.2 Structure and Responsibility

The Managing Director is accountable overall for Northparkes' environmental performance and will implement the systems that have been developed to manage environmental aspects and impacts. The Managing Director will make provision for adequate resources to be available to implement the Environmental Management Strategy at Northparkes Mines.

The People, Safety and Environment Manager (PSE) is responsible for overseeing the environmental performance of the operation and compliance with the conditions specified in DC11_0060, environmental licences and associated management plans. The PSE Manager is responsible for reporting on the performance of the HSEMS to Senior Leadership Team and is contactable during normal working hours on (02) 6861 3211.

All employees and contractors working for and on behalf of Northparkes are responsible for environmental risk and impact management in their roles. All environmental incidents will be reported to the PSE Manager or delegate. All employees are provided with environmental awareness training through a site induction process and monthly HSE presentations.

The Northparkes management team and HSE department structures are shown in Appendix E.

6.2 Planning

6.2.1 Environmental Aspects and Impacts

The on-going identification of environmental aspects and impacts is a key component of the HSEMS and in driving the continual improvement process. The review process is a tool which can be used to ensure the previously identified management practices are in place and are effective or if additional measures can be implemented to further reduce environmental risk.

The site aspects and impacts register is reviewed on at least an annual basis. This process is scheduled by the Environment and Farm Teams which each department area. The aspects and impacts register is maintained in the site Document Control System (DCS). The aspects and impacts register will be reviewed in the event of a major change to the project or in response to a significant environmental incident or hazard investigation.

Legal and Other Requirements

Northparkes commits to complying with all relevant legal and other requirements. This includes all relevant legislation, licences, Company, Australian and International Standards and other requirements.

DOCID-3-4747 Northparkes Licence and Permit Register contains a list of the HSE permits and licences and includes a link to the location of these documents.

A register(s) of the legal and other requirements is maintained within the HSEMS. The HSE Legal Register within RMSS, details how these requirements apply to the operation's environmental aspects. PRO-0119 Maintaining Legal Compliance Register provides information on how the register is maintained.

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A summary of approvals and licences is provided in Appendix D, including the government agencies and the applicable legislation.

Assessment of compliance is an ongoing process through analysis of environmental monitoring data, site inspections, periodic audits and external reporting requirements.

Any non-compliance against Northparkes operating licence conditions will require an Incident report to be raised within the internal reporting system, appropriate government authority notifications will be conducted in the event that this occurs. This will be conducted in accordance with PRO-0148 Incident Management.

Objectives, Targets and Improvement Plans

With the aim of continual improvement in HSE performance, annual objectives and targets are developed. Environmental objectives and targets are aligned with the requirements of the environmental policy and are set in consideration of the following:

- Legislation and standards;
- Stakeholder expectations;
- Technological options;
- Significant HSE aspects; and
- Operational impacts.

This process is also linked to the business planning process and facilitates budgeting for environmental improvement projects.

The process of developing, implementing and monitoring HSE objectives and targets is defined in the site HSE Management System.

Departmental improvement plans have been established that detail actions against their highest environmental risks as identified within the site risk register. The plans form the basis for budget justifications and resourcing of the high-risk impacts. The documentation of these plans outlines not only the required outcomes, but also the department responsibilities and the means and timeframe by which they are to be achieved.

6.3 Support

6.3.1 Training, Awareness and Competence

All personnel working for or on behalf of Northparkes Mines shall be aware of their environmental responsibilities in relation to the HSE Policy and HSEMS requirements, consequences of deviating from the policy and procedures, role in emergency response, and the potential and actual environmental impacts of their tasks and roles. Awareness programs may include inductions, training sessions and various multimedia communication of environmental information across sites.

All personnel working for or on behalf of Northparkes Mines shall be competent in managing their significant environmental risks by virtue of qualifications, experience or training.

Northparkes identifies competency requirements based on environmental risks associated with roles and functions of employees within the organisation. To address training requirements training programs are implemented and records are maintained for verification purposes.

PLN-0039 Training Management Plan details the processes in place at Northparkes for the management and maintenance of HSE training.

6.3.2 Communication

Effective communication between all key stakeholders is important for the successful implementation and operation of the HSEMS. Specific communication mechanisms include;

- Internal communications;
- External communications;

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- Complaints management; and
- Dispute resolution.

PLN-0040 Stakeholder Communications Management Plan provides information on the communication process at Northparkes.

Internal Communication

HSE requirements and responsibilities are communicated through internal meetings, regular reporting and training programs. Responsibilities are also defined in employees Role Description. These may include HSE responsibilities.

Northparkes communicates relevant procedures and requirements to suppliers, customers and contractors via contractual agreements, regular meetings and training programs. Meeting types and their frequency are listed in PLN-0040 Stakeholder Communications Management Plan.

External Communication

Northparkes maintains an external communication and complaints system which addresses and records communication from external stakeholders. All external communications are undertaken in accordance with this system. The process for this is outlined in PLN-0040 Stakeholder Communications Management Plan.

A Community Consultative Committee (CCC) has been established to provide a forum for open discussions and feedback between representatives from Northparkes and residents of the local community. Northparkes also consults with its immediate neighbours on a six monthly basis.

The Northparkes website is a key mechanism for external dissemination of information, it provides stakeholders with readily accessible up-to-date information on Northparkes and its performance. The website is located at www.northparkes.com.au. Copies of DoPI approved environmental management plans and programs, quarterly monitoring results summary and the Annual Review as required under Development Consent 11_0060 will be made available.

Northparkes has a Facebook and Instagram account which provides general information regarding the operation and its employees and contractors.

Northparkes maintains a 24-hour telephone line (02 6861 3000 – Option 3) to allow a quick and effective response to community concerns in relation to environmental matters.

Complaint records are kept for at least four years after the complaint was made and will be available to any authorised officer of the Environment Protection Authority (EPA) who may require details. Complaint records are also provided in the relevant Annual Review. External communications are also held as required with relevant government agencies.

Complaints Management

Any complaints that are received relating to Northparkes operations are recorded and actioned in accordance with the Stakeholder Communications Management Plan (PLN-0040). Notifications of complaints received are provided to the Strategic Adviser Community and External Relations as soon as possible to ensure a timely response. All complaints recorded and outcomes of any investigation findings and corrective actions implemented are reported in the Annual Review.

Dispute Resolution

Northparkes consults regularly with stakeholders to avoid disputes arising through the communication mechanisms outlined above.

In the event that a dispute arises between Northparkes and a government authority regarding compliance with development consent conditions the matter shall be referred to the Secretary of the DoPI for resolution. If not resolved by the Secretary, it will then be referred to the Minister for Planning.

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In addition, for any dispute that occurs between Northparkes and a member of the community that cannot be resolved through direct consultation, the matter will be referred to the relevant government authority for resolution.

6.3.3 Documentation, Document Control and record Management

HSEMS documentation and records are prepared and maintained in an orderly manner sufficient to implement the system in accordance with the ISO 14001:2004 Standard.

Northparkes have established procedures for controlling documents to ensure;

- Periodic review and approval by relevant personnel;
- Current versions of documents are easily located and available in identified locations;
- Obsolete documents are promptly removed from points of issue and use and archived appropriately; and
- Documentation is legible, dated (with dates of revision) and readily identifiable.

The document control processes is defined in PRO-0116 Document Control Procedure.

Document Control

Northparkes will ensure that environmental documentation is maintained, up to date and readily available to all authorised personnel. The following procedures ensure document control:

- Copies of the environmental management documentation will be kept on-site with Northparkes' electronic Controlled Documents, once printed the document will be considered "uncontrolled";
- The document will be reviewed, and if necessary revised, when major changes occur to ensure that it remains accurate and in accordance with all relevant standards;
- All Northparkes personnel and contractors will be notified of revision to the environmental management documentation; and
- The environmental management documentation will be clearly dated.

6.4 Operational Control

Operational controls are required to be implemented where activities are identified as potentially having environmental impacts and to ensure environmental objectives and targets are met. The process of the development, implementation and maintenance of operational control is documented in the HSE Management System.

Environmental operating procedures, management plans and programs are established, documented and maintained for operational activities to minimise risks and reduce the potential environmental impact(s) identified.

Northparkes has developed standard environmental operating practices to reduce, minimise or eliminate potential environmental impacts across the operation. These procedures, management plans and programs include but are not limited to;

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- PLN-0063 Air Quality Management Plan;
- PLN-0058 Surface Water Management Plan;
- PLN-0056 Water Management Plan;
- PLN-0070 Noise Management Plan;
- PLN-0048 Mineral Waste and Acid Rock Drainage Management Plan;
- PLN-0060 Rehabilitation Management Plan;
- DOCID-3-4575 Chemical Approval and Risk Assessment;
- PLN-0065 Biodiversity and Offset Management Plan; and
- PLN-0059 Conceptual Mine Closure Plan.

Operating procedures are reviewed on a regular basis, and revised as appropriate, to ensure all significant aspects of the operation are appropriately controlled. New procedures will be developed on an as needs basis.

All personnel working for or on behalf of Northparkes shall be aware of the relevant operating procedures when undertaking their day to day duties. Responsibility will be delegated to the most effective level of supervision to ensure compliance.

6.4.1 Pollution Incident response Management Plan

Northparkes PLN-0046 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.

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 definition:

pollution incident - means 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.

Examples of environmental pollution incidents threatening material harm to the environment include:

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- hydrocarbons, tailings, untreated mine water, chemical substances, or hazardous materials which have, or threaten to enter either clean water systems on site or possibly be released from site; or bush fires within surrounding areas, including on company owned land.

Examples of environmental incidents which may not threaten material harm to the environment include: spills which are contained within the Northparkes dirty water system, minor hydrocarbon or other substance spill to land, sediment basin discharge where greater than design rainfall has been received and no other material pollutants are in the surface runoff.

In order to be prepared for a pollution incident or an environmental emergency on site, notification and response procedures have been developed.

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.

Incident notification processes are defined in PRO-0148 Incident Management.

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 (PSE Manager) or Managing Director undertake external notification. The internal notification protocol allows external notification by other parties in the case that the PSE 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:
 - o People, Safety & Environment Manager (PSE Manager); or
 - o Managing Manager (in the absence of the PSE 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 PSE Manager cannot be immediately contacted, the EPA require that the supervisor/employee/contractor/agent must notify the EPA immediately.

Note: In this instance, the PSE Manager and/ or the Managing Director should be contacted as soon as possible after notifying the EPA.

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External Notification Protocol

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

3. 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).
4. 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:
 - a) the EPA Environment Line 131 555 (the appropriate regulatory authority (ARA) for the activity under the POEO Act)
 - b) 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
 - c) the WorkCover Authority – phone 13 10 50
 - d) Parkes Shire Council – phone:
 - Work Hours ph: 02 6861 2333
 - After Hours ph: 1800 648 585

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

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.

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. Depending on the nature of the incident, this may be in conjunction with or undertaken by Community Department as per PLN-0040 Stakeholder Communications Management Plan.

The effected landowners will be notified in writing of any exceedance of environment monitoring criteria for dust, noise and water as required by the Development Consent, 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 also inform landowners of their rights under DC11_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.

Notification to Government Agencies

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Northparkes must provide written details regarding the incident to relevant government departments including DP&E, DRE and the EPA within 7 days of the date on which the incident occurred. The PSE Manager needs to sign-off on the written report in accordance with DC11_0060 and EPL 4784.

Incidents not causing or threatening material harm to environment

Environmental incidents which are identified as not causing or threatening material harm to the environment should be contained if safe to do so, then the Northparkes Mine Incident Reporting procedure undertaken.

6.5 Performance Evaluation

Regular environmental inspections of operations are conducted. These inspections determine, in conjunction with the environmental monitoring and incident reporting procedures, onsite compliance with the HSEMS. The inspections are conducted in accordance with PRO-0113 Zero Harm Operations Walk Procedure.

Northparkes' internal auditing program is designed to assess whether the HSEMS is effectively implemented and maintained and conforms to legal and other requirements. An annual schedule specifies the audit team, frequency and scope of internal audits. Audit reports are presented at the Management Review meeting, which is signed off. Internal audits are conducted as per PRO-0014.

All corrective actions for non-conformance findings from audits and inspections are actioned through the internal system. This is conducted in accordance with PRO-0115.

Monitoring & Measurement

Activities that have the potential to result in significant impacts (such as the release of contaminants) are identified in the development, review and maintenance of the Environmental Aspects and Impacts Register DOCID-3-8926. Procedures for monitoring and measuring performance, operational controls and conformance with environmental objectives and targets are documented.

The environmental monitoring program, coordinated by the Environment Team, is undertaken by appropriately trained personnel. The Environmental Measuring and Monitoring Program Procedure (PRO-0150) consolidates the requirements for all environmental monitoring conducted onsite. REG-008 Environmental Monitoring and Measuring Schedule includes the list of environmental monitoring locations, frequencies, reporting and monitoring types.

A number of monitoring programs have been established to allow for the measurement and management of key potential cumulative impacts as follows:

- Air Quality;
- Noise;
- Surface Blasting;
- Surface Water;
- Groundwater; and
- Biodiversity and Rehabilitation

Monitoring procedures and equipment calibration techniques adopted comply with recognised Australian Standards and external criteria where applicable. External services employed for laboratory analysis of critical data are NATA accredited where applicable.

Monitoring data will be regularly assessed to ensure that any trends indicating potential environmental impact are identified. In accordance with Condition 11, Schedule 6 of DC11_0060 a summary of monitoring results will be made publicly available at the mine and on the website (www.northparkes.com) and updated on a quarterly basis.

An Annual Review that details the environmental performance of the previous year is prepared and submitted to all relevant stakeholders as per PRO-0114 Auditing and Reporting Program.

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6.6 Improvement

6.6.1 Implementing corrective actions

Corrective and preventative actions will be implemented through the development of an action plan. The plan will provide details on the action required, time frame and responsibilities for completing the action. The implementation of the corrective and preventative actions will be reviewed internally and specific procedures developed for addressing non-conformances with the EMS or subordinate plans and strategies. This is conducted as per PRO-0115 Action Management.

6.6.2 Review and Continuous Improvement

Operational activities will be subject to regular review to ensure conformance with commitments made in the EMS and subordinate plans and strategies.

In accordance with Schedule 6, Condition 5 of DC11_0060, the Environmental Management Strategy will be reviewed, and if necessary revised, within 3 months of the submission of an:

- a) Annual review under Condition 4 of Schedule 6;
- b) Incident report under Condition 7 of Schedule 6; and
- c) Audit report under Condition 9 of Schedule 6.

New activities or changes to the operation that may result in environmental issues will be assessed to determine if changes are required to manage the impacts, and so if any revision to a particular subordinate plan is required.

The review process will include formalised procedures including independent audits, or consultation with relevant specialists where required.

An Independent Environmental Audit will be undertaken by 31 March 2015, and every three years thereafter (unless the Secretary directs otherwise) in accordance with Schedule 6, Condition 9 of DC11_0060. This audit will be conducted by suitably qualified, experienced and independent expert/s whose appointment has been endorsed by the Secretary.

Any revisions of the EMS will be undertaken to the Satisfaction of the Secretary of NSW, Department of Planning and Infrastructure in the event that major changes are made to the manner in which environmental aspects and impacts are managed. In the event of format changes or updates to referenced HSE system documents a copy will be provided to the Department of Planning and Infrastructure, however approval would not be required.

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6.6.3 Management Review

The Northparkes Management team is responsible for ongoing review of the effectiveness of the HSEMS and continuous improvement of the HSEMS.

The review addresses the possible need for changes to policy, objectives, and other elements of the HSEMS, in light of system audit results, changing circumstances and the commitment to continual improvement. These reviews will be conducted in accordance with PRO-0112 Management Review of HSE Management System.

The management review ensures that the necessary information is collected to allow management to carry out the review and document findings in the meeting minutes.

6.6.4 Strategy Review

This Strategy will be reviewed and updated on an annual basis.

In addition, this Strategy will be reviewed within six months of an Independent Environmental Audit in accordance with Condition 5, Schedule 6 of DC11_0060.

6.6.5 Checking and Corrective Actions

Non Compliance, Corrective & Preventative Action

Non-compliances may be identified by a range of mechanisms including:

- Review of monitoring results;
- Complaints;
- Site inspections;
- Audits; and
- Incident reports.

Incidents and near misses at Northparkes are reported internally through the internal system which is supported by a database to manage the system. This will be conducted in accordance with PRO-0148 Incident Management.

Incident investigations and corrective actions are conducted and authorised by designated personnel. The degree of involvement of the environmental function depends on the nature and scale of the incident.

At a minimum all environmental incidents obtain recommendations for corrective and preventative actions prior to close out of the incident. All corrective actions for nonconformance findings from audits and inspections are actioned through the internal system.

Any non-compliance against Northparkes operating licence conditions is reported internally and externally. Incident reporting will be in accordance with Condition 7, Schedule 6 of DC11_0060 and in line with the Incident Management Procedure (PRO-0148).

Non-compliance incidents that are reportable to government departments are also reported to CMOC and Joint Venture partners as they may have the potential to impact upon the business.

The frequency and severity of incidents and non-conformances are used in the Management Review process for determining the effectiveness of the HSEMS.

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Adaptive Management

The PSE Manager (or delegate) will review all environmental monitoring results on a regular basis to ensure compliance with all statutory, legislative and approval requirements (DC11_0060, other development consents, EPL, mining approvals), and to identify where results or trends indicate a risk of future non-compliance to the development consent criteria or other approval conditions.

Northparkes will assess and manage all project-related risks to ensure that there are no exceedances of the criteria as mentioned in Schedules 3 & 4 of the DC11_0060. Should environmental monitoring show that the relevant criteria or threshold has been exceeded, the company will conduct an investigation into the potential sources and/or causes. The investigation will consider any plant operation or other factors that may have resulted in the exceedance. If the company is responsible for the exceedance further actions will be taken to address the matter. The relevant environmental management plan as required in DC11_0060 will detail reporting requirements regarding monitoring results or environmental incidents.

A report on the exceedance will be provided to the DP&I or other relevant agency (such as EPA). The report will:

- d) describe the date, time and nature of the exceedance/incident;
- e) identify the cause (or likely cause) of the exceedance/incident;
- f) describe what action has been taken to date; and
- g) describe the proposed measures to address the exceedance/incident.

If the results of environmental monitoring identify that impacts generated by the project are greater than the relevant impact assessment criteria, except where a negotiated agreement has been entered into in relation to that impact, then Northparkes shall, within one week of obtaining the monitoring results, notify the Secretary, the affected landowners and tenants (including tenants of mine owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the criteria.

If the results of environmental monitoring identify that impacts generated by the project are greater than the relevant air quality impact assessment criteria, then Northparkes shall send the relevant landowners and tenants (including tenants of mine owned properties) a copy of the NSW Health fact sheet entitled "Mine Dust and You" (and associated updates) in conjunction with the notification required above.

7. REGULATORY REQUIREMENTS

Northparkes commits to complying with all relevant legal and other requirements. This includes all relevant legislation, licences, Company, Australian and International Standards and other requirements.

A summary of relevant approvals and licences is provided in Appendix D - Summary of Approvals and Licences. These include requirements of Mining Leases, and of the Environmental Protection Licence (EPL) that must be satisfied.

This Environmental Management Strategy (the Strategy) has been developed in accordance with Condition 1, Schedule 6 of the Department of Planning and Environment (DPE) DC11_0060. Table 4 indicates where each component of the Condition is addressed within this document.

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Table 2: Environmental Management Strategy Requirements

Condition	Requirement	Section
Schedule 6 Condition 1	<p>The Proponent shall prepare and implement an Environmental Management Strategy for the Project to the satisfaction of the Secretary. This strategy must:</p> <p>a) be submitted to the Secretary;</p> <p>b) provide the strategic framework for environmental management of the mine;</p> <p>c) identify the statutory approvals that apply to the mine;</p> <p>d) describe the role, responsibility, authority and accountability for all key personnel involved in the environmental management of the mine;</p> <p>e) describe the procedures that would be implemented to: <input type="checkbox"/> keep the local community and relevant agencies informed about the operation and environmental performance of the Project;</p> <ul style="list-style-type: none"> • receive, handle, respond to and record complaints; • resolve any disputes that may arise; • respond to any non-compliance; • manage cumulative impacts; • respond to emergencies; and <p>f) include:</p> <ul style="list-style-type: none"> • copies of any strategies, plans and programs approved under the conditions of this approval; and <p>• a clear plan depicting all the monitoring to be carried out in relation to this project.</p>	<p>Whole document</p> <p>Section 6.0 Appendix D</p> <p>Section 8.1</p> <p>Section 8.3</p> <p>Section 8.3 & 10</p> <p>Section 12</p> <p>Section 8.5.1</p> <p>Section 9</p> <p>Appendix F Appendix G Appendix H Appendix I Appendix J Appendix K Appendix L Appendix M</p> <p>Appendix F</p>
Independent Environmental Audit		
Schedule 6 Condition 10	<p>Within 3 months of commissioning this audit, or as otherwise agreed by the Secretary, the Proponent shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.</p>	Section 10.7
Schedule 6 Condition 5	<p>Within 3 months of:</p> <p>(a) Annual review under Condition 4 of Schedule 6;</p> <p>(b) Incident report under Condition 7 of Schedule 6; and</p> <p>(c) Audit report under Condition 9 of Schedule 6.</p> <p>The proponent shall review and, if necessary, revise the strategies, plans and programs required under this approval to the satisfaction of the Secretary. Note: this is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.</p>	Section 10.7

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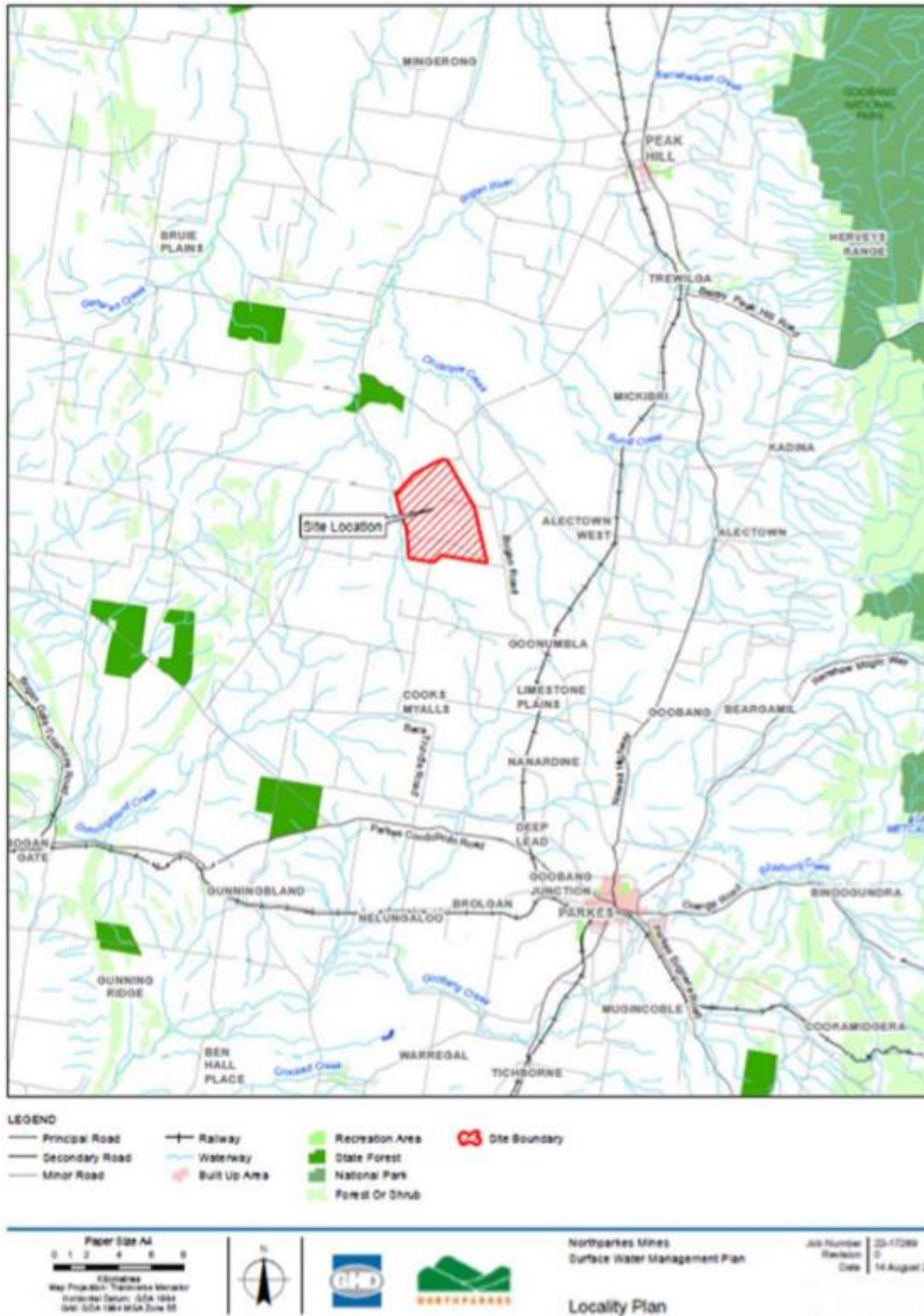


Figure 1: Project Location

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8. ATTACHMENTS

8.1 Appendix A – Regulatory Correspondence



NSW GOVERNMENT
Department of Planning

Mr Stephen Alexander
Manager ESH & Community Relations
Northparkes Mines
PO Box 995
PARKES NSW 2870

Contact: David Kitto
Phone: 02 9228 6467
Fax: 02 9228 6466
Email: david.kitto@planning.nsw.gov.au
Our ref: 9036747-3
Your ref:

Dear Mr Alexander,

Northparkes Mines – Environmental Management Strategy

Reference is made to your letter of 30 August 2007 in which you have provided an amended version of the Northparkes Mines Environmental Management Strategy following the Department of Planning's comments made on 7 July 2007. The strategy is a requirement contained in the Minister for Planning's 28 February 2007 approval for the Northparkes Mines.

The strategy, entitled *ESH Management System Reference Manual – Environmental Management Strategy* (revision 1, dated 28 August 2007), is satisfactory provided the following matters are incorporated:

- The 24 hours telephone number referenced in section 6.3.2 is included; and
- Appendix E is revised to include the names and contact details of the personnel filling each of the positions.

The Environmental Management Strategy is approved providing the matters outlined above are incorporated.

If you have any enquiries please contact Paul Weiner on 9228 6339.

Yours sincerely

David Kitto
Director
Major Development Assessment
As delegate for the Director-General

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Objective No: A118927
 ESHMS No: 9.400.H
 ESHMS SOP/Std No: ESHF400.11
 Page: 1 of 1
 Revision No: 3

EXTERNAL COMMUNICATION RECORDING FORM

IN / **OUT**

Date 12/09/07 Time mid morning am / pm

DETAILS OF PERSON SPOKEN WITH

Name Paul Weiner
 Location (if relevant) Dept of Planning Sydney Phone No 92286339
 Method of Communication (circle): Phone / Personal Communication / Fax / Letter

DETAILS OF COMMUNICATION

Discussion with Paul Regarding letter dated 3/09/07 regarding 2 detpoints concerning contact details .

ANY ACTION (Responsibility / Date)

Renee Morphet : Update EIS document and prepare a separate memo with particular contact details on it .

OUTCOME Paul Weiner agreed that :

- 1) Agreed that NRM 24 hour hotline number would be included .
- 2) Agreed that a separate memo with manager contact details would be provided to DOP rather than displayed in EIS document .

NAME (Person receiving/making call) Kerrie Edwards

SIGNATURE K Edwards DATE 14-09-07

Original Distribution: ~~ESH~~ / AJR / RCM / ASR / GJM/MS / Exploration (if relevant) / LC (file)

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8.2 Appendix B – Components of the Northparkes HSEQMS Consistent with ISO 14001 Requirements

ISO 14001:2004 Reference		HSEMS Elements	Relevant Documentation
4.2	Environmental Policy	1 - Policy	Northparkes Health, Safety, and Community Policy (POL-0006)
4.3.1	Environmental Aspects	3 - Hazard Identification and Risk Management	Environmental Aspects and Impacts Register (DOCID-3-8926) Environmental Aspects and Impacts Standard Operating Procedure (PRO-0174) Risk Assessment Level 1 (JHA) WI (WKI-0159) Risk Assessment Level 1 (PTHA) WI (WKI-0158) Risk Assessment Level 2 (Qualitative) (GUI-0093) Risk Assessment Level 3 (Quantitative) (PRO-0094)
4.3.2	Legal and other requirements	2 - Legal and Other Requirements	Legal Register (DOCID-3-8784) Northparkes Licences and Permits Register (DOCID-3-4747)
4.3.3	Objectives, targets and programme(s)	4 –HSEQ Management Improvement Planning	Environmental Objectives and Targets Departmental Improvement Plans
4.4.1	Resources, roles and responsibility and authority	5 - Resources, Accountabilities and Responsibilities	Northparkes Mines Organisational Chart HSE Accountabilities SOP (PRO-0080) Individual Role Descriptions
4.4.2	Competence, training and awareness	6 –,Competencies and Awareness	Inductions and Training Modules Training Systems Management Plan (PLN-0080)
		15 – Data and Records Management	Training Records Individual Role Descriptions
4.4.3	Communication	9– Communication and Consultation	Stakeholder Communications Management Plan (PLN-0040) Community Complaint Notification Form (FRM-0152) Consultation Manager Incident Management (DOCID-3-3898)
4.4.4	Documentation	8 – Documentation and Document Control	HSE Management System Procedure for Document Control (PRO-0116) SOP and Document Control Index (DOCID-3-3990)
		16 – Records	Documentation Archiving (Hard Copy and Electronic) WI (PRO-0203) Environmental Records Management SOP (DOCID-3-3903)
4.4.5	Control of documents	Refer to 4.4.4	
4.4.6	Operational Control	10 – Operational Control	Site Risk Register HSE Forms
		7 –and Contractor Management	Management Plans as per DC11_0060 Standard Operating Procedures and Procedures
4.4.7	Emergency preparedness and response	12 – Business Resilience and Recovery Program	Emergency Management Plan (PLN-0017) Chemical Approval Risk Assessment (FRM-0134) Pollution Incident Response (PLN-0054) Pre-Incident Plan – Diesel Bund Spill (GUI-0074)

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4.5.1	Monitoring and measurement	13 – Measurement and Monitoring	Environmental Aspects and Impacts Register (DOCID-3-8926) Environmental Measuring and Monitoring Procedure (PRO-0150)
4.5.2	Evaluation of compliance	Refer to 4.3.2	
4.5.3	Nonconformity, corrective action and preventive action	9 – Communication and Consultation	Incident Management Procedure (PRO-0148) Government Notification of Environmental Incident form (FRM-0037) Monthly Operations Report Stakeholder Communications Management Plan (PLN-0040) Environmental Monitoring and Measuring Schedule (DOCID-3-3877) Measuring and Monitoring Procedure (PRO-0150)
		13 – Measurement and Monitoring 14 – Non Conformance Incident and Action Management	
4.5.4	Control of records	Refer to 4.4.2 and 4.4.4	
4.5.5	Internal audit	16 – Performance Assessment and Auditing	Internal Audit Program HSE (PRO-0114) Zero Harm Walk Schedule (DOCID-3-6009) HSE Policy Meeting Minutes Zero Harm Operations Walk (PRO-0113)
4.6	Management review	9 – Communication and Consultation	Stakeholder Communications Management Plan (PLN-0040)
		16 – Performance Assessment and Auditing	HSE Accountabilities SOP (PRO-0080) Northparkes Management Team Meetings

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8.3 Appendix C – Health, Safety and Environment Policy



Health, Safety and Environment Policy

We care about people and the world in which we live. We recognise that excellence in managing health and safety, and commitment to environmental responsibility and protection are essential to our long-term vision of a century of mining together.

WE ARE COMMITTED TO:

- Zero Harm Operations which is the prevention of incidents that may lead to injury, illness, pollution, property and environmental damage, or conflict with our neighbours and community
- operating in accordance and compliance with all applicable laws and our health, safety and environmental requirements
- actively pursuing and sharing leading practices and new approaches in key health, safety and environment areas, in line with our core value of continuous improvement
- having clear performance indicators for improving our health, safety and environmental performance
- providing the necessary resources needed to meet our performance objectives
- encouraging workforce participation and promoting workforce awareness of health, safety and environmental threats and opportunities
- understanding and respecting expectations of our people, the community, customers and other interested parties for responsible and effective management of health, safety and environmental risks

OUR RESPONSIBILITY:

As workers of Northparkes, we undertake work only after the appropriate risk assessments have been completed.

As leaders in our workplace, we provide and maintain a safe work environment, which ensures the health and safety of every person onsite and the protection of our environment.

As a business, we are proud to publicly report on our performance so that interested parties and key stakeholders can assess and provide feedback on our achievements.

We all have a responsibility to ensure we have the knowledge and commitment to complete work aligned to Zero Harm Operations.

Hubert Lehman
Managing Director
21 November, 2019

Doc No. POL-0006	Version No. 14.01	Next Review Date 11/12/2022	Owner Managing Director
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8.4 Appendix D – Summary of Approvals and Licences

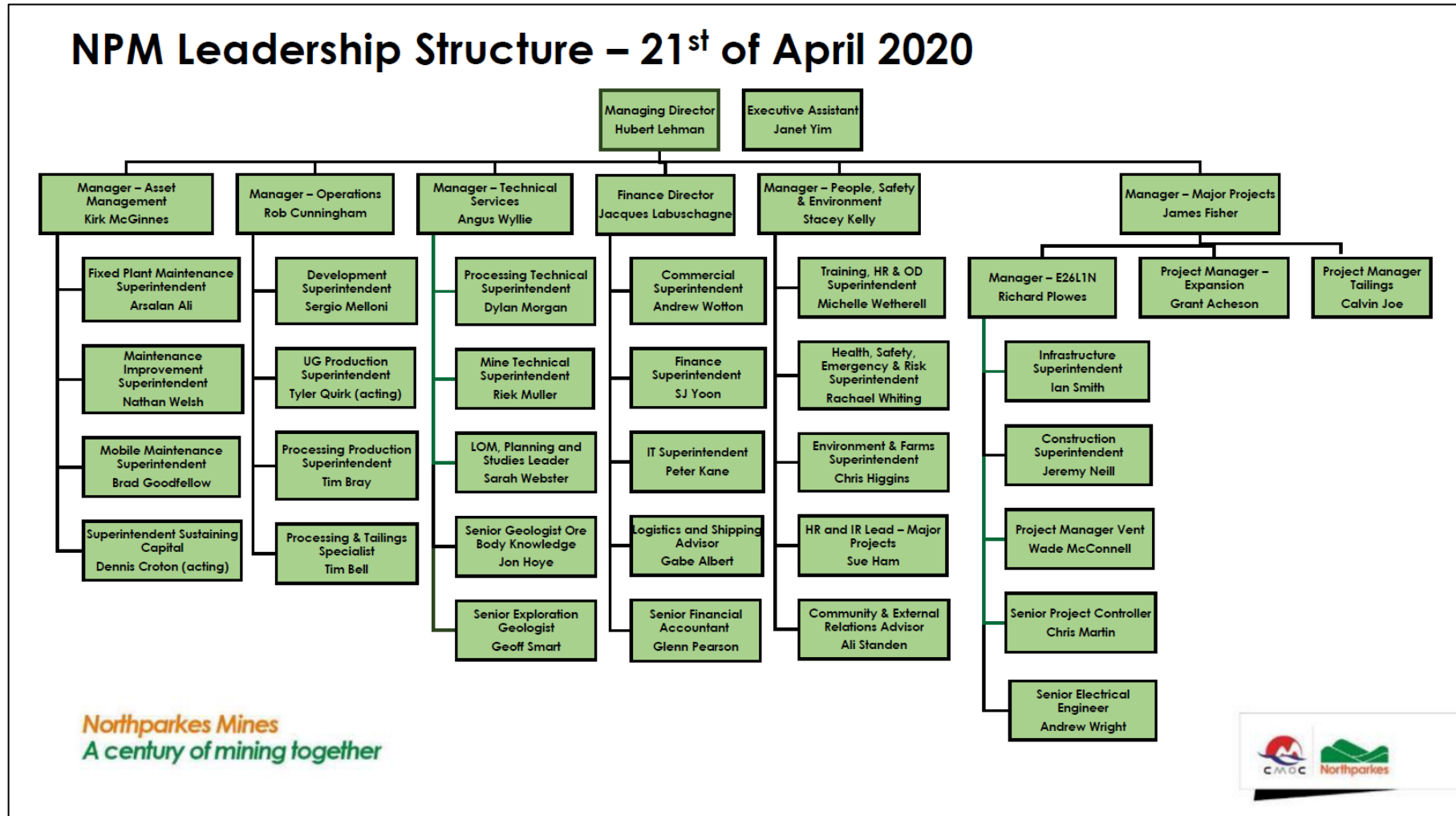
Approval or Licence	Relevant Authority or Stakeholder	Relevant Legislation, Policy and Guidelines
Development Consent	DoPI (and other agencies as required)	Environmental Planning and Assessment Act 1979 Environmental Planning and Assessment Regulation 2000
Environment Protection Licence	NSW Environmental Protection Authority	Protection of the Environment Operations Act 1997 Protection of the Environment Operations (Noise Control) Regulation 2008 Australian Water Quality Guidelines for Fresh and Marine Waters (ANZECC and ARCMANZ, 2000) Managing Urban Stormwater: soils and Construction (Landcom, 2004) Industrial Noise Policy (EPA 2000) Environmental Noise Control Manual (EPA 1998) Technical Basis for Guidelines to Minimise Annoyance Due to Blasting Over Pressure and Ground Vibration (ANZECC 1990)
Permits to construct levees and licences to extract/access water	NSW Office of Water Natural Resources Access Regulator	Water Act 1912 (Part 8 and Part 5) Water Management Act 2000
Mining Lease (including Mining Operations Plan)	NSW Mining, Exploration & Geoscience	Mining Act 1992 Guidelines for the Preparation of Mining Operations Plans (DT&I 2013)
Consent to destroy Aboriginal sites	OEH, relevant Aboriginal groups*	National Parks and Wildlife Act 1974 Aboriginal Cultural Heritage Standards and Guidelines Kit (NPWS 1997)
Approval to construct a building or structure	Parkes Shire Council	Environmental Planning and Assessment Act 1979
Exchange of land dedicated as State Forest and Permits	Forestry Corporation of NSW	Forestry Act 2012

* Subject to confirmation in individual projects.

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8.5 Appendix E – Northparkes Management Team and Department Structures

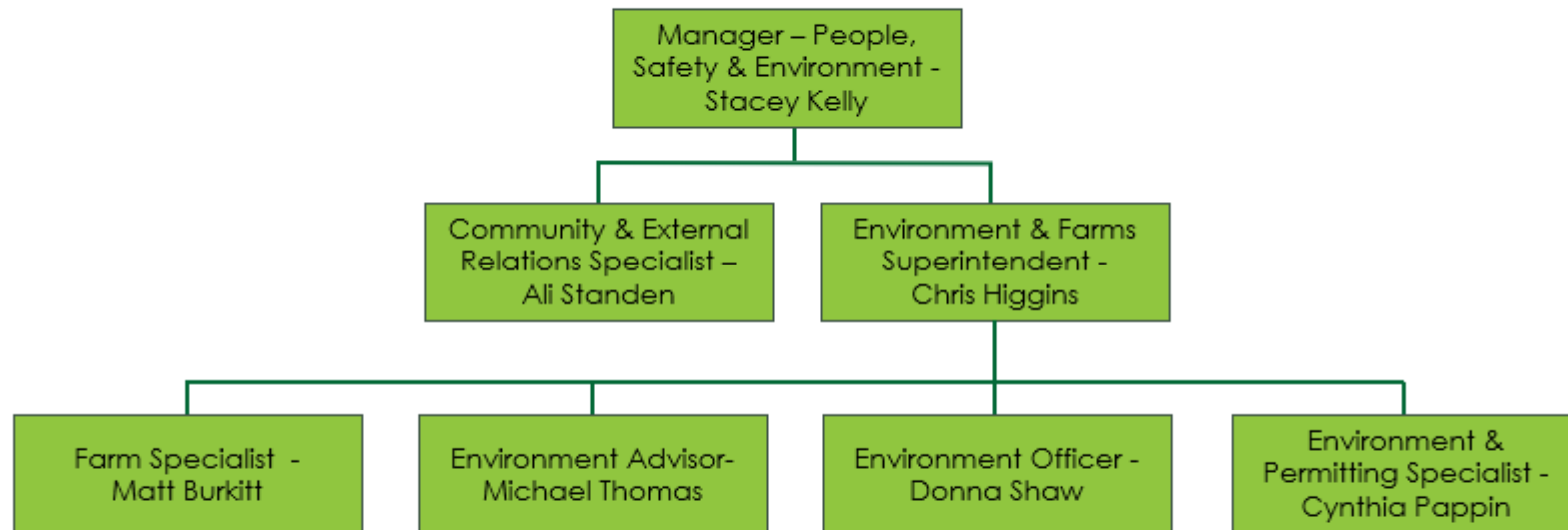
Northparkes Leadership Structure



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PSE – Community, Environment and Farms Teams

Northparkes Community, Environment & Farms Teams



Northparkes Mines
A century of mining together



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8.6 Appendix F – Monitoring and Measuring Schedule

Extract from DOCID-3-3877- Environment Monitoring and Measuring Schedule

Monitoring Type	Parameter Monitored	Monitoring Location	Sample Point Name	Monitoring Frequency
<i>Type of monitoring occurring</i>	<i>List of the parameters being measured</i>	<i>Facility being monitored or general location</i>	<i>List of sample point names at that location</i>	<i>How often do we do the monitoring ?</i>
Noise				
Attended monitoring.	Day: LAeq(15min) < 35 dB(A) Evening: LAeq(15min) < 35 dB(A) Night: LA1(1min) < 45 dB(A) and LAeq (15min) <35dB	Northparkes mines - off lease neighbours	Hubberstone Milpose Lone Pine Hill View	Quarterly - Minimum period of one day (daytime, evening and night-time measurements) per quarter.
Unattended	Day: LAeq(15min) < 35 dB(A) Evening: LAeq(15min) < 35 dB(A) Night: LA1(1min) < 45 dB(A) and LAeq (15min) <35dB	Northparkes mines - off lease neighbours	Hubberstone Milpose Lone Pine Hill View	Ongoing
Vibration				
Air blast overpressure	>115 dB (Lin Peak) (allowable exceedance of 5% over 12 months) >120 dB (Lin Peak) (no allowable exceedance at any time)	Open Cut	Not applicable	Timed for all open cut blasts. Currently undertaking no surface blasting.
Vibration	>5 mm/s (ppv) (allowable exceedance of 5% over 12 months) >10 mm/s (ppv) (no allowable exceedance at any time)	Open Cut	Not applicable	Timed for all open cut blasts. Currently undertaking no surface blasting.
Groundwater				
Levels	Depth to water table	On site and off site	MB01, MB02, MB03, MB05, MB06B, MB10, MB11, MB12, MB13, MB14, MB16, MB17, MB18, MB19, MB20, W14, W19, W20, W21, W22, W23, W24, W25, W26, W27, W28, W29, W30, W31, W32, P71, P101, P102, P103, P104, P139, P145, P149, Far Hilliers, Moss, Wright, Long Paddock, South Hilliers	Quarterly

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Full chemical analysis	pH, Electrical conductivity (EC), Total Dissolved Solids (TDS), hydroxide alkalinity, bicarbonate alkalinity, total alkalinity, Antimony, Copper (Cu), Manganese, Nitrate, Strontium, Thallium, Thorium, Uranium, Iron, Mercury, Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulphate (SO ₄), Aluminium (Al), Arsenic (As), Barium (Ba), Beryllium (Be), Cadmium (Cd), Cobalt (Co), Chromium (Cr), Molybdenum (Mo), Nickel (Ni), Lead (Pb), Selenium (Se), Zinc (Zn)	On site and off site	MB01, MB02, MB03, MB05, MB06B, MB10, MB11, MB12, MB13, MB14, MB16, MB17, MB18, MB19, MB20, W14, W19, W20, W21, W22, W23, W24, W25, W26, W27, W28, W29, W30, W31, W32, P71, P101, P102, P103, P104, P139, P145, P149, Far Hilliers, Moss, Wright, Long Paddock, South Hilliers	Quarterly
Surface water				
Full chemical analysis (ALS Suite WC4A)	pH, Electrical Conductivity, Total Suspended solids (TSS), Total Dissolved Solids (TDS), Copper (Cu), Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chlorine (Cl), Sulphate (SO ₄), Ni-carbonate (HCO ₃), Carbonate (CO ₃)	Water Courses	WC01, WC02, WC03, WC04, WC05, WC06, WC07, WC11, WC12, WC13, WC14, WC15, WC16	Quarterly and following a rainfall event
Field Chemistry (ALS Suite FD5B)	pH, Electrical Conductivity, Total Suspended solids (TSS), Total Dissolved Solids (TDS), Copper (Cu), Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chlorine (Cl), Sulphate (SO ₄), Ni-carbonate (HCO ₃), Carbonate (CO ₃)	Farm Dams	FD04, FD05, FD06, FD07, FD11, FD12, FD16, FD18, FD21, FD25, FD26, FD27	Quarterly
Full chemical analysis (ALS Suite SP3A - 1 per year & SP3B - other 3 quarters)	pH, Electrical Conductivity, Total Suspended solids (TSS), Total Dissolved Solids (TDS), Copper (Cu), Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chlorine (Cl), Sulphate (SO ₄), Ni-carbonate (HCO ₃), Carbonate (CO ₃)	Sediment Ponds	SP03, SP10, SP15, SP16 (SCT no longer exists)	Quarterly and during a rainfall event that results in flow from the sediment pond
Field Chemistry (ALS Suite PW2A - 3 quarters)	pH, Electrical Conductivity, Copper (Cu)	Process Water System	RP01, RP02, RP03, RP04, RP05, RP06, RP07, RP08, RP09, RP10, RP12, RP13, RP15, RP16, RP19, RP20, RP21, RP22, RP23, RP24, RP25, RP26, RP27, RP29, RP30, RP32, RP33 GT01, GT02, PWD, DM02, SD1, SD2 and Caloola Dams. (RP 28 & 31 no longer exist)	Quarterly
Full chemical analysis (ALS Suite PW2B - 1 per year)	Total Suspended Solids (TSS), Total Dissolved Solids (TDS), Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chlorine (Cl), Sulphate (SO ₄), Bi-carbonate (HCO ₃), Carbonate (CO ₃), Aluminium (Al), Arsenic (As), Barium (Ba), Beryllium (Be), Cadmium (Cd), Cobalt (Co), Copper (Cr), Chromium (Cr), Molybdenum (Mo), Nickel (Ni), Lead (Pb), Selenium (Se), Thorium (Th), Uranium (U), Zinc (Zn)	Process Water System	RP01, RP02, RP03, RP04, RP05, RP06, RP07, RP08, RP09, RP10, RP12, RP13, RP15, RP16, RP19, RP20, RP21, RP22, RP23, RP24, RP25, RP26, RP27, RP29, RP30, RP32, RP33 GT01, GT02, PWD, DM02, SD1, SD2 and Caloola Dams. (RP 28 & 31 no longer exist)	Annually

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Air Quality				
Depositional dust	Maximum increase in deposited dust level 2 g/m2/month (Annual Average) Maximum total deposited dust level 4 g/m2/month (Annual Average)	NPM - on site and off site	ND19, ND20, ND21, ND22, TDN5, TDE, TDE5, TDNE, TDSW, TDS5, TDW	Monthly
Total suspended particulate	Total suspended particulate (90 µg/m3 (Annual Average))	Offsite	Hubberstone Milpose Hill View	24 hours every 6 days
Particulate Matter	< 10µm (PM10) Long Term Criterion 30 µg/m3 (Annual Average) Short Term Criterion 50 µg/m3 (24 hour)	Offsite	Hubberstone Milpose Hill View	Real Time - Continuous
Weather station	Rainfall, wind speed, wind direction, temperature	Rosedale	Northparkes AWS	Continuous - 15 minute data and 24 hour
Directional Dust	Total deposited dust	Offsite	ND19-E, ND19-W, ND19-N, ND19-S, ND20-E, ND20-W, ND20-N, ND20-S, ND21-E, ND21-W, ND21-N, ND21-S, ND22-E, ND22-W, ND22-N, ND22-S, TDN5-E, TDN5-W, TDN5-N, TDN5-S, TDE-E, TDE-W, TDE-N, TDE-S, TDE5-E, TDE5-W, TDE5-N, TDE5-S, TDNE-E, TDNE-W, TDNE-N, TDNE-S, TDSW-E, TDSW-W, TDSW-N, TDSW-S, TDS5-E, TDS5-W, TDS5-N, TDS5-S, TDW-E, TDW-W, TDE-N, TDE-W	Monthly
Waste Rock				
Waste Rock Monitoring	PAF	On Site	Waste rock emplacement	Annual
Ecological Monitoring				
Ecological Monitoring	LFA	Site and Estcourt Offset Area	As per Rehabilitation Management Plan	Annual
Ecological Monitoring	Pine Donkey Orchid	On Site and off site	As per species management plan for pine donkey orchid	Annual (September/November)
Top Soil				
Weed and Erosion	Presence of Weeds and Erosion	Top/Sub soil stockpiles	TS1-21 and SS1-2	Bi-annual