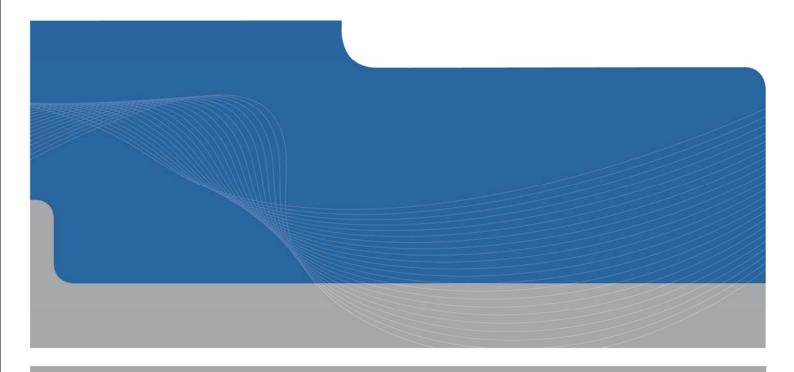


North Mining Limited

Northparkes Mines Section 75W Submissions Report July 2009



Contents

1.	Intro	duction		1
	1.1	Overviev	v	1
	1.2	Summar	y of the proposal	1
	1.3	Contents	s of the report	2
2.	Con	sultation	activities	3
	2.1	Consulta	ation during the Environmental Assessment process	3
	2.2	Public E	xhibition of the Environmental Assessment	4
	2.3	Submiss	ions received	4
3.	Res	ponse to	issues raised in submissions	5
	3.1	Departm	ent of Environment and Climate Change	5
	3.2	Departm	ent of Water and Energy	10
	3.3	Departm	ent of Primary Industries	13
	3.4	Departm	ent of Planning	13
	3.5	Commur	nity Member	14
	3.6	Parkes S	Shire Council	14
4.	Stat	ement o	f commitments	16
Tab	le In	dex		
	Table	e 1	Environmental Assessment consultation activities undertaken to date	3
	Table	2	Anticipated water volumes	ა 11
	Table		Draft Statement of Commitments	17
	iable	- 3	Dian Statement of Commitments	17

Appendices

- A Submission letters
- B Supporting noise information
- C Groundwater monitoring program

1. Introduction

1.1 Overview

An Environmental Assessment was prepared in April 2009 to support an application by North Mining Limited to modify their existing project approval (DC 06-0026) to operate Northparkes Mine (NPM) under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Environmental Assessment provided an assessment of the potential environmental impacts of the proposed modification in accordance with the Director-General's requirements (DGRs) issued by the Department of Planning (DoP) on 26 September 2008.

The Environmental Assessment was placed on public exhibition by the DoP from 8 April 2009 to 24 April 2009. Following exhibition, five (5) submissions were received by the DoP that NPM were requested to address.

1.2 Summary of the proposal

The current approved Northparkes Mines operation is predominantly underground operations supplemented by open cut mining campaigns. Its associated processing plant is focused on the production of copper concentrate for distribution to overseas smelters.

The proposed modifications will enable an extension to the life of the mine to 2025 that will see the continued extraction of copper and gold in a manner which is both economically viable and environmentally responsible. This will result in the continued positive benefits, particularly to the Parkes and district community, from a social and economic perspective.

The proposed modification to the existing project approval includes the following:

- Construction of a new tailings storage facility "Estcourt" TSF including any associated floor preparation and drainage system;
- ▶ Increase the limit on approval to 8.5 million tonnes of ore processed per year;
- Extend the life of the mine through to 2025;
- Installation of a secondary and tertiary crusher adjacent to the hoisting shaft at underground operations; and
- Upgrades and modifications to existing processing infrastructure including:
 - Module 1 and 2 Grinding Circuits;
 - Module 1 and 2 Flotation Circuits:
 - Module 3 Flotation Circuit;
 - Concentrate Handling Facilities; and
 - Tailings Handling Facilities.

1.3 Contents of the report

This report has been compiled to:

- Outline the consultation activities undertaken as part of the Environmental Assessment process;
- Provide a response to the submissions received following the public exhibition period including additional information to address some of the issues raised; and
- Provide an updated Statement of Commitments that NPM agrees to undertake should the proposal be granted approval by the Minister for Planning.

2. Consultation activities

2.1 Consultation during the Environmental Assessment process

A number of consultation activities have been undertaken in accordance with the DGRs, during the Environmental Assessment process, as outlined in Table 1 below and described in Chapter 4 of the Environmental Assessment. The objectives of this consultation have been to raise awareness of the proposal and provide an opportunity for input from government and community stakeholders.

Table 1 Environmental Assessment consultation activities undertaken to date

Activity	Date
Meeting with Department of Environment and Climate Change (DECC)	September 2008
Meeting with Department of Primary Industries (DPI)	November 2008
Meeting with Forbes Shire Council (FSC)	November 2008
Meeting with Parkes Shire Council (PSC)	November 2008
Meeting with Department of Water and Energy (DWE)	November 2008
Meeting with Parkes Borefield Community Consultative Committee	November 2008
Meeting with Dam Safety Committee	December 2008
Meeting with Aboriginal Heritage Working Group (AHWG)	October and December 2008
Adequacy review of the Environmental Assessment	February/March 2009
Advertisement in Parkes Champion Post and Sydney Morning Herald	8 April 2009
Public exhibition of the Environmental Assessment	8 April 2009 – 24 April 2009
Meeting with DoP	April 2009
Meeting with DECC	May 2009
Discussion with PSC	May/June 2009

2.2 Public Exhibition of the Environmental Assessment

The exhibition of the Environmental Assessment, including the receipt of submissions, was coordinated and managed by the Department of Planning.

2.2.1 Advertisement

The Department of Planning placed an advertisement in the Sydney Morning Herald and Parkes Champion Post on 8 April 2009. The advertisement announced the public exhibition and provided details on the project, how to view a copy of the Environmental Assessment and how to make a submission. It also provided contact details for community members who required additional information on the project and approval process.

2.2.2 Public exhibition

The Environmental Assessment was publicly exhibited from 8 April 2009 to 24 April 2009 at the following locations:

- Department of Planning
 Information Centre, 22-33 Bridge Street, Sydney
- Northparkes Mine Bogan Road, Parkes
- Parkes Shire Council2 Cecile Street, Parkes
- Parkes Post Office
 34 36 Welcome Street, Parkes
- Department of Planning website www.planning.nsw.gov.au; and
- Northparkes Mine website www.northparkes.com.au.

2.3 Submissions received

In total, five (5) submissions were received by the Department of Planning which comprised:

- 4 written submissions from government bodies; and
- 1 written submission from the public.

Copies of the submissions are provided in Appendix A.

The four (4) government submissions were received from:

- Department of Environment and Climate Change;
- Department of Water and Energy;
- Department of Primary Industries; and
- Parkes Shire Council.

The submissions have been reviewed and a response is provided for each individual issue in the following section.

3. Response to issues raised in submissions

3.1 Department of Environment and Climate Change

3.1.1 Biodiversity

Discussions are being held between NPM, Department of Environment and Climate Change and Department of Planning regarding the biodiversity issues raised. The outcome(s) from these discussions will be provided to the Department of Planning in a separate report once finalised.

3.1.2 Noise

Issues

DECC notes that the exhibited Environmental Assessment does not address the noise key issues raised in the DECC's adequacy review including:

- 1. NPM must provide clarification that predictions under inversion and 2m/s wind conditions have been made for day and evening as well as night, in Table 4-1, 4-3, 4-4 and 4-5.
- NPM must clarify exactly how they have adjusted the plant Sound Power Level (SPL) to reflect their nominated operating times per 15 minutes. This shall be undertaken for all plant and equipment SPL that have been adjusted.
- NPM must provide a figure in the Noise Impact Assessment (NIA) detailing the mine site
 and the surrounding topography out to as far as the nearest affected receivers with the
 location of mobile and stationary plant and equipment in the noise model superimposed.
- 4. NPM must note in any reference in the NIA to the Draft DECC document "Construction Noise Guideline" that this document is currently in draft form and has not been released as NSW Government Policy.
- 5. NPM must not use the construction noise policy to assess any component of the project. DECC does not accept the application of the construction noise policy at this mine site for a modification of consent. Any expansion of mining operations or ancillary components shall be included in the operational predicted noise levels in the NIA.
- 6. NPM predicts noise contributions in the NIA that are 3 dB(A) above the criteria at Lone Pine. Where the proponent predicts noise contributions more than 2 dB(A), but less than 5 dB(A), above the criteria, and all feasible and reasonable noise mitigations measures have been implemented, DECC expects the Department of Planning (DoP) will assign architectural treatment rights.
- 7. Where the noise levels are predicted to be more than 5 dB(A) above the criteria, and all feasible and reasonable noise mitigation measures have been implemented, DECC expects DoP to assign acquisition rights to the owner of the affected receiver.
- 8. DECC notes that increases are primarily experienced at the receivers "Milpose" and "Lone Pine" and can be mainly attributed to the addition of the secondary and tertiary crushers near the underground mine portal area. DECC would expect that where exceedences are

- observed, the proponent must consider all feasible and reasonable noise mitigation measures to help minimise any noise impacts. The proponent shall apply all feasible and reasonable noise mitigation (including barriers) to minimise noise impacts from secondary and tertiary crushers and include this commitment in the Statement of Commitments.
- DECC note in Table 1 in Section 1.4.2 Blasting and Vibration that the units are missing from the ANZEC referenced criteria for blasting and vibration. NPM must include the appropriate units in the EA.
- 10. NPM must include the recommendations specific to noise from Section 6.2 in the Statement of Commitments.

Response

As summarised in Section 5.2 and detailed in Appendix B of the EA, GHD conducted an assessment of noise and vibration for the proposed modifications in January 2009.

Below are additional responses to the issues raised:

- 1. NPM confirm that predictions under temperature inversion and 2m/s wind conditions were made for day and evening as well as night, in Table 4-1, 4-3, 4-4 and 4-5. NPM's consent conditions do not state the time periods when the meteorological effects should be assessed, however, Section 5.2 of the DECC Industrial Noise Policy states the following: "The 4-step procedure for assessing the amount by which noise is increased by inversion effects is summarised in Figure 5.1. Assessment of impacts is confined to the night noise assessment period (10 pm to 7 am), as this is the time likely to have the greatest impact—that is, when temperature inversions usually occur and disturbance to sleep is possible."
- 2. Acoustic modelling by GHD was undertaken using Computer Aided Noise Abatement (Cadna-A) software that calculates the time correction based on the formula: 10*log (operating time/15 minute period) e.g. a noise source with Sound Power Level 100 dB(A) operating for 7.5 minutes in 15 minute period will have correction of -3dB(A). Sound Power Levels for all noise sources modelled, including the Time Correction, are provided in Appendix B.
- 3. Figures are provided in Appendix B.
- 4. All references in the EA to DECC Construction Noise Guidelines were noted as "Draft for consultation".
- 5. The original NIA used the Draft Construction Noise Guideline because the Estcourt TSF construction is not part of the typical operational noise for NPM and therefore was not considered as operational noise. The NIA was reviewed against both the Draft Construction Noise Guideline and chapter 171 of the DECC Environmental Noise Control Manual (ENCM). This revealed that the construction noise criterion is identical, i.e. background + 5dB = 35 dB(A). Therefore the criteria would remain the same if the ENCM was used instead of the Draft Construction Noise Guideline as required by DECC.
- 6. This exceedence is predicted for cumulative impacts from mining operations and construction of Estcourt TSF. Predicted noise levels from the Project Site operations following the proposed modifications show that the license limit of 35 dB(A) would be met at all noise receivers and under all weather conditions. Since the Estcourt construction is a

temporary noise source and not part of typical mining operational noise, feasible and reasonable noise mitigation measures have been recommended in Section 5.2.5 of the EA to minimise construction noise under adverse weather conditions. These recommendations have been added to the Statement of Commitments as part of the Construction Environmental Management Plan for Estcourt TSF.

- 7. Predicted noise levels are not greater than 5 dB above the criteria. Predicted noise levels from the Project Site operations following the proposed modifications show that the license limit of 35 dB(A) would be met at all noise receivers and under all weather conditions. Since the Estcourt construction is a temporary noise source and not part of typical mining operational noise, feasible and reasonable noise mitigation measures have been recommended in Section 5.2.5 of the EA to minimise construction noise under adverse weather conditions. These recommendations have been added to the Statement of Commitments as part of the Construction Environmental Management Plan for Estcourt TSF.
- 8. A comparison of predicted noise results following the modifications to the existing and approved operations show increases in noise levels of up to 4 dB(A) at noise receivers, however predicted noise levels from the project site operations following the proposed modifications show that the license limit of 35 dB(A) should be met at all noise receivers and under all weather conditions. NPM confirm that the secondary and tertiary crushers will be installed within cladded buildings to help minimise noise impacts.
- 9. Noted, the appropriate units are airblast overpressure level [dB(Lin Peak)] and peak particle velocity (mm/s).
- Recommendations specific to noise from Section 5.2.5 of the EA have been added to the Statement of Commitments as part of the Construction Environmental Management Plan for Estcourt TSF.

It is considered that the issues raised by DECC in regard to noise have been addressed.

3.1.3 Aboriginal Cultural Heritage

Issue

DECC notes that the exhibited Environmental Assessment does not address the Aboriginal cultural heritage key issues raised in the DECC's adequacy review including:

- 1. It is recommended that draft SoC 10.5 be amended to ensure that in any revision of the AHMP full details of site NPM ST1 are provided including the fact that this site will not be managed by NPM for retention in situ but that it will be destroyed prior to commencement of mining activities. This should include the development and implementation of protocols for the mitigation of this loss to the local Aboriginal community including at a minimum archival recording of the site and notification of its destruction to DECC. Further the development and implementation of these protocols requires the involvement of the NPM Aboriginal Heritage Working Group.
- 2. It is recommended that draft SoC 10.6 to be amended to ensure NPM AHMP is revised to include specific protocols for, and reference to, the monitoring by local Wiradjuri representatives [as agreed by the NPM Aboriginal Heritage Working Group] of topsoil

material within Zone 1 (Goonumbla Creek). This is to ensure that in the event that Aboriginal objects are identified during this monitoring that the appropriate notification, assessment, recording and salvage of these occur.

Response

NPM is committed to maintain and protect Aboriginal cultural heritage during all phases of mine operation as outlined in the Aboriginal Heritage Management Plan (AHMP). The AHMP was prepared and implemented for the mine site by NPM in consultation with DECC and the local Wiradjuri people and approved by the Director General in May 2008.

- 1. Any revision of the AHMP will reference NPM ST1 and the Aboriginal Cultural Heritage Assessment that identified the artefact. The implementation of the AHMP provides adequate protocols to mitigate the loss of artefacts to the local Aboriginal community. Section 3 of the AHMP outlines the objectives to protect all Aboriginal cultural heritage on the site from damage or harm. Section 6 of the AHMP specifies a hierarchy of control measures to ensure the highest level of protection possible.
- 2. Section 7 of the AHMP defines the consultation protocol with local aboriginal groups including the establishment of a working group with representatives from both the Peak Hill Local Aboriginal Land Council (PHLALC) and Wiradjuri Council of Elders Cultural Heritage Committee (WCECHC). The AHMP also requires that these groups are "involved in Aboriginal cultural heritage assessment surveys and participation in any heritage site salvage and monitoring works that take place".

3.1.4 Groundwater

Issue

The draft statement of commitments 8.1 states that "to ensure the floor and walls of TSF 3 have a permeability satisfying the standard required by the DECC (i.e. $<1 \times 10^{-9}$ m/s)". However no details have been provided in the body of the report to indicate if TSF 3 will be lined to meet this standard. Clarification should be provided in the EA as to whether Northparkes Mines proposes to line the floor and walls of TSF 3 to meet this permeability.

Clarification should also be provided as to whether the material proposed to be used in construction of the floor and walls of TSF 3 meets this permeability.

Response

Previous permeability testing in, and adjacent to, the proposed Estcourt TSF shows a clay/saprolite layer 32 m to 36 m thick with a very low permeability equal to or below 1x10⁻¹⁰ m/s. Permeability testing adjacent to the approved Rosedale TSF site also shows very low permeability in the 28 m of upper clay and underlying saprolite equal to or below 1x10⁻⁷ m/s. Some parts of the regolith between 2 and 7.4 m show permeabilities between 2.5x10⁻¹¹ and 3.1x10⁻¹² m/s. Furthermore, the regolith provides a substantial medium for exchange processes and retardation of metals and other elements so the clays present will adsorb or modify any mobile metals in the tailings water. The permeability of the material underlying the proposed TSFs is discussed in detail in Section 5.6 and Appendix G of the EA.

The quality of any seepage generated by the TSF is not expected to contain significant levels of contaminants, nor have the capacity to mobilise contaminants in the tailings or through the underlying clay layers. This is based on previous studies on tailings characteristics and results from monitoring of the existing TSFs have not detected any adverse effects on the groundwater quality surrounding these structures.

Previous studies (EGI (1996) and CSIRO (1997a 1997b)) have shown that NPM tailings have a high acid neutralising capacity, resulting in negative net acid producing potential (NAPP). Both studies concluded that acid leachate conditions were unlikely to develop. As a consequence of negative NAPP results there is a low risk of mobilising contaminants bound in the tailings.

The existing structures were constructed using traditional techniques, with minimal surface preparation and no underdrainage. The proposed Estcourt TSF would be constructed with underdrainage to improve the capture of tailings water and further reduce the risk of infiltration to the underlying strata.

It is noted that, following impact assessments, other structures on site are approved to hold process water or tailings, including the E27 open cut pit and Estcourt clay borrow pit. The materials placed in the E27 pit are in direct contact with the water bearing structures with no capping or preparatory works to limit infiltration. Approval was granted by the DoP, DPI and DECC based on the impermeable nature of the rock and the benign characteristics of the tailings material.

The DECC permeability standard requiring less than $1x10^{-9}$ m/s relates to a leachate barrier 900 mm thick that is to be used where the natural geology of the site is insufficient to prevent the pollution of water by leachate. This requirement is outlined in the DECC Solid Waste Landfills Guideline (1996). Such barriers are to be designed to contain leachate for the period equivalent to the reactive life of the waste.

In summary, NPM considers that the groundwater resource underlying the proposed Estcourt TSF and Rosedale TSF will be adequately protected for the following reasons:

- The clay/saprolite material underlying the proposed Estcourt TSF and the Rosedale TSF is very deep (28-36 m) and has a very low permeability varying from 1x10⁻⁷ m/s to 1x10⁻¹⁰ m/s;
- The presence of low permeability clays been predicted to result in the attenuation of potential metal contaminants during transport;
- There is a low risk that contaminants would be mobilised in the tailings as a result of negative NAPP values for NPM tailings; and
- Existing structures (process water and tailings) on site have not resulted in the contamination of known groundwater resources.

Consequently, for Statement of Commitment 8.1 to specify "Ensure the floor and walls of TSF 3 and Estcourt TSF have a permeability sufficient to protect the groundwater resource" is deemed adequate.

Issue

The EA should also provided details of the number and locations of proposed groundwater monitoring bores surrounding TSF 3 to detect any leakage and further details of the proposed monitoring program.

Response

The number and locations of proposed groundwater monitoring bores surrounding TSF 3 and the water monitoring program are detailed in NPM's Water Management Plan (WMP) that was prepared in consultation with DECC in August 2007. Extracts of the WMP showing monitoring locations, parameters and frequencies are provided in Appendix C.

3.2 Department of Water and Energy

3.2.1 Water Supply Security and Water Licensing

Issues

The DWE submission provided the following key points:

- External water sourced from groundwater to supply NPM is likely to be limited by the existing infrastructure to supply the required volumes. This is yet to be adequately understood as additional bores are yet to be connected and operated within the network. In addition NPM's current groundwater entitlement may be further restricted by the implementation of a Macro Water Sharing Plan in 2010.
- External water sourced from surface water to supply NPM is limited by the available water determinations provided under the Water Sharing Plan for the Lachlan Regulated River Water Source. The AWDs in recent years for General Security Licences have been 0-14% of share entitlement.
- It will be critical for NPM to actively monitor the current and future water supply limitations and prepare alternate strategies to ensure a secure water supply is available. DWE can provide advice on limitations relevant to policies and licences under the Water Act 1912 and Water Management Act 2000.

Response

NPM holds sufficient water licences for the proposed modification. NPM acknowledges that access to its full entitlement of water is dependent on the available water determinations (AWD) for general and high security water in the relevant water season. Conditions in NPM's Groundwater Licences state:

"The Department of Water and Energy shall have the right during the currency of this license to vary at any time the volumetric allocation, or the rate at which this allocation is taken"

NPM recognises that the general security river water entitlements are not secure and the allocation could be below the full entitlement as it has been 0% for the last several years. Should the determinations continue with a low or nil allocation, groundwater from PSC and NPM owned entitlements is sufficient to meet the volume of water from external sources (total of 4,550 ML) as shown in Table 2.

Table 2 Anticipated water volumes

Source	Entitlement (ML)	Reliability	Expected Vol	%	
PSC	1900	Н	1900	100	
Bores	2650	M-H	2650	100	
Lachlan River	2977	L	0	0	
Total	7527	-	4550	60	

Discussions were held between NPM and PSC regarding the capacity of the existing infrastructure to support an increase in water supply to site. NPM acknowledges that additional upgrade works may be required and the scope of upgrades would be addressed in consultation with PSC as the need for increased water supply arises.

A key component of NPM's water strategy is focused on securing water supply to ensure continued operations through all climatic conditions. To achieve this NPM will:

- Continue to pursue a long-term strategy to convert General Security river water entitlements to High Security under existing agreements with the NSW Government;
- Improve water efficiency at the site with particular focus on reducing water loss during tailings disposal and water storage;
- Investigate and source sustainable water supply options; and
- Engage and maintain relationships with key government and community stakeholders.

NPM's Water Strategy is annually reviewed by the management team and actively progressed by the site's water team. As part of this process NPM actively monitor the current and future water supply limitations and prepare alternate strategies to ensure water supply is secured on an annual basis.

Issue

General Security and high security surface water is available under the access licences that NPM hold or can be obtained via an allocation assignment from another licence holder subject to the AWD. However, it should be noted that Parkes Shire Council is not licensed to supply surface water to NPM under its Local Water Utility Access Licence. The LWUAL can only be used to supply town water within the Parkes municipality, hence Parkes Shire Council can only supply groundwater to NPM from its Lachlan Valley borefield.

Response

NPM acknowledge that the PSC LWUAL relates only to the supply of town water within the Parkes municipality.

Issue

The bores in Parkes Shire Council's Lachlan Valley bore field are licensed for the purpose of mining with an annual extraction entitlement. Any agreement for Parkes Shire Council to supply groundwater to NPM from this borefield for the purpose of mining is currently not restricted and is subject to an arrangement between the parties. DWE would recommend confirmation in

writing of any agreement to increase the supply above the current 1900 ML supplied annually to the mine via this source.

Response

NPM are continuing negotiations with PSC to formalise an in-principle water supply agreement in accordance with Statement of Commitments 6.5 and 6.8.

3.2.2 Water Management Plan

Issues

DWE recommended the following statement of commitment:

"The proponent shall review the Site Water Management Plan in consultation with the DWE".

Response

NPM supports this recommendation with the following addition:

"The proponent shall review the Site Water Management Plan in consultation with the DWE and DECC prior to commencement of the proposed works".

3.2.3 Groundwater

Issues

DWE recommended the following statement of commitment:

"The proponent shall demonstrate protection of the groundwater resource under the Estcourt TSF by achieving a permeability rating of 1×10^{-9} m/s".

Response

NPM has addressed this recommendation as per response provided in Section 3.1.4.

3.2.4 Watercourse Crossing

Issues

DWE recommended the following statement of commitment:

"The proponent shall prepare final design drawings, and bed and bank stabilisation measures for the road crossing of Goonumbla Creek in consultation with the DWE. This information is to be in accordance with DWE Guidelines "Guidelines for Controlled Activities – Watercourse Crossings and In-stream Works".

Response

NPM note that designs for the secondary and tertiary crushers have been developed in line with requirements of the DWE "Guidelines for Controlled Activities – Watercourse Crossings and Instream Works".

NPM supports the intent of this recommendation with the following amendment to draft Statement of Commitments (SoC) 6.4C:

"Prepare final design drawings for the secondary and tertiary crushers in accordance with DWE Guidelines for Controlled Activities - Watercourse Crossings and Instream Works"

3.3 **Department of Primary Industries**

3.3.1 Mining Rehabilitation and Environmental Management Process

Issue

The Department of Primary Industries (DPI) advised that if the modification is to be approved, North Mining Limited would be required to submit and have approved a Mining Operations Plan (MOP) prepared in accordance with DPI's Mining Rehabilitation and Environmental Management Process. The MOP will be required to refine strategies outlined in the EA to ensure that the stated final landform and landuse objectives can be achieved. Progress against the MOP will be required to be reported in the Annual Environmental Management Report.

Response

A revised Mining Operations Plan will be submitted to the DPI in accordance with DPI's Mining Rehabilitation and Environmental Management Process prior to commencement of modification works. Future NPM AEMR's will include relevant information relating to the proposed modifications.

3.4 **Department of Planning**

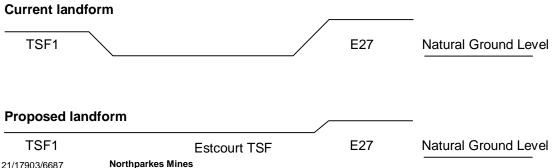
3.4.1 **Estcourt Tailings Storage Facility**

The proponent is to provide further information on how the Estcourt TSF will blend into existing landforms.

Response

The Estcourt TSF will involve the construction of northern, eastern and southern embankments (Figure 6 in the EA) at a downslope gradient of 1:3 and a final height of approximately 25 m above the natural ground level. The downstream faces of the embankments will have uniform slopes without benches, the tailings surface stabilised and the area covered with suitable waste rock and soil materials.

As a result the Estcourt TSF will link the existing TSF 1 with the E27 open cut pit and associated waste dumps (currently used for in-pit tailings) and appear as one continuous low lying final landform as shown in the sketch below.



The existing buffer zone of native vegetation between 2 and 5 m in height would remain between the TSFs (1, 2 and Estcourt) and Adavale Lane. The visual impacts are considered minimal and would further reduce as the tree plantings mature. Section 5.10 of the EA discusses visibility issues associated with the mine infrastructure and landforms.

Rehabilitation of the Estcourt TSF site would be undertaken in accordance with the Landscape Management Plan (LMP) and with commitments and strategies outlined in the Mining Operations Plan, as required by section 3.3.1 above. The preferred post closure land use option that has been identified for the TSFs as detailed in the LMP is Nature Reserve consisting of native habitat to promote biodiversity.

3.5 Community Member

3.5.1 Taweni Road sealing

Issue

What (if any) steps will be taken to ensure that the 5.7 kilometres section of unsealed Taweni Road needs to be sealed.

Response

Taweni Road is a public road under the jurisdiction of the PSC and requests for sealing of this road should be directed towards the PSC. Discussions held with PSC indicated that sealing of ~1 – 1.5 km of Taweni Road will be undertaken in 2009 and the remaining section of unsealed road incorporated into PSC's annual program (pers. comm. Steve Barry, Director of Operations, PSC).

NPM acknowledges that some employees travel to NPM via Taweni Road. NPM continues to encourage its contractors to access site via the Newell Highway and Bogan Road as required under Schedule 3, Condition 5 of DC 06-0026:

"The Proponent shall use its best endeavours to ensure that as much mine-related traffic as possible, particularly heavy vehicles, uses the Newell Highway and Bogan Road to get to and from the mine."

3.6 Parkes Shire Council

3.6.1 Traffic, Road and Community needs

Issue

In relation to 5.8.4 Modification Impact Assessment states the existing formation and pavement condition of the public roads can safely accommodate the proposed construction traffic, and Section 5.8.5 Mitigation Measures and Safeguards states that the road system is of capacity and design to accommodate the light and heavy vehicle movements of the project. Council indicates that this is not the case as identified in the Transport and Urban Planning Report

August 2006 Section 5.3 and Appendix 2 Pavement Assessment. The need for ongoing maintenance and pavement rehabilitation as identified in the previous reports should be identified, or the process previously undertaken repeated, in the modification's environmental assessment.

Response

Discussions were held between NPM and PSC in regards to Council's comments on road maintenance and upgrade contributions. NPM have acknowledged the need for ongoing maintenance and pavement rehabilitation of the public road, Bogan Road via correspondence to the Council dated 1 July 2009 (Appendix A).

Should approval be granted for the proposed modifications, NPM request that Department of Planning extend existing conditions of approval for road upgrade and maintenance contributions to 2025 as per Schedule 3, Clause 2 and 3 of DC 06-0026 outlined below:

Road Upgrade Contribution

- 2. The Proponent shall pay council 80% of the costs of:
 - (a) resealing Bogan Road between the Mine Access Road (Northparkes Lane) and the Newell Highway; and
 - (b) reconstructing Bogan Road between the Mine Access Road (Northparkes Lane) and Goonumbla rail siding, within 30 days of receiving notification from the Council of these costs.

Road Maintenance Contributions

- 3. The Proponent shall pay the Council:
 - (a) \$52,267 on 1 July 2007; and
 - (b) An equivalent amount, indexed in accordance with the RTA's Road Maintenance index, on the anniversary of that date each year until and including 2018 2025, to maintain roads used by mine related traffic.

4. Statement of commitments

This section provides the final statement of commitments (SoC) that reflect the requirements of Part 3A of the EP&A Act and presents a compilation of the actions and initiatives the Proponent commits to implement if the proposed modification receives planning approval. The commitments are designed to effectively manage, mitigate, guide and monitor the project through its construction and operation.

Table 3 presents the original DC 06-0026 SoC and any additions or alterations proposed by the Proponent.

Table 3 Draft Statement of Commitments

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
1. PROJECT COMPON	ENTS AN	D ENVIRONMENTAL MANAGEMENT		
Continue operation of existing activities	1.1	Undertake all activities as described in Part B (and summarised on Figure F1) of E48 EA.	Ongoing for life of mine	Undertake all activities as described in Part B (and summarised on Figure F1) of E48 EA and Section 2 of Section 75W EA.
Construct and operate the E48 mine and related components	1.2	Undertake all activities as described in Part C (and summarised on Figure F1) of E48 EA.	Ongoing for life of mine	Undertake all activities as described in Part C (and summarised on Figure F1) of E48 EA and Section 3 of Section 75W EA.
Comply with all conditional	1.3	Comply with all commitments recorded in Table F1 of E48 EA.	Continuous and as required.	Comply with all commitments recorded in this table.
requirements in all approvals, licences and leases.	1.4	Comply with all conditional requirements included in the: Planning Approval; Environment Protection Licence; Mining Leases; and Any other approvals.	Continuous and as required.	No amendment proposed.
Conduct all operations in accordance with all relevant documentation.	1.5	Undertake all activities in accordance with any current Mining Operations Plan, environmental procedures, safety management plan or site-specific documentation.	Continuous and as required.	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification				
2. OPERATING HOUR	2. OPERATING HOURS							
Construction and operating hours are managed in	2.1	Blasting (underground): 24 hours per day, 7 days per week.	Continuous during project construction and operations	No amendment proposed.				
accordance with the approved planning approval conditions.	2.2	Blasting (open cut): 9.00 am to 5.00 pm, Monday to Saturday		No amendment proposed.				
	2.3	Underground Mine Development: 24 hours per day, 7 days per week.		No amendment proposed.				
	2.4	Underground Mining: 24 hours per day, 7 days per week		No amendment proposed.				
	2.5	Tailings Storage Facility Construction: 24 hours per day, 7 days per week		No amendment proposed.				
	2.6	Maintenance: 24 hours per day, 7 days per week		No amendment proposed.				
	2.7	Processing: 24 hours per day, 7 days per week		No amendment proposed.				
	2.8	 Product Transport Trucks: 24 hours per day, 7 days per week (but timed to avoid school buses) 		No amendment proposed.				
		Trains: 24 hours per day, 7 days per week		No amendment proposed.				

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
3. NOISE AND VIBRAT	ΓΙΟΝ			
Noise impacts attributable to the Project are minimised	3.1	Regularly service major earthmoving equipment to ensure equipment sound power levels are within nominated range.	Standard servicing schedules	No amendment proposed
at all surrounding residences and comply with DEC criteria.	3.2	Avoid unnecessary clustering of earthmoving equipment.	During all above ground construction activities.	No amendment proposed
	3.3	Minimise TSF 3 construction at night during gentle winds towards "Avondale" and temperature inversions.	During adverse weather conditions when "Avondale" residence is occupied.	No amendment proposed
	3.3A	Additional Action	During adverse weather conditions at 'Lone Pine'.	Minimise Estcourt TSF construction at night-time during noise enhancing conditions such as gentle wind towards 'Lone Pine' and temperature inversions
	3.3B	Additional Action	Prior to Estcourt TSF construction	Mitigation measures and safeguards recommended in section 5.2.5 of the EA will be incorporated in the CEMP for the Estcourt TSF (refer to Action 9.20)
All open cut blasts meet DEC airblast overpressure and	3.4	Ensure all blasting contractors adopt appropriate blasting controls to minimise air blast overpressure and vibration.	All open cut blasts	No amendment proposed
ground vibration criteria at all surrounding residences.	3.5	Monitor open cut blasts at 'Hubberstone'.	All open cut blasts	No amendment proposed

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification			
4. SOILS AND LAND CAPABILITY							
Maintain soil value for rehabilitation and	4.1	Minimise handling of soils.	During soil stripping operations	No amendment proposed.			
minimise soil loss through erosion.	4.2	Select soil stockpile locations to minimise subsequent movement.	During soil stripping operations	No amendment proposed.			
	4.3	Minimise handling of soils during periods of high soil moisture.	During soil stripping operations	No amendment proposed.			
	4.4	Topsoil stockpiles will be created between 1m and 2m in height while subsoil stockpiles will not normally exceed 3m in height.	Continuous	No amendment proposed.			
	4.5	Prevent mobile equipment, including light vehicles, from accessing soil stockpiles once created.	Continuous	No amendment proposed.			
	4.6	Install well maintained upslope water diversion banks or swales where overland surface water flow has the potential to impact on the soil stockpiles.	Continuous	No amendment proposed.			
	4.7	Implement downslope sedimentation controls as required.	Until the surface of the soil stockpile is stabilised	No amendment proposed.			
	4.8	Sow surfaces of soil stockpiles with appropriate groundcover.	As soon as practicable following construction	No amendment proposed.			

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
	4.9	Take reasonable measures to protect natural or stockpiled soils from any spills or contaminating activities.	Continuous	No amendment proposed.
	4.10	Ensure Soil Mapping Unit SMU2 subsoils >70cm in depth are mixed with overburden before being stockpiled.	During soil stripping campaigns.	No amendment proposed.
5. AIR QUALITY				
Undertake site activities without exceeding DEC air	5.1	Avoid disturbing areas outside approved footprints of disturbance (including tracks).	During construction periods	No amendment proposed.
quality criteria or goals.	5.2	Keep unsealed roads damp when in use by off-road trucks.	As required	No amendment proposed.
	5.3	Tailings storage facilities operated to minimise dust and capped as early as practicable.	Continuous	No amendment proposed.
	5.4	Erect and maintain partial cover on above ground conveyors.	Continuous during operations	No amendment proposed.
	5.5	Progressively rehabilitate areas no longer required for operational purposes.	As required	No amendment proposed.
	5.6	Prepare and implement a dust control strategy.	As required	No amendment proposed.
6. SURFACE WATER	AND WAT	ER SUPPLIES		
Ensure the surface infrastructure related to the E48 project and	6.1	Construct appropriate catch drains and diversion banks around the margins of TSF 3 (Cell A).	Prior to construction of TSF 3 (Cell A)	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
modification works is incorporated into a comprehensive	6.2	Construct necessary sediment ponds to contain sediment-laden water on site.	Prior to construction of TSF 3 (Cell A)	No amendment proposed.
surface water management system compatible with the existing surface water	6.3	Maintain the existing drainage systems for Farm Dams south of the mine access road.	Until TSF 3 (Cell B) works commence	No amendment proposed.
management system.	6.4	Construct catch drains and diversion banks around the margins of TSF 3 (Cell B).	Prior to construction of TSF 3 (Cell B)	No amendment proposed.
	6.4A	Additional Action	Prior to construction of Estcourt TSF	Construct catch drains and diversion banks around the margins of Estcourt TSF.
	6.4B	Additional Action	Prior to construction of Estcourt TSF	Review the Site Water Management Plan in consultation with DWE and DECC
	6.4C	Additional Action	Prior to commissioning of secondary and tertiary crushers.	Prepare final design drawings for the secondary and tertiary crushers in accordance with DWE Guidelines for Controlled Activities – Watercourse Crossings and Instream Works
Ensure that there is a secure water supply to the E48 Project	6.5	To work with the Parkes Shire Council and other relevant authorities to put in place a formal agreement relating to various matters associated with the volumes and quality of water required to support the NPM operations, the future infrastructure requirements and the use of water entitlements post mine.	Commencing immediately with a view to completion by 2006 year end.	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
Ensure no 'dirty' or 'contaminated' water leaves the Project Site as a result of the E48 Project surface disturbance.	6.6	Vegetate the embankments of TSF 3 to provide erosion protection, with consideration to be given to subsequent afforestation of these areas or rock armour the embankments to minimise erosion.	On completion of each TSF 3 embankment construction	Stabilise the embankments of TSF 3 and Estcourt TSF to provide protection using vegetation or rock armour to minimise erosion.
	6.7	Contain tailings supernatant and accumulated rainfall within the processing plant water circuit for extreme rainfall events up to 1 in 100 year 72 hour storm or sustained wet periods.	Continuous	No amendment proposed.
	6.8	Continue to negotiate and reach agreement with Parkes Shire Council regarding the supply of water during the operational phase of the NPM operations.	As required	No amendment proposed.
	6.9	Undertake activities at the premises in a manner that does not cause or permit water pollution as defined in the <i>Protection of the Environment Operations Act 1997.</i>	Continuous	No amendment proposed.
Ensure the NPM operations water usage from off-site sources do not cause unacceptable short falls for other users,	6.10	Continue to negotiate and reach agreement with Parkes Shire Council regarding the supply of water during the operational phase of the NPM operations	As required	No amendment proposed.
7. TRAFFIC				
All motorists travel	7.1	Ensure all employees and contractors are	Continuous	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
safely to and from the NPM operations.		regularly informed about the safe driving requirements to and from the NPM operations.		
	7.2	Transport all oversize loads with all necessary permits.	As required	No amendment proposed.
Interaction between the road train and school bus is avoided.	7.3	Avoid despatch of road train (with concentrate) between 7:30 am/9:30 am and 3:00 pm/5:00 pm.	School days	No amendment proposed.
The standard of road pavement is maintained at an appropriate level for the type and volume of traffic.	7.4	Continue to work collaboratively with the Parkes Shire Council on road pavement and traffic issues. An ex gracia annual road maintenance contribution of \$50,000, index linked will be made in order to help maintain Bogan Road in good repair.	Annually or as agreed	No amendment proposed.
8. GROUNDWATER				
Protect the groundwater resources from contamination.	8.1	Ensure the floor and walls of TSF 3 have a permeability satisfying the standard required by the DEC (i.e. <1 x 10 ⁻⁹ m/s).	During construction program	Ensure the floor and walls of TSF 3 and Estcourt TSF have a permeability sufficient to protect the groundwater resource.
	8.2	Conduct testing to ensure required permeability levels are achieved.	During construction program	Carry out inspections by a suitably qualified engineer of the floors and walls to document and ensure the adequacy of as built conditions.
	8.3	Ensure all programs for managing hydrocarbons and chemicals are fully implemented.	Ongoing	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
	8.4	Prepare a Groundwater Management Plan for the entire project site in consultation with and to the satisfaction of the Department of Water and Energy.	Within 6 months of the grant of planning approval.	No amendment proposed.
	8.5	Additional Action	Prior to commissioning of Estcourt TSF.	Review groundwater monitoring bores around Estcourt TSF and install additional bores as required.
9. ECOLOGY MANAG	EMENT A	ND BIODIVERSITY OFFSET STRATEGY		
Minimise long term impact on flora and fauna on and around	9.1	Clearly identify the boundaries of all construction areas. No clearing will occur outside these boundaries.	Prior to clearing	No amendment proposed.
the Project Site.	9.2	Where practicable, clearing of mature trees within woodland communities will be timed to avoid fauna breeding seasons. In any event, a pre-clearing survey will be undertaken prior to all operations involving the clearing of mature trees. If necessary, individual fauna species will be relocated.	During clearing	Where practicable, clearing within woodland communities will be timed to avoid more sensitive fauna breeding, torpor and dispersal periods of the year Where it is not practicable to avoid clearing during these sensitive periods, any fauna species identified during the pre-clearing survey will be relocated.
	9.3	Implement a feral baiting and/ or trapping program, consistent with the existing feral animal control strategy	Prior to clearing	No amendment proposed.
	9.4	Spread all cleared native vegetation in revegetation areas.	Following clearing if areas available, otherwise the revegetation area available.	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
	9.5	Re-site hollow-bearing trees removed where practicable.	During clearing	No amendment proposed.
	9.6	Continue the existing feral animal management program.	Continuous	No amendment proposed.
	9.7	Inspect TSF 3 and the Rosedale Borrow Pit daily for fauna during the course of daily maintenance and operation inspections.	Daily	No amendment proposed.
	9.8	Progressive and final rehabilitation will occur across the Project Site to recreate a final land use of agriculture and native vegetation.	As required	No amendment proposed.
	9.9	Continue current programs of habitat enhancement and revegetation across the Proponent's land.	Ongoing	No amendment proposed.
	9.10	Review the revegetation program to ensure it remains relevant.	Annually	No amendment proposed.
	9.11	Ensure all native trees and shrubs planted on the Project Site are local endemic species.	Ongoing	No amendment proposed.
	9.12	Prepare and implement a detailed revegetation plan for the Limestone National Forest offset area.	Within 6 months of the grant of a planning approval.	No amendment proposed.
	9.13	Incorporate in the Mine Closure Plan details of the mechanisms to achieve long term security of both remnant and planted native vegetation across the Proponent's	No later than 3 years prior to the scheduled closure of	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
		landholding.	the mine.	
	9.14	Undertake pre-clearing surveys to target Threatened species known to potentially occur in the vicinity of the Project Site. Undertake appropriate measures for the relevant species in the event any of the targeted species are located in an area to be cleared.	Prior to each tree clearing campaign.	No amendment proposed.
	9.15	Ensure that during all operations involving the clearing of mature trees, an ecologist or appropriately trained personnel is present to check any tree felled for wildlife inhabiting these trees.	During each tree felling campaign.	No amendment proposed.
	9.16	Undertake a small scale vegetation survey across the 6,000 ha of surrounding properties owned by the Proponent to provide guidance on a suite of species appropriate for rehabilitation.	Within 2 years of E48 approval.	No amendment proposed.
	9.17	Swap an area of 45 ha (as identified in Figure F1 of the E48 Environmental Assessment) in agreement with the DPI Forests for 24 ha located within the E48 subsidence zone.		No amendment proposed.
	9.18	Prepare, seed, plant, monitor and maintain (including weed control) in order to revegetate the offset area.	Ongoing.	No amendment proposed.
	9.19	Ensure revegetation of offset area involves the use of local native species, sourced locally.	Ongoing.	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
10. INDIGENOUS HERI	9.20 TAGE	Additional action	Prior to Estcourt TSF construction	Prepare and implement a Construction Environmental Management Plan (CEMP) for Estcourt TSF construction.
Employees who are sensitive to, and respectful of, possible Aboriginal heritage on the Project Site.	10.1	Inform relevant staff and contractors of their responsibilities under the National Parks and Wildlife Act 1974.	During site induction	No amendment proposed.

Desired Outcome		Action				Timing		ons or alter		
Appropriate salvage or protection provided for archaeological sensitive sites.	10.2	Implement the following proposed actions:			Salvage prior to surface disturbance in that area. Protect continually.	Implement the following proposed actions:				
		Site Id	Туре	Impact	Proposed Action		Site Id	Туре	Impact	Proposed Action
		2	Campsite	None	Protect		2	Campsite	None	Protect
		8	Campsite	Farming	Salvage		8	Campsite	Farming	Salvage
		9	Campsite	Farming	Salvage		9	Campsite	Farming	Salvage
		10	Campsite	Farming	Salvage		10	Campsite	Farming	Salvage
		11	Campsite	Farming	Salvage		11	Campsite	Farming	Salvage
		12	Campsite	Farming	Salvage		12	Campsite	Farming	Salvage
		P1	Scarred Tree?	E48 Project	Salvage		P1	Scarred Tree?	E48 Project	Salvage
		P2	Isolated Find	E48 Project	Salvage		P2	Isolated Find	E48 Project	Salvage
		P3	Isolated Find	E48 Project	Salvage		P3	Isolated Find	E48 Project	Salvage
		P4	Isolated Find	E48 Project	Salvage		P4	Isolated Find	E48 Project	Salvage
		A1	Campsite	Farming	Salvage		A1	Campsite	Farming	Salvage
		A2	Isolated Find	E48 Project	Salvage		A2	Isolated Find	E48 Project	Salvage
		A3	Isolated Find	E48 Project	Salvage		A3	Isolated Find	E48 Project	Salvage
							NPM- ST1	Scarred Tree	Estcourt TSF	Record and prepare cast of tree
	10.3	artefact salvage with the Council underta	se sites that reserved project that we Peak Hill Loc. The salvage ken by a qual mbers of the	vered as payill be undecal Aborigin work will be ified archa	art of a ertaken nal Land be eologist	When programmed	No am	endment pro	pposed.	
	10.3A	Additior	nal Action			Prior to Estcourt TSF Construction	the ide	e AHMP to in entified Abori e implement ires.	ginal site N	IPM-ST1

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
Minimise disturbance to potential unidentified sites.	10.4	Conduct a program of test pitting in Zone 1 (Goonumbla Creek).	Prior to any disturbance in Zone 1.	No amendment proposed.
	10.5	Additional Action	During topsoil removal at location of surface crushers	Involve local Wiradjuri representative to monitor removal of topsoil material within Zone 1 (Goonumbla Creek).
11. EUROPEAN HERIT	AGE			
Ensure appropriate records of the heritage buildings are made prior to their demolition.	11.1	 A site plan of the heritage area be recorded to include: detailed recording of historic landscaping features; and location of structures within the Project Site and in relation to one another 	Prior to disturbance	No amendment proposed.
	11.2	Record elevations of: Blacksmith's shed; and Workman's Hut.	Prior to disturbance	No amendment proposed.
	11.3	Compilation of the above details with the documentation and recordings provided by Jolly (2005).	Prior to disturbance	No amendment proposed.

Desired Outcome	Action		Timing	Additions or alterations arising from the Section 75W Modification
12. VISUAL				
Limit adverse visual impacts	12.1	Progressively revegetate all project- related components.	As areas are finalised	No amendment proposed.
	12.2	Maintain site in clean and tidy manner.	Continuous	No amendment proposed.
13. ENVIRONMENTAL	_ MONITOR	RING		
Identification of the level of impact(s) (if any) the NPM operations is having	13.1	Monitor noise at the principal residence (if occupied) 'Hubberstone', "Avondale", 'Milpose' and "Lone Pine."	Within 2 weeks of the start of each TSF construction program	No amendment proposed.
on the surrounding environment.	13.2	Monitor blasts at 'Hubberstone'.	Every blast in E22 open cut	No amendment proposed.
	13.3	Monitor PM ₁₀ levels at 'Milpose' and 'Hubberstone'.	6 day cycle	No amendment proposed.
	13.4	Monitor deposited dust levels at 11 sites.	Monthly	No amendment proposed.
	13.5	Monitor surface water quality at existing sites and all new structures associated with E48 Project activities.	Separate schedule	Monitor surface water quality at existing sites and all new structures associated with E48 Project activities and Estcourt TSF.
	13.6	Monitor groundwater levels and quality in monitoring bore network.	Separate schedule	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
	13.7	Monitor pH / EC of water pumped from E48 mine.	Daily	No amendment proposed.
	13.8	Review monitoring parameters and frequency to ensure meaningful data is collected.	Annually	No amendment proposed.
14. COMMUNITY RELA	TIONSHII	PS		
Minimise impact on surrounding land users.	14.1	Maintain a substantial buffer zone (beyond the Project Site) surrounding the current and proposed mining operations.	Continuous while surface operations take place.	No amendment proposed.
Keep surrounding land owners and land users informed about site activities.	14.2	Continue current practice of regular meetings and one-to-one liaison.	Ongoing	No amendment proposed.
Continue to enhance community communication.	14.3	Create a community consultative committee comprising mine management and local community representatives in order to enhance feedback between the mine and the local community on matters of community significance.		No amendment proposed.
15. DOCUMENTATION				
A systematic set of documents are in place to guide the planning and	15.1	Incorporate the E48 Project management measures into the existing EMS.	Prior to commencement of the E48 Project and continuous review	No amendment proposed.

Desired Outcome		Action	Timing	Additions or alterations arising from the Section 75W Modification
implementation of all environmental management strategies.	15.2	Update the Mining Operations Plan for the mine site.	Prior to commencement of E48 and modification works	Amendment to timing to include Section 75W modification
	15.3	Incorporate relevant data/information regarding the E48 Project in Annual Environmental Management Reports.	Annually	No amendment proposed.
16. MINE DECOMMISS	IONING			
Decommission the mine and related infrastructure with least impact on the local environment and Parkes and district community.	16.1	Undertake all mine decommissioning in accordance with an approved Mine Closure Plan	Complete the mine closure plan no later than 3 years prior to scheduled closure of the mine	No amendment proposed.
	16.2	Prepare a memorandum of understanding with Parkes Shire Council regarding water allocations currently used by the NPM operations.	As required but prior to mine closure	No amendment proposed.
	16.3	Negotiate with Parkes Shire Council regarding programs for retraining personnel and social impacts following mine closure.	Prior to mine closure	No amendment proposed.

Appendix A

Submission letters

Your reference Our reference Contact : 06_0026 MOD1

: LIC07/80-04 DOC09/16186 : Kharl Turnbull (02) 6883 5333

Mr Howard Reed A/Manager- Major Development Assessment NSW Department of Planning GPO Box 39 SYDNEY NSW 2001

Attention: Haley Rich

Dear Mr Reed,

I refer to the Department of Planning's (DoP) letter dated 2 April 2009 regarding the North Parkes Mine proposed modification to the E48 Approval (Department of Planning Reference 06_0026 MOD 1) and the Draft Environmental Assessment (EA) submitted in support of the proposal which was received by the Department of Environment and Climate Change (the Department) on 3 April 2009.

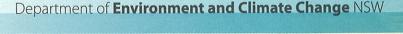
The proponent has advised that no comments raised by the Department's earlier letter dated 2 March 2009 on the original draft EA have been incorporated into the above document. The proponent has advised that this decision was based on advice from DoP. Consequently, DECC still considers that draft EA for the proposed development is inadequate as discussed in our letter to DoP dated 2 March 2009.

If you have any further enquiries regarding the above advice please contact Kharl Turnbull at the Dubbo Office of DECC by telephoning (02) 6883 5333.

22-4-09

Carmen Dwyer
Head Pesticides, Operations and Planning Dubbo
Environment Protection and Regulation

PO Box 2111, Dubbo NSW 2830 48- 52 Wingewarra Street, Dubbo NSW 2830 Tel: (02) 6883 5333 Fax: (02) 6884 8675 ABN 30 841 387 271 www.environment.nsw.gov.au



Your reference Our reference Contact : 06_0026 MOD1

: LIC07/80-04 DOC09/6218 : Kharl Turnbull (02) 6883 5333



Mr Howard Reed NSW Department of Planning GPO Box 39 SYDNEY NSW 2001

Attention: Kane Winwood

Dear Mr Reed.

I refer to the Department of Planning's letter dated 12 February 2009 regarding the North Parkes Mine proposed modification to the E48 Approval (Department of Planning Reference 06_0026 MOD 1) and the Draft Environmental Assessment (EA) submitted in support of the proposal which was received by the Department of Environment and Climate Change (DECC) on 17 February 2009.

Please note DECC has responsibilities under the Protection of the Environment Operations Act 1997, National Parks and Wildlife Act 1974 and the Threatened Species Conservation Act 1995.

DECC believes that the draft EA is generally adequate in the matters of air, Aboriginal cultural heritage, water, soils, and erosion and sediment control and that generally the environmental assessment has been prepared in accordance with the Director-General's requirements.

However, DECC believes that the draft EA for the proposed development is inadequate in the areas of biodiversity and noise. These matters are discussed separately in Attachment A.

If you have any further enquiries regarding the above advice please contact Kharl Turnbull at the Dubbo Office of DECC by telephoning (02) 6883 5333.

5/1

CARMEN DWYER
Head Pesticides, Operations and Planning Dubbo
Environment Protection and Regulation Group

2-3-09

ATTACHMENT A

The Department of Environment and Conservation NSW is now known as the Department of Environment and Climate Change NSW

PO Box 2111 DUBBO NSW 2830 48-52 Wingewarra Street Dubbo NSW Tel: (02) 6883 5333 Fax: (02) 6884 8675 ABN 30 841 387 271 www.environment.nsw.gov.au

Department of **Environment and Climate Change NSW**



BIODIVERSITY

DECC notes that in Table 9 of Section 7.4.3 of the draft Environmental Assessment (EA), it is stated that the DECC Offsetting guidelines require a 1:1 offset ratio. This is an incorrect interpretation of the Offsetting guidelines. Like for Like in this sense is used to describe the targeting of offsets to what has been lost in terms of status, type, etc as described below.

Biodiversity impacts must be offset on the basis of a like-for-like or better conservation outcome. Offsets should be targeted according to biodiversity priorities in the area, based on the conservation status of the ecological community, the presence of threatened species or their habitat, connectivity and the potential to enhance condition by management actions and the removal of threats.

Only ecological communities that are equal to or greater in conservation status to the type of ecological community lost can be used for offsets. It is also important to note that one type of environmental benefit cannot be traded for another: for example, biodiversity offsets may also result in improvements in water quality or salinity but these benefits do not reduce the biodiversity offset requirements.

DECC notes NPM's commitment to provide an offset of 65ha (at a ratio of 4.5:1) or to agree to an alternative arrangement that would ensure an equivalent, or better, biodiversity conservation outcome.

Based on the information presented, DECC does not consider that the 65 ha offset proposal can currently be regarded as an improve or maintain outcome for biodiversity for the following reasons:

- It is less than that calculated to be required by the scenario tested by DECC and NPM using the Biobanking calculator.
- It does not guarantee a satisfactory outcome for the resident group of grey-crowned babblers.
- It does not ensure the loss of 45 hollow-bearing trees is adequately catered for.

DECC advises therefore that it would be seeking an offset that is larger is size, contains a large number of hollow bearing trees, is of a suitable vegetation type and contains a population of greycrowned babblers.

Further consideration should also be given to immediate onsite conservation measures to protect the glider population in the northern portion of the NPM site. Additional surveys would be warranted to more clearly define the species present and the species use of the site.

Recommendation: A biodiversity offset strategy be developed in accordance with the issues highlighted above.

<u>NOISE</u>

DECC requests that the following additional information/clarifications be provided in the Environmental Assessment prior to public exhibition.

NPM must provide clarification that predictions under inversion and 2m/s wind conditions have been made for day and evening as well as night, in Tables 4-1, 4-3, 4-4 and 4-5.

NPM must clarify exactly how they have adjusted the plant Sound Power Levels (SPL) to reflect their nominated operating times per 15 minutes. This shall be undertaken for all plant and equipment SPL that have been adjusted.

NPM must provide a figure in the Noise Impact Assessment (NIA) detailing the mine site and the surrounding topography out to as far as the nearest affected receivers with the location of mobile and stationary plant and equipment in the noise model superimposed.

NPM must note in any reference in the NIA to the Draft DECC document "Construction Noise Guideline" that this document is currently in draft form and has not been released as New South Wales Government Policy.

NPM must not use the construction noise policy to assess any component of the project. DECC does not accept the application of the construction noise policy at this mine site for a modification of consent. Any expansion of mining operations or ancillary components shall be included in the operational predicted noise levels in the NIA.

NPM predicts noise contributions in the NIA that are 3 dB(A) above the criteria at Lone Pine. Where the proponent predicts noise contributions more than 2 dB(A), but less than 5dBA, above the criteria, and all feasible and reasonable noise mitigation measures have been implemented, DECC expects the Department of Planning (DoP) will assign architectural treatment rights.

Where the noise levels are predicted to be more than 5 dB(A) above the criteria, and all feasible and reasonable noise mitigation measures have been implemented, DECC expects DoP to assign acquisition rights to the owner of the affected receiver.

DECC notes that increases are primarily experienced at the receivers "Milpose" and "Lone Pine" and can be mainly attributed to the addition of the secondary and tertiary crushers near the underground mine portal area.

DECC would expect that where exceedances are observed, the proponent must consider all feasible and reasonable noise mitigation measures to help minimise any noise impacts. The proponent shall apply all feasible and reasonable noise mitigation (including barriers) to minimise noise impacts from secondary and tertiary crushers and include this commitment in the Statement of Commitments.

DECC note in Table 1 in Section 1.4.2 Blasting and Vibration that the units are missing from the ANZEC referenced criteria for blasting and vibration. NPM must include the appropriate units in the EA.

NPM must include the recommendations specific to noise from Section 6.2 in the Statement of Commitments.

Recommendation: The draft EA be amended to address the issues mentioned above prior to placing the EA on public exhibition

ABORIGINAL CULTURAL HERITAGE

DECC considers that the archaeological survey for the proposed modification appears adequate and in general DECC is satisfied with the draft Statement of Commitments (SoCs) with respect to Aboriginal Cultural Heritage (ACH) in so far as the draft SoCs are supported by the previously prepared and approved North Parkes Aboriginal Heritage Management Plan (AHMP). However, DECC recommends the following minor amendments to SoCs 10.5 and 10.6.

It is recommended that Draft SoC 10.5 be amended to ensure that in any revision of the AHMP full details of site NPM-ST1 are provided including the fact that this site will not be managed by NPM for retention *in situ* but that it will be destroyed prior to commencement of mining activities.

This should include the development and implementation of protocols for the mitigation of this loss to the local Aboriginal community including at a minimum archival recording of the site and notification of its destruction to DECC. Further, the development and implementation of these protocols requires the involvement of the NPM Aboriginal Heritage Working Group.

It is recommended that Draft SoC 10.6 be amended to ensure that the NPM AHMP is revised to include specific protocols for, and reference to, the monitoring by local Wiradjuri representatives [as agreed by the NPM Aboriginal Heritage Working Group] of topsoil material with Zone 1 (Goonumbla Creek). This is to ensure that in the event that Aboriginal objects are identified during this monitoring that the appropriate notification, assessment, recording and salvage of these occur.

Recommendation: The recommended amendments to the draft SoCs mentioned above be adopted and incorporated into the EA prior to public exhibition

GROUNDWATER

Draft Statement of Commitments 8.1 states that "to ensure the floor and walls of TSF 3 have a permeability satisfying the standard requirement of DECC (i.e. 1 x 10⁻⁹ m/s)". However no details have been provided in the body of the report to indicate if TSF 3 will be lined to meet this standard. Clarification should be provided in the Environmental Assessment (EA) as to whether North Parkes Mine proposes to line the floor and walls of TSF 3 to meet this permeability.

Clarification should also be provided as to whether the material proposed to be used in construction of the floor and walls of TSF 3 meets this permeability.

The EA should also provide details of the number and locations of proposed groundwater monitoring bores surrounding TSF 3 to detect any leakage and further details of the proposed monitoring program.

Recommendation: More information be provided in the EA regarding measures proposed to protect groundwater



Howard Reed
Department of Planning
GPO Box 39
SYDNEY NSW 2000

Contact: Tim Baker Phone: (02) 6841 7403 Fax: (02) 6884 0096

Email: Tim.Baker@dnr.nsw.gov.au

File: ER20351

27 April 2009

Dear Mr Reed

Subject: NORTHPARKES MINE - PROPOSED MODIFICATION 06_0026 MOD 1 - ENVIRONMENTAL ASSESSMENT

I refer to your letter dated 2 April 2009 requesting comment from the Department of Water and Energy (DWE) on the final Environmental Assessment (EA) for the proposed E48 modification at North Parkes Mine (NPM). Initially DWE refers to previous correspondence submitted to Department of Planning dated 2 March 2009 regarding the test of adequacy. DWE has reviewed the final documentation and provides the following key points, water licensing comments and recommended consent conditions to assist in final determination.

- External water sourced from groundwater to supply NPM is likely to be limited by the
 existing infrastructure to supply the required volumes. This is yet to be adequately
 understood as additional bores are yet to be connected and operated within the network.
 In addition NPM's current groundwater entitlement may be further restricted by the
 implementation of a Macro Water Sharing Plan in 2010.
- External water sourced from surface water to supply NPM is limited by the available water determinations provided under the Water Sharing Plan for the Lachlan Regulated River Water Source. The AWD's in recent years for General Security Licences have been 0-14% of share entitlement.
- It will be critical for NPM to actively monitor the current and future water supply limitations and prepare alternate strategies to ensure a secure water supply is available. DWE can provide advice on limitations relevant to policies and licences under the Water Act 1912 and Water Management Act 2000.

WATER LICENSING

- Based on Table 17 in the EA the proposed increase in processing rate results in an increase in annual water demand required from external sources by approximately 2000ML with a total external water demand of approximately 4500ML. The proposed external water sources listed in Section 5.5.4 of the EA include low and high security Lachlan River Water, groundwater sourced from Parkes Shire Council's Lachlan Valley borefield at Forbes, and groundwater sourced from properties purchased with bore licences in the Lachlan Valley. DWE advises the following based on this list of sources:
 - NPM currently has a total external water supply of 2650ML of groundwater entitlement from NPM Lachlan Valley properties, 2976 shares in the Lachlan Regulated River Water Source, and access to 1900ML of groundwater supplied

under agreement from Parkes Shire Council. In consideration of these sources the following needs to be recognised:

- The volumes of surface water available in the Lachlan Regulated River Water Source are subject to Available Water Determinations (AWD's) which have ranged between 0% and 14% in previous years which does not represent a guaranteed supply.
- The nominated groundwater supplies which constitute 4550ML (NPM's water demand is 4500ML) have the potential for a higher level of supply availability from individual bores in comparison to the surface water source however this is likely to be impacted by the ability of Parkes Shire Council's infrastructure to meet the demands of both NPM and Town Water Supply. This supply may be further limited by the implementation of a Macro Groundwater Sharing Plan (due in 2010) which may introduce some form of entitlement adjustment and potentially an available water determination depending on groundwater usage. The details of this are yet to be confirmed, however there will be the ability to trade groundwater entitlement which will enable NPM to enter into negotiations to purchase water from other users if available.
- O General Security and high security surface water is available under the access licences that NPM hold or can be obtained via an allocation assignment from another licence holder subject to the AWD. However, it should be noted that Parkes Shire Council is not licensed to supply surface water to NPM under its Local Water Utility Access Licence. The LWUAL can only be used to supply town water within the Parkes municipality, hence Parkes Shire Council can only supply groundwater to NPM from its Lachlan Valley borefield.
- The bores in Parkes Shire Council's Lachlan Valley bore field are licensed for the purpose of mining with an annual extraction entitlement. Any agreement for Parkes Shire Council to supply groundwater to NPM from this borefield for the purpose of mining is currently not restricted and is subject to an arrangement between the parties. DWE would recommend confirmation in writing of any agreement to increase the supply above the current 1900ML supplied annually to the mine via this source.

RECOMMENDED CONDITIONS

- The proponent shall review the Site Water Management Plan in consultation with the Department of Water and Energy.
- The proponent shall demonstrate protection of the groundwater resource under the Estcourt Tailing Storage Facility by achieving a permeability rating of 1 x 10⁻⁹ m/s.
- The proponent shall prepare final design drawings, and bed and bank stabilisation
 measures for the road crossing of Goonumbla Creek in consultation with the Department of
 Water and Energy. This information is to be in accordance with DWE Guidelines "Guidelines
 for Controlled Activities Watercourse Crossings and In-stream Works".

For general enquiries please do not hesitate to contact Tim Baker on telephone (02) 6841 7403.

Yours sincerely

Mark Mignanelli

Manager Major Projects, Mine Assessments and Planning

grade.



Your Reference: 9036747 Our Reference: 09/709

Mr Howard Reed A/Manager Mining Major Development Assessment Department of Planning GPO Box 39 SYDNEY NSW 2001

Dear Mr Reed

Northparkes Mine- Proposed Modification (06_0026 MOD1) Environmental Assessment Report

I refer to your letter dated 2 April 2009 regarding the proposal by North Mining Limited (North Mining) to modify its project approval for the Northparkes Mine under Section 75W of the *Environmental Planning and Assessment Act 1979*.

The proposed modification includes; construction of a new tailings storage facility, increase in ore processing rate, extension of the life of the mine to 2015, installation of a secondary and tertiary crusher, and the upgrade and modifications to existing processing infrastructure. The proposal is wholly within the company's current Northparkes mine boundary and will not require additional mining titles.

During the initial consultation process the Department of Primary Industries (DPI) identified and raised with the company various potential issues associated with this proposal. This included ground and surface water, location design and visual amenity of the proposed tailings dam extension, rehabilitation and mine closure strategies. DPI is satisfied that the Environmental Assessment (EA) satisfactorily addresses the issues raised by DPI.

Should the proposed modification be approved, North Mining will be required to submit and have approved a Mining Operations Plan (MOP) prepared in accordance with DPI's Mining Rehabilitation and Environmental Management Process. The MOP will be required to refine strategies outlined in the EA to ensure that the stated final landform and land use objectives can be achieved. Progress against the MOP will be required to be reported in the Annual Environmental Management Report.

Should you have any queries on the contents of this letter, or regarding the Department's assessment of this proposal, please contact Vince Fallico, A/Senior Project Officer, Development Coordination on - telephone 02 8289 3930.

Yours sincerely

William Hughes A/Director

Development Coordination

23.4.09

	Peter Green		
	"Lemah"		
	Peak Hill NSW		
	0268653228		
Ref. No. (06 002 MOD 1)	14th April, 2008		
To Howard Reed,	The state of the s		
After our phone conver	sation on 8.4.09		
I would like to make a submission.			
E. a. application . I support the propos			
Having noted the mine life to	•		
myself, neighbours, + school bus operator			
believe 5.7 ks of gravel road on 82 A T			
be bitumen like the other 30 ks to Pe	ak Hill		
Through the summer months or an	dry time this		
section becomes very dusty and danger	ous with pot holes		
and loose gravel. Iraffic travelling	from Peak Hill.		
and to the mine from the north all	use this road		
I trust your department would con			
Goot as they collect royalties, R.T.A.	who divert Newell		
Highway to this road due to assiden	to and fire on hishway		
Highway to this road due to assiden Parkes Shire Council and North Mining	Limited		
We would hope these four authore	ities could act		
together and raise the funds to finis	h this short section		
of the gravel road.			
ν	lincevelu		
let	Incevely freez		
P.S. Enclosed Photos			
from my front gate			
	Exercised to any of the property of the test of th		
	Received		
	1 6 APR 2009		
	Major Development Assessment		







PARKES SHIRE COUNCIL

Progress, opportunities and a quality lifestyle for our residents

AJ

Contact Person: Andrew Johns

25 May 2009

Mr Howard Reed Assistant Director Major Development Assessment Department of Planning GPO Box 39 SYDNEY NSW 2001 Received

27 MAY 2009

Major Development Assessment OSDAA

Dear Mr Reed

NORTH PARKES MINE (06-0026 MOD 1) EXHIBITION OF ENVIRONMENT ASSESSMENT - E48 PROJECT

I refer to the above and your letter dated 7 April 2009. Council writes to thank your for the opportunity to comment on Environmental Assessment and offers the following minor comments:

"Review of the Section 75W Environmental Assessment in relation to 5.8.4 Modification Impact Assessment shows that they state that the existing formation and pavement condition of the public roads can safely accommodate the proposed construction traffic, and 5.8.5 Mitigation Measures and Safeguards states that the road system is of a capacity and design to accommodate the light and heavy vehicle movements of the project. This is NOT the case as previously identified in the Transport and Urban Planning Report August 2006 sec 5.3 and Appendix 2 Pavement Assessment. The need for ongoing maintenance and pavement rehabilitation as identified in the previous reports should be identified, or the process previously undertaken repeated, in the modification's environmental assessment."

As discussed with the applicant, GHD and in Council's letter in respect of the Draft Environmental Assessment, Council would also like to ensure that the department has appropriate regard to the contribution toward community and social infrastructure that is necessary with the ongoing presence of such a large industry in a regional centre.

Yours faithfully

Alan McCormack
GENERAL MANAGER

Steven Campbell

DIRECTOR PLANNING & ENVIRONMENT



1 July 2009

Alan McCormack General Manager Parkes Shire Council PO Box 337 PARKES NSW 2870

Dear Alan

NORTHPARKES MINES

North Mining Limited (ABN 78 000 081 434) as agent for and manager of the Northparkes Joint Venture

Postal Address: PO Box 995 Parkes NSW 2870 AUSTRALIA

Telephone: +61 2 6861 3000 Facsimile: +61 2 6861 3101

RE: NORTHPARKES MINES (06-0026 MOD1) SECTION 75W MODIFICATION

I refer to your letter dated 25 May 2009 addressed to the Department of Planning regarding Council's comments on Northparkes Mines Section 75W Environmental Assessment report.

Northparkes acknowledges the need for ongoing maintenance and pavement rehabilitation of the public road, Bogan Road, that will be used by mine related traffic throughout the operation's mine life.

Should the Section 75W modification for Development Consent (DC) 06-0026 be granted approval by the Department of Planning, Northparkes will commit to extending existing conditions of approval for road upgrade and maintenance contributions to 2025 as per Schedule 3, Clause 2 and 3 of DC 06-0026 outlined below:

Road Upgrade Contribution

- 2. The Proponent shall pay council 80% of the costs of:
 - (a) resealing Bogan Road between the Mine Access Road (Northparkes Lane) and the Newell Highway; and
 - (b) reconstructing Bogan Road between the Mine Access Road (Northparkes Lane) and Goonumbla rail siding,

within 30 days of receiving notification from the Council of these costs.

Road Maintenance Contributions

- 3. The Proponent shall pay the Council:
 - (a) \$52,267 on 1 July 2007; and
 - (b) An equivalent amount, indexed in accordance with the RTA's Road Maintenance index, on the anniversary of that date each year until and including 2018 2025, to maintain roads used by mine related traffic.

This commitment will be outlined in Northparkes Mines Submissions Report to be provided to the Department of Planning prior to determination of Northparkes application.

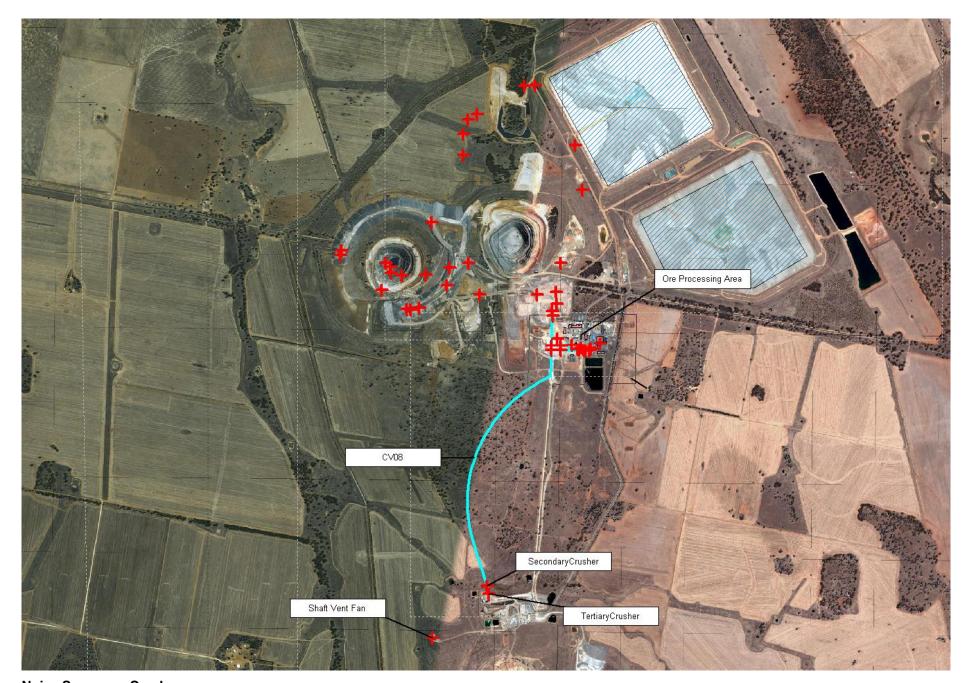
If you have any queries please contact Andrew Lye, Manager Operational Support, on 02 6861 3242.

Yours sincerely

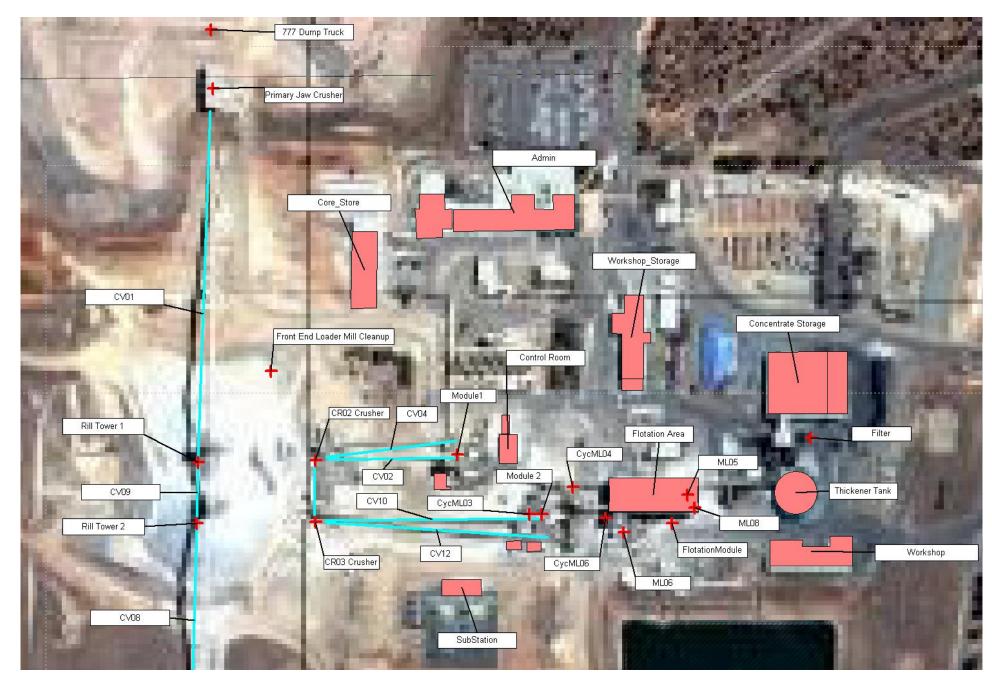
NORTHPARKES MINES

CRAIG STEGMAN GENERAL MANAGER Appendix B

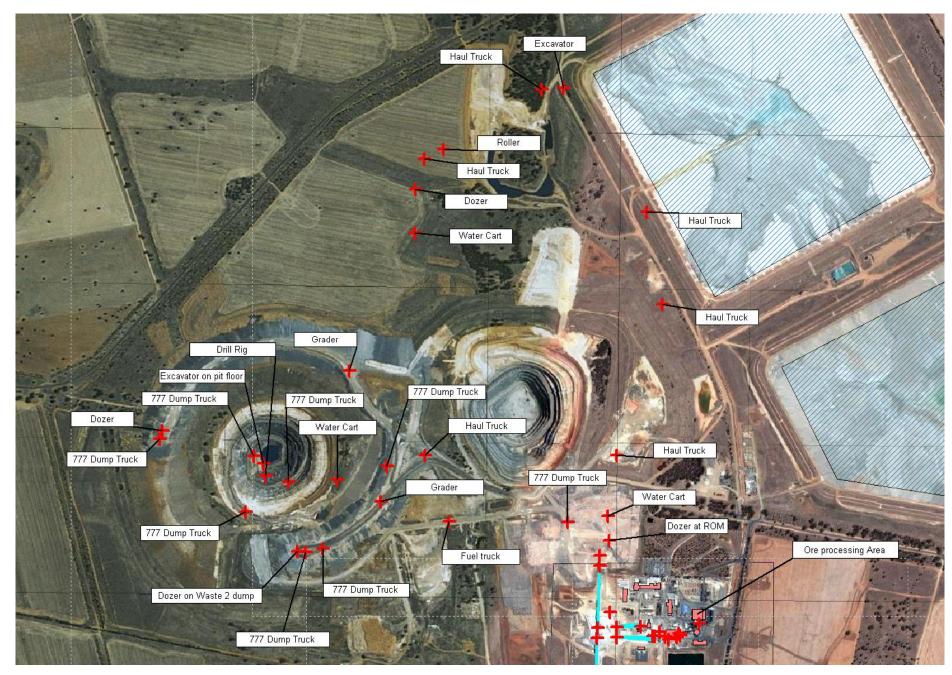
Supporting noise information



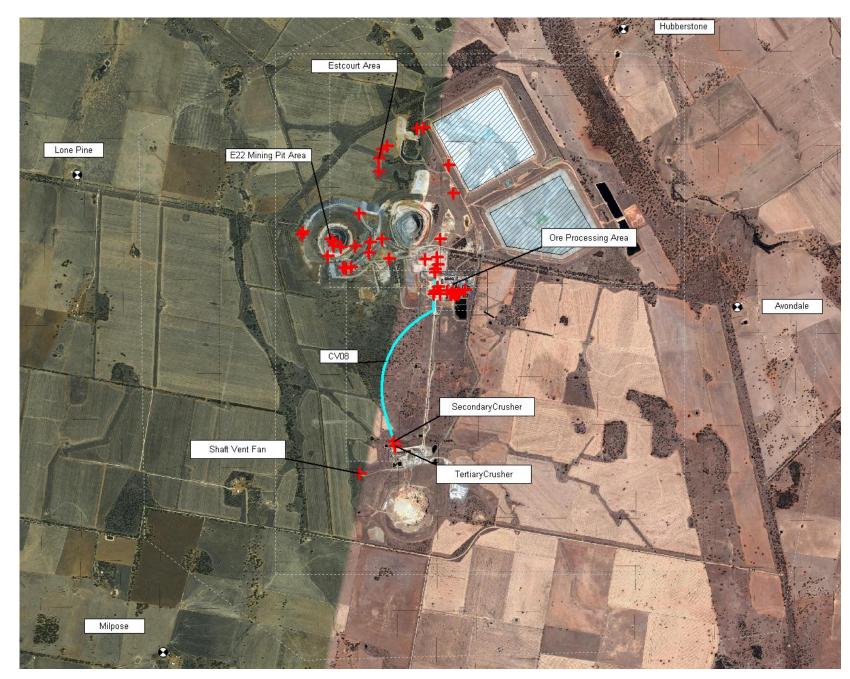
Noise Sources – Crushers



Noise Sources - Ore Processing



Noise Sources - Pit Areas



Noise Sources - Receivers

Appendix C

Groundwater monitoring program

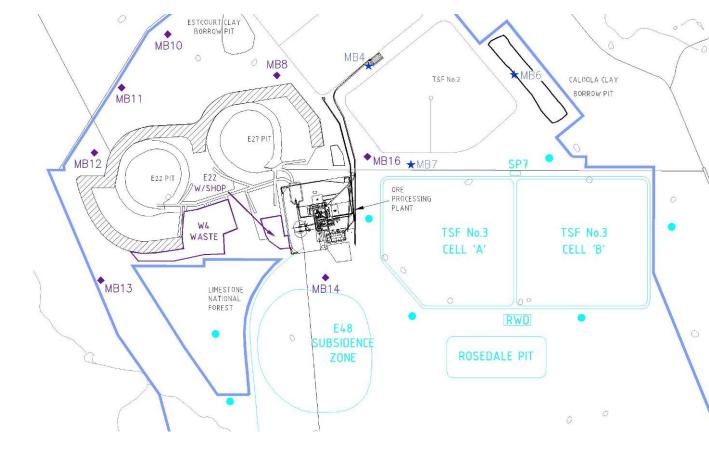


Figure 1 Part of Water Management Plan Figure 7 showing TSF 3 groundwater monitoring points

Table 4 of the Water Management Plan

Monitoring Locations	Frequency	Analytical Suite		
	Quarterly	Levels, pH, EC, Cu		
TSF bores ¹	Annually ²	pH, EC, TDS, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , Al, As, Ba, Be, Cd, Co, Cu, Cr, Mo, Ni, Pb, Se, Th, U, Zn		
	Quarterly	Levels, pH, EC, Cu		
Opencut bores	Annually	pH, EC, TDS, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , Al, As, Ba, Be, Cd, Co, Cu, Cr, Mo, Ni, Pb, Se, Th, U, Zn		
	Quarterly	Levels, pH, EC, Cu		
Underground bores ¹	Annually ²	pH, EC, TDS, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , Al, As, Ba, Be, Cd, Co, Cu, Cr, Mo, Ni, Pb, Se, Th, U, Zn		
	Quarterly	Levels only		
E26 dewatering bores	Annually	pH, EC, TDS, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , Al, As, Ba, Be, Cd, Co, Cu, Cr, Mo, Ni, Pb, Se, Th, U, Zn		
Regional bores	Quarterly ³	Levels, pH, EC, Cu		
	Annually	pH, EC, TDS, Na, K, Ca, Mg, Cl, SO ₄ , HCO ₃ , CO ₃ , Al, As, Ba, Be, Cd, Co, Cu, Cr, Mo, Ni, Pb, Se, Th, U, Zn		

Notes:

- 1. Proposed groundwater monitoring locations associated with E48 project are shown in Figure 7.
- 2. Undertake quarterly monitoring of E48 bores to establish baseline.
- 3. Annual analytical suite will be undertaken for the first 12 months prior to commencement of E48 extension to establish baseline data.

GHD

72 McNamara St, Orange, NSW 2800 PO BOX 950, Orange, NSW 2800

T: (02) 6393 6400 F: (02) 6393 6401 E: oagmail@ghd.com.au

© GHD 2009

This document is and shall remain the property of GHD. The document may only be used for the purpose for which it was commissioned and in accordance with the Terms of Engagement for the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0.	D. Mees & G. Metcalfe	D. Chubb	D Chubb*	D. Chubb	D Chubb*	May 09.
1	D. Mees & G. Metcalfe	D. Chubb	D Chubb	D. Chubb	D Chubb	July 09