NSW EPA

ENVIRONMENT PROTECTION AUTHORITY

Our reference: EF13/3374
Contact: Brad Tanswell 02 6883 5367

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

Attention: Sara Wilson

Dear Mr Reed,

Thank you for the opportunity to comment on the Response to Submission Report (RtS) associated with the proposed Northparkes Mine extension (ref MP11_0060) received by the Environment Protection Authority (EPA) on 24 October 2013.

Additionally I refer to the EPA's submission of the exhibited Environmental Assessment (EA) dated 20 August 2013.

The EPA has determined that it is still able to support the proposal, subject to the Department of Planning and Infrastructure (DoPI) seeking and the proponent addressing the information requirements outlined below and in **Attachment A** and subject to the adoption of the proposed conditions of approval outlined in **Attachment B**. It should be noted that provision of the additional information and incorporation of the recommended conditions of consent are important for the EPA's ongoing support of the proposal.

The key additional issues identified include:

Water
Further information/clarification is required regarding the proposed impacts upon and measures to protect surface water and groundwater from pollution.

Noise
Further assessment/information is required regarding the Noise Impact Assessment and impacts on local noise amenity.

These issues are addressed in further detail in **Attachment A**.

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It is expected that the EPA will be given an opportunity to review the draft Director-General's Environmental Assessment report for this proposal prior to finalisation.

If the DoPI determines the project application by granting consent, the EPA recommends that the additional conditions of approval provided at **Attachment B** are incorporated into the consent.

The EPA notes that the proposal will require an environment protection licence pursuant to the *Protection of the Environment Operations Act 1997* to commence construction activities and to operate. The proponent will need to make a separate application to the EPA to obtain this licence once development project approval is granted.

Should you have any queries regarding the EPA's submission, please contact myself at the Dubbo Office of the EPA on (02) 6883 5367.

Yours sincerely

07/11/13

BRAD TANSWELL
A/Head Far West Operations
Environment Protection Authority NSW

Encl: Attachment A - Additional Detailed Information.
Attachment B - Revised Recommended Conditions

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ATTACHMENT A

Additional Detailed Information

Noise

Residual impacts above the PSNL

The RtS discusses the acceptability of residual impacts above the PSNL with reference to Chapters 8 and 9 of the INP. DoPI are best positioned to weigh the social and economic benefits of the proposal against potential adverse noise impacts and to determine if a higher noise limit is justified. If a higher noise limit is accepted by DoPI following this assessment and consent is granted, the EPA can include these limits in the project's Environment Protection Licence (EPL).

Criteria for blasting

The RtS commits the proponent to meeting the ANZEC (1990) criteria for blast overpressure and ground vibration and states that they will revise the existing *Environmental Noise and Vibration Management Plan* to implement a blast monitoring program when campaign open cut mining is undertaken. The RtS also states that the proponent will investigate refinements to blast design to ensure compliance with airblast criteria at all sensitive receivers.

Sensitive receiver not included in Noise Impact Assessment (NIA)

The RtS addresses a submission by Annette Moss, owner of the "Hillview" property, which includes a building ("Walma Hillview") identified as a derelict residence in the NIA. The submission highlighted that the NIA assessed impacts on "Walma Hillview" but not on an existing occupied residence or a proposed new residence on the property. In response to Ms Moss' submission, the RtS assesses the operational noise impact of the proposal on the existing occupied residence on "Hillview" as well as the proposed new residence.

The RtS provides sufficient information to demonstrate that operational noise from the proposal including Tailings Storage Facility (TSF) construction and campaign open-cut mining will comply with PSNL. However, the RtS does not address impacts on existing and proposed residences on the "Hillview" property resulting from construction of the modifications to McClintocks Lane (a public road) and the new site access road (a private road).

The EPA have assessed noise from modifying the public McClintocks Lane against Noise Management Levels (NML) derived from application of the Interim Construction Noise Guideline (ICNG), and noise from installation of the private, new site access road against the PSNL derived from application of the NSW Industrial Noise Policy (INP).

Adopting the overall construction sound power level given in the NIA (120 dBA) and using a simple equation for hemispherical dispersion and attenuation in air gives a maximum $L_{Aeq(15min)}$ of 42 dBA at the new residence or 37 dBA at the existing residence for construction of the private site access road (2 – 7 dBA above the PSNL) and 52 dBA for the modifications to McClintocks Lane (12 dBA above the NML but less than the "highly noise affected" level of 75dBA in the ICNG).

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The information provided on residual impacts above the PSNL in the RtS appears to be applicable to sensitive receiver locations on the "Hillview" property, including during installation of the private access road, and the Construction Noise Management Plan proposed in the NIA and RtS should deal adequately with impacts above the NML during construction works on McClintocks Lane.

Recommended conditions for noise and blasting are presented in **Attachment B**. The recommended conditions do not include noise limits for receivers predicted to receive operational noise from the proposal in excess of PSNL, however as noted above the EPA can adopt limits placed onto any project approval by DoPI.

The EPA has not proposed limits to apply to sensitive receivers where noise from the proposal is expected to exceed the PSNL. Sensitive receivers expected to receive impacts in excess of the PSNL include:

- "Hubberstone" by up to 5 dBA during TSF construction and open-cut mining;
- "Adavale" by up to 1 dBA during TSF construction and open-cut mining; and
- "Hillview" existing and proposed residences by up to 7 dBA during on-site works to construct the new site access road.

"Avondale" has not been included in the above list as the proponent has indicated that a Private Negotiated Agreement (PNA) exists for that receiver. In the absence of a PNA for the other receivers expected to receive noise above the PSNL, DoPI are best positioned to weigh the social and economic benefits of the proposal against potential adverse noise impacts and determine if a higher noise limit is justified. If a higher noise limit is accepted by DoPI following this assessment and consent is granted, the EPA can include these limits in the project's EPL.

Locations for blast monitoring, and locations, times and frequencies of noise monitoring, (Conditions L7, M8 and R4) in the conditions are to be negotiated and finalised in consultation with the proponent. This information must be provided to the EPA with a licence application to allow Scheduled Development and Activity works to commence.

Water

The EPA has reviewed the Response to Submissions regarding surface water and groundwater management and identified the following outstanding issues. These are discussed in further detail below.

- A need for review of management trigger criteria and actions as part of a revised water management plan;
- Assessment of the potential for the clean water dams to contain contaminated water is inadequate;
- Additional water quality management triggers should be developed for monitoring the dirty water sediment basins for potential contaminants associated with neutral rock drainage runoff from the waste rock stockpiles and tailings dam walls; and
- No commitment to proactively monitor water quality following significant site changes or after periods when a risk may emerge.

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Groundwater Management

The Statement of commitments for groundwater (6.9) has not adequately captured the additional monitoring recommended in the EA Groundwater Impact Assessment Report (Section 7.3.2) or Appendix 1 of the Response to submissions. The EPA recommends DoPI incorporate the following consent condition in relation to a groundwater management plan and monitoring program.

It is recommended that additional monitoring bores be installed around the proposed waste facilities (*TSF and contaminated water system*) at a suitable depth for the purposes of leak detection and these new monitoring locations and existing locations incorporated into the groundwater management plan for the extended development including appropriate water quality and groundwater levels triggers for management action. This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

If consent is granted by the Department of Planning and Infrastructure the EPA will be unable to issue a Scheduled Activity Licence until the issues summarised above are addressed.

Surface Water Management

Dirty Water System
The dirty water system captures runoff from the stockpile areas and tailings dam walls in sediment basins. The basins have been designed to intercept runoff generated by the 90th percentile 5 day duration rainfall event. The Surface Water Assessment states that runoff collected in these basins '*must be of sufficient quality prior to being discharged off site into surrounding natural watercourses*' and '*any controlled discharges from the sediment dams will be of a quality consistent with the requirements of the 'Blue Book'.*

These statements in the EA implied that controlled discharges from the dirty water basins have occurred and will occur in the future from time to time, hence the EPA recommendation to further assess surface water discharges. Controlled discharges from the dirty water system based on current water quality would result in pollution of waters. If controlled discharges are proposed then licence limits would need to be established based on ANZECC (2000) default trigger values or alternatively site specific trigger values developed using the reference site approach and monitoring requirements specific in the ANZECC guidelines. The reference sites chosen for this site have not been demonstrated as being suitable reference sites in accordance with the ANZECC guidelines that could be used for developing site specific trigger values used as a basis for controlled discharge criteria or limits.

The additional information in the response to submission has further clarified that the dirty water system will be managed as a nil discharge site with regard to controlled discharges and therefore the management trigger proposed are not related to controlled discharge levels. The following consent condition is therefore proposed to confirm the site as a nil discharge site for controlled discharges.

It is recommended that a consent condition is included for the dirty water system to be managed as a nil discharge area except for uncontrolled discharges that exceed the design capacity of the sediment storage basins including the use of the mining void to store excess water. Management actions and triggers should be

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included in the water management plan to maximise pumping to prevent overflow and determine when wastewater should be diverted to the contaminated water systems. This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

The high levels of some pollutants in specific sediment basins including salinity and Copper remain a cause for concern as they do not appear to represent the levels of water quality that would be expected for an area collecting runoff from neutral drainage stockpiles and other disturbed areas. It is unclear what management actions were and will be taken based on excedances of triggers, for example 20,000 µS/cm electrical conductivity. The current triggers and actions therefore should be revised to incorporate diversion of water to contaminated water systems.

The management trigger criteria appear to have been developed based on historic water quality in the dirty area from the period 2009-2011 and therefore if contaminated water has been entering the dirty water area then these contaminants may be reflected in the trigger levels meaning that the triggers would not be representative of expected water quality in the dirty water system. The trigger values therefore may not provide a sound basis for action to assess potential for contaminant to be entering the dirty water system from the contaminated water system.

The additional information in the Response to Submission includes ranges of data but does not show how water quality has changed over time.

It is recommended that the water management plan includes or is supported by the following information:

- ***the methodology for developing management trigger criteria in clean and dirty water systems;***
- ***clarification of the action that would be taken on exceedance of trigger criteria. Actions should include the diversion to the contaminated water system of wastewater that is above trigger criteria;***
- ***how water quality has changed over time in the clean and dirty water systems***
- ***the frequency and volumes of uncontrolled discharges based on available pumping capacity and practices.***

This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

If consent is granted by the Department of Planning and Infrastructure the EPA will be unable to issue a Scheduled Activity Licence until the issues summarised above are addressed.

Trigger value errors
Appendix 3 of the Response to Submission (Tables 1.1 – 1.4) include the site specific management triggers. While some may be inappropriate as they may be based on data that incorporate unacceptable impacts (see comment above), some values appear to be errors, for example, magnesium 555 mg/L, total cyanide 490 mg/L, mercury 555 mg/L as Stage 1 triggers in the dirty water area. There are also no triggers for aluminium triggers in dirty water area sediment ponds.

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It is recommended that the consent condition include a requirement to review management trigger criteria for magnesium, total cyanide, and mercury for all dams and sediment basins in clean and dirty water systems. This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

Clean water system
The EA and RtS did not provide an adequate assessment of why there are elevated levels of pollutants in some clean water dams relative to others. For example, FD8 and FD18 recorded EC values of 4010 and approximately 1600 µS/cm respectively compared to a mean EC value of 469 µS/cm across all monitoring data. FD14, which is stated to be upstream of the mine and only receive agricultural runoff, has the highest mean copper level.

There is potential for elevated salinity and copper levels to be derived from the dirty or contaminated water systems, including through the movement of contaminated groundwater.

The additional information in the RtS does not address the EPA's request to include consideration and assessment of the potential for clean water dams to contain contaminated water from the mining site.

It is recommended that the Surface Water Monitoring Program include an ongoing requirement to compare of the water quality in the clean water dams with the dirty and contaminated water dams. This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

Water Quality Monitoring
The SWA states that historical monitoring data indicates the presence of neutral rock drainage associated with waste rock pile and tailings dam wall runoff. Current water quality monitoring of the dirty water system indicates that pH, EC, TSS and Cu are present at elevated levels relative to the 'clean water system'.

The EPA requested that the proponent commit to monitoring the dirty water sediment basins for all contaminants potentially associated with runoff from waste rock stockpiles, the tailings dam walls, and other relevant mining activities. The range of analytes monitored could then be modified over time to reflect the presence or absence of contaminants based on the monitoring results.

The RtS indicates that the proponent will continue to only use monitoring of Copper concentrations as a reference point for monitoring within the dirty water management system.

It is recommended that the monitoring program include a condition of consent requiring that the proponent monitor the dirty water sediment basins for all potential contaminates associated with runoff from the waste rock pile and tailings dam wall and expand the set of key metal indicators and triggers. This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

The EPA also requested that the proponent commit to monitoring for a full suite of analytes after significant site changes or after periods when a risk may emerge such as

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accumulation of pollutants in basins through sedimentation or concentration via evaporation.

The RtS indicates that the proponent has not amended the monitoring frequency to capture significant site changes or following periods of risk.
It is recommended that the monitoring program include a requirement for proactive monitoring. This recommendation forms part of the proposed approval conditions specified under "Recommended Approval Conditions" below.

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ATTACHMENT B

Recommended Conditions of Consent

Noise and Blasting

Limit Conditions

L6.1 Noise generated at the premises must not exceed the noise limits in the table below. The locations referred to in the table below are indicated by Table 4.5 and Figure 4.1 of the *Noise Impact Assessment Northparkes Mines Step Change Project* contained within the *Environmental Assessment Northparkes Mines Step Change Project* (Umwelt 2013).

		NOISE LIMITS dB(A)			
Locality	Location	Day	Evening	Night	
		$L_{Aeq\ (15\ minute)}$	$L_{Aeq\ (15\ minute)}$	$L_{Aeq\ (15\ minute)}$	$L_{A1\ (1\ minute)}$
Any residence	*Any residential receiver not subject to a private negotiated agreement*	35	35	35	45

L6.2 For the purpose of condition L6.1;

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.
- Evening is defined as the period 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.

L6.3 The noise limits set out in condition L6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.

L6.4 For the purposes of condition L6.3:

a) Data recorded by the meteorological station identified as EPA Identification Point TBC must be used to determine meteorological conditions ; and

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b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

L6.5 To determine compliance:

a) with the $L_{eq(15\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located:

- approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
- within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
- within approximately 50 metres of the boundary of a National Park or a Nature Reserve.

b) with the $L_{A1(1\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) with the noise limits in condition L6.1, the noise measurement equipment must be located:

- at the most affected point at a location where there is no dwelling at the location; or
- at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b).

L6.6 A non-compliance of condition L6.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions L6.5(a) and L6.5(b); and/or
- at a point other than the most affected point at a location.

L6.7 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Blasting Conditions

Airblast overpressure level

L7.1 The airblast overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.2 The airblast overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) at any noise sensitive locations for more than five per

cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

Ground vibration level

L7.3 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L7.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

Blasting hours

L7.5 Blasting at the premises may only take place between 9:00am-5:00pm Monday to Friday. Blasting is not permitted on public holidays.

L7.6 Blasting outside of the hours specified in L7.5 can only take place with the written approval of the EPA.

Blast monitoring

L7.7 To determine compliance with condition(s) L7.1 to L7.4:

a) Airblast overpressure and ground vibration levels experienced at the following noise sensitive locations must be measured and recorded for all blasts carried out on the premises;

- exact location TBC - consider ANZEC guidelines. Lot & DP, street address identifiers should be used.

b) Instrumentation used to measure and record the airblast overpressure and ground vibration levels must meet the requirements of Australian Standard AS 2187.2-2006.

NOTE: A breach of the licence will still occur where airblast overpressure or ground vibration levels from the blasting operations at the premises exceeds the limit specified in conditions L7.1 to L7.4 at any "noise sensitive locations" other than the locations identified in the above condition.

L7.8 The airblast overpressure and ground vibration levels in conditions L7.1 to L7.4 do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

Monitoring Conditions

M7.1 The meteorological weather station must be maintained so as to be capable of continuously monitoring the parameters specified in condition M7.2.

M7.2 For each monitoring point specified in the table below the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

Point < point number TBC as listed in table P1.1>

Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method
Air temperature	°C	Continuous	1 hour	AM-4
Wind direction	°	Continuous	15 minute	AM-2 & AM-4
Wind speed	m/s	Continuous	15 minute	AM-2 & AM-4
Sigma theta	°	Continuous	15 minute	AM-2 & AM-4
Rainfall	mm	Continuous	15 minute	AM-4
Relative humidity	%	Continuous	1 hour	AM-4

M8 Requirement to Monitor Noise

M8.1 *To assess compliance with Condition L6.1, attended noise monitoring must be undertaken in accordance with Conditions L6.5 and:*

a) at each one of the locations listed in Condition L6.1;
b) occur bi-annually in a reporting period;
c) occur during each day, evening and night period as defined in the NSW Industrial Noise Policy for a minimum of:

- 1.5 hours during the day;
- 30 minutes during the evening; and
- 1 hour during the night.

d) occur for three consecutive operating days.

Reporting Conditions

R4 Noise Monitoring Report

A noise compliance assessment report must be submitted to the EPA within 30 days of the completion of the bi-annual monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:

a) an assessment of compliance with noise limits presented in Condition L6.1; and

b) an outline of any management actions taken within the monitoring period to address any exceedences of the limits contained in Condition L6.1.

Additions to Definition of Terms of the licence

- NSW Industrial Noise Policy - the document entitled "New South Wales Industrial Noise Policy published by the Environment Protection Authority in January 2000."
- Noise - sound pressure levels' for the purposes of conditions L6.1 to L6.7.
- "Noise sensitive locations" includes buildings used as a residence, hospital, school, child care centre, places of public worship and nursing homes. A noise sensitive location includes the land within 30 metres of the building.

Water

The Proponent must ensure that all surface water discharges from the site comply with:

(a) Section 120 of the POEO Act;
(b) a maximum of 50 milligrams per litre of suspended solids in any controlled discharge of water from sediment basins, and any other discharge limits (both volume and quality) that may be specified by licensing instruments issued under environment protection legislation administered by the EPA.

The "dirty water" system is to be managed as a nil discharge area except for uncontrolled discharges that exceed the design capacity of the sediment storage basins to prevent uncontrolled discharges. This includes the use of the mining void to store excess water. Management actions and triggers shall be included in the water management plan to maximise pumping to prevent overflow and determine when wastewater should be diverted to the contaminated water system.

The Proponent must prepare and implement a Water Management Plan for the project to the satisfaction of the EPA. This plan must:

(a) be prepared in consultation with EPA and by a suitably qualified and experienced person(s);
(b) be submitted to the EPA's Regional Manager for approval prior to the commencement of activities;
(c) address construction, operation and post closure monitoring, management and response arrangements; and
(d) include:
- ***a Site Water Balance;***
- ***an Erosion and Sediment Control Plan;***
- ***a Water Reuse Management Plan;***
- ***a Surface Water Monitoring Program;***
- ***a Groundwater Monitoring Program; and***
- ***a Surface and Ground Water Response Plan to respond to issues identified by the surface and groundwater monitoring programs.***

The Water Management Plan shall include or be supported by the following information:

- *a review of the methodology for developing management trigger criteria in clean and dirty water systems in order to update them as necessary to reflect appropriate data and reference levels;*
- *clarification of the actions that would be taken on exceedance of management trigger criteria. Actions should include the diversion to the contaminated water system of wastewater that is above management trigger criteria;*
- *how water quality has changed over time in the clean and dirty water systems based on historical data*
- *the frequency and volumes of uncontrolled discharges based on available pumping capacity and practices.*

The trigger values for magnesium, total cyanide, and mercury for all dams and sediment basins in clean and dirty water systems should be reviewed to address potential errors in their transcription into the Response to Submissions.

The Site Water Balance must describe, as a minimum:

(a) how any water removed from the tailings storage facility or water management structures to return to the design freeboard will be managed, keeping in mind that the proponent will need to ensure compliance with S120 POEO Act for the management of process water and water in the tailings facility

(b) if 'dirty water' is suitable for reuse, consideration of increasing the size of new sediment basins to maximise the potential for on-site capture and reuse to reduce a reliance on 'make-up' water.

The Erosion and Sediment Control Plan must include, as a minimum:

(a) describe how soil erosion and sediment pollution will be managed following the guidelines and recommendations in Volume 1 of Managing Urban Stormwater: Soils and Construction (the Blue Book) during the construction/recommencement phase;

(b) provide plan drawings showing the locations for best management practices for the site during all construction/recommencement stages

(c) include written text detailing the installation, monitoring and maintenance requirements for each of the recommended BMPs for erosion and sediment control

(d) include detailed drawings of any engineering structures such as sediment and evaporation ponds and the clear water diversion structures, including design standards and management regimes to return the erosion and sediment control system to design capacity following rainfall events

(e) design calculations and sizing for all clean water diversion bunds and sediment basins on site

(f) consideration of the potential for increasing the size of sediment basins to maximise water reuse and reduce the reliance on 'make-up' water

(g) a commitment to construct and maintain roads consistent with 'Managing Urban Stormwater – Soils and Construction Volume 2C Unsealed Roads'

The Surface Water Monitoring Program must include, as a minimum, the following components:

(a) detailed baseline data on current surface water flows and quality in creeks and other water bodies that could be affected by the project;

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(b) an initial surface water quality characterisation assessment of water quality in sediment basins collecting runoff from waste rock stockpiles and the tailings dam walls. The range of analytes monitored can then be modified over time to reflect the presence or absence of contaminants based on the monitoring results.

(c) an expanded set of key indicators and triggers for management action based on the initial characterisation and historical data.

(d) a proposed program of ongoing monitoring of surface water and sediment basins based on characterisation of the dirty water

(e) ongoing comparison and analysis of water quality monitoring data collected from the 'clean', 'dirty' and 'contaminated' water basins to assess the potential for mobilisation of 'contaminated' water around the mining site

(f) monitoring for a full suite of analytes after significant site changes or after periods when a risk may emerge such as accumulation of pollutants in basins through sedimentation or concentration via evaporation.

The Water Reuse Management Plan must include, as a minimum, the following components:

(a) Water Reuse Management Procedures that ensures salinity, sodicity and bicarbonate levels in water used on-site is fit-for-purpose and managed to prevent:

- *cumulative impacts on soil and vegetative condition;*
- *impacts on water quality in receiving waters.*

If water reused on site is determined to have a negative impact on soil and vegetative condition, the Water Reuse Management Procedures must include a detailed monitoring program that specifies relevant parameters and sampling frequency for any water to be used on the site. The program must be designed to the satisfaction of the EPA.

The Groundwater Monitoring Plan must include monitoring to detect any potential leakage from the TSF and contaminated water system into local surface water features such as ephemeral streams, onsite dams and other water features in the nearby sub-catchments.

*It is recommended that the additional monitoring bores proposed in the environmental assessment be installed around the proposed waste facilities (*TSF and contaminated water system*) at a suitable depth for the purposes of leak detection and these new monitoring locations and existing locations incorporated into the groundwater management plan for the extended development including appropriate water quality and groundwater levels triggers for management action.*

The Surface and Groundwater Response Plan must include, as a minimum:

(a) response procedures if the surface water monitoring program identifies that the 'clean' or 'dirty' water systems become contaminated by wastewater from the mining site.

If consent is granted by the Department of Planning and Infrastructure the EPA will be unable to issue a Scheduled Activity Licence until the issues summarised above are addressed in the relevant management plans.

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