Rasp Mine

Zinc – Lead – Silver Project

Project Approval No. 07-0018

January 2011

Lead Management Plan (Community)

BHO-PLN-ENV-015

Table of Contents

Tables

Appendices

1. Introduction

1.1 Purpose

The purpose of the Lead Management Plan (Community) is to outline:

- The management measures, including contingency measures, undertaken by the Rasp Mine to minimise the impact of lead contamination and, in particular its potential impact on blood lead (Pb) levels, in the community from mining activities;
- How these measures will be assessed, monitored and communicated to the community; and,
- The arrangements for reasonable contributions by Broken Hill Operations Pty Ltd towards the cost of public health monitoring and public education campaigns about the health risks associated with lead.

1.2 Scope

This Plan applies to the mining activities undertaken by the Rasp Mine which is operated by Broken Hill Operations Pty Ltd (BHOP), Broken Hill.

1.3 Definitions

Term	Definition
BHCC	Broken Hill City Council
BLL	Blood Lead Level
BHLRG	Broken Hill lead Reference Group
BHOP	Broken Hill Operations Pty Ltd
CML	Consolidated Mining Lease
DPE	Department of Planning & Environment
EA	Environmental Approval
Environment	Surrounding in which BHOP operates including air, water, noise, land, flora, fauna, natural resources, humans and their interactions
EPA	Environment Protection Agency
HHRA	Human Health Risk Assessment
IEUBK model	Integrated Exposure Uptake Biokinetic model
LHD	Local Health District
LMP	Lead Management Plan
NHMRC	National Health and Medical Research Council
Pb	Lead
Planning Secretary	Planning Secretary under the EP&A Act, or nominee
ROM	Run of Mine
Sensitive receptor	Residence and community or public space used for assessment
SLR	SLR Consulting
TSF1	Tailings Storage Facility 1
TSF2	Tailings Storage Facility 2 (Blackwood Pit)
TSF3	Tailings Storage Facility 3 (Kintore Pit)

Term	Definition
µg/dL	Micrograms per decilitre, unit use to describe level of lead in the bloodstream

1.4 Project Approval Conditions

This Plan has been developed in accordance with the Project Approval 07_0018 MOD10 (**Table 1-1**) and has been prepared in consultation with the Broken Hill Lead Reference Group, whose members include the NSW Department of Health (Far West Local Health District and Western Public Health Unit) and the Broken Hill City Council.

Table 1-1 Summary of Project Approval MOD10 Conditions

PA 07_0018 MOD6	Requirement	Referenced in this Plan
Schedule 3 Condition 12	BHOP to make a reasonable contribution towards the cost of: (a) public health monitoring, particularly in relation to child blood lead levels; and (b) public education campaigns about the health risks associated with lead. to the satisfaction of the Secretary. *Note: The Secretary will consult with NSW Health (Western NSW Local Health District) on the reasonableness of the proposed contribution prior to making any decisions under this condition, and determine the date upon which the contributions shall commence.*	Section 8 Section 8
Schedule 3 Condition 13	BHOP to prepare and implement a Lead Management Plan for the project to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with the Broken Hill Lead Reference Group, including the EPA, NSW Health (Western NSW Local Health District) and Council; (b) be submitted to the Secretary for approval; (c) outline the proposed commitment towards the cost of: • public health monitoring, particularly in relation to child blood lead levels, and tracking of this data over time; and • public education campaigns about the health risks associated with lead, including lead hygiene, lead and children, tank water lead risks and soil lead contamination risks. (d) identify additional reasonable and feasible measures that could be implemented either on site or in the areas adjoining the site to minimise the potential lead impacts of the project and "free areas"; (e) include a program for the staged implementation of the measures identified in above in the event that dust emissions are higher than predicted or the public health monitoring suggests further action is required to reduce blood lead levels in the environment surrounding the site; and (f) include a detailed communication strategy, that outlines how the relevant dust and blood level monitoring data would be reported on the Proponent's website along with any relevant public education material.	Sections 9 & 11.2 Section 11.2 Section 8 Sections 5 & 7 Section 7 Sections 6 & 9.2
Schedule 3 Condition 14	Within one year of the commencement of operation of the project, and every five years thereafter, unless otherwise agreed by the Secretary, the Proponent shall update the human health risk assessment prepared for the project and presented in the EA to the satisfaction of the Secretary The updated risk assessment shall: (a) be prepared by a suitably-qualified expert whose appointment has been endorsed by the Secretary; (b) take into account monitoring data collected under this approval, and such other information as may be relevant to the assessment; and (c) be prepared in consultation with the EPA and the NSW Health (Western NSW Local Health District).	Section 4 Section 4 Section 4

PA 07_0018 MOD6	Requirement	Referenced in this Plan
Schedule 3 Condition 14A	The updated Health Risk Assessment must inform the revision of the Air Quality Management Plan and the Lead Management Plan required under this approval, if monitoring data shows that the project is contributing to increased blood lead levels.	Section 4

1.5 Referenced Documents

- Rasp Mine Project Approval 07_0018 MOD6 and all associated Environment Assessment (EA) Reports by BHOP (Including EA 2010).
- Rasp Mine Health Risk Assessment Report, Toxikos Pty Ltd, 2010 (HHRA1)
- Health Risk Assessment Rasp Mine Broken Hill, Toxikos Pty Ltd, 2014 and updated September 2015 (HHRA2)
- Health Risk Assessment Rasp Mine Broken Hill, SLR, 2020 (and addendum 2021)
- Air Quality Management Plan, BHOP, 2022 (BHO-PLN-ENV-001)
- Evidence on the Effects of Lead on Human Health (March, 2015) National Health & Medical Research Council.

As per the Project Approval the CLMP must be written in consultation with the Broken Hill Lead Reference Group, including the EPA, NSW Health (Western NSW Local Health District and Western Public Health Unit) and Council (Appendix D). Applicable matters raised have been edited in this version of the management plan.

2. Roles and Responsibilities

2.1 BHOP Responsibilities

2.1.1 General Manager

- Provide resources to support the implementation of this Plan.
- Participate in audit reviews of this Plan and approve actions/amendments, as required.

2.1.2 Senior Environmental Advisor

- Maintain and update this Plan.
- Provide information in relation to blood Pb monitoring levels reported in the community to senior management.
- Communicate the Plan to Rasp Mine personnel.
- Attend Broken Hill Lead Reference Group meetings.
- Maintain information on the Rasp Mine web site.
- Arrange budgets for reasonable cost contributions.
- Review of proposals for financial contributions and provide to senior management with recommendations.
- Audit BHOP performance against this Plan.

- Assess investigations as required by this Plan.
- Provide reports as required under this Plan.

2.1.3 Managers

- Implement air quality control measures in their areas of responsibility including those designed to prevent/minimise lead dust exposure to the community.

2.1.4 Supervisors and Superintendents

- Implement air quality control measures in their areas of responsibility including those designed to prevent/minimise lead dust exposure to the community.

2.1.5 Employees and contractors

- Implement air quality control measures in their work areas including those designed to prevent/minimise lead dust exposure to the community.

2.2 External Responsibilities

2.2.1 Far West LHD Child and Family Health (Broken Hill)

- Provide requested information (Appendix C) when submitting a proposal for financial contribution funding from BHOP.
- Direct BHOP financial contributions to expenditures consistent with the BHOP Project Approval 07_0018 MOD10 conditions.
- Provide details on funded items to BHOP for auditing purposes.

2.2.2 Broken Hill Lead Reference Group

- Review and provide feedback to BHOP on this Plan (Appendix D).

3. Blood Lead Risk Levels

In 2015 the National Health and Medical Research Council of Australia (NHMRC) determined "*that a blood lead level greater than 5 micrograms per decilitre (µg/dL) suggests that a person has been, or continues to be, exposed to lead at a level that is above what is considered the average 'background' exposure in Australia*". And it recommended that the source of exposure should be investigated and reduced, particularly if the person is a child or pregnant woman.

BHOP has an extensive range of measures in place to minimise potential exposure to Pb dust from the Rasp Mine. These are summarised in Section 8 with contingency measures outlined in Section 7.

4. Human Health Risk Assessments

BHO are required to update the Human Health Risk Assessment prepared for the project every five years in consultation with EPA and NSW Health (Western NSW Local Health District). The

updated Health Risk Assessment must inform the revision of the Air Quality Management Plan and the Lead Management Plan required under PA07_0018, if monitoring data shows that the project is contributing to increased blood lead levels.

BHOP engaged Toxikos Pty Ltd (Toxikos) to undertake a Human Health Risk Assessment (HHRA1) of its proposed activities for the recommencement of mining on Consolidated Mine Lease 7 (CML7), the Rasp Mine. This report was presented as Annexures I(A) and I(B) of the Rasp Mine Environmental Assessment Report July 2010. Toxikos was accepted by the DPE to undertake the HHRA1 and the subsequent updated HHRA2. Toxikos updated the HHRA based on actual air quality data collected post the commencement of mining operations. Toxikos compared this new data to their original predictions applying the same modelling techniques, Health Risk Assessment Rasp Mine Broken Hill (HHRA2) (2015). Copies of these studies and the HHRA2 report, have been posted on the CBH Resources Ltd/Rasp Mine Operations web site.

Rasp Mine commenced operations in April 2012 however a slow start-up resulted in spasmodic production until early 2013. The HHRA2 was commissioned in early 2014 and was completed in November 2014. The Report was distributed to the EPA, NSW Department of Health in April 2015 and submitted to the DPE in the same month.

In the HHRA2 study Toxikos used data collected from the Rasp Mine air quality monitoring program for the 2013/2014 period. The method used in the original HHRA1 was applied using the same IEUBK model adopted in the original HHRA1 to enable comparison of results. Toxikos assessed the same age groups over the same life of mine period, 15 years. The HHRA2 shows that the incremental increase in blood Pb levels arising from the current mine operations is lower than that predicted in the original HHRA1.

In the original study (HHRA1) it was predicted that at the most affected receptor, Receptor 8, an increase ranging between 0.53 μg/dL to 0.75 μg/dL (and a mean of 0.63 μg/dL) could occur for children under 10 years of age. With the relocation of the processing plant the most affected receptor is now Receptor 27. The results in HHRA2 for Receptor 27 saw an increase ranging between 0.0 μg/dL to 0.1 μg/dL (and a mean of 0.08 μg/dL). For the most affected age group, 1 to 2 year olds, the current assessment indicates values 7.5 times lower than those originally predicted.

This is primarily due to the use in the model of actual dust emissions (monitored results between July 2013 and June 2014) being lower than those predicted in 2010. These dust levels are used to estimate soil concentrations and the soil component used in the calculations of blood Pb from ingestion which is the most significant exposure pathway.

Table 4-1 Comparison of Human Health Risk Assessment Studies 1 & 2

Age Group	**0.6 - 1**	**1 - 2**	**2 - 3**	**3 - 4**	**4 - 5**	**5 - 6**	**6 - 7**	
Receptor 8	**Blood Lead Concentrations** (μg/dL)							**Mean**
HHRA1	0.61	0.75	0.69	0.65	0.61	0.57	0.53	0.63
HHRA2	0.10	0.10	0.10	0.10	0.10	0.00	0.00	0.08
Receptor 27	**Blood Lead Concentrations** (μg/dL)							**Mean**
HHRA1	NA	NA	NA	NA	NA	NA	NA	NA
HHRA2	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09

NA – Not assessed HHRA2 – current assessment uses monitored data collected during operations.

In addition the calculations of the contribution to blood Pb from air emissions through inhalation as the exposure pathway is very low with a maximum incremental increase estimated to be 0.10 μg/dL.

The results of HHRA2 also indicate that the dust emissions from the processing plant are not making a significant contribution to ambient Pb levels in the local community.

In December 2020 an updated HHRA (and addendum to the HHRA, 2021) was conducted by SLR in accordance with the proposed changes to the Project Approval, MOD6. The HHRA covers the MOD6 construction phase and operational phase of the operation which constitutes an updated HHRA based on the review of monitoring data. The HHRA used air quality modelling results from the air quality assessment completed by ERM for MOD6. SLR consulted BHELP on soil metal concentrations to inform the HHRA.

MOD6 involves;

- Use of Kintore Pit as a new tailing storage facility (TSF3) for naturally dried tailings with co-placement of excess waste rock from underground
- Relocation of the current mine portal and access decline with associated infrastructure to a new boxcut within the existing mine site.
- Harvest naturally dried tailings from Blackwoods Pit (TSF2) and transfer into TSF3
- Conduct periodic crushing of non-ore material in Kintore pit and/or BHP Pit
- Utilise excess waste rock from underground (<0.5%Pb) for rehabilitation surface capping

Note: An addendum was issued to incorporate an additional tails harvesting haul road as part of MOD6. This haul road was included as a key safety control providing segregation of vehicles and improved intersection design.

The results of the updated HHRA (and addendum) for MOD6 suggest;

- Predicted incremental increases in soil Pb potentially arising from approximate 12-month MOD6 construction phase are small and insignificant (i.e. 0.005-0.43% of existing soil Pb).
- MOD6 operations are not expected to change absolute geometric mean blood Pb in children living in Broken Hill.
- Blood Pb concentrations in children living in Broken Hill not anticipated to be affected by activities associated with MOD6.
- The risk of exceeding health-based toxicity reference values for other metals as a result of the Proposal is very low.

5. Rasp Mine Lead Dust Management

A number of dust control measures have been identified in the Air Quality Management Plan (BHO-PLN-ENV-001) in line with Project Approval and Environment Protection Licence requirements.

The objective of these measures is to minimise dust and lead bearing dust generation from BHOP activities and from the general wind take up of dust across the surface areas of CML7 for which BHOP has responsibility.

The Air Quality Management Plan outlines the responsibilities and actions for managing and monitoring dust at the Rasp Mine and is available on the CBH Resources Ltd/Rasp Mine web site. BHOP has also implemented an Occupational Lead Management Plan (BHO-PLN-HLT-001) to address specific issues relating to the personal hygiene of employees, blood lead level testing together with action guidelines.

The following summarises the Rasp Mine's main dust control measures.

5.1 Exposed Areas - Existing and Project-related Free Areas

Exposed areas have the potential for dust generation by wind take-up. These areas include the 'free areas' where there is no land disturbance from mining activities and mine areas where dust can rise from unsealed surfaces.

A dust control strategy for all exposed areas of BHOP surface areas of CML7 has been developed and is documented in the Air Quality Management Plan (BHO-PLN-ENV-001) and details the following management measures:-

- Regular application of chemical dust suppressant;
- Restriction of vehicle or work access to the 'free areas';
- Restriction of surface disturbances within the 'free areas';
- Identification and remediation of areas where fines or silt has built up (typically after heavy rain storms); and
- Remediation of any stabilised exposed area disturbed due to works carried out on site.

Stabilisation refers to the treatment of areas with chemical dust suppressants, to be applied according to the manufacturer's specifications, with the purposed of achieving a control efficiency of at least 80%.

Remediation will include, but not be limited to, removal and burial of fine material, capping with inert waste rock (or similar inert substance), or additional use of chemical dust suppressants. MOD6 approved the use of inert waste rock (classified as containing <0.5% Lead) for capping of free areas with a maximum of 16,000 tonnes/year applied to limit the potential for vehicle-generated dust to impact the community. The areas to be treated and the timeframes for completion are outlined in the Rehabilitation Management Plan and Rehabilitation Strategy available on the CBH website.

5.2 Unsealed Roads

Secondary service roads that receive minimal traffic have been left unsealed, and for safety reasons, an 800m section of unsealed haul road is located within Kintore Pit.

A dust control strategy for all roadways under BHOP operational control has been developed and is documented in the Air Quality Management Plan (BHO-PLN-ENV-001)]. This Management Plan includes the following strategies specific to unsealed roads:-

- Chemical dust suppressant will be applied to achieve a minimum dust control efficiency of 80% to all unsealed roads on the site including the unsealed portion of the haul road;
- Restricting traffic travelling on unsealed sections of road.

- Provision will be made, and responsibility assigned, for clean-up of temporary sources of dust on chemically stabilised roads as a priority (within 8 hours) and kept wet until clean-up is possible; and
- Speed restriction on unpaved haul roads is to be a maximum of 25 km/h.

The periodic grading of unsealed roads has also been identified as a potential dust source unless adequately controlled. To ensure that graders are operated to minimise environmental and community impacts, control measures have been adopted which include:

- Grading to be avoided in dry conditions;
- Grading of damp areas only (application of water to control dust)
- Grading to occur only when necessary; and
- If an area needs grading, grade just that area and not the entire road. The rest of the road may be in good condition and this can be reversed by unnecessarily cutting the surface and disturbing the chemical dust suppressant, resulting in dust.

5.3 Sealed Roads

Consistent with the requirements of the Rasp Mine Project Approval, approximately 4.5km of roads have been sealed, this includes all major roads; the main haul road, road to the processing plant and roads to the mechanical workshop.

The specific roads to be sealed are listed together with a dust control strategy for all roadways in the Procedure – Roadway Dust Management (BHO-PRO-ENV-007). This procedure includes the following strategies specific to sealed roads:

- All sealed areas intended to carry vehicular traffic are to be kept clean;
- Use of a PM10-certified street sweeper to clean sealed roads to reduce dust for a minimum of 12 hours per week;
- Regular inspections are to be made to ensure that dust suppression activities are sufficient to control dust generated from roads;
- Haul trucks are not to be overfilled to avoid spillage of material onto roadways;
- All vehicles entering beyond the boom gate will be required to be cleaned before they exit onto public roads using the site's dedicated wheel wash;
- Storm water drainage has been designed and maintained to prevent water erosion onto paved roads; and
- Spillages and other temporary sources of dust on the sealed roads will be cleaned up as a priority (within 8 hours), and traffic rerouted around spills until they are removed.

5.4 ROM Stockpile Wind Erosion

The ROM stockpile has the potential for dust generation from wind take up. Provision has been made within the Project design for the following engineering controls:

- Static wind breaks will be used to deflect wind to reduce dust entrainment:
- ROM stockpiles are to be kept lower than the surrounding bunds as much as practicable;

- Pro-active use of the water cart for dust suppression if weather conditions suitable for dust lift-off are expected (alerts are currently provided by the daily Weather Intelligence Dust Risk Report); and
- Chemical dust suppressant to be used around traffic areas.

5.5 TSF Wind Erosion

The source of dust from the tailings facilities will primarily be wind-blown dust. A dust control strategy for the Tailings Storage Facility (TSF) has been developed and is documented in the Air Quality Management Plan (BHO-PLN-ENV-001) and includes;

5.1.1 TSF1 Construction and Operation

TSF1 is a historic tails storage facility. It is not planned to further construct or use TSF1. TSF has the following measures in place to control dust;

- TSF1 is covered with rock/slag to prevent dust lift off
- There are restricted and minimal traffic movements on TSF1.
- TSF1 is not in use or planned for use.

5.1.2 TSF2 Operation

Blackwood Pit (TSF2) has been utilised as the sole deposition area for tailings (up until MOD6). Blackwood pit was a deep pit (up to 70 m) and dust suppression activities were not required until the tailing level was closer to the surface. The following controls are in place to prevent dust lift off from TSF2;

- Tailings is deposited as a wet (~65% moisture) material
- Currently the tailings are deposited at the southern end of the Pit and the supernatant water runs the course of the dam maintaining adequate moisture levels in the tailings
- An automatic sprinkler system is currently in construction that will be able to spray water across the TSF to prevent and control dust. The sprinkler system is expected to be completed in 2023.
- The automatic sprinkler system will be linked to the existing air quality monitoring equipment and be able to activate if dust is detected.
- The sprinkler system will also be able to be activated in advance of anticipated ‘windy’ weather. BHO utilises the Kite advanced weather forecasting system to monitor for potentially ‘windy’ dust generating days.
- Dust Suppressant is able to be applied to specific areas of the TSF if/when required.
- Water trucks are able to be deployed in the TSF if/when required.
- The use of video recording equipment to assist in the active management of emissions from TSF2 has been established and is streamed live to the Emergency Services Officer (ESO) office. The ESO position is a 24 hour a day 7 day per week position that is trained to respond to identification of dust generation.

With the approval of MOD6 a Tails harvesting arrangement will be established in TSF2 whereby the TSF will be split into cells to allow depositing of tails, drying of tails and harvesting of tails. The harvested tails (at approximately 10% moisture) will be harvested from TSF2 using mobile equipment and placed in a haul truck for transport and placement in Kintore Pit (to be established as TSF3 under MOD6). Similar controls will remain in place for TSF2 when conducting tails harvesting activities.

With the approval of MOD10 tails will be temporarily stockpiled in the western cell (Cell 1) of TSF2 whilst preparations of Kintore Pit TSF3 for tailings deposition are completed (expected 2024).

5.1.3 TSF3 Construction and Operation

As approved in MOD6, Kintore Pit in which the current underground mine access portal exists, will be converted into a Tails Storage Facility (TSF3). Kintore pit is approximately 100m deep and provides potentially 13 years of tails storage. It is not anticipated that dust lift off from TSF3 will become an issue until the level of tailing is much closer to the top of the pit. The following controls are in place to prevent dust lift off from TSF2;

- TSF3 is approximately 100m deep and at depth is protected from winds generating dust lift off.
- Tailing that is placed in TSF3 will be at approximately 10% moisture.
- An anemometer will be used in TSF3 to monitor wind speeds. When it is determined at what height/level of tailing dust is likely to be generated, suitable controls will be established to mitigate dust from TSF3. It is envisaged this will be many years into the operation of TSF3.

5.6 Transfer To/From Crushed Ore Storage Bin

Material handling of crushed material is potentially a major source of dust in the processing area. The following engineering controls are in place to mitigate the risk:

- All above ground conveyors and transfer points prior to the grinding circuit (SAG and ball mills) are enclosed as required by the Project Approval.
- The crushed ore bin is an enclosed structure.

5.7 Ventilation Exhaust

Stack testing is conducted quarterly at the ventilation shaft against criteria listed in the Rasp Mine Environment Protection Licence. In addition water sprays have been installed at the outlet of the ventilation exhaust that are automatically triggered prior to, and during blasts, to maximise suppression of dust exhausted from the underground mine.

5.8 Unloading Ore to ROM Stockpile

The Run of Mine (ROM) stockpile areas have the potential to generate dust from vehicle movements, depositing ore and by wind take-up. A dust control strategy for the ROM stockpile area has been developed and documented in the Air Quality Management Plan

(BHO-PLN-ENV-001). This plan includes the following dust control strategies specific to unloading ore to the ROM stockpile:

- Wind breaks/bunds have been established and ore stockpiles are kept lower than these wind breaks/bunds.
- Water carts apply water to the ROM stockpile and ROM trafficable areas to supress dust
- Operators are required to visually monitor dust caused by dumping and take appropriate actions to control the level of dust which may include the addition of a dedicated water cart/varying or ceasing operations.
- Operators are to visually monitor dust from the ROM stockpile and additional water will be applied to the stockpile to avoid wind erosion.
- Chemical dust suppressant is applied as per manufacturer's specifications to all trafficked areas (FEL and dump trucks) within the ROM stockpile area, Procedure – Roadway Dust Management (BHO-PRO-ENV-007).

5.9 Front End Loader Operation/Apron Feeder Hopper at the ROM Pad

There is potential for dust to be generated from the dumping of ore onto the apron feeder and into the crusher. Ring nozzle water sprays (atomised sprays) are installed on the apron feeder hopper to the crushing circuit and negative pressure takes this airflow to the crushing circuit bag-house.

Additionally, provision is made for operational dust control measures in the Procedure – ROM Pad Area Management (BHO-PRO-MET-040), including:

- Monthly inspections of the ring nozzle water sprays to ensure effective operation.
- Cease loading to the apron feeder during adverse weather conditions (high winds).

5.10 Crusher Circuit

Material handling of crushed material is potentially a major source of dust in the processing area. The following engineering controls have been implemented to control dust:

- The crusher circuit (jaw (primary) crusher) is fully enclosed within a permanent structure.
- The enclosed structure over the ROM bin extends five metres over the front end load feed area. This extension sits flush onto the steel wing walls and is designed to prevent particulate wind entrainment around the top of the ROM bin.
- This crusher circuit enclosure is kept under negative pressure (approximate airflow into the bag house of 9,700 L/s) and vented via an appropriately sized bag house which has a high (>99%) control efficiency.
- Four dust extraction points report to the bag house - two points in the roof of the crusher circuit enclosure, and two over the conveyor;
- Additionally, provision is made for operational dust control measures in the Procedure – Crusher Circuit Operation, including:

- Consistent with Project Approval conditions the enclosure and associated emissions controls are operated and maintained to ensure that visible fugitive emissions from the enclosure are minimised.
- In the event that sustained (>5 minutes) visible dust is observed to be emitted from the crusher circuit enclosure, crushing will be ceased, and the cause established and rectified prior to crushing activities recommencing.
- The integrity of the crusher circuit bag house is monitored through mill control software (Citect), and via the point source monitoring detailed within the Air Quality Management Plan (BHO-PLN-ENV-001).

5.11 Concentrate Handling

Controls have been implemented to control dust from the concentrate loading area and include:

- Concentrate loading takes place in an enclosed building (solid roof and side walls) with automated doors to open and close upon entry and exit;
- Once the concentrate container has reached capacity a solid lid is placed on the container to maintain moisture content of the product (tested and estimated to be approximately 9%) and eliminate any dust emissions during transport to the rail load out, and subsequently to port; and
- A concentrate container wash facility has been installed to remove and collect any potential spillage from the concentrate container trucks prior to travelling to the rail load out area. Material collected is returned to the process.

5.12 Other Measures

5.1.4 Vehicle wash

BHOP also requires all vehicles that have passed the boom gate access point to be washed down prior to leaving site. This is to remove any potential lead contamination that may be on the vehicle. It is located on the main exit road prior to the boom gate access point. The main features of this facility are:

- Fully automated wash system;
- Deluge designed to wash wheels and undercarriage of cars and trucks;
- Sediment collection and removal system.

The capacity of the facility is be in excess of 1000 vehicle movements per day.

5.1.5 Showering and laundering facilities

On-site showering and laundering facilities are provided to enable workers to shower prior to leaving site and also to negate the need for work clothes to be taken off site for washing. Employees and contractors are required to change clothes prior to leaving site if they have been working on the mine site (past the boom gate). This is to prevent Pb exposure off site including to family members.

5.1.6 Advanced meteorological forecasting

BHOP obtains daily advanced meteorological forecasting which is presented at prestart meetings prior to commencement of each shift, additional control measures can be put in place in advance of adverse weather conditions.

5.1.7 Air Quality Monitoring Equipment and automated alert systems

BHOP has a complex network of air quality monitoring equipment including real time monitors operating 24 hours a day. Details of the Air Quality Monitoring network and equipment are documented in the Air Quality Monitoring Plan (BHO-PLN-ENV-001). The real time monitors utilised at the mine also provide automated alerts (email and SMS) when predetermined dust levels are detected and these alerts are sent to site Environmental Staff and the ESO. A Trigger Action Response Plan has been develop for responding to these alerts which includes investigation into the cause of the alert and escalation to the Area Supervisor. Based on the investigated cause of the dust, appropriate controls may be implemented which can include the ceasing of work or application of water to supress dust.

6. Rasp Mine (Lead) Dust Monitoring

The Air Quality Monitoring Program (BHO-PLN-ENV-010) was initially developed by air quality specialists at ENVIRON Pty Ltd and documents the statutory conditions, standards, locations and reporting requirements for air quality monitoring undertaken by BHOP across its mining operations and neighbouring properties. It also addresses the requirements as outlined in the Project Approval and Environment Protection Licence including:

- Installation of real-time air quality monitoring to assist in the active management of emissions;
- Continuation and expansion of the existing air quality management program to include high volume samplers, dust deposition jars and real time monitors;

Data gathered through air quality monitoring demonstrates the effectiveness of the Air Quality Management Plan and evaluates performance against continual improvement objectives.

Appendix B indicates the locations of air quality monitoring units.

7. Lead Dust Management Contingency Measures

Measures to minimise Pb dust emissions from the Rasp Mine are outlined in Section 5, BHOP has instigated an extensive range of measures to prevent and minimise the generation of lead bearing dust from the Rasp Mine. BHOP has also identified contingency measures to be implemented where the above measures have also been identified to fail. These measures would be implemented where air quality trends indicate an increase in Pb emissions which can be attributed to the Rasp Mine.

7.1 Free Areas

The majority of lead bearing dust emission from the site is potentially from the ‘free areas’ (95%). Currently chemical dust suppressants are applied to minimise dust from these areas. Where dust monitoring results indicate that dust levels have increased, a review of

the chemical dust suppressant program will be instigated to investigate if methods of application and / or concentration are effective. The results of this investigation may:

- Increase the area for application of the chemical suppressant.
- Increase the concentration of the chemical suppressant.
- Investigate other newly available chemical suppressants that are more effective.
- Provide capping over sections of the 'free areas' with inert waste rock.

7.2 Active Mining Areas

Active mining areas, for example processing plant, crushing and roadways account for 5% of lead bearing dust emissions from the site. BHOP have proposed an extensive range of dust mitigation measures as outlined above, where dust monitoring results indicate that dust levels have increased the following measures may be implemented:

- Sealing of secondary roads.
- Increase application of the chemical suppressant on unsealed roads.
- Increase the concentration of the chemical suppressant on unsealed roads.
- Ceasing of dust generation activities in specific wind conditions, for example from a particular direction and/or at particular wind speeds.
- Installing a dust tracking system to better identify dust generating sources.

7.3 Implementation of Contingency Measures

Contingency measures will be implemented following these steps:-

Step 1 There are two triggers for instigating investigations for the implementation of contingency measures:

(1) Dust emissions are higher than predicted. In this case a review of dust monitoring trends indicates an increase in Pb bearing dust over a period of at least 3 months.

(2) Public health monitoring suggests further action is required to reduce blood lead levels in the environment surrounding the site. In this case there has been an increase in the annual blood Pb levels of children as indicated by the NSW Department of Health data.

Environmental staff conduct monthly reviews of air quality monitoring data and will identify and alert management of any increases, where any increases have exceeded the trigger in Step 1 (1) the Senior Environmental Advisor (or delegate) shall notify management and instigate an investigation.

The Senior Environmental Advisor shall keep abreast of the monitoring of Broken Hill community's blood Pb results and where these have increased shall notify management and instigate an investigation.

Step 2 If either of the triggers occurs in Step 1 BHOP will undertake an investigation to determine the source of any increase in Pb dust and any linkage to site operations.

Where it has been determined that the increase in Pb bearing dust or community blood Pb levels can be attributed to Rasp Mine activities, the Senior Environmental Advisor shall complete an incident report in the BHOP INX system and report the matter together with remedial measures to be undertaken to:

- Department of Planning & Environment
- Environment Protection Authority
- Far West Local Health District and Western Public Health Unit
- Broken Hill Environmental Lead Program
- Broken Hill City Council
- Department of Resources and Energy

Step 3 Review identified site operations linkages in Step 2 with the contingency measures listed in Sections 7.1 and 7.2 and implement as required.

Step 4 Review future data to monitor impact and if further actions are required.

8. BHOP Funding Contributions

BHOP shall make reasonable contributions to the Western NSW Local Health District and Western Public Health Unit annually for the purposes of:

- Public health monitoring, particularly in relation to child blood lead levels; and
- Public education campaigns about the health risks associated with lead, including lead hygiene, lead and children, tank water lead risks and soil lead contamination risks.

Western NSW Local Health District shall submit items for financing consideration to BHOP by the end of August each year to enable consideration in the BHOP budgetary process. Items will be in line with above criteria and consistent with the Broken Hill Lead Health Program. Appendix C outlines the information requirements to enable submissions to be assessed.

BHOP will review items against the criteria listed above and identify items for financial support. BHOP will incorporate funding support in annual budgets and provide funding to the Western NSW Local Health District) by end of November each year.

BHOP funding will be up to $50,000 in any calendar year.

The following funding has been provided following applications from Western NSW Local Health District and Western Public Health Unit:

- 2013 - $50,000 for a Public Health Monitoring and Education Campaign;
- 2016 - $50,000 for a Lead Screening Project; and
- 2022 - $40,300 for a Lead Risk Education.

In 2019, $50,000 was provided for a Lead Risk study which was refunded as the project was declined by University of Sydney for being unable to meet ethical standards.

9. Consultation and Communication

9.1 Consultation

9.1.1 Broken Hill Lead Reference Group

BHOP will prepare this Plan in consultation with the Broken Hill Lead Reference Group, including the EPA, NSW Health (Western NSW Local Helaht District) and Council (BHCC).

9.2 Communication

9.2.1 Air Quality Monitoring Data

BHOP provides summary information regarding its air quality monitoring on its web site. This includes summary data and a review of the data against relevant criteria. This data is updated monthly.

Where requested this information may also be presented at meetings of the Broken Hill Lead Reference Group.

9.2.2 Lead Blood Level Monitoring Data

BHOP has provided a link from its web site to the Far West Local Health District information web site which provides independent information on Broken Hill blood Pb level monitoring data and also contains relevant information on public education material related to personal blood lead management.

10. Reporting

10.1 Incident Reporting

10.1.1 Internal

Air quality internal incidents are defined as a deviation of visible dust generation from normal operations.

All air quality incidents are recorded and reported on the BHOP system for incident reporting (INX).

The supervisor of the area where the incident occurred is responsible for investigating, reporting and remediating the incident.

10.1.2 External

For external reporting purposes an incident is defined (Project Approval) as:

"A set of circumstances that causes or threatens to cause material harm to the environment, and/or breaches or exceeds the limits or performance measures/criteria in this approval"

In terms of air quality an 'incident' is defined as any exceedance of the air quality criteria as outlined in the Project Approval.

BHOP is required to report incidents to the DPE (refer Project Approval 07_0018 Schedule 4 Condition 5 and Appendix 5). Incidents may be reported to other relevant agencies including:

- Environment Protection Authority
- Resources Regulator
- Broken Hill City Council

Notification shall be made as soon as practicable after BHOP becomes aware of the incident and a written detailed report shall be provided within seven days of the date of the incident.

BHOP also operates a Pollution Incident Response Management Plan which outlines reporting and investigation requirements. This Plan is tested annually and amended accordingly where required. A copy can be found on the CBH Resources Ltd/Rasp Mine Operations web site.

The Senior Environmental Advisor is responsible for preparing reports to the relevant government agencies which are signed off by the General Manager prior to their submission.

Notification includes all contextual information relevant to the incident, such as prevailing meteorological conditions, extraordinary events (e.g. bushfires, prescribed burning, dust storms, fire incidents, illegal activities), as well as site activities and preventative action undertaken (if applicable) during the incident.

Incident reporting where appropriate contains information on diurnal trends and pollution roses (a graphical representation of wind direction plotted against concurrent particulate concentration, similar to a wind rose), as applicable.

The Senior Environmental Advisor is also responsible for making reports under Section 7.3.

10.1.3 Regular Reporting

Rasp Mine Website (cbhresources.com.au/operations/rasp-mine)

The Senior Environmental Advisor is responsible for updating the Rasp Mine web site with the following information:

- Summary of monitoring results (monthly).
- Summary of community complaints (monthly).
- Updates of the Human Health Risk Assessments.
- A current approved copy of this Plan.
- A link to the Far West Local Health District information regarding blood lead levels and public health.
- Copies of Annual Reviews

10.1.4 Air Quality Complaints Management

Any air quality related complaint will be recorded in the complaints register, entered into INX reporting system and fully investigated to find root causes and corrective actions implemented where necessary.

Additionally the following measures will be undertaken during complaint and incident investigation:

- Instigation of complaints-driven ambient air quality monitoring, as required (refer Rasp Mine Air Quality Monitoring Program); and
- Review of relevant management practices/operational procedures will be undertaken to systematically identify and implement options to modify site practices, to ensure effective control of dust-generating activities so as to achieve the air quality objectives stated in this plan.

All complaints will be documented according the procedure for complaints handling.

The following information is recorded:

- Date
- Specific Time
- Prevailing Meteorology (wind speed/direction)
- Location of incident
- Frequency of emission
- Duration of emission
- Results of investigation, and
- Any required remedial actions.

Any complaints that are investigated and found not to be the result of activities at the Rasp Mine shall be removed from the complaints register and maintained on file for reference.

In accordance with Schedule 4, Condition 10 of PA07_0018, if an owner of privately-owned land considers the project to be exceeding the criteria in schedule 3 at his/her land, then he/she may ask the Secretary in writing for an independent review of the impacts of the project on his/her land.

If the Secretary is satisfied that an independent review is warranted, then the Proponent shall:

(a) commission a suitably qualified, experienced and independent expert, whose appointment has been approved by the Secretary, to:
    - consult with the landowner to determine his/her concerns;
    - conduct monitoring to determine whether the project is complying with the relevant impact assessment criteria in schedule 3; and

- if the project is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and

(b) give the Secretary and landowner a copy of the independent review within 2 months of the Secretary's decision, unless the Secretary agrees otherwise.

11. Auditing and Review

11.1 Auditing

BHOP will undertake independent audits of this Plan consistent with PA07_0018 Schedule 4, Conditions 7, 8 and 8A, as outlined below:

INDEPENDENT ENVIRONMENTAL AUDIT

7. Within one year of the date of physical commencement of development under Modification 6, and every three years after, unless the Secretary directs otherwise, the Proponent must commission and pay the full cost of an Independent Environmental Audit of the project. The audit must:

(a) be prepared in accordance with the Independent Audit Post Approval Requirements (NSW Government 2020); and

(b) be submitted, to the satisfaction of the Secretary, within two months of undertaking the independent audit site inspection, unless otherwise agreed by the Secretary.

8. In accordance with the specific requirements of the Independent Audit Post Approval Requirements (NSW Government 2020), the Proponent must:

(a) review and respond to each Independent Audit Report prepared under Condition 7 above;

(b) submit a response to the Secretary and any other NSW agency that requests it, together with a timetable for the implementation of the recommendations of the Independent Audit Report;

(c) implement the recommendations to the satisfaction of the Secretary; and

(d) make each Independent Audit Report and response to it publicly available no later than 60 days after submission to the Secretary.

MONITORING AND ENVIRONMENTAL AUDITS

8A. Any condition of this approval that requires the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the EP&A Act. This includes conditions in respect of incident notification, reporting and response, non-compliance notification, compliance report and independent audit.

For the purposes of this condition, as set out in the EP&A Act, "monitoring" means monitoring of the project to provide data on compliance with the approval or on the environmental impact of the project, and an "environmental audit" means a periodic or particular documented evaluation of the project to provide information on compliance with the approval or the environmental management or impact of the project.

11.2 Review

This Plan shall be reviewed and revised as required by PA07_0018 Schedule 4, Condition 4 which states:

Within three months of:

(a) the submission of an annual review under Condition 3 above;

(b) the submission of an incident report under Condition 5 below;

(c) the submission of an audit report under Conditions 7 – 8A below;

(d) any modification of the conditions of this approval (unless the conditions require otherwise), or

(e) a direction of the Secretary under Condition 2 of Schedule 2.

The Proponent shall review, and if necessary revise, the strategies, plans, and programs required under this approval to the satisfaction of the Secretary.

Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted to the Secretary for approval, unless otherwise agreed with the Secretary.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the project.

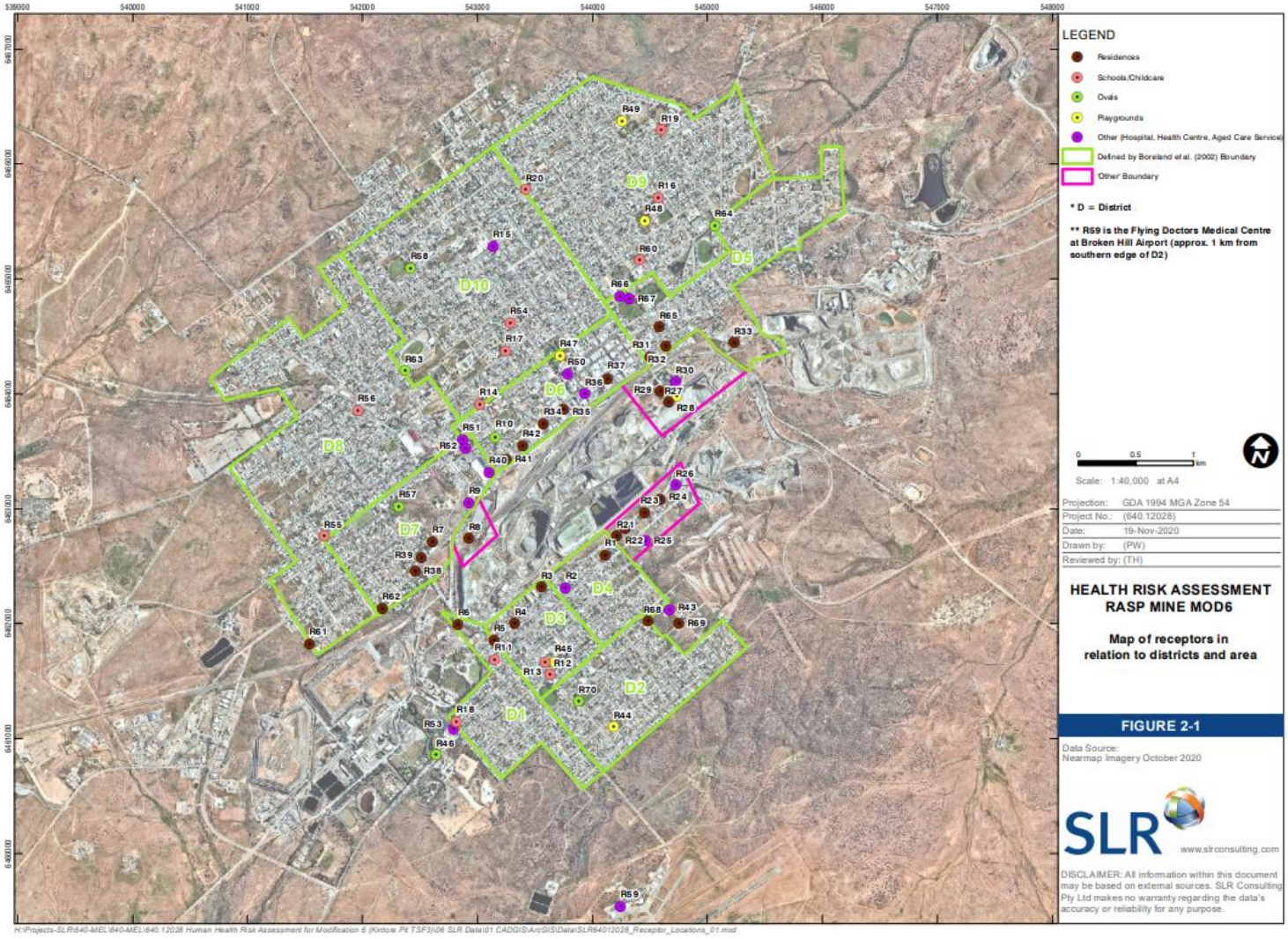
In this review the Broken Hill Lead Reference Group (which includes BHCC, EPA, FWAHS) shall be consulted.

The amended document shall then be submitted to the DPE for approval.

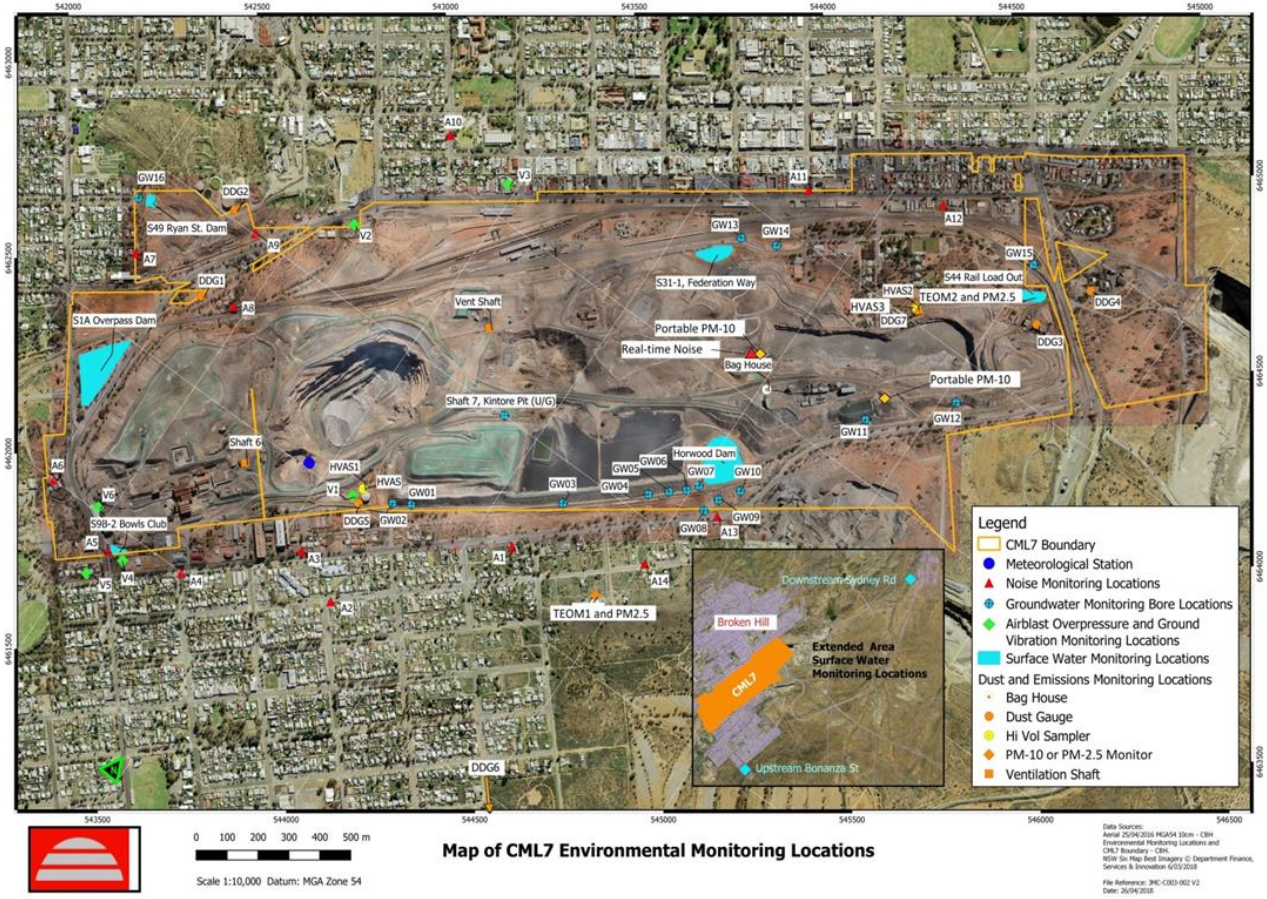
11.3 Revision History

Version: 1.0	***Revised** by:* Ben Jones	***Reviewed by:***	***Date:*** November 2011
Revision Details	New Document		
Authorised By:	***Name***	***Position***	***Date:*** *November 2011*
Version: 2.0	***Revised** by:*Leonard Sharp	***Reviewed by:***	***Date:*** April 2016
Revision Details			
Authorised By:	***Name***	***Position***	***Date:*** *April 2016*
Version: 3.0	***Revised** by:* Jacinta Clark, Devon Roberts	***Reviewed by***:Joel Sulicich	***Date***:April 2023
Revision Details	Updated for MOD 6 – New Tailings Storage Facility & MOD 10 – Temporary tailings placement in TSF2 Change of document number		
Authorised By:	***Name*** *Giorgio Dall'Armi*	***Position*** *General Manager*	***Date****:April 2023*
Version:4.0	***Revised** by:*Devon Roberts	***Reviewed by***:Joel Sulicich	***Date***:October 2023
Revision Details	Updated for MOD10, Updated for Human Health Risk Assessment conducted for MOD6. Monitoring plan updated Appendix B.		
Authorised By:	***Name*** *Giorgio Dall'Armi*	***Position*** *General Manager*	***Date****:October 2023*

Appendix A - Sensitive Receptor Locations



Appendix B - Rasp Mine Monitoring Locations including Air Quality Monitoring



Map of CML7 Environmental Monitoring Locations

Appendix C

Information for Financial Contribution and Evidence of Provision

Broken Hill Operations Pty Ltd (BHOP) in accordance with its Project Approval PA07_0018 Schedule 2 Condition 12, is required to provide a reasonable contribution towards the cost of:

(a) public health monitoring, particularly in relation to child blood lead levels; and
(b) public education campaigns about the health risks associated with lead,
to the satisfaction of the Secretary.

In consultation with the Broken Hill Lead Reference Group, BHOP developed the Community Lead Management Plan which outlines the arrangements for the contribution and states that the 'reasonable contribution' will be up to $50,000. Section 8 also states that the funds shall be made to the Broken Hill Child & Family Health Centre (BHCFHC) annually for the purposes as outlined above.

To obtain funding the BHCFHC is requested to submit a proposal outing the items for expenditure consistent with the requirements of the Project Approval. This proposal is required to be submitted by August each year to enable BHOP to make budgetary provisions for the following year (BHOP operates on a calendar year) and review the proposal to check it is in line with the Project Approval.

To enable BHOP to review the proposal the following information is required:

Applicant – Department entity, name and address

Authorising Officer – Details of the person authorised to act on behalf of the applicant, name, position, contact details.

Contact Person – If different from Authorised Person.

Project Title – Succinct for reporting purposes.

Project Summary – Provide short description of the Project and its outcomes. Carefully consider the criteria outlined in the Project Approval.

Project Timetable – Include the nominated start and completion date for the Project.

Project Outcomes – Show how the project outcomes are aligned with the criteria outlined in the Project Approval.

Project Description – Provide a detailed description of the Project and its benefits. Demonstrate the feasibility of the Project and its capacity to deliver the desired outcomes.

Project Budget – Detail how the funds will be expended for the Project including detailed costs for all expenditure from internal as well as external sources. Provide quotes from third parties and/or calculations for internal resources detailing how the contribution will be distributed and how this aligns to the Project Approval.

Project Reporting - Provide milestones and interim reporting against these milestones together with the submission for a final report. This final report should match the actual expenditure against the

submitted budget and provide an explanation for any variations. This will confirm that the funds were expended on the items in the proposal which is in line with the Project Approval.

Project Auditing – Financial information will be requested to audit expenditures against Project deliverables.

Appendix D

Stakeholders Consultation Responses

The following consultation responses were received from BHLRG members after reviewing the Lead Management Plan. Comments provided were incorporated into this revised version of the Lead Management Plan.