Broken Hill Operations Pty Ltd ABN 95 103 555 862

Annual Environmental Management Report

PERIOD: 31 March 2013 to 1 April 2014

TITLE BLOCK

Name of Mine:	**Rasp Mine**
Mining Titles / Leases:	**Consolidated Mining Lease 7, Broken Hill**
	MPLs 183, 184, 185, 186
MOP Commencement Date 31/03/12	**MOP Completion date 30 /06/12**
AEMR Commencement Date 1/03/13	**AEMR End Date 31 /03/ 14**
Name of Leaseholder:	**Broken Hill Operations Pty Ltd**
Name of Mine Operator:	**Broken Hill Operations Pty Ltd**
Reporting Officer:	**Leonard Sharp**
Title	**Environment Officer**
Signature	 ……
Date	**17/04/2015**

CONTENTS

1. INTRODUCTION

Broken Hill Operations Pty Ltd (BHOP) (a wholly owned subsidiary of CBH Resources Ltd (CBH)), purchased the Rasp Mine from Normandy Mining Investments in 2001 (NMI). The Rasp Mine consists of the Consolidated Mining Lease 7 (CML7) and Mining Purpose Leases 183, 184, 185 and 186. These leases occupy a central region of the historic Broken Hill Line of Lode ore body and incorporate the original mine areas that commenced operations in the 1880s including a substantial amount of mining infrastructure from various mining phases.

The Rasp Mine is located centrally within the City of Broken Hill and is surrounded by transport infrastructure, areas of commercial and industrial development and some residential housing. The Rasp Mine is bounded by Eyre Street and Holten Drive to the south and east, Menindee Road (MR 66) to the northeast, Crystal Street to the northwest and Bonanza Street and South Road (Silver City Highway SH 22) to the southwest. Residential and commercial areas are located to the west, south and north of CML7, Perilya mine developments to the north-east (North Mine) and south-west (Southern Operations) and the Blue Metal Quarry to the east. An aerial view of the Rasp Mine is provided in Figure 1.

Figure 1: Aerial Overview, Rasp Mine

1.1 Consents, Leases and Licences

Table 1 provides a list of development consents held by Rasp Mine.

Table 1: Development Consents

Approval Number	Date Issued	Duration	Purpose
DA 125/2001	5th Sept 2002	Work completed	Surface drilling on CML7 in surface exclusion zone (near rail), supported by a SEE.
MOP 06/6463	26th Oct 2006	31st Aug 2008	Construct exploration decline, conduct drilling and obtain bulk sample, supported by a REF.
DA 101/2007	26th April 2007	Work completed	Undertake temporary mining in the Kintore Pit, supported by a SEE.
MOP Amendment 06/6436	5th May 2008	31st Oct 2008	Extend the exploration decline.
MOP 06/6463	16th Dec 2009	31st Dec 2010 Extended to 31st March 2011	For underground mining and stockpiling 120,000 tpa, supported by a REF.
DA 264/2009	19th Jan 2010	2nd Feb 2011	For ancillary surface mining activities including crushing, stockpiling and transport of ore, supported by a SEE.
Part 3A Application 07_0018	31st Jan 2011	31st Dec 2026	Mining production of 750,000 tpa from Western Mineralisation, Centenary Mineralisation and Main Lode Pillars. Construction and operation of minerals processing plant and rail load out facility. Supported by an EAR.
MOP 0111	31st Jan 2011	31st Dec 2026	Mining production of 750,000 tpa from Western Mineralisation, Centenary Mineralisation and Main Lode Pillars. Operation of a minerals processing plant and rail load out facility. Supported by an EAR.

Table 2 presents the mineral authorities held by BHOP in the vicinity of the Rasp Mine. For the purposes of this document, the area covered by CML7 and MPLs 183, 184, 185 and 186 is referred to as the "Rasp Mine".

Table 2: Mineral Authorities

Mineral Authority	Grant Date	Last Renewed	Renewal Date	Holder	Purpose
CML7	8th Oct 1987	17 th Jan 2007	31st Dec 2026	BHOP	As per Schedule 2 of the Lease Open cutting, shaft sinking, stoping, tunnelling, building of dams, extraction and obtaining minerals, generation of electricity, erecting dwellings, storage of fuels, dumping of ore, treatment and dumping of tailings, development of roads
MPL 183	4th Feb 1981	24th Apr 2007	31st Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings
MPL 184	4th Feb 1981	24th Apr 2007	31st Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings
MPL 185	4th Feb 1981	24th Apr 2007	31st Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings
MPL 186	4th Feb 1981	24th Apr 2007	31st Dec 2026	BHOP	Dumping of ore and mine residues, treatment of tailings

Table 3 presents the licences held by BHOP in relation to the Rasp Mine.

Table 3: Licences Held

Licence / Permit	Issued By	Date of Expiry/ Renewal	Purpose
EPL 12559	EPA	Upon surrender, suspension or revocation	Crushing , grinding or separating >500,000 – 2,000,000T processed. Mining for minerals >500,000 – 2,000,000T produced.
Dangerous goods XSTR100095	Work Cover	Feb 2017	Storage and use of dangerous goods. **Class of explosives — Max quantity** 1.1D — 5,000 Kg 1.1B — 50,500 Kg 5.1 — 25,000 Kg

Licence / Permit	Issued By	Date of Expiry/ Renewal	Purpose
Diesel storage UN 00C1	Work Cover	Feb 2017	Storage of 150,000 L of Diesel
Water extraction 85WA752823	NOW	May 2017	Permission given for exemption from water extraction embargo.
Radiation RML43782	EPA	July 2014	Current licence to sell and/ or possess radiation apparatus. Sell and/ or possess radioactive substances or items containing radioactive substances.

1.2 Mine Contacts

The contact names and phone numbers for key personnel are listed in **Table 4,** together with the telephone number of the Rasp Mine Complaint Line, as required by EPL 12559.

Table 4: Mine Contacts

Name	Title	Contact Details
Visko Sulicich	BHOP Director CBH Chief Operating Officer	T: 08 8088 9106 viskosulicich@cbhresources.com.au
Robert Williamson	BHOP General Manager	T: 08 8088 9157 Robwilliamson@cbhresources.com.au
Costa Papadopoulos	BHOP Manager of Health, Safety & Environment	T: 08 8088 9126 costapapdopoulos@cbhresources.com.au

1.3 Actions Required at Previous AEMR Review

Rasp's previous AEMR review was held on 16th July 2013; a summary is provided in Table 5 with references to applicable sections in this report.

Table 5: AEMR Review Actions

Actions required from 2013 AEMR	Section in AEMR
• **Land Preparation** ○ 0.6ha tailings and waste emplacement – detail required ○ 0.2ha development of vent shaft – detail required Is this the total of land disturbance? Detail all	2.2
• **Table 7 Production and Waste Summary** (MOP Pg. 79) Ore extraction and processing waste exceeds MOP. Need to reflect MOP or justify increase/amend MOP.	
• **recyclable waste** – Further information required	2.6.3

Actions required from 2013 AEMR	Section in AEMR
• **Storage Ponds** o Identify freeboard. Detail how FB is monitored/maintained o Contaminated storages all at maximum capacity. How is contaminated water contained in a high rainfall event if maintained at maximum capacity? o Plan to show location of surface water	
• **Eyre Street Seepage Trench** o Has SWMP been updated to reflect this? o Is amount monitored? o Include further detail	
• **Management Plans** o Conservation Management Plan stated as being in place (email 16-01-2013 stating delay of CMP to be completed by end Jan 2013). Completed? Submitted?	
• **Dust Monitoring Results** o 'All High readings can be attributed to earthworks'. What management strategies if any have been put in place to prevent high levels in the future? Further detail required.	
• **Erosion and Sediment** o 'Monitoring during reporting period'. How is this conducted? How regularly? Further detail required	
• **Surface Water** o 'No water being contained in ponds'. Table 8 Pg. 1 contradicts this statement. Review and amend.	
• **Ground Water** o 'Bores monitor seepage from TSF1' Give details of results of GW Monitoring.	
• **Contaminated Lands** o 6 incidents should be detailed in S 3.17 – Hydrocarbon Management/ S 3.20 Reportable Incidents.	
• **Blasting** o Roving Blast Monitor – Further detail required. o How are locations for this determined? Do they correspond with complaints? o Provide summary of blasting monitoring results. Any exceedences need to be included in reportable incidences.	
• **Noise** o Table 20 to include criteria limits	

Actions required from 2013 AEMR	Section in AEMR
○ Paragraph 1 *'complaints.. Investigated and readings came back under criteria limits.* Paragraph 2 '*all noise results … recoded at high levels than set criteria*. Further detail required on discrepancy of information.	
• **Reportable Incidents** ○ Include hydrocarbon leaks, blast exceedences etc. Notify DRE of all incidents as per Reportable Incidences Guidelines.	
• **Community Relations** ○ How is RASP addressing community concerns re blasting? ○ Are any management strategies in place to reduce effects of blasting on community? ○ Under licence criteria is not responding to community concerns nor an acceptable response given 55 community complaints regarding blasting. ○ Only 4 /68 complaints were responded to with any form of action being taken by RASP. ○ Over all poor response to community concerns/complaints	
• **Rehabilitation Summary** ○ Not consistent with MOP (pg. 93) ○ Infrastructure area 12ha greater than MOP. ○ Rehabilitated area 2ha less for next year – Explain	
• **Table 23** ○ No area given ○ Activities described not rehabilitation ○ 5.2 rehabilitation ○ Pg 91 MOP 'rehabilitation will be carried out progressively during life of project'. – Need to see commitment to rehabilitation. ○ Any free areas identified suitable for rehabilitation?	
Pg 73 of the Mine Closure Plan and pg. 93 MOP refer to chemical suppressant trials with results to be reported in AEMR. Where are these results? Any other rehab trials proposed?	
What/Any rehab activities proposed for next AEMR period?	
RCE Required	

2. OPERATIONS DURING THE REPORTING PERIOD

2.1 Exploration

There has been no surface exploration drilling conducted during the reporting period.

2.2 Land Preparation

Topsoil and Subsoil Stockpiles

No topsoil or subsoil stockpiles were established or maintained during the reporting period.

Surface disturbance

Earth works were undertaken at the processing plant for the construction of the maintenance workshop. This work was planned with the initial construction of the processing plant and was approved in the previous MOP (section 3.2). The area prepared was 200$m^{2.}$ Due to the highly disturbed nature of the CML7 mining lease no new ground has been disturbed. The dirt that was removed was used for additional bunding in the processing plant.

Works to increase the height of bunding along the haul road was also commenced. Waste rock from underground was used to increase the height of the eastern bund on the haul road. The geometric mean lead and zinc concentration in the waste rock was 0.2%.

2.3 Construction

New buildings / structures

The following buildings and structures were constructed in the reporting period

- A maintenance workshop at the processing plant
- Further works to the change house to increase the number of personnel able to be accommodated.

Roads and fencing

No new roadways or fencing were constructed during the reporting period. Routine maintenance of the haul road was conducted to ensure its longevity. Boundary fencing was also inspected and repaired as required.

2.4 Mining

Mine Access

Mining is conducted underground and is accessed through the existing portal located at the northern end of the Kintore Pit. Mining activities include mining of the Western Mineralisation and Main Lode Pillars.

Mining activities were undertaken as follows and met the requirements of the Development Consent:

- Truck haulage from underground to ROM pad 24 hours per day, 7 days per week
- Production rock blasting between 6.45 am to 7.15 pm, 7 days per week
- Development blasting concurrently with production blasting where practicable
- Independent development firing below the 10 level, 7 days per week at any time

- Ventilation fans, 24 hours per day, 7 days per week
- Underground operations, 24 hours per day, 7 days per week

Underground decline development

The current Rasp Decline has been developed between the Western Mineralisation and the Main Lodes, with a secondary decline to be developed providing additional access to the Main Lode stoping. During the reporting period the decline was extended by 205.1m linearly and 21.93 m vertically.

Ore and waste was excavated using load haul dump (LHD) equipment and transported to loading points where mine trucks transported ore to the ROM pad. Waste was used in underground back fill operations with some waste rock being retained and stored in the Kintore Pit for temporary storage.

A total of 21 stopes have been mined with 613,719t of ore coming from those stopes listed in Table 6.

Table 6: Mined Stopes 2013/2014

Western Mineralisation and Main Lode Stopes		
WM_7_3	WM-7-5	WM_8_5
WM_8_4	WM_9_1	WM_10_2
WM_10_4	WM_6_4	WM_5_2
WM_9_3_UH	WM_7_4	WM_6_2
WM_6_1	WM_7 SUB 1	WM_10_3_UH/DH
WM_8_3_UH/DH	WM_12_3_A_UH/DH	WM_12_3_B _UH/DH – Still in production
WM_11_1_UH – Still in production	MLD_525_1	MLD_525_WP –Still in Production

Mining Method and Sequence

The mining of mineral ore is limited to underground workings.

A variety of production methods are utilised, including long-hole open stoping (LHOS), uphole benching, room and pillar and uphole pillar retreat mining. LHOS is the most prevalent method used in the Western Mineralisation, uphole stoping, with room and pillar and uphole pillar retreat in the Main Lode Pillars.

The ore is blasted using a bulk emulsion explosive and extracted using load haul dump vehicles (LHD's) either conventionally or under remote control.

Void Backfilling

Waste rock was used for backfill in mined out stopes. Over the next reporting period more waste will be back filled underground as more stopes become available. The backfill plant was not operational during the reporting period as the cost to complete its construction could not be justified in the current life cycle of the mine.

Tailings Deposition

A total of 543,609t of tailing was produced during the reporting period. All tailings have been stored in TSF2 (Blackwoods Pit). Water is pumped from TSF2 and re used throughout the processing facility.

The Northern and Southern beaches merged during the reporting period to allow greater control of dust levels and filling of the TSF. Further detail around TSF management is in section 2.7.1.

Ore and Product Stockpiles

All ore is transported by truck and stored at the ROM facility before being put through the processing plant. The ROM pad is 32m by 80m as indicated in the MOP. The ROM is also surrounded by 5m wind breaks and has additional water sprays to control dust.

Mine production for the reporting period is provided in Table 7. Kintore Pit stockpiles for back fill were kept at a minimum during the reporting period. All ore on the ROM stockpile including low grade stockpiles were processed. No more than a week's processing was kept on the ROM stockpile at any one time. Table provides a summary of production from the start of the AEMR reporting period to end of the reporting period with the figures being the total cumulative amount since mining commenced. The amount of waste rock and ore produced was less than indicated in the MOP as production and personnel were reduced to increase the viability of the mine.

Table 7: Production and Waste Summary

	Cumulative Production (tonnes)		
Item	**Start of reporting period**	**At end of reporting period**	**End of next reporting period**
Topsoil stripped	N/A	N/A	N/A
Topsoil used / spread	N/A	N/A	N/A
Waste rock	398053	282,122	500000
Ore	557112	640,132	1,000,000
Processing waste	469,190	543,609	1,000,000
Product	59,644	70,110	200,000

2.5 Mineral Processing

Processing of ore from the Rasp mine, has single stage crushing, two stage grinding and differential flotation, including concentrate regrind, to produce separate lead and zinc concentrates. Concentrates are dewatered using thickeners and filters, the filtered concentrates are conveyed directly into concentrate containers for rail transport to a shipping port.

A summary of mineral processing operations for the reporting period are presented below in Table 10.

Table 10: Mineral Processing Summary (April 2013 to March 2014)

Activity/Element	Total Tonnes Produced
Milled tonnes	613,719
PB Con	23,409
Zn Con	46,701
Tailings	543,609

A total of 613,719 t of ore was milled with a yield of 23,409t of lead and 46,701t of Zinc during the reporting period. There was a total of 543,609 t of tailings produced which was deposited in TSF 2. During this time the processing plant operated on a campaign basis with processing occurring three weeks of the month with the fourth being a shutdown week for routine maintenance.

2.6 Waste Management

Waste management at the mine is classified into two broad categories: mineral wastes (mining and mineral processing wastes), and non-mineral wastes which include recyclables and non-recyclables.

Mineral Waste

2.6.1 Tailings

Process tailings from the process plant is primarily deposited into the Blackwoods pit TSF, Figure 2. This is via a ring main and is done in such a manner to beach the tailings and reclaim water for re-use in the process plant from the northern end. In addition it is designed to be able to maintain some moisture and never completely dry as to reduce dust.

In the reporting period the Back fill plant was not commissioned. Meaning that no tailings were able to be used as underground fill and reduce the overall speed that the Blackwoods TSF fills.

There is approximately 1,530,380m3 of remaining storage volume in Blackwoods Pit and at the current milling rate of 500.000 tonnes per year the pit has just over five years remaining life assuming a uniform density of 1.65 tonnes/m3.

The tailing contains the following elements; zinc (0.4%), lead (0.4%), silver (8ppm), iron (3.3%), sulphur (1.2%), arsenic (460ppm), bismuth (70ppm), cadmium (trace) and antimony (45ppm).

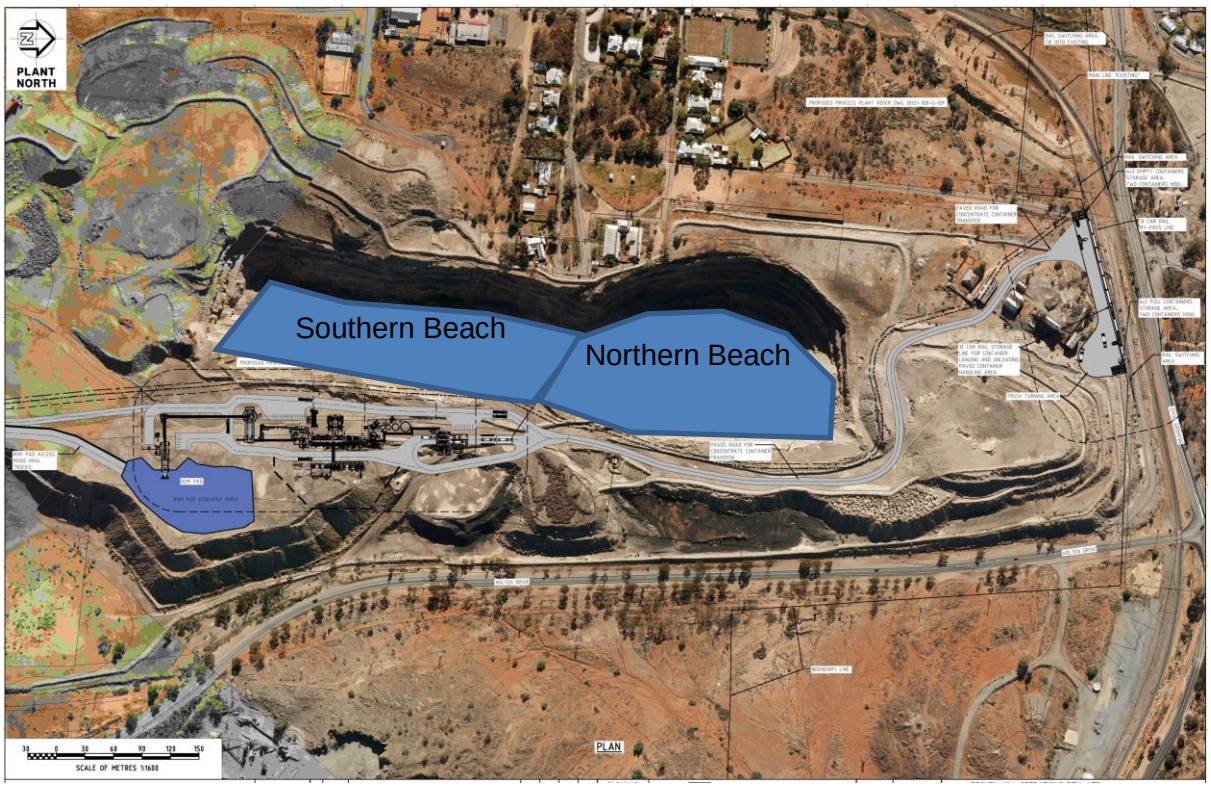

Figure 2: TSF 2, Blackwoods Pit

2.7.1.1 Waste Rock

Waste rock generated from the underground mine is generally reused immediately underground as backfill. There is a small surface waste rock stockpile located opposite the Batching Plant and another located in the Kintore pit. During the reporting period 22156.5 Tonnes of waste rock were transported to the surface stockpiles. The waste rock originates from previous underground workings namely the upper decline bypass. Uses for the waste rock include crushing and screening for road base where required. A total of 262 Tonnes of waste rock was used as road base. Waste rock is also returned underground as void fill. Waste rock is likely to be used during the life of mine or can be utilised for TSF rehabilitation.

If waste rock is needed for use on the surface, it is tested in accordance with the waste rock management procedure. The rock must undergo geometric assessment to establish its lead and zinc concentration and have a mineral concentration of less than 1% for the stockpile.

Non-Mineral Waste Recyclables

Laydown area

Rasp Mine has four main laydown areas where used parts and equipment are stored for future use.

The recyclable area is sign posted with dedicated sections for scrap metal, timber, batteries, rubber, electronic goods and used pods.

Hydrocarbons

Used hydrocarbons are handled and processed at the waste hydrocarbon depot. The facility handles used oil, grease, oily rags, oil filters and hydrocarbon contaminated items.

Volumes of material sent off site are shown in Table 11.

Other Recyclables

Other recyclables include office paper, cardboard, printer cartridges and scrap metal. Standard practices/procedures are in place for paper, cardboard and printer carriages.

Exact figures for recycling cannot be provided as material is taken off site "co-mingled".

Used 1000L pods are returned to the manufacturer for reconditioning and reuse.

Table 11: Waste Management Register

Waste	Recycled Volumes*
Oil	34,400 L
Scrap metal	1500 t
Grease	31 x 205L drums
Oil filters	4 pods
Oily rags	1 pod
Printer cartridges	6 bags
Empty oil drums	10 pods
E-waste	1 pod

* One pod = 1000L

Non-Mineral Waste Non-Recyclables

Tyre Disposal

No tyres were disposed in underground workings during the reporting period. Tyres for heavy mobile equipment have been stored or reused around the mine site for barricades on roadways and within the laydown yards. All other LV and light truck tyres are removed from site under arrangement with the tyre supplier.

Landfill

The Broken Hill City Council on a weekly basis empties rubbish bins containing general site rubbish into a garbage truck. The rubbish is taken to the Broken Hill rubbish dump where it is deposited.

2.7 Water Management

The primary use of water is for processing plant activity with some water losses occurring due to underground backfilling, water retained in the tailings, water in concentrate, water used for dust suppression and seepage at the TSF.

The closed water circuit for the mining operations results in complete management of process water with no off-site wastewater discharges directly from the operations other than the conventional sewage discharge. Collection ponds are in the vicinity of the processing activities to capture and return potentially mineralised sediment to the processing circuit.

The key aspects of the water management strategy include:

- The separation of raw water and potable water requirements. Raw water mining requirerments include processing, workshop, vehicle wash-bay and dust suppression, while potable water requirements include showers, toilets and laundry.
- Reclaiming of water from the tailings storage facility to the processing plant.

Monitoring and updating of the water balance will be ongoing as mining operations progress. Observations regarding the rate of water usage and the effectiveness of the water balance on site will be reviewed periodically.

Water Supply

The water supply to the site comes from the Stephen's Creek Reservoir, Umberumberka Reservoir, Imperial Lake (emergency supply only) and Menindee Lakes Scheme on the Darling River. The following water supplies will be utilised over the life of the Project:

Broken Hill operations holds a license (85WA752823) which permits exemption from the water extraction embargo.

Clean Water

The only clean water structures on site are the raw water tank and potable water tanks. There are no permanent watercourses within the mine's leases. All clean water runoff is diverted around the mine operations via bunding and drains as detailed on Plan 3, to ensure that clean water quality is not degraded with potential contaminants.

Processing plant water management

Runoff from the processing plant is directed to a 'first flush' plant water pond in catchment 42B, with overflows into a second pond (Plant Event Pond) located at the toe of the embankment within this catchment. Both ponds are lined facilities.

Blackwood Pit is used to retain the tailings from the processing plant. Supernatant water from this storage facility is transferred directly to a lined pond at the plant (Plant Water Pond) located in, but not part of, catchment 42B for subsequent reuse in the processing plant.

These ponds allow for the storage of supernatant water from Blackwood Pit, plant upsets and a 1:100 24 hour rainfall event. Any overflow from the Plant Event Pond (in excess of a 1:100 year rainfall event) is directed to Horwood Dam.

Shaft Seven Water

The storage area S22 is a large gully with a storage capacity in excess of 40,000m^3. The gully is used as catchment storage for runoff from surrounding catchments including TSF 1. It is also used for the separate storage and settling of water from the operating underground mine workings and the shaft7. This water is reused for mining activities underground.

The area of S22 is divided into 5 compartments with the northern and southern ends available for surface water runoff (Figure 3). For a 1:100 year rainfall event, runoff into the

northern compartment of the gully will be from TSF 1 of approximately 10,304 m^3. The runoff into the southern compartment of the gully will be from catchments 18, 19, 21A, 21B and 22 and will approximate to 10,185m^3.

The central three compartments are lined and comprise of two settling ponds and a storage pond with installed pumping capacity.

The volume of stored water in northern and southern compartments is kept to a minimum. Any collected stormwater is either evaporated or added to the central compartments for reuse underground or in the processing plant.

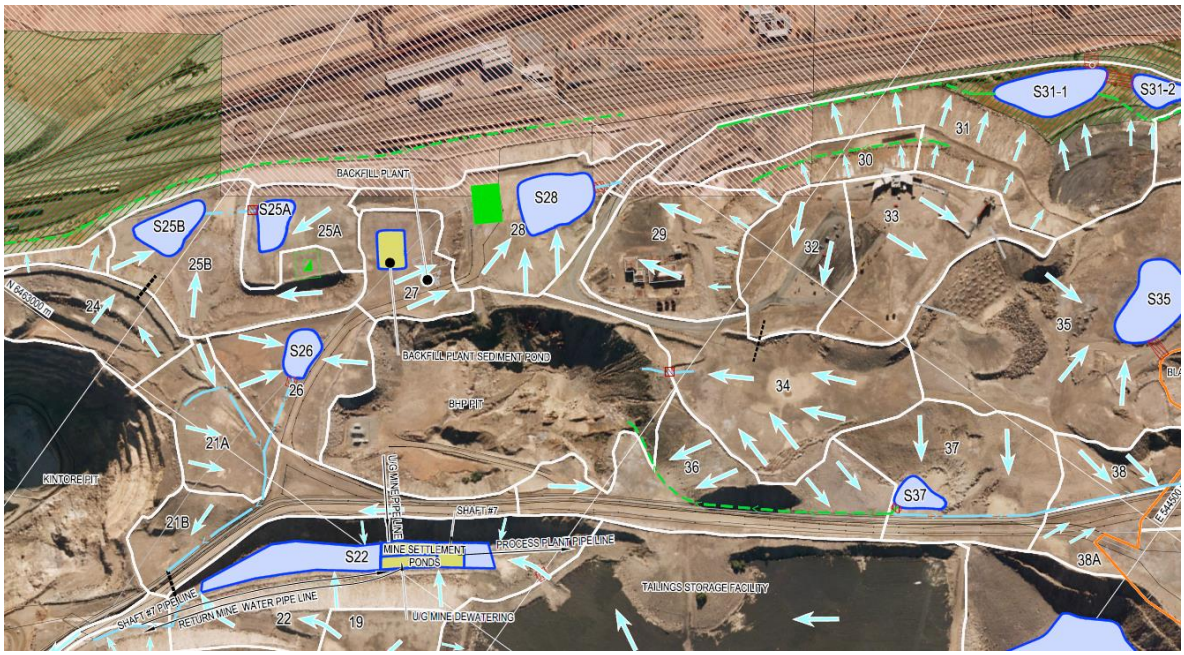

Figure 3: Storage Area S22

Controlled Discharge

There was no surface discharge of contaminated water.

Water Containment Structures

All surface runoff on site is captured by diversion trenches or berms and channelled to site water storage structures. Water catchments and containment structures are presented in Plan 3. Catchments, capacities and estimated stored water volumes for the reporting period are provided in Table 12**.** Detailed surveying of the water storage structures is planned for the next reporting period. Surveys will be used to develop staged storage curves that will enable more accurate capacities and volumes to be determined.

Markers have been placed in water ponds to indicate the maximum level to which water may be stored in the facilities to maintain sufficient free board to accommodate a 1:100y 72 hour storm event.

Table 12 Water Containment Structures

		Volumes held (cubic metres)			
	Pond Identification	**Start of reporting period (1/4/13)**	**At end of reporting period (31/3/14)**	**Storage Capacity m^3**	
Clean Water					
	Workshop	14	14	14	
	Boom Gate	2	2	2	
	Mill	0	8000	8000	
	Delprat's Shaft	9	9	9	
	Kintore Pit	18	18	18	
	Silver Tank	8000	8000	8000	
Dirty Water					
	S2	20	0	5003	
	S14	0	0	7813	
	S17	0	0	4265	
	S31	0	0	225	
	S49	0	0	1951	
	S35	0	0	6092	
Controlled discharge					
	N/A	N/A	N/A	N/A	
Contaminated water					
	Horwood Dam	6000	6000	7663	2000
	Plant Water Pond	2000	1500	2000	1000
	S22 Mine Settlement Ponds	1000	2500	1000	1500
	S22-A	2000	1500	2000	1500
	Vehicle Wash	20	20	20	800

2.8 Hazardous Material Management

Licensing

Rasp holds Licence XSTR100095 for the storage and handling of dangerous goods. The license is valid until February 2017. Rasp also holds a Radiation Management Licence 5063802 which is valid until 26/7/15.

Dangerous Goods Management

Site dangerous goods management is managed according to the site "Chemical Management and Storage Procedure" and the "Dangerous Goods / Hazardous Substance Spill or Leak Response Procedure.

A Safety Data Sheet (SDS) database for each chemical is maintained. SDS's are kept at each location where chemicals are stored and in the mines rescue room. SDS's are also electronically available on the mine intranet using the *ChemAlert* database program. All SDS's across site are continually updated.

General and contractor inductions outline the required actions in the event of a spill, including completing an Incident Report.

All quantities and map with locations are reference in the Pollution Incident Response Management Plan.

Diesel storage

Diesel is stored in two tanks each with a capacity of 68,000L. These self bunded transtanks are located east of the workshop and are sitting on a constructed concrete re-fuelling station. The facility has been designed and manufactured in accordance with AS1940 and AS1692. BHOP has provision for diesel storage on its Dangerous Goods Licence, UN 00C1 Diesel 150,000 L.

Lubricants and oils

Lubricants and oils are stored in individual pods located on a portable bund. A storage facility for these lubricants and oils has been constructed on the western side of the main workshop. It consists of a raised concrete pad incorporating drainage to a sump to facilitate cleaning.

Processing Reagent Storage

All reagents are stored in a purpose built storage facility designed to prevent contamination and capture spillage.

All quantities and map with locations are reference in the Pollution Incident Response Management Plan.

3. ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

3.1 Meteorological

A fully automated weather station has been installed on site. The data recorded by the site weather station has shown discrepancies with the Broken Hill Bureau of Meteorology station. Rasp has been in consultation with Environdata and have been unsuccessful in repairing the weather station with any consistency or reliability. For this reason, BHOP is continuing to attain weather data from the Bureau of Meteorology.

3.2 Air Quality

Development Consent MP 07_0018 specifies two classes of air quality impact assessment criteria relevant to mining operations. These classes relate to dust deposition and particulate

concentration levels. Dust deposition levels refer to the quantity of dust particles that settle out from the air as measured in grams per square metre per month (g/m^2/month) at a particular location. Particulate concentration refers to airborne dust and is measured in micrograms per cubic metre of air ($\mu g/m^3$).

Dust Controls

Dust generation is minimised on site by using RST Total Ground Control chemical dust suppressant on free areas and sealing the haul road and other high use roads around the site. The sealed roads are maintained by using a contracted street sweeper and the sites water truck as required. Unsealed site roads are watered with a water truck as required.

Rasp manages dust emissions from free areas by restricting access to free areas and by maintaining chemical dust suppression on a six monthly schedule. When personnel are required to access free areas, an inspection of the area is conducted to ensure the integrity of the dust suppression.

Long-Term Impact Assessment Criteria for Particulate Matter

The criteria for particulate concentration are defined in terms of two particle size fractions: TSP and PM_{10}.

TSP relates to particles of all size able to remain suspended in the atmosphere; typically particulate matter with aerodynamic diameters of up to 30 micrometres (µm).

PM_{10} refers to particulate matter with an aerodynamic diameter less than 10µm. PM_{10} is a sub-component of TSP.

The Development Consent MP 07_0018 long term impact assessment criteria for particulate matter are summarised in Table 13.

Table 13: Long Term Impact Assessment Criteria for Particulate Matter

Pollutant	Averaging period	[d] Criterion
Total suspended particulate (TSP) matter	Annual	[a] 90 $\mu g/m^3$
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 $\mu g/m^3$

Short-Term Impact Assessment Criterion for Particulate Matter

An Impact Assessment Criterion for maximum 24-hour average PM_{10} is specified within the Rasp Mine Development Consent (MP 07_0018), as provided within **Table 14**.

Table 14: Short Term Impact Assessment Criterion for Particulate Matter

Pollutant	Averaging period	[d] Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 $\mu g/m^3$

Dust Deposition

The Development Consent MP 07_0018 expresses dust deposition criteria in terms of both an acceptable increase in dust deposition over the existing background levels and an absolute maximum value. These impact assessment criteria are summarised in Table 15.

Table 15: Dust Deposition Criteria

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

In-Stack Air Quality Criteria

The DECCW specify in-stack performance criteria within the Protection of Environment Operations (Clean Air) Regulation (2010). Standards of concentration specified in this document represent minimum requirements for point source emissions within NSW. They are generally expressed in terms of milligrams per cubic metre of air (µg/m^3), expressed at reference conditions (typically Dry, 273 K, 101.3 kPa).

Condition 4 of Schedule 3 of Development Consent MP 07_0018 states:

The Proponent shall ensure that the project is operated in a manner that does not exceed the criteria listed in Tables 4 and 5.

"Tables 4 to 5" referred to above are summarised in Table 16 and Table 17 below.

Table 16: Discharge Criteria for Point 1 – Ventilation Shaft (Little Kintore Pit)

Pollutant	Units of Measure	Concentration Limit
Oxides of nitrogen (as NO_2)	Milligrams per cubic metre	350
Total solid particles (TSP)	Milligrams per cubic metre	20
[a] Type 1 and Type 2 substances	Milligrams per cubic metre	1
Volatile organic compounds (as n-propane)	Milligrams per cubic metre	40

Table 17: Discharge Criteria for Point 2 – Process Enclosure / Baghouse Stack

Pollutant	Units of Measure	Concentration Limit
Total solid particles (TSP)	Milligrams per cubic metre	[b] TBD
[a] Type 1 and Type 2 substances	Milligrams per cubic metre	[b] TBD

Monitoring Data

3.2.1 Dust deposition

Total fallout dust (depositional dust) is sampled monthly. A total of seven depositional gauges are in use. Two gauges are located on site and five off site, one control site is located at Casuarina Avenue see Figure 4. Samples are sent to ALS Laboratory in Newcastle for NATA accredited analysis.

Figure 4: Dust Deposition Gauges

The limit for atmospheric dust deposition is set out in the project approval and is aligned with the recommended limits in *Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in NSW*. The guidance document recommends a maximum level of a 12 month average of 4 g/m^2/mth for insoluble solids, and that the activities should not generate dust 2 g/m²/month above the background levels. A summary of the fallout dust results are given in Table 18.

Table 18: Summary of Fallout Dust Analysis

Site	Particulates – deposited matter (g/m^2/m)					Total Lead (g/m^2/m)		
	MIN	MAX	MEAN	BACKGROUND (from EA 2010)	DIFFERENCE	MIN	MAX	MEAN
D1	0.17	7.92	1.64	4.0	- 2.36	0.00	0.01	0.00
D2	0.11	2.55	0.84	3.01	-2.17	0.00	0.01	0.00
D3	0.34	5.49	2.19	4.3	-2.11	0.00	0.02	0.01

Site	Particulates – deposited matter ($g/m^2/m$)					Total Lead ($g/m^2/m$)		
	MIN	MAX	MEAN	BACKGROUND (from EA 2010)	DIFFERENCE	MIN	MAX	MEAN
D4	0.28	5.83	2.19	5.7	-3.51	0.00	0.01	0.01
D5	0.51	2.72	1.41	N/A	N/A	0.00	0.02	0.01
D6	0.23	10.24	3.07	5.8	-2.72	0.00	0.01	0.00
D7	0.40	2.55	1.32	N/A	N/A	0.00	0.01	0.01

Dust Particulate Concentration High Volume Air Samplers

HVAS1 (EPL10)

The average TSP level for the reporting period was 26.83 μg/m3. This is less than in the previous reporting period and indicates that dust control measures at this monitoring point are being maintained adequately. The 12 month lead average has remained low at 0.39 $\mu g/m^3$ Table 19.

There were five samples collected during the reporting period that differ significantly from the average PM10 lead result. As the results were an order of magnitude higher than the average, the soil in the surrounding area was tested to investigate the validity of the results. Testing indicated that the lead concentration in this area was 2%. As the results differ significantly and the surrounding lead concentration is low it is unlikely that the results are valid. BHOP is working together with Onsite Laboratories to verify the results attained.

Table 19- TSP HVAS1 (EPL10) Results Overview

PERIOD	TSP ($\mu g/m^3$)			Total Lead ($\mu g/m^3$)		
	MIN	MAX	MEAN	MIN	MAX	MEAN
1st March 2013 – 30 April 2014	2.02	152.44	26.83	0.04	4.33	0.39

HVAS2 (EPL 11)

The average PM10 level at this monitoring point was 15.80 μg/m3 Table 20. This result remains well below the criteria of 30ug/m3. There were two samples collected during the reporting period that differ significantly from the average PM10 lead result. As the results were an order of magnitude higher than the average, the soil in the surrounding area was tested to investigate the validity of the results. Testing indicated that the lead concentration in this area was 2%. As the results differ significantly and the surrounding lead concentration is low it is unlikely that the results are valid.

Table 20- PM10-HVAS2 (EPL11) Results Overview

PERIOD	TSP (μg/m³)			Total Lead (μg/m³)		
	MIN	MAX	MEAN	MIN	MAX	MEAN
1st March 2013 – 30 April 2014	1.72	83.33	15.80	0.04	2.80	0.29

HVAS 3 (EPL12)

The average PM10 reading at this location was 14.26 μg/m^3 which was less than the previous reporting period Table 21. However results indicated that total lead content has increased (0.083μg/m^3 to 0.42 μg/m^3). A number of results vary significantly from the average content of lead per PM_{10} dust sample. The average content of lead in a PM10 sample at this location is 3%. For example the result obtained on the 10th of February 2014 was 18% lead. The data has been checked with the lab and appears to be correct. Some split samples (blind duplicate or lab duplicate) may be required in the future to test lab methods are adequate.

Table 21- PM10 HVAS3 (ELP12) Results Overview

PERIOD	TSP (μg/m³)			Total Lead (μg/m³)		
	MIN	MAX	MEAN	MIN	MAX	MEAN
1st March 2013 – 30 April 2014	0.59	70.47	14.26	0.04	1.39	0.26

TEOM Monitors

The Rasp Mine has two TEOM monitors which record real time PM10 data. This data is used to manage dust emissions during the day. The monitors provide a real time read out on a kiosk computer in the HSE office which is monitored by HSE personel. When the level exceeds 50ug/m3, the cause is investigated and where possible controlled by use of the water truck or by modifying work methods. During the reporting period monthly averages did not exceed criteria at either monitoring point. Figure 5 shows the recorded data at each TEOM for the reporting period.

An average of 30ug/m3 was exceeded in October 2013 and January 2014. These two spikes are not necessarily reflected in the depositional and Hi Vol analysis as they do not have the same sample frequency so short term spikes are more evident in the TEOM data.

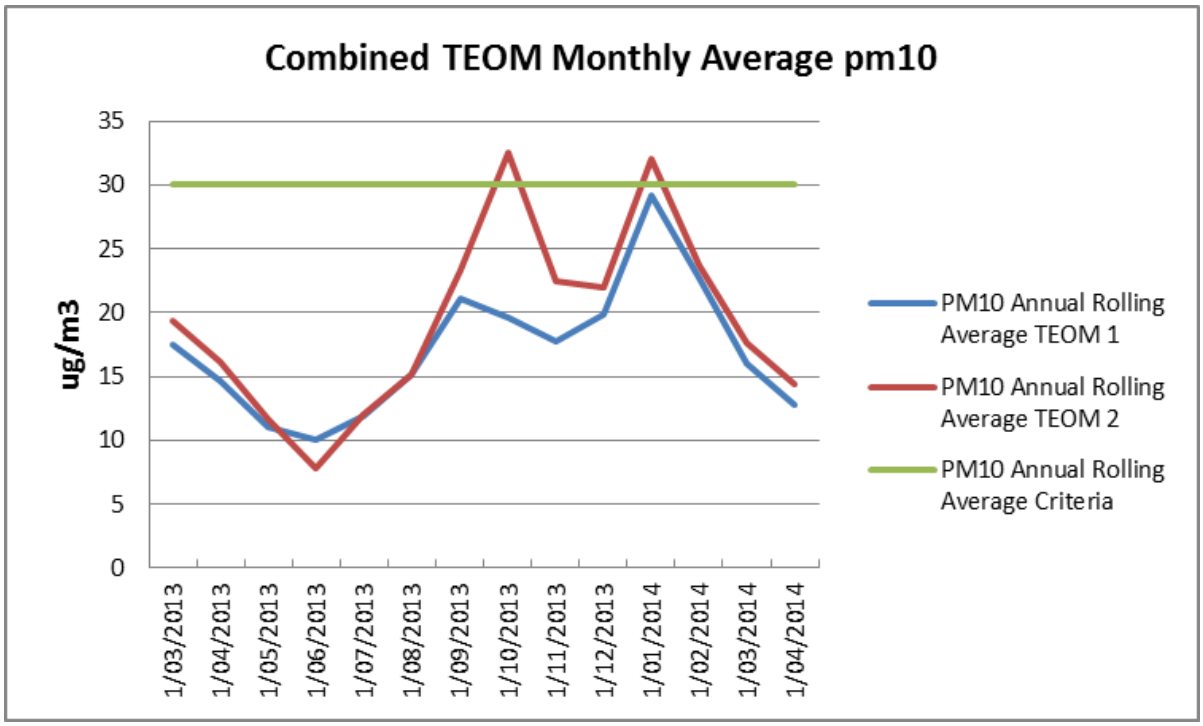

Figure 5: TEOM 1 and 2 Monthly Average PM10 levels

In-Stack Air Quality

Pacific Environment was commissioned by CBH Resources to conduct air emissions sampling from two sources at their Broken Hill Operations. The sources sampled were the vent shaft emission point and the mill bag-filter release point.

The sampling on the vent shaft is timed to coincide with blasting activities in the mine. To perform representative sampling on a release point of this size and to achieve reasonable detection limits, the sampling time is calculated to 80 minutes and the sampling is started immediately following the start-up of the sprinklers just prior to the blast. As described in the Rasp Mine Air Quality Monitoring Program, stack testing is conducted quarterly at the ventilation shaft. Water sprays were installed in the vent rise and are used during blasts to maximise suppression of dust. Emission testing is also conducted at the bag house. Tables 22 and 23 show the results of emission testing during the reporting period for the Vent Shaft and Mill Baghouse respectively.

Table 22 Emission Testing Results

Vent Shaft							
Element	Units	EPL Limits	03-Jun-13	04-Jun-13	05-Jun-13	23-Oct-13	11-Feb-14
Stack PM Concentration	mg/Nm3	20.00	5.08	8.70	7.67	6.58	4.20
Nitrogen Oxides (NOx as NO2)	mg/Nm3	350.00	4.73	12.43	3.00	2.44	36.54
Total Heavy Metals	µg/Nm3	1000.00	180	308	229	466	97.4
Volatile Organic Compounds	mg/Nm3	40.00	1.15	1.15	1.15	2.68	1.16

Table 23 Emission Testing Results

Mill Baghouse					
Element	Units	EPL Limits	04-Jun-13	24-Oct-13	12-Feb-14
Stack PM Concentration	mg/Nm3	20.00	2.50	5.98	4.99
Total Heavy Metals	µg/Nm3	1000.00	82	388	126

All results were within the monitoring criteria and no incidents were recorded.

3.3 Erosion and Sediment

The majority of the existing batters were constructed during former mining operations and consequently the surfaces of the batters consist predominantly of weathered rock. It is not practical to reshape the slopes, as most of the slopes are on the mining boundary, steep and predominantly comprise of large rock aggregate. The process of erosion over the years since the slopes were formed has removed most of the finer materials and the existing surface now comprises relatively large and coarse rock resulting in a self- armoured surface with limited erosion potential.

To limit further erosion of the batters, surface water is diverted by shaping the top area of the landform to allow surface water to drain away from the crest of the slopes. Where this is not possible, open drainage channels divert surface water away from the batter face.

Storage ponds effectively serve as sediment control ponds and limit the movement of sediment throughout and off site. Ponds are routinely inspected quarterly and after significant rain events. Inspections consist of a visual assessment for erosion, flooding, rubbish, algal growth or significant sediment build up.

Erosion and Sediment Control is managed through the Erosion and Sediment Control Procedure.

Monitoring during the reporting period did not identify any serious erosion issues. Due to the low rainfall over the reporting period, there was limited erosion observed.

3.4 Water Usage

Raw water and potable water are supplied by Essential Water with take off valves at the Eyre Street entrance. Raw water (288 ML/annum), water from the town supply, is supplied untreated to the project via existing connections.

Approximately 300 ML/annum of water is reclaimed onsite from various sources to be recycled for the Project, mainly from underground dewatering. If necessary, the reclaimed water will be treated onsite to ensure that it is suitable for use as process water in both the processing plant and underground operations. The sources for the reclaimed water include:

- No. 7 Shaft dewatering (95 ML);
- mine underground operations dewatering (135 ML);
- processing plant tailing and thickener overflows (included in TSF decant pond reclaim water);
- TSF decant pond (116 ML); and
- stormwater containment dams (amount dependent on extreme rain events as insufficient runoff is collected for pumping during normal rainfall events, therefore no allocation has been made).

Reclaimed water will be returned after treatment at the back fill plant to the process water tank which has a three hour holding capacity or to the Silver Tank which has a capacity of 9 ML.

Water Management

The site water management plan encompasses responses to the relevant planning conditions as outlined in the project approval. The SWMP includes a ground water monitoring programme, sediment control plan, surface water monitoring and maintenance plan, a water balance and communication plan.

Raw Water Monitoring

Raw water is used for firefighting and specific parts of mill processing. Hydrants are located adjacent to the office buildings on Eyre Street, the truck wash facility, workshop and Kintore Pit portal.

Raw water was required for dust control and general construction works where recycled water was not considered feasible (due to potential for cross contamination or unsuitability for the purpose of the intended use).

3.5 Potable Water

Water from the town supply is treated at the Mica Street treatment plant and supplied to the Project via existing connections and is used for showers, toilets, and laundry. Average usage of potable water is 9 ML/annum. Potable water is supplied to the offices, workshop, core shed and processing facility.

3.6 Surface Water Monitoring

There are no natural water courses or creeks flowing through the site. The drainage network layout restricts runoff leaving the active area of the site up to the 1 in 100 year event.

Surface water monitoring includes a weekly visual inspection of water storage facilities, freeboard and structural integrity. The tailings storage facility and the processing events dam are inspected and levels checked monthly. Quarterly water quality samples are taken from dams when the water levels are above 20% capacity.

Surface water analysis for the reporting period was compared to the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 – livestock water quality.* Samples are couriered to ALS, a NATA accredited laboratory for analysis. The majority of the surface water storages do not comply with the guidelines and exceed thresholds for conductivity, pH, lead, zinc and sulphates. However, this is considered to be typical of surface waters in an operational metalliferous mine, and indicates that high metals are likely attributed to mineralisation of naturally sulphate rich or elevated lead and zinc occurrence in near surface soils (EES, 2013). All waters were contained within the containment structures with no off site discharges during the reporting period.

Stormwater Ponds

Monitoring of water quality of the following stormwater ponds is carried out if the ponds contain water. The water quality results are used to compare with groundwater monitoring bores near the four ponds. The pond water quality of S1-A, S31-1, S31-2, S44, S49, S9B-1

and S9B-2 are measured at least twice a year when a pond has contained water for at least one week and the volume of stored water is at least 20% of the pond capacity. Water results from run off into ponds S31-1 and S31-2 are related to historic mining operations classified as heritage listed slag heaps.

Sample results are provided in Table 24, and indicate that stormwater has not been an issue throughout the reporting period due to a very dry season and lack of rain. All water was contained within the containment structures with no off site discharges during the reporting period.

Table 24: Stormwater Pond Water Quality

Sample	Date	Temp °C	pH	EC uS/cm	Sulphates mg/L	Lead mg/L	Zinc mg/L	Iron mg/L
	Guideline	**NA**	**6 – 9**	**7500**	**1000**	**0.1**	**20**	**NA**
S31-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S31-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S44	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S49	23/5/13	N/A	6.59	55	12	0.071	2.09	0.08
S9B-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
S9B-2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Horwood Dam

Monitoring of surface water in Horwood dam is conducted at least once a year after storm events and when the level of water is within 300 mm (± 20mm) from discharge occurring. No water was discharged from Horwoods Dam during the reporting period. Monitoring results from the reporting period are presented in Table 25.

Table 25: Horwoods Dam Water Quality

Sample	Date	Temp °C	pH	EC uS/cm	Sulphates mg/L	Lead mg/L	Zinc mg/L	Iron mg/L
	Guideline	**NA**	**6 – 9**	**7500**	**1000**	**0.1**	**20**	**NA**
Horwoods	11/2/14	N/A	6.88	17600	5820	0.021	309	0
Horwoods	31/1/14	N/A	6.26	23900	12100	1.87	3040	0
Horwoods	27/11/13	N/A	6.52	19200	9420	1.29	2540	0.05
Horwoods	30/9/13	N/A	6.4	17100	7370	1.52	525	0

3.7 Ground Water

The regional groundwater near the site is depressed due to long term pumping from the underground mines in the area. This results in the depressed groundwater level below the site being more than 100m below the surface level, with a hydraulic gradient into the site at depth. The groundwater monitoring program is undertaken with the purpose of recording perched groundwater movement. Perched groundwater refers to surface water that has

infiltrated into the near surface moderate to high permeability material generally comprising of granular soils and rock dill. The perched ground water exists for short periods of time after rainfall events and generally seeps laterally over the low permeability bedrock surface below the near surface permeable material. The rainfall events at Rasp mine site indicate that the perched groundwater has the potential to surface seep rather than seep into the regional groundwater. Considering the depth of the regional groundwater it is concluded that there is little interaction between the shallow perched groundwater and the regional groundwater.

Rasp's ground water monitoring plan is outline in the Site Water Management Plan. The objective of the ground water monitoring program is to;

- Provide a program to monitor seepage movement within and adjacent to the tailings storage facility;
- Provide details of parameters and pollutants to be monitored and background local perched groundwater parameters;
- Establish a contingency measure in the event that an unacceptable impact is identified.

The existing monitoring bore holes provide an early warning sign if seepage is occurring near the CML7 lease boundry. Water from mine dewatering at Shaft 7 and from the mine decline will form part of the groundwater monitoring program. Samples of groundwater are collected every three months, water permitting.

The location and function of each borehole is listed in Table 26

Table 26 Location and function of Mine Dewatering Samples and Groundwater Monitoring Boreholes

Groundwater Borehole ID/ Mine Dewatering	Location	Function / Purpose
GW01, GW02	South east of Mt Hebbard	To monitor if seepage is occurring from Mt Hebbard
GW03, GW04, GW05, GW06 GW07, GW08, GW09	East of TSF 1	To monitor potential seepage flows from TSF 1 towards the CML7 mine lease boundary
GW10	Downstream of Horwood Dam	To monitor potential seepage north of Eyre Street Dam.
GW11, GW12	Proposed east of Blackwood Pit	Proposed borehole to monitor potentially perched water as a result of potential groundwater mounding from TSF water
GW13, GW14, GW15	Adjacent to storage areas S44, S31-1 and S31-2	To monitor if movement of perched groundwater is occurring from the storages.
GW16	To the west of storage area S49.	To monitor potential seepage west of S49.
Shaft 7	Shaft 7	To assess groundwater quality of pumped water from Shaft 7
Mine Dewatering	Decline at Kintore Pit	To assess groundwater quality at decline

Piezometers monitoring

The piezometers are sampled quarterly when there is sufficient water quantity to enable sampling. Groundwater bores GW11-GW16 were installed to target seepage from TSF1 and monitor the surface water pond S49. There are a total of 16 monitoring bores across the CML7 and are presented in Figure 6.

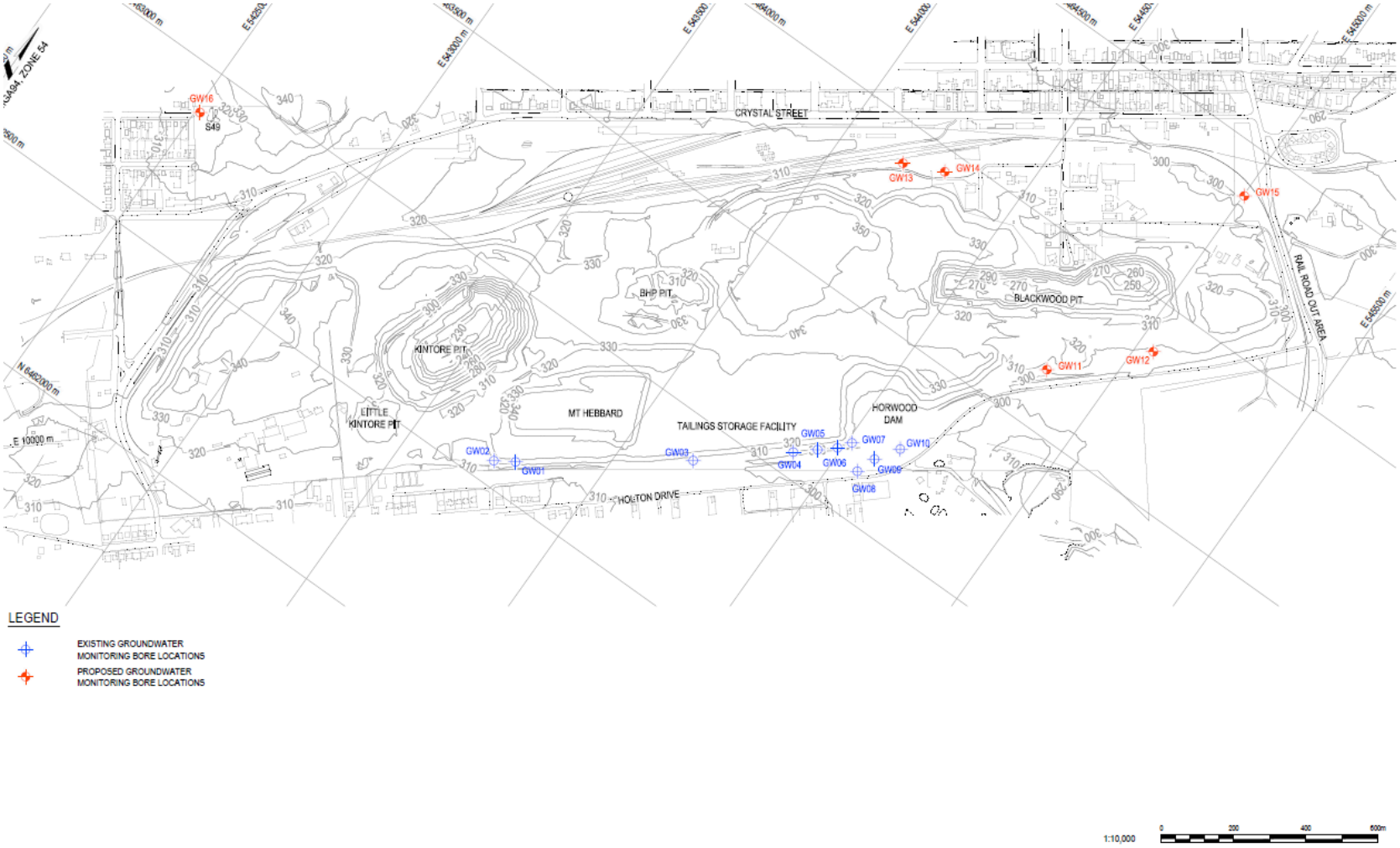

Figure 6: Monitoring Bore Locations

The majority of piezometers showed a steadying or very slight decrease in levels during the reporting period. Levels in the piezometers can be attributed to low rainfall during the reporting period.

Water from Mine Dewatering

Sampling of mine dewatering from shaft 7 and the mine decline forms part of the groundwater monitoring program. Sampling is carried out at the mine water pond in S22, where water from underground is discharged in to individual storage pond compartments. The central three compartments in S22 are lined for storage of underground water and to limit the risk of possible mixing of underground water with surface water runoff also being stored in S22. Samples taken at the central compartments in S22 are representative of the decline and shaft 7 samples. Sampling from mine dewatering is carried out every three months.

3.8 Contaminated Land

The majority of the surface land area that makes up the Rasp Mine is historic mining waste material including waste rock emplacements and tailings.

The storage and handling of diesel fuels, lubricants and oils, and waste rock material are the only aspects of the operation which have the potential to contribute to contaminated land.

There were no spills or land contamination incidents recorded during the reporting period.

3.9 Hydrocarbon Management

The main streams of hydrocarbons managed on site include:

- Fuel (diesel); storage and distribution
- Grease oils and lubricants; storage distribution and recovery for recycling
- Solvents used in the parts washer

Fuel

Diesel is stored in two tanks each with a capacity of 68,000L. These self bunded transtanks are located east of the workshop and are sitting on a constructed concrete re-fuelling station. The facility has been designed and manufactured in accordance with AS1940 and AS1692. BHOP has provision for diesel storage on its Dangerous Goods Licence, UN 00C1 Diesel 150,000 L. Surface distribution of diesel is by direct collection from the fuel browser. The tanks operate on a float and cut-off system that prevents overfilling of the tanks.

Rasp's fuel management system enables monitoring of fuel usage by each vehicle and piece of plant. This assists with maintenance and security as well as providing an accurate reporting mechanism for the collecting of data for NPI and NGERS reporting.

Grease, oils and lubricants

Lubricants and oils are stored in individual pods located on a portable bund. A storage facility for these lubricants and oils has been constructed on the western side of the main workshop. It consists of a raised concrete pad incorporating drainage to a sump to facilitate cleaning.

Solvents

Oil solvent used for cleaning of mechanical parts at the workshop is removed by a contractor on a fixed maintenance schedule.

Processing Reagent Storage

All reagents are stored in a purpose built storage facility designed to prevent contamination and capture spillage.

The reagents stored here include:

- Hydrated Lime
- Copper Sulphate
- Methyl isobutyul carbinol
- Sodium metabisulphite
- Sodium ethyl xanthate
- Sodium isopropyl xanthate
- Flocculant

All quantities and map with locations are reference in the Pollution Incident Response Management Plan.

3.10 Flora and Fauna

The site is a highly disturbed environment that provides little value as native flora and fauna habitat. There have been no threatened flora, fauna or species habitat identified at the Rasp Mine.

3.11 Weeds

Weeds are managed on an as needs basis with Trevor Hicks Pest Control engaged to spray any weed infestations. There have been no reported outbreaks during the reporting period.

3.12 Blasting

Blast monitors are installed at three locations around site as per licence requirements. A roving blast monitor is also utilised for determining more information about ground conditions and vibration movement at various locations. When a blast complaint is received, the person is given the opportunity to have the roving monitor placed at their location. The aim of this is to assess community impact and also to gather information for future blast design.

As per Project Approval, blasting times are stipulated for production blasting and only occur between 6.45am and 7.15pm on any day. Development firing usually occurs at the end of every shift however under certain circumstances firings are completed during the shift.

On three occasions the overpressure reading exceeded the 120dB (Lin Peak) criteria. Investigations of the results indicated that the noise was the result of non-mining related activities. This receptor was located near a construction site which was active during the reporting period.

Airblast overpressure of 115 dB was exceeded less than 5% of the time for the total number of blasts over the reporting period. All other airblast criteria was met.

A total of 131 production blasts were fired at the Rasp mine site over the reporting period. There were a total of 6 blasts which exceed the 10 mm/s vibration limit.

A pollution reduction plan was developed with the EPA (Audit of Production Rock Blasting Activities Broken Hill Operations Pty Ltd) Rasp Mine completed a full review of its blasting activities and the vibration results recorded. Nearly all recommendations have been implemented with some historical data to be entered for the practice of better blasting vibration prediction.

BHOP engaged Prism Mining to review blasting practices and vibration monitoring and in particular:

- Blast design;
- Estimated vibration readings;
- The set-up of the vibration monitors;
- Recorded data;
- Planning data for blast design; and
- Methodology for detonation to better control blast vibration.

BHOP has implemented a number of processes (as outlined in the PRP response) to manage blast vibration and reduce impact on the local community over the last 18 months.

These include:

- Developing a review process to help assist with future predictions;
- Making realistic predictions with regard to blast vibration that achieve the most likely minimum impact scenario;
- Moving away from aiming for an unattainable vibration peak that carries to much risk of an extraneous peak occurring;
- Predicting peak vibrations at three non-monitored locations to better determine the impact of our blasting on specific identified community locations;
- Where possible reducing the length of the blast to assist in limiting impact on the community; and
- Improving our database to isolate more information to a single source to better analyse result

It was identified that some of the initial design controls carried lower levels of predictability with regard to control of blasting vibration. For example blasts were initially designed for a longer duration with smaller impact blasting. However this was identified to have a greater risk of possible overlapping vibration frequency. This could possibly increase peaks at sources and increased the likelihood of sympathetic detonation occurring at a time not scheduled.

3.13 Operational Noise

During the reporting period noise was generated by operation activities, movement of heavy vehicles and delivery trucks leaving and entering site.

Operational Noise Criteria and Control Measures

Noise control measures which have been introduced include insulating the crusher house with noise abatement material. Noise monitoring identified emission from the washcloth recirculating line. To reduce the noise level the existing 150mm OD (poly-HDPE) pipe work which housed the orifice plate was removed, along with numerous flanges and 3 90° bends. The recirculation line actuated butterfly valves were moved as close as practical to the cloth wash pipe work that feeds the filter press. Then to maintain an acceptable head on the pump and eliminate the electric motor tripping the ID of the cloth wash, the recirculation line after the valve was reduced in 3 stages from 140mm down to 50mm. This has eliminated the need to have the orifice plate in the line and reduced the noise being omitted from the pumps/pipework.

Several noise attenuation measures were put in place recently these measures include:

- Plant and equipment operator training. This included correct gear selection to minimize noise emission, retraining in travelling haul road procedure and educating personnel of the noise criteria for site.
- The use of an ice-creaming technique when loading the crusher allows the crusher to be loaded to maximum capacity at all times reducing the noise generated by rockfall onto the grizzly. Ice-creaming is where the crusher bin volume is maintained at a high level by the ROM front end loader.
- Optimisation of haul truck speed and gear changing via the use of intermediate markers along haulage route
- Reduction in haul truck movements
- Extension of both length and height of the existing earth bund along the southern haul road (from Kintore Pit to ROM pad)
- Installation of noise abatement material in the crusher house
- A 2.5 m high by 6 m long tyre wall was constructed to reduce noise transition from the filtration area of the processing plant.

Operational Noise Monitoring

Noise monitoring was taken quarterly at noise monitoring locations stipulated in the Development Approval. Noise readings were also completed on a ‘as need’ basis when a community complaint was received. Seven noise complaints were received in the reporting period

24 Hour Crushing Approval

BHOP commenced 24hr crusher operation trials in November 2013. EMM was engaged to complete noise surveys and submit a modification to the environmental agreement. Approval for this modification is currently under review.

3.14 Visual, Stray Light

All light towers around machinery have been designed to face light away from residents. There were no light complaints for the reporting period.

3.15 Indigenous Heritage

There are no known significant indigenous sites within CML7.

3.16 Natural and Social Heritage

Rasp has engaged Austral Archaeology Pty Ltd to prepare a Conservation Management Plan (This work is ongoing). This is to allow for sufficient consultation to occur. Discussions have occurred with DoPI and Rasp has sought an extension to the completion of this work.

3.17 Spontaneous Combustion

Products with high sulphur content (tailings, ore and concentrate) are prone to spontaneous combustion. Combustion is caused by the oxidation of the sulphides, which is an exothermic chemical reaction that causes heat build-up, and the remaining sulphides to start smouldering. In extreme cases the sulphides may burn producing a flame. Requirements for combustion to occur are high sulphur material, oxygen, moisture and sufficient material to generate heat build up. No incidences occurred during the period.

3.18 Bushfire

Restriction of Fires on Site

No incidences occurred during the period

Fire Control

Hydrants supplied with town water are located on site have fireboxes with hoses located nearby. Rasp has a fully equipped fire truck available at all times to respond to fires. Rasp also has a trained mines rescue team for the purpose of fire fighting.

3.19 Mine Subsidence

Subsidence Monitoring

No incidences occurred during the period.

3.20 Methane Drainage/Ventilation

Methane is routinely monitored for underground workings and during underground drilling. No methane ventilation issues occurred during the reporting period.

3.21 Public Safety

The mine site is clearly signposted and fenced to restrict any unauthorised access. The majority of the BHOP surface area of CML7 is fenced and secured by locked gates or is bunded to discourage access. Therefore, the only significant public safety exposures will be if there is illegal or unauthorised public access to the CML7.

The control plan for such exposures are:

- Public access to the lease will be strictly controlled via security gates.
- All visitors accessing the site will be required to report to the administration office prior to entering and after existing the lease.
- All visitors to the lease will undergo a visitor's induction before entering the lease and will be accompanied by a fully inducted employee or contractor at all times.

- All contractors will have to undergo the appropriate induction prior to commencing any work on site.
- Regular inspections are undertaken of the lease boundary to check that the site fences are fit for purpose and that site access gates are secure.

Visitors to the mine are only allowed on site with management approval and are required to undertake a visitor briefing (induction), and are accompanied by a site representative at all times. Visitor briefing cards are distributed to ensure key information is readily at hand for visitors. Visitors must follow site policies and conform to personal protective equipment (PPE) requirements.

All employees and contractors complete a general induction and work area specific inductions where required (e.g. underground, mill).

3.22 Radiation

During the reporting period, Endeavor's Radiation Licence to Sell/Possess no. RL28863 was converted to a new Radiation Management Licence no. RML28863. The renewal period on this licence is two years. The environmental officer monitors all renewal dates via the central compliance register. An external contractor conducts six monthly inspections of the individual radiation gauges on site.

3.23 Environmental Incident Management

All health, safety and environmental incidents are reported via the Rasp Incident Management Procedure. A summary of the incidents for the reporting period are shown in Table 27. Rasp maintains a Pollution Incident Response Management Plan on the CBH Resources website in accordance with EPA requirements.

A total of environmental incidents were registered during the reporting period. The majority of incidents related to the management of hydrocarbons, or leaks and spills on site. As a result of Endeavor's good reporting culture, these types of incidents are promptly reported and can be addressed quickly. There were no reportable EPA incidents during the reporting period. The majority of incidents related to minor spillages.

Table 27: Environmental Related Incidence for Reporting Period

Environmental Incidents for 2013-2014 reporting period			
Date	**Incident Number**	**Brief Description**	**Actions**
21/4/13	048-04-13	Whilst re fueling up R5 the quick fill failed to shut off causing a spill of approx 40ltrs of deisel	Spill cleaned up using spill kit located at the fuel bay. Followed site spill procedure. No diesel escaped the fuel area and no waterways were affected
3/5/13	060-05-13	A vibration reading of 11.40 mm/s was achieved. This has exceeded the maximum allowable limit stipulated in the licencing agreement by 1.4 mm/s.	

Environmental Incidents for 2013-2014 reporting period			
Date	**Incident Number**	**Brief Description**	**Actions**
12/1/14	007-01-14	tailings spilled outside of bung wall area	
22/1/14	019-01-14	Punched a hole in the bottom of a 1000L pod with the tine of an IT	
8/4/14	70-04-14	Lime plant bunded area overflowed	Contained spill and cleaned up. Electricians contacted to reset sensor.
28/4/14	81-04-14	Spillage of dry hydrated lime	Shutdown lime pump, cleared lime screw feeder sock

4. COMMUNITY RELATIONS

4.1 Environmental Complaints

During the period of the AEMR BHOP has maintained a register for community complaints and concerns. A total of 47 complaints were received over the reporting period with 38 of these related to blasting vibration. BHOP has made significant steps to improve blasting over the reporting period.. All complainants were followed up, contacted and closed out.

5. REHABILITATION

5.1 Buildings

There were no buildings erected or demolished during the year.

5.2 Rehabilitation and Disturbed Land

Table's 28 and 29 detail disturbed areas no rehabilitation reporting period.

Table 28: Rehabilitation Summary

	Area Affected / Rehabilitated (hectares)		
	To date 1/4/2012-31/3/2014	**Last Report 1/1/2011-31/3/2013**	**Next Report 1/4/2013-31/3/2014**
A: MINE LEASE AREA			
A1 Mine lease(s) Area	226.4		
B: DISTURBED AREAS			
B1 Infrastructure area (other disturbed areas to be rehabilitated at closure including facilities, roads)	64.5	64.5	64.5
B2 Active Mining Area (excluding items B3 – B5 below)	11.5	11.5	11.5
B3 Waste emplacements, (active / unshaped / in or out-of-pit)	2.5	1.70	2.5

	Area Affected / Rehabilitated (hectares)		
	To date 1/4/2012-31/3/2014	**Last Report 1/1/2011-31/3/2013**	**Next Report 1/4/2013-31/3/2014**
B4 Tailings emplacements (active / unshaped / uncapped)	3.8	0.0	3.8
B5 Shaped waste emplacement (awaits final vegetation)	0.0	0.0	0.0
ALL DISTURBED AREAS	77.2	77.2	77.2
C REHABILITATION			
C1 Total Rehabilitated area (except for maintenance)	149.1	149.1	149.1
D REHABILITATION ON SLOPES			
D1 10 to 18 degrees	4.1	4.1	4.1
D2 Greater than 18 degrees	14.7	14.7	14.7
E SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	NA	NA	NA
E2 Native forest / ecosystems	1.0	1.0	1.0
E3 Plantations and crops	2.6	2.6	2.6
E4 Other (include non-vegetative outcomes)	151.3	151.3	151.3

Table 29 – Maintenance Activities on Rehabilitated Land

	Area Treated (ha)		
NATURE OF TREATMENT	**Report Period**	**Next Period**	**Comment / control strategies / treatment detail**
Additional erosion control works (drains re-contouring, rock protection)	0	0	Site water management earthworks completed at various locations around site to implement Site Water Management Plan Dust suppression sprayed on bunds and batters to reduce the erosion of loose fill.
Re-covering (detail further topsoil, subsoil, sealing etc)	0	0	NA
Soil treatment (detail – fertiliser, lime, gypsum etc)	0	0	NA
Treatment / Management (detail – grazing, cropping, slashing etc)	0	0	Monthly inspections of the lease are undertaken checking stability of slopes, fallen rocks, fencing and heritage buildings
Re-seeding / Replanting (detail – species density, season etc)	0	0	N/A
Adversely Affected by Weeds (detail – type and treatment)	0	0	N/A
Feral animal control (detail – additional fencing, trapping, baiting etc)	0	0	No action during period to control goats.

6. ACTIVITIES PROPOSED IN THE NEXT AEMR PERIOD

At the time of writing the following activities were proposed for the 2014/2015 reporting period (Table 30).

Table 30: Works Schedule

Activity	Proposed Completion Date	Status
Mine Closure Plan	June 2015	Underway
Conservation Management Plan	May 2015	Underway