



INTRODUCTION

Broken Hill Operations Pty Ltd (BHOP) seeks to modify its Project Approval 07_0018 for the Rasp Mine in Broken Hill to extend its underground mining to the south-western boundary to include Block 7 and the Zinc Lodes. This document provides preliminary information consisting of an overview of the extension and the potential key issues to address in support of this application.

The current Project Approval permits underground mining of the Western Mineralisation, Centenary Mineralisation and Main Lode Pillars (Blocks 8 to 12) until 31 December 2026 extracting no more than 750,000 tonnes of ore per annum, and no more than 8,450,000 tonnes of ore over the life of the Project. It also permits the processing of ore and the despatch of concentrate products from the mine site by rail.

The Rasp Mine is located on Consolidated Mining Lease 7 (CML7), which lies centrally in the City of Broken Hill. Mining and associated operations have been conducted at the site for over 125 leaving the site highly disturbed with a number of heritage buildings and structures.

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 and Argent Streets to the north, and South Road (Silver City Highway SH 22) to the west. These roads form part of the existing trucking route through Broken Hill. The Broken Hill railway station is located directly to the north of the mine and lies on the main Sydney – Perth railway line. Residential and commercial areas are located to the west, north and south of the Project Area, Perilya mine developments to the east (North Mine) and west (Southern Operations) and the Blue Metal Quarry to the east.

These areas were intended to be mined and were included in the resource model. However at the time of the Project Approval application, a geotechnical study for the area had not been completed. It was therefore determined to allow the application to proceed and request a modification to the Project Approval prior to mining in these areas.

There will be no addition to life of mine mined tonnages or ore processed as the proposed mining will replace material from Main Lode Pillars which cannot be mined successfully due to its oxidation or dilution. Therefore there will be no requirements for additional equipment to extract or process ore from these areas and no impact on tailings produced for life of mine.



Figure 1 Aerial View of Area for this Project



VALUE

The Zinc Lodes represent an updated resource (as of 10 July 2014) of 266,000 tonnes at a grade of 11.6% Zinc, 6.8% Lead and 88 grams/tonne Silver. The in-situ value of this ore at today’s commodity prices is approximately \$80 million.

It has also been determined that Block 7 contains 50,000 tonnes of Main Lode reserves at a grade of 7% Zinc, 8% Lead and 150 grams /tonne Silver. The in-situ value of these reserves are approximately \$20 million.

These two areas represent high grade ore essential for the viability of the Rasp Mine operations. Current grades from the Western Mineralisation must be supplemented with higher grades reserves such as these to ensure viability and maximise recovery of underground resources.

Table 1 Ore Resource as at 30 June 2014

	Category	'000 t	Zn%	Pb%	Ag g/t
Main Lode Pillars – Block 7	Probable	50	7.0	8.0	150
Zinc Lode	Probable	260	11.6	6.8	83



DESCRIPTION OF ADDITIONAL MINING

BHOP seeks to extend its underground mining program southwest into Block 7 Main Lode and to the Zinc Lodes.

Block 7

Block 7 Main Lode is an extension of the old Main Lode orebody (comprising 2 and 3 Lens material) that Rasp has current approval to mine between Blocks 8-12. It has been mined since the late 1800's and BHOP now intends to extract pillars that have been left over the course of 100 years of mining. The Main Lode was the primary focus of mining operations on CML7 between 1884 and 1991 and BHOP will extend its focus on the remaining material left in Block 7. These pillars are dispersed throughout old timber stoping areas that were originally uneconomic to mine but with bulk mining methods can now be recovered.

Zinc Lodes

The Zinc Lodes on CML7 are along a strike extension of the B and C Lodes that are mined on the Perilya Broken Hill Pty Ltd lease to the southwest. The geology of the B and C lodes has been well documented in Broken Hill over a long period. On CML7 the B lode material is concentrated in an area of fold interference and the C lode material is concentrated in "dropper" structures which are axial planar to the B lode folds. This is typical of B and C lodes throughout the field.

The Zinc Lodes will be mined in a conservative fashion (small volume loader cut and fill initially and small diameter up-hole stopes).



Figure Error! No text of specified style in document. Rasp Mine Resource Areas – Looking West

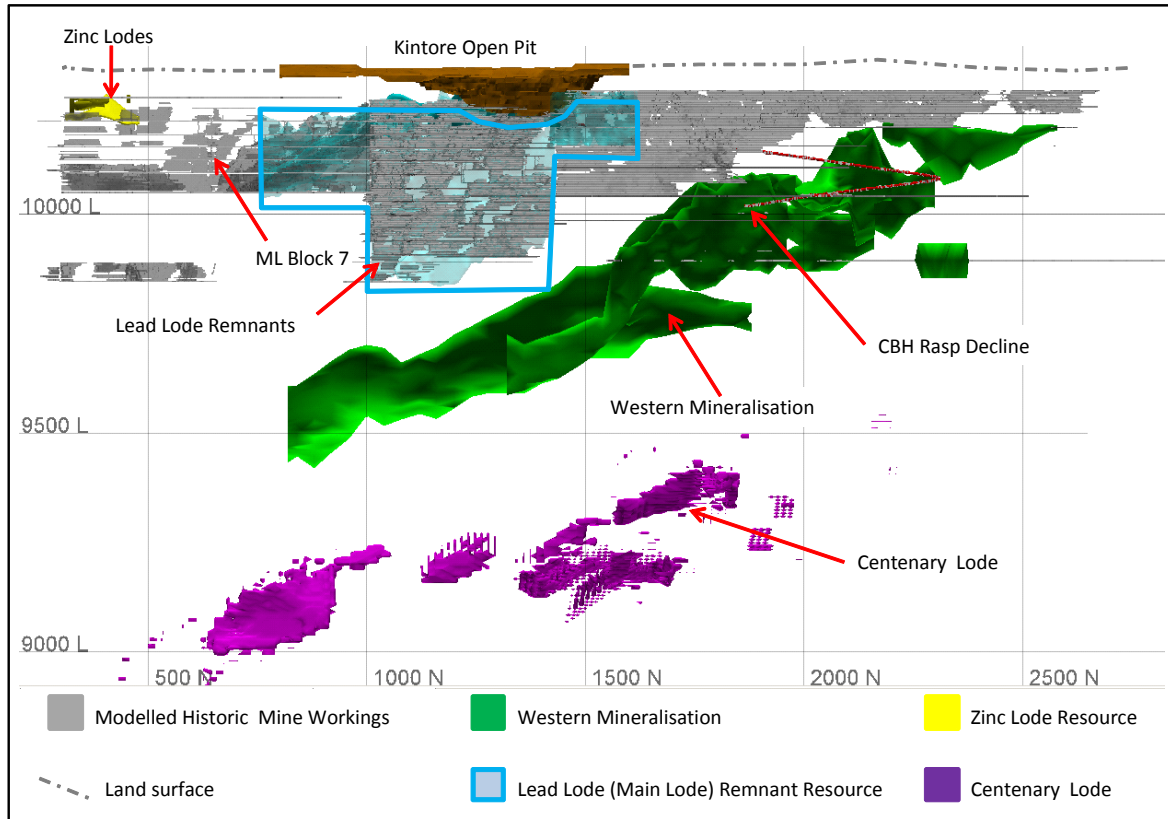
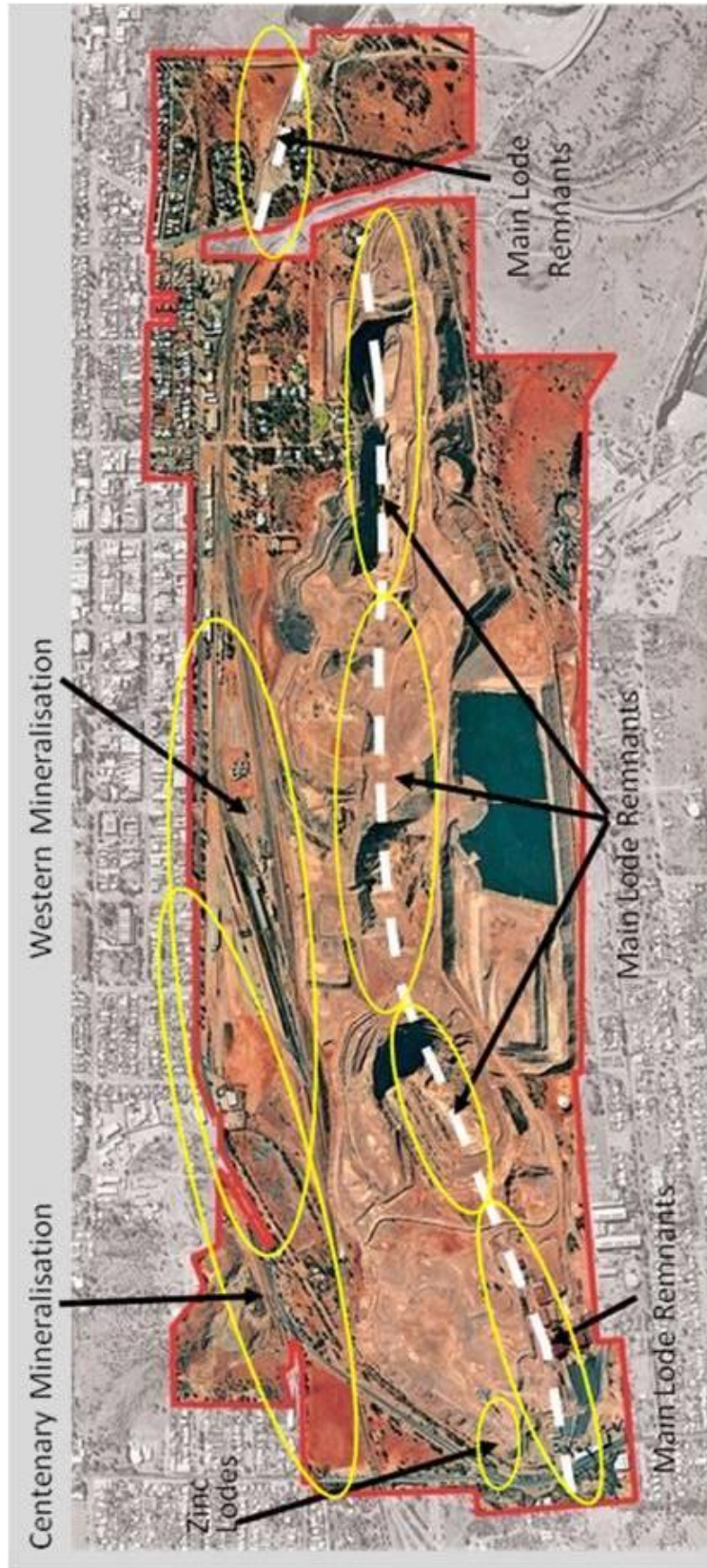




Figure Error! No text of specified style in document. Rasp Mine Resource Areas





PRELIMINARY ENVIRONMENTAL REVIEW

Table 2 provides a review of environment issues identified in the Environment Assessment for the Rasp Mine Project Approval and identifies the key environment issues relevant to this Project.

Table 2 Review of Environment Issues (Environment Assessment)

Environmental Issue	Relevance	Key Issue
Noise	All mining works will be conducted underground as the material to be mined replaces other mining material that has been found to be uneconomic to mine there will be no change in tonnes mined.	No
Vibration	Mining will be undertaken up to 65 metres from surface and will proceed beneath South Road (Silver City Highway SH 22) and 2 houses owned by the Line of Lode Reserve Trust (located on CML7). There is also some residential housing and the Italian Club located in the area within 71 m and other approximately 100-150 m of the proposed mining operations. Extending mining to the southwest boundary brings the Rasp Mine mining activities closer to the workings of the Perilya Broken Hill Operations Pty Ltd's South Mine.	Yes
Subsidence	Mining will be undertaken within 65 metres below South Road (Silver City Highway SH 22).	Yes
Air Quality, general	All mining works will be conducted underground as the material to be mined replaces other mining material that has been found to be uneconomic to mine there will be no change in tonnes mined and therefore no additional ore haulage or processing requirements or other dust generating activities.	No
Air Quality, air extraction from mining	It is proposed to use a sealed shaft (Shaft 5) to vent air from underground workings. This would require the removal of the seal and placing a fan at an appropriate location along the shaft. The closest facilities to the shaft are the tennis courts located 50 m to the south and the Italian Club located 75 m also to the south. Beyond these facilities are 7 residential housing located 140 m to 165 m from the shaft.	Yes
Community Health	As there will be no additional ore mined or processed there will be no additional impacts to community health.	No
Water Resources	No impact as proposed mining is well above the current water table. Water is currently pumped from underground to lower water table levels to permit mining to occur. Water extraction is also required to allow safe operations at the adjacent mine – Perilya Broken Hill Operations Pty Ltd's South Mine.	No
Heritage	Adjacent to South Road are a number of items listed on the BHCC Local environment Plan as heritage	Yes



Broken Hill Operations Pty Ltd
Rasp Mine
Preliminary Paper – Zinc Lodes Project Approval Variation

	items. These include the No 7 and No 4 Head Frame. Engineering reports indicate that the No 4 Head Frame requires stabilisation. This work is scheduled for Quarter 4 2014.	
Ecology	Past mining has left the Rasp Mine and Project Area highly modified and disturbed. The original landform has been significantly altered, the majority of native vegetation has been removed and soils have been degraded and covered with waste rock.	No
Visual Amenity	There will be no change to surface activities, structures or buildings.	No
Traffic & Transport	There will be no change to surface activities, traffic or haulage movements for ore or concentrates.	No
Waste Management	Non mining waste will be managed in line with the current BHOP Waste Management Plan. Waste rock will be used to fill underground voids, may be stored in Kintore Pit and / used, if tested as suitable, as noise/safety bunding material or road base.	No
Rehabilitation	There will be no additional surface disturbance or stockpiling of ore or waste (concentrates are not stockpiled but placed into containers directly from the filtration process.	No

KEY ENVIRONMENTAL ISSUES

Vibration

A risk assessment will be undertaken by a suitably qualified blasting engineer to assess any potential impacts in regards to vibration issues relevant to the integrity of South Road and the Perilya mining operations. Consultation will also occur with Roads and Maritime Services and Perilya to identify any risks and required control measures.

Vibration impacts on local residential housing and the Italian Club will also be assessed.

Subsidence

BHOP will complete a geotechnical study to identify possible subsidence impacts from proposed mining activities to the South Road and surrounding area. This study will also identify suitable mining methods to eliminate any risks identified.

Air Quality, air extraction from mining

BHOP will complete an air quality assessment for extracting air from Shaft 5. BHOP is currently required (Environment Protection Licence 12559) to conduct air quality monitoring from its main ventilation shaft at the Rasp Decline:



**Pollutant Units of measure
POINT 1**

Oxygen correction
Averaging period
Reference conditions
Nitrogen Oxides
milligrams per cubic 350
metre
dry, 273 K,
101.3 kPa
Total Solid Particles
milligrams per cubic 20
metre
dry, 273 K,
101.3 kPa
Type 1 and Type 2 substances in aggregate
milligrams per cubic 1
metre
dry, 273 K,
101.3 kPa
volatile organic compounds
as n-propane equivalent
milligrams per cubic 40
metre
dry, 273 K,
101.3 kPa

It is proposed to use a sealed shaft (Shaft 5) to vent air from underground workings. This would require the removal of the seal and placing a fan at an appropriate location along the shaft. The closest facilities to the shaft are the tennis courts located 50 m to the south and the Italian Club located 75 m also to the south. Beyond these facilities are 7 residential housing located 140 m to 165 m from the shaft.

Heritage

No 4 Head Frame located near the south western boundary of CML7 near South Road is listed under the BHCC LEP (2013) as heritage item (I267, previously 180). The Head Frame is surveyed monthly by the BHOP technical services department. It was inspected by a structural engineer in April 2013 and was found to show signs of rotation in a south easterly



direction. Stabilisation works were identified and agreed with some financial contribution provided by BHCC.

These works are expected to start in quarter 4 of 2014 with completion by the end of March 2015.

CONSULTATION

BHOP has identified a number of key stakeholders and will consult with each of these parties to gain an understanding of any relevant environmental concerns to be addressed for this Project.

- Department of Planning and Environment
- Department of Trade and Investment, Division of Resources and Energy
- Environment Protection Authority
- Roads and Maritime Services
- Broken Hill City Council
- Department of Trade and Investment, Crown Lands
- Perilya Broken Hill Operations Pty Ltd
- Italian Club
- Local residents

APPROVAL REQUIREMENTS

In addition to the application to the Department of Planning and Environment to modify the Project Approval 07_0018 BHOP will also seek a modification to its Mining Operations Plan.

BHOP will also consult with the EPA to determine if any variation to its Environment Protection Licence 12559 is required.

ADDITIONAL INFORMATION

For additional information please contact:

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Broken Hill Operations Pty Ltd
Rasp Mine
Preliminary Paper – Zinc Lodes Project Approval Variation

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