Rehabilitation Management Plan

Rasp Mine

Prepared for Broken Hill Operations Pty Ltd

July 2025

Rehabilitation Management Plan

Rasp Mine

Broken Hill Operations Pty Ltd

E240995 RP#2

July 2025

Version	Date	Prepared by	Reviewed by	Comments
2	16/10/2024	Bret Jenkins and Emilia Zambri	Paul Freeman	Update objectives and heritage information
3	28/10/2024	Bret Jenkins	Paul Freeman	BHOP Review and revised RA
4	22/07/2025	Bret Jenkins	Paul Freeman	Final. Revised surface water and tailings seepage

Approved by

Bret Jenkins
Associate Director
22 July 2025

Level 3 175 Scott Street
Newcastle NSW 2300
ABN: 28 141 736 558

.

Lease Block

Name of mine:	Rasp Mine
Rehabilitation management plan commencement date:	March 2025
Rehabilitation management plan completion date:	
Mining leases (lease number(s)) and expiry date(s):	**Lease** / **Expiry** CML7 / 31 Dec 2026 MPL183 / 31 Dec 2026 MPL184 / 31 Dec 2026 MPL185 / 31 Dec 2026 MPL186 / 31 Dec 2026 ML1249 sublease / 31 Dec 2026
Name of lease holder(s):	Broken Hill Operation Pty Ltd
Name of operator (if different):	Broken Hill Operation Pty Ltd
Name and contact details of mine manager (or equivalent):	Chris Chindanya Telephone: 08 8088 9111 Email: giorgiodallarmi@cbhresources.com.au
Name and contact details of environmental representative:	Devon Roberts Telephone: 08 8088 9126 Email: droberts@brokenhillmines.com
Name and title of representative(s) of the lease holder(s):	Chris Chindanya General Manager
Signature of representative(s) of the lease holder(s):	
Submission date:	
Version:	V4 (July 2025)

Declaration

I, Chris Chindanya, declare that all information contained in this document is, to the best of my knowledge, true and not misleading.

Signature

Date

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Acronyms and abbreviations

As	Arsenic
AMD	Acid mine drainage
ARD	Acid rock drainage
ASX	Australian Stock Exchange
BGM	Bitumen impregnated Geomembrane
BHOP	Broken Hill Operations Pty Ltd
CIP	Carbon-in-pulp
Cu	Copper
DMR	Department of Mineral Resources
DP	Deposited plan
DPE	Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
DPI	Department of Primary Industries
DSI	Detailed site investigation
EIS	Environmental impact statement
EL	Exploration licence
EPA	Environment Protection Authority
EPBC	Environment Protection & Biodiversity Conservation
EPL	Environment Protection Licence
EP&A Act	Environmental Planning and Assessment Act 1979
FOS	Factor of safety
HEPA	Heads of EPAs Australia and New Zealand
km	Kilometres
km^2	Square kilometres
g/t	Grams per tonne
Ha	Hectares
HGM	Hydraulically applied growth medium
IUCN	International Union for Conservation of Nature
JVA	Joint venture agreement
LEP	Local Environmental Plan
m^3	Cubic metres
MCP	Mine Closure Plan
ML	Mining Lease
ML/day	Megalitres per day

ML/pa	Megalitres per annum
Mm	millimetres
MMM	Minerals Mining and Metallurgy Limited
MOP	Mining Operations Plan
MPLs	Mining Purposes Leases
MOP	Mine Operations Plan
MPL	Mining Purposes Lease
NAF	Non-acid forming
NATA	National Association of Testing Authorities
NMI	Normanby Mining Investments
NML	Normanby Mining Limited
NSW	New South Wales
PAF	Potentially acid forming
Pb	Lead
POEO Act	Protection of Environment Operations Act 1997
PLMU	Post-mining land use
PMF	Probable maximum flood
PSI	Preliminary site investigation
RMP	Rehabilitation Management Plan
RO	Reverse osmosis
RR	Resources Regulator
SRD SEPP	State Environmental Planning Policy (State and Regional Development) 2011
SL	Special Lease
TARP	Trigger Action Response Plan
t/pa	Tonnes per annum
Zn	Zinc

1 Introduction

This Rehabilitation Management Plan (RMP) for the Rasp Mine has been prepared in accordance with Clause 9 of Schedule 8A to the Mining Regulation 2016, mining lease conditions of Consolidated Mining Lease 7 (CML7) and the Form and Way Rehabilitation Management Plan for Large Mines (NSW Resources Regulator 2021).

A Rehabilitation Strategy has also been prepared by BHOP to satisfy the requirements under Project Approval (PA) 07_0018 and specifically Schedule 3, Condition 34. It covers the final landform design, mine closure planning, rehabilitation planning, post mine land uses and proposed rehabilitation techniques for the Rasp Mine. The Rehabilitation Strategy was approved by the Department of Planning and Environment (DPE) (now the Department of Planning, Housing and Infrastructure (DPHI)) on 21 November 2023.

This Rehabilitation Management Plan has been revised to align with the approved Rehabilitation Strategy, and to align with the site's Heritage Conservation Management Plan which is required in accordance with PA 07_0018 Schedule 3 Condition 30, which has the role of providing a detailed plan for the conservation of heritage values on the site.

1.1 History of operations

With a mining history spanning over 130 years, the Rasp Mine's landscape reflects extensive mining activities. The site is covered mostly with historic waste rock and tailings, with limited topsoil and vegetation present. Various heritage buildings and structures and waste rock piles stand as remnants of the mine's long history and contribution to the site's history of Broken Hill.

1.1.1 Exploration and operating history

CML7 occupies a central region of the historic Broken Hill Line of Lode orebody. Mining has been undertaken within earlier leases making up CML7 since 1884 by several companies including Broken Hill Proprietary Company Ltd (to later become BHP); British Broken Hill Pty Ltd; Broken Hill South; and Minerals Mining and Metallurgy Ltd (MMM), among others. In 1885, the town of Broken Hill was surveyed as two grid plans east and west of the line of lode leases, and businesses began to appear in its streets. The overall form of the mines and the adjacent mining city of Broken Hill was established.

In 1886, before the railway to Port Pirie opened, BHP had a smelter underway, the first on the field. BHP and the North Mine had both built large concentrating mills by 1889. In 1887 BHP diversified its interests and its leases into a series of subsidiary companies to work specific sections of the lode: the Block 10 Company, Block 14 Company and British Company. All of these companies built concentrating mills and smelters, as did BHS (see Figure 2.2). The British company also built a smelter at Port Pirie in 1889, and set about sinking shaft No. 5 (Thompson's shaft) on Block 16. BHP built a refinery at the port (Austral, 2013).

In 1887, the South Australian government extended its Port Pirie railway to Cockburn on the border and the following year the private Silverton Tramway opened, connecting it to Broken Hill via Silverton. Broken Hill now had direct railway access to Port Pirie, dramatically reducing the cost of mining.

In 1892, BHP reflected moved all its smelting operations to Port Pirie, taking over the British company's smelter there, and also commenced opencut mining on the Broken Hill leases, although underground mining continued at deeper levels. By 1898 smelting had ceased altogether in Broken Hill.

The current boundary of CML7 of the Rasp Mine resulted from BHS's acquisition of the former BHP blocks in 1943 (Austral Archaeology Pty Ltd, 1994:36). BHS mining operation on these blocks, revitalising Delprat Shaft as its primary underground mine.

A significant shift in mining approached occurred during the 1970s, when South Australian company Minerals Mining and Metallurgy Limited (MMM) took over the old South and Central Mine and introduced mining from the surface ore shoots and underground pillars, which enabled a significant increase in mining scale compared to previous operations. MMM operated the site until 1991 and played a role in the Blackwood opencut which commenced in 1974, and the Phase one Kintore opencut initiated in 1983 (Austral, 1994). These activities resulted in the most significant physical alterations to the surface of the Broken Hill leases since the 1930s (Austral, 2013).

Operations on site have subsequently included both open pit mining and underground mining, with the most recent (before Broken Hill Operations Pty Ltd (BHOP)) by MMM in Kintore Pit. Mining ceased in Kintore Pit in 1991 when NMI commenced implementation of a rehabilitation plan from 1991 to 1999 (NML, 2000). The Mine site also houses a substantial amount of mining infrastructure including heritage buildings and structures from various past mining phases.

The Rasp Mine was purchased by CBH Resources from NMI in 2001. BHOP is a subsidiary of CBH Resources and on acquisition, BHOP continued rehabilitation of the lease to the point where it met the requirements set down by the then Department of Mineral Resources (DMR) (now NSW Resources Regulator (NSWRR)); however, final relinquishment was not sought as BHOP planned to restart mining.

Following acquisition, BHOP conducted an exploration surface drilling program into the Western Mineralisation to aid in resource definition. This drilling area was within a surface exclusion zone and was conducted under a Development Approval from Broken Hill City Council (BHCC). Drilling confirmed that significant high-grade zinc-silver-lead lenses indicated in historical drilling data are present within the broader mineralised resource. It was concluded that given new mining technologies and mine design options available, the resource could be extracted economically.

In 2006, a Review of Environmental Factors (REF) was prepared to accompany a Mining Operations Plan (MOP) for an exploration decline and the extraction of a bulk 200 t sample. The purpose of the bulk sample and underground in-fill drilling proposed was for resource assessment to confirm the viability of an underground mine and mineral processing plant. The MOP was approved in October 2006 and decline development commenced in February 2007. The initial application was for the decline to proceed 2,100 metres (m) at a depth of 300 m. However, an amendment to the MOP was approved in May 2008 to extend the decline to 3,000 m (3,500 m including drilling cuddies).

In addition to the above activities in 2007, under Part 4 of the EP&A Act, a Statement of Environmental Effects (SEE) was prepared to permit recovery of some small, high-grade ore blocks in the floor of Kintore Pit, culminating in the extraction of 15,000 tonnes (t) of remnant ore material over a period of approximately three months. Activities involved crushing ore on-site, prior to haulage by truck to CBH owned Endeavour Mine at Cobar. Approval was granted by BHCC on 26 April 2007. This temporary mining was completed in August 2007.

In 2009, BHOP sought approval from the then Department of Industry & Investment (I&I NSW) (Now the Department of Industry, Science and Resources (DISR)) to recommence underground mining (120,000 tonnes per annum (tpa)) and surface drilling activities via a new MOP supported by an assessment under Part 5 of the EP&A Act with an REF. This was approved in December 2009. Approval was obtained from BHCC via a Development Application (DA) to crush, stockpile and transport ore off site to the Endeavour Mine for processing under part 4 of the EP&A Act. This DA was approved in January 2010 and was supported by a SEE. The planned mining and transport of ore was not undertaken. In December 2010, an extension to 28 February 2011 was granted for the MOP.

An application was made in March 2007, for the extension of underground mining to include the Western Mineralisation and the Centenary Mineralisation, together with further mining development of the Main Lode Pillars, including the expansion of mining production to 750,000 tpa, and the construction and operation of a processing plant. Approval was granted in January 2011 being Project Approval (MP07_0018).

In June 2008, as a direct result of the global financial crisis, all work at the Rasp Mine was suspended. Since June 2008 BHOP has undertaken extensive work in redefining the reserve and resource which is now Joint Ore Reserves Committee (JORC) compliant.

A modification to MP07_0018 was sought in November 2011 to enable relocation of the ventilation shaft from Kintore Shaft in Little Kintore Pit to a purpose-built shaft located in a central area northwest of the Lease. This relocation was required as heavy rains in early 2011 damaged the Kintore Shaft and rehabilitation of the shaft to enable construction of the ventilation shaft was no longer possible. The modification was granted in March 2012, and the MOP amended in March 2012.

In 2013, a Main Lode crown pillar which formed a critical part of the mining plan, was found to have collapsed, resulting in reduced production rates and 49 personnel redundancies as new mine plans were developed and implemented.

In February 2014, at the request of Crown Lands, an application was made to the Division of Resources and Energy (DRE) for the relinquishment of the tourist area around and including Broken Earth Café and Miners Memorial, car parking area and the road leading to these tourist features. Work on this ceased as BHOP did not have resources to meet the requirements of DRE. In 2015, a formal Deed of Responsibility between BHOP and Lands Administration Ministerial Corporation as reserve trust manager for Crown Lands, was granted, to accept liability for tourists entering these sites.

In February 2014, an application was made to modify MP07_0018 to allow flexibility in crusher hours to operate 24 hours per day and to truck ore off-site. The request to truck ore off-site was removed from the application. The Modification was granted by Department of Planning and Environment (DPE) (now DPHI) in August 2014 and the MOP amended in September 2014.

In November 2014, an application was made for a minor modification (MOD3) to MP 07_0018 to extend underground mining to Block 7 (including the Zinc Lodes), located to the southwest of CML7. The ore mined was to replace ore that had been unable to be mined as originally approved and would; therefore, remain within the limits for extraction (750,000 tpa).

In March 2017, an application was made for a modification (MOD4) to PA 07_0018 to construct a concrete batching plant and to extend the life of Blackwood Pit (TSF2) tailings storage facility by infilling some low points around its perimeter. The Modification was granted in September 2017.

On 4 July 2018, the project was transitioned to State significant development by order, which took effect by publication in the NSW Government Gazette.

A minor modification (MOD5) to PA 07_0018 was sought to extend the current Stores Warehouse, install a cement silo at the current Backfill Plant, and to adjust air quality monitoring requirements. MOD5 was approved on 2 November 2018.

In August 2021, an application was made to modify PA 07_0018 (MOD6) to allow co-disposal of waste rock and tailings to Kintore Pit and to enable continued operations as the existing tailings storage facility (TSF2) was anticipated to reach capacity in late 2022. The modification was approved in March 2022.

A minor modification (MOD7) to PA 07_0018 to utilise waste rock material stored in BHP Pit for Blackwood Pit (TSF2) embankment construction, and to conduct crushing and screening activities within BHP Pit, was approved on 29 July 2019.

In April 2021, a minor modification (MOD8) to PA 07_0018 was made to incorporate a predefined region of Mine Lease 1249 that is proposed to be mined under a sublease arrangement with Perilya Broken Hill Limited (PBHL), the lease holder. The application for this modification was made pursuant to Section 4.55(1A) of the EP&A Act and was determined a minor modification as there are no additional surface activities or environmental impacts associated with the application and was determined to be consistent with the original development application.

In August 2021, a minor modification (MOD9) to PA 07_0018 was made to allow the installation of an emergency egress and the construction of two development drives through Blocks 13, 14 and 15, towards Blackwoods orebody and the incline for the Box Cut and mine access proposed in the MOD6 submission. The application was determined to be a minor modification as there are no additional surface activities or environmental impacts associated with the application, and it is consistent with the original development application.

In December 2022, a modification (MOD10) to PA 07_0018 was made for construction of a new intake vent and temporary placement of dried tailings in TSF2, pursuant to Section 4.55(1A) of the EP&A Act. The modification was determined to involve minimal environmental impact as there would be no change to key aspects of the project; no additional surface disturbance; and impacts would be similar to the approved impacts of the project.

In March 2024, a modification (MOD11) to PA 07_0018 was made to install and use a new ventilation intake and further extend underground exploration in the Main Lode to Blocks 13 to 15 within the current CML7. The modification was determined to be substantially the same development as it would not significantly increase the environmental impacts of the project, including annual and total ore extraction, processing or transport methods and schedule of land.

1.1.2 Rehabilitation history

i Approved life of mine

PA 07_0018 approves mining operations on site until 31 December 2026 at a maximum rate of 500,000 tpa (or up to 750,000 tpa with approval of the EPA) or not more than 8,450,000 t of ore over the life of the project. It is anticipated that BHOP will seek to extend this approval approximately 13 years to align with the increase in tails storage capacity approved in MOD6.

ii Activities proposed during the RMP term

During the term of the Rehabilitation Management Plan (RMP), BHOP has consent to extend two development drives for exploration purposes within the Main Lode mining area as approved under Modification 9. Additionally, BHOP proposes to conduct mining in the Western Mineralisation and Western Mineralisation – Siberia deposits, finishing in 2025, and in the Blackwoods and Blackwoods North deposits, finishing in 2026 (project approval expiry).

Little Kintore Pit is scheduled to be shaped and trimmed in 2025, then capped with waste rock (of <0.5%Pb) in 2026.

With the completion of Kintore Pit (TSF3), tailings in the TSF temporary stockpile will be moved to Kintore Pit. Deposition of tailings into TSF2 will continue until December 2026 (depending on approvals for continued mining operations). From quarter one in 2024, Kintore Pit will be backfilled following plugging of the decline portal and preparation of the pit floor. Under current approvals, transport and placement of tailings to TSF3 will continue to December 2026.

PA 07-0018 MOD12 was submitted in 2025 to advance mining in Blocks 13,14, and 15, and install an air intake in the vicinity of Thompsons Shaft.

1.2 Development consents, mining leases and licences

1.2.1 Development consents

Table 1.1 lists the consents held by BHOP.

Table 1.1 Development consents

Approval number	Date issued	Duration	Purpose
DA 125/2001	5 September 2002	completed	
DA 101/2007	26 April 2007	completed	
DA 264/2009	19 January 2010	2 February 2011	For ancillary surface mining activities including crushing, stockpiling, and transport of ore.
PA 07_0018	31 January 2011	31 December 2026	Mineral production of 750,000 tpa from Western Mineralisation, Centenary Mineralisation and Main Lode Pillars. Construction and operation of a minerals processing plant and rail loadout facility.
PA 07_0018 MOD1	16 March 2012	31 December 2026	Relocation of ventilation shaft.
PA 07_0018 MOD2	29 August 2014	31 December 2026	24-hour crusher operation.
PA 07_0018 MOD3	17 March 2015	31 December 2026	Extension of underground mining to include all of Block 7 and the Zinc Lodes.
PA 07_0018 MOD4	6 September 2017	31 December 2026	Installation of concrete batching plant and extension of TSF2 embankments.
PA 07_0018 MOD5	2 November 2018	31 December 2026	Construction of cement silo and warehouse extension.
PA 07_0018 MOD6	16 March 2022	31 December 2026	Dry tailings disposal from TSF2 to Kintore Pit, relocate mine portal and access decline to a new box cut and utilise low lead waste rock for rehabilitation capping and lead dust minimisation.
PA 07_0018 MOD7	29 July 2019	31 December 2026	Crushing and screening of material in BHP pit for TSF2 embankment construction.
PA 07_0018 MOD8	20 April 2021	31 December 2026	Incorporate a predefined region of ML1249 to be mined under a sublease agreement with Perilya Broken Hill Ltd.
PA 07_0018 MOD9	23 December 2021	31 December 2026	Installation of development drives and emergency egress ladderway to the surface.
PA 07_0018 MOD10	12 December 2022	Until TSF3 is operational (up to 12 months)	Temporary storage of tailing in stockpile at TSF2
PA 07_0018 MOD11	15 March 2024	31 December 2026	An extension of the development workings within blocks ML13, ML14 and ML15 and the addition of a ventilation intake.

1.2.2 Mining leases

Table 1.2 Mining authorities

Table 1.2 lists the mining leases held by BHOP.

Mining authority	Grant date	Last renewed	Renewal date	Holder	Purpose
CML7	8 October 1987	17 January 2007	31 December 2026	BHOP	Open cut mining, shaft sinking, stoping, tunnelling, dam construction, extraction and obtaining minerals, generation of electricity, erecting dwellings, storage of fuels, dumping of ore, treatment and dumping of tailings, development of roads.
MPL183	4 February 1981	24 April 2007	31 December 2026	BHOP	Dumping of ore and mine residues, treatment of tailings.
MPL184	4 February 1981	24 April 2007	31 December 2026	BHOP	Dumping of ore and mine residues, treatment of tailings.
MPL185	4 February 1981	24 April 2007	31 December 2026	BHOP	Dumping of ore and mine residues, treatment of tailings.
MPL186	4 February 1981	24 April 2007	31 December 2026	BHOP	Dumping of ore and mine residues, treatment of tailings.
ML1249 sublease	20 April 2021		31 December 2026	BHOP	Extraction and obtaining minerals.
EL 5818	8 March 2021	7 March 2009	8 March 2023	BHOP	Dumping of ore and mine residues, treatment of tailings.

1.2.3 Other licences and permits

Other licences and permits held by BHOP are listed in Table 1.3.

Table 1.3 Other licences and permits

Licence/permit	Issued by	Date of expiry	Purposes
EPL12559	EPA	Upon surrender, suspension or revocation	Authorises the carrying out of scheduled activities: Crushing, grinding or separating >500,000–2,000,000 t processed. Mining for minerals >500,000–2,000,000 t produced.
Explosives XMNF200003	SafeWork NSW	24 October 2024	Authorises the manufacture, possession and storage of explosives.
Dangerous goods NDG005239	SafeWork NSW	Upon notification	Authorises the storage and use of dangerous good.
Refrigerant AU31297	Refrigerant Trading Council	27 March 2025	Authorises the use of refrigerant.
Water extraction 85WA752823	NOW	29 March 2027	Permits the extraction of water from Shaft 7 and underground dewatering (370 megalitres (ML)).
Radiation 5063802	EPA	26 July 2023	Sell and/or possess radiation apparatus. Sell and/or possess radioactive items or items containing radioactive substances.

1.2.4 History of MOPs and RMPs

The site has been managed in accordance with MOPs and RMPs listed in Table 1.4.

These previous MOPs are revoked and superseded by this RMP (**this document**).

Table 1.4 MOP and RMP history

Plan	Plan period	Purpose
Mining Operations Plan Ref: 06/6463	0ctober 2006 to August 2008	Construct exploration decline, conduct drilling and obtain bulk sample, supported by a REF.
Mining Operations Plan Amendment Ref: 06/6436	May 2008 to October 2008	Extend the exploration decline.
Mining Operations Plan Ref: 06/6463	September 2009 to December 2010 (extended to March 2011)	For underground mining and stockpiling 120,000 tpa.
Mining Operations Plan Ref: 06/6483	April 2011 to March 2014	Mining production of 750,000 tpa from Western Mineralisation, Centenary Mineralisation and Main Lode Pillars. Construction and operation of a minerals processing plant and rail loadout facility. Supported by an EAR prepared for DoPI Part 3A Project Approval.
Mining Operations Plan Ref: 06/6463	March 2012 to March 2014	Relocation of ventilation shaft.
Mining Operations Plan Ref: 06/6463	April 2014 to June 2014	Extension of MOP requested and granted.
Mining Operations Plan Ref: 06/6463	June 2014 to August 2014	Extension of MOP requested and granted.
Mining Operations Plan Ref: 06/6463	October 2014 to October 2015	Allow 24-hour crusher operation.
Mining Operations Plan Ref: 06/6463	August 2014 to October 2014	Extension of MOP requested and granted.
Mining Operations Plan Ref: 06/6463	November 2014 to October 2015	New MOP for underground mining, ore processing and despatch of concentrates, including ancillary activities.
Mining Operations Plan Amendment Ref: 06/6463	March 2015 to October 2015	Extension of underground mining to include all of Block 7 and the Zinc Lodes.
Mining Operations Plan	October 2017 to September 2019	New MOP submitted to the DRG.
Mining Operations Plan (Amendment)	December 2020 to September 2021	Amended MOP submitted to the DRG.
Mining Operations Plan	June 2021 to September 2021	Amended MOP submitted to the DRG.
Mining Operations Plan	September 2021 to September 2023	Amended MOP submitted to NSW RR.
Rehabilitation Management Plan	August 2022 to August 2026	Prepared to be consistent with RMP Guidelines 2021
Rehabilitation Management Plan	August 2025 to August 2030	Revised heritage items, rehabilitation objectives and risk assessment

1.3 Land ownership and land use

1.3.1 Land ownership and land use figures

CML7 consists of several mining leases that were originally gazetted in September 1886 and consolidated into CML7 in 1987. Most of the land on which CML7 and MPLs are located on are designated as 'Willyama Common Reserve 2421'. Other areas are located on Western Land Leases and a small portion of the CML7 area is freehold as identified in the Certificate of Title 4635/757298. The underlying tenure is shown in Figure 1.2.

There are a several other occupants conducting activities within CML7, and these are listed in Table 1.5 and shown on Figure 1.3.

The nearest residences to the active mine areas are located along Eyre Street, Bonanza Street and within the rail corridor. Mine residences owned by Perilya are located in Proprietary Square.

Table 1.5 Land holding and occupiers within CML7

Holding	Underlying land owner	Type	Usage	Area (ha)	Occupier
1	Crown	Willyama Common	Olive grove	2.59	Broken Hill Gourmet Products Cooperative Limited
2	Crown	Willyama Common	Vodaphone communications tower	0.1	Crown Castle Australia
3	Crown	Willyama Common	Two residences (South Road), one unoccupied and one tenanted	0.26	Line of Lode Reserve Trust
4	Crown	Willyama Common	Broken Earth Restaurant and Miners Memorial	5.61	Foundation Broken Hill, a not-for-profit organisation that supports local businesses and community ventures Until 2026. (the Miners Memorial is located on MPLs 183 and 184) Licence to Occupy UG12R
5	Crown	Willyama Common	The British Flats in Proprietary Square, Item I21, unoccupied buildings	1.7	Line of Lode Reserve Trust
5A	Crown	Willyama Common	Residences 27A&B, to be repaired and used for public tourism (D4874)	0.6	Jamieson House Reserve Trust
6	Crown	Willyama Common	As per MPL183	1.3	BHOP (Partial overlap with Holding 4 the Miners Memorial is located on this lease)
7	Crown	Willyama Common	As per MPL184	4.38	BHOP (Partial overlap with Holding 4 the Miners Memorial is located on this lease)
8	Crown	Willyama Common	As per MPL185	1.43	BHOP (Partial overlap with Holding 4 the Miners Memorial is located on this lease)
9	Crown	Willyama Common	As per MPL186	0.5	BHOP
10	BHOP	Freehold 4635/757298	Mining purposes	0.21	BHOP

Holding	Underlying land owner	Type	Usage	Area (ha)	Occupier
11	Crown	Willyama Common	Tourism area, Browns Shaft	0.25	BHCC, Licence to Occupy UG2-3A
12	Crown	Willyama Common	Tourism area, Block 10	1.29	BHCC, Licence to Occupy C39-1L

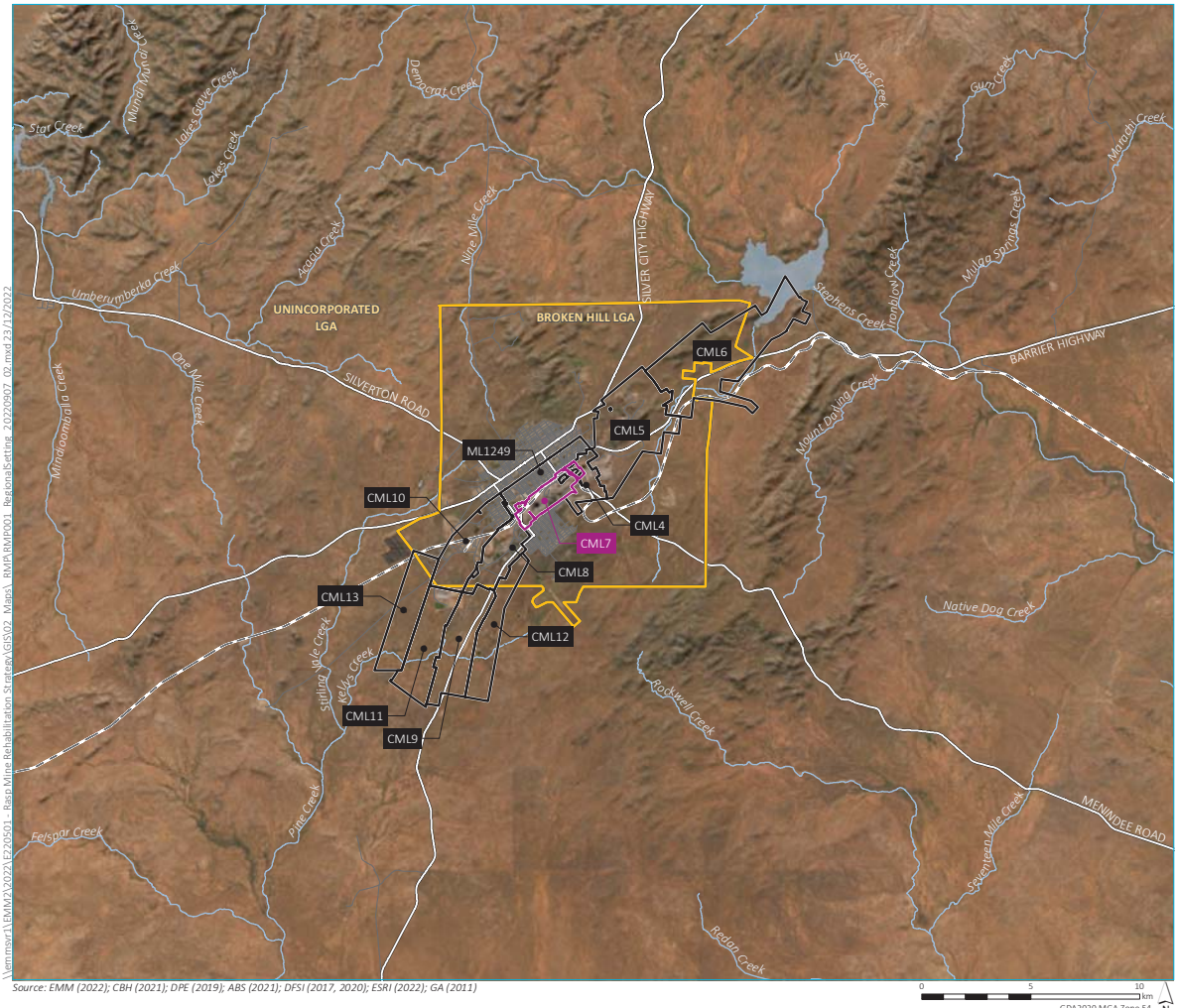
Some BHOP activities are not located within CML7 and are located on adjacent freehold and Western Land Leases; these include:

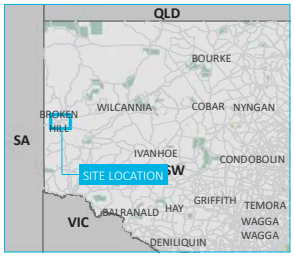
- Administration offices located in Eyre Street, known as the General Offices – Main Administrative building is owned as freehold by BHOP
- Administration block, known as Radford House, is leased by BHOP from Lifeline on a 5-year lease, expiry 31 August 2021. BHOP are currently in the process of purchasing Radford House
- Rail and Rail Loadout – is leased by BHOP from Australian Rail Track Corporation (ARTC) on a 10-year lease, 31 August 2021, with a 10-year option
- Stores Warehouse – is located on Western Lands Leases.

i Other occupiers on CML7

a Crown Castle Australia

A communication tower has been managed by Crown Castle Australia since 2001. Known locally as the Vodafone Communications Tower (see Photograph 1.1), the Tower services the City of Broken Hill. Although the Tower is located on CML7 and within the surface area of BHOP, BHOP is required to allow access to the Tower for maintenance and repair work (*Telecommunications Act 1997*).





KEY

- Broken Hill Operations mining lease
- Perilya mining lease
- Rail line
- Major road
- Minor road
- Named watercourse
- Named waterbody
- Local government area

INSET KEY

- Major road
- NPWS reserve
- State forest

Source: EMM (2022); CBH (2021); DPE (2019); ABS (2021); DFSI (2017, 2020); ESRI (2022); GA (2011)

Regional setting

Rasp Mine
Rehabilitation Management Plan
Figure 1.1

creating opportunities

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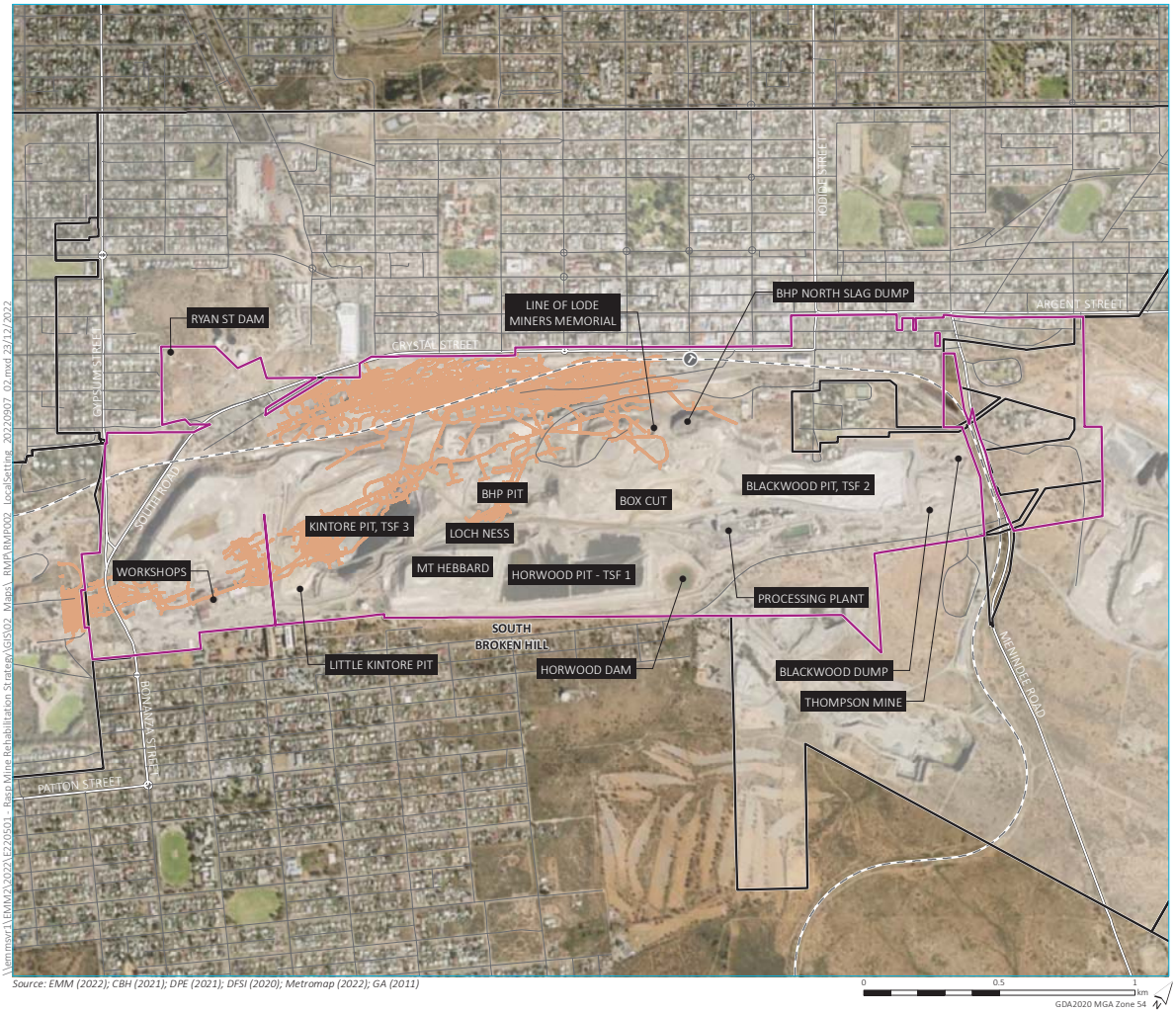

KEY

- Broken Hill Operations mining lease
- Perilya mining lease
- Train station
- Existing underground workings
- Rail line
- Major road
- Minor road

Source: EMM (2022); CBH (2021); DPE (2021); DFSI (2020); Metromap (2022); GA (2011)

0 0.5 1 km

GDA2020 MGA Zone 54

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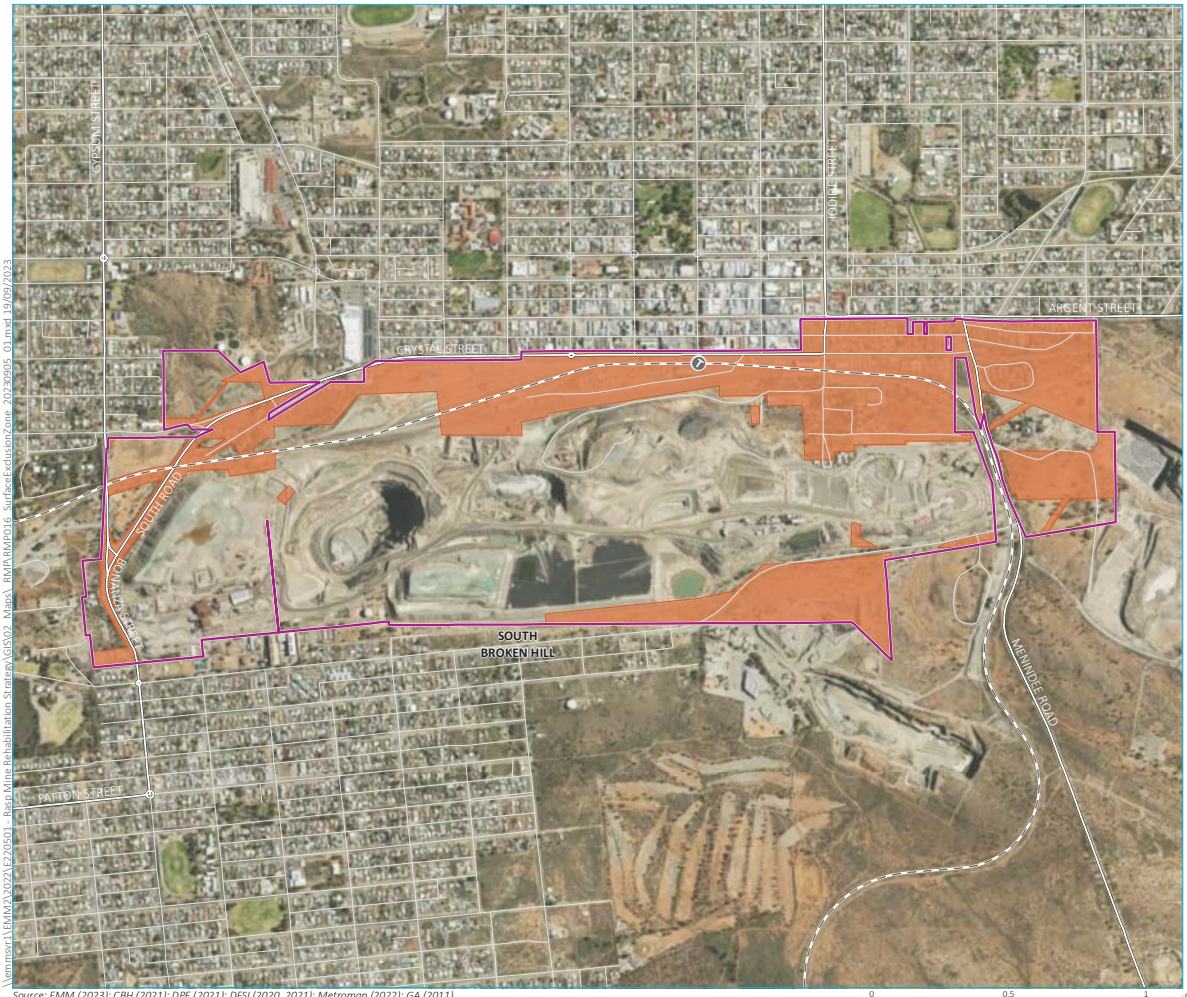
Land tenure - mine locality plan (local)

Rasp Mine
Rehabilitation Management Plan
Figure 1.2

EMM creating opportunities



KEY

- Broken Hill Operations mining lease
- CML7 surface exclusion zone
- Train station
- Rail line
- Major road
- Minor road

Source: EMM (2023); CBH (2021); DPE (2021); DFSI (2020, 2021); Metromap (2022); GA (2011)

0 0.5 1 km

GDA2020 MGA Zone 54

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CML7 Surface Exclusion Areas

Rasp Mine
Rehabilitation Management Plan
Figure 1.3

EMM
creating opportunities

Photograph 1.1 Vodaphone communications tower

b Broken Hill Miners Memorial and Broken Earth Café

The Broken Hill Miners Memorial and Broken Earth Café (see Photograph 1.2) are located centrally in the Project Area and within the surface lease of BHOP. The buildings are owned by the Line of Lode Reserve Trust (LOLRT).

The Line of Lode Association (LOLA) was established in 1995 as a community-based group to oversee the development of tourism and other commercial possibilities with CML7. Several residential and other buildings were donated to LOLA in 2000. In September 2011, the LOLA was dissolved and its assets located on CML7 transferred to the then Land and Property Management Authority (now Crown Lands), that established the Line of Lode Reserve Trust (LOLRT) and act as trustee of these assets. These assets include:

- two residences being Jamieson House (residence 27A&B) located on Bonanza Street
- the British Flats within Proprietary Square
- the Broken Earth Café and Miners Memorial which are centrally located on the city side of CML7, atop an old mine waste dump.

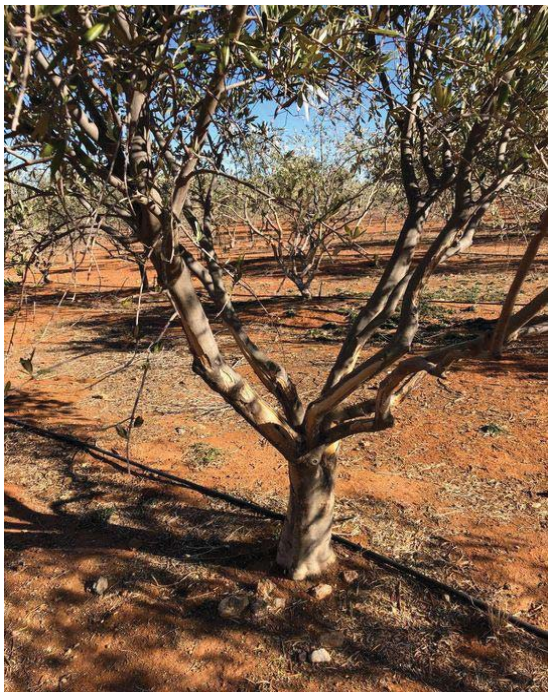
The NSW Government has awarded a Crown licence to Foundation Broken Hill, a not-for-profit organisation that supports local businesses and community ventures across Broken Hill, to manage the Line of Lode Reserve during 2025 and 2026.

These facilities are not directly affected by mining operations. A Deed of Responsibility is in place between CBH and the Lands Administration Ministerial Corporation allowing public access for tourism.

Photograph 1.2 Broken Earth Cafe and Miners memorial

c Olive Grove Plantation

A plantation of 1,000 olive trees (see Photograph 1.3) was established in October 2004 by the Broken Hill Gourmet Products Co-operative Limited on an area of land previously used as water storage. It is located on 2.59 hectares (ha) to the north-west of CML7, within the surface area of BHOP. The project produces olives each year, which are pressed for their oil and sold commercially.



Photograph 1.3 Olive plantation

d Other properties

Several residential and other buildings were donated to LOLA (now LOLRT) in 2000. These assets include two residences located on Bonanza Street), known as Jamieson House (residence 27A&B) (see Photograph 1.4); British Flats (see Photograph 1.5) within Proprietary Square; and Broken Earth Café and Miners Memorial, centrally located on the city side of CML7, atop an old mine waste dump.

The British Flats in Proprietary Square is listed on the BHCC Local Environmental Plan (LEP) 2013 under LEP Item I21 for its heritage significance. These buildings are not owned by BHOP; however, they are located on CML7 and are included in the surface rights areas of BHOP.

Photograph 1.4 Jamieson House (Residence 27A & B)

Photograph 1.5 British Flats

2 Final land use

2.1 Regulatory requirements for rehabilitation

Regulatory requirements for rehabilitation applicable to Rasp Mine are listed in Table 2.1. These include requirements specified in mining leases; relevant legislation and guidelines; and other statutory approvals, permits and licences issued for the site.

No final land-uses are mandated in the Development Approvals or Development Consents that apply to the project. Development consent requirements with relevance to the final land use proposed in this RMP are provided in Table 2.1.

As the mine is defined as a large mine, in that it has one or more mining leases and the carrying out of activites under at least one of which requires an environmental protection licence (EPL) under the *Protection of the Environment Operations Act* 1997, the new standard mining conditions will apply to all mining leases on the Project. Relevant standard rehabilitation conditions are listed in Table 2.1.

Table 2.1 Regulatory requirements for rehabilitation

Instrument	Condition	Applicable domains / land parcels	Timing	RMP section
Development Consents				
PA 07_0018	Sch.3, c.30 The Proponent shall prepare and implement a Conservation Management Plan for the site to the satisfaction of the Secretary. This plan must provide a strategic framework for all heritage items located on the Lease, based on the principles of the Burra Charter, and developed in consultation with the Heritage NSW and Council. The plan must be submitted for the approval of the Secretary by December 2011.		December 2011	
	Sch.3, c.34 The proponent must rehabilitate the site progressively, that is, as soon as practicable following disturbance, to the satisfaction of the Secretary.			
	Sch.3, c.34A Within 6 months from approval of Modification 6, the proponent must prepare a Rehabilitation Strategy for the site to the satisfaction of the Secretary. This strategy must: • be prepared by a team of suitably qualified and experienced experts whose appointment has been endorsed by the Secretary • be prepared in consultation with relevant stakeholders including the RR, MEG, EPA, NSW Health (Western NSW Local Health District), Water Group, Heritage NSW, Council and Perilya Broken Hill Limited • define the rehabilitation objectives for and schedule of the mine site and “free areas”, with consideration of heritage values, dust management, water and leachate management, subsidence, visual impacts and public safety • include a conceptual final landform and rehabilitation plan • include a life on mine rehabilitation and mining schedule which outlines key progressive rehabilitation milestones from the commencement of operations through to decommissioning and mine closure • managing and minimising any adverse socio-economic effects associated with mine closure.		17 September 2022	

Instrument	Condition	Applicable domains / land parcels	Timing	RMP section
	The proponent must implement the approved Rehabilitation Strategy for the project. *Note: The Proponent must also prepare and implement a Rehabilitation Management Plan in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992.*			
Mining Leases				
CML 7	5. The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs.	1, 2, 3, 4	1 August 2022	Section 6
	6 (1) The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining area.	1, 2, 3, 4	1 August 2022	Section 4
	6 (2) The holder of the mining lease must ensure any planning approval has been obtained that is necessary to enable the holder to comply with subclause (1)	1, 2, 3, 4	1 August 2022	Table 1.2
	6 (3) The holder of the mining lease must identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to comply with subclause (1). Note— Clause 7 requires a rehabilitation risk assessment to be conducted whenever a hazard is identified under this subclause.	1, 2, 3, 4	July 2022	Section 3
	6(4) In this clause— final land use for the mining area means the final landform and land uses to be achieved for the mining area— (a) as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and (b) for a large mine—as spatially depicted in the final landform and rehabilitation plan, and (c) if the final land use for the mining area is required by a condition of development consent for activities under the mining lease—as stated in the condition. Planning approval means— (a) a development consent within the meaning of the Environmental Planning and Assessment Act 1979, or (b) an approval under that Act, Division 5.1.	1, 2, 3, 4	1 August 2022	Section 4 Section 5 N/A
	7(1) The holder of a mining lease must conduct a risk assessment (a rehabilitation risk assessment) that— (a) identifies, assesses and evaluates the risks that need to be addressed to achieve the following in relation to the mining lease— (i) the rehabilitation objectives, (ii) the rehabilitation completion criteria; (iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan, and (b) identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks.	1, 2, 3, 4	July 2022	Section 3
	7(2) The holder of the mining lease must implement the measures identified.	1, 2, 3, 4		

Instrument	Condition	Applicable domains / land parcels	Timing	RMP section
	7(3) The holder of a mining lease must conduct a rehabilitation risk assessment— (a) for a large mine—before preparing a rehabilitation management plan, and (b) for a small mine—before preparing the rehabilitation outcome documents for the mine, and (c) whenever a hazard is identified under clause 6(3)—as soon as reasonably practicable after it is identified, and (d) whenever given a written direction to do so by the Secretary.	1, 2, 3, 4		Section 3
	10(1) The holder of a mining lease relating to a large mine must prepare a plan (a rehabilitation management plan) for the mining lease that includes the following— (a) a description of how the holder proposes to manage all aspects of the rehabilitation of the mining area; (b) a description of the steps and actions the holder proposes to take to comply with the conditions of the mining lease that relate to rehabilitation, (c) a summary of rehabilitation risk assessments conducted by the holder, (d) the risk control measures identified in the rehabilitation risk assessments; (e) the rehabilitation outcome documents for the mining lease; (f) a statement of the performance outcomes for the matters addressed by the rehabilitation outcome documents and the ways in which those outcomes are to be measured and monitored.	1, 2, 3, 4	1 August 2022	This document
	10(2) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must include a proposed version of the document.	1, 2, 3, 4	1 August 2022	Section 4
	10(3) A rehabilitation management plan is not required to be given to the Secretary for approval.	Noted		
	10(4) The holder of the mining lease— (a) must implement the matters set out in the rehabilitation management plan, and (b) if the forward program specifies timeframes for the implementation of the matters—must implement the matters within those timeframes.	Noted		
	12(1) The holder of a mining lease must prepare the following documents (the rehabilitation outcome documents) for the mining lease and give them to the Secretary for approval— (a) the rehabilitation objectives statement, which sets out the rehabilitation objectives required to achieve the final land use for the mining area; (b) the rehabilitation completion criteria statement, which sets out criteria, the completion of which will demonstrate the achievement of the rehabilitation objectives; and (c) for a large mine, the final landform and rehabilitation plan, showing a spatial depiction of the final land use.		1 August 2022	Section 4 Section 4 Section 5
	12(2) If the final land use for the mining area is required by a condition of development consent for activities under the mining lease, the holder of the mining lease must ensure the rehabilitation outcome documents are consistent with that condition.			N/A

Instrument	Condition	Applicable domains / land parcels	Timing	RMP section
	13(1) The holder of a mining lease must prepare a program (a forward program) for the mining lease that includes the following— (a) a schedule of mining activities for the mining area for the next 3 years; (b) a summary of the spatial progression of rehabilitation through its various phases for the next 3 years; and (c) a requirement that the rehabilitation of land and water disturbed by mining activities under the mining lease must occur as soon as reasonably practicable after the disturbance occurs.	1, 2, 3, 4	1 August 2022	Section 6
MPL183	As per CML7 (standard conditions – common to all MLs)			
MPL184	As per CML7 (standard conditions – common to all MLs)			
MPL185	As per CML7 (standard conditions – common to all MLs)			
MPL186	As per CML7 (standard conditions – common to all MLs)			
ML 930	As per CML7 (standard conditions – common to all MLs)			
ML1249 sublease	As per CML7 (standard conditions – common to all MLs)			
EL 5818	As per CML7 (standard conditions – common to all MLs)			

2.2 Final land use options assessment

2.2.1 Overview

BHOP purchased Rasp Mine from NMI in March 2001. Prior to purchase by BHOP, NML managed the site under a care and maintenance management plan, having undertaken and completed some areas of rehabilitation of the site (to the extent that was agreed by the then DMR). The mine was being used by the LOLA as a tourist operation with guided tours conducted through the old processing plant and heritage buildings, and a private tourist operator conducted underground tours via the Delprats Shaft. Tourism operations ceased when the mine reopened in 2010.

The Rasp Mine site is uniquely located centrally within the City of Broken Hill and occupies the central region of the historical Broken Hill Line of Lode orebody whose mining leases were continually mined from the mid-1880s until the early 1990s. As such, the conventional final land use options of returning the site to native ecosystem and/or agricultural land uses are not appropriate for the site.

The entirety of the City of Broken Hill is formally inscribed on the National Heritage List (NHL) on the 20 January 2015, Place ID, 10581. Within the Rasp Mine site, there are 76 individual heritage elements that are identified as heritage items on the Broken Hill Local Environmental Plan 2013 (LEP), which have been categorised into eight heritage precincts. In addition, the Rasp Mine is located in proximity to three heritage conservation areas as well as several State Heritage registered (SHR) items. In addition, The Line of Lode Place ID, RNE 101036, and Kintore Shaft Place ID, RNE 581, attained listing on the Register of the National Estate (RNE) on 21 November 2000, under the *Australian Heritage Commission Act 1975*.

2.2.2 Mining heritage tourism

Department of Primary Industries – Lands (DPI – Lands, 2016) prepared a draft Broken Hill, Line of Lode Masterplan that outlines a range of projects associated with mining heritage at the line of lode including:

- interpretative mining tours
- construction of an amphitheatre for memorial ceremonies, open air cinema or musical performances
- expansion of the Broken Earth café (currently being undertaken)
- construction of new methods of accessing the top of hill including walkways, cycle paths and chair lift (currently being undertaken).

Broken Hill Rehabilitation Steering Committee (Broken Hill Mining inter-Agency Committee (BHMIAC) was formed with the purpose of facilitating a coordinated, whole of government approach to establishing sustainable post-mining land use options for the mines within the Broken Hill district (M Newton, pers.com). The initial focus of the Committee is limited to Rasp Mine and adjacent Perilya mining operations and associated facilities.

The Committee plans to expand focus in the future to include the broader Broken Hill mining district. The Group is comprised of representatives from DPC, EPA, Resources Regulator, Crown Lands, OEH, Broken Hill Lead Program, and DPE, as well as Broken Hill Council. It is not the role of the Group to be part of any decision making required as part of any regulatory function executed by the government agencies represented in the Group.

Site inspections at Broken Hill were undertaken by the Committee on 13 to 14 August 2019. The purpose of inspections was to provide site context to ensure committee members understand the complexity of issues that need to be addressed in developing a pathway to confirming post-mining land use option(s) (M Newton, pers.com). It also intended to provide an opportunity for both BHOP and Perilya to outline issues that required further clarification.

BHOP had no further contact with the committee since the 2019 inspection; however, there is a clear objective to establish mining tourism for relevant sections of the site. In the absence of specific guidance from the Committee or DPI- Lands, BHOP have adopted a ‘fall back’ safe, stable and non-polluting final land-use that provides for a heritage final land use for the greater mine area.

BHOP has ongoing discussions with the Broken Hill Lead Response Group regarding the control of dust impacts.

BHOP has initiated final land-use consultation with the Committee and other relevant stakeholders (see Section 4.2), acknowledging that due to the complexity of issues, it may take several years for consensus to be achieved.

2.2.3 Alternative final land uses

Other alternate PMLUs which were considered and excluded are summarised in Table 2.2. Further detail regarding exclusion of a biodiversity final land use is detailed in Section 2.2.3i.

Table 2.2 Excluded post-mine land uses

Post-mine land use	Reasons
Grazing	Aridity, lack of growing media, lack of suitable water, lead contamination, available area -waste landforms with suitable gradients will be capped with inert waste rock for lead dust control, preventing the establishment of pastures.
Biodiversity	Aridity, lack of growing media on spoil batters, low slope free areas of waste landforms will be capped with inert waste rock for lead dust control.
Industry	Visual amenity, geotechnical stability, available area, conflict with heritage tourism land use.
Residential	Geotechnical, lead contamination, visual amenity, available area, conflict with heritage tourism land use.

i Biodiversity

Vegetation on site has been removed by historical mining operations, and topsoil has been buried or was not recovered and conserved. Desktop mapping of vegetation undertaken by OzArk (2017) (see Figure 2.1) for the adjacent Perilya Mine indicates the following two vegetation communities are likely to have existed prior to being cleared by historical mining:

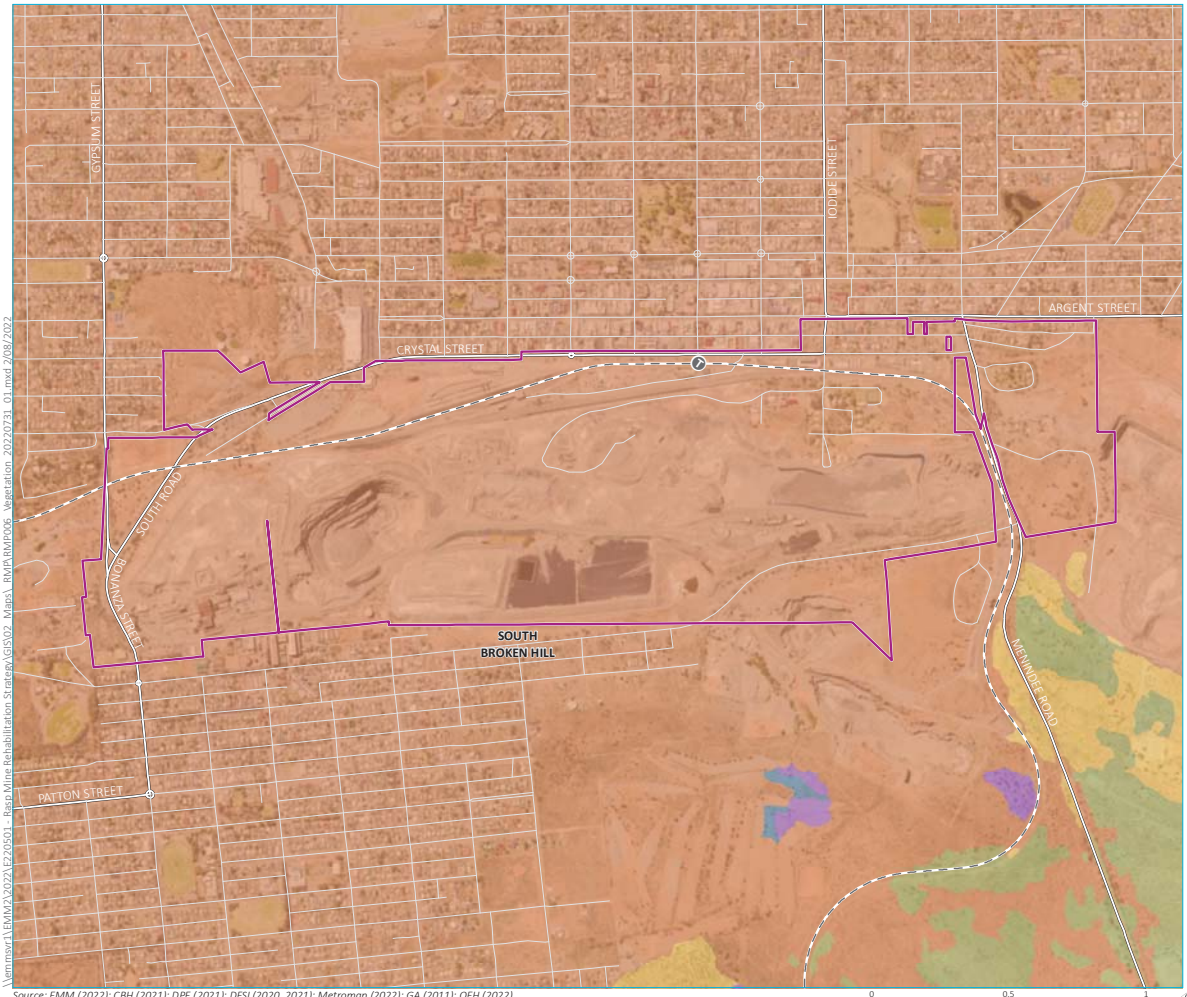
- 27. *Acacia aneura- Acacia tetragonophylla* tall shrub land
- 34. *Atriplex vesicaria* dwarf open scrub.

A biodiversity final land-use is not considered reliably achievable as the waste rock has insufficient fines to support sparse native vegetation. Waste rock typically contains between 1% to 2% silt and sand sized particles, which severely limits water and nutrient holding capacity of the waste rock and generally results in hostile conditions for plant germination and establishment.

Previous revegetation trials on site have failed due to lack of suitable growing media characterised by insufficient nutrients, inadequate fine material content resulting in and poor moisture retention, poor germination conditions, and harsh climatic conditions. There will be insufficient suitable growing media for vegetation establishment on the outer batters, and revegetation would also be inconsistent with the agreed objective of retaining the historical mining landscape.

BHOP proposes to leave outer facing batters of the existing mining landform unvegetated, at the existing angle of repose as agreed and approved by the then DMR for NMI in 1996 (detailed in Section 2.4.1iv). Retaining the existing mining landform is supported by outcomes of stakeholder consultation forums, and is consistent with the National Heritage listing for the city of Broken Hill, and supports the final land use of heritage tourism. This approach will also remove the potential for lead dust that would be generated by the extensive earthworks required to reshape the mining landform. In addition, reshaping of historical mining wastes such as TSF1 is constrained by material characteristics.

BHOP will undertake LIDAR or equivalent erosion monitoring technique to determine if the rate of erosion on the outer batters is tolerable. If monitoring demonstrates that erosion rates are higher than acceptable, then rock mulching of the batters will be undertaken where required. Surface water controls will also be investigated and revised if necessary to ensure storm flows do not report to the outer spoil heap batter surfaces from the flat spoil heap top surfaces and benches.



KEY

- Broken Hill Operations mining lease
- Train station
- Rail line
- Major road
- Minor road

Plant community type

- 0 | Not native vegetation
- 123 | Mulga - Dead Finish on stony hills mainly of the Channel Country Bioregion and Broken Hill Complex Bioregion
- 128 | Nelia tall open shrubland of semi-arid sandplains
- 139 | Prickly Wattle tall open shrubland of dunes and sandplains of semi-arid and arid regions
- 155 | Bluebush shrubland on stony rises and downs in the arid and semi-arid zones

Source: EMM (2022); CBH (2021); DPE (2021); DFSI (2020, 2021); Metromap (2022); GA (2011); OEH (2022)

0 0.5 1 km

GDA2020 MGA Zone 54

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Modelled vegetation communities prior to mining disturbance

Rasp Mine
Rehabilitation Management Plan
Figure 2.1

EMM creating opportunities

2.3 Final land use statement

Approved PMLUs for the mine will be a combination of:

- mining landscape - safe, stable and non-polluting waste landforms
- mining and industrial heritage
- mining and industrial related tourism.

2.4 Final land use and mining domains

Rasp Mine has four final land-use domains and seven mining domains as summarised in Table 2.3 and shown in Figure 2.2 and Figure 2.3.

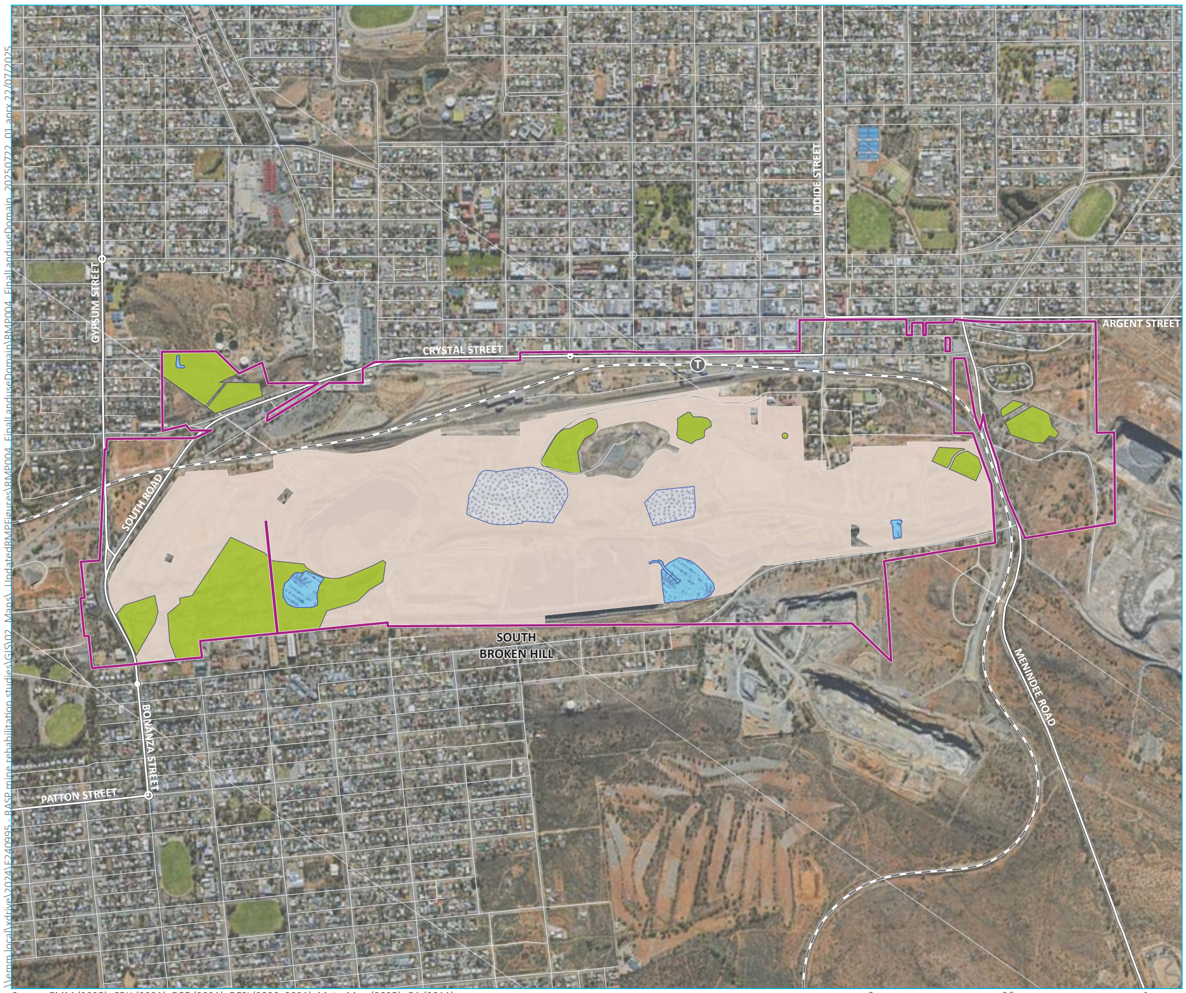
Domain codes are in accordance with the Resources Regulator Mine Rehabilitation Portal Guideline (RR 2021). Detailed descriptions of these domains are provided in the following sub-sections.

As noted in the Rasp Mine rehabilitation strategy (EMM 2023), and in Section 2.4.1ii, the site has a unique location within the central region of the historical Broken Hill Line of Lode orebody within the City of Broken Hill. Retention of the landscape and built heritage values of the site to support the ongoing heritage values of the City of Broken Hill are the agreed outcomes, whereby conventional final land use options of returning the site to native ecosystem and/or agricultural land uses are therefore not appropriate for the site.

BHOP has adopted a 'base case' safe, stable and non-polluting final landform for the entire site that provides for mining heritage-related tourism PMLU with the opportunity for other appropriate PMLUs for the non-heritage related components of the mine. Accordingly, the final land use domain of "Other" has been assigned in accordance with the NSW Resources Regulator Mine Rehabilitation Portal Guideline (RR 2021a) and NSW Resources Regulator Guideline Rehabilitation Objectives and Rehabilitation Completion Criteria (RR 2021b).

Table 2.3 Rasp Mine – rehabilitation domains

Code	Domain name	Area (ha)
Final land use domains		
F	Water management areas	5.39
H	Heritage area	39.67
J	Final void	11.45
K	Other – mining landscape related heritage	207.72
Mining domains		
1	Infrastructure Areas	0.10
2	Tailings storage facilities	57.97
3	Water management areas	10.49
4	Waste emplacement areas	135.06
5	Active mining area (open cut void)	11.45
7	Beneficiation facility	5.80
8	Other – mining heritage related	43.37



KEY
Broken Hill Operations mining lease (CML 7)
Final land use domain
Final void
Heritage area
Other
Water management area
Existing environment
Train station
Rail line
Major road
Minor road

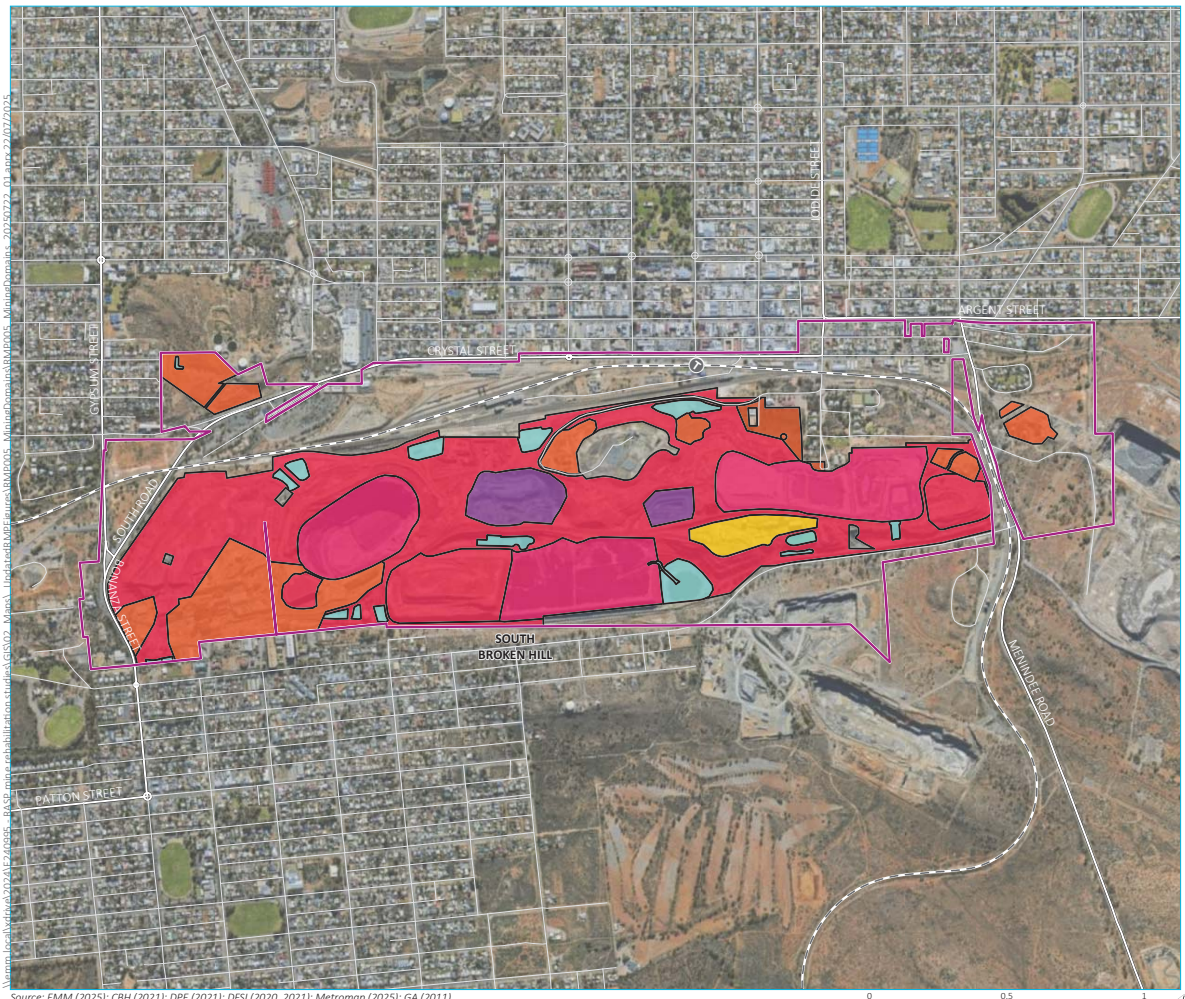
Source: EMM (2025); CBH (2021); DPE (2021); DFSI (2020, 2021); MetroMap (2025); GA (2011)

0 0.5 1 km
GDA2020 MGA Zone 54

Final land use domains

Rasp Mine
Rehabilitation Management Plan
Figure 2.2

EMM creating opportunities



Source: EMM (2025); CBH (2021); DPE (2021); DFSI (2020, 2021); Metromap (2025); GA (2011)

Mining domains

Rasp Mine
Rehabilitation Management Plan
Figure 2.3

EMM creating opportunities

2.4.1 Final land use domains

i Domain F – Water management area

Significant water management works were undertaken by NML from 1993 through to 2000 to minimise discharge of surface water from the site and divert it to evaporation basins within or adjacent to the lease (NML, 2000).

A summary of surface water management works undertaken by NML prior to BHOP purchasing the mine is detailed in Table 2.4.

Table 2.4 Surface water management works undertaken by NML

Location	Works	Date	Purpose
Haul road at the toe of the Horwood tailings dump (TSF1) and Horwood Dam	Bunding of haul road and Horwood Dam	January 1993	To prevent stormwater from the southern side of the city entering the lease.
Horwood tailings dump (TSF1)	Earth fill near Kintore pit and change of road gradients Trenching from Dump 1A to Kintore Pit	January 1993	Diversion of flow away from TSF1. Diversion of flow from the old crusher and mill areas to the then mill dam and an area south of Kintore Pit. Trenching was undertaken to divert flow from Dump 1A to Kintore Pit.
Waste dumps (including old tailings dumps covered with rock) in the Delprats area	Recontouring and excavation of a drainage channel	1993/1994	Divert flow from the waste dumps to the BHP pit.
Delprats waste dump	Recontouring and redirecting drainage	1994/1995, extended in 1997/1998	Divert flow from Delprat dump and roadway to BHP pit to the south and Block 14 to the north.
Dump 1A and All Nations tailings dump	Perimeter bunding	1995/1996 and 1996/1997	Runoff from the top of Dump 1A and All Nations tailings dump re-directed to Kintore Pit.
No 7 winder southeast to the old mill	Bunding	1995/1996 and 1996/1997	Divert flow to the old Kintore Pit.
Old Broken Hill South tailings dump western side of CML7 overlooking the rail yards	Using waste rock to cover and construct a stormwater retention area	1996/1997	Cover tailings and create stormwater capture and evaporation.
Old Sulphide Corporation fire/ambulance building	Excavation of a retention basin	1996/1997	Capture of stormwater from the south-eastern side of CML7 and redirecting it via a culvert under the main access road into old Kintore Pit.
North-east boundary fence	Removal of mullock and slack and construction of major drainage bunds	1996/1997	Direct stormwater to the Horwood Dam to eliminate any runoff or seepage outside the lease boundary from that area.
Rail yards	Construction of an evaporation pond at the base of the black slag dump and connection to the rail yards evaporation pond	1999/2000	To divert, capture and evaporate contaminated stormwater.

Location	Works	Date	Purpose
Blackwoods waste rock dump	Bunding and regrading of benches	1997/1998	To redirect stormwater from Blackwoods waste rock dump to Blackwoods Pit.

The concept final landform design maximises the opportunity for diversion of stormwater flow away from the angle of repose outer batters and maintains internal drainage to pits and low points to encourage retention and evaporation. Modification to some of the works undertaken by NML is proposed to minimise the concentration of flows and erosion potential, and to avoid reliance on structural erosion controls. It also accounts for drainage modification undertaken by BHOP over the life of the mine.

A surface water model of the proposed final landform is currently being developed, and detailed investigations are being undertaken to:

- improve the retention capacity of Ryan Street Dam to minimise the potential for off-site discharge
- determine treatment options for stormwater contained in Ryan Street Dam to permit lawful discharge
- assess:
  - all monitoring systems, alerts, and associated action plans
  - the integrity of all water storage facilities, including permeability and their ability to prohibit discharge
  - verify the aspect and required design capacities of all water storages
  - water storage facility maintenance programs
  - permanent and temporary pumping systems.

The key formal evaporation dams (other than the final voids) planned to remain following closure are detailed in Table 2.5.

Table 2.5 Water storages

Water storage	Capacity	Purpose	Comments
Ryan Street Dam (S49)	1,951 m^3	Collect contaminated stormwater run-off from the historical Block 10 smelter.	BHOP investigating an option to establish an artificial wetland in this dam to improve contaminant capture.
Horwood Dam	7,66 m^3	Receives seepage and stormwater runoff from the Mt Hebbard and TSF1 outer batters.	BHOP are investigating an option to establish an artificial wetland in this dam to improve contaminant capture.
Lochness (S22)	18,000 m^3	Receives runoff from the surface of TSF1.	This dam will be modified to form a single cell during rehabilitation works in preparation for closure.

Crest bunding of waste rock dumps in preparation for closure will form temporary water storages that are anticipated to evaporate. Details of evaporation dams to remain will be refined in the surface water model currently being developed for the site. Spillways are installed on waste rock dump crest bunds to control overflows and limit erosion in the event of excessive rainfall.

ii Domain H – Heritage areas

The Rasp Mine site has many items that possess heritage significance on a local, State, and National level. As a result, constraints apply to some actions that would ordinarily form part of conventional mine rehabilitation works as detailed in Table 2.6.

Gazetted heritage items located within CML7 are detailed in Table 2.7.

Table 2.6 Statutory listing implications

Listing	Relevant legislation	Protections	Implications
National Heritage List	*Environmental Protection Biodiversity Conservation Act 1999* (EPBC Act)	Site is listed on the NHL are defined as Matters of National Environmental Significance (MNES). Under the EPBC Act, an action that may have a *significant impact* on a MNES is deemed to be a 'controlled action' and can only proceed with the approval of the Commonwealth Minister for the Environment. An action that may potentially have a significant impact on a MNES is to be referred to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for determination as to whether or not it is a controlled action. If deemed a controlled action, the project is assessed under the EPBC Act for approval.	The project area falls under the NHL listing for the City of Broken Hill (refer to attachments). Whether an action needs to be referred is determined by the proponent via a self-assessment process. *Matters of National Environmental Significance, Significant Impact Guidelines 1.1* (Department of the Environment 2013) provides a framework to assist proponents. The Rasp Mine Closure Remediation Plan would need to be self-assessed to determine whether the implementation of the plan would have a significant impact on the assessed significance of the City of Broken Hill NHL listing. It would be deemed to have a significant impact if one of the following statements is found to be true: • One or more of the National Heritage values to be lost. • One or more of the National Heritage values to be degraded or damaged. • One or more of the National Heritage values to be notably altered, modified, obscured or diminished.
State Heritage Register (SHR)	*Heritage Act 1977*	Items are protected under Section 57 of the Heritage Act as they are significant in the development of NSW	• Cannot be disturbed/impacted/changed without approval. • Change must be justified. • Approval not guaranteed.
Local Environmental Plan (LEP) listing	*Environmental Planning and Assessment Act 1979*	As defined by the standard LEP and the Development Control Plan (DCP).	• Council to approve changes. • Development that has the potential to affect heritage items is discouraged.

Table 2.7 Gazetted heritage items

Item	Register	Item ID	Comments
City of Broken Hill	NHL	C2015G00102	Entire project area. Retention of National Heritage values through retention of listed heritage items and mining landscape.
BHP Chimney Ruins of First Offices	SHR	01820	These chimney ruins, situated in the centre of Heritage Precinct 11 (former Precinct 8), are owned and managed by Broken Hill City Council and fall outside the study area.
	LEP	I14	
British Flats – Proprietary Square	LEP	I21	The British Flats in Proprietary Square are located northeast of Heritage Precinct 11 (former Precinct 8). These residences, although encompassed within the surface rights areas of BHOP, are owned by the LOLRT. As such, these donated properties lie outside the study area boundaries.
Sydney Railway Station (former)	LEP	I210	The Broken Hill Railway Station and Yard Group and Sydney Railway Station (former) is located on CML 7. However, it is owned by the Transport Asset Holding Entity and operated by NSW TrainLink, making it fall outside the designated study area.
The Broken Hill Railway Station and Yard Group	LEP	I149	
Heritage Precinct 1	LEP	I116, I244, I236–I262, I280	Items listed separately on the LEP as: • I116 Radford House (Eyre Street) • I236 Brick Pier Foundations • I237 Broken Hill, South Mill • I238 Carpenter's Paint Shop (Old Winderhouse) • I239 Changehouse • I240 Coal Bins • I241 Compressor Room (Old Power House) • I242 Electrical Workshop • I243 Fire and Ambulance Station • I244 General Offices • I245 General Store Office • I246 Mechanical Workshop (Old General Workshop) • I247 Mullock Bin • I248 Number 2 Control Substation • I249 Number 6 Shaft Vent Fan • I250 Pattern Store (Carpenter's Shop)

Item	Register	Item ID	Comments
			• I251 Pumphouse • I252 Pumphouse and Cooling Water Reservoir • I253 Riggers Shop • I254 Roaster Plant • I255 Sand Plant • I256 Saw Mill and Extension • I257 Square Concrete Foundation • I258 Tank stand • I259 Two Water Tanks • I260 Two Water Tanks and a Stone Foundation • I261 Water Tower • I262 Yardman's Office
Heritage Precinct 2	LEP	I263–I279, I282	Items listed separately on the LEP as: • I263 Ambulance Garage • I264 Changehouse • I265 Covered Overpass • I266 Crusher Station • I267 Headframe, No. 4 Shaft • I268 Ice-Making Plant Building • I269 Lamp Repair Room • I270 Lamp Room • I271 Magazine • I272 No. 7 Headframe • I273 No. 7 Rescue Equipment Building • I274 No. 4 Rescue Equipment and Waiting Sheds • I275 No. 7 Winding House • I276 Ore Outcrop • I277 Rectifier Room • I278 Saw Mill • I279 Underground Offices Building • I280 Winding House and Motor, No. 4 Shaft

Item	Register	Item ID	Comments
Heritage Precinct 3			The northern part of Heritage Precinct 3 falls beyond the boundaries of the study area. This area is the property of PBHOP and is licensed for occupancy by Broken Hill City Council under tourist lease for *Browns Shaft, License to Occupy*, UG2-3A.
	LEP	I281, I282	Items listed separately on the LEP as: • I281 Browne's Shaft, Junction Mine & Lookout • I282 Junction Mine and Lookout
Heritage Precinct 4	LEP	I283, I284	The northern part of Heritage Precinct 4 hosts an olive grove and is occupied by Broken Hill Gourmet Products Cooperative Limited. This olive plantation, established in October 2004, consists of 1,000 olive trees and is located on 2.59 ha to the north-west of CML 7, within the surface area of CML7. The Block 10 site, encompassing the BHP Concentration Mill Site I283 and Block 10 Reservoirs I284 is located outside of CML7 managed by Broken Hill City Council and fall outside the study area.
Heritage Precinct 5	LEP	I285–I296	Items listed separately on the LEP as: • I285 BHP Concetration Mill Foundations • I286 BHP Smelter Walls and Stack • I287 Delprat Changehouse • I288 Delprat General Offices • I289 Delprat Head Frame and Shaft • I290 Delprat Winder Foundations • I291 Delprat Winderhouse • I292 Loading Platform • I293 Slag Dump, Foundations & Timber Piles • I294 Stone Wall and Concrete Footings • I295 Three Water Tanks
Heritage Precinct 6	LEP	I296–I304	Items listed separately on the LEP as: • I296 Mullock Dump with Tram Lines • I297 Ore Outcrop • I298 Thompsons Ambulance Station • I299 Thompsons Changehouse • I300 Thompsons Conveyor, Storage Bin and Loading House • I301 Thompsons Crusher House • I302 Thompsons General Offices

Item	Register	Item ID	Comments
			• I303 Thompsons Header Frame, Brace Housing & Conveyor • I304 Thompsons Winderhouse
Heritage Precinct 7	LEP	I305–I309	Items listed separately on the LEP as: • I305 Four Concrete Piers • I306 Building Foundation • I307 BHP Headframe Ruins • I308 Stone Retaining Wall • I309 Timber Chute
Heritage Precinct 11 (former Precinct 8)	LEP	I417	Proprietary Square Residences – off site in CML7 but in a surface exclusion area.
		I15	Items listed separately on the LEP as: • I15 BHP North Slag Dump

NML's rehabilitation and closure program focused on the preservation of significant buildings and structures on the leases. NML's rehabilitation program commenced in 1991 with comprehensive and systematic identification of movable items that constituted either:

- salvageable (i.e. saleable) material
- scrap
- heritage items for conservation.

Direct sale of equipment was undertaken until 1995 when an auction was held to sell remaining equipment. Scrap material was removed for burial in several campaigns from 1992 to 1997, and moveable heritage items were retained for future use by the LOLA or removed to museums in Broken Hill.

In 1993, BHCC was granted funding by the Heritage Council of NSW to support a study by industrial archaeologist J McCarthy of the significance of the headframes and surrounding structures at No.4 and No. 7 shafts. BHCC noted, in presenting the findings of this report that:

> Preservation of the mining character of Broken Hill was essential for the long-term prosperity of the town. This would impact on the rehabilitation strategies of the mines, with potential tourists coming to see mines, not vegetation. (MREMP minutes March, 1993).

Of note in the report was reference to the black slag dump overlooking Crystal Street on the western side of the lease. It was agreed the distinctive nature of this feature warrants its preservation and should not be covered or regraded in any way. The high density and cohesiveness of the slag makes the dump highly stable, and its vertical face prevents access. Ownership of the dump maintained with BHP until it was purchased by MMM in 1998 (NML, 2000) and later listed as LEP Item I15.

A gap behind a prominent freestanding stone and brick wall, which formed part of the original BHP Smelter Walls and Stack (LEP Item I286), washed out overtime, was filled with rock by NML from 1993 to 1994 to support the wall and prevent any further deterioration.

Newer buildings, not important to understanding the site history – including a heavy equipment workshop, assay office, reagent shed (formerly LEP Item I279, Broken Hill LEP 1996) and training office were dismantled and removed in 1995 to 1996.

The tailings grinding and retreatment plant near the mill and its associated feed bin, apron feeder, and conveyors were removed, foundations excavated, and the site cleared and graded. The coarse ore feed bin, primary crusher, secondary crushing, screening plants, and conveyors were dismantled and removed, but concrete foundations were left in place at the request of the LOLA. Voids were filled with rock.

At the South Mine Mill (LEP Item I237) water supply tanks, thickeners and filter plant were removed and mill dams were filled with waste rock. Unwanted water pipes, tailings pipes, railway tracks, and the firehouse drying mast were also removed.

Important and distinctive infrastructure that was retained included:

- the offices on Eyre Street (freehold, not within CML7), as well as the South Mine ambulance rooms, changeroom/bathhouse, South Mine Mill, and workshops in Mining Precinct 1 (LEP Items I116, I244, I236–I262, I280)
- No. 7 and No. 4 Headframes, shafts, associated winding houses, and complex of associated structures in Mining Precinct 2 (LEP Items I263–I279, I282)
- Browne's Shaft, Junction Mine and lookout complex in Mining Precinct 3 (LEP Items I281-I282)
- Delprats headframe, winder and associated structures in Mining Precinct 5 (LEP Items I281-295)

- Thompsons shaft (Junction) complex in Mining Precinct 6 (LEP Items I305-I309)
- the unlisted houses on South Road and the British Flats in Proprietary Square (LEP Item I21).

Plant and equipment excluded from the main auction sale held by MMM in May 1995 and left in place for future mining heritage tourism included:

- winders at Brownes shaft (LEP Item I281), Delprats (LEP Item I291), Thompsons (LEP Items I304); and No. 7 (main) shafts (LEP Item I271)
- in the South Mill (LEP Item I237); one set of roll crushers, one ball mill, Mt Hebbard flotation cells, and two solid displacement Aldridge pumps
- all the original electrical switching and control stations
- sand fill plant (LEP Item I255) with several sets of drag classifier
- in the workshops (LEP Items I242; I246); two (2) pre 1900 lathes and several overhead cranes
- in the compressor building (LEP Item I241); the original compressor
- in the fire service pump house; several examples of high-pressure water pumps.

In 1994 to 1995, old plans and records dating back to the early 1900s were collected, stored, and made available to the LOLA. Work commenced to make (to the then DMR and Workcover requirements at that time) the buildings and mine structures to be retained safe for public access. This included:

- removing scrap; removing or repairing unsafe walkways; removing contaminated material from the South Mill (LEP Item I237); and filling pits in the basement with rock
- removing scrap and filling pits at the No.7 shaft crusher station (LEP Item I266)
- clean-up and removal of scrap, and removal of tailings around the old sand plant building (LEP Item I255).

Building repair continued in 1996 to 1997. Damaged roofs and walls were reclad (with iron sheets chosen for their 'weathered' look) and in the South Mill (LEP Item I237), unwanted stairways; power cables; pipework; walkways; and steel work were repaired or removed; all accessible areas were cleared; and potentially hazardous areas were partitioned off.

Shafts were either capped or fenced as detailed in Table 2.8.

Table 2.8 Shaft safety works undertaken by NML

Shaft	Details of works
No. 1	Previously filled, reinforced concrete slab
No. 4	Open, with steel mesh safety grid, chainwire cyclone fence
No. 5	Open upcast airway, mesh safety grid and security fence repaired
No. 6	Open upcast airway, additional chainwire security fence
Sandpass decline	Previously filled, reinforced concrete slab
Sandpass shaft	Previously filled, chainwire security fence

Shaft	Details of works
Campbell	Decked and fenced, signage fitted
Delprats vent shaft	Upcast airway, chainwire safety fence
Jimmy Green	Previously filled, reinforced concrete slab
Brownes	Decked with heavy gauge railway line and erection of security fencing
Thompsons	Open, with decking, security fence repaired
Thompsons vent shaft	Previously filled, reinforced concrete slab
King	Open, reinforced concrete slab
King vent shaft	Open, gaps around fan duct housing decked and concreted
Reyallick	Decked and chainwire security fence
McIntyre	Decked and chainwire security fence
Marsh	Decked and chainwire security fence

The LOLA was established in 1995 as a community-based group to oversee the development of tourism and other commercial possibilities with CML7. Several residential and other buildings were donated to LOLA in 2000. In September 2011, the LOLA was dissolved, and its assets located on CML7 transferred to the then Land and Property Management Authority (now Crown Lands), that established the Line of Lode Reserve Trust (LOLRT) and act as trustee of these assets. These assets include two residences located on Bonanza Street, Jamieson House (residence 27A&B); British Flats within Proprietary Square and Broken Earth Café and Miners Memorial, centrally located on the city side of CML7, atop an old mine waste dump.

It is BHOP's intention that the mine's heritage items remain following cessation of mining. and that the greater mine area is used for historical mining and industrial related tourism to minimise the socio-economic impacts on the City of Broken Hill.. However, the responsibility for the heritage items will ultimately need to be transferred from BHOP to another entity. Formal consultation has commenced with relevant stakeholders to plan for this process (see Section 4.2).

The LOLA has been replaced by Broken Hill Lead Response Group - Premier's Department including Regional NSW and EPA. In addition Broken Hill City Council and Heritage NSW have been consulted with the development of the Conservation Management Plan.

Some heritage items may be structurally unsound and may not be fit for purpose for future mining use or tourism use (e.g. Carpenters Paint Shop (LEP Item I238). It may be necessary to seek development approval to demolish these items.

A draft conservation management plan (CMP) was prepared for BHOP in 2012 by Austral Archaeology Pty Ltd in association with Dr Peter Bell. The CMP comprises two volumes: Volume 1 is the main body of the CMP and Volume 2 includes the individual heritage inventory forms for each building and site.

GML Heritage (GML) prepared the *Rasp Mine Conservation Management Strategy* in August 2015, commissioned by Broken Hill Operations Pty Ltd (BHOP). The objective of the report (GML 2015) was:

> …to integrate the findings and policies of the Draft CMP with the current management framework for Rasp Mine, to provide for appropriate management of the large number of individual heritage items, to align with BHOP's planning for mine closure and lease relinquishment and to form the basis for preparation of a revised Conservation Management Plan.

EMM prepared a draft CMP in 2024 under Schedule 3, Condition 30 of PA 07_0018 to guide heritage management during ongoing mining and PMLU planning.

In 2024, EMM commenced work on a strategic framework to address redundant heritage structures within the mine, potentially serving as a model for future PMLU. This framework navigates complex issues, including uncertain mine ownership, variable timelines for closure, multi-stakeholder involvement, funding needs, and the high costs of heritage conservation.

EMM assessed 74 structures of high, exceptional, or outstanding heritage significance, categorising them for demolition, ruin retention, conservation, or adaptive reuse, with phased budget planning.

Recommendations highlighted stakeholder consultations, audits of movable and archival heritage, and the creation of a Heritage Asset Management Plan and Line of Lode Masterplan, emphasising a unified approach and transparent communication for the sustainable management of heritage assets at Rasp Mine during operations and into the post-mining timeframe.

The CMP establishes a strategic framework that encompasses all heritage items situated within the Lease area under BHOP's management. The CMP is consistent with the principles of the *Burra Charter* (ICOMOS (Australia), 2013). The development of the CMP involved consultation with Heritage NSW and Broken Hill City Council. These entities review and provide comments on the management of the Rasp Mine, as well as the implementation of recommendations outlined in the CMP.

The 2024 CMP is a response to a multitude of challenges that have intensified the management of heritage items within an active mining precinct. It aims to strike a balance between operational continuity, safety, rehabilitation, and PMLU requirements, in the context of the Rasp Mine's location within The City of Broken Hill listing on the NHL, Place ID, 10581.

These challenges include concerns about the potential effects of mine rehabilitation, the anticipated rise in tourist visits, increased demands on the site, and the risks posed to its historical integrity and surroundings due to ongoing mining operations and nearby developments in the mining area.

In light of these considerations, the 2024 CMP provides a practical framework to guide change, conservation, and care at the Rasp Mine, acknowledging the complexities involved in managing heritage items during the planned mine rehabilitation, as well as the coexistence of an active mining precinct.

The CMP provides further detail on all the known built heritage items and heritage precincts, as well as mining heritage landscape values and conservation measures.

This RMP will be circulated and reviewed by stakeholders and finalised.

KEY

- Broken Hill Operations mining lease (CML 7)

Existing environment

- Train station
- Rail line
- Major road
- Minor road

Statutory listing

- Commonwealth Heritage List
- State Heritage Register

Non-statutory listing

- Register of the National Estate
- National heritage place

Source: EMM (2025); CBH (2021); DPE (2021); DFSI (2020); ESRI (2024); GA (2011)

0 0.5 1 km

GDA2020 MGA Zone 54

Listed heritage items

Rasp Mine
Rehabilitation Management Plan
Figure 2.4

EMM creating opportunities

iii Domain J – Final voids

Two final voids will remain at closure:

- BHP Pit
- Box Cut.

Little Kintore Pit will be partially backfilled with waste rock from the excavation of the Box Cut to form a shallow stormwater detention pond designed to capture runoff from the capped Kintore Pit landform. As shown on Figure 2.5, where it would evaporate or seep into the floor of the backfilled pit.

The finished surface will be a rough surface inert waste rock with 1% to 2% fines.

a BHP Pit

The BHP Pit is currently used for sorting and storage of waste rock. It is expected at closure that the BHP pit will be partially backfilled with waste rock and then capped with inert waste rock. The extent of backfilling is limited by the in-situ heritage items within the pit.

It is expected that the BHP will form part of the mining heritage final land use and if not completely backfilled, it will be bunded for public safety purposes.

b Box Cut

MOD 6 approved the harvesting of dry tailings from the Blackwood Pit (TSF2) for disposal in Kintore Pit (TSF3) as TSF2 is reaching maximum capacity. This will require excavation of a Box Cut, mainly via earthworks with some surface blasting at the lower levels (30 m) to gain access to competent rock from which a new portal and decline would be installed. This would require relocating up to 490,000 t of excavated material to Little Kintore Pit and BHP Pit (all material has been deemed to be >0.5% Pb and would be stored in-pit).

Following cessation of underground operations, removal of all infrastructure, and plugging and capping of the portal, the Box Cut will be partially backfilled with waste rock, then capped with inert waste rock to form a stormwater detention pond (see Figure 2.7). Surface water contained in the stormwater detention pond would be expected to evaporate or seep to ground water.

The finished surface will be a rough surface of inert waste rock with 1% to 2% fines.

The sides of the Box Cut above the backfilled surface will be exposed in-situ rock.

iv Domain K – Other (mining heritage related tourism)

The greater mine area will be used for historical mining and industrial related tourism to minimise the socio-economic impacts on the City of Broken Hill. Retention of the mining landscape on site will assist in retaining the National heritage values of Broken Hill.

This domain will be rehabilitated to be a safe, stable, and non-polluting mining landscape that is consistent with the mine's industrial and mining heritage. This involves leaving all mining landforms not constructed or modified by BHOP in their existing as-constructed landform, because reshaping is either not possible due to impacts on waste storages that were constructed prior to BHOP such as TSF1, or due to restricted areas caused by proximity to the mining lease boundary, or the presence of existing infrastructure such as rail, road and powerline constraints. In addition, a risk exists from the potential to generate lead dust during reshaping operations which may result in an air quality risk to residents or tourists.

Free areas are defined as waste dump surfaces as identified in Appendix 4 of the PA 07_0018 MOD11.

In 1993, BHCC was granted funding by the Heritage Council of NSW to support a study by industrial archaeologist J. McCarthy. BHCC noted, in presenting the findings of this report that:

> Preservation of the mining character of Broken Hill is essential for the long-term prosperity of the town. This would impact on the rehabilitation strategies of the mines, with potential tourists coming to see mines, not vegetation. (MREMP minutes March, 1993).

Of note in the report was reference to the black slag dump (LEP Item I15) overlooking Crystal Street on the western side of the lease. While not listed on any heritage register, it was agreed the distinctive nature of this feature warrants its preservation and it shouldn't be covered or regraded in any way. The high density and cohesiveness of the slag makes the dump highly stable, and its vertical face prevents access.

Newer buildings, not important to understanding the site history – including a heavy equipment workshop, assay office, reagent store and training office were dismantled and removed in 1995 to 1996.

At the cessation of mining, infrastructure that has been installed by BHOP will be demolished and disposed of underground or within Kintore Pit (TSF3) and capped. Concrete structures and pads will be removed and placed underground or within TSF3 or crushed and placed around heritage areas to minimise the exposure of lead-bearing waste rock which may result in dust emissions. Contaminated material will be removed and disposed of underground or to TSF3, where it will be capped and covered with inert waste rock. Slopes greater than 18 degrees, installed by BHOP, will be reshaped in accordance with the final landform plan to ensure geotechnical and erosional stability.

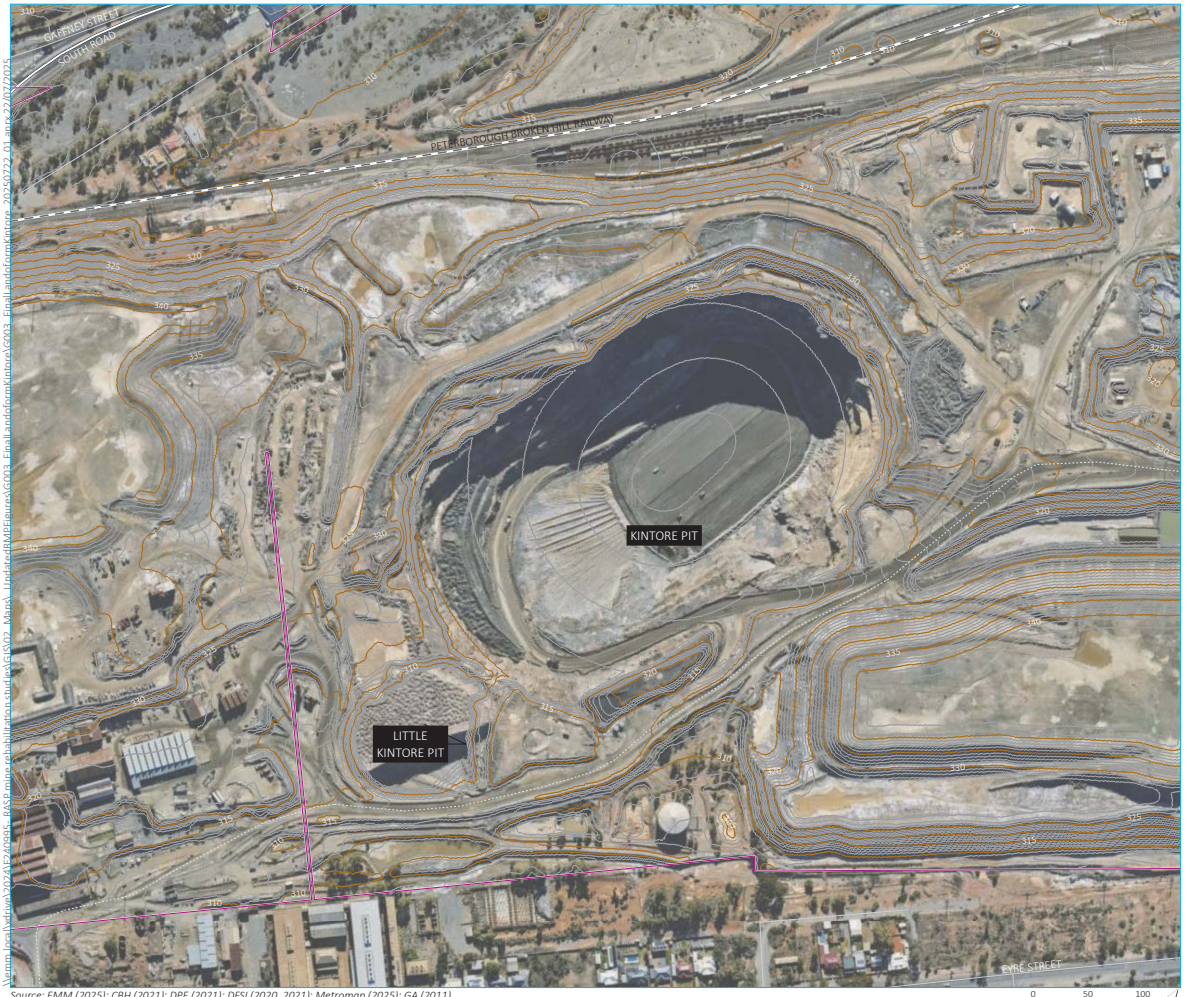
Crushed inert waste rock/concrete will be placed as cover around heritage items to provide for public safety through minimising lead-bearing dust emissions.

There are several sealed and unsealed hardstand and laydown areas across the site. The sealed areas will remain in-situ with removal of any contaminated material and the areas cleaned down. Most of the sealed areas are located around historic buildings and will remain for the proposed mining tourism final land use. Unsealed areas will have contaminated material removed and then will be covered with inert waste rock to minimise dust emissions.

It is intended that electrical services will be retained for mining heritage tourism purposes and will therefore only be partially terminated. Two electrical substations will be terminated, demolished, and placed underground.

Development approval will be required for demolition of buildings and structures erected by NML in the 1990s. Demolition of current BHOP structures and buildings may also require a modification to the PA07_0018, which references the original Environmental Assessment that requires their retention to add another layer of mining history to the site.

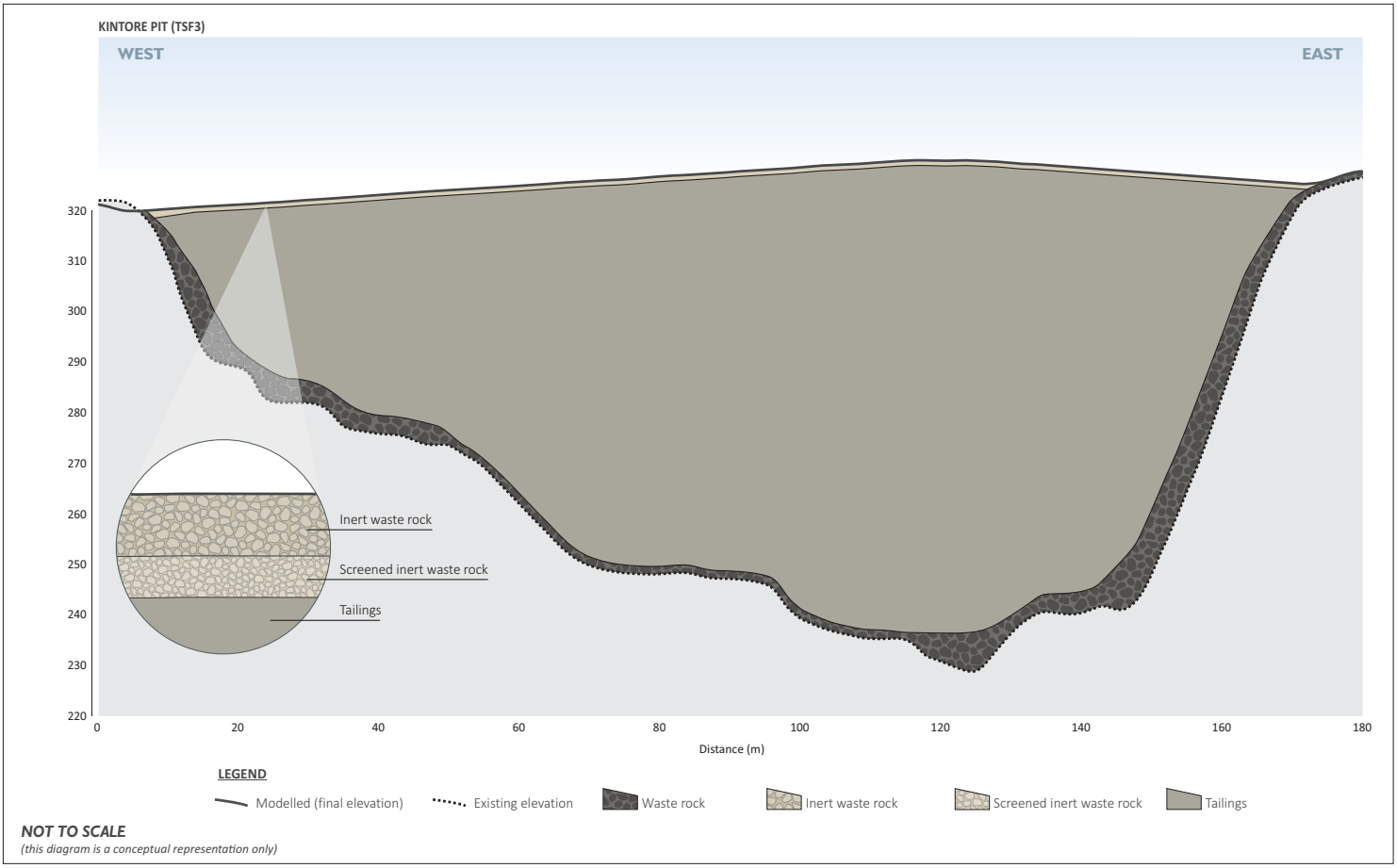
Some unsealed and sealed roads will remain to allow access to the heritage items for the mining heritage tourism final land-use, access to the Vodaphone tower, Line of Lode Café, Miners Memorial, and lookout and for ongoing land management activities such erosion monitoring, site security, pest control etc.



Source: EMM (2025); CBH (2021); DPE (2021); DFSI (2020, 2021); Metromap (2025); GA (2011)

Kintore Pit (TSF 3) and Little Kintore Pit final landform

Rasp Mine
Rehabilitation Management Plan
Figure 2.5



Kintore Pit final landform cross sec on

Rasp Mine
Rehabilitation Management Plan
Figure 2.6

KEY

- Broken Hill Operations mining lease
- Rail line
- Minor road
- Vehicular track

Final landform contour (m)

- 1 m contour interval
- 5 m contour interval

Source: EMM (2025); CBH (2021); DPE (2021); DFSI (2020, 2021); Metromap (2025); GA (2011)

Box Cut and TSF2 final landform

Rasp Mine
Rehabilitation Management Plan
Figure 2.7

EMM
creating opportunities

2.4.2 Mining domains

i Domain 1 – Infrastructure

Infrastructure associated with the mine, excluding the processing plant are listed in Table 2.9.

Table 2.9 Rasp Mine infrastructure

Area	Sub area	Assets	Requirements for demolition, removal or disconnection
Backfill Plant	Buildings and infrastructure	Structure, tanks, cyclone	DA. Demolish and place underground.
Mechanical Workshop	Buildings and infrastructure	Offices, workshops	Heritage structure to be in-situ with minor repairs for safety, refer to Final Land use Domain H.
Electrical Workshop	Buildings and infrastructure	Offices, workshops	Heritage structure to be in-situ with minor repairs for safety, refer to Final Land use Domain H.
Mining Workshop	Buildings and infrastructure	Offices, workshops	Heritage structure to be in-situ with minor repairs for safety, refer to Final Land use Domain H.
Employee facilities	Buildings and infrastructure	Shower block, laundry, employee carpark	DA. Disconnect services, demolish and place underground.
Access roads and haul roads	Sealed roads		Strip bitumen and contaminated material and cover with inert waste rock.
Sewage treatment	Mill and mechanical workshop	Septic systems x 2	DA. Disconnect services, demolish and place underground.
Hardstands and laydown areas			Items removed and disposed underground, areas cleaned and contaminated materials removed.
Remote learning area		Bunding, structure	DA. Bund to be pushed back over the area.
Power, electrical substations	Power lines	22 kV, 415 kV	Power connection for South Mill heritage area to remain. Dismantle and remove.
		Seven switch yard and sub-stations	Dismantle and remove.
Rail load out facility and spur line		Rail line	Dismantle and remove unless ownership is transferred to ARTC.

Non-BHOP owned infrastructure that will remain following the cessation of mining is listed in Table 2.10.

Table 2.10 Non-BHOP owned infrastructure

Owner	Assets	Requirements for demolition, removal or termination
Broken Hill Gourmet Products Cooperative Limited	Olive Grove	Agreement for mining lease relinquishment to allow activity to continue.
Crown Castle Australia	Vodaphone Communications Tower	Agreement to allow activity to continue.
Line of Lode Reserve Trust	Broken Earth café and Miner's memorial. Two residences (South Road) British Flats	Agreement for mining lease relinquishment to allow activity to continue.
Jamieson House Reserve Trust	Residence D4874, old mine managers house	Agreement for mining lease relinquishment to allow activity to continue.
Broken Hill City Council	Browns Shaft tourist interpretive signage to buildings and structures Block 10 interpretive signage and structures	Licence to Occupy UG2-3A- Browns shaft tourist area. Licence to Occupy C39-1L- Block 10 tourist area.

2.4.3 Domain 2 – Tailings storage facilities

There are two existing and one proposed tailings storage facilities at Rasp Mine:

- Horwood Dam (TSF1)
- Blackwoods Pit (TSF2)
- Kintore Pit (TSF3).

i Horwood Dam (TSF1)

The Horwood Dam (TSF1) was capped by NML using smelter slag, as approved by the then DMR. Some modification to the surface of TSF1 is proposed to divert surface flows away from the north-eastern angle of repose batter to decrease the risk of erosion.

ii Blackwoods Pit (TSF2)

The Blackwoods Pit (TSF2) is reaching its maximum capacity. MOD 6 approved removing tailings from TSF2 to Kintore Pit (TSF3) for disposal. TSF2 will be capped as detailed in Section 3.3.5ii.

iii Kintore Pit (TSF3)

Underground access is currently through Kintore Pit. MOD6 approved the construction of a Box Cut and portal for a new underground access to allow Kintore Pit to be backfilled with waste rock and tailings trucked from TSF2. TSF3 will be capped as detailed in Section 3.3.5ii.

iv Domain 3 – Water management areas

The Rasp Mine water management system consists of a network of infrastructure to control the movement of water around the site. The Rasp Mine water management system is described within the Rasp Mine Site Water Management Plan (BHO-PLN-ENV-004).

v Domain 4 – Overburden emplacement areas

Domain 4 includes overburden emplacement areas. The area covered by Domain 4 changes continually due to the progressive nature of mining operations.

Overburden is removed and transported to designated emplacement areas where it is placed in benches (layers) to reach the final design profile, following which it is shaped with dozers to create a final landform.

Domain 4 is inclusive of the designated 'Free Areas' in which no mining disturbance has occurred due to Rasp Mine operations. However, they can provide a source of wind-borne dust. These 'Free Areas', will be capped with inert waste rock to minimise dust emissions, and the angle of repose batters will be rock mulched if required for erosional stability.

Stormwater surface flows will be managed to minimise the risk of erosion impacts on waste rock batters from stormwater by:

- flat or low slope tops of waste rock dumps will be shaped to direct stormwater flows away from outer batter slopes where possible
- where necessary, edge berms will be constructed as required around the top of waste rock dump batters to prevent over-topping of stormwater flowing from flat areas and down exposed batters. Spillways are installed as required to control the flow of excess runoff and minimise erosion impacts.

Detailed consideration of surface water flows has been incorporated into the proposed final landform as discussed in Section 3.2.3.

vi Domain 5 – Active mining area (Open cut void)

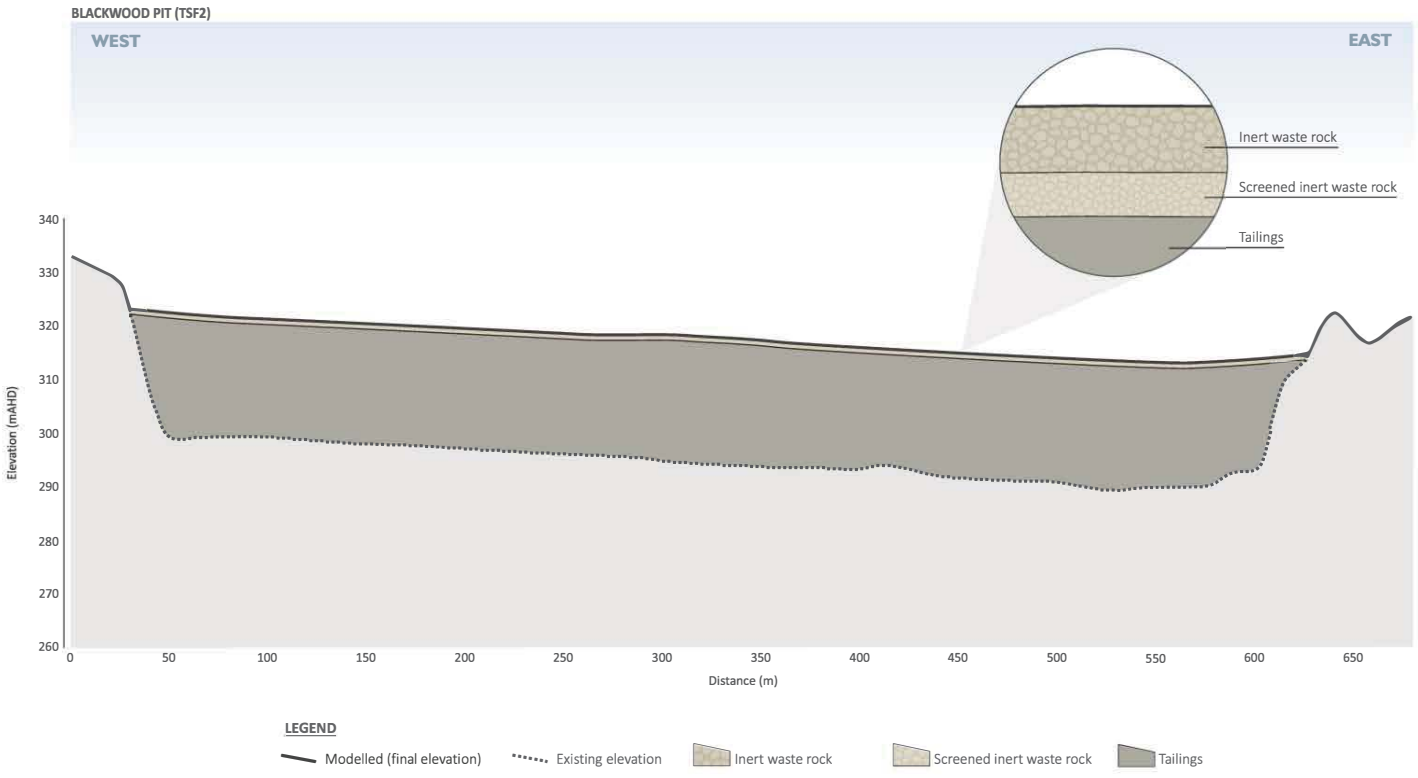
Domain 5 contains infrastructure related to ongoing mining activities including ancillary mining activities in the BHP pit, and underground mining access from the Box Cut.

vii Domain 7 - Beneficiation facility

Domain 7 includes product preparation facilities and associated infrastructure; however, does not include product stockpiles.

viii Domain 8 - Other Heritage

Domain 8 contains in-situ heritage items identified within Section 2.4.1, located within CML7 to be maintained post mining. Rasp Mine, where appropriate, may utilise heritage items to support ongoing mining operations.



NOT TO SCALE
(this diagram is a conceptual representation only)

Blackwoods Pit (TSF2) final landform conceptual cross section

RASP Mine Rehabilitation Strategy
Broken Hill Operations Pty Ltd
Figure 2.8

3 Rehabilitation risk assessment

3.1 Rehabilitation risk assessment approach

A rehabilitation risk assessment was completed in August 2021 and updated in February 2025, in accordance with the principles outlined in *AS/NZS ISO 31000:2009 Risk Management – Principles and Guidelines (AS/NZS ISO 31000:2009)* (Standards Australia, 2009) and Clause 7 of Schedule 8A of the *Mining Regulation* 2016. Outcomes of the risk assessment are provided in Appendix B.

Rehabilitation risk has been considered with regards to risk which exists from past mining and proposed rehabilitation phases of the operation and has been developed with reference to available guidance from the Resources Regulator. The current rehabilitation risk assessment largely relies on risk assessments developed in support of previous MOPs relied upon by BHOP and developed in consultation with regulatory authorities. Risks have been identified based on industry experience, site knowledge, relevant industry guidelines and contemporary materials made available by the Resource Regulator.

The risk assessment is maintained by BHOP. Key outcomes of the risk assessment are summarised in Section 3.2, detailing the risk, impact, risk control, and where the risk controls are described in detail in this RMP. Where the risk assessment has identified a residual risk level of 'High' following the consideration of mitigation measures, further consideration is provided within the following sections. Of note, the only residual risk level of 'High', identified in the Risk Assessment, relates to the insufficient volume of inert waste rock which is discussed in Section 3.3.4.

3.2 Key rehabilitation risks

Broken Hill has been a significant mining centre since the discovery of silver-lead-zinc ore bodies in 1883. The history of mineral development at Broken Hill and the heritage value of associated infrastructure has State and National significance (NSW Government, 2020). In January 2015, the City of Broken Hill was granted heritage status and placed on the National Heritage Listing for its contribution to mining (Australian Government, 2020) A contributing factor to the heritage listing is the mining landscape of the Rasp mine.

From 1885, mining has been undertaken continuously, by multiple companies, on earlier leases that now comprise CML7.

Historic operations have left the mine area highly modified and disturbed. The original landform has been significantly altered, most native vegetation has been removed and soils have been degraded and covered with waste rock or tailings (BHOP, 2020a).

The three key rehabilitation risks that have been identified in terms of having potential impacts on final landform stability over time are:

- the inability to reliably establish and maintain vegetation cover on rehabilitation surfaces, due to the arid climate
- the lack of suitable growth medium
- impacts of surface water from storm events on the final landform.

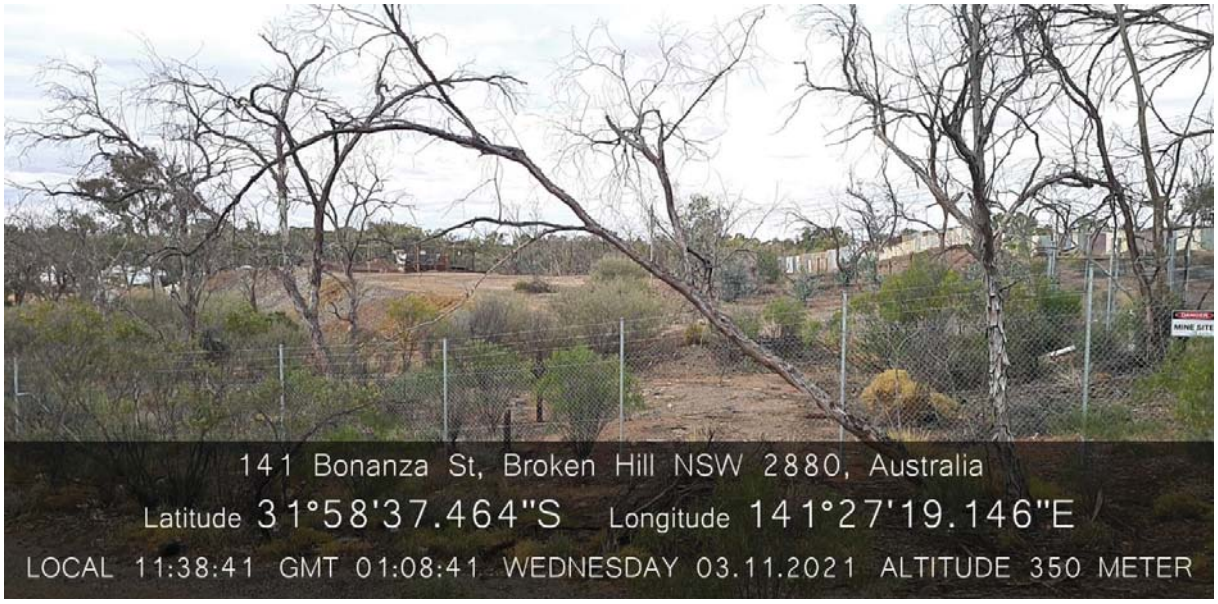
3.2.1 Climate

The mine is situated in the NSW arid zone, which has a hot dry climate. A median annual rainfall of 254 mm has been recorded at the Broken Hill Airport weather station, with most rain failing in the summer months. The mean maximum temperatures range from 15.6˚C in July to 33.6˚C in January, while the mean minimum temperatures range from 4.8˚C in July to 19.3˚C in January.

The annual evaporation rate is high, around 2,614 millimetres (mm) (BOM, 2021).

Climatic conditions such as. low rainfall and high evaporation rates are hostile to the germination of seed and plant growth, particularly with the lack of suitable growth media within the mine areas. Successful revegetation programs in the region have utilised irrigation to overcome climatic issues. Use of town water for irrigation; however, is not considered to be a viable long-term closure solution. Wastewater was successfully used to establish vegetation in the Broken Hill area in the 1930s. Irrigation is unlikely to be a suitable long- term option given the value of water resources (including wastewater) in Broken Hill, the ongoing maintenance and operating costs, and the likely failure of revegetation once irrigation activities cease.

The climate of the mine locality is characterised by low annual rainfall and high evaporation rates. During 2019 and 2020, the mine experienced drought conditions, with total annual rainfall being 96 mm and 109 mm respectively. Both years were below the long-term annual average rainfall (249 mm) at Broken Hill (BOM, 2021). There is evidence of tree death within the mine due to these drought conditions (see Photograph 3.1).



Photograph 3.1 Tree death due to drought conditions (2021)

Frequent drought conditions are considered unlikely to support revegetation adequate for water or wind erosion control purposes.

The establishment of vegetation is commonly used to stabilise rehabilitated mining landforms against erosion. This approach is generally appropriate for areas where rainfall is adequate to support plant germination, and long-term growth to achieve and maintain a soil surface cover equal to or greater than 60%. However, in semi-arid and arid rainfall environment, the control of erosion through revegetation is generally unreliable because the prevailing rain cannot sustain sufficient vegetation cover to effectively control erosion.

The cover response curve developed by Kirby (1969) (see Figure 3.1) shows that the impact of contact cover on erosion is not adequate until a cover level greater than approximately 30% is achieved.

Data from the United States of America (USA) suggests peak erosion rates occur where annual rainfall is in the order of 300 to 350 mm per year (see Figure 3.2) which is only 20% more than the annual average rainfall at the mine.

Therefore, other forms of soil surface cover such as timber debris or appropriate rock mulch are required to provide adequate erosion protection on rehabilitated landforms.

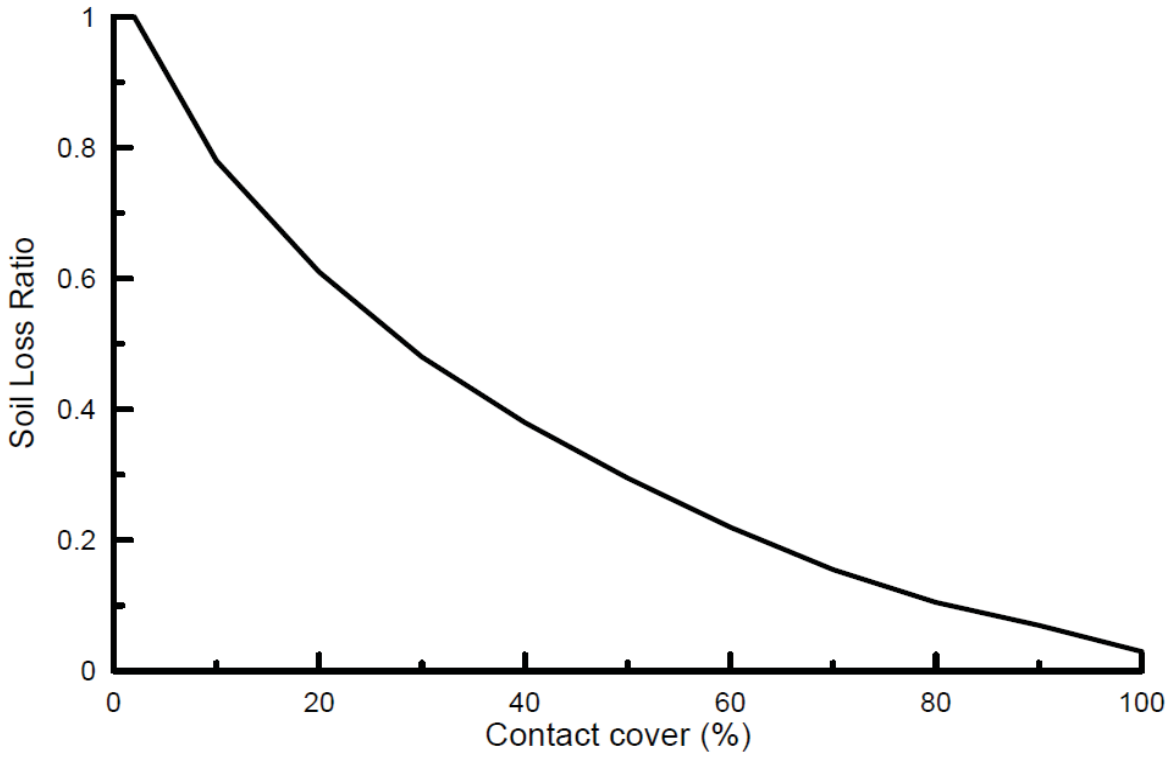


Figure 3.1 **Relationship between contact cover and soil loss (Kirby 1969)**

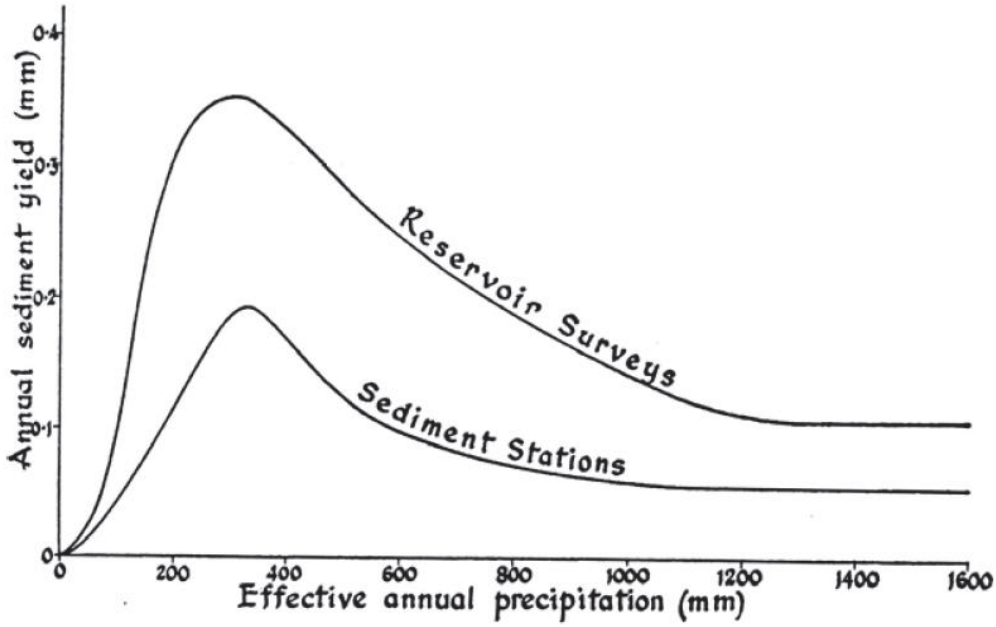


Figure 3.2 **Relationship between annual rain and erosion (Kirby 1969)**

Howard and Lock (2019) propose a risk-based approach to defining acceptable rates of erosion that considers many site-specific factors including:

- rates of soil renewal
- rates of natural erosion in adjoining areas
- water quality and connectivity
- the consequences of erosion rates greater than acceptable
- the presence or absence of bed rock layers to limit the migration of the erosion features
- ability to access slope to manage or mitigate the erosion.

It is typical for steeply sloping mining landform batters to have sufficient slope length/catchment area to be prone to rill and gully erosion as can be observed on the angle of repose outer batters at Rasp Mine.

Loch and Howard, 2019 recommend that where the risk and consequence of a landform performing poorly is high, then it is appropriate to reduce the acceptable rate of erosion used in landform design. They propose the following erosion rates, measured as tonnes per hectare per year (t/ha/y):

- low risk – 9 t/ha/y
- medium risk – 6 t/ha/y
- high risk sites – 3 t/ha/y.

Portions of the Rasp Mine landform where tailings are encapsulated such as TSF1 are considered high risk, whereas areas of inert waste rock are low risk.

Slope stability can also be impacted by uncontrolled surface water flows, especially in a mining waste rock pile landform context where surface water can accumulate on flat surfaces during storms and flow in an uncontrolled manner over the waste rock dump faces. It is therefore essential that the final landform is designed to minimise this risk, and it is preferable if this design outcome can be achieved without the use of engineered flow control structures such as contour banks and drop structures that are likely to require monitoring and maintenance into the future.

3.2.2 Growth medium

There are no topsoil or subsoil resources available within the mining area due to removal or burial by past historical mining practices. Waste rock is the only growth medium present at the Mine. As evident on site, vegetation was not typically observed on areas treated with waste rock. This is most likely associated with low concentrations of nutrients, low water holding capacity of the waste rock, and high surface temperatures.

Waste rock has been used as a growth medium at other mine sites throughout Australia; however, the success of revegetation in terms of plant growth and erosion control has been varied with vegetation typically taking longer to establish in arid areas. Success of revegetation on waste rock dumps is also influenced by the available fine material content which can aid in the retention of moisture and the development of a soil profile over time. Rasp mine waste rock typically has very low fine material content, as described in Pacific Environment (2017). If waste rock is used as a growth medium, ameliorants are typically required to increase water holding capacity, improve nutrient status, and increase the concentration of organic matter. Poor moisture retention and lack of organic material limits the success of waste rock revegetation in arid areas.

Rock/soil matrices have also been used successfully on other mine sites in Australia in areas with less severe climatic constraints, the most relevant being Cowal Gold in NSW.

Rock/soil matrices rely on having suitable growing media to mix with the rock. Given the absence of soil resources on site, suitable soil would either need to be imported to the site or manufactured from suitable organic material. BHOP consider the importation of growing media to be unsustainable due to cost and the potential environmental impacts on the source borrow area.

In arid areas such as the Kalgoorlie mining region in Western Australia, rock armour is often used on spoil piles to control erosion and can be designed to operate as a store-and-release moisture cover to control infiltration and reduce the risk of acid mine drainage (AMD) from the underlying spoil heap where AMD risks exist. Rock armour does not rely on vegetation establishment to achieve these outcomes. Rock of selected size and durability is required for successful rock armouring.

BHOP is not proposing to establish growth medium for use on site due to:

- significant vegetation establishment and growth rate constraints due to the lack of fine material in waste rock dumps and the severely arid climate
- poor erosion control due to unreliable vegetation establishment and ongoing survival
- the retention of the existing mining landscape is required to support the listed mining heritage values of the Broken Hill precinct. This outcome is inconsistent with the objective of establishing vegetation on spoil areas.

Subsequently, as discussed and agreed with various government agencies, and outlined in the Heritage CMP, the spoil areas with the Rasp mine will be retained and made safe and stable to support the listed mining heritage values of the Broken Hill city. Identified as free areas will be treated with rock armour on the exposed top surfaces of spoil heaps to minimise the risk of windblown dust containing lead. As noted in Pacific Environment (2017) the slope surfaces have very low levels of fine particulates and generally represent a low risk in terms of dust generation. The priority areas for rock armour and rock selection criteria are described in Section 3.3.2i.

i Management and mitigation

BHOP will segregate and preserve waste rock with low lead content (<0.5%) and low sulphur content (≤0.2%) to be used for rehabilitation capping purposes (inert waste rock). A surface cover of inert waste rock (approximately 250 to 300 mm deep) on the tops and level bench surfaces of spoil heaps (up to 5% slopes) will provide the necessary protection from water and wind erosion. This inert waste rock capping will also mitigate the risk of wind-blown fine dust containing lead from leaving the site.

Another key contributing management measure required to minimise slope erosion is to shape the final landform so that water that could collect on spoil pile tops and benches during storm events is directed away from the outer spoil heap slopes, and flows in a controlled manner to appropriately sized sediment basins before evaporating or leaving the site. In addition, where necessary, berms will be constructed at the top of waste rock slopes to prevent stormwater from flowing off flat areas and down spoil heap batters. These approaches are incorporated into the final landform design.

Coarse rock within the existing landform slopes are expected to have sufficient diameter and density such that their critical shear from overland flow is unlikely to be exceeded (LandLoch 2021). Erosion monitoring through remote surface scanning (Lidar or similar) will be undertaken five-yearly to assess the erosion stability of the waste rock dump slopes. However, if monitoring demonstrates that existing rills/gullies are increasing over time, such that they pose a risk to the stability of the landform, then additional rock mulching will be undertaken with necessary rock size determined from erosion control principles. In addition, the surface water flows across the landform will be checked and if necessary revised to ensure appropriate surface water flows are established away from dump faces.

ii Residual risk

The residual risks associated with unreliable vegetation establishment and maintenance due to climate and a lack of growth medium have been reduced to 'low' as a result of the combined management measures of applying a rock mulch using low lead (<0.05%Pb) waste rock to spoil dump top surfaces and ensuring appropriate surface water controls through landform design.

3.2.3 Surface water

The risk of severe storm or flood events result in damage to or loss of rehabilitated ground and damage to final landform is recognised in the risk assessment, potentially resulting in an unplanned rehabilitation/closure liability; and potentially the Inability to achieve relinquishment, or delays to relinquishment. Key landform aspects subject to this risk include tailings storage facilities and stormwater management structures.

The risk ranking for this aspect is low, however the NSW Resources Regulator h=issued a direction to the Rasp Mine to engage a suitably qualified expert to undertake an assessment of the surface water management on tailings storage facility 1 (TAF1) to address erosion and instability risks. This work was undertaken by WSP in 2024.

i Management and mitigation

Proposed management measures for this risk include developing a detailed final landform closure surface water assessment to cover:

- flooding/hydrology risks of final landforms
- applicable surface water quality objectives
- integrated surface water / groundwater assessment to address options for long-term surface water disposal to underground workings.

In 2017, Golder prepared a spillway layout and sections for the Blackwood Pit TSF which proposed a new spillway located on the south-east tailings containment structure to control storm flows. This design is provided in Appendix D.1.

In 2024, the NSW Resources Regulator directed the Rasp Mine operator to engage a suitably qualified expert to undertake an assessment of the surface water management on TSF1 to address scour erosion and instability risks.

Initial studies by WSP undertaken in 2024 included "Preliminary advice on rectification of TSF1 stormwater management system erosion" (WSP 2024) which included an overview of the site surface water management and proposed improvements for TSF1. Suggested improvements to stormwater overflow structures from TSF1 to Horwood Dam were proposed, as well as improvements to redirect the upper catchment (Area B) away from TSF1, and improvements to the existing surface water drain from TSF1 to the Horwood Dam.

Further detailed hydrologic assessment and designs were developed by WSP in January 2025 to rectify stormwater system at TSF1, to address scour erosion risks and associated potential instability of TSF1 water management structures. This design is provided in Appendix D.2.

These key water management features are shown as Water Management Area domains on mining and final landform plans.

3.3 Geochemistry

3.3.1 General

Underground waste rock material comprises the following geological units:

- Metasediments – The most abundant rock type comprising psamimite (quartz – feldspar) and pelite (biotite, sillimanite, garnet, feldspar).
- Potosi Gneiss – A leucocratic quartzo-feldspathic gneiss comprising quartz + feldspar + biotite + garnet with varying occurrences of sillimanite.
- Pegmatite – Coarse grained leucocratic quartzo - feldspathic rocks comprising feldspar and quartz with lesser amounts of muscovite. Locally biotite may be present.
- Amphibolites – A rock which contains greater than 40% mafic minerals, generally comprising pyroxenes, amphibole, plagioclase, garnet. Grades into garnet, amphibolite and soliated, quartz – feldspar – biotite – garnet rock.

Mine ore lacks pyrite and contains only traces of protoxide, and acid waters are not generated from ore oxidation and tailings oxidation. Furthermore, calcite is a common mineral in Broken Hill ores. The presence of calcite buffers any acid fluid and, with oxidative coatings on galena and sphalerite in tailings, acid mine waters have not derived from the ore or tailings over the last 130 years of mining. While there is minor visual evidence of isolated pockets of waste rock oxidation, ground and surface water monitoring records all reveal stable pH ranging from 5.09 to 7.3.

Assay records from metallurgy do not detect free sulphur.

The Potosi Gneiss unit is quarried as “blue metal” from an adjacent quarry. This rock is used for road base in Broken Hill and surrounding areas. As such, Potosi Gneiss from development activities will be crushed onsite and used for road base in the construction of the underground roads.

Waste rock from underground mine development is primarily used for back filling underground voids. Small amounts are also used for road base, surface covering to reduce dust, and noise bunding. Grading of waste rock will be integrated into future rehabilitation trials.

Waste material is tested and low grade (<0.5% Pb, ≤0.2% S) material is used for road repair, surface coverings and noise abatement bunds, where required.

Placement of waste rock is critical to meeting the rehabilitation requirement to minimise dust generation from the site post closure and provide surface stability to spoil pile tops and bench surfaces.

3.3.2 Waste rock lead dust potential

i Constraint

In 2017, BHOP engaged Pacific Environment Ltd (PE) to study waste rock and provide recommendations for its suitability and effectiveness as a medium for dust suppression over selected free area surfaces of Rasp Mine.

PE (2017) undertook an assessment of waste rock from the stockpile within Kintore Pit to use as embankment material for the extension of Blackwood Pit (TSF2), proposed by MOD4, and more generally, its use for other dust suppression applications as part of the rehabilitation process for the mine site. This included cover for existing areas that may otherwise have a potential to generate dust containing elevated lead concentrations. The rock is known to contain potentially elevated lead concentrations due to the ore bodies being mined.

To minimise any potential health effects for the local community, the original environmental assessment stipulated that any waste rock material used for rehabilitation, or other site surface purposes, will be 'inert'. The term 'inert' material was not defined in the EA and no directly applicable established criteria are available for assessing the potential for hazardous dusts generated from weathering of waste rock at the site, potentially resulting in exposure scenarios for inhalation/ingestion by residents outside the site, or for site users' post-rehabilitation.

For rehabilitation planning purposes, inert waste rock shall be waste rock that contains <0.5% Pb and ≤0.2% S.

The study utilised a 'multiple lines of evidence approach', in accordance with the NEPM 2013. This is used for evaluating and integrating information from different sources of data and uses best professional judgement to assess the consistency and plausibility of the conclusions which can be drawn.

PE (2017) studied rock type (geological description), moisture content, particle size distribution (PSD), and metals content of the waste rock. In addition, consideration was given to the prior human health risk assessment work undertaken by Toxikos (2010, 2015) background soil/dust data; air quality modelling; and recent confined air burst chamber (CABC) testing undertaken by PE on-site for the purposes of quantifying dust control.

Results of the waste rock assessment identified that:

- rock type varies; however, all rock types identified are competent and mostly hard, with good resistance to weathering
- rock comprises only approximately 1% fines capable of producing dust
- this was qualified by confined air burst chamber tests, which identified a 99.7% reduction in dust generation from the waste rock, compared to disturbed dry tailings
- lead concentrations averaged 2,371.5 milligrams per kilogram (mg/kg) (0.24%) and were taken from crushed samples (and therefore were conservative). This is approximately four times the NEPM HIL-C criterion (600 mg/kg), but significantly below surface dust averages (15,640 mg/kg or 1.56%). Whilst the NEPM criteria are not directly applicable, they do represent a level below which soils would not be considered a risk to human health
- bioaccessibility is very low, 7.3% on average. This is much lower than the 50% (bioavailability) assumed for the calculation of health investigation limits (HILs); this suggests that results, if adjusted for bioaccessibility, would meet HIL-C criteria
- air quality modelling conducted by PE (2017), assumed a waste rock concentration of 0.5% (5,000 mg/kg). Results demonstrate compliance with all the NSW Environmental Protection Authority (EPA) impact assessment criteria for all air quality parameters assessed.

The results support the use of the waste rock for dust suppression for the TSF and 'free areas' and are considered unlikely to cause an unacceptable risk to human health based on the site's ultimate final land use as mining heritage tourism.

Air quality modelling has assumed lead concentrations above those identified in waste rock on site (0.5% compared to 0.24%), therefore the waste rock is likely to meet NSW EPA impact assessment criteria and is unlikely to impact further upon surface soil lead concentrations within local communities. The very low dusting potential of the rock due to low fines content supports this conclusion.

PE concluded that the 0.5% lead concentration adopted by the air quality model is a suitable criterion for waste rock placement on-site and that the waste rock, when placed, is suitable as a means of reducing, to an acceptable level, the potential for dust generation from the TSF and 'free areas' of the site.

PE recommended that:

- waste rock be tested prior to placement to ensure median level of lead concentration does not exceed 0.5%
- dust suppression water spraying is carried out during capping material (waste rock) placement to ensure finer particles are washed between the larger rocks.

ii Management and mitigation

BHOP will segregate and preserve waste rock with low lead (<0.5%) and low sulphur (≤0.2%) for rehabilitation capping purposes. The waste rock will provide necessary surface roughness and soil surface cover to limit wind erosion and generation of dust. Waste rock will be watered during placement and spreading to minimise dust generation.

3.3.3 Waste rock acid rock drainage potential

i Constraints

Low levels of sulphur and pyrite in the ore indicate there is negligible potential for acid generation. This is confirmed by site groundwater (pH 5.09 to 7.3) and surface water (pH 5.78 to 7.59) monitoring records, which all reveal stable pH.

The drainage, while neutral, does contain metals, particularly where water contacts with rock materials, as is the case with the *in-situ* orebody, as well as ores altered by processing (grinding and refining).

ERM (2021) undertook geochemical analysis of the waste rock material and found that regarding the potential for acidic drainage:

- most samples tested were classified as non-acid forming (NAF) (76%) with low sulphur (S) (<0.3%) and low to moderate acid neutralising capacity (ANC). Only three of the 50 samples showed moderate to high sulphur (0.42% to 1.14%)
- two psammopelite samples (4% of samples) were classified as potentially acid forming (PAF) and 10 samples (20%) as uncertain (UC). All PAF and UC samples were <0.2% sulphur
- mineralogy testing demonstrated that samples mostly consist of quartz and very slow to slow reacting silicates. Some chlorite, a mineral with immediate reactivity, was present in most samples. Garnets were identified in all samples, which can provide fast reacting silicate buffering. No carbonate minerals were identified

- all rock type groupings, including the psammopelite rock type, had average net potential ratio (NPR) values ≥2. The NPR ratio is the ratio of acid neutralisation capacity (ANC) over maximum potential acidity (MPA), with a ratio above 2 indicating that the material is NAF.

ERM (2021) concluded that while a small subset of samples were identified as PAF, the central tendency in the data (and specifically the average NPR ratio ≥2 for all rock types) indicate the material is expected to be largely NAF.

Additional waste rock and run of mine (ROM) samples were collected by BHOP and assessed by EMM as part of the ongoing site testing and verification program outlined in the geochemical sampling and analysis plan (SAP) detailed in the *Rasp Mine Waste Rock Management Strategy* (EMM 2022). Following the sampling program outlined in the SAP, the additional 20 samples underwent the following analysis:

- satic acid-base accounting, including pH, electrical conductivity (EC), total sulphur content and ANC
- ehole-rock sample metal and metalloid analysis
- de-ionised water leach testing.

The 2022 sample results are consistent with the findings of previous geochemical characterisation studies, indicating that most waste rock on site is NAF and contains low sulphur contents (all the 2022 samples are classified as NAF). Leachate compositions of all samples analysed to date indicate that drainage is likely to be predominantly neutral rather than saline or acidic.

It is noted that the few samples with pH below 6 are unlikely to be acid forming because they lack the capacity to generate significant quantities of acidity; as such pH values remain close to 6, rather than decreasing to 4.5 or below (pH 4.5 or lower is generally the point at which most buffering capacity is exhausted and acidity may be generated by precipitation of ions such as Fe^{3+} and Al^{3+}).

ii Management and mitigation

Waste rock with >0.2% sulphur will be placed in the Kintore Pit for disposal with dry tailings and ultimately capped with inert waste rock. If ARD was to occur, it would be contained within the pit and ultimately seep into the underground workings.

Groundwater studies in the area and on site have demonstrated that groundwater within the bedrock aquifer is generally unsuitable for potable use or irrigation and is marginal for stock watering. Baseline groundwater sampling is compared with the descriptive statistics for waste rock leach testing results which are shown in Table 3.1.

Table 3.1 Comparison of metalliferous drainage data with ground baseline data

Grouping	Ec (µS/cm²)	SO4 (mg/L)	Cd (mg/L)	Pb (mg/L)	Mn (mg/L)	Zn (mg/L)	Fe (mg/L)
Groundwater baseline	13,900	9,660	6.32	2.25	907	3,330	1.57
DI leach – median	320	37.5	0.0001	0.0015	0.009	0.005	0.1115
DI leach – 90th percentile	689	37.5	0.0001	0.0015	0.009	0.005	0.115
DI leach – maximum	1,900	432	0.0003	0.02	0.415	0.028	1.57
NAF liquor – median	210	45	0.0015	0.001	0.12	0.005	0.05
NAF liquor – 90th percentile	277	78	0.035	0.53	0.45	2.88	4.23

Grouping	Ec (µS/cm²)	SO4 (mg/L)	Cd (mg/L)	Pb (mg/L)	Mn (mg/L)	Zn (mg/L)	Fe (mg/L)
NAF liquor – maximum	709	312	0.31	5.93	1.02	87.5	33

Results show that all median leaching values were well below baseline values, with the exception of Fe for NAG liquor data.

ERM (2021) concluded that there was potential for metalliferous drainage from the waste rock analysed, in comparison with the background groundwater baseline data. However, this would have limited, if any, material impact on existing water quality of the basement rock aquifer.

3.3.4 Waste rock mineralised drainage potential

i Constraints

ERM (2021) undertook geochemical analysis of the waste rock material and made the following conclusions with regard to the potential for metalliferous drainage:

- Elemental enrichment, based on the total elemental data for the samples and using the geochemical abundance index (GAI), identified several elements enriched more than 12 times the average crustal abundance.
- The majority of these were identified for psammopelite samples and elements enriched at this level included silver (Ag), arsenic (As), bismuth (Bi), cadmium (Cd), molybdenum (Mo), Pb, antimony (Sb) and Zn.
- Analysis of a deionised (DI) water leach at a solid to liquid ratio of 1:2 and of the NAG test liquor for the samples indicate the potential for metalliferous drainage when the metal content of the leachate is compared to conservative freshwater aquatic ecology guidelines (specifically the freshwater aquatic guidelines for slightly to moderately disturbed aquatic ecosystems - ANZECC & ARMCANC, 2000).
- Metals leaching at concentrations above the conservative aquatic guidelines for both the DI leachate and NAG liquor included (but were not limited to) aluminium (Al), chromium (Cr), copper (Cu) and Pb. It should be noted that the NAG liquor data presents a conservative estimation for drainage quality in the long term, with NAG testing entailing aggressive oxidation of a pulverised rock sample.
- While most samples have been classified as non-acid generating, the DI leachate and the NAG testing indicate that most of material sampled has potential to generate metalliferous drainage.
- All median leaching values (for both DI leach and NAG liquor) are well below the baseline values at Rasp Mine, except for iron (Fe) for the NAG liquor data. All 90th percentile values are also below the baseline values.

ERM (2021) concluded that given these results, potential metalliferous drainage from the waste rock should have limited, if any, material impact on existing water quality of the basement rock aquifer.

ERM (2021) also conducted a detailed risk assessment using a source-pathway-receptor (SPR) evaluation process for surface water runoff and concluded:

> The risk assessment for the mine placement domains indicates that potentially complete SPR linkages are limited to on-site receptors. These are related to use of dewatering water and surface water onsite. Risk rankings for these potentially complete SPR linkages were considered to be low.

ii Management and mitigation measures

As discussed in section 3.3.2, BHOP will segregate and preserve waste rock with low lead (<0.5%) and low sulphur (<0.2%) for rehabilitation capping purposes. Waste rock generated from mining, the construction of the box cut and portal will either be placed in Kintore Pit (TSF3) (non-inert waste rock), or segregated and preserved for capping of Kintore Pit (TSF3), or capping of TSF2.

Any mineralised drainage is expected to seep to the bottom of Kintore Pit and into the underground workings. Any mineralised drainage from capping of TSF2 will be retained by the liner in TSF2. As detailed in Section 3.3.3ii, ERM (2021) determined there is potential for metalliferous drainage from the waste rock. However, this would have limited, if any, material impact on existing water quality of the basement rock aquifer.

Rehabilitation works undertaken by NML from 1991 through to 1997 included reshaping and drainage control measures such as crest bunding and diversion of banks/drains to maximise the diversion of surface runoff to internal evaporative sinks in the mining landform. The proposed conceptual final landform further improves on these works with crest bunding of all landforms where appropriate to retain surface runoff, and shaping works to divert surface runoff away from external batters to internal evaporation sinks (e.g. the surface of TSF1 will be reshaped to modify the flow conditions from concentrated flow to sheet flow, divert surface flow away from the outer batters and Horwood Dam to dams S22A and S22UG, which will then ultimately overflow to the Little Kintore Pit).

3.3.5 Tailings geochemistry

i Constraints

Rasp Mine tailings contain, on average, zinc (0.4%), lead (0.4%), silver (8 ppm), iron (3.3%) sulphur, (1.2%), arsenic (460 parts per million (ppm)), bismuth (70 ppm), cadmium (trace) and antimony (45 ppm) (BHO AEMR, 2014).

Average lead concentration within the tailings is less than that recommended by PEL for waste rock material. Despite formation of crusts on the surface, tailings can be eroded by wind and generate dust, due to the fine particle size.

In the final stages of tailings deposition, the delivery system would be realigned to also discharge tailings from along the crest of TSF2 Embankment 2, shaping the surface to direct runoff towards the spillway. The tailings beach surface near the spillway would be shaped by selective tailings placement from Embankment 2 to fill the environment containment freeboard to a point that the remaining depression below the spillway level would contain the 1:100-year 72-hour rainfall runoff event from the TSF2 catchment area.

Following deposition of tailings to the designed level, an application of soil stabilising polymer would be applied through the water spray system to minimise dust entrainment by wind while the tailings are allowed to settle and consolidate.

Ponding water would be allowed to evaporate or be recirculated over the drier part of the beach to remove water from the low areas and promote drying of the tailings prior to placement of cover material. It is expected that the tailings beach may be accessible for construction works within a few months after final placement of tailings.

The surface of TSF2 would be covered progressively with screened inert waste rock followed by inert run of mine waste rock. Access over the tailings would be by end tipping waste rock material on previously spread material, with vehicles travelling on previously placed material only. No vehicles would be permitted to travel directly on the tailings surface, which would disturb the dust control crust on the tailing surface. During these activities, dust monitoring would continue from the monitoring station located adjacent to the Pit (and at other monitoring stations across the site).

The proposed design of the cover layer comprises:

- 200 mm thick capillary break layer formed of screened inert waste rock placed over the tailings surface to prevent the capillary rise of contaminants
- 300 mm thick cover formed of compacted run of mine inert waste rock. Mine waste rock would contain sufficient fines to create a well graded rockfill after compaction.

The rockfill would be watered and compacted using heavy smooth drum compaction equipment. The cover would be robust and resistant to wind and water erosion. Studies would be conducted to determine if a subsequent in-fill layer is required, and the thickness of this additional layer (the current rehabilitation cover thickness allows for 1 m).

The cover layer would be constructed over the entire tailings surface and be integrated into the in-situ rock on the Pit rim and the embankment rockfill. The surface would be shaped to shed water towards the low area near the spillway.

a Tailings Storage Facility 3

TSF3 will be filled to the natural surface level of approximately 330 m Reduced Level (RL) (when domed). As the emplaced tailings surface reaches the crest of the pit, the depression formed by the southern branch of the access ramp would be filled in to promote surface runoff toward the stormwater pond to be located near Little Kintore Pit. The waste rock perimeter layers around the pit may be stopped at approximately 10 m below the pit rim, or lower if operation considerations and geotechnical assessments of the emplaced compacted tailings confirm it is not required for tailings liquefaction risk management. Tailings would be placed and compacted against the pit wall.

The final surface of TSF3 will be covered with a screened inert waste rock capillary break, then inert waste rock cover as per TSF2. After allowing a suitable period for any settlement and consolidation of the tailings and waste rock, the final surface will be shaped as a shallow dome to shed to the sides of the pit and either seep to groundwater or be directed to Little Kintore Pit stormwater detention basin.

ii Management and mitigation of potential seepage

Two existing and one proposed TSF are located at Rasp Mine, with potential for seepage of water to underlying strata. Management of potential seepage risks are summarised below.

a Horwood Dam (TSF1)

Capping of TSF1 is complete, management of seepage is achieved through the established surface contours designed to redirect surface stormwater off the TSF surface, and excess surface water management through runoff controls and the engineered spillway.

Prior to capping, tailings samples were collected in October 2022 by UQ SMI[1] including:

- 13 holes sampled to max depth of 13 m
- 85 samples collected
- whole sample analysis and mineralogy.

[1] University of Queensland Sustainable Minerals Institute. New South Wales Mine Reuse Project: Rasp Zn-Pb-Ag Mine, 2023

Given that tailings placement has ceased at TSF1 and that the landform has been capped, the following approach will be undertaken:

- The UQ data can be used to assess potential AMD risk and no further sampling is required.
- If seepage is observed in any areas associated with TSF1 consider sampling and analysing for pH, EC, major ions, and metals. This will provide valuable information regarding the longer-term weathering and reactivity of already placed tailings.

b TSF2 (Blackwood Pit)

Currently the active tailings placement. Consider:

- Two/three samples from the current tailings stream. Collect in large buckets/drums. Collect both tailings and supernatant.
- If safe to do so, collect two/three samples from the current placed tailings beach.
- If safe to do so, collect two/three samples of water from the tailings pond.

Analysis for tailings solid:

- Static ABA and metals

Analysis for tailings pond/supernatant:

- pH, EC, major ions, trace elements, nutrients..

The time and date of the tailings stream sampling is to be recorded to enable correlation with details on the feed at the time of sampling (process stream, process feed material). Repeat the above if the tailings feed changes.

c TSF3 (Kintore Pit)

During active placement, follow as for TSF2.

3.3.6 Contamination

i Constraints

Mining has been undertaken within the earlier leases making up CML7 since 1885 by several companies including Broken Hill Pty Ltd (BHP), British Broken Hill Pty Ltd, Broken Hill South and Minerals Mining and Metallurgy Ltd (MMM), among others. Operations have included both open pit mining and underground mining, with the most recent (previous to BHOP) by MMM in Kintore Pit. Historically, appropriate management of potentially contaminated mining wastes including tailings, low grade ores, smelter slag, and waste rock was rarely considered, resulting in potentially widespread historical contamination. Except for Block 10 Hill, the Line of Lode represents the outcrop of a significant lead-zinc orebody with naturally elevated levels of contamination.

BHOP has operated the site to contemporary standards to minimise further contamination of CML7 including the characterisation and segregation of waste rock and low-grade ore, and construction of appropriate tailings storage facilities. Hydrocarbons and chemicals are stored and managed in accordance with appropriate standards with documented spill clean-up procedures.

ii Management and mitigation

Significant remediation works were undertaken by NML as part of its rehabilitation and closure works and these are summarised below.

a Mill

Mill spillage collected in the mill sump, and material remaining in thickeners and on the stacking area was removed and taken offsite to Pinnacles Mine for retreatment in 1991 to 1992. In 1993 to 1994, 3,000 t of spillage, which had collected in the mill underfloor pits, was removed, and treated. Parts of the interior of the Mill accessible to the public were cleaned of spillage in a major phase of repair work undertaken in 1996 to 1997.

Underground fuel tanks were excavated and removed and resulting voids filled with waste rock in 1995 to 1996.

Areas of contamination around the exterior of the mill were identified and removed for reprocessing or burial during rehabilitation of the mill infrastructure in 1996 to 1998.

b Block 10 Hill

Remediation of Block 10 Hill was undertaken in three phases, which are described below.

Phase One (1993-1994)

Excavation works were undertaken to remove all tailings and associated contaminated soil and rocky material present in various small mounds. High grade material was reprocessed at the Pinnacles Mine and low-grade material buried in existing older tailings dumps south of Delprats Mine that were later covered by waste rock and regraded as part of the site's water management plan.

Excavation work was undertaken in close consultation with the then DMR and Council to ensure preservation of heritage structures on site, which were subsequently developed for public use by Council. DMR also undertook a revegetation program on the adjoining area using sewage sludge and imported clay soil. Native species were broadcast sown and irrigated but was only partially successful. The area has since been covered with rock.

Phase Two (1995-1996)

Tailings and other waste remaining along a water main that crosses the site was removed and the area filled and covered with rock and crusher dust.

Phase Three (1998-1999)

Following assessments by contamination consultants OTEK Australia, civil and hydrological engineer J Miedecke, and archaeologist J McCarthy, a final rehabilitation plan for Block 10 was agreed. The plan involved covering all contaminated areas with rock and constructing rock contour banks and sediment traps either side of the hillslope. The design capacities for the structures were for a 1 in 100-year average recurrence interval (ARI) event (NML, 2000).

Heritage structures were stabilised by placement of rock around their foundations.

Contaminated runoff from the Block 10 Hill area is still being captured in the Ryan Street Dam. BHOP are currently investigating further management options for this location.

c Blackwoods tailings dump

In 1997, a small, old free-standing tailings dump north of Blackwoods Pit, regarded as having heritage value, was found to have unacceptably high lead levels (~1%). It was removed by NML at the direction of DMR to a nearby area and buried as fill within a drainage control structure, redirecting runoff back from the lease boundary into Blackwoods Pit.

d Brownes Shaft

From 1997 to 1999, contaminated material was removed at Brownes Shaft and Mill without damaging the heritage values of the site as it was a publicly accessible area for tourism, managed by Council. Remediation works comprised the following:

- The base of the stone wall of the Mill was built up with rock to cover contaminated material that could not be removed without damaging the wall and to support it.
- A set of old tanks had been built on a foundation of both tailings and orebody outcrop (that has high scientific and heritage value). Remediation focused on removal of contaminated material from the outcrop back to stable rock, protecting and presenting the heritage items, which included the outcrop itself, and leaving the tanks on a stable footing. The contaminated material was removed, where possible, by a team using handheld tools and brooms. The bases of the water tanks, which were founded on contaminated material, were meshed and shotcreted, and the base of the small hill covered with rock, leaving the outcrop exposed.
- Tailings north-west of the shaft and extending onto Pasminco's lease were removed and the area re-covered with rock and stormwater management bunds.

e All Nations Tailings Dam

Tailings excavated as part of remediation works were initially placed into the existing All Nations Tailings Dam. NML (2000) states All Nations Dam contains 4.4 Mt of tailings. An additional dam was built onto the side of All Nations Dam (Horwood's Dam TSF1) (it is assumed that the Mt. Hebbard waste dump was constructed on top of All Nations Dam). Some small tailings dumps from earlier mining were removed for reprocessing or buried beneath waste rock dumps.

iii Ongoing remediation

BHOP will remediate any contamination created as part of the current mining activities, and/or any areas of old contamination disturbed as part of BHOP's operations. It is expected that any hydrocarbon contaminated material will be bioremediated on site and then used for rehabilitation works and that any material contaminated with heavy metals will either be placed underground or within TSF3.

Phase 1 – Preliminary Site Investigations (PSI) and Phase 2 – Detailed Site Investigations (DSI) contamination assessments will be undertaken as required.

3.3.7 Subsidence

i Constraints

Coffey was engaged to assess the potential for subsidence at the surface and the effect, if any, on Broken Hill railway operations to the north-east of CML7 from mining beneath these facilities. The assessment looked at stope geometry, geology, and railway infrastructure. An exclusion area and buffer zone of 150 m was established around rail infrastructure.

The Coffey (2007) analysis of caving potential in the western mineralisation found that the most critical type of failure mode from vertical (piping), diverging (outwards) and converging (inward) was converging. However, this is unlikely to propagate to a great extent before the void is able to support the span and vertical failure is the most likely critical failure mode.

The analysis shows that a stope failure is not expected to propagate through to the surface and significant surface subsidence is not predicted above the stopes. The analysis estimates some hanging wall failures with the currently estimated rock mass properties and the open stope geometry proposed. However, these failures are expected to be localised and are not expected to result in continuous caving to the surface. The presence of a more competent Potosi Gneiss unit above the stope hanging walls will restrict any failure from propagating upward, assuming the unit is always above the stopes.

After extensive analysis, Coffey (2007) concluded that any stope failure (no matter how unlikely) would not propagate through to the surface; therefore, significant surface subsidence is not predicted above the stopes.

It is important to note the analysis indicated there exists some potential for hanging wall failures; however, these failures are expected to be localised in extent. The presence of the more competent Potosi Gneiss above the stope hanging walls limits potential of a failure from propagating upward. Furthermore, if there was a failure, rock expansion would fill the void and prevent failure propagation to the surface.

ii Management and mitigation

Key subsidence risks are managed and mitigated by:

- use of empirical stope design charts in conjunction with detailed geotechnical modelling of extraction sequences to ensure ground stresses do not exceed the capabilities of the rock mass
- regular stope inspections used to ascertain if predicted behaviour matches the actual performance of the void
- installation of modern ground support/reinforcement systems which capitalise on the inherent strength of the rock mass
- placement of mine back fill (eliminating the void) in a timely manner after production has ceased
- use of trained and competent people in critical functional roles such as mine technical services and mining operations.

As part of the mine design process, each stope undergoes an individual risk assessment. The assessment addresses the following:

- stope size and shape
- ground support requirements, including additional support into the hanging wall if required
- ring design and stope firing sequence
- back fill requirements.

This process mitigates the potential for localised failures within the stoping blocks. Additional diamond drilling and geological mapping of the orebody, footwall, and hanging wall occurs as underground development progresses. This additional geological and geotechnical information is used for individual stope assessments and in the larger mine planning process to further mitigate the risk of localised failures.

3.3.8 Pit wall geotechnical stability

a Constraints

Ground Control Engineering (GCE) has undertaken an assessment of the geotechnical stability of the historic tailings with the Kintore Pit (GCE, 2019) and an assessment of geotechnical impacts of the emplacement wet tailings on pit wall stability (GCE 2019a).

The slope stability analyses conducted by GCE highlights the potential for slope scale instability of the historic tailings slope forming the north wall of Kintore Pit under certain hydrogeological conditions. Circular failure or composite failure with a major circular component was considered by GCE (2019) as the most likely potential failure mechanism.

Progressive placement of fresh tailings against the existing historic tailings slope is expected to increase stability of the slope.

Assessment of the slope of waste rock stockpile located in Kintore Pit indicates that the waste rock slope may experience shallow sloughing of near surface materials and that placement of engineered fill against the toe would improve slope stability. Slope stability analyses conducted by GCE (2019a) indicates that current, free draining, waste rock dump slope has a factor of safety for overall slope scale stability of greater than 1.3.

Modelling highlights the potential for shallow, circular style failure (sloughing) in all cases. This may materialise as minor rilling, which is typical of waste rock slopes.

b Management and mitigation

Works have been proposed by Golder to support the slopes during tailings and waste rock placement, and safety bunds have been included in the conceptual placement design to mitigate these risks.

The pit wall geotechnical instability risk will be fully mitigated by complete backfilling of Kintore Pit with waste rock and tailings.

The Little Kintore Pit and the Box cut will also be backfilled with waste rock, mitigating any pit wall geotechnical instability.

4 Rehabilitation objectives and completion criteria

4.1 Rehabilitation objectives and rehabilitation completion criteria

The primary rehabilitation objectives for Rasp Mine adopted by BHOP are to rehabilitate the site to a safe, stable and non-polluting landform, appropriate to the surrounding historical landscape values of the Broken Hill region that provides for a mining heritage tourism related final land use.

Detailed rehabilitation objectives and rehabilitation criteria for the mine are provided in Table 4.1.

The location of Domains discussed within Table 4.1, are illustrated in Figure 2.2 and Figure 2.3.

It is noted that 'Free Areas' as identified within PA 07_0018, being non-active mining areas within CML7 that are not disturbed by the BHOP but contribute to the wind-blown dust from the project site, are considered within Mining Domain 4 – Overburden Emplacement Area.

Table 4.1 Rehabilitation objectives and indicative rehabilitation completion criteria

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Landform stability	Water management areas are safe, geotechnically and erosionally stable and non-polluting and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Water management areas have been constructed in accordance their design drawings.	Design reports and drawings. As constructed drawings and reports.	Inspection reports. As constructed reports.
					Water management areas are capable of containing/ conveying their design storms.	Design reports and drawings. As constructed drawings and reports.	Inspection reports. As constructed reports.
					Water management areas are structurally stable.	Presence/absence active rills, gullies and tunnels. Presence/absence of seeps, slumps and cracking.	Inspection reports. Rehabilitation monitoring reports.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Water approvals	Structures that take or divert water such as final voids, dams, levees etc. are appropriately licensed (e.g. under the *Water Management Act 2000*) and where required, ensure sufficient licence shares are held in the water source(s) to account for water take.	Necessary approvals/licences.	Water approvals/licences are granted by the NSW Government Agency.	Copies of approvals/licences.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	F3	Land contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Landform stability	Water management areas are safe, geotechnically and erosionally stable and non-polluting and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Water management areas have been constructed in accordance their design drawings.	Design reports and drawings. As constructed drawings and reports.	Inspection reports. As constructed reports.
					Water management areas are capable of containing/ conveying their design storms.	Design reports and drawings. As constructed drawings and reports.	Inspection reports. As constructed reports.
					Water management areas are structurally stable.	Presence/absence active rills, gullies and tunnels. Presence/absence of seeps, slumps and cracking.	Inspection reports. Rehabilitation monitoring reports.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by Environment Protection Authority. Independent hydrological assessment report.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Water approvals	Structures that take or divert water such as final voids, dams, levees etc. are appropriately licensed (e.g. under the *Water Management Act 2000*) and where required ensure sufficient licence shares are held in the water source(s) to account for water take.	Necessary approvals/licences.	Water approvals/licences are granted by the NSW Government Agency.	Copies of approvals/licences.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Management of waste and process materials	Residual waste materials will be appropriately covered so they do not pose any hazards or constrained for the mining heritage related tourism land use.	Covering with inert waste rock.	Minimum 300 mm thick inert waste rock cover.	Survey data. As constructed reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Land contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Ecological rehabilitation	The vegetation composition of the rehabilitation contains species that are commensurate with native vegetation communities found in the local area.	Native plant species recorded from 0.04 ha fixed monitoring plots are characteristic of the target vegetation community.	Native plant species are characteristic of the target vegetation community(s) when compared to analogue sites.	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
F Water management areas (such as creek realignments, constructed wetlands, significant final landform drainage features)	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	F4	Ecological rehabilitation	The vegetation structure of the rehabilitation is similar to that of native vegetation communities found in the local area.	Cover and abundance of plant growth forms recorded from 0.04 ha fixed monitoring plots are characteristic of the target vegetation community, or an ongoing trend toward becoming characteristic is evident from the monitoring data.	Cover, abundance and height range of native plant growth forms are characteristic of, or trending towards, the target vegetation community type(s).	Before and after photos, rehabilitation monitoring reports, independent ecological reports (where required) that validate rehabilitation completion criteria have been met.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Land contamination	There is no residual contamination on site that is incompatible with the heritage final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There is no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Retention of infrastructure	Heritage items do not pose a safety risk to people, stock, or native animals.	Heritage buildings and structures are structurally safe.	Structural assessment against building code and adaptive reuse.	Structural assessment reports. Heritage assessments reports.
					Access is restricted to unsafe heritage items.	Barricades, fencing, shafts and portals capped and sealed.	Safety inspection reports.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community. All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and/or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
H Heritage area	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	H8	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Surface water	Void water quality is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There are no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence, or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Water approvals	Structures that take or divert water such as final voids, dams, levees etc. are appropriately licensed (e.g. under the Water Management Act 2000) and where required ensure sufficient licence shares are held in the water source(s) to account for water take.	Necessary approvals/licences.	Water approvals/licences are granted by the NSW Government Agency.	Copies of approvals/licences.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Land contamination	There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and/or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
J Final void (the extent is defined by an area that does not free drain to the surrounding surface environment)	5 Active mining area (open cut void)	J5	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Land contamination	There is no residual contamination on site that is incompatible with the mining heritage related tourism final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There are no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence, or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	1	K1	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
					Where applicable, necessary approvals are in place (e.g. development consent under the Environmental Planning and Assessment Act 1979) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
K Other	1 Infrastructure area (such as administration facilities, workshops, access roads, material stockpile areas, portals, ventilation shafts)	K1	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
K Other	2 Tailings storage facility	K2	Management of waste and process materials	Tailings will be capped so it does not pose any hazards or constraints for the mining heritage related tourism land use.	Covering with inert waste rock.	Minimum 300 mm thick inert waste rock cover.	Survey data. As constructed reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	2 Tailings storage facility	K2	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	2 Tailings storage facility	K2	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	2 Tailings storage facility	K2	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There are no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence, or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	2 Tailings storage facility	K2	Land contamination	There is no residual contamination on site that is incompatible with the mining heritage related tourism final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K	2 Tailings storage facility	K2	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
K Other	2 Tailings storage facility	K2	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
K Other	2 Tailings storage facility	K2	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by Environment Protection Authority. Independent hydrological assessment report.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and/or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Landform stability	Water management areas are safe, geotechnically and erosionally stable and non-polluting and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	Water management areas have been constructed in accordance their design drawings.	Design reports and drawings. As constructed drawings and reports.	Inspection reports. As constructed reports.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
					Water management areas are capable of containing/ conveying their design storms.	Design reports and drawings. As constructed drawings and reports.	Inspection reports. As constructed reports.
					Water management areas are structurally stable.	Presence/absence active rills, gullies and tunnels. Presence/absence of seeps, slumps and cracking.	Inspection reports. Rehabilitation monitoring reports.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Land contamination	There is no residual contamination on site that is incompatible with the final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Water approvals	Structures that take or divert water such as final voids, dams, levees etc. are appropriately licensed (e.g. under the Water Management Act 2000) and where required ensure sufficient licence shares are held in the water source(s) to account for water take.	Necessary approvals/licences.	Water approvals/licences are granted by the NSW Government Agency.	Copies of approvals/licences.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and/or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
					Where applicable, necessary approvals are in place (e.g. development consent under the Environmental Planning and Assessment Act 1979) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
K Other	3 Water management area (excludes final void but may include any operational sediment dams, temporary creek diversions and other significant constructed drainage features)	K3	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There are no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence, or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Land contamination	There is no residual contamination on site that is incompatible with the mining heritage related tourism final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Management of waste and process materials	Residual waste rock materials on free areas will be appropriately covered to mitigate any air quality hazards and reduce constraints for the mining heritage related tourism land use.	Cap with inert waste rock.	Minimum250 mm thick inert waste rock cover on exposed free areas.	Survey data As constructed reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
K Other	4 Overburden emplacement area (includes waste rock emplacement areas, potentially acid forming materials, etc.)	K4	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and / or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Removal of infrastructure	All processing infrastructure is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use.	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There are no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence, or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Land contamination	There is no residual contamination on site that is incompatible with the mining heritage related tourism final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
K Other	7 Beneficiation facility (includes plant used for the processing of minerals such as cyanidation plant, concentrators, thickeners, crushers, separators, etc.)	K7	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.
K Other	8	K8	Retention of infrastructure	All infrastructure that is to remain as part of the final land use is safe, does not pose any hazard to the community All infrastructure that is to remain as part of the final land use benefits from the relevant approvals (e.g. development consent and/or licence/lease/binding agreement, etc).	Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required maintenance complete.	Inspection reports.
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Removal of infrastructure	All infrastructure that is not to be used as part of the final land use is removed to ensure the site is safe and free of hazardous materials.	Removal of all infrastructure and services, footing and slabs not required for the final land use	Infrastructure removed.	Inspection reports. Surveyed and marked on as-constructed final landform plan.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
					Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
					The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use.	Engineering report/statement, photos, risk assessment verifying modes of failure are adequately addressed to minimise risks to public safety or the environment.
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Land contamination	There is no residual contamination on site that is incompatible with the mining heritage related tourism final land use or that poses a health threat to the public/stock/native fauna or risk of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use. Residual waste materials stored on site (e.g. non-inert rock) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met. The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the intended final land use and does not pose threat of environmental harm. Dust potential minimised via appropriate containment or encapsulation of contaminants.	Contamination Remediation Report prepared by Land Contamination Consultant. Engineered capping design with specifications. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Landform stability	The final landform is geotechnically and erosionally stable and does not present a risk of environmental harm downstream/downslope of the site or a safety risk to the public/stock/native fauna.	There is no active rill, gully or tunnel erosion are within the parameters for safe and stable landform. There are no active slips, slumps, surface cracking, deformation, subsidence or other indicators of geotechnical instability.	Presence/absence active rills, gullies and tunnels within rehabilitation monitoring transects. Inert waste rock or hard stand soil surface cover in rehabilitation transects ≥60%. Presence/absence of active slips, slumps, surface cracking, deformation, subsidence, or other indicators of geotechnical instability. Dust potential minimised via appropriate containment or encapsulation of contaminants.	As constructed reports as constructed report. Erosion monitoring reports. Geotechnical stability assessment reports. Subsidence monitoring reports. Environmental monitoring data (namely air quality and water) does not exceed limits under PA 07_0018 or EPL 12559.
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Surface water	Surface water runoff water quality from the rehabilitated mine site is similar to background runoff water quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of surface water monitoring data with analogue data.	Surface water monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Groundwater	Groundwater quality is similar to the background groundwater quality.	Key water quality parameters selected from Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.	Comparison of ground water monitoring data with analogue data.	Groundwater monitoring reports. Environmental monitoring data does not exceed limits under PA 07_0018 or EPL 12559.

Final land use domain	Mining domain	Spatial domain code	Rehabilitation objective category	Rehabilitation objective	Rehabilitation completion criteria	Indicator	Justification and validation of methods
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Bushfire	The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Appropriate bushfire hazard controls (where required) have been implemented on the advice from the NSW Rural Fire Service.	Bushfire controls implemented.	Statement provided and before/after photos.
K Other	8 Other (other ancillary infrastructure areas such as temporary waste rock emplacement areas, topsoil stockpile areas, or on-lease exploration areas)	K8	Groundwater	Impacts to groundwater regime are within range as per the development consent(s) / pre-mining environmental assessment.	Groundwater quality both on and off a mining lease represent an acceptable level of change from a defined reference condition.	Groundwater levels, groundwater flow.	Water quality monitoring reports. Environment Protection Licence relinquished by EPA. Independent hydrological assessment report.

4.2 Stakeholder consultation

Consultation will be ongoing throughout the life of the mine. HillPDA (2022) provides a framework for engagement of stakeholders, which been adopted by BHOP.

Stage 1 has generally been completed.

Stage 2 of the engagement process will involve preparation of a detailed engagement plan and undertaking a range of engagement activities with the Broken Hill community; relevant government agencies; community groups; and mine employees and contractors. Noting that engagement activities undertaken to date, identified in Table 4.2, will inform the detailed engagement plan. The detailed engagement plan will involve:

- undertaking a stakeholder engagement planning workshop
- preparation of an engagement plan that will involve:
    - identifying and mapping potential stakeholders in the local community
    - reviewing previous submissions received about closure of the mine
    - development of key messaging
    - determining the engagement methods and activities
    - allocating roles and responsibilities
    - identifying anticipated issues, risks, and mitigation
    - reporting and evaluation
- undertaking the engagement as detailed in the plan
- preparing a community consultation report that outlines activities undertaken; which groups and communities were included in the works; and key findings from these works. It will identify potential additions or modifications to rehabilitation and closure planning (if required), to improve alignment with community expectations
- BHOP will undertake detailed consideration of the matters raised, and if appropriate, a selection of the desired outcomes from the above will be included in rehabilitation and closure planning for the site.

Stage 3 will involve the established stakeholder and community reference groups continuing to meet with BHOP to monitor the implementation of rehabilitation strategies and socio-economic mitigation strategies.

Table 4.2 Stakeholder consultation

Stakeholder consultation	Form	Date	Topics	Stakeholder response	BHOP action
Department of Regional NSW Resources Regulator – Matt Newton	Email	11 February 2021	Final land use options, facilitation of an BHMIAC meeting	Nil	Email from company to set up an initial meeting
Heritage NSW – Tempe Beaven	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Department of Regional NSW, Mining, Exploration and Geoscience - Christine Fawcett	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Department of Planning and Environment (Compliance) – Ben Gazi	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Department of Planning and Environment (Compliance) – Katrina O'Reily	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Please submit request via the planning portal	Request submitted via the planning portal
Broken Hill Council – Kobus Nieuwoudt	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
NSW DPIE Water and Natural Resources Access Regulator – Tim Baker	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	DPE Water has considered the request and has no specific comments to provide in terms of landuse options. Please note however that DPE Water has responsibilities under water management legislation and related policies that may need to be considered in the design and selection of landuse options. DPE Water would appreciate further consultation once a draft Rehabilitation Management Plan has been prepared.	Draft RMP provided to DPE Water for review
Transport for NSW – Howard Ore	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Dam Safety NSW – Heather Middleton	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
NSW DPIE, Biodiversity and Conservation Division – Michael Todd	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Crown Lands – Shaun Barker	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Please note that post-closure land use for Rasp Mine will need to be actioned/considered in the broader context of all mines in Broken Hill to ensure consistency in how this is approached and undertaken. I will take this forward to the Broken Hill Post Mining Interagency Group and will respond in due course.	Nil
Crown Lands – Sharon Hawke	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	I acknowledge the complexities concerning this site not only for the DPE-Crown Lands but for the NSW Government as a whole and these issues were highlighted in the visit in August 2019 that I attended. At this time Crown Lands in unable to provide guidance or requirements to determine final land use options as further consultation will be required with other agencies and stakeholder groups.	Nil
Maari Ma Health – Kaylene Kemp	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
NSW Health, Far West Local Health District – Leanne Hastwell	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Broken Hill Environmental Lead Program– Kathryn Graham	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
NSW Resources Regulator – Matt Newton	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil

Stakeholder consultation	Form	Date	Topics	Stakeholder response	BHOP action
Environment Protection Authority – Jason Price	Email with letter	14 June 2022	Final land use options, RMP and RMS preparation	the consultation letter about the preparation of a final land use plan for Rasp mine in Broken Hill took some time to land with the appropriate EPA officers, including the Broken Hill Environmental Lead Program team, and as a result I am requesting a two-week extension to provide comments on the plan (I understand from BHOP's letter that comments were required by today). Can you let me know if this is acceptable and that our comments would still be considered during preparation of the plan?	Advised that this is acceptable
Environment Protection Authority – Jessica Creed	Email with letter	15 June 2022	Final land use options, RMP and RMS preparation	Nil	Nil
Broken Hill Environmental Lead Program– Kathryn Graham	Email with letter	3 June 2022 15 June 2022	Final land use options, RMP and RMS preparation	See EPA response of 23 August 2023 above.	N/A Contact by phone and letter resent by Devon Roberts, BHOP, on 18 May 2023.
Perilya	Email with letter	7 September 2022	Final land use options, RMP and RMS preparation	Perilya Environmental Officers Brett Bussell and Jessica Hannigan attended site for a discussion on Rehabilitation and Mine Closure. Perilya provided feedback on revegetation conducted on the North and Potosi Mines. Perilya and BHOP representatives were present at the Mines on the Line of Lode meeting held by Dept of Premier and Cabinet on 27 February 2023 where both Perilya and BHOP provided their perspectives on legacy issues, rehabilitation and mine closure goals.	BHOP will continue to consult as necessary with neighbouring landholders, including Perilya.
BCD – Andrew Fisher	Email	13 September 2022	Use of compostable waste as an alternative to topsoil and subsoil	Ensuring that the rehabilitation remains compatible with the tourism goals and possible revegetation via the manufacture of growing media is important. Continuing research and discussions with Broken Hill City Council and the Broken Hill Post Mining Interagency Group are encouraged.	BHOP will continue to discuss site rehabilitation with BHCC as the strategy and the RMP are implemented. This will include the potential for alternative growth media to be used at the site.
Broken Hill City Council	Letter	22 May 2023	Final land use options, RMP and RMS preparation	BHCC noted the following consideration in correspondence dated 5 June 2023: • Council notes that, in the absence of any specific guidance from the Broken Hill Post Mining Interagency Group, that BHOP's position is to rehabilitate the site to be safe, stable, and non-polluting, and further to that BHOP consider a combination of mining heritage -related tourism and a safe, stable, non-polluting Land Use for the non-heritage components of the mine is desirable and achievable. • Council acknowledges the approach which you have outlined, and also concurs with BHOP's understanding that it will take some time for all relevant stakeholders to reach consensus, however Council is willing to continue to work with BHOP to achieve beneficial outcomes for the community and the mining company.	BHOP to continue consulting with relevant stakeholders, including BHCC, to ensure beneficial rehabilitation and closure outcomes for the community and BHOP.

Stakeholder consultation	Form	Date	Topics	Stakeholder response	BHOP action
Resources Regulator	Letter and request for consultation via Major Projects Portal	22 September 2023	Request for comment on revised Rehabilitation Strategy	Response dated 18 October 2023: • The Regulator expects that geotechnical assessments are undertaken of high-risk landforms to be retained in the final landform for Rasp mine. This includes all steep slopes with slope angles at (or close to) the angle of repose. Risk controls, such as reduction of slope angles (laying back), or placement of buttressing, are required to be considered to ensure the nominated rehabilitation objective for these areas is achieved. The nomination of slope stability risks and risk control must be considered in the rehabilitation risk assessment and included in the Rehabilitation Management Plan as required under Schedule 8A of the Mining Regulation • The level of detail provided in the rehabilitation strategy exceeds what was requested as part of the Project Approval Condition 34A of PA 07_0018. In particular, the Rehabilitation Strategy provides rehabilitation completion criteria, aligned to rehabilitation objectives. The Regulator will undertake a detailed review of completion criteria when they are formally submitted as part of the approval process for the Rehabilitation Completion Criteria Statement pursuant to Clause 12 in Schedule 8A of the Mining Regulation 2016. It is noted that the Rehabilitation completion criteria can only be submitted for approval once the Rehabilitation Objectives Statement and Final Landform and Rehabilitation Plan are approved. At the time of preparing this response, the Rehabilitation Objectives Statement and Final Landform and Rehabilitation Plan for Rasp Mine have not yet been approved. • It is the expectation from the Regulator that CBH Resources will consult with the relevant government agencies and other relevant stakeholders in regard to the implication on post mining land use outcomes before approving the Rehabilitation Completion Criteria Statement. Key issues to be addressed before the Regulator can approve the Rehabilitation Completion Criteria statement will be how relevant State and Commonwealth legislation (e.g. Heritage conservation, pollution impacts etc.) are addressed in consideration of current and post-mining land use constraints and or opportunities associated with the mining operations. As part of the process of approving the Rehabilitation Outcome Documents (rehabilitation objectives statement, rehabilitation completion criteria statement, final landform and rehabilitation plan) pursuant to Clause 12 in Schedule 8A of the Mining Regulation 2016, it is envisaged that further amendments of the Rehabilitation Strategy will be required to ensure these documents are consistent.	• BHOP acknowledges the RR comments regarding the requirement for geotechnical assessments for high-risk landforms and has included this risk in the Rehabilitation Risk Assessment in Section 4.8. BHOP are in the process of commissioning a geotechnical assessment of the potentially high-risk landforms within the final landform and the outcomes of this assessment including any changes to proposed management during the closure phase will be documented in the Rehabilitation Management Plan and other Rehabilitation Outcome Documents (rehabilitation objectives statement, rehabilitation completion criteria statement, final landform and rehabilitation plan) pursuant to Clause 12 in Schedule 8A of the Mining Regulation 2016 as appropriate. • BHOP acknowledges the RR comments with regard to the level of detail in this Strategy which is beyond that required by Condition 34A of the consent. To minimise the potential for inconsistencies between this Strategy and Rehabilitation Outcome Documents required under the Mining Regulation 2016, and the need for multiple reiterations of this strategy as Rehabilitation Objectives and Criteria are revised during the mine life, BHOP has updated Chapter 5 of this Strategy. The updates outline that the rehabilitation criteria presented in this document are indicative and final criteria will be documented in the Rehabilitation Management Plan and approved Rehabilitation Completion Criteria Statement required under Schedule 8A of the Mining Regulation. BHOP has consulted with the relevant government agencies and other relevant stakeholders in regard to the implication on post mining land use outcomes during the June 2022 consultation process with these stakeholders having a further opportunity to comment on the proposed post mining use outcomes in this revised Strategy in September/October 2023.

Stakeholder consultation	Form	Date	Topics	Stakeholder response	BHOP action
DPE Water	Letter and request for consultation via Major Projects Portal	22 September 2023	Request for comment on revised Rehabilitation Strategy	Response dated 5 October 2023: • The department requests the plan be considered further to ensure relevant water legislation, policy and management requirements are addressed. The department has defined a range of outcomes relevant to assist in the preparation of Rehabilitation Management Plans and these are detailed in Attachment A. • The Rehabilitation Management Plan is recommended to be reviewed to achieve the following outcomes. These are intended to meet the department's legislative, policy and water management requirements. • Sharing of water must protect the water source, its dependent ecosystems and basic landholder rights. • Water sources, floodplains and dependent ecosystems are protected and restored. • Activities within a water source should avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, and where possible land should be rehabilitated. • The final Rehabilitation Management Plan is made electronically available on a public accessible website. • A conceptual model/diagram clearly presents how the groundwater and surface water systems interact with the final landform. This is to be informed by recent environmental assessments/modelling reviews. • The final design and location of surface drainage features achieves a stable landform and maintains or improves riparian corridor functioning. This is to be completed with reference to industry guidelines such as: "*Rehabilitation Manual for Australian Streams* (LWRRDC 2000)", "*Guideline: Works that interfere with water in a watercourse for a resource activity* (DNRME 2019)" and "*Guidelines for Controlled Activities on Waterfront Land* (DPE 2022)" or their latest versions. • Dirty runoff catchment areas are rehabilitated and the conveyance of clean surface runoff downstream is maximised. • Decommissioning of groundwater boreholes is in accordance with the "Minimum Construction Requirements for Water Bores in Australia (2020)". • Ongoing water take by the final landform via interception, storage or diversion is quantified and complies with relevant approvals and licences under the *Water Management Act 2000* or a relevant exemption. Please note exemptions from the requirement to hold approvals under s.90 and s.91 of the *Water Management Act 2000* for approved SSD/SSI projects will not apply once the project approval ceases. Therefore, any relevant water management works that are to be retained will need to obtain an approval prior to the development consent lapsing. • Final voids do not present a risk to important groundwater ecosystems and assets (groundwater dependent ecosystems, alluvial aquifers, and landholder bores). • Final voids are designed to be sinks or to flow through the local groundwater system and need to be confirmed by a post-mining groundwater model. • Residual risk to water sources is clearly understood and minimised. This is to include relevant assessment documentation and updated risk assessments to meet the requirements of the NSW Aquifer Interference Policy. A monitoring and review program is included to ensure the rehabilitation outcomes are met.	• Consideration of the outcomes detailed in the DPE Water response, is addressed as appropriate in this strategy. Further details of proposed post closure management will be documented in the revised Rehabilitation Management Plan. • The final landform seeks to avoid and/or minimise land degradation, including soil erosion, compaction, geomorphic instability and contamination (refer Section 3.4). • This strategy will be made available on the CBH Resources website. • A conceptual diagram showing how the final landform interacts with surface water is contained in Appendix C. • There are no waterways within the mining lease that will be reconstructed post closure. Notwithstanding, post closure drainage channels will be constructed to be stable. Where flow paths outlet off site these will be stabilised with a rock level spreader, appropriately sized to withstand velocities of the peak flow from a 1% event. • Preliminary post closure surface water assessment indicates that water leaving site is predicted to result in a minimal change on the annual flow volumes within the receiving environment with no offsite discharge occurring based on a typical average and wet rainfall year. • Indicative completion criteria outlined in Chapter 5 has been updated to include as appropriate "Decommissioning of groundwater boreholes is in accordance with the "Minimum Construction Requirements for Water Bores in Australia (2020)". • The requirement for post closure water licences is noted and addressed in the indicative completion criteria in Chapter 5. • The BHP and Box cut final voids are not predicted to form a pit lake on closure with water expected to evaporate or seep to groundwater. • Risk to water sources are considered in Chapter 4. Further detail on proposed post closure management will be documented in the revised Rehabilitation Management Plan. A surface water and groundwater monitoring and review program is outlined indicative completion criteria and performance indicators outlined in Chapter 5.

Stakeholder consultation	Form	Date	Topics	Stakeholder response	BHOP action
Foundation Broken Hill	Letter	22 September 2023	Request for comment on revised Rehabilitation Strategy	Response dated 5 October 2023: • No specific comments on the Rehabilitation Strategy however welcomed BHOP's desire to conserve mining heritage pre and post mine closure. • Foundation Broken Hill (The Foundation) sees the value whole line of lode as a cohesive project over the near and long term for the benefit of Broken Hill, across heritage, tourism, community and commercial aspects. • The Foundation noted that whilst there is a desire expressed by agencies to preserve these assets, there is no entity necessarily stepping up to take an active role alongside BHOP in making it happen and the Foundation. The Foundation believes that it can take a pro-active role and work with the mining companies to develop a broad and encompassing strategy for the future of mining heritage in Broken Hill.	BHOP to continue consulting with the Foundation to ensure beneficial rehabilitation and closure outcomes for the community and BHOP.
Environment Protection Authority	Letter and request for consultation via Major Projects Portal	22 September 2023	Request for comment on revised Rehabilitation Strategy	Response dated 18 October 2023: • Activities associated with rehabilitation works at the premises will be subject to regulation by the EPA under the licence. As such, we recommend that rehabilitation works are carried out in a manner that minimises the emission of dust from the premises.	This submission is noted and has been considered in the indicative completion criteria (refer Chapter 5).
Heritage NSW	Letter and request for consultation via Major Projects Portal	22 September 2023	Request for comment on revised Rehabilitation Strategy	Response dated 13 October 2023: • It is understood that the proposed key updates as noted in your correspondence will not impact the SHR listed items, BHP Chimney Ruin of First Offices (SHR No. 01820) and Broken Hill Railway Station and yard group (SHR No. 01101) located within the Rasp mine boundary.	This submission is noted. The noted SHR listed items are within the CM7 surface exclusion areas.
NSW Health (Western NSW Local Health District	Letter	22 September 2023	Request for comment on revised Rehabilitation Strategy	No response received.	While no response has been received from NSW Health, recent feedback from NSW Health, The Lead Health program was received in May 2023 and has been considered in the revision of this Strategy (refer below).
Broken Hill City Council	Letter	22 September 2023	Request for comment on revised Rehabilitation Strategy	No response received.	While no response has been received from Council, recent feedback from Council received in May 2023 on final land use options has been considered in the revision of this Strategy (refer following row).
Heritage NSW Broken Hill City Council	Letter	11 September 2024	Conservation Management Plan for review and comment.	Response dated 11 September 2024: • Consultation feedback: Heritage NSW, in collaboration with Broken Hill City Council, provided feedback, highlighting areas for improvement and additional detail.	This submission is noted and issued to EMM to capture in the draft CMP update.
Line of Load Association Broken Hill Lead Response Group - Premier's Department Includes Regional NSW and EPA	Meetings Meetings	1995 to 2011 Ongoing	The LOLA was established in 1995 as a community-based group to oversee the development of tourism and other commercial possibilities with CML7. In September 2011, the LOLA was dissolved, and its assets located on CML7 transferred to the then Land and Property Management Authority (now Crown Lands), that established the Line of Lode Reserve Trust (LOLRT) and act as trustee of these assets. LOLA was replaced by Broken Hill Lead Response Group - Premier's Department including Regional NSW and EPA.	Assets include two residences located on Bonanza Street, Jamieson House (residence 27A&B); British Flats within Proprietary Square and Broken Earth Café and Miners Memorial, centrally located on the city side of CML7, atop an old mine waste dump. However, the long-term responsibility for the remaining heritage items will ultimately need to be transferred from BHOP to another entity. Formal consultation has commenced with relevant stakeholders to plan for this process.	It is BHOP's intention that the mine's heritage items remain following cessation of mining. and that the greater mine area is used for historical mining and industrial related tourism to minimise the socio-economic impacts on the City of Broken Hill.

5 Final landform and rehabilitation plan

5.1 Final landform and rehabilitation plan – electronic copy

The final landform features proposed under this RMP are identified within Plan 1 in Appendix C.1. The final landform as proposed has been developed in accordance with previous assessments supporting project approvals and the final land use options assessment discussed in Chapter 3 of the Rasp Mine Rehabilitation Strategy (EMM 2023). Key aspects of the final landform include the appreciation of the heritage values located within CML7 and the ability for the site to provide ongoing benefits to the local community through mining heritage related tourism. The final landform as presented within Plan 1 has been adopted by BHOP and will be implemented in accordance with the life of mine rehabilitation schedule outlined in Chapter 6. Key water management features are shown under the water management area domains.

Plan 2: in Appendix C.2 shows the proposed final landform contours to provide a greater conceptualisation of the final landform provided in Plan 1.

6 Rehabilitation implementation

6.1 Life of mine rehabilitation schedule

Key aspects of the Rasp Mine forward work plan December 2024 to December 2027 are provided below.

6.1.1 Rehabilitation planning

As identified in the approved Rehabilitation Strategy (EMM, 2023), the establishment of vegetation for rehabilitation purposes is not an objective for BHOP's Rasp Mine. The site is to be maintained as a mining landscape to support ongoing heritage values of Broken Hill township, consistent with the approach agreed with line-of-lode interagency panel. In order to support the objective of leaving a safe, stable and non-polluting landform, the exposed waste rock dump surfaces will be sheeted with low-Lead (<0.5% Lead) waste rock at 250 mm thick.

Historic operations have left the mine area highly modified and disturbed, and the mining landform has historical values which can contribute to ongoing tourism uses post-mining. The Rehabilitation Strategy (EMM, 2023) was approved in 2023, including revised objectives and risks. In 2024 there was a focus on the development of a Heritage Management strategy with the creation of a draft Conservation Management Plan (CMP) and a draft Strategic Decision Matrix (SDM) produced with stakeholder consultation. EMM and supporting consultants conducted a condition assessment of heritage structures in August 2024. The CMP and SDM are expected to be finalised in 2025 with applicable management strategies incorporated into the RMP when finalised.

6.1.2 Rehabilitation maintenance and corrective actions

Key rehabilitation maintenance will involve inspections of areas that have been capped with waste rock to identify any erosion that may have started, and to implement repairs as necessary. A site water management review was conducted in 2023 which will ensure water storages are capable of containing design storms and will reduce the reliance on water management structures into the future. This should reduce this aspect of rehabilitation maintenance. This approach will be incorporated into the final landform as areas are reshaped and capped. A water drop structure is to be constructed on the eastern portion of TSF1 late in 2025 to direct to water to Horwood Dam without causing erosion of the TSF1 surface and designed to withstand a 1:100 AER rainfall event. Heritage items will be inspected regularly for structural integrity or removal depending on their condition and safety concerns and stakeholder feedback. Analogue monitoring of soil and surface water for background contamination will be undertaken. Reshaped areas will be monitored remotely using Lidar or similar technology to identify any erosion that requires maintenance. A Rehabilitation Trigger Action Response Plan has been developed addressing land contamination and final landforms erosion, seepage, weed invasion, and subsidence.

6.1.3 Rehabilitation schedule

Backfilling of Kintore Pit (TSF3) began in 2023 and will continue to the end of mine life. Capping of Little Kintore Pit (after receiving boxcut material) with approximately 20,000t of waste rock will be conducted in 2026 following shaping and trimming. This approach is consistent with Mod 6 Modification Report – Section 3.10.2.2. Capping of free areas will begin in 2025, consistent with the Mod 6 Modification Report (Appendix I – Dust Management Options, Mine Earth, 2021) with capping of parts of the North Kintore dumps and is restricted to approximately 16,000 t annually, within an operating scenario that includes handling of up to 146,000 tpa of waste rock. Additional capping material could be placed if it fits within the total 146,000 tpa waste rock being handled on the surface, based on air quality modelling conducted for MOD6 (ERM, 2021). Landform reshaping (as required) will be conducted from 2025 on Mt Hebbard, Blackwoods Waste Dump, South Hill Waste Dump, and TSF1. The site is heavily disturbed due to the extent of historical mining and disturbance of new areas of land is not likely.

Forecast total new area of land proposed for active rehabilitation in 2025 and 2026 are 17.5 ha and 30.78 ha, respectively.

6.1.4 Subsidence remediation

Coffey Mining (Coffey 2007) analysis of the potential for caving in the Western Mineralisation shows that a stope failure is unlikely, and if it did occur is not expected to propagate through to the surface. Significant surface subsidence is not expected above the stopes. Monitoring occurs on Bonanza St/South Road to detect any movement that may be associated with mining activities in the Zinc Lodes which is now completed. Geotechnicians regularly (monthly) inspect landforms for any signs of subsidence. Key subsidence risks are managed and mitigated by:

- use of empirical stope design
- regular stope inspections
- installation of modern ground support/reinforcement systems
- placement of mine back fill (eliminating the void)
- use of trained and competent people in critical functional roles such as mine technical services and mining operations. If subsidence did occur, then appropriate rehabilitation measures would be developed depending on the nature, extent and location of the subsidence.

6.1.5 Rehabilitation Plans

Progressive rehabilitation activities by year are shown in Appendix C as follows:

- Rehabilitation Year 1 (Appendix C.3)
- Rehabilitation Year 2 (Appendix C.4)
- Rehabilitation Year 3 (Appendix C.5).

6.2 Phases of rehabilitation and general methodologies

6.2.1 Active mining phase

PA 07_0018 and CML7 approve mining until 31 December 2026 and thereafter to rehabilitate the site to the satisfaction of the Department of Regional NSW – Resources Regulator. With MOD6 approval to place dry tailings into Kintore Pit, there is sufficient tailings storage capacity and ore reserves to extend the mine life until 2036. However, any such extension will require a modification to PA 07_0018 and renewal of mining leases.

6.2.2 Decommissioning

i Site security

The site is fenced with security fencing around active mining areas, with several electronically activated gates to ensure only approved personnel and contractors can access the site.

Decommissioning will not commence until mining and process have been completed. It is envisaged that a core workforce and contractors would be retained/engaged to implement the rehabilitation and closure phases of the project.

It is envisaged that key administration buildings, ablution facilities and workshops would remain during the rehabilitation phase of the project for BHOP and contractor personnel.

ii Infrastructure to be removed or demolished

It is envisaged that key administration buildings, ablution facilities and workshops would remain during the rehabilitation phase of the project for BHOP and contractor personnel.

The only infrastructure envisaged to remain after rehabilitation will be unsealed access tracks for rehabilitation monitoring and maintenance, and access for other infrastructure owners (e.g. Vodaphone).

Underground mining equipment that is uneconomical to recover will remain underground.

Mine and ventilation shafts will be sealed and capped in accordance with regulatory requirements.

Concrete from slabs and foundations is expected to be broken up and used as inert rock to cover free areas to minimise lead dust emissions.

Infrastructure to be demolished and removed is detailed in Section 2.4.1iii and Section 2.4.1i.

iii Management of carbonaceous/contaminated material

A summary of contaminated land remediation works undertaken by NML prior to BHOP commencing operations is detailed in Section 3.3.6.

a Regulatory framework

The site has known and potential sources of contamination which may impact the environment or human health receptors for final land use domains. To ensure risk to receptors is understood and mitigated, the site will require contaminated site investigations completed in accordance with:

- NSW *Contaminated Land Management Act 1997* (CLM Act)
- NSW *Protection of the Environment Operations Act 1997* (POEO Act)
- NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)
- State Environmental Planning Policy (Resilience and Hazards) 2021.

Applicable guidelines which should be used to support any contamination assessments include:

- Australian and New Zealand Environment and Conservation Council and the National Health and Medical Research Council (1992) National Water Quality Management Strategy - Australian Water Quality Guidelines for Fresh and Marine Waters, as updated in 2018 by the Australian and New Zealand Governments (ANZG 2018)
- National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended 2013, including 20 Schedules and Appendices (B1 to B9), and the NEPM Toolbox, updated April 2014 (the ASC NEPM)
- NSW EPA (2022) Sampling Design (Parts 1 and 2)
- NSW EPA (2014) Waste Classification Guidelines Part 1: Classifying Waste
- NSW EPA (2017) Guidelines for the NSW Site Auditor Scheme

- NSW EPA (2020) Guidelines for Consultants Reporting on Contaminated Sites.

b Areas of known or likely or potential contamination

Potential sources of contamination at the site include:

- water management areas containing heavy metal run off and sediments
- storage, handing and dispensing of hydrocarbons and chemicals
- roads and tracks where non-inert rock was used for construction and/or sheeting purposes
- processing and handing areas of ores
- historical processing, waste and tailings storage areas.

c Scope of contamination studies

A Stage 1 PSI will be completed in accordance with ASC NEPM to assess if potential source-pathway-receptor linkages may be present at the site. Due to the understanding of existing sources of contamination, it is likely that a Stage 2 DSI will be required to quantify potential ecological and human health risk. If contamination is present at levels which pose an unacceptable risk, a remediation action plan (RAP) will be required. This stage should be integrated into the overall mine closure design where encapsulation; on-site treatment; in situ or bioremediation may form part of the overall closure approach. Where remediation is completed, validation sampling will be required in accordance with ASC NEPM and NSW EPA guidelines.

All contamination investigations will be completed by an appropriately qualified contamination consultant.

d Potential remediation strategies

Any contaminated sediments and rock will be excavated and either disposed of underground or transported to TSF3 for capping. Any hydrocarbon contaminated soil will be bioremediated on site.

iv Hazardous materials management

Hazardous and dangerous goods currently used on site are detailed in Table 6.1 and Table 6.2 on the following pages.

Any quantities of these materials that are on site post rehabilitation will be disposed of lawfully.

Table 6.1 Dangerous goods quantities

Common name	Proper shipping name	ID or Code No.	Type of storage facility	Max storage capacity	Typical quantity	UN number	ADG class	Packing group
Reagent shed	Corrosive Liquid, Acidic, Organic, N.O.S (Contains Phosphoric Acid)	BD01	Roofed Store	5,000 L	5,000 L	Mixed	4.2, 8, 9	II or III
	Caustic Alkali Liquid, N.O.S			2,000 L	2,000 L		Combustible	
	Corrosive Liquid, N.O.S.			8,000 L	8,000 L		Liquid	
	Xanthates (Marine Pollutant)			34,000 kg	34,000 kg			
Filter shed	Corrosive Liquids, N.O.S. (dithiophosphate salt)	BD02	Enclosed Roof Store	4,000 L	4,000 L	1760	8	II
SEX Mixing Tank	Corrosive Liquid, Toxic, N.O.S.	TK03	Process Mixing	10,000 L	8,000 L	2922	8 (6.1)	III
SEX Head Tank		TK04	Above Ground Tank	1,000 L	1,000 L	2922	8 (6.1)	III
Copper Sulphate Mixing Tank	Environmentally Hazardous Substance, Liquid, N.O.S. - (Contains Copper Sulphate)	TK05	Process Mixing	10,000 L	8,000 L	3082	9	III
Copper Sulphate Storage Tank		TK14	Above Ground Tank	10,000 L	8,000 L	3082	9	III
Copper Sulphate Head Tank		TK06	Above Ground Tank	1,000 L	1,000 L	3082	9	III
SMBS Mixing Tank	Bisulphites, Aqueous Solution, N.O.S.	TK07	Process Mixing	10,000 L	8,000 L	2693	8	III

Table 6.2 Surface dangerous goods manifest

Product name	Location	Maximum quantity	UN number	ADG class	Hazchem code	Packing group
EXPLOSIVE, BLASTING, TYPE B	SURFACE-MAG-01	3,000 Kg	0082	1.1D	N/A	N/A
EXPLOSIVE, BLASTING, TYPE E	SURFACE-MAG-01	1,000 Kg	0241	1.1D	N/A	N/A
BOOSTERS without detonator	SURFACE-MAG-01	500 Kg	0042	1.1D	N/A	N/A
CORD, DETONATING, flexible	SURFACE-MAG-01	1,500 M	0065	1.1D	N/A	N/A

Product name	Location	Maximum quantity	UN number	ADG class	Hazchem code	Packing group
CHARGES, SHAPED without detonator	SURFACE-MAG-01	20 Units	0059	1.1D	N/A	N/A
DETONATORS, ELECTRIC for blasting	SURFACE-MAG-02	6,000 Units	0030	1.1B	N/A	N/A
DETONATORS, ELECTRIC for blasting	SURFACE-MAG-02	500 Units	0456	1.4S	N/A	N/A
DETONATORS, NON ELECTRIC for blasting	SURFACE-MAG-02	6000	0360	1.1B	N/A	N/A
SUBTEK CHARGE (Ammonium Nitrate Emulsion)	SURFACE-MAG-03	25,000 Kg	0241	1.1D	5.1	N/A
DIESEL	TK-01	61,900 L	00C1	C1		N/A
DIESEL	TK-02	61,900 L	00C1	C1		N/A
EXPLOSIVE, BLASTING, TYPE B	UG-MAG-01	22,000 Kg	0082	1.1D	N/A	N/A
EXPLOSIVE, BLASTING, TYPE E	UG-MAG-01	5,000 Kg	0241	1.1D	N/A	N/A
BOOSTERS without detonator	UG-MAG-01	1,000 Kg	0042	1.1D	N/A	N/A
CORD, DETONATING, flexible	UG-MAG-01	5,000 M	0065	1.1D	N/A	N/A
CHARGES, SHAPED without detonator	UG-MAG-01	0 Units	0059	1.1D	N/A	N/A
DETONATORS, ELECTRIC for blasting	UG-MAG-02	6,000 Units	0030	1.1B	N/A	N/A
DETONATORS, ELECTRIC for blasting	UG-MAG-02	500 Units	0456	1.4S	N/A	N/A
DETONATORS, NON ELECTRIC for blasting	UG-MAG-02	6,000 Units	0360	1.1B	N/A	N/A
SUBTEK CHARGE (Ammonium Nitrate Emulsion)	UG-MAG-03	25,000 Kg	0241	1.1D	5.1	N/A

v Underground infrastructure

Key underground infrastructure includes:

- a spiral decline that extends from the surface to the bottom of the mine (approximately 700 m)
- ventilation shafts:
  - 1 x exhaust
  - 3 x intake (No.7 Shaft, No.6 Shaft, Delprat's Shaft)
- associated compressors; pump stations; ventilation fans; crib room; toilets; and electrical infrastructure.

A detailed shaft and decline sealing design has yet to be prepared for Rasp Mine.

Prior to decommissioning BHOP will recover equipment from the mine where viable to do so, as well as materials that could result in groundwater contamination.

Underground pumps would be turned off and over time, it is expected that groundwater levels would slowly fill back to pre-mining levels. A groundwater model is currently being prepared to determine the rate of inflow, final levels, and water quality.

All associated above ground infrastructure would be demolished and removed, sold for re-use or scrapped.

The shafts and drift would be capped to permit a mining heritage final land use.

A detailed capping design will be prepared at an appropriate time closure to schedule closure.

6.2.3 Landform establishment

i Water management infrastructure

All water management infrastructure apart from evaporation ponds/dams and TSF spillways will be rehabilitated. The final landform design will aim to convert many of the diversion bunds constructed by NML in the 1990s from concentrated flows to sheet flows to reduce the erosion potential of runoff. This will include treating and discharging any stored water in accordance with the EPL and excavating any contaminated sediment for disposal in TSF3.

Dam walls and drain banks would be pushed back into their excavation and reshaped to approximate pre-mining landforms sheet flow conditions would be re-established.

Rehabilitated water management infrastructure would be capped with inert waste rock to minimise erosion and lead dust emissions.

ii Final landform construction: general requirements

The bulk of landforms at Rasp Mine are the result of historical mining operations and approved rehabilitation works undertaken by NML as previously detailed. Key changes to historical landforms at Rasp Mine include:

- backfilling Kintore Pit with waste rock and tailings
- partial backfilling of Little Kintore Pit
- partial backfilling of BHP Pit with waste rock
- backfilling of Blackwoods Pit with tailings

- excavation and then partial backfilling of the Box Cut for access for underground mining operations to allow Kintore Pit to be used for dry tailings storage.

iii Final landform construction: reject emplacement areas and tailings

a Kintore Pit (TSF3)

With an anticipated extended mine life, Kintore Pit will be completely backfilled with tailings and waste rock, then capped with inert waste rock to form a gently sloping domed landform with slopes ranging from 3.28% to 6.7%. The finished surface will be a rough surface inert waste rock with 1% to 2% fines. as shown on Figure 2.5.

Surface drainage of the capped landform will be toward a stormwater detention pond in the partially backfilled Little Kintore Pit.

b Little Kintore Pit

Little Kintore Pit will be partially backfilled with waste rock from excavation of the Box Cut to form a shallow stormwater detention pond, designed to capture runoff from the capped Kintore Pit landform (see Figure 2.5). Runoff would either evaporate or seep into the floor of the backfilled pit.

The finished surface will be a rough surface inert waste rock with 1% to 2% fines.

c Box Cut

Following cessation of underground operations, removal of all infrastructure, and plugging and capping of the portal, the Box Cut will be partially backfilled with waste rock, then capped with inert waste rock to form a stormwater detention pond (Figure 2.7). Surface water contained in the stormwater detention pond would be expected to evaporate or seep to ground water.

The finished surface will be a rough surface of inert waste rock with 1% to 2% fines.

The sides of the Box Cut above the backfilled surface will be exposed in-situ rock.

d Blackwood Pit (TSF2)

During the final stages of mining and processing, tailings would cease to be excavated from TSF2, and deposited tailings would be used to fill cells within TSF2, leaving a finished tailings surface with a 1% gradient from west to east (see Figure 2.8).

The surface of TSF2 would be covered progressively with screened inert waste rock to form a capillary break layer 200 mm thick followed by an inert run of mine waste rock layer 300 mm thick. The finished surface will be a rough surface of inert waste rock with 1% to 2% fines with a formal engineered spillway in the south-eastern corner, which will be designed and constructed in accordance ANCOLD 2019 and the ICMM 2020 Global Tailings Standard.

e Horwood Tailings Dam (TSF1)

Rehabilitation of the Horwood Tailings Dam (TSF1) was undertaken by NML and subsequently approved by the then DMR (NML, 2000). Minor modification to the surface of TSF1 is proposed to divert overland flow away from the angle of repose batter on the north-eastern side of TSF1 to the S22 evaporation ponds to the north-west, and ultimately to Little Kintore Pit (Plan 2). This will significantly reduce the potential for erosion of the angle of repose TSF1 north-eastern wall and will reduce the volume of water that flows into Horwood Dam and potentially off-site.

The regraded surface will have a gently graded surface from the north-east to north-west and it will be covered with inert waste rock in addition to the existing slag if required (Plan 2).

f Existing waste rock dumps

No new waste rock dumps have been created by BHOP other than for backfilling existing pits. Existing waste rock dumps (free areas) will be capped with inert waste rock to minimise dust emissions, and the angle of repose batters will be rock mulched if required for erosional stability.

Reshaping of Horwood waste dump batters will be undertaken to reduce the potential for erosion and to assist the diversion of flow away from the angle of repose waste rock dumps (Plan 2).

The reshaped dump will be capped with inert waste rock for erosion and lead dust control.

iv Final landform construction: Box Cut and Processing Plant

a Box Cut

Following cessation of underground operations, removal of all infrastructure, and capping of the portal, the Box Cut will be partially backfilled with waste rock, then capped with inert waste rock to form a stormwater detention pond (see Figure 2.7). Surface water contained in the stormwater detention pond is expected to evaporate or seep to ground water.

The finished surface will be a rough surface of inert waste rock with 1% to 2% fines.

The sides of the Box Cut above the backfilled surface will be exposed in-situ rock.

b Processing Plant

Minor reshaping of internally draining landforms will be required once the processing plant has been removed, for safety and erosional stability. The reshaped landforms will be capped with inert waste rock to control erosion and lead dust (Plan 2).

v Final landform construction: BHP Pit

BHP Pit will be partially backfilled with waste rock. The pit cannot be completely backfilled due to existing heritage items. A perimeter bund will be constructed around the pit rim for safety.

The pit will be used for evaporation of surface runoff.

vi Construction of creek/river diversion works

There are no creek or river diversions associated with Rasp Mine.

6.2.4 Growth medium development

As the key rehabilitation objective is to retain the Rasp Mine mining landscape to support the heritage values of Broken Hill City, therefore the key rehabilitation objectives are to stabilise the post-mining landform without revegetation. Subsequently, no development of growth medium will be required.

BHOP's approach is to cover rehabilitated low gradient landforms with inert waste rock for erosion control and to reduce the generation of lead dust.

6.3 Rehabilitation of areas affected by subsidence

Analysis of the potential for caving in the Western Mineralisation found that the most critical type of failure mode from vertical (piping), diverging (outwards) and converging (inward) was converging. However, this is unlikely to propagate to a great extent before the void can support the span and vertical failure is the most likely critical failure mode (Coffey, 2007).

The analysis shows that a stope failure is not expected to propagate through to the surface and significant surface subsidence is not expected above the stopes. The analysis estimates some hanging wall failures with the currently estimated rock mass properties and the open stope geometry proposed. However, these failures are expected to be localised and are not expected to result in continuous caving to the surface. The presence of a more competent Potosi Gneiss unit above the stope hanging walls will restrict any failure from propagating upwards, assuming the unit is always above the stopes.

After extensive analysis, Coffey Mining concluded that any stope failure (no matter how unlikely) would not propagate through to the surface; therefore, significant surface subsidence is not predicted above the stopes.

If subsidence did occur, then appropriate rehabilitation measures would be developed depending on the nature, extent, and location of the subsidence.

7 Rehabilitation quality assurance process

BHOP will develop rehabilitation specifications for key stages of rehabilitation implementation. This will include technical requirements, inspection and testing requirements.. This will ensure each key stage of rehabilitation is completed to the agreed design, and that the next step/phase cannot proceed until there is formal signoff that the rehabilitation has been implemented as required.

All steps will be documented, and records will be retained to:

- show progression towards achieving the approved rehabilitation completion criteria
- identify areas where progress over time is not trending towards achieving completion criteria to inform management requirements
- assist in determining causes if rehabilitation does not achieve the required criteria or fails in a particular area
- compare results where different methodologies have been applied
- enable a process to be repeated by following a documented procedure.

8 Rehabilitation monitoring program

8.1 Analogue sites baseline monitoring

As vegetative rehabilitation is not viable at Rasp Mine due to lack of suitable growth mediums, use of traditional rehabilitation monitoring techniques such as Landscape Function Analysis is not applicable to Rasp Mine.

Analogue monitoring of soil and surface water for background contamination will be undertaken.

Values for tolerable rates of erosion have been determined from Howard and Loch (2019) as detailed in Section 2.4.1vi.

8.2 Rehabilitation establishment monitoring

Vegetative establishment is not viable at Rasp Mine due climate, lack of suitable growth medium, and is inconsistent with the key rehabilitation objectives. Revegetation establishment monitoring is therefore not required.

Progress of key rehabilitation activities will be monitored such as:

- reshaping areas following completion of mining activities to meet final landform design
- establishment of required water management measures including establishing appropriate slope gradients on waste rock dump flat surfaces, establishment of dump face berms and sediment control dams per the final landform design
- capping exposed flat surfaces (free areas) with inert rock
- removal of BHOP infrastructure.

Completion criteria and validation methodologies are included in Table 4.1 for all rehabilitation objectives.

8.3 Measuring performance against rehabilitation objectives and rehabilitation completion criteria

Rehabilitation completion criteria and validation processes detailed in Table 4.1 are used as the basis for assessing when rehabilitation of the project is complete.

The adopted rehabilitation criteria for the site have been developed in accordance with the unique constraints posed by the mine site and historical mining activities and practices. They consist of a set of objectives, rehabilitation criteria and evidence that criteria have been met.

9 Rehabilitation research, modelling and trials

9.1 Rehabilitation research, modelling and trials

As revegetation of the site is not consistent with the agreed final land use objectives, no further research into revegetation or growth medium establishment is proposed.

10 Intervention and adaptive management

A rehabilitation Trigger Action Response Plan (TARP) has been developed for the site to respond to potential threats to the success of rehabilitation outcomes of achieving a safe stable final landform, as detailed in Table 10.1.

Table 10.1 Rehabilitation Trigger Action Response Plan

Threats to rehabilitation success	Potential source of threat	Trigger	Action/Response	How impact will be monitored	Notification protocol
Final land use domain - Infrastructure					
Land contamination	Contaminated land remains	Audit of site contamination indicates contaminated land is present. Audit details remedial recommendations	Remedial recommendations are implemented. Site re-audit to ensure contamination removed.	Remediation verification report	Notification to the EPA and Resources Regulator may be required if gross contamination or environmental harm has occurred
Final landforms not in accordance with RMP	Erosion/instability/lead dust emissions	As constructed surveys, rehabilitation monitoring	Engage an independent specialist to determine in non-conforming landform can still achieve RMP objectives: • erosion stability • geotechnical stability • lead dust control • surface and ground water quality • implement recommendations if rework is required.	Annual rehabilitation monitoring	Depending on severity: • incident report • revision of RMP
Final land use domain – Other Mining Landscape					
TSF	Contaminated seepage from capped TSFs	Visual assessment, surface and/or groundwater monitoring trigger exceedances, rate of seepage not decreasing following	Engage an independent specialist to identify cause of seepage and implement investigations. Implement seepage collection and pump underground.	Surface and groundwater monitoring	Depending on severity: • incident report • revision of RMP
	Water ponding on capped surface due to differential settlement	Surveys of the capped TSF surface	Placement of additional soil material to restore gradients and re-seed.	Rehabilitation monitoring and survey	Annual rehabilitation report
	Differential settlement/slips of the TSF embankments	Surveys of the capped TSF surface, Lidar monitoring of slopes	Engage independent TSF dam geotechnical engineer/ erosion specialist to undertake an investigation and implement recommendations.	Rehabilitation monitoring and survey	Depending on severity: • incident report • revision of RMP

Threats to rehabilitation success	Potential source of threat	Trigger	Action/Response	How impact will be monitored	Notification protocol
	Failure to remove TSFs from Dam Safety NSW register	Correspondence from Dam Safety NSW	Engage independent TSF dam geotechnical engineer to apply to Dam Safety NSW for removal address any identified concerns and management/mitigation requirements.	Independent report	Annual rehabilitation report
Erosion of final landform area	Rainfall resulting in excessive surface flows	Rehabilitation monitoring and inspections	Backfill any eroded areas using material available on site. If erosion is due to flow exceeding the critical shear of the final surface, provide additional erosion protection as required, e.g. re-grading, rock armour or rock lining, etc.	Rehabilitation monitoring and inspections	Annual rehabilitation report
Weed or exotic grass species invasion	Windblown or bird dropped weed or exotic grass species Invasion	Rehabilitation monitoring identifies exotic species.	Undertake weed control as required.	Rehabilitation monitoring and inspections	Annual rehabilitation report
Subsidence above underground mine areas	Collapse of underground pillars and infilling of underground voids	Subsidence and rehabilitation monitoring	Engage a suitably qualified and experienced subsidence/geotechnical engineer to determine cause and solution (most likely backfilling or exclusion fencing).	Subsidence and rehabilitation monitoring	Incident reporting, Annual rehabilitation reports

11 Review, revision and implementation

In accordance with Clause 11 of Schedule 8A to the *Mining Regulation* 2016, this RMP will be amended if any of the following arise:

- there are changes to rehabilitation objectives and completion criteria
- there are changes to the proposed rehabilitation landforms or key rehabilitation methods
- there are changes to the identified risk or associated control measures
- mining recommences on site
- as otherwise directed to do so by the Secretary of DPE or nominated delegate.

The lease holder must ensure that the rehabilitation management plan remains current and relevant to ensure it defines the rehabilitation outcomes to be achieved in relation to the mining area and sets out the strategy to achieve those outcomes. This is partly informed by ensuring that the effectiveness of the rehabilitation risk assessment and controls adopted in the life of mine progressive rehabilitation schedule and rehabilitation phases are routinely evaluated throughout the life cycle of a project. Whenever any foreseeable hazard is identified that presents a risk to achieving the rehabilitation objectives, the rehabilitation completion criteria and the final landform and rehabilitation plan, the lease holder is required to update the rehabilitation risk assessment and the rehabilitation management plan.

This RMP will be reviewed and if necessary, amended if required, in accordance with the Rehabilitation Strategy review requirements from Schedule 4, Condition 4 of PA 07_0018 if any of the following actions require changes to the RMP:

- submission of an annual review under Schedule 4, Condition 3 PA 07_0018
- submission of an incident report under Schedule 4, Condition 5 of PA 07_0018
- submission of an audit report under Schedule 4, Conditions 7-8A of PA 07_0018
- any modifications of the conditions of approval (unless the conditions require otherwise)
- a direction of the Secretary under Schedule 2, Condition 4 of PA 07_0018
- changes to rehabilitation objectives and completion criteria
- changes to the proposed rehabilitation landforms or key rehabilitation methods
- changes to the identified risk or associated control measures.

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Appendix A
Approvals

EMM
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A.1 Mining tenements

Mining at Rasp Mine is undertaken subject to the following mining tenements:

- Consolidated Mining Lease 7 (CML7) originally granted 8 October 1987
- MPL 183
- MPL 184
- MPL 185
- MPL 186.

A.2 Project approval

Rasp Mine operates in accordance with Project Approval (MP 07_0018) which was granted under delegation by the (then) Minister for Planning on 31 January 2011.

Since the granting of MP 07_0018 on 31 January 2011, the project approval has been modified on 11 occasions. An overview of the Rasp Mine approval history is summarised in Table A.1.

Table A.1 Rasp Mine approval history overview

Approval	Details
MP 07_0018	Granted 31 January 2011 under Part 3A of the EP&A Act to: • extract up to 8.45 Mt of ore over a 15-year mine life, at an average rate of 750,000 t per annum • crush and process ore to produce ore concentrates containing approximately 44,000 t of lead (73% lead and 985 grams per tonne of silver) and 87,000 t of zinc annually • transport the crushed ore from the site by road during the first 18 months of the project, until processing facilities have been constructed, after which time crushed ore concentrate would be transported from the site by rail to domestic smelter and port customers (for export) • rehabilitate the site.
MP 07_0018 (Mod 1)	Granted 15 March 2012 under section 75W of the EP&A Act to authorise the relocation of the ventilation shaft and associated exhaust fans.
MP 07_0018 (Mod 2)	Granted 29 August 2014 under section 75W of the EP&A Act to change the approved operating hours of the crusher to 24 hours a day.
MP 07_0018 (Mod 3)	Granted 17 March 2015 under section 75W of the EP&A Act to: • expand its underground mining operations into ML Block 7ML • increase employment at the mine to 166 total full-time equivalents (FTEs) • Install four new ventilation fans in ML Block 7.
MP 07_0018 (Mod 4)	Granted 6 September 2017 under section 75W of the EP&A Act to increase the Blackwood Pit (TSF2) capacity from 4 to 5 Mt and constructing an on-site concrete batching plant.
MP 07_0018 (Mod 5)	Granted 2 November 2018 under section 4.55(1A) of the EP&A Act to construct a cement silo, import 5,000 t of cement to the site, extend an existing warehouse and update the mine's air quality monitoring requirements to be consistent with the Environment Protection Licence (EPL).
MP 07_0018 (Mod 6)	Granted 16 March 2022 under section 4.55(2) of the EP&A Act to use the Kintore Pit as a new tailing storage facility (TSF3), relocate the current mine portal, provide for future waste rock emplacement areas (currently stored in Kintore Pit), and provide for associated service facilities.

Approval	Details
MP 07_0018 (Mod 7)	Granted 29 July 2019 under section 4.55(1A) of the EP&A Act to utilise rock fill material stored in BHP Pit for Blackwood Pit (TSF2) embankment construction; and conduct crushing and screen activities within BHP Pit.
MP 07_0018 (Mod 8)	Granted 15 April 2021 under section 4.55(1A) of the EP&A Act to extend underground mining across CML7 to mine a predefined region of ML1249 under a sub-lease arrangement with Perilya Broken Hill Limited.
MP 07_0018 (Mod 9)	Granted 23 December 2021 under section 4.55(1A) of the EP&A Act to extend underground exploration in Main Lode (ML) Blocks 13 to 15 within CML7 and install an emergency egress ladder way from Stockpile 1 (SP1) underground to the surface.
MP 07_0018 (Mod 10)	Granted 13 December 2022 under section 4.55(1A) of the EP&A Act to permit the temporary stacking and storage of additional tailings within the mine's TSF2 facility.
MP 07_0018 (Mod 11)	Granted 15 March 2024 under section 4.55(1A) of the EP&A Act to install and use a new ventilation intake and further extend underground exploration in the ML to Blocks 13 to 15 within CML7.

A.3 Environment protection licence

Rasp Mine operates in accordance with EPL 12559. This EPL authorises the carrying out of scheduled activities including crushing, grinding or separating >500,000 to 2,000,000 t processed.

Mining for minerals >500,000 to 2,000,000 t produced.

A.4 Water access licences

Rasp Mine holds water extraction licence 85WA752823 to extract up to 370 ML for use on site or to send to Perilya Broken Hill Operations Pty Ltd.

Appendix B

Rehabilitation risk assessment

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Rehabilitation Risk Assessment

Date: 15/7/2022
Participants: Nick Travers (EMM), Michael Frankcombe (EMM), Devon Roberts (BHO), Joel Sulicich (BHO)
Revised: 31/3/2025
Participants: Devon Roberts (BHO), Joel Sulicich (BHO)

E211010
Rasp Mine - Closure Studies, Rehabilitation Strategy and Rehabilitation Management Plan
Broken Hill Operations Pty Ltd (BHOP)
Rasp Mine, Broken Hill NSW

CLOSURE RISK DESCRIPTION (Unwanted Event)	POTENTIAL IMPACTS (Consequence)	POTENTIAL CAUSES (Risk Pathway - Root Causes)	RISK #	RELEVANT? (Yes / No)	Existing Proposed Controls (per Rasp Mine MOP, October 2021 - September 2023)	Likelihood (L)	Impacted Area							Inherent Risk Level (IRL)	Additional Identified Risks/Issues (from EMM studies and site assessment)	Additional Recommended Controls (from EMM studies and site assessment)	Likelihood (L)	Impacted Area							Residual Risk Level (RRL)	Closure knowledge gaps	Uncertainties	Path Forward (Agreed way forward for RMP)	Responsibility	Due Date
							Financial	Health & Safety	Environmental	Community Relations	Company Reputation	Security	Legal Compliance					Financial	Health & Safety	Environmental	Community Relations	Company Reputation	Security	Legal Compliance						
LANDFORM STABILITY																														
Instability/failure of waste rock emplacements	* Major costs for landform re-design/re-work; * Inability to achieve relinquishment; * Adverse impacts on downstream receptors (eg sediment runoff and surface water impacts); * Failure of WRE capping through ground disturbance and erosion resulting in exposure of materials with elevated lead levels; * lead dust emissions	* Unacceptable rates of erosion results in landform/rehab failure; * Landform design not sympathetic to the base material characteristics and local climatic conditions; * Modelling of landform morphology and failure risk not undertaken (eg WEPP, RUSLE, SIBERIA); * Grazing impacts/disturbance (eg stock over-grazing, feral fauna activity) * Not constructed to design; * Lack of suitable inert waste rock or rock mulch (material balance)	001	Yes	*For slopes created by BHOP, completion of geotechnical stability assessment; slopes >20 degrees to be assessed, cut and re-shaped for long-term stability. * Angle of repose slopes previously rock mulched by NMI	B - Likely	4 - Major	1 - Insignificant	3 - Moderate	N/A	3 - Moderate	N/A	4 - Major	High	1/ Rill/gully erosion and slumping of angle of repose slopes	Erosion and landform design assessment, to include: * erosion material characterisation * erosion modelling (WEPP) * generation of landform design 'rules' and 3D final landform designs based on modelling *Lidar erosion monitoring of angle of repose slopes and rock mulching if required *geotechnical assessment and buttressing or slope reduction if required and if possible due to boundary/infrastructure constraints	E - Rare	2 - Minor	1 - Insignificant	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	1/ Erosional stability of final landforms based on the materials proposed for use as final cover (waste rock mulch) 2/ Have geotehcnical stability assessments already been done for legacy landforms (or will they be done) and who is responsible for managing this closure risk?	NSW RR may require evidence of geotechnical stability (safety) of legacy landforms	Erosion and landform design assessment, to include: * erosion material characterisation * erosion modelling (WEPP) * generation of landform design 'rules' and 3D final landform designs based on modelling. RMP will describe fate of WRE	Devon Roberts - Environmental	31-Dec-26
Instability/failure of tailings storage facilities	* Major costs for landform re-design/re-work; * Inability to achieve relinquishment; * Adverse impacts on downstream receptors (eg sediment runoff and surface water impacts); * Failure of TSF capping through ground disturbance and erosion resulting in exposure of capped tailings materials	* Unacceptable rates of erosion results in landform/rehab failure; * Landform design not sympathetic to the base material characteristics and local climatic conditions; * Modelling of landform morphology and failure risk not undertaken (eg WEPP, RUSLE, SIBERIA); * Footprint limitations require steeper slopes * Not constructed to design; * Lack of inert waste rock or rock mulch(material balance)	002	Yes	* TSF1 capped will slag, TSF2 and TSF3 will be covered with inert waste rock to enhance stability and contain any potentially hazardous material.	D - Unlikely	3 - Moderate	N/A	3 - Moderate	2 - Minor	3 - Moderate	N/A	3 - Moderate	Moderate	1/ Lack of assessment/modelling to demonstrate how rock/soil final cover will perform in terms of erosion over the long-term 2/ No geotechical reports undertaken for long term closure plan only for TSF operational use. 3/ Surface flow diversion over north-eastern batter of TSF1 actively eroding	Erosion and landform design assessment, to include: * erosion material characterisation * erosion modelling (WEPP) * generation of landform design 'rules' and 3D final landform designs based on modelling Geotechnical stability assessment of TSF1 and the final landform design for TSF2 * final landform will divert surface water away from TSF 1 batter (may be able to be done via tailings beaching or waste emplacement instead of earthworks) * Lidar erosion monitoring of batters	E - Rare	2 - Minor	N/A	2 - Minor	N/A	2 - Minor	N/A	2 - Minor	Low	1/ Erosional stability of final landforms based on the materials proposed for use as final cover (waste rock mulch)	Not applicable	Erosion and landform design assessment, to include: * erosion material characterisation * erosion modelling (WEPP) * generation of landform design 'rules' and 3D final * landform designs to refined modelling. * RMP will describe fate of TSF's * Lidar monitoring of TSF1 batter to determine if long term stable and if rock mulching is required	Devon Roberts - Environmental	31-Dec-26
LANDFORM DESIGN & CONSTRUCTION																														
The reconstructed landform is not capable of supporting the nominated PMLU	* Inability to satisfy approval conditions; * Inability to achieve relinquishment; * Subsidence, tunnel erosion and/or differential settlement of rehabilitated landforms; * Re-design of existing rehabilitated landforms; unacceptable rates of erosion - landform design not sympathetic to the base material characteristics and local climatic conditions; * Modelling of landform morphology and failure risk not undertaken (eg WEPP, SIBERIA); * Failure of tailings capping and exposure of hostile material. * Landform do not the historic mining landscape fabric required for tourism use	* Landform design does not adequately consider the end land use(s); * Final landform design (eg slope and shape) does not adequately consider the intended PMLUs; * Modelling of landform morphology and failure risk not undertaken (eg WEPP, SIBERIA);	003	Yes	Landform features such as final voids and slopes are to be retained as these are consistent with the mining character of the site and are a definitive feature of the visual character of Broken Hill. Development of rehabilitation strategy, and rehabilitation managment plan (RMP) including final landform designs considerate of generic stable landforms and tourism-related PMLUs.	E - Rare	3 - Moderate	N/A	3 - Moderate	3 - Moderate	3 - Moderate	N/A	2 - Minor	Moderate	Not applicable	Not applicable	E - Rare	3 - Moderate	N/A	3 - Moderate	3 - Moderate	3 - Moderate	N/A	2 - Minor	Moderate	Not applicable	Not applicable	Not applicable	NA	NA
Acid Mine Drainage (AMD) capillary rise (upward migration of acidity and salinity) into rehabilitation profile - TSF2, TSF3	* Contamination and sterilisation of clean upper sub- and topsoil material; * Medium- and long-term failure of surface vegetation, crops or pasture (eg acidification of root zone). * Long-term contamination liability	* Disposal of PAF waste rock and tailings into TSF2 * Geochemical processes (eg ARD capillary rise); * Inadequate capping design (does not prevent capilliary rise) * No or inadequate modelling of capillary process and associated risks. * No modelling to test performance of proposed capping options to mitigate risk	004	Yes	Extensive geochemical assessments (waste rock characterisation by ERM and EMM) indicate negligible quantities of PAF material exist at-surface across the site	E - Rare	N/A	2 - Minor	3 - Moderate	2 - Minor	2 - Minor	N/A	3 - Moderate	Moderate	Not applicable	Nil	E - Rare	N/A	2 - Minor	2 - Minor	2 - Minor	2 - Minor	N/A	2 - Minor	Low	Not applicable	Not applicable	Not applicable	NA	NA
Acid Mine Drainage (AMD) - impacts on groundwater and surface water receptors	* Adverse impacts on sensitive receptors *Ongoing exceedance of water qaulity objectives post-closure *Ongoing legacy and compliance issues (financial and reputational impact)	* Disposal of PAF waste rock and tailings into TSF2 * Inadequate capping design (does not prevent seepage and AMD) * No modelling to test performance of proposed capping options to mitigate risk	005	Yes	Extensive geochemical assessments (waste rock characterisation by ERM and EMM) indicate negligible quantities of PAF material exist at-surface across the site	E - Rare	N/A	2 - Minor	3 - Moderate	2 - Minor	2 - Minor	N/A	3 - Moderate	Moderate	As per Risk # 004	As per Risk # 004	E - Rare	N/A	2 - Minor	2 - Minor	2 - Minor	2 - Minor	N/A	2 - Minor	Low	Not applicable	Not applicable	Not applicable	NA	NA
Neutral Mine Drainage (NMD) capillary rise (upward migration of heavy metals) into rehabilitation profile - TSF2,TSF3	* Contamination and sterilisation of clean inert waste rock; * Long-term contamination liability	* NMD containing metals generated from in-situ orebody and ores altered by processing (grinding and refining) when in contact with water. * Disposal of NMD waste rock and tailings into TSF2, TSF3 * Geochemical processes (capillary rise); * No or inadequate modelling of capillary process and associated risks. * Inadequate capping layer(s) or layers do not prevent capilliary rise * No modelling to test performance of proposed capping options in terms of capilliary rise and seepage	006	Yes	* capillary break including in capping design * store/release cover design * non-vegetative capping design due to climate and growing media constraints	C - Possible	N/A	N/A	3 - Moderate	2 - Minor	3 - Moderate	N/A	3 - Moderate	High	Extent of NMD material (location, quanitity) and risk is unknown. Risk of metalliferous NMD drainage to surface and groundwater receptors post-closure is unknown	Geochemical mine waste characterisation to quantify the volume and extent of NMD material on site and risks Modelling of proposed TSF capping scenarios to demonstrate performance (mitigaton of AMD capilliary rise and deleterious seepage)	E - Rare	N/A	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Extent of NMD material (location, quanitity) and is unknown. Risk of metalliferous NMD drainage to surface and groundwater receptors post-closure is unknown	Not applicable	Complete updated geochemical characterisation to quantify location and quanitity of NMD material and ability to generate metalliferious drainage. Groundwater assessment and modelling (including solute transport modelling and seepage modelling of TSF capping scenarios) Surface water assessment and modelling	Devon Roberts - Environmental	31-Dec-25
Neutral Mine Drainage (NMD) and impacts on groundwater and surface water receptors - TSF2,TSF3	* Adverse impacts on sensitive receptors *Ongoing exceedance of water qaulity objectives post-closure *Ongoing legacy and compliance issues (financial and reputational impact)	* NMD containing metals generated from in-situ orebody and ores altered by processing (grinding and refining) when in contact with water. * Disposal of NMD waste rock and tailings into TSF2, TSF3 * Geochemical processes (eg ARD capillary rise); * No or inadequate modelling of capillary process and associated risks. * Inadequate capping layer(s) or layers do not prevent capilliary rise * No modelling to test performance of proposed capping options in terms of capilliary rise and seepage	007	Yes	* capillary break including in capping design * store/release cover design * non-vegetative capping design due to climate and growing media constraints * groundwater poor quality due to mineralisation	C - Possible	N/A	2 - Minor	3 - Moderate	2 - Minor	3 - Moderate	N/A	3 - Moderate	High	Risk of metalliferous NMD drainage to surface and groundwater receptors post-closure is unknown	Groundwater modelling (inc solute transport modelling) to assess closure risk to surface- and groundwater receptors Surface water assessment and modelling to asess closure risks to surface- and groundwater receptors	C - Possible	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	As per Risk # 006	Not applicable	As per Risk # 006	Devon Roberts - Environmental	31-Dec-25
Visual amenity - final landform design does not visually integrate with the surrounding landscape and/or does meet community expectations	* Inability to satisfy approval conditions; * Community does not accept final landform design; * Inability to achieve relinquishment. * Reputational impacts	* Lack of landform character / visual impact assessment as part of landform design. * Lack of consultation with community and other stakeholders on PMLU and proposed final landform	008	Yes	Landform features such as final voids and slopes are to be retained as these are consistent with the mining character of the site and are a definitive feature of the visual character of Broken Hill.	E - Rare	N/A	N/A	N/A	3 - Moderate	1 - Insignificant	N/A	N/A	Low	Not applicable	Not applicable	E - Rare	N/A	N/A	N/A	3 - Moderate	1 - Insignificant	N/A	N/A	Low	Not applicable	Not applicable	Not applicable	NA	NA
GEOTECHNICAL STABILITY																														

Slumping and failure of TSF2 embankment/retaining wall failure	* Major costs for landform re-design/re-work; * Inability to achieve relinquishment; * tailings release (mass discharge) - harm to/loss of persons and property downstream; * Reputation impacts	* No geotechnical stability assessments (ANCOLD) to confirm long-term stability and hazard classification * Erosion of embankment slope gradient not sympathetic to the erosion and geotechnical constraints of the soil material; * insufficient or inappropriate final surface cover provide long-term erosional stability * Seismic event * inappropriate or inadequate surface water runoff drainage system causing undesired impoundment of water and/or rilling and gullying. * inappropriate or inadequate sub-surface drainage system resulting in saturation of impounded tailings and potential for liquefaction.	009	Yes	Quality assurance during construction, water drainage system to prevent water pooling, geomembrane and filter curtain to cater for any differential settlement preventing erosion and slumping. Certified engineer has inspected and confirmed embankments constructed to design. Ongoing embankment monitoring in place. Closure design provided by Golder in MOD4 and updated for MOD6. Flood management – spillway design for a probable maximum flood (generally considered to be 1 in a million probability); Environmental containment freeboard – designed to a 1:10,000 annual exceedence probability AEP), 72 hour event; Earthquake loading – seismic parameters OBE: 0.12 g, MDE/MCE: 0.2 g. Stormwater management on Embankments tied into the site stormwater management system. Inspections and seismic monitoring.	E - Rare	4 - Major	5 - Critical	4 - Major	4 - Major	4 - Major	N/A	5 - Critical	High	Not applicable	Not applicable.	D - Unlikely	3 - Moderate	1 - Insignificant	3 - Moderate	1 - Insignificant	1 - Insignificant	1 - Insignificant	3 - Moderate	Moderate	1/ Who is providing the final landform design for TSF2?	Not applicable	Final technical design of TSF2 capping to be developed and confirmed on construction	Devon Roberts - Environmental	31-Dec-25
Subsidence/differential settlement at surface above former underground mine workings	* Harm to /loss of persons and property downstream; * Inability to support targeted PMLUs and PMLU users; * Reputational impacts; * Major costs for landform re-design/re-work; * Inability to achieve relinquishment.	* No geotechnical stability assessments to confirm long-term stability; * Insufficient volume of benign waste rock and/or overburden to use as surface backfill for underground subsidence. * stopes not adequately backfilled	010	Yes	As per Risk #1 Also - * Stope backfilling with waste rock * Mitigation practices during mining phase, eg: - selected mining method (ie no block caving) - design of extraction sequences to ensure ground stresses do not exceed the capabilities of the rock mass. - Ground support and measures as outlined in the Ground Control Management Plan.	E - Rare	4 - Major	4 - Major	2 - Minor	2 - Minor	3 - Moderate	N/A	3 - Moderate	Moderate	Not applicable	Geotechnical monitoring and further geotechnical assessment at closure phase to demonstrate subsidence/differential settlement is un-changed	E - Rare	4 - Major	4 - Major	2 - Minor	2 - Minor	3 - Moderate	N/A	3 - Moderate	Moderate	Has any predictive modelling of future ground moverment (subsidence) been undertaken that has relevance to closure risk assessment?	Not applicable	RMP to refer to existing geotechnical subsidence assessments (if applicable) to demonstrate longer-term closure risk (low) as it relates to geotechnical stability of underground workings	Devon Roberts - Environmental	31-Dec-25
MATERIAL BALANCE - MINING WASTE AND OVERBURDEN																														
Location and volume of deleterious mining waste and contaminated materials is unknown	* Adverse impacts to downstream receptors (eg acid-mine drainage); *Inability to surrender mining leases	* Inadequate characterisation of mining wastes across the site (geochemical testing/analysis and volumetric survey); * Location for disposal of tailings and other contaminated materials by former operators not known * Closure material balance not accurate based on 'close now' scenario	011	Yes	* Extensive geochemical assessments (waste rock characterisation by ERM and EMM) indicate negligible quantities of PAF material exist at-surface across the site. * Limited understanding of location, quanitity and risk associated with NMD material and metalliferous mine drainage	C - Possible	3 - Moderate	N/A	3 - Moderate	1 - Insignificant	1 - Insignificant	N/A	3 - Moderate	High	Extent of NMD material (location, quanitity) and risk is unknown. Risk of metalliferous NMD drainage to surface and groundwater receptors post-closure is unknown	Geochemical mine waste characterisation to quantify the volume and extent of NMD material on site and risks Map remediation works and disposal locations detailed in NML 2000.	E - Rare	1 - Insignificant	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Extent of NMD material (location, quanitity) and associated metalliferous drainage risk is unknown. No or incomplete rehabilitation material balance for underground and aboveground rehabilitation	Not applicable	* Complete updated geochemical characterisation to quantify location and quanitity of NMD material and ability to generate metalliferious drainage. * Map remediation works and disposal locations detailed in NML 2000.	Devon Roberts - Environmental	31-Dec-26
Insufficient volume of inert waste rock to use as surface backfill for underground subsidence	* Inability to account for predicted ongoing ground settlement; * Inability to achieve nominated PMLU. * Inability to adequately backfill underground workings and mitigate subsidence/differential settlement risk	* Volume of remaining non-backfilled voids in main lode area not known * Volume of required backfill material not known (no or incomplete rehabilitation material balance for underground and aboveground rehabilitation)	012	Yes	No detailed material balance provided in MOP re: available material for stope backfilling, but MOP does infer use of material will be available (most waste rock to be returned underground).	C - Possible	3 - Moderate	3 - Moderate	3 - Moderate	1 - Insignificant	2 - Minor	3 - Moderate	3 - Moderate	High	No clear inventory of materials for rehabilitation in current MOP or 2015 MCP	BHOP to provide detailed inventory of materials to include in updated RMP (informed by final EMM geochemical assessment)	C - Possible	3 - Moderate	3 - Moderate	3 - Moderate	1 - Insignificant	2 - Minor	3 - Moderate	3 - Moderate	High	No or incomplete rehabilitation material balance for underground and aboveground rehabilitation	Volume of waste rock required to complete backfill of underground workings and surface rehabilitation (waste rock mulch) Available volume of material to use	Review mine plan for available waste material volumes and suitability of materials in accordance with the Waste Rock Management Strategy.	Kiernan McCunnie - Mine Planning	Complete
Insufficient volume of inert waste rock to use for encapsulation of deleterious wastes and/or construct target landform design	* Inability to construct adequate depth of cover above problematic mining or other wastes; * Inability to construct nominated post-mining landform design; * Unplanned cost for landform re-design or substitute materials; * Need to import rock mulch to cover angle of repose batters	* Inadequate characterisation of mining wastes across the site (geochemical testing/analysis and volumetric survey); * Random unquantified non-inert material * Closure material balance not accurate based on 'close now' scenario	013	Yes	No detailed material balance provided in MOP	C - Possible	2 - Minor	N/A	4 - Major	1 - Insignificant	3 - Moderate	N/A	4 - Major	High	No clear inventory of materials for rehabilitation in current MOP or 2015 MCP	BHOP to provide detailed inventory of materials to include in updated RMP (informed by final EMM geochemical assessment)	C - Possible	2 - Minor	N/A	4 - Major	1 - Insignificant	3 - Moderate	N/A	4 - Major	High	No or incomplete rehabilitation material balance for underground and aboveground rehabilitation	Volume of benign material to use for capping of deleterious materials (eg inert waste rock) Available volume of material to use	Review mine plan for available waste material volumes and suitability of materials in accordance with the Waste Rock Management Strategy.	Kiernan McCunnie - Mine Planning	Complete
MATERIAL BALANCE - SOIL AND GROWING MEDIA																														
Insufficient volume of native soil resource (subsoil and topsoil) to use as final cover material	* Inability to support proposed PMLUs (eg native vegetation, cropping or pasture)	* Subsoil and topsoil resources not stripped and stockpiled; * Subsoil and topsoil resources lost by previous operators	014	Yes	MOP identifies lack of soil resource (resource does not exist). Proposed establishment of waste-rock based covers on final landforms to manage erosion risks and provide surface stability	B - Likely	3 - Moderate	N/A	3 - Moderate	1 - Insignificant	3 - Moderate	N/A	3 - Moderate	Moderate	Need to identify alternate source of growth media that can be used to support vegetation, if/where required	Alternate growth media assessment (waste to soils)	D - Unlikely	3 - Moderate	N/A	3 - Moderate	1 - Insignificant	1 - Insignificant	N/A	3 - Moderate	Moderate	Unknown sources (feedstock) within greater Broken Hill area available to generate alternate growth media	Unknown what alternate growth media will be used for if final landform does not involve any revegetation?	Not applicable	NA	NA
Quality of native soil resource inadequate to support biodiversity PMLU	* Inability to support proposed PMLUs (eg native vegetation, cropping or pasture); * Unplanned costs to import/apply alternative growing media; * Extended closure time and cost to achieve performance targets.	* Subsoil and topsoil resources not stripped and stockpiled; * Subsoil and topsoil resources lost by previous operators * No trials undertaken into alternative growth media and techniques.	015	Yes	MOP identifies lack of soil resource (resource does not exist)	D - Unlikely	3 - Moderate	N/A	3 - Moderate	1 - Insignificant	3 - Moderate	N/A	3 - Moderate	Moderate	Not applicable	Not applicable	D - Unlikely	2 - Minor	N/A	3 - Moderate	1 - Insignificant	3 - Moderate	N/A	3 - Moderate	Moderate	Not applicable	Not applicable	Not applicable	NA	NA
REVEGETATION																														
Inability to re-establish target plant community types (PCTs)	* Inability to satisfy approval conditions; * Inability to achieve relinquishment; * Unplanned rehabilitation/closure liability; * Unplanned, undesired change of end land use;	* Drought/climate change; * No available growth media ; * Lack of suitable seed resources	016	No	MOP identifies lack of soil resource (resource does not exist) - rehabilitation of native vegetation is not possible or proposed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not applicable	Not applicable	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not applicable	Not applicable	Not applicable	NA	NA
PUBLIC HEALTH AND SAFETY																														
Retained historical heritage - buildings/structures structurally unsound	* Harm/fatality to member of public	* Historical heritage structures not assessed for structural stability as part of closure planning * Unsafe/at-risk structures not removed * Unsafe/at-risk structures not barricaded to prevent public access	017	Yes	Final agreed end of mine life status for heritage buildings. Delapidation surveys Fencing of areas where access needs to be controlled.	E - Rare	2 - Minor	2 - Minor	N/A	3 - Moderate	3 - Moderate	2 - Minor	2 - Minor	Moderate	Not applicable	Not applicable	E - Rare	1 - Insignificant	1 - Insignificant	N/A	2 - Minor	2 - Minor	2 - Minor	1 - Insignificant	Low	Not applicable	Not applicable	Not applicable	NA	NA
Dust emissions from final landforms (lead dust)	Impacts on public (eg urban areas and site tourists), including: * Nuisance dust deposition * Exposure to lead dust	* Lack of vegetative cover on final landforms * Lack of alternative ground cover to minimise wind erosion	018	Yes	Placement of inert waste rock over areas, including areas around infrastructure, roads and other mining affected areas and 'free areas' that have potential for dust generation. Cover TSF2, TSF3 with suitable waste rockto enhance stability and suitably contain any potentially hazardous material minimising dust generation.	D - Unlikely	N/A	2 - Minor	2 - Minor	2 - Minor	2 - Minor	N/A	2 - Minor	Low	Capping with waste rock expected to be an effective control. Utilised by BHELP for stabilisation of community spaces.	Confirm effectiveness of rock mulch cover on final landforms to also mitigate water erosion	E - Rare	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Not applicable	Not applicable	Monitor effectiveness of rock mulch cover on final landforms to also mitigate water erosion	Devon Roberts - Environmental	Ongoing
Final landforms not safe and stable - harm or fatality to member of public	Harm or fatality to member of public	* geotechnical failure of final landforms (mass movement) * Geotechnical mass movement (subsidence/differential settlement) * Lack of fencing or other means to restrict access to at-risk areas	019	Yes	* pits to be back filled or partially backfilled - Little Kintore, Blackwoods, BHP * crest bunds installed where required on pits and dumps * stability assessments by in house geotechnical resources	B - Likely	4 - Major	1 - Insignificant	3 - Moderate	N/A	3 - Moderate	N/A	4 - Major	High	1/ Current MOP notes historic landforms (eg final voids and slopes) will be retained per historic mining character - no mention made of assessment for geotechnical stability and safety (this is only proposed for BHOP-generated landforms). 2/ MOP refers to re-shaping to achieve long-term stability but this seems focussed in geotechnical stability, with no consideration of erosional stability	Erosion and landform design assessment, to include: * erosion material characterisation * erosion modelling (WEPP) * generation of landform design 'rules' and 3D final landform designs based on modelling	E - Rare	2 - Minor	1 - Insignificant	2 - Minor	N/A	1 - Insignificant	N/A	1 - Insignificant	Low	Not applicable	Not applicable	Not applicable	NA	NA
Safety of retained final voids - harm or fatality to member of public	* Deliberate or inadvertent access to pit crests - slips/falls	* Lack of fencing, bunding or other means to restrict access to unsafe areas	020	Yes	* pits to be back filled or partially backfilled - Little Kintore, Blackwoods, BHP * crest bunds installed where required on pits and dumps * stability assessments by in house geotechnical resources	E - Rare	4 - Major	4 - Major	N/A	3 - Moderate	3 - Moderate	N/A	4 - Major	Moderate	Not applicable	Not applicable	E - Rare	4 - Major	4 - Major	N/A	3 - Moderate	3 - Moderate	N/A	4 - Major	Moderate	Not applicable	Not applicable	Not applicable	NA	NA

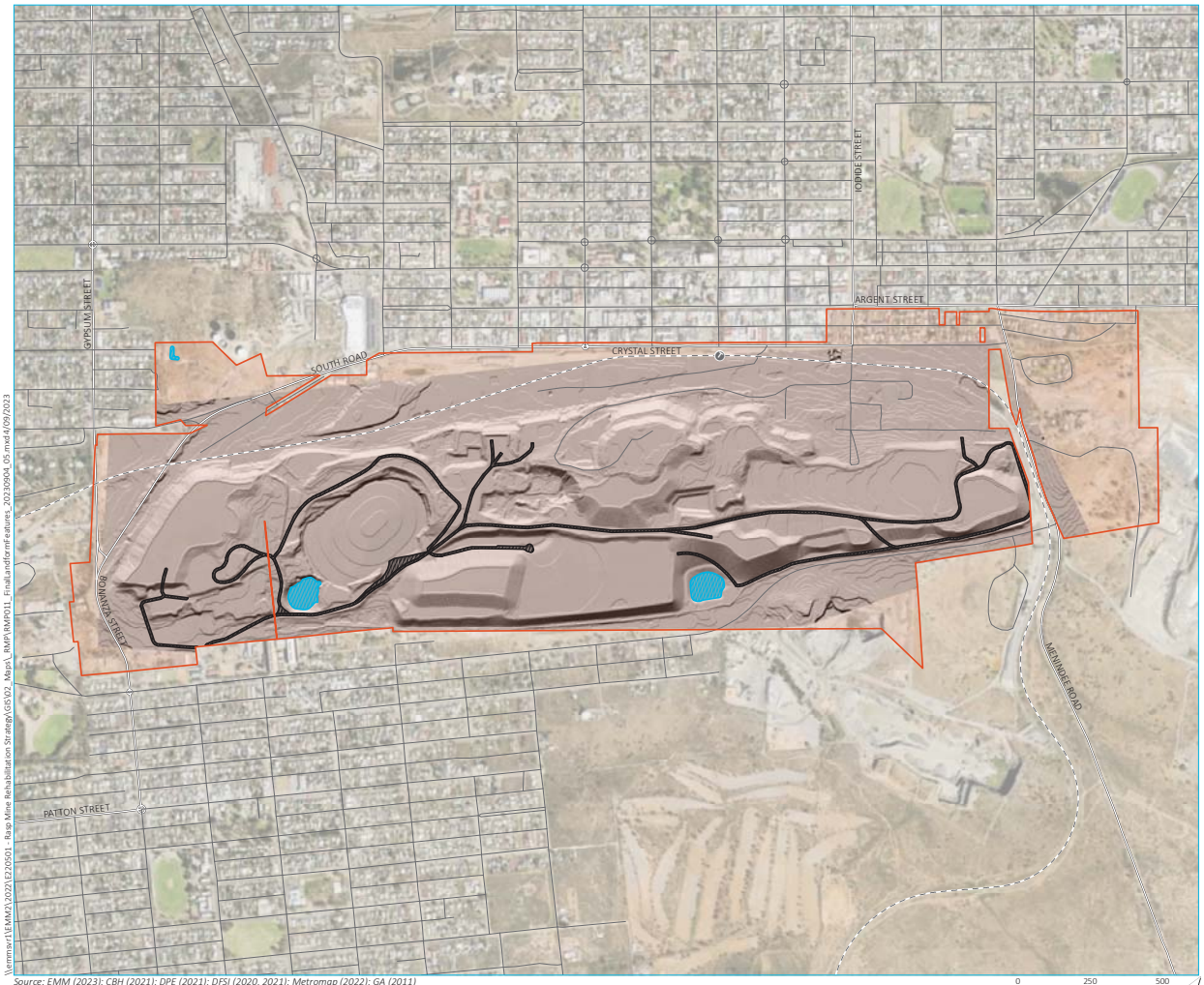
Safety of former underground workings - harm or fatality to member of public	* Deliberate or inadvertent access to shafts and portals by members of the public	* Lack of fencing or other means to restrict access	021	Yes	Sealing of all mine entries in accordance with State Government requirements Areas fenced to control access to unsafe areas. Documented Infrastructure Safety Plan.	E - Rare	4 - Major	4 - Major	N/A	3 - Moderate	3 - Moderate	N/A	4 - Major	Moderate	Not applicable	* map location of backfilled, capped, fenced shafts as detailed in NML 2000	E - Rare	4 - Major	4 - Major	N/A	3 - Moderate	3 - Moderate	N/A	4 - Major	Moderate	Not applicable	Not applicable	Not applicable	NA	NA
SURFACE WATER																														
The pre-project catchment hydrology cannot be reinstated	* Catchment and sub-catchment flows are permanently altered as a result of final landform changes; affecting downstream users and sensitive receptors; * Inability to satisfy approval conditions; * Inability to achieve relinquishment; * Final landforms permanently alter catchment and sub-catchment flows (ie. final landform designs do not consider pre-mining catchment hydrology); * Final landforms deliberately alter original catchments in order to manage other risks (eg final voids, permanent flood levees etc); * Adjoining land use changes not considered (cumulative impacts); * Inadequate staging plans - final hydrology not realised.	* Final landform design(s) do not integrate with, or do not adequately integrate with, site- and/or local hydrology (eg drainage lines, creeks etc)	022	Yes	Determine stormwater management requirements. Review current water storage structures and water flows and determine how water is to be redirected to pits and final water structures. Design final shape and drainage.	E - Rare	2 - Minor	N/A	2 - Minor	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options. **Site is highly modified and spatially constrained which limits ability for significant re-shaping to tie final landform into surrounding drainage lines. Likewise, site to be rehabilitated to a historical heritage PMLU which means most existing mining landforms will remain as they currently exist.** **Site generated runoff will have to be retained on-site and disposed underground.**	Closure surface water assessment to cover: * flooding/hydrology risks of final landforms * applicable surface water WQOs * integrated SW/GW assessment to address options for long-term SW disposal to underground workings	E - Rare	1 - Insignificant	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Not applicable	SW assessment to be undertaken	Devon Roberts - Environmental	31-Dec-25
Ongoing impact on water quality in creeks and drainage lines downstream of rehabilitated areas	* Erosion and sediment runoff from rehabilitated areas; * Adverse impacts to downstream users and sensitive receptors (cumulative impacts); * Inability to satisfy approval conditions; * Inability to achieve relinquishment;	* Instability and erosion of rehabilitated landforms. * Major storm event. • Water management measures do not perform to plan. • Implemented solutions do not eliminate pollution. * Lack of knowledge of seepage issues. • Site is space constrained.	023	Yes	Removal of dirty water storages and associated contaminated material and dispose in underground voids and / or TSF2/TSF3 is completed. TSF2/TSF3 surface and shape, installation of control runoff areas where required (eg rock lined drains) to reduce likelihood of potential erosion. Structures to be non-eroding Rain water runoff quality meets agreed guidelines. Development of water management plan for closure Engage water specialist to design post mine water management - Water Closure Management Plan. Determine appropriate slopes to achieve required drainage (direction). Appropriate consideration to rainfall runoff in slope design.	D - Unlikely	3 - Moderate	3 - Moderate	3 - Moderate	3 - Moderate	3 - Moderate	N/A	3 - Moderate	Moderate	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Closure surface water assessment to cover: * flooding/hydrology risks of final landforms * applicable surface water WQOs * integrated SW/GW assessment to address options for long-term SW disposal to underground workings * final landform design to maximise internal diversion of surface flows to evaporation ponds where possible	E - Rare	1 - Insignificant	1 - Insignificant	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Not applicable	SW assessment to be undertaken	Devon Roberts - Environmental	31-Dec-25
Flood events result in damage to or loss of rehabilitated ground	* Unplanned rehabilitation/closure liability; * Inability to achieve relinquishment, or delays to relinquishment.	* Inadequate or no flood modelling;	024	Yes	Determine stormwater management requirements. Review current water storage structures and water flows and determine how water is to be redirected to pits and final water structures. Design final shape and drainage. Rock mulch armouring of final landforms and surfaces	E - Rare	2 - Minor	N/A	2 - Minor	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Closure surface water assessment to cover: * flooding/hydrology risks of final landforms * applicable surface water WQOs * integrated SW/GW assessment to address options for long-term SW disposal to underground workings	E - Rare	1 - Insignificant	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Not applicable	SW assessment to be undertaken	Devon Roberts - Environmental	31-Dec-25
Water quality in retained water management structures not suitable to support PMLUs	* Unplanned rehabilitation/closure liability;	* Residual contaminated material in ponds and drains - not identified and removed during rehabilitation phase; * Ongoing sediment / contaminant inflows - inadequate erosion and sediment control system.	025	Yes	Determine stormwater management requirements. Review current water storage structures and water flows and determine how water is to be redirected to pits and final water structures. Design final shape and drainage. Removal of dirty water storages and associated contaminated material and dispose in underground voids and / or TSF2, TSF3 is completed.	E - Rare	3 - Moderate	2 - Minor	3 - Moderate	2 - Minor	2 - Minor	2 - Minor	3 - Moderate	Moderate	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Closure surface water assessment to cover: * flooding/hydrology risks of final landforms * applicable surface water WQOs * integrated SW/GW assessment to address options for long-term SW disposal to underground workings	E - Rare	1 - Insignificant	N/A	1 - Insignificant	1 - Insignificant	1 - Insignificant	N/A	1 - Insignificant	Low	Lack of detailed mine closure SW assessment addressing flooding, water quality objectives (WQOs) and long-term water management disposal options.	Not applicable	SW assessment to be undertaken	Devon Roberts - Environmental	31-Dec-25
GROUNDWATER - LEVEL AND QUALITY																														
Groundwater levels do not return to regional levels (due to mounding) and adversely impacts future beneficial uses	* Altered groundwater flow regimes; * Undesired GW expression at surface down-gradient of site	* Tails water seepage causing groundwater mounding * Underground disposal (pump back) of surface water to manage SW risks	026	Yes	* GW generally very deep (≥100m depth) * Evaporation exceeds rainfall * groundwater data available * existing quality is low (saline, metals)	E - Rare	N/A	N/A	1 - Insignificant	N/A	N/A	N/A	1 - Insignificant	Low	No numerical (predictive) groundwater model exists for the site that can be used to assess long-term risks to groundwater receptors post-closure	Groundwater assssment and modelling to address: * predicted groundwater recovery post-mining (inc,. Consideration of water disposal in underground workings) * predicted groundwater quality post-mining * seepage modelling of final landform capping options (eg final cover on TSF2 and capacity to mitigate metalliferous drainage risks)	E - Rare	N/A	N/A	1 - Insignificant	N/A	N/A	N/A	1 - Insignificant	Low	Lack of detailed mine closure GW assessment addressing groundwater levels and quality post-mining, and long-term seepage risks and performance of final covers on relevant landforms (eg TSF2)	Mine closure groundwater assessment and modelling for Rasp will need to consider groundwater affecting activities for the adjoining Perilya mine (ie take, plans for deep disposal etc). EMM scope and budget does not consider this.	Groundwater assssment and modelling to address: * predicted groundwater recovery post-mining (inc,. Consideration of water disposal in underground workings) * predicted groundwater quality post-mining * seepage modelling of final landform capping options (eg final cover on TSF2)	Devon Roberts - Environmental	31-Dec-25
Groundwater levels do not return to regional levels (due to drawdown during mining) and adversely impacts future beneficial uses	* Groundwater accessibility by third-party users is adversely affected as a result of groundwater drawdown additional licensing and cost impacts;	* Lack of groundwater drawdown modelling/prediction - over-extraction of groundwater during mining phase; * Unintentional exceedance of abstraction limits in water licences or permits;	027	Yes	* GW generally very deep (≥100m depth) * Evaporation exceeds rainfall * groundwater data available * existing quality is low (saline, metals)	E - Rare	N/A	N/A	1 - Insignificant	N/A	N/A	N/A	1 - Insignificant	Low	No numerical (predictive) groundwater model exists for the site that can be used to assess long-term risks to groundwater receptors post-closure	Groundwater assssment and modelling to address: * predicted groundwater recovery post-mining (inc,. Consideration of water disposal in underground workings) * predicted groundwater quality post-mining * seepage modelling of final landform capping options (eg final cover on TSF2 and capacity to mitigate metalliferous drainage risks)	E - Rare	N/A	N/A	1 - Insignificant	N/A	N/A	N/A	1 - Insignificant	Low	Lack of detailed mine closure GW assessment addressing groundwater levels and quality post-mining, and long-term seepage risks and performance of final covers on relevant landforms (eg TSF2)	Mine closure groundwater assessment and modelling for Rasp will need to consider groundwater affecting activities for the adjoining Perilya mine (ie take, plans for deep disposal etc). EMM scope and budget does not consider this.	Groundwater assssment and modelling to address: * predicted groundwater recovery post-mining (inc,. Consideration of water disposal in underground workings) * predicted groundwater quality post-mining * seepage modelling of final landform capping options (eg final cover on TSF2)	Devon Roberts - Environmental	31-Dec-25
Deleterious mine seepage/drainage into local aquifer and migration to groundwater and surface water receptors	* Adverse impacts to groundwater beneficial uses / GDEs er post-closure; * Groundwater contamination prevents future potential beneficial use(s).	* No or inadequate geocehmical characterisation of mining wastes (eg waste rock, overburden, tailings etc) * Inadequate placement and/or encapsulation of deleterious material within the final landform; * No or inadequate final cover/capping of deleterious material * No hydrogeological or geochemical investigations and modelling; * Leakage from existing storages eg S22;	028	Yes	Extensive geochemical assessments (waste rock characterisation by ERM and EMM) indicate negligible quantities of PAF material exist at-surface across the site. Limited understanding of location, quanitity and risk associated with NMD material and metalliferous mine drainage No controls currently proposed re: long-term management of material generating metalliferous drainage. Existing studis indicate GW migration is into the mine due to long-term extraction/draw-down	D - Unlikely	2 - Minor	N/A	2 - Minor	2 - Minor	2 - Minor	N/A	2 - Minor	Low	Extent of NMD material (location, quanitity) and risk is unknown. Risk of metalliferous NMD drainage to surface and groundwater receptors post-closure is unknown	Geochemical mine waste characterisation to quantify the volume and extent of NMD material on site and risks Development of capping scenarios for long-term encapsulation of deleterious materials and validation of capping performance through seepage modelling	E - Rare	2 - Minor	N/A	2 - Minor	1 - Insignificant	1 - Insignificant	N/A	2 - Minor	Low	Lack of detailed mine closure GW assessment addressing groundwater levels and quality post-mining, and long-term seepage risks and performance of final covers on relevant landforms (eg TSF2) Extent of NMD material (location, quanitity) and associated metalliferous drainage risk is unknown. No or incomplete rehabilitation material balance for underground and aboveground rehabilitation	Mine closure groundwater assessment and modelling for Rasp will need to consider groundwater affecting activities for the adjoining Perilya mine (ie take, plans for deep disposal etc). EMM scope and budget does not consider this.	Complete updated geochemical characterisation to quantify location and quanitity of NMD material and ability to generate metalliferous drainage. Groundwater assessment and modelling (including solute transport modelling and seepage modelling of TSF capping scenarios) Surface water assessment and modelling	Devon Roberts - Environmental	31-Dec-25
Seepage from the tailings facilities or other storages to groundwater resulting in contamination (eg salinity, heavy metals)	* Adverse impacts to groundwater beneficial uses post-closure; * Groundwater contamination prevents future potential beneficial use(s).	* No hydrogeological or geochemical investigations and modelling; * Impacts on beneficial uses not assessed; * surface expression of groundwater associated with the tailings dams or other water storages eg S22 has previously occurred *	029	Yes	* GW generally very deep (≥100m depth) * Evaporation exceeds rainfall * groundwater data available * existing quality is low (saline, metals)	D - Unlikely	2 - Minor	N/A	2 - Minor	2 - Minor	2 - Minor	N/A	2 - Minor	Low	No numerical (predictive) groundwater model exists for the site that can be used to assess long-term risks to groundwater receptors post-closure	Groundwater assssment and modelling to address: * predicted groundwater recovery post-mining (inc,. Consideration of water disposal in underground workings) * predicted groundwater quality post-mining * seepage modelling of final landform capping options (eg final cover on TSF2, TSF3 and capacity to mitigate metalliferous drainage risks)	D - Unlikely	3 - Moderate	N/A	3 - Moderate	2 - Minor	2 - Minor	N/A	3 - Moderate	Moderate	Lack of detailed mine closure GW assessment addressing groundwater levels and quality post-mining, and long-term seepage risks and performance of final covers on relevant landforms (eg TSF2, TSF 3)	Mine closure groundwater assessment and modelling for Rasp will need to consider groundwater affecting activities for the adjoining Perilya mine (ie take, plans for deep disposal etc). EMM scope and budget does not consider this.	Groundwater assssment and modelling to address: * predicted groundwater recovery post-mining (inc,. Consideration of water disposal in underground workings) * predicted groundwater quality post-mining * seepage modelling of final landform capping options (eg final cover on TSF2, TSF3)	Devon Roberts - Environmental	31-Dec-25
HERITAGE																														
Heritage items not reinstated and protected at closure	* Non-compliance with statutory obligations; * Reputational impact.	* Inadequate record keeping * Inadequate maintenance * Accidental damage to heritage items	031	No	* Protection works undertaken by formers operators * Items donated to LOLA and museums by former operators * Conservation management plans and conservation management strategies prepared and implemented	C - Possible	2 - Minor	2 - Minor	N/A	3 - Moderate	3 - Moderate	N/A	2 - Minor	High	1/ Existing CMP (circa 2013) is outdated. 2/ Ongoing lack of direction from regulatory agency panel on site rehabilitation and heritage-related PMLUs 3/ Unclear who is proposed to 'take on' retained heritage structures post-mining	1/ Updated CMP (inc. heritage register) requried - needs to identify what structures will be retained, to inform rehabilitation strategy (tourism PMLU) 2/ Consult with government agency panel and propose a 'base case' to include in RMP, and seek their feedback	D - Unlikely	2 - Minor	2 - Minor	N/A	3 - Moderate	3 - Moderate	N/A	2 - Minor	Moderate	Who will take on retained heritage items/structures post-closure (as part of relinquishment)?	Not applicable	Ongoing dialogue with stakeholders, CMP is being updated	Devon Roberts - Environmental	Ongoing

Heritage structures removed/destroyed, or retained heritage structures not maintained	* Non-compliance with historical heritage legislation * Reputational impact * Inability to achieve/support heritage-related PMLU	* No entity willing to take on the site assets/liability in particular due to maintenance costs * No legal mechanism for handing over responsibility * Unknown management requirements for heritage sites – demolition, dismantling, dilapidation surveys, retention. * Lack of knowledge of heritage obligations for the site	032	Yes	* Conservation Management Plan, including heritage sites register	C - Possible	2 - Minor	2 - Minor	N/A	3 - Moderate	3 - Moderate	N/A	2 - Minor	High	1/ Existing CMP (circa 2013) is outdated. 2/ Ongoing lack of direction from regulatory agency panel on site rehabilitation and heritage-related PMLUs 3/ Unclear who is proposed to 'take on' retained heritage structures post-mining	1/ Updated CMP (inc. heritage register) requried - needs to identify what structures will be retained, to inform rehabilitation strategy (tourism PMLU) 2/ Consult with government agency panel and propose a 'base case' to include in RMP, and seek their feedback	D - Unlikely	2 - Minor	2 - Minor	N/A	3 - Moderate	3 - Moderate	N/A	2 - Minor	Moderate	Who will take on retained heritage structures post-closure (as part of relinquishment)?	Not applicable	Ongoing dialogue with stakeholders, CMP is being updated	Devon Roberts - Environmental	Ongoing
INFRASTRUCTURE																														
Retained infrastructure is inconsistent/incompatible with the intended final land use	* Unplanned cost to remove; * Unplanned rehabilitation/closure liability; * Inability to achieve relinquishment.	* Landform designs do not consider retained infrastructure; * Mine plans and closure plans do not consider retained infrastructure and land use compatibility; * Landowner/land manager/R&R agreement not obtained on infrastructure to be retained; * Formal landowner agreement not obtained regarding infrastructure to be retained; * Landowner does not accept the final condition of retained infrastructure at point of closure.	033	Yes	* Conservation Management Plan, including heritage sites register Relevant heritage structures to be retained post-mining to support proposed mine hertage related PMLU	D - Unlikely	4 - Major	N/A	N/A	3 - Moderate	3 - Moderate	N/A	N/A	High	1/ Existing CMP (circa 2013) is outdated. 2/ Ongoing lack of direction from regulatory agency panel on site rehabilitation and heritage-related PMLUs 3/ Unclear who is proposed to 'take on' retained heritage structures post-mining	1/ Updated CMP (inc. heritage register) requried - needs to identify what structures will be retained, to inform rehabilitation strategy (tourism PMLU) 2/ Consult with government agency panel and propose a 'base case' to include in RMP, and seek their feedback	E - Rare	2 - Minor	N/A	N/A	3 - Moderate	2 - Minor	N/A	N/A	Moderate	**Who will take on retained heritage structures post-closure (as part of relinquishment)?** **Which structures will remain to support heritage PMLU?**	Not applicable	Ongoing dialogue with stakeholders, CMP is being updated	Devon Roberts - Environmental	Ongoing
SITE CONTAMINATION																														
Residual site contamination not removed/remediated prior to mine closure	* Contamination prevents or limits the intended final land use; * Non-compliance with environmental protection legislation, policies and NEPM for site contamination; * Residual contamination results in surface water or groundwater contamination; * Unexpected cost to manage/treat contaminated material; * Delays to closure and relinquishment; * Unplanned rehabilitation/closure liability.	* Types and locations of known and potential site contamination not identified, tested and removed/remediated prior to mine closure; * Hostile tailings material, PAF, rejects material etc not appropriately disposed at depth/capped as part of mine planning and landform construction/reinstatement; * No or inadequate remediation;	034	Yes	MOP (pg 103) - Inspection and removal of contamination associated with BHOP mining activities	D - Unlikely	4 - Major	2 - Minor	3 - Moderate	3 - Moderate	3 - Moderate	N/A	3 - Moderate	High	Not applicable	Post-excavation validation sampling program to confirm all validated material has been removed	D - Unlikely	3 - Moderate	2 - Minor	3 - Moderate	3 - Moderate	3 - Moderate	N/A	3 - Moderate	Moderate	Not applicable	Not applicable	Not applicable	NA	NA
CLIMATE CHANGE																														
Droughts and climate change	* Delays to rehabilitation establishment; * Loss of establishing rehabilitation (native vegetation, crops and pasture); * Unplanned rehabilitation/closure liability; * Inability to achieve, or delays to, mine relinquishment.	* Revegetation is not mature / resilient to extended dry conditions; * Lack of watering/irrigation programs (rehabilitation maintenance) during establishment phase resulting; * over-watering impedes hardening of reveg; * Inadequate soil/growth media preparation.	035	No	MOP identifies lack of soil resource (resource does not exist) - rehabilitation of native vegetation is not possible or proposed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not applicable	Not applicable	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not applicable	Not applicable	Not applicable	NA	NA

Appendix C

Landforms and rehabilitation plans

EMM
creating opportunities



Final landform features (Plan 1)

Rasp Mine
Rehabilitation Management Plan
Appendix C.1

EMM
creating opportunities

KEY

- MINERALS - CURRENT TITLES
- Train station
- Rail line
- Major road
- Minor road
- 1 m contour interval

Final land use domain

- Final void
- Heritage area
- Industrial
- Infrastructure
- Other
- Water management area

Source: EMM (2022); CBH (2021); DPE (2021); DFSI (2020, 2021); Metromap (2022); GA (2011)

0 250 500 m

GDA2020 MGA Zone 54

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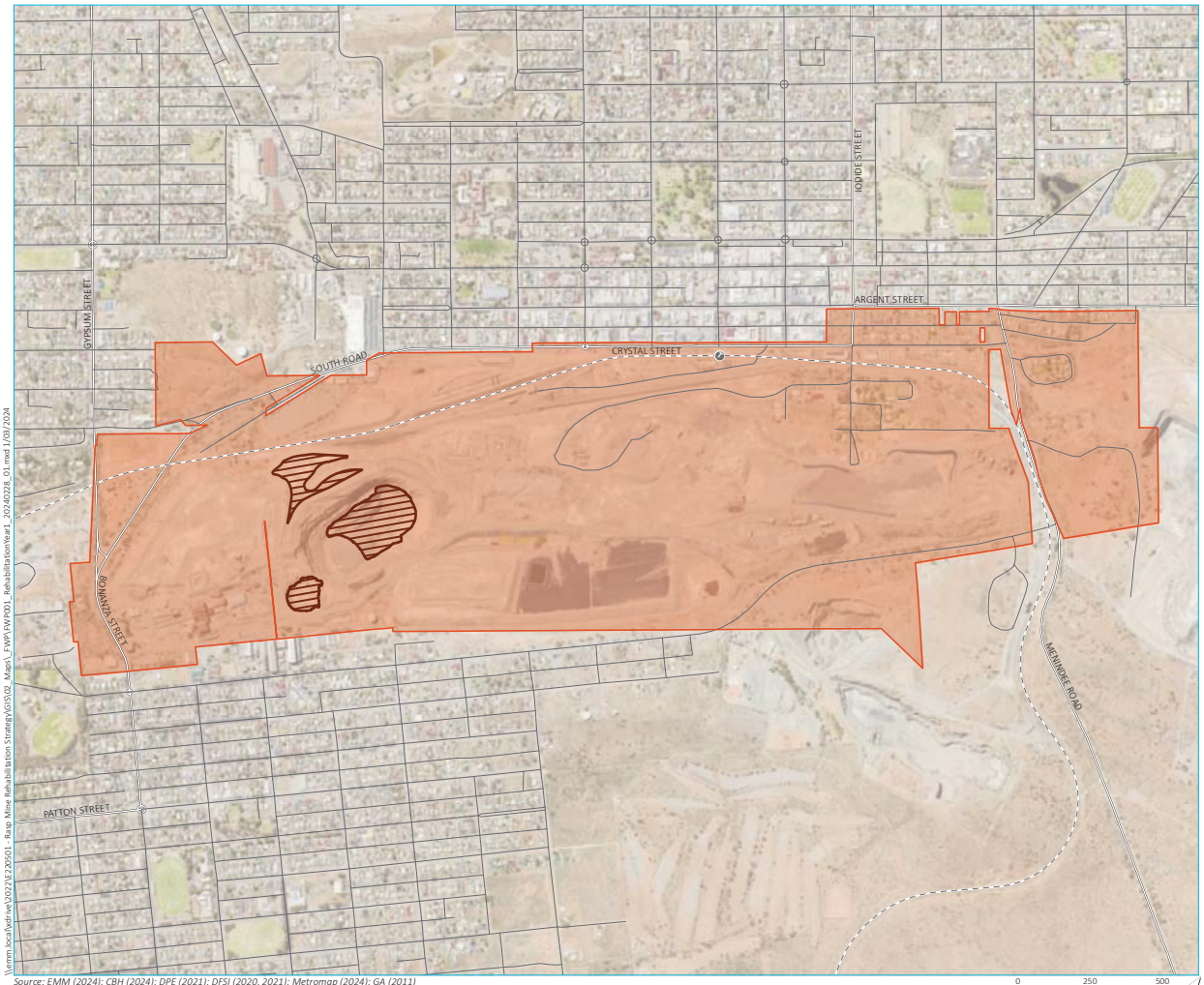
Final landform contours (Plan 2)

Rasp Mine
Rehabilitation Management Plan
Appendix C.2

EMM
creating opportunities



KEY

- MINERALS - CURRENT TITLES
- Forecast land prepared for rehabilitation

Existing environment

- Train station
- Rail line
- Major road
- Minor road

Source: EMM (2024); CBH (2024); DPE (2021); DFSI (2020, 2021); Metromap (2024); GA (2011)

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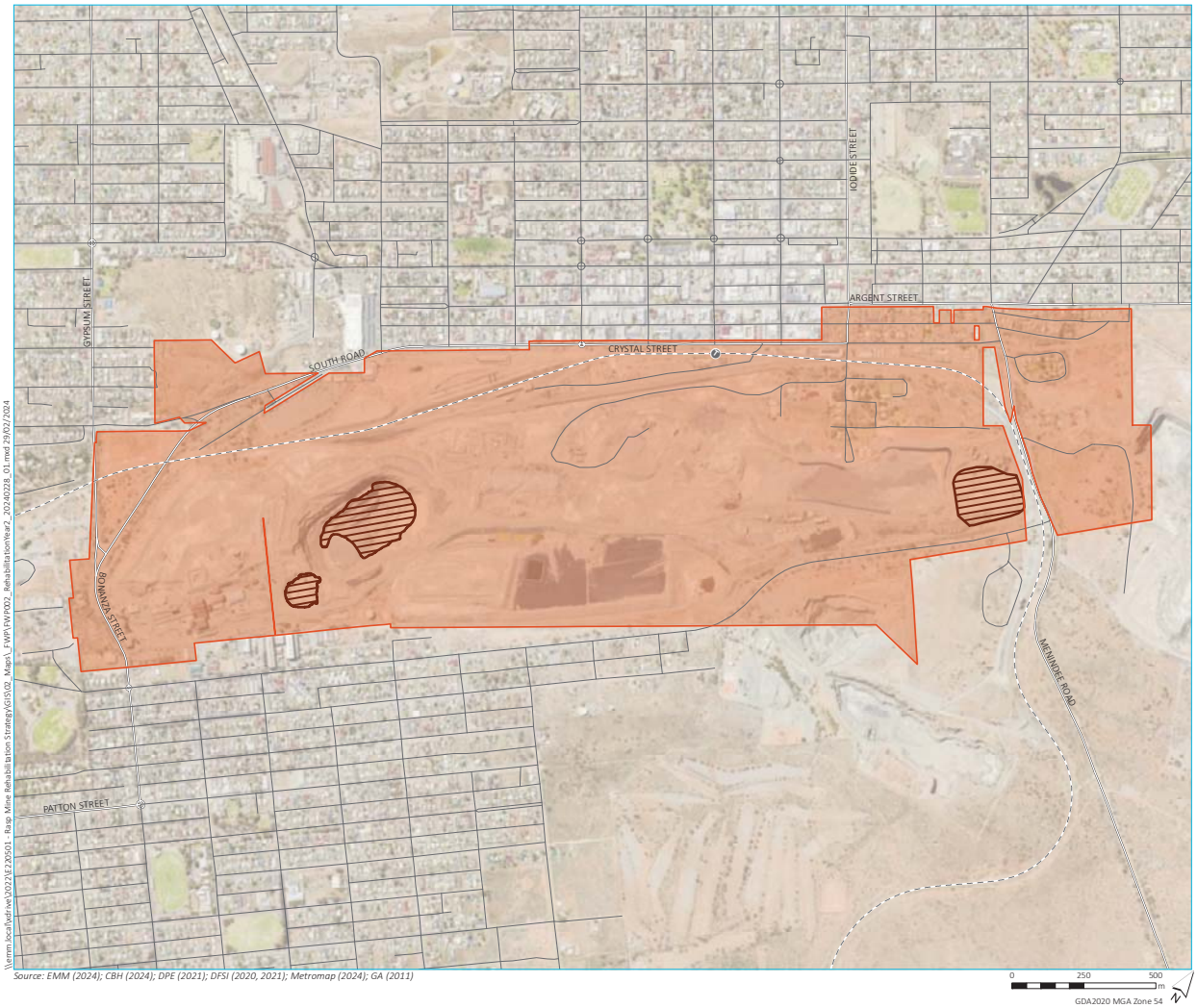
Mining and Rehabilitation – Year 1

Rasp Mine
Forward Program

EMM
creating opportunities



KEY

- MINERALS - CURRENT TITLES
- Forecast land prepared for rehabilitation

Existing environment

- Train station
- Rail line
- Major road
- Minor road

Source: EMM (2024); CBH (2024); DPE (2021); DFSI (2020, 2021); Metromap (2024); GA (2011)

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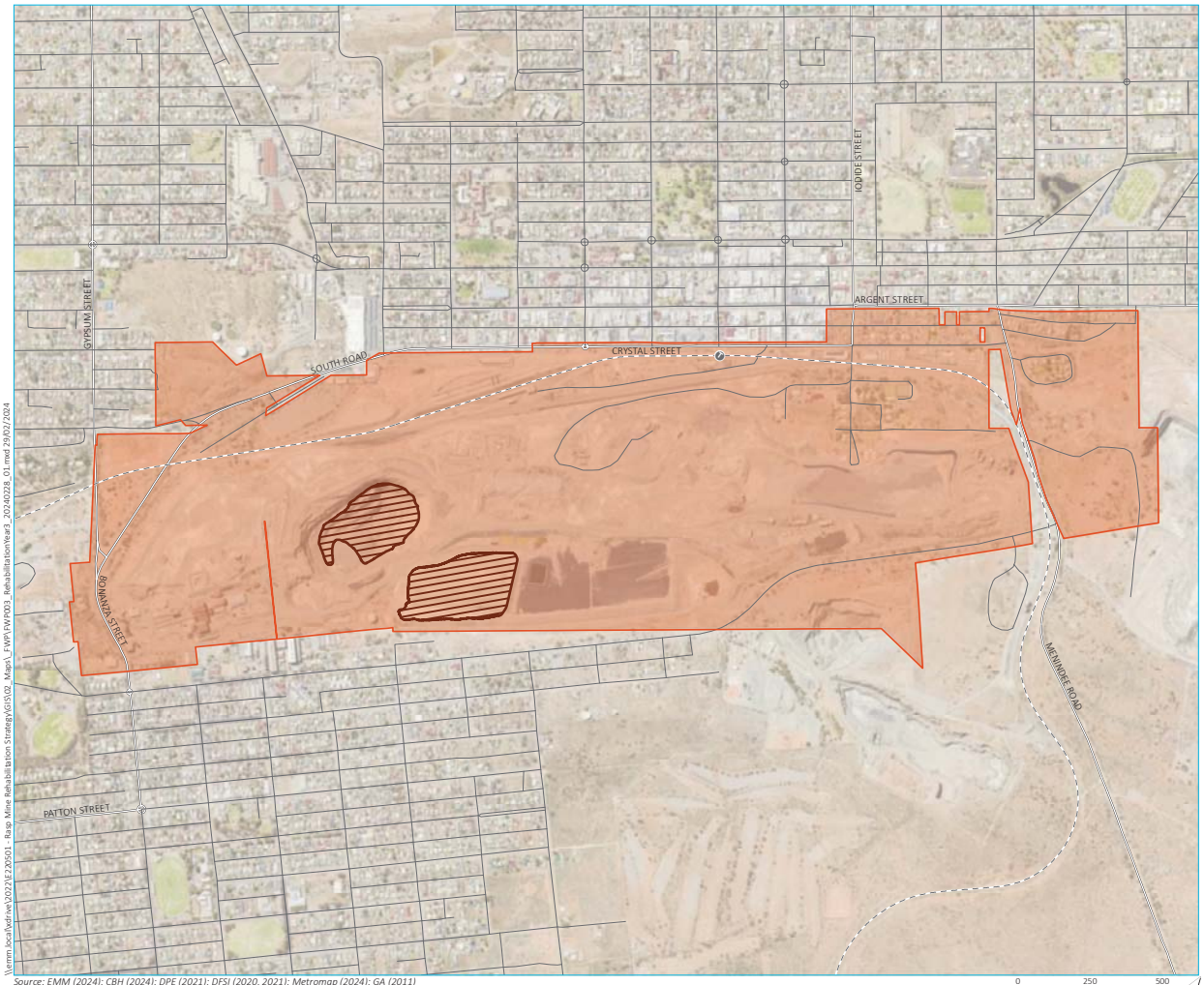
Mining and Rehabilitation – Year 2

Rasp Mine
Forward Program

EMM
creating opportunities



KEY

- MINERALS - CURRENT TITLES
- Forecast land prepared for rehabilitation

Existing environment

- Train station
- Rail line
- Major road
- Minor road

Source: EMM (2024); CBH (2024); DPE (2021); DFSI (2020, 2021); Metromap (2024); GA (2011)

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Mining and Rehabilitation – Year 3

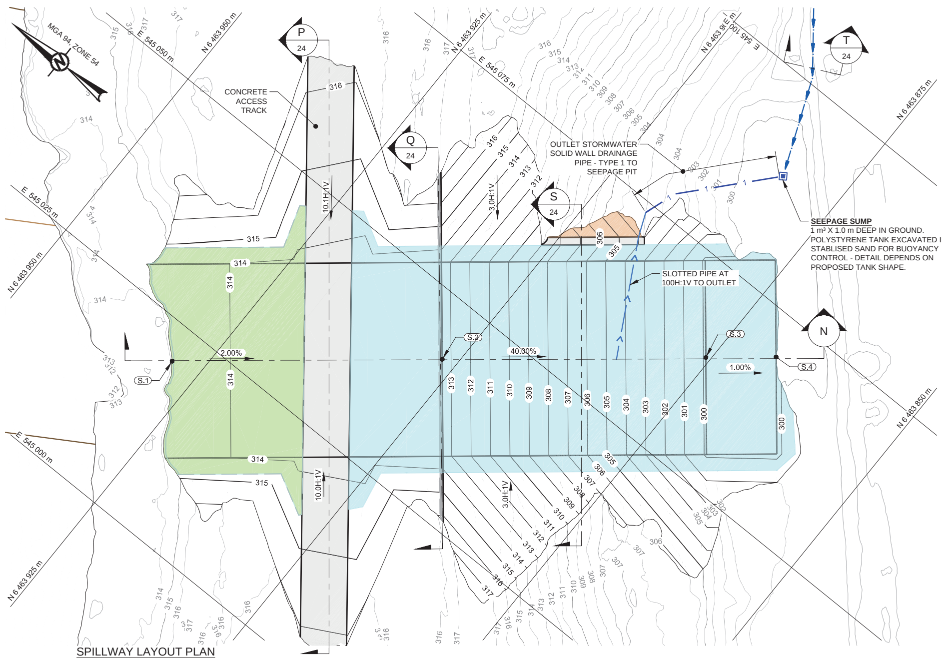
Rasp Mine
Forward Program

EMM
creating opportunities

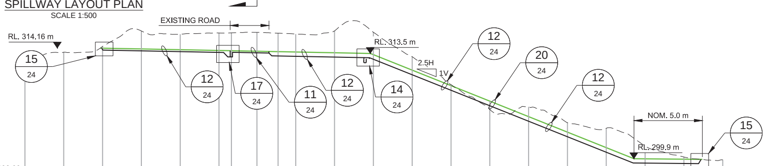
Appendix D
Stormwater spillway designs

EMM
creating opportunities

D.1 Blackwood Pit TSF spillway design



SPILLWAY LAYOUT PLAN
SCALE 1:500



GRADE			2% SPILLWAY										40% CHUTE							1% APRON	
SPILLWAY INVERT			314.14	314.04	313.94	313.84	313.81	313.75	313.69	313.65	313.55	313.30	311.30	309.30	307.30	305.30	303.30	301.30	299.86	299.81	
EXISTING GROUND	310.76	313.62	314.37	316.37	315.94	316.10	316.12	316.18	316.08	315.97	316.37	316.19	313.04	309.44	306.22	306.57	304.53	303.80	301.53	300.10	299.74
CHAINAGE	0.00	5.00	10.00	15.00	20.00	25.00	16.71	20.00	22.72	25.00	30.00	35.00	40.00	45.00	50.00	55.00	60.00	65.00	70.00	75.00	89.88

SCALE 1:500 N SPILLWAY LONG SECTION

LEGEND

- EXISTING CONTOURS AT 1 m INTERVALS
- SPILLWAY CONTOURS AT 1 m INTERVALS
- EXTENT OF RIPRAP - TYPE A
- EXTENT OF RIPRAP - TYPE B
- DOWNSTREAM SLOPE OF SPILLWAY EDGE BUND
- PROPOSED SLOTTED DRAINAGE PIPE
- PROPOSED SOLID WALL DRAINAGE PIPE - TYPE 1
- PROPOSED STORMATER DRAIN
- SEEPAGE SUMP

NOTE(S)

1. REFER TO DRAWING 1 - COVER SHEET FOR GENERAL NOTES AND REFERENCES.
2. TYPICAL BATTER SLOPES AT SPILLWAY CREST TO BE NO STEEPER THAN 3H:1V. 10H:1V BATTER APPLIES TO REINSTATEMENT OF EXISTING ROAD ALIGNMENT THROUGH THE PROPOSED SPILLWAY ONLY.

SPILLWAY ALIGNMENT SETOUT TABLE

POINT No.	EASTING (m)	NORTHING (m)	ELEVATION (RL)
S.1	545020.47	6463928.71	314.15
S.2	545042.54	6463901.83	313.45
S.3	545064.08	6463875.59	299.87
S.4	545069.82	6463868.61	299.78

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APPROVAL

0 10 20
1:500 METRES

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
A	2017-08-13	ISSUED FOR APPROVAL	FWG	PB	GRP	FWG

CLIENT
BROKEN HILL OPERATIONS PTY LTD

CONSULTANT
GOLDER

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PROJECT
BLACKWOOD PIT TAILING STORAGE FACILITY
RASP MINE, BROKEN HILL

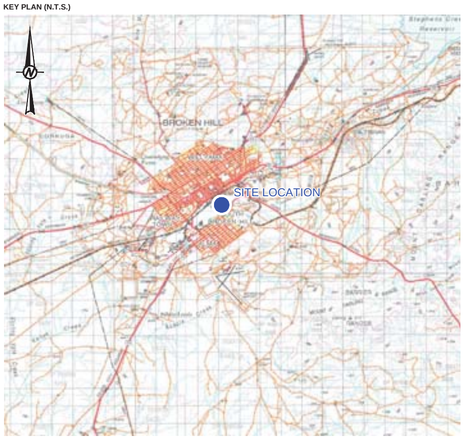
TITLE
SPILLWAY LAYOUT AND SECTIONS

PROJECT NO.	CONTROL	REV.		DRAWING
1896230	009-R	A	23 of 28	23

D.2 TSF1 spillway design

DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1

KEY PLAN (N.T.S.)



DRAWING LIST

DRG. No.	TITLE
001	COVER SHEET
002	EXISTING LAYOUT WITH AERIAL IMAGE
003	ROCK CHUTE AND ENERGY DISSIPATION STRUCTURE TOP OF SUBGRADE LAYOUT
004	LONGITUDINAL SECTION
005	CROSS SECTIONS
006	TYPICAL DETAILS

REFERENCE(S)

KEY PLAN REPRODUCED FROM NSW DEPARTMENT OF LANDS 'TOPOVIEW RASTER 2006' SOFTWARE (LAND AND PROPERTY INFORMATION MAP REF.: 7134 BROKEN HILL)

SITE SURVEY AND FEATURES GENERATED FROM INFORMATION PROVIDED BY CBH RESOURCES IN FILE tsf1.dwg (RECEIVED 31 OCTOBER 2024)

AERIAL IMAGE DATED 27 SEPTEMBER 2024 SOURCED WITH PERMISSION FROM www.nearmap.com.au

GENERAL NOTE(S)

1. THESE NOTES APPLY TO ALL PROJECT DRAWINGS IN THE SET UNLESS NOTED OTHERWISE AND SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION.
2. ALL LEVELS ARE REFERENCED IN METRES TO AUSTRALIAN HEIGHT DATUM (m AHD).
3. ALL CO-ORDINATES ARE REFERENCED IN METRES TO MAP GRID AUSTRALIA (MGA '94, ZONE 54).
4. ALL DIMENSIONS ARE IN METRIC UNITS, AS SPECIFIED
5. DIMENSIONS AND LOCATION OF EXISTING STRUCTURES SHALL BE CONFIRMED ON SITE BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.
6. LOCATION AND DEPTH OF ALL SERVICES INCLUDING OVERHEAD UTILITY LINES TO BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.
7. DIMENSIONS SHALL NOT BE SCALED OFF DRAWINGS.
8. DRAWINGS MUST BE PRINTED IN COLOUR TO CORRECTLY IDENTIFY ALL DESIGN FEATURES.
9. THE DESIGN INFORMATION PROVIDED HAS BEEN GENERATED UTILISING EXTERNALLY SOURCED FILES AND INFORMATION. GOLDER ASSOCIATES CAN NOT GUARANTEE THE ACCURACY OF THE EXTERNALLY SOURCED DATA USED TO GENERATE THIS DESIGN.
10. EXISTING SURFACE ELEVATION TO BE VERIFIED BY DETAILED SURVEY AT START OF WORKS DUE TO ONGOING DEFORMATION OF GROUND SURFACES. OUTCOMES OF SURVEY TO BE REPORTED TO THE DESIGNER PRIOR TO COMMENCEMENT OF WORKS.

MATERIAL(S) LIST

- UNIT 1 - RIP RAP
- UNIT 2 - ROCK-FILLED WIRE BASKET
- UNIT 3 - SEPARATION GEOTEXTILE

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APPROVAL

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-17	ISSUED FOR APPROVAL	MAR	EDV	DRW	DRW

CLIENT
CBH RESOURCES

CONSULTANT
wsp
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wsp.com/au

PROJECT
DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1
RASP MINE, BROKEN HILL

TITLE
COVER SHEET

PROJECT NO. PS220490-WSP-MEL-CIV-SPC-00002 | REV. 0 | 1 of 6 | DRAWING 001

LEGEND

EXISTING CONTOURS AT 1 m INTERVALS (OCTOBER 2024)

PROPOSED STORMWATER RECTIFICATION WORKS AREA BOUNDARY

NOTE(S)

1. REFER TO DRAWING 001 - COVER SHEET FOR GENERAL NOTES, REFERENCES AND MATERIALS LIST.

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APPROVAL

0 50 100

1:2,000 METRES

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-17	ISSUED FOR APPROVAL	MAR	EDV	DRW	DRW

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CBH RESOURCES

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PROJECT

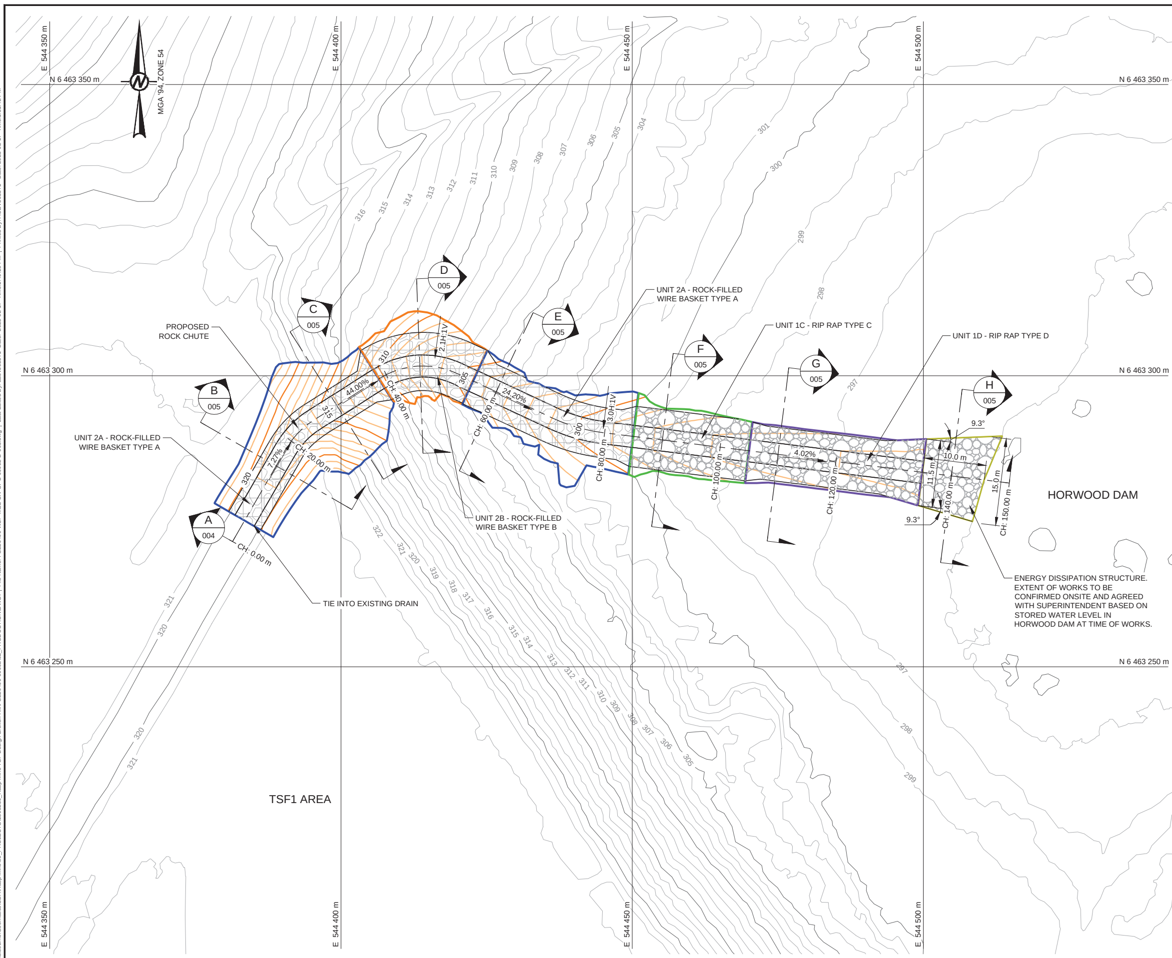
DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1
RASP MINE, BROKEN HILL

TITLE

EXISTING LAYOUT WITH AERIAL IMAGE

PROJECT NO. PS220490-WSP-MEL-CIV-SPC-00002 REV. 0 2 of 6 DRAWING 002

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3 25 mm



LEGEND

- EXISTING CONTOURS AT 1 m INTERVALS (OCTOBER 2024)
- TSF 1 STORMWATER DRAIN AND CHUTE TOP OF SUBGRADE DESIGN CONTOURS AT 1 m INTERVALS
- EXTENT OF UNIT 2A - ROCK-FILLED WIRE BASKET TYPE A
- EXTENT OF UNIT 2B - ROCK-FILLED WIRE BASKET TYPE B
- EXTENT OF UNIT 1C - RIP RAP TYPE C
- EXTENT OF UNIT 1D - RIP RAP TYPE D
- EXTENT OF ENERGY DISSIPATION STRUCTURE

NOTE(S)

1. REFER TO DRAWING 001 - COVER SHEET FOR GENERAL NOTES, REFERENCES AND MATERIALS LIST.

NOT FOR CONSTRUCTION - ISSUED FOR

APPROVAL

0 12.5 25
1:750 METRES

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-17	ISSUED FOR APPROVAL	MAR	EDV	DRW	DRW

CLIENT
CBH RESOURCES

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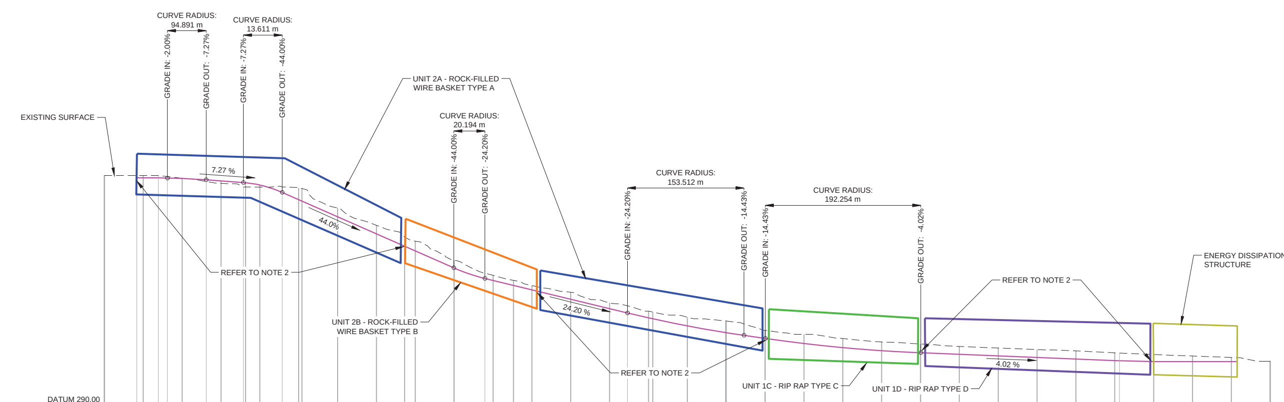
AUSTRALIA
wsp.com/au

PROJECT
DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1
RASP MINE, BROKEN HILL

TITLE
ROCK CHUTE AND ENERGY DISSIPATION STRUCTURE TOP OF SUBGRADE LAYOUT

PROJECT NO. PS220490-WSP-MEL-CIV-SPC-00002
REV. 0
3 of 6
DRAWING 003



CHAINAGE	DESIGN SUBGRADE LEVELS	EXISTING GROUND LEVELS	CUT AND FILL DEPTH (m)
0.00		319.47	
4.16	319.16	319.46	-0.30
5.00	319.16	319.46	-0.30
6.95	319.16	319.46	-0.30
8.11	319.14	319.34	-0.20
10.00	319.08	319.14	-0.05
13.11	318.91	318.70	0.21
15.00	318.77	318.46	0.31
17.88	318.56	318.01	0.55
18.16	318.54	317.99	0.54
20.00	318.24	317.98	0.27
22.88	317.28	318.03	-0.74
25.00	316.35	317.89	-1.54
25.42	316.16	317.79	-1.62
30.00	314.15	315.30	-1.16
35.00	311.95	313.04	-1.10
38.61	310.36	311.56	-1.20
40.00	309.75	311.00	-1.25
44.96	307.57	308.57	-1.00
45.00	307.55	308.56	-1.01
48.96	306.20	306.88	-0.67
50.00	305.95	306.61	-0.66
52.63	305.31	305.97	-0.65
55.00	304.74	305.28	-0.54
60.00	303.53	304.43	-0.90
65.00	302.32	303.06	-0.74
67.29	301.76	302.68	-0.92
70.00	301.13	301.98	-0.84
70.55	301.01	301.88	-0.87
75.00	300.09	301.20	-1.11
79.94	299.23	300.74	-1.51
80.00	299.22	300.73	-1.51
82.29	298.87	300.35	-1.48
85.00	298.48	299.52	-1.04
85.04	298.47	299.51	-1.04
90.00	297.82	299.01	-1.19
95.00	297.29	298.46	-1.17
100.00	296.90	298.02	-1.12
105.00	296.63	297.76	-1.13
110.00	296.43	297.45	-1.02
115.00	296.23	297.24	-1.01
120.00	296.03	297.05	-1.02
125.00	295.82	296.87	-1.04
130.00	295.62	296.62	-1.00
130.61	295.61	296.59	-0.99
135.00	295.50	296.40	-0.90
140.00	295.50	296.21	-0.71
145.00	295.50	296.02	-0.52
145.66	295.50	296.00	-0.50
150.00		295.53	

SCALE 1:500 A 003 TSF1 ROCK CHUTE AND ENERGY DISSIPATION STRUCTURE LONG SECTION

LEGEND

- EXTENT OF UNIT 2A - ROCK-FILLED WIRE BASKET TYPE A
- EXTENT OF UNIT 2B - ROCK-FILLED WIRE BASKET TYPE B
- EXTENT OF UNIT 1C - RIP RAP TYPE C
- EXTENT OF UNIT 1D - RIP RAP TYPE D
- EXTENT OF ENERGY DISSIPATION STRUCTURE

NOTE(S)

1. REFER TO DRAWING 001 - COVER SHEET FOR GENERAL NOTES, REFERENCES AND MATERIALS LIST.
2. THE CONTRACTOR IS TO CONSTRUCT A SMOOTH TRANSITION IN SUBGRADE SURFACE LOCALLY IN ACCORDANCE WITH THE REQUIREMENTS OF THE TECHNICAL SPECIFICATION AT THE LOCATIONS WHERE ROCK-FILLED WIRE BASKET OR RIP RAP THICKNESS OR EXTENTS CHANGES.

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APPROVAL

0 10 20
1:500 METRES

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-17	ISSUED FOR APPROVAL	MAR	EDV	DRW	DRW

CLIENT
CBH RESOURCES

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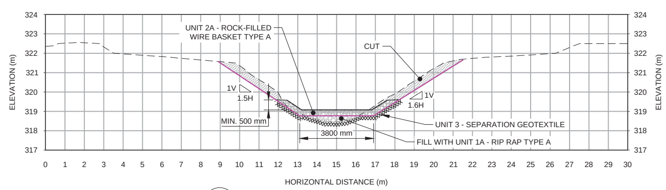
AUSTRALIA
wsp.com/au

PROJECT
DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1
RASP MINE, BROKEN HILL

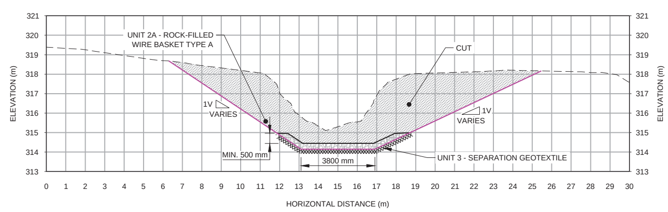
TITLE
LONGITUDINAL SECTION

PROJECT NO. PS220490-WSP-MEL-CIV-SPC-00002 | REV. 0 | 4 of 6 | DRAWING 004

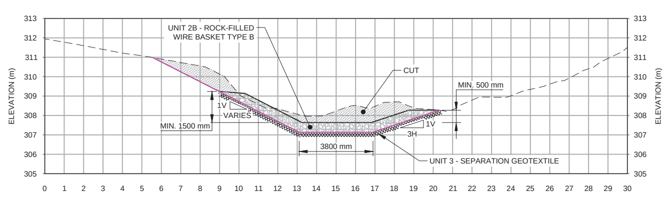
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3
25 mm



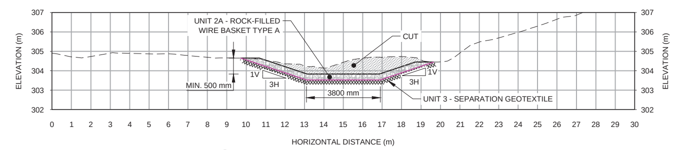
SCALE 1:200 B 003 ROCK CHUTE CROSS SECTION 1 (CH: 10.00)



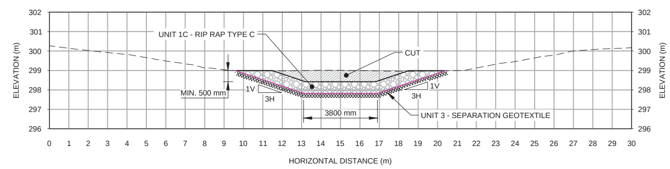
SCALE 1:200 C 003 ROCK CHUTE CROSS SECTION 2 (CH: 30.00)



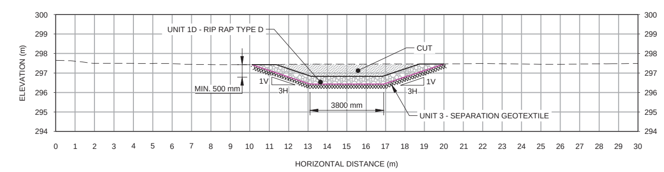
SCALE 1:200 D 003 ROCK CHUTE CROSS SECTION 3 (CH: 46.00)



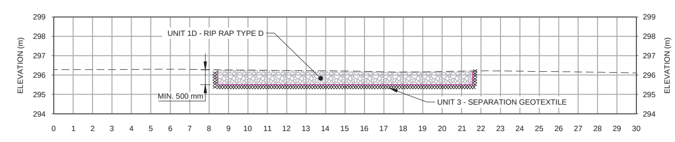
SCALE 1:200 E 003 ROCK CHUTE CROSS SECTION 4 (CH: 60.00)



SCALE 1:200 F 003 ROCK CHUTE CROSS SECTION 5 (CH: 90.00)



SCALE 1:200 G 003 ROCK CHUTE CROSS SECTION 6 (CH: 110.00)



SCALE 1:200 H 003 ENERGY DISSIPATION STRUCTION SECTION (CH: 140.00)

LEGEND

- EXISTING SURFACE PROFILE (OCTOBER 2024)
- TSF 1 STORMWATER DRAIN AND CHUTE TOP OF SUBGRADE DESIGN SURFACE PROFILE
- CUT (EXISTING SOILS TO BE EXCAVATED IN THESE AREAS)
- UNIT 1 - RIP RAP
- UNIT 2 - ROCK-FILLED WIRE BASKET
- UNIT 3 - SEPARATION GEOTEXTILE

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APPROVAL

0 5 10
1:200 METRES

NOTE(S)

1. REFER TO DRAWING 001 - COVER SHEET FOR GENERAL NOTES, REFERENCES AND MATERIALS LIST.

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-17	ISSUED FOR APPROVAL	MAR	EDV	DRW	DRW

CLIENT
CBH RESOURCES

CONSULTANT
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LEVEL 11, 567 COLLINS STREET
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AUSTRALIA
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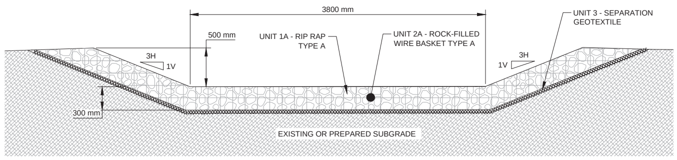
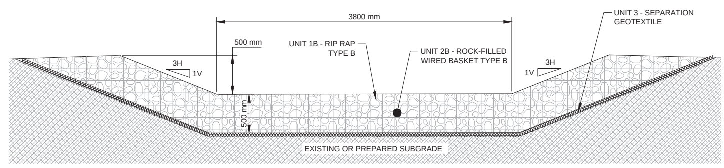
PROJECT
DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1
RASP MINE, BROKEN HILL

TITLE
CROSS SECTIONS

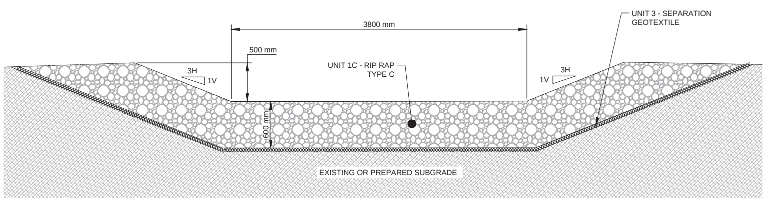
PROJECT NO. PS220490-WSP-MEL-CIV-SPC-00002 REV. 0 5 of 6 DRAWING 005



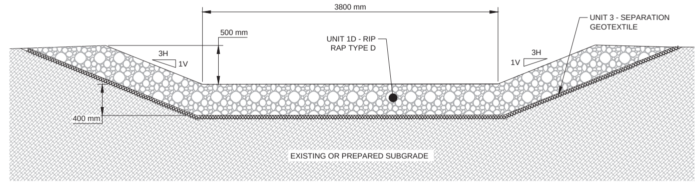
TYPICAL SECTION OF ROCK CHUTE WITH ROCK-FILLED WIRE BASKET TYPE A
SCALE 1:50



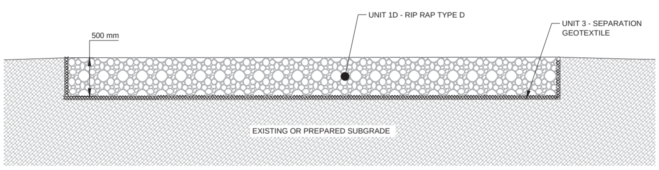
TYPICAL SECTION OF ROCK CHUTE WITH ROCK-FILLED WIRE BASKET TYPE B
SCALE 1:50



TYPICAL SECTION OF ROCK CHUTE WITH RIP RAP TYPE C
SCALE 1:50



TYPICAL SECTION OF ROCK CHUTE WITH RIP RAP TYPE D
SCALE 1:50



TYPICAL SECTION OF ENERGY DISSIPATION STRUCTURE
SCALE 1:50

NOT FOR CONSTRUCTION - ISSUED FOR
APPROVAL

0 1 2
1:50 METRES

NOTE(S)

1. REFER TO DRAWING 001 - COVER SHEET FOR GENERAL NOTES, REFERENCES AND MATERIALS LIST.

REV.	YYYY-MM-DD	DESCRIPTION	DESIGNED	PREPARED	REVIEWED	APPROVED
0	2025-02-17	ISSUED FOR APPROVAL	MAR	EDV	DRW	DRW

CLIENT
CBH RESOURCES

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AUSTRALIA
wsp.com/au

PROJECT
DETAILED DESIGN FOR RECTIFICATION OF STORMWATER DRAIN FOR TSF1 RASP MINE, BROKEN HILL

TITLE
TYPICAL DETAILS

PROJECT NO. PS220490-WSP-MEL-CIV-SPC-00002 | REV. 0 | 6 of 6 | DRAWING 006

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