



Rasp Mine

*State Significant
Development
Modification Assessment
(07_0018 MOD 5)*



October 2018

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Cover photo

Broken Hill Old Junction Mine (2018)

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Executive Summary

Broken Hill Operations (BHO) owns and operates the Rasp Mine, an underground zinc, lead and silver mine located centrally within the City of Broken Hill. The mine has been operational since the 1880s, and the site and surrounds are dominated by mining infrastructure (see **Figure 1**). BHO purchased the mine in 2001 and operates the mine under a Ministerial approval granted in January 2011.

BHO is proposing to modify its approval to construct a cement silo, import 5,000 tonnes of cement to the site, extend an existing warehouse and update the air quality monitoring requirements for the mine to be consistent with the Environment Protection Licence.

The Department referred the application to key government agencies and made it publicly available on its website from 7 September 2018. No government agencies raised concerns or objected to the modification, and no comments were received from the general public. Broken Hill City Council supports the modification.

The key issue for the modification relates to potential amenity impacts during construction of the cement silo and warehouse extension. BHO has designed the modification to include robust noise and dust mitigation measures that are supported by the Environment Protection Authority.

The Department's assessment has concluded that the proposed modification can be undertaken with no significant environmental impacts. The Department considers that the proposed modification would enable the backfilling of underground voids and allow access to additional ore reserves. Consequently, the modification is in the public interest and should be approved, subject to conditions.

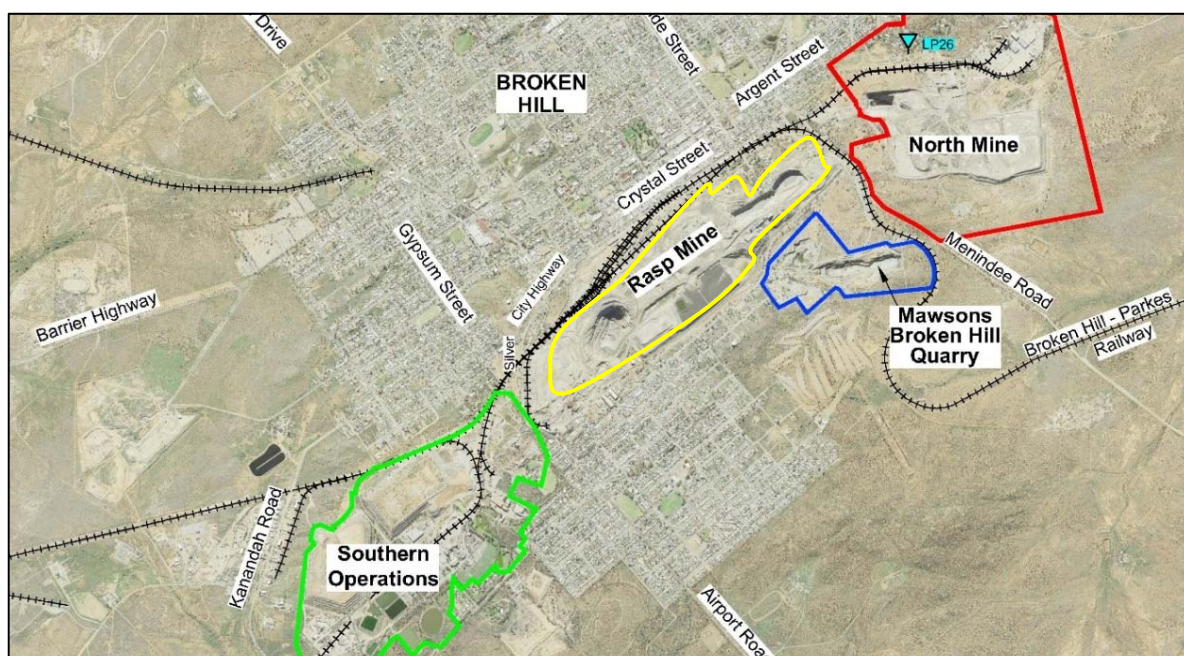


Figure 1 | Location of the Rasp Mine



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1. Introduction

Broken Hill Operations (BHO), a wholly owned subsidiary of CBH Resources, owns and operates the Rasp Mine, an underground zinc, lead and silver mine located centrally within the City of Broken Hill.

Mining has occurred almost continually at the Rasp Mine since the 1880s. The site and surrounds are dominated by mining infrastructure, including historic mining buildings and structures. The area surrounding the site has also been shaped by mining activities and includes a range of infrastructure, commercial and residential developments immediately adjacent to the mine (see **Figure 1**).

BHO purchased the Rasp Mine in 2001 and operates the mine under a Ministerial approval granted in January 2011. This approval has been modified four times, and allows BHO to:

- extract 750,000 tonnes of ore per year until 31 December 2026, and no more than 8,450,000 tonnes in total;
- process ore at the on-site processing plant;
- operate 24 hours a day, 7 days a week; and
- transport ore concentrate via rail to the port of Newcastle.

Operations at the mine are supported by numerous on-site facilities including crushing and processing plants, a tailings backfill plant, rail siding facilities, as well as administration offices, workshops and a storage warehouse.

BHO also has approval to backfill underground voids with tailings and waste rock. To date, only waste rock has been used for this purpose. However, the approved tailings backfill plant has been constructed and BHO intends to commission the plant in late 2018 and use tailings to backfill the underground voids.

Under the existing approval, tailings will be mixed with cement at the backfill plant, which will increase the strength of the material and allow BHO to reach ore pillars that would otherwise be inaccessible.

The exact volume of cement required at the tailings backfill plant was not determined in the Environmental Assessment (EA) for the original project. BHO has since identified that approximately 5,000 tonnes of cement would be required each year.

Accordingly, BHO is proposing to import the required volume of cement and construct a cement silo adjacent to the tailings backfill plant. BHO has also identified the need for additional storage at one of its warehouses and is taking this opportunity to modify the air quality monitoring requirements in the development approval to align with its Environment Protection Licence (EPL) for the mine.



2. Proposed Modification

The proposed modification includes delivery of 5,000 tonnes of cement to the site via rail; construction of a cement silo at the existing tailings backfill plant; a minor extension to the existing storage warehouse; and updates to the air quality monitoring requirements in the existing approval. The modification is summarised below and described in detail in BHO's Statement of Environmental Effects (SEE) (see **Appendix B**).

Cement Delivery and Cement Silo

Cement would be delivered to the site via rail within enclosed 25 tonne storage containers. Up to four containers would be delivered to the site each week. Typically, cement would be back-loaded into empty concentrate containers, although BHO anticipates that a maximum of four additional trains may be required each year.

Containers would be stored near the rail siding until cement is required at the backfill plant (see **Figure 2**).



Figure 2 | Location of proposed modification

On the rare occasions that cement is not available via rail, road transport would be used. BHO expects that a maximum of 10 trucks may access the site each year via approved routes and the site entry from Eyre Street.

When cement is required at the tailings backfill plant, the 25 tonne storage containers would be transferred to the proposed cement silo via existing sealed haul roads. Cement would then be transferred from the containers to the cement silo, and the silo to the backfill plant via a fully enclosed process. Once cement is at the backfill plant, operations would proceed in accordance with the existing approval.

The proposed cement silo would be located on disturbed land adjacent to the tailings backfill plant (see **Figure 2**). The silo would cover an area of 25 square metres (m²), have a height of 18 m and a capacity of 300 tonnes. It would arrive prefabricated for on-site assembly. Construction of the silo would occur over a two-week period during standard daytime construction hours and require two additional employees.

Warehouse Extension

BHO currently stores critical spares and stock items (i.e. mill gear box, major components for mobile fleet etc) at a warehouse located near the site entry off Eyre Street. The warehouse is at capacity and BHO needs additional space to store these items. The proposed extension would not change the existing use of the warehouse. No hazardous items are stored at this location, and there would be no operational impacts associated with the extension.

The extension would be located on disturbed land immediately west of the existing warehouse (see **Figure 2**). The extension would cover an area of 204 m² and would be 2 m lower in height than the existing warehouse. The structure would arrive prefabricated for on-site assembly. Construction would occur over a four-week period during standard daytime construction hours and require up to two additional employees. Construction of the warehouse extension may overlap with construction of the cement silo; however, the Department's assessment considers sequential construction (i.e. a six-week construction period).

Air Quality Monitoring

BHO is seeking to include air quality criteria at the baghouse stack monitoring location and remove the requirement to monitor air quality at Shaft 6, which (following approval of Modification 3) is no longer used as an exhaust vent. The amendments would ensure the approval is consistent with BHO's Environment Protection Licence (EPL).



3. Statutory Context

3.1 Scope of Modification

The project was originally approved under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Under clause 6 of Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017*, the project was transitioned to State Significant Development (SSD) by order, which took effect by publication in the NSW Government Gazette on 4 July 2018.

A modification application under Section 4.55 (1A) for a modification involving minimal environmental impact was submitted to the Department on 4 September 2018.

Based on its assessment, the Department considers that the application can be characterised as a modification involving minimal environmental impact as the proposal:

- would not significantly increase the environmental impacts of the project as approved;
- is substantially the same development as originally approved in 2011; and
- would not change the approved mining, processing and transport methods, extraction rate, or surface disturbance areas.

Consequently, the Department considers that the proposed modification is within the scope of Section 4.55 (1A) of the EP&A Act.

3.2 Consent Authority

The Minister for Planning is the consent authority for the modification application. However, under the Minister's delegation dated 11 October 2017, the Director, Resource and Energy Assessments, may determine the application because BHO has not made any reportable political donations, Broken Hill City Council (Council) does not object to the proposal, and there were no submissions from the community.



4. Engagement

The Department referred the application to key government agencies for comment and made it publicly available on its website from 7 September 2018. No comments from the general public were received by the Department on the modification.

The Department notes that the modification is supported by **Broken Hill City Council** (Council), subject to BHO installing fencing around items of historic heritage significance during construction of the proposed warehouse extension. In response, BHO confirmed that it would ensure this fencing is installed.

The Department received advice from six government agencies, none of which object to the proposed modification. A summary of the advice is provided below.

The **Environment Protection Authority** (EPA) raised no concerns about the proposed modification and confirmed that the proposed changes to BHO's air quality monitoring requirements would be consistent with the EPL for the mine. The EPA also recommended that BHO update its air quality monitoring program to include the cement silo air filter. The Department notes that BHO is already required to review and revise its air quality monitoring program following any modifications to the approval.

The **Heritage Council of NSW** raised no concerns, subject to the implementation of a protocol requiring BHO to cease works and notify the Heritage Council if any unexpected heritage items are identified. The Department notes that this is already a requirement of the existing approval.

The **Division of Resources and Geoscience** (DRG) within the Department raised no concerns and made no recommendations about the proposed modification.

The **Resources Regulator** within the Department, the **Department of Industry – Lands and Water Division** and the **Roads and Maritime Services** raised no concerns and made no recommendations about the proposed modification.



5. Assessment

In assessing the merits of the proposed modification, the Department has considered the:

- previous Environmental Assessments (EAs) for the project and associated modifications;
- modification application, SEE and existing conditions of approval;
- agency comments on the application; and
- requirements of the EP&A Act.

A list of the key documents that informed the assessment is provided in **Appendix A**.

Given the close proximity of the Rasp Mine to surrounding receivers, the key issues for the modification relate to potential noise and dust emissions during construction and use of the cement silo and warehouse extension.

5.1 Noise

The SEE included a noise impact assessment (NIA) undertaken by EMM Consulting. The NIA considered construction of the cement silo and warehouse extension concurrently and in combination with approved operations under worst case meteorological conditions.

Noise generated during construction of the cement silo and warehouse extension would form part of the existing noise environment at the operating mine and the Department has assessed this noise against the limits in the existing approval. The approval also includes a framework for dealing with noise generated by atypical activities that are discrete and short term in nature, and which may exceed the limits in the existing approval (i.e. construction of the TSF2 embankments and construction of a concrete batching plant and associated noise bund).

During construction of the warehouse extension, BHO would comply with the noise criteria in its approval at all receivers. During construction of the cement silo, noise is expected to reach a maximum of 46 dB at receivers located along Eyre Street (i.e. 2 dB above the intrusive criteria in BHO's project approval) (see **Figure 2**).

The Department notes that an increase of 2 dB is generally indiscernible to humans, that the predicted exceedances would only occur for two weeks and that noise from these activities would remain well below the amenity criteria of 65 dB(A) specified for an urban/industrial interface area. Consequently, the Department considers that surrounding receivers would maintain a reasonable level of amenity during construction of the silo and warehouse extension.

Nonetheless, the Department has also recommended conditions requiring BHO to implement standard construction hours for the modification, notify the Department prior to commencing and upon completion of construction of the warehouse extension and cement silo and minimise construction noise in accordance with the best practice requirements outlined in the *Interim Construction Noise Guideline*.

During operation of the modified project, noise from the four additional rail movements per year and 10 additional trucks movements per year would be negligible (approximately 42 trains currently access the site per year, and 50 trucks access the site per month). The number of trucks transporting cement from the rail loadout to the silo would be minimal (i.e. 3 to 4 per week) and would remain within the current variability of movements along this route (i.e. 0 to 3 trucks currently use this route per hour).

Noise from the transfer of cement from the storage containers to the cement silo, and from the silo to the mixing tank, would be indiscernible (from existing daytime noise) as the transfer motors would be fully enclosed. There would be no additional noise associated with the ongoing use of the extended warehouse.

Both the EPA and the Department consider that BHO has proposed all reasonable and feasible noise mitigation measures during construction and ongoing operations (e.g. enclosure of the motors used to transfer cement to the backfill plant, standard construction hours, restricted operating hours, use of 'squawker' reverse alarms on vehicles, current noise abatement bund surrounding the proposed cement silo).

The existing approval requires BHO to review and revise its Noise Management Plan to account for the proposed modification. The Department has also recommended conditions requiring BHO to minimise noise during construction (see above), and to only transport cement and operate the silo between 7 am and 7 pm. With these measures in place, the Department considers that surrounding receivers would maintain a reasonable level of amenity during construction, and over the life of the modified project.

5.2 Air quality

Dust

Dust would potentially be generated during construction of the cement silo and warehouse extension, and during operations – by the additional haul truck movements and when cement is transferred from the storage containers to the silo, and the silo to the mixing tank.

During construction, dust would be managed by in-situ water sprays at the warehouse extension area and mobile spray units at the cement silo. Water trucks would also be used at both locations when required.

Consistent with existing operations, haul trucks would only use sealed haul roads, and dust would be managed by water trucks and in-situ and mobile water spray units.

All cement transfer would be fully enclosed. An air compressor would transfer cement from the storage containers to the silo via tubing. A filter would be fitted to the silo outlet to capture dust. Cement would then be transferred via an enclosed conveyor to the mixing tank.

Additionally, existing dust mitigation measures would continue to be used, including:

- real-time dust monitoring and an automatic alarm system to inform BHO when dust levels are approaching the relevant criteria;
- restrictions on dust-generating activities during adverse meteorological conditions; and
- use of water carts and chemical suppressants on unsealed haul roads and 'free areas'.

The EPA has confirmed that the proposed dust mitigation measures are appropriate and has recommended that the cement silo filter is included in BHO's air quality monitoring program.

The existing approval requires BHO to update its Air Quality Management Plan, including its air quality monitoring program, to account for the proposed modification. With the proposed dust mitigation measures and the requirements of the existing approval, the Department and the EPA consider that the proposed modification would not increase air quality impacts above those already assessed and approved at the mine.

Monitoring Requirements

The existing approval requires BHO to monitor air quality at the 'Point 6 ventilation shaft'. Following approval of Modification 3, Shaft 6 is no longer used as an exhaust vent. As such, the Department and the EPA consider that there is no longer any need for BHO to monitor air quality at this location. Accordingly, the Department has recommended that the approval conditions be updated to remove the requirement to monitor air quality at the Point 6 ventilation shaft.

The existing approval also requires BHO to determine the pollutant concentration limits at the crusher baghouse stack based on the results of post-commissioning tests in consultation with the EPA. These limits have been determined and the EPA has confirmed that the conditions of approval should be revised to reflect the limits in the EPL. The Department agrees and has included this monitoring limit in the recommended conditions.

5.3 Other Issues

Table 1 summarises the Department's consideration of other issues related to the modification.

Table 1 | Assessment of other issues

Issue	Consideration	Recommendation
Traffic and transport	- During the six-week construction period, 5 additional heavy vehicles would travel to the site. This would have a negligible impact on the road network. - During operation of the modified project, the four additional train movements per year are unlikely to be discernible and could be managed in accordance with available rail capacity. - Approximately 5% of all cement deliveries may need to be transported to site via road (i.e. 10 additional heavy vehicles per year). This would have a negligible impact on the road network. Movements would only occur along approved routes, and trucks would access the site via the approved site entry (approximately 50 heavy vehicles currently access the site each month via Eyre Street). - Once cement is delivered to the site, it would be transported from the rail loadout (or the site access off Eyre street) to the cement silo via existing sealed haul roads. This would result in an additional 3 to 4 heavy vehicle movements on-site per week. Potential noise and dust impacts resulting from increased on-site vehicle movements have been considered in Sections 5.1 and 5.2 above. - Under the existing approval, BHO is required to review and if necessary revise its Traffic Management Plan to account for the proposed modification. - The RMS and Council raised no concerns about the additional vehicle movements, and the Department considers that the modification would not significantly impact the safety, capacity and efficiency of the surrounding road and rail networks.	Comply with existing conditions.
Heritage	- No heritage items are located within the vicinity of the proposed cement silo. - Five locally listed heritage items are located 18-22 m from the warehouse extension area. These items are the foundations and infrastructure for a roasting plant installed in 1917, including roaster plant foundations, two steel tanks, a concrete tank stand and foundations and two water tanks. BHO would maintain a 5 m buffer around these items. Council requested that fencing be installed to maintain this buffer during construction of the warehouse, which BHO has committed to implementing. - The Heritage Council confirmed that no state listed heritage items are located in the vicinity of the proposed works. - The City of Broken Hill is listed on the National Heritage Register for its history as a mining city. The modifications would occur on disturbed mine land and would have little to no impact on the National Heritage values of the city.	Comply with existing conditions.

- Under the existing approval, BHO is required to cease works and notify the Heritage Council if any unexpected historic archaeological relics are identified, and review and revise its Conservation Management Plan following the approval of any modification.
- The Department and Council consider that the proposed buffer and the requirements of the existing approval would mitigate any potential heritage impacts.

Visual	• The roofline of the extended warehouse would be 2 m lower than the current warehouse building, and only partially visible from Eyre Street. • The cement silo would be 18 m high, and partially visible from Crystal Street. However, the silo would be visually similar with existing mine infrastructure (e.g. historic A frames, the concrete batching plant and associated silo), and is comparatively lower than other structures on the site (for example, the waste rock dumps, TSF embankments, communication tower and the heritage listed slag dump). • Under the existing approval, BHO is required to minimise the visual impacts of the project. • The Department considers that the warehouse extension and cement silo would be consistent with the character of the existing site and would not result in any significant additional visual amenity impacts.	• Comply with existing conditions.
Water	• The existing stormwater management and collection system would accommodate the proposed modification.	• Comply with existing conditions.
Rehabilitation	• At mine closure, the cement silo would be demolished and the land would be rehabilitated by placing waste rock over the area to prevent dust emissions. This is consistent with the current plan for mining infrastructure in this area. • The warehouse extension (and existing warehouse) would likely be demolished if no other use for this infrastructure is identified. • The existing approval requires BHO to review and revise its Rehabilitation Management Plan for the site to account for the proposed modification. • The Department also notes that BHO is in the process of developing a Rehabilitation Strategy for the site in consultation with key government agencies. BHO would be required to consider the proposed modification in this strategy. • The Department considers that there would be no significant risks associated with rehabilitation of the cement silo and warehouse extension, given the minor nature of these works.	• Comply with existing conditions.



6. Evaluation

The Department has assessed the modification application and supporting information in accordance with the relevant requirements of the EP&A Act.

The Department considers that the proposed modification can be undertaken with no significant environmental impacts. With the proposed noise and dust mitigation measures, the amenity of surrounding receivers would not be affected. The additional truck and train movements would be minimal and would not significantly impact the safety, capacity and efficiency of the surrounding road and rail networks. Further, there would be no new land disturbance, and therefore no impacts on any heritage items within or surrounding the cement silo and warehouse extension.

Importantly, the modification would enable concrete to be delivered to site and used at the tailings backfill plant. In turn, this will enable BHO to commission its tailings backfill plant and use tailings to backfill underground voids. By mixing tailings with a cement binder, the strength of the material is increased which will allow BHO to reach ore pillars that would otherwise be inaccessible.

Consequently, the Department considers that the proposed modification is in the public interest, and recommends that it should be approved, subject to conditions.



7. Recommendation

The Department has drafted a Notice of Modification (see **Appendix C**) for the proposed modification, as well as a consolidation version of the project approval as modified (see **Appendix D**).

It is recommended that the Director, Resource and Energy Assessments, as delegate of the Minister for Planning:

- **considers** the findings and recommendations of this report;
- **determines** that the application (07_0018 MOD 5) falls within the scope of Section 4.55(1A) of the EP&A Act;
- **accepts and adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **modifies** the approval (07_0018); and
- **signs** the attached modification of approval (**Appendix C**).

Recommended by:

M. Mazaheri
25/10/2018

Mandana Mazaheri

Senior Environmental Assessment Officer
Resource and Energy Assessments

Recommended by:

P. Duncan
25/10/2018

Phillipa Duncan

Team Leader
Resource and Energy Assessments



8. Determination

The recommendation is Approved / Refused by:

Clay Preshaw 2/11/18

Clay Preshaw

Director
Resource and Energy Assessments



Appendices

Appendix A – List of Documents

Broken Hill Operations (August, 2018) *Statement of Environmental Effects – Modification 5 Warehouse Extension, Cement Silo and Adjustment of Air Quality Monitoring.*

Appendix B – Statement of Environmental Effects

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9597

Appendix C – Notice of Modification

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9597

Appendix D – Consolidated Approval

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=9597