



DOC17/236124-21

The Acting Team Leader  
Resource Assessments  
Planning Services  
Department of Planning and Environment  
GPO Box 39  
SYDNEY NSW 2001

Dear Ms Donnelley

**Re Rasp silver, lead and zinc mine – Modification No 4**

I refer to your electronic mail of 13 April 2017 to the Environment Protection Authority (EPA) about the application received by the Department of Planning and Environment to modify Project Approval No 07\_0018 granted to Broken Hill Operations Pty Ltd for their Rasp silver, lead and zinc mine in Broken Hill.

We have reviewed the Environmental Assessment (EA) provided by the proponent to support the application and advise that there is insufficient information on air quality and noise impacts to enable an adequate assessment of the proposal.

The EPA believes a thorough and robust assessment of the potential air quality impacts from this proposal is particularly important given the New South Wales (NSW) Government's commitment to reducing blood lead levels in children under 5 years of age at Broken Hill through the Broken Hill Environmental Lead Program (BHELP). One of the roles of the BHELP is to identify areas of land at Broken Hill that have elevated lead levels and engage with land owners to co-ordinate on-ground remediation of sites to reduce lead contamination and recontamination processes and sources.

Any modification to the current mining operations should only be approved if there is certainty that off-site contamination does not result from the modification. This will include demonstration that a monitoring system and associated mitigation measures are adequate to detect and immediately prevent dust migration from the mining lease.

Whilst the air assessment prepared indicates compliance with the EPA's air quality criteria, the EPA believes there may be an increased potential for erosion and dust migration from raising the approved height of the tailings deposit through greater exposure to the prevailing winds experienced at the site. Given the location of the mine and its close proximity to residential areas within Broken Hill the EPA requires additional information to assess the potential environmental risks associated with the proposed modification.

We note that the human health risk assessment prepared for the Rasp mine was not reviewed for this modification despite the independent analysis of community health impacts predicting an increase in lead levels in surrounding air and soil during the 14 month construction period of this proposal. We recommend consultation be undertaken with NSW Health to ascertain if a review should be undertaken.

The requested information is detailed at Attachment 'A' with justification and further details about our review of the EA provided in Attachment 'B'.

If you have any further enquiries about this matter please contact Jason Price by telephoning 02 6969 0700.

Yours sincerely



17/5/17

**DARREN WALLETT**  
**Head, Griffith Unit**  
**Environment Protection Authority**

## ATTACHMENT 'A'

Broken Hill Operations Pty Ltd (BHOP) have made application to the Department of Planning and Environment (DPE) to modify their existing tailings storage facility and add a concrete batching plant to their Rasp silver, lead and zinc (Rasp) mine in Broken Hill.

The proposed modification will vary the potential air quality and noise impacts at sensitive receptors and the EPA has reviewed the application made to DPE including the:

- Environmental Assessment (EA) titled "*Modification 4, Concrete Batching Plant, Blackwood Pit TSF2 Extension*" (Broken Hill Operations Pty Ltd (BHOP), April 2017);
- Air Quality Impact Assessment (AQIA) "*Appendix 1- Air Quality Assessment for the Rasp Mine Modification 4*" (Pacific Environment Limited, 27 March 2017), and
- Noise Impact Assessment (NIA) "*Rasp Mine Modification 4, Concrete batching plant and TSF2 (Blackwood Pit) extension*" (EMM Consulting Pty Ltd, March 2017).

### Air quality

The AQIA generally predicts compliance with the Environment Protection Authority's impact assessment criteria. However to provide greater certainty and confidence in the information provided and to help interpret the risk of off-site impacts from the construction and operation of the proposal, the following additional information and analysis is required.

1. Confirmation, including test data, to verify the percent lead concentration of tailings material and the Tailings Storage Facility No 2 (TFS2) walls (in situ and constructed) which have the potential to emit particulate matter/dust.
2. Engineering specification, assurance and guarantee that TSF2 management measures, such as watering, are achievable and able to service all parts of the TFS2 and its walls, including:
  - water availability and pressure,
  - water application rate, timing, location and method.
3. Verification of ambient monitoring data presented in the assessment including:
  - Calibration and quality assurance applied to the data and to the monitoring instruments; and
  - Reanalysis, evaluation and confirmation of ambient PM10 and PM2.5 values adopted in the assessment, noting -
    - adopted annual PM10 values are trending towards minimum reported values, when analysed by box and whisker plots (assessment figures E-10 and E-11).
    - adopted annual PM2.5 values show far greater inter monitor variation than PM10, indicating either a data error or an unidentified dominant PM2.5 emission source(s) influencing TEOM2 values.
4. A comprehensive description and results of the confined air bust chamber testing to demonstrate the relative control efficiency for emissions from wind erosion, with attention on TSF2 emissions.
5. Modelled emission source characteristics including but not limited to source location and source height (including height relative to receptors with attention given to final capping height of the TSF2). Where estimated and modelled emissions vary by hour, the basis for defining emission variability should also be clearly explained and justified.
6. Detailed discussion and calculation of any 'threshold friction velocity' adopted in the assessment.



7. Sensitivity analysis to evaluate the impact of an alternative 'threshold friction velocity', including 5.4metres per second and any other suitable threshold referenced in the published literature.
8. Evaluation of potential emissions, impacts and management measures for the decommissioning phase of the TFS2, including during initial drying prior to hard rock armouring and during armouring works.
9. Further detail on a proposed management monitoring regime, including as a minimum, real time particle monitoring at representative locations on all sides of TSF2; telemetry notifications; response mechanisms; responsibilities; and quality assurance.

## Noise

The NIA predicts exceedances to noise criteria during the construction phase and has not considered all scenarios associated with this proposal. The following additional information is required to enable the EPA to adequately assess the potential noise impacts from this proposal.

1. Noise impacts from rehabilitation and capping of TSF2 should be assessed as part of the project.
2. The proponent should more clearly demonstrate that they have implemented all feasible and reasonable mitigation measures in attempting to meet the noise management level, and that they have considered all feasible and reasonable measures which could be implemented.
3. The noise model for the project should be updated to include meteorological conditions based on on-site measurements, which may include G class stability category conditions.
4. The NIA should include the additional noise impacts of the project from rail noise levels, or explain why they do not need to be assessed.
5. An explanation of how noise impacts from cement being emptied into the silo of the concrete batch plant have been modelled (the loading method does not appear to have been included in modelling).
6. The NIA should clarify what parts of the concrete batch plant will be contained in a concrete building, and confirm that the noise model accurately represents that enclosure.
7. The proponent should explain why existing site noise levels used in the NIA represent a reasonable worst case scenario, and why the operational noise model for the site was not used instead.

Further context around this requested information is provided in Attachment 'B'.

## ATTACHMENT 'B'

### **Background**

BHOP owns and operates the Rasp mine on Consolidated Mining Lease 7 which is subject to conditions of Project Approval No 07\_0018 (PA). The current operations at the mine have operated continuously since the current project approval was granted in 2011.

The mine is located centrally within the city of Broken Hill and is subject to Environment Protection Licence No 12559 which aims to protect the residential and commercial premises, which surround the mine to the north and south from adverse environmental impacts and in particular exposure to lead and other heavy metals.

BHOP have lodged a 4<sup>th</sup> project approval modification application to install and operate a concrete batching plant based on economic savings that can be made to produce their own concrete and raising the proposed height of the existing tailings storage within the Blackwoods Pit tailings storage facility to extend its life a further 2 years through to 2021.

### **Air quality**

The AQIA was conducted in general accordance with and reference to the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2016).

The AQIA estimates emissions associated with the proposed construction of increased tailings storage facility capacity at Blackwood Pit (TSF2) and development of an on-site concrete batching plant (CBP). While the air assessment does not discuss tailings deposition heights, Table 7-2 of the EA main report (Broken Hill Operations, April 2017) advises that proposed tailing deposition heights will increase by 6 metres (308 RL to 314 RL) and 8 metres (316 RL to 324 RL) at the north east and south west ends of TFS2 respectively.

The AQIA models estimated emissions to predict potential particle and lead (as TSP) impacts, with cumulative impacts accounting for existing operations based on ambient monitoring data for 2016.

The AQIA generally predicts compliance with the EPA impact assessment criteria. The exception being 24-hour PM10 during upset conditions at the TFS2. The assessment predicts potential for exceedance of the 24-hour PM10 criteria on 1 day of the modelled year at Receptor 27 (the EPA understands that this receptor is not currently occupied). A time series has not been provided for the TSF2 upset scenario so it is not possible to infer the maximum potential impact from the TSF2.

It should be noted that the cumulative assessment is based on monitoring data for the year 2016 and not maximum approved (100%) operation for which the proponent is seeking approval. On this basis, there is potential that actual impacts could be greater than reported based on 2016 activity.

Additional information has been sought to clarify the potential impacts from this proposed modification and to enable determination of the potential off-site risks. Where appropriate the additional information should inform updated modelling in a revised AQIA.

### **Noise**

The NIA was generally completed consistent with the *NSW Industrial Noise Policy* (INP) and compared construction noise levels to noise management levels derived following the EPA's *Interim Construction Noise Guideline*, in line with the Department of Planning and Environment's "key issues for consideration" for the project.



The assessment predicted that noise during the tailing storage facility expansion would exceed the adopted noise management levels by up to 4 dB. The highest predicted construction noise level of  $L_{eq(15min)}$  54 dBA at location A12 was 3 dB above the standard hours noise management level at that location. The greatest exceedance of the standard hour's noise management level was predicted to be 4 dB at location A14.

With these exceedances the proponent is required by the INP to consider all feasible and reasonable noise mitigation measures. The NIA has not clearly demonstrated that they will implement all feasible and reasonable mitigation measures in attempting to meet the noise management level, or that there are no more feasible and reasonable measures which could be considered and implemented.

The EA stated that the noise consultant EMM Consulting Pty Ltd reviewed a number of management and mitigation measures for construction noise, but "none were deemed to be both feasible and reasonable, given the required economic outlay, the short duration of the project works and the benefit to be gained."

The proponent appears to have only assessed the feasibility and reasonableness of four possible measures in Table 6.2 of the NIA. The NIA did not commit to any specific mitigation measures, but listed a number of other measures which would be reviewed once construction activities were clearly defined and contractors selected.

It is not clear whether the feasibility and reasonableness of all possible mitigation measures have been properly considered. Other measures should be added to the analysis in Table 6.2 of the noise impact assessment, including those listed after Table 6.2 (on pages 24 and 25 of the assessment). For example:

- Could quiet plant be included as a key criterion in selecting contractors?
- Could contractors be required to only use broadband or non-audible movement alarms on plant?
- Could a contract require construction contractors to minimise noise as far as reasonably practicable?

In considering feasibility and reasonableness, the proponent should also more clearly consider the economic value of the project. For example, the EA stated that the concrete batch plant would save about \$900,000 a year. Some of this saving could be spent on noise mitigation measures.

The NIA did not appear to address the noise impacts of the project's rehabilitation. For example demolishing the batch plant and capping the extended tailings storage facility. These are potentially noisy activities, requiring large mobile plant to operate in exposed areas.

The noise model for the project should be updated to include meteorological conditions based on on-site measurements. The NIA referred to "the infrequent occurrence of F class temperature inversion [conditions]". This appears to have been based on recent data from the Bureau of Meteorology's automated weather station at Broken Hill Airport. However, a 2007 noise impact assessment for the Rasp mine indicated that F and G class stability category conditions occurred more than 30% of the time on winter nights between 2004 and 2006, using the Turner method and data from the same location.

BHOP have an on-site weather station, as required by their Environment Protection Licence, so data from that station should have been used to determine the significance of temperature inversion conditions using the sigma-theta method. Even though the NIA said F class stability category conditions were not significant, they were included in noise modelling. Depending on site-specific data, it is possible that G class stability category conditions are also significant: if they are, G class stability category conditions should have been modelled because the site is in an arid area.

The NIA should have included an assessment of the impact of the project from increased rail movements. The EA stated that cement would be transported in ISO tank containers by rail, collected by truck and transported to the batch plant from the mine's concentrate siding. It did not indicate how

many train movements would be needed for cement transport, or what the likely impact of those movements would be.

The EA stated that cement would be emptied into a silo using a blower at the concrete batching plant – this activity does not appear to have been modelled in the NIA. The proponent should explain how their consultant modelled cement being emptied into the silo of the concrete batch plant and how this was included in the noise modelling.

Varying descriptions of the enclosure for the concrete batch plant were provided in the EA and NIA:

- The NIA stated that the concrete batch plant would be contained within a concrete building.
- Photograph 6-1 of the EA, “Proposed Concrete Batching Plant”, showed a concrete batch plant that was not enclosed in concrete.
- The EA also stated that BHOP are committed to enclosing the “batching process” (batching and slumping) in a concrete structure.

The NIA stated that construction noise levels were added to existing site noise levels, and that the existing site noise levels were taken from a noise monitoring report for October 2015. The assessment should explain why the chosen site noise levels represent a reasonable worst case scenario, and why the operational noise model for the site was not used instead.

The EPA has requested additional information is provided for our review. Where necessary the additional information should be used to provide updated noise modelling presented in a revised NIA.

### **Ground and surface water**

Groundwater is expected to be maintained several hundred metres below mining activities and the Blackwood Pit tailings storage facility (TSF2). Post mining conditions are not expected to have an adverse impact on any rising groundwater.

There are no expected adverse surface water impacts from this proposal with no additional catchment areas created as a result of this proposal. There are minor changes from re-directing stormwater to existing catchment structures.

Wet weather contingences have been incorporated into the TSF2 design which include the ability to contain and manage a 1 in 10,000 annual exceedance probability, 72 hour rainfall event. Beyond this rain event a spillway and overflow catchment ponds have been incorporated into the design which was reviewed by the Dam Safety Committee.

### **Waste**

Waste rock is proposed to be used in the construction of the TSF2 wall embankment lifts and for use as a noise abatement bund around the concrete batching plant. If the modification is approved this will be a lawful use of the waste and the EPA has no objections to the proposal. We also note an assessment of lead and heavy metals in the waste rock has been undertaken and based on that assessment and the proposed mitigation measures during construction works the movement and use of this waste will have negligible impacts off-site.

A small amount of additional waste is expected to be generated by the new concrete batching plant and the EPA expects this waste to be disposed lawfully via the project approval and/or through the environment protection licence.