



ABN: 46 099 761 289



Noise Management Plan

for the

Broken Hill North Mine



Prepared by:

RWCorkery&co

November 2025

TITLE BLOCK

Name of Mine:	Broken Hill North Mine
Development Application Number	SSD 7538
Applicant	Perilya Broken Hill Limited
Development Consent Date	22 December 2017, Last Modified 9 December 2021
Development Consent Condition Number & Title	Condition 17 of Schedule 3 Noise Management Plan

VERSION CONTROL

SUMMARY OF DOCUMENT REVISIONS				
Rev. No.	Date Revised	Section Revised	Revision Description	Revision Authority
A	25/9/18	All	Issued for INTERNAL Review	M. Bland
B	26/9/18	6	Issued for AGENCY Review	G. Hender
C	12/11/18	3, 5, 10, 13	Issued for SECRETARY'S Approval	G. Hender
D	07/12/18	Various	Issued for SECRETARY'S Approval (following receipt of DPE comments)	G. Hender
E	08/04/22	Various	Revised following approval of MOD 3	G. Hender
E.2	05/05/22	13	Issued for SECRETARY'S Approval (following receipt of DPE comments)	G. Hender
F	14/05/25	Various	Revised following Independent Environmental Audit	P. Ukpong
G	27/10/25	13, 16	Issued for SECRETARY'S Approval (following receipt of DPHI's comments)	P. Ukpong

CONTENTS

1	Introduction and Scope	5
2	Project Description	6
3	Consultation.....	10
3.1	Previous Consultation	10
4	Environmental Management System	12
5	Legal and Other Requirements.....	13
5.1	Legislative requirements.....	13
5.2	Conditions of Consent.....	13
5.3	Environment Protection License	15
5.4	Mining Leases.....	18
5.5	Guidelines, Policies and Standards	18
6	Environmental Risk	18
7	Existing Environment.....	21
8	Compliance Criteria	22
9	Management and Mitigation Measures	23
10	Monitoring Program	25
10.1	Introduction	25
10.2	Predictive Meteorology	25
10.3	Real-time Meteorological Monitoring	26
10.4	Real-time Noise Monitoring.....	26
10.5	Attended Noise Monitoring	27
11	Trigger Action Response Plans.....	29
12	Compliance Review and Reporting.....	34
12.1	Data Validation.....	34
12.2	Adaptive Management and Reporting	34
12.3	Information regarding the operations and environmental performance	35
13	Exceedance, Non-compliance and Incident Management	35
13.1	Exceedance, Non-compliance and Incident Identification	35
13.2	Annual Review	36
13.3	Emergency Management Process.....	36
13.4	Complaints Management Process	36
14	Training and awareness	37
15	Roles and Responsibilities	37

16	Review and Revision Process	38
16.1	SSD 7538 Schedule 4 Condition 6	38
16.2	SSD 7538 Schedule 4 Condition 7	38
17	References	38

FIGURES

Figure 1	Approved Site Layout	7
Figure 2	Approved Limit of Mining.....	8
Figure 3	EPA Monitoring Locations	17
Figure 4	Example of DUSTX Forecast Tool.....	25

TABLES

Table 1	EPA Feedback on Draft Noise Management Plan	10
Table 2	Conditions of Consent associated with the Noise Management Plan	13
Table 3	EPL 2683 Licence Conditions – Noise-related	15
Table 4	Mining Lease Conditions – Noise-related.....	18
Table 5	Risk Rating Matrix.....	19
Table 6	Risk Assessment – Noise.....	20
Table 7	Background Noise Monitoring Summary	21
Table 8	North Mine-related Compliance Criteria – Noise.....	22
Table 9	Management and Mitigation Measures – Noise.....	23
Table 10	Preliminary Noise Monitoring Trigger Levels	27
Table 11	Trigger Action Response Plan	30
Table 12	Roles and Responsibilities	37

1 Introduction and Scope

This *Noise Management Plan* is one of several required by the Development Consent Conditions of SSD 7538. These plans are listed in Section 4. The overarching document in this list is the *Environmental Management Strategy* for the Broken Hill North Mine which contextualises each of the subordinate management plans and includes generic systems-based details that are common to all plans.

This document describes the management of noise associated with the operational phase of the Broken Hill North Mine (the North Mine).

This document represents a staged approach to the preparation of the various management plans and covers the post-construction phase of the North Mine following formal notification of the commencement of mining operations under Condition 10(b) of Schedule 2 of SSD 7538. This document specifically addresses the requirements of Condition 17 of Schedule 3 of SSD 7538.

Responsibility for preparation of the document has been as follows.

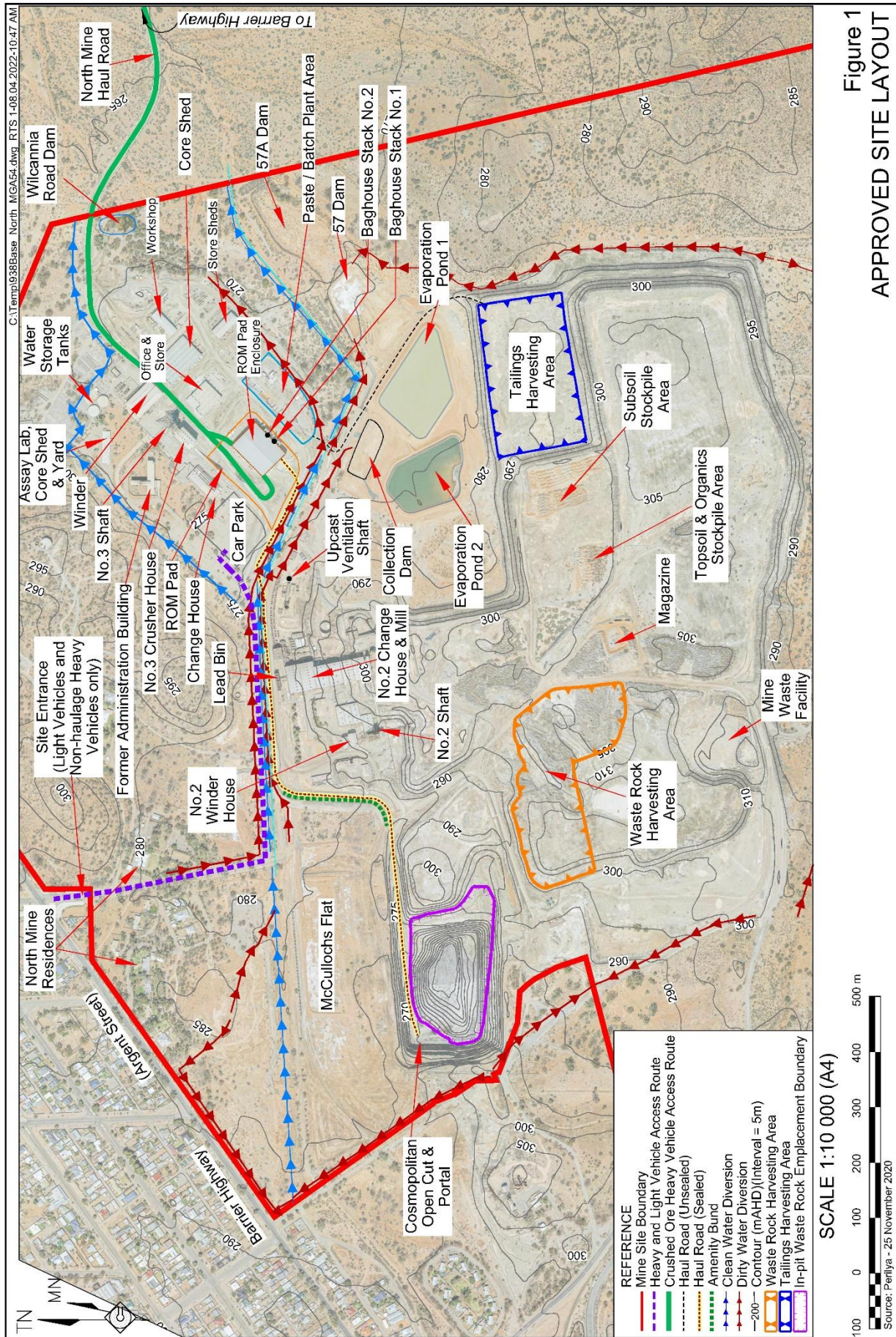
- R.W. Corkery & Co. Pty Limited (RWC) – prepared the initial draft of this document based on the Construction Environmental Management Plan, ensuring consistency between this document and the commitments made throughout the development application process. RWC also provided administrative assistance in the finalisation of this report.
- Perilya Broken Hill Limited (Perilya) – reviewed and completed the draft document and approved the document for release.
- Muller Acoustic Consulting – provided advice in relation to real-time and attended noise monitoring, trigger levels for the Trigger Actions Response Plans and the definition of an exceedance and non-compliance with the noise criteria.

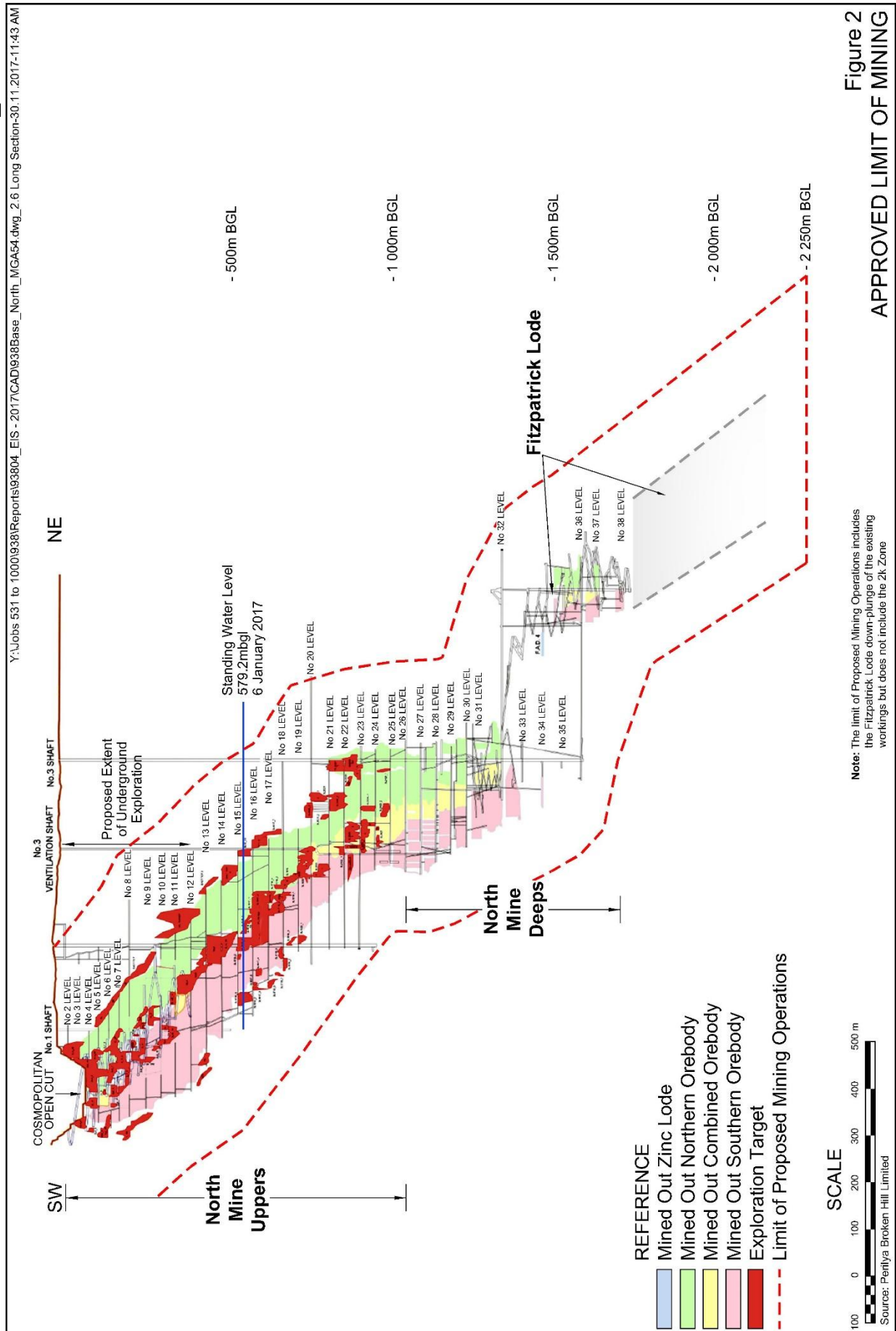
2 Project Description

The North Mine first started operations in 1883. Perilya Broken Hill Limited (Perilya) acquired assets of Pasminco Ltd in Broken Hill, including the North and South Mines, in 2002. Operations recommenced at the North Mine in 2003, with ore crushed from the North Mine and transported to Perilya Southern Operations (Southern Ops) for processing. The North Mine was placed under care and maintenance in August 2008. Underground exploration and maintenance re-commenced in April 2017, and continued operations until May 2023, when the North Mine was placed under care and maintenance again.

Development Consent SSD7538 for the recommencement of mining operations was granted under Section 89E of the *Environmental Planning and Assessment Act 1979* on the 22 December 2017 and subsequently modified on 7 September 2018, 31 July 2019 and 9 December 2021. The approved activities include the following (**Figures 1 and 2**).

- Remediate the existing Cosmopolitan access ramp, portal and decline to the 12 Level (the limit of the existing decline) to facilitate safe and efficient access to the underground workings.
- Restore and upgrade existing electrical, ventilation, air and water services, including on surface and within the decline, No. 2 and No. 3 Shafts, No. 3 Vent Rise.
- Extend the existing decline from the 12 Level to link with the existing decline between the 32 Level and the 38 Level.
- Undertake exploration drilling from underground to further define remnant ore and identify additional ore lenses and lodes.
- Develop access drives to permit access by modern mining equipment.
- Extract up to 400 000 tonnes per annum of remnant ore and ore below the base of previous mining operations, including within the Fitzpatrick Area.
- Transport extracted ore to the surface ROM Pad enclosure, a sealed, negative pressure building equipped with a dust collection system, using underground haul trucks, including establishment of a haulage route.
- Transport extracted waste rock for placement either within completed stopes underground or within the in-pit waste rock emplacement in the Cosmopolitan Open Cut.
- Extract waste rock from the existing surface waste rock emplacement for transportation back underground as required.
- Extract tailings from a former Tailings Storage Facility for mixing with water and cement in a pastefill plant for use backfilling completed stopes.
- Re-establish surface infrastructure required to support the mining operation, including a ROM pad, office and store, workshop and fuel store, change house and car park, services (power, water, air and communications), surface magazine and ancillary infrastructure.
- Crush stockpiled ore within the ROM Pad enclosure using a mobile crusher.
- Load and transport up to 400 000 tonnes per annum of crushed ore to the Southern Operations using A-double road trains via the approved transport route, namely the Potosi Mine Haul Road, Barrier Highway, Iodide Street, Crystal Street and Gypsum Street.





- Generate up to:
 - 32 ore laden truck movements per day;
 - 4 ore laden truck movements per hour;
 - 21 ore laden truck movements per day when averaged over a calendar year; and
 - 42 ore laden truck movements per day from the North Mine and the Potosi Mine when averaged over a calendar year.
- Process the transported ore within the Southern Operations Concentrator under the continuing use rights held for that operation.
- Dewater the existing workings and transfer that water to on-site evaporation ponds or the Southern Operations.

3 Consultation

All previous Revisions of this Management Plan have been prepared in consultation with all relevant agencies in accordance with Development Consent SSD7538 or as directed by the Department of Planning, Housing and Infrastructure.

The following consultation related to the preparation of the current version of this Plan (Revision G) was undertaken, with the following responses received.

- Environment Protection Authority (EPA)

A request for comments or requirements for this Plan was provided to the EPA in August 2024. A response was received on 16 September 2024 stating the following.

“We acknowledge previous comments made by the EPA in 2018 that are reflected in the plan; however, the EPA no longer approves or endorses these plans as our role is to set environmental objectives for environmental management, not to be involved in developing strategies such as this plan to achieve those objectives. As such, we have no further comments on the plan.”

3.1 Previous Consultation

The following consultation related to the preparation of previous revisions of this Plan was undertaken.

- Environment Protection Authority

An email requesting requirements for this Plan was provided to the Environment and Protection Authority on 23 January 2018. A response was received on 1 February 2018 stating that “EPA’s response to the project generally contains our main requirements for the management plans.”

A draft of *Construction Environmental Management Plan* (incorporating the *Noise Management Plan* for the construction phase of the North Mine) the was provided to EPA on 14 March 2018 and no response was received prior to approval of that document by Department of Planning and Environment on 16 August 2018.

A draft of this *Noise Management Plan* was provided to the EPA on 29 September 2018, with a response received on 9 November 2018. **Table 1** presents an overview of the comments received and where/how each comment has been addressed.

Table 1 EPA Feedback on Draft Noise Management Plan

Page 1 of 2

Comment Received	How/where addressed
The relevant guideline for noise is the NSW Industrial Noise Policy (EPA, 2000) until the development is substantially modified or the EPA deems a modified or new activity requires a noise assessment, when the relevant guideline becomes the Noise Policy for Industry (EPA, 2017).	Section 5.5 of the <i>Noise Management Plan</i> states that the Industrial Noise Policy (INP) applies to the development. The footnote to that Section notes that t is the INP that applies despite the fact that the Noise Policy for Industry (NPI) has superseded it. The footnote has been amended to indicate that the NPI may be applied following a future modification to SSD 7538.

Table 1 (Cont'd) EPA Feedback on Draft Noise Management Plan

Page 2 of 2

<i>Comment Received</i>	<i>How/where addressed</i>
The noise trigger levels for the real-time noise monitor should include a relevant LA1 (1 minute) trigger level to address potential issues with noise spikes causing sleep disturbance.	Section 10.3 has been amended to require a noise trigger equivalent to 43dBA(1 min) at the most affected attended noise monitoring location, or 2dBA lower than the commonly accepted sleep disturbance criterion of 45dBA(1 min) (see Section 8).
At Section 13.1 (Incident and non-compliance reporting) it should be stated that non-compliances or exceedances of limit criteria with EPL 2683 will be reported to the EPA (consistent with condition R2 of the EPL).	Section 13 has been amended to provide additional guidance on the definition and management of incidents, non-compliances, emergencies and complaints.

4 Environmental Management System

The Environmental Management System for the North Mine comprises the following principal documents.

- Environmental Management Strategy (EMS)
The EMS defines the broader environmental management system requirements that are common to all relevant environmental aspects for the construction phase of the North Mine.
- Air Quality Management Plan
- Noise Management Plan (this document)
- Blast Management Plan
- Transportation Management Plan
- Water Management Plan
- Operational Historic Heritage Management Plan
- Strategic Historic Heritage Management Plan
- Aboriginal Cultural Heritage Chance Finds Protocol
- Lead Monitoring & Education Program
- Rehabilitation Management Plan

A range of Standard Operating Procedures (SOPs) are in place to manage implementation of the above Management Strategy and Management Plans. These SOPs provide operational personnel with a detailed description of how each of the identified measures is to be implemented. These SOPs are live documents and are introduced, amended, removed and replaced as required.

5 Legal and Other Requirements

A range of approvals, licenses and consents exist for the North Mine, each of which include conditional requirements. The following subsections present the statutory commitments relevant to this *Noise Management Plan*.

5.1 Legislative requirements

The following sections of the *Protection of the Environment Operations Act 1997* (POEO Act) are relevant to this Plan.

- Section 139 makes it an offence to operate any plant at a premises in such a manner as to cause the emission of noise if the noise, or any part of it, is caused by the occupier's failure to maintain the plant in an efficient condition, or to operate the plant in a proper and efficient manner.
- Section 140 makes it an offence to fail to deal with "materials" in a proper and efficient manner that results in noise.
- Section 141 sets out maximum penalties for noise offences relating to Section 139 and 140.

5.2 Conditions of Consent

Conditional requirements identified in SSD 7538 that are relevant to this *Noise Management Plan* are reproduced in **Table 2** with a reference provided to the section(s) of this document where each conditional requirement is addressed.

Table 2 Conditions of Consent associated with the Noise Management Plan

Page 1 of 3

Page 10 of 10

Cond. No.	Conditions of Consent	Document Reference																									
3(14)	Prior to commencing construction, and for the life of the development, the Applicant must ensure that there is an on-site meteorological station that: (a) complies with the requirements in the Approved Methods for Sampling of Air Pollutants in New South Wales guideline; and (b) is capable of continuous real-time measurement of temperature inversions in accordance with the NSW Industrial Noise Policy, unless a suitable alternative is approved by the Secretary following consultation with the EPA.	Sect 10.3																									
3(15)	The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 3. Table 3: Noise criteria dB(A) <table><tr><th>Location</th><th>Day L_{Aeq}(15min)</th><th>Evening L_{Aeq}(15min)</th><th colspan="2">Night</th></tr><tr><td></td><td></td><td></td><th>L_{Aeq}(15min)</th><th>L_{A1}(1min)</th></tr><tr><td>NC1, NC2,</td><td>38</td><td>38</td><td>35</td><td>45</td></tr><tr><td>NC3, NC4, NC5</td><td>36</td><td>36</td><td>35</td><td>45</td></tr><tr><td>All other residential receivers</td><td>35</td><td>35</td><td>35</td><td>45</td></tr></table> Noise generated by the development is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 5 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria. However, these noise criteria do not apply if the Applicant has an agreement with the owner/s or leaseholders of the residence to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement. Note: To interpret the locations referred to in Table 3, see the figure in Appendix 4.	Location	Day L _{Aeq} (15min)	Evening L _{Aeq} (15min)	Night					L _{Aeq} (15min)	L _{A1} (1min)	NC1, NC2,	38	38	35	45	NC3, NC4, NC5	36	36	35	45	All other residential receivers	35	35	35	45	Sect 8
Location	Day L _{Aeq} (15min)	Evening L _{Aeq} (15min)	Night																								
			L _{Aeq} (15min)	L _{A1} (1min)																							
NC1, NC2,	38	38	35	45																							
NC3, NC4, NC5	36	36	35	45																							
All other residential receivers	35	35	35	45																							

Table 2 Conditions of Consent associated with the Noise Management Plan (Cont'd)

Page 2 of 3

Cond. No.	Conditions of Consent	Document Reference
3(16)	The Applicant must: (a) minimise the construction, operational and road noise of the development; (b) minimise the noise impacts of the development during meteorological conditions when the noise criteria in this consent do not apply (see Appendix 5); (c) carry out regular monitoring to determine whether the development is complying with the relevant conditions of this consent; and (d) regularly assess noise monitoring data and modify and/or stop operations on site to ensure compliance with the relevant conditions of this consent.	Sect 9 Sect 9 and 11 Sect 10 Sect 11 & 12
3(17)	Prior to commencing construction, unless the Secretary agrees otherwise, the Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with EPA; (b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions of this consent; (c) describe the proposed noise management system in detail; (d) include a noise monitoring program that: • uses a combination of: - attended and unattended noise monitoring measures; and - reactive and proactive mitigation measures; • monitors noise at the nearest and/or most affected receptors; • evaluates and reports annually on: - the effectiveness of the noise management system; and - compliance with the noise criteria and operating conditions in this consent; • defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents; and • outlines procedures to manage responses to any complaints or issues raised by the owners of affected residences.	Sect 3 Sects 9 to 13 Sect 9 to 13 Sect 10.4 and 10.5 Sect 11 Sect 10.5 Sect 12.2 Sect 13.1 Sect 13.3
3(18)	The Applicant must implement the approved Noise Management Plan for the development.	Noted
4(4)	The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include: (a) detailed baseline data; (b) a description of: • the relevant statutory requirements (including any relevant approval, licence or lease conditions); • any relevant limits or performance measures/criteria; • the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria; (d) a program to monitor and report on the: • impacts and environmental performance of the development; • effectiveness of any management measures (see c above); (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;	Sect 7 Sect 5 Sect 8 Sect 8 Sects 9 to 13 Sect 12 Sect 11

Table 2 Conditions of Consent associated with the Noise Management Plan (Cont'd)

Page 3 of 3

Cond. No.	Conditions of Consent	Document Reference
4(4) (Cont'd)	(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Sect 12.2
	(g) a protocol for managing and reporting any: - incidents; - complaints; - non-compliances with statutory requirements; an exceedances of the impact assessment criteria and/or performance criteria; and	Sect 13
	(h) a protocol for periodic review of the plan.	Sect 16

5.3 Environment Protection License

A variation to Environment Protection License (EPL) 2683 was issued 26 July 2022. Conditional requirements identified in EPL 2683 that are relevant to this *Noise Management Plan* are reproduced in **Table 3** with a reference provided to the section(s) of this document where each conditional requirement is addressed. **Figure 3** presents the locations of each of the identified EPA monitoring locations.

Table 3 EPL 2683 Licence Conditions – Noise-related

Page 1 of 2

Page 1 of 2

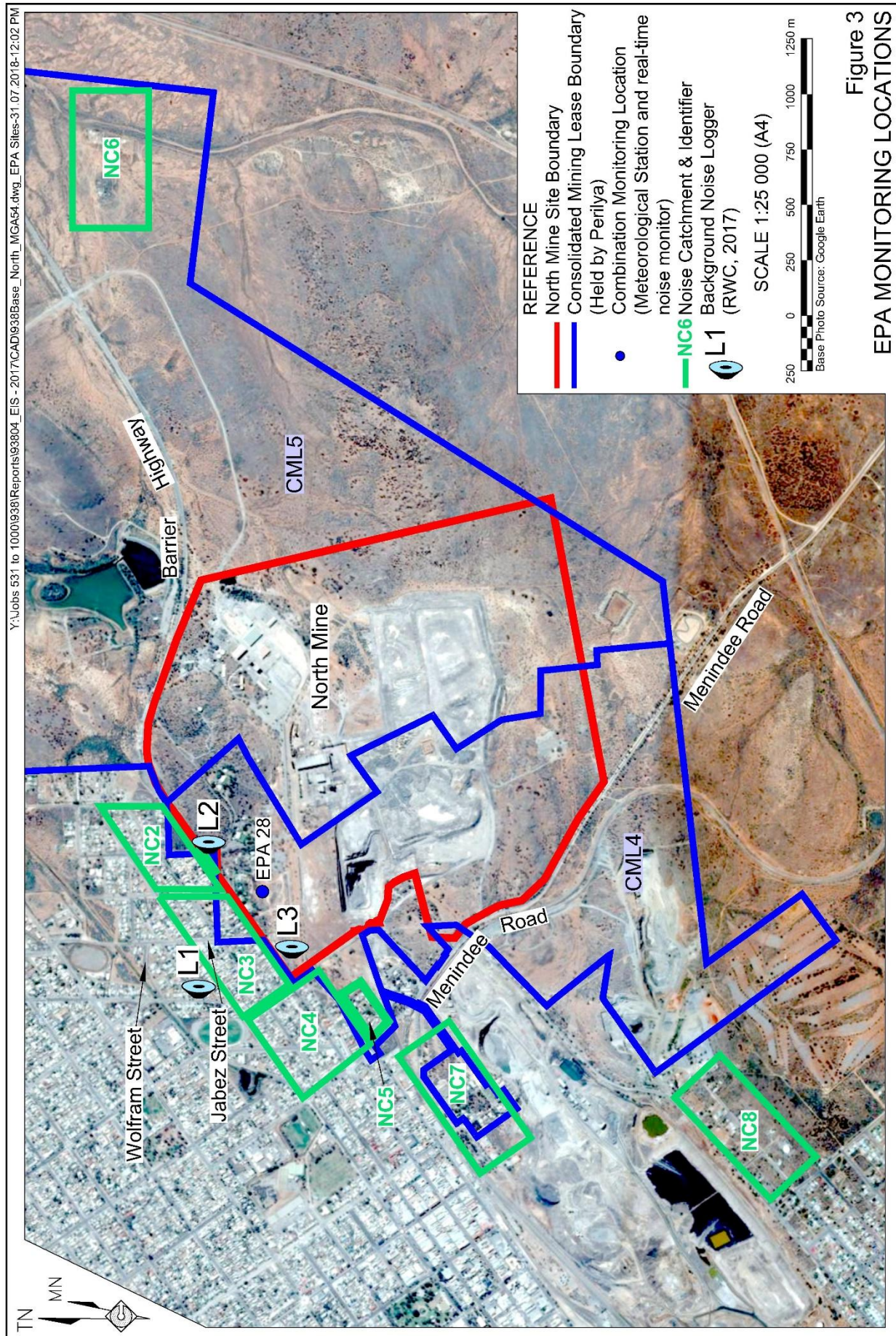
Cond. No.	Conditions of Consent	Document Reference																																			
P1.2	An onsite meteorological station must be established at EPA28	Sect 10.3																																			
M4.1	At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units Point 28 <table><tr><th>Parameter</th><th>Sampling method</th><th>Units of measure</th><th>Averaging period</th><th>Frequency</th></tr><tr><td>Rainfall</td><td>AM-4</td><td>millimetres per hour</td><td>1 hour</td><td>Continuous</td></tr><tr><td>Wind Direction at 10 metres</td><td>AM-2 & AM-4</td><td>Degrees</td><td>30 minutes</td><td>Continuous</td></tr><tr><td>Wind Speed at 10 metres</td><td>AM-2 & AM-4</td><td>metres per second</td><td>30 minutes</td><td>Continuous</td></tr><tr><td>Temperature at 10 metres</td><td>AM-4</td><td>degrees Celsius</td><td>1 hour</td><td>Continuous</td></tr><tr><td>Temperature at 2 metres</td><td>AM-4</td><td>degrees Celsius</td><td>1 hour</td><td>Continuous</td></tr><tr><td>Relative humidity</td><td>AM-4</td><td>percent</td><td>1 hour</td><td>Continuous</td></tr></table>	Parameter	Sampling method	Units of measure	Averaging period	Frequency	Rainfall	AM-4	millimetres per hour	1 hour	Continuous	Wind Direction at 10 metres	AM-2 & AM-4	Degrees	30 minutes	Continuous	Wind Speed at 10 metres	AM-2 & AM-4	metres per second	30 minutes	Continuous	Temperature at 10 metres	AM-4	degrees Celsius	1 hour	Continuous	Temperature at 2 metres	AM-4	degrees Celsius	1 hour	Continuous	Relative humidity	AM-4	percent	1 hour	Continuous	Sect 10.3
Parameter	Sampling method	Units of measure	Averaging period	Frequency																																	
Rainfall	AM-4	millimetres per hour	1 hour	Continuous																																	
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	30 minutes	Continuous																																	
Wind Speed at 10 metres	AM-2 & AM-4	metres per second	30 minutes	Continuous																																	
Temperature at 10 metres	AM-4	degrees Celsius	1 hour	Continuous																																	
Temperature at 2 metres	AM-4	degrees Celsius	1 hour	Continuous																																	
Relative humidity	AM-4	percent	1 hour	Continuous																																	
P1.2	Attended noise monitoring must be undertaken at EPA33 to EPA42 (or NC1 to NC8 plus surrounding residences – See Figure 3)	Sect 10.5																																			

Table 3 EPL 2683 Licence Conditions – Noise-related (Cont'd)

Page 2 of 2

Page 2 of 4

Cond. No.	Conditions of Consent	Document Reference																																												
L.4.2	Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2. POINT 33,34 <table><tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr><tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Quarterly</td><td>38</td></tr><tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Quarterly</td><td>38</td></tr></table> POINT 33,34,35,36,37,38,39,40,41,42 <table><tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr><tr><td>Night</td><td>Night-LAeq (15 minute)</td><td>Quarterly</td><td>35</td></tr></table> POINT 35,36,37 <table><tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr><tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Quarterly</td><td>36</td></tr><tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Quarterly</td><td>36</td></tr></table> POINT 38,39,40,41,42 <table><tr><th>Time period</th><th>Measurement parameter</th><th>Measurement frequency</th><th>Noise level dB(A)</th></tr><tr><td>Evening</td><td>Evening-LAeq (15 minute)</td><td>Quarterly</td><td>35</td></tr><tr><td>Day</td><td>Day-LAeq (15 minute)</td><td>Quarterly</td><td>35</td></tr></table>	Time period	Measurement parameter	Measurement frequency	Noise level dB(A)	Day	Day-LAeq (15 minute)	Quarterly	38	Evening	Evening-LAeq (15 minute)	Quarterly	38	Time period	Measurement parameter	Measurement frequency	Noise level dB(A)	Night	Night-LAeq (15 minute)	Quarterly	35	Time period	Measurement parameter	Measurement frequency	Noise level dB(A)	Day	Day-LAeq (15 minute)	Quarterly	36	Evening	Evening-LAeq (15 minute)	Quarterly	36	Time period	Measurement parameter	Measurement frequency	Noise level dB(A)	Evening	Evening-LAeq (15 minute)	Quarterly	35	Day	Day-LAeq (15 minute)	Quarterly	35	Sect 8
Time period	Measurement parameter	Measurement frequency	Noise level dB(A)																																											
Day	Day-LAeq (15 minute)	Quarterly	38																																											
Evening	Evening-LAeq (15 minute)	Quarterly	38																																											
Time period	Measurement parameter	Measurement frequency	Noise level dB(A)																																											
Night	Night-LAeq (15 minute)	Quarterly	35																																											
Time period	Measurement parameter	Measurement frequency	Noise level dB(A)																																											
Day	Day-LAeq (15 minute)	Quarterly	36																																											
Evening	Evening-LAeq (15 minute)	Quarterly	36																																											
Time period	Measurement parameter	Measurement frequency	Noise level dB(A)																																											
Evening	Evening-LAeq (15 minute)	Quarterly	35																																											
Day	Day-LAeq (15 minute)	Quarterly	35																																											
L4.3	Definition: LAeq is the equivalent continuous noise level - the level equivalent to the energy-average of noise levels emitted by the premises over the stated measurement period. Noise from the premises is to be measured at the most affected point on or within the residential boundary or at the most affected point within 30m of the dwelling (rural situations) where the dwelling is more than 30m from the boundary to determine compliance with the LAeq (15 minute) noise limits in condition L3.1 and L3.2 unless otherwise stated.	Sect 10.5																																												
L4.4	The noise limits set out in condition L3.1 and L3.2 apply under all meteorological conditions except for the following: a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or c) Stability category G temperature inversion conditions. For the purposes of this condition: Data recorded by the meteorological station identified as point 28 at condition P1.2 of this licence must be used to determine meteorological conditions.	Sect 8																																												



5.4 Mining Leases

Consolidated Mining Leases (CMLs) 4 and 5 have been renewed until 23 June 2024 and 6 June 2038. Conditional requirements identified in CML4 and 5 that are relevant to this CMP are reproduced in **Table 4** with a reference provided to the section(s) of this document where each conditional requirement is addressed.

Table 4 Mining Lease Conditions – Noise-related

<i>Cond No</i>	<i>Conditions of Consent</i>	<i>Document Reference</i>
2	The proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation or rehabilitation of the development.	Entire document

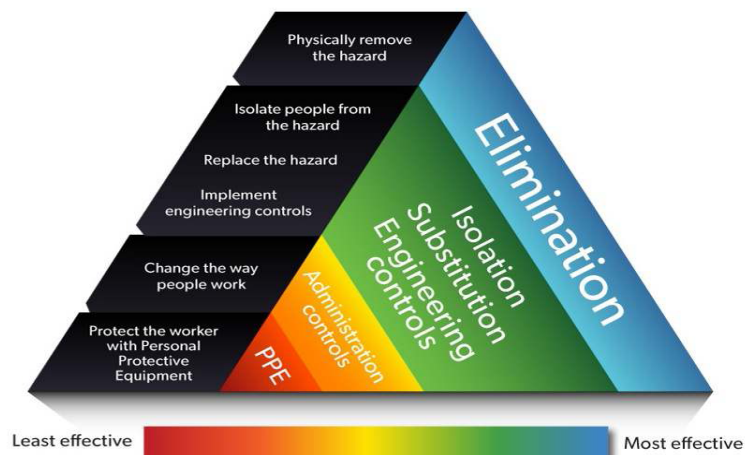
5.5 Guidelines, Policies and Standards

The Industrial Noise Policy (2000)¹ is also relevant to this Plan and must be complied with at the North Mine.

6 Environmental Risk

Tables 5 and 6 presents the risk rating matrix and risk assessment specific to noise during the operational phase of the North Mine. The risk rankings and control measures identified in **Table 6** have informed the management and mitigation measures identified in Section 9.

¹ The Industrial Noise Policy (2000) has been superseded by the Noise Policy for Industry (2017). However, it is the 2000 version that has been referenced by Development Consent SSD7538 and is therefore applicable to the Mine. The 2017 version may be applied following a future modification of SSD7538.

Table 5 Risk Rating Matrix

Consequence	Negligible	Minor	Moderate	Major	Catastrophic
People	Minor injury First aid treatment	Medical treatment injury Restricted work injury	Serious injury Lost time injury (LTI)	Multiple LTIs Permanent disabling injury	Fatality Multiple fatalities
Environment	Little or no environmental harm. Not required to inform EPA/Government.	Minor transient environmental harm. Transient release of pollutants. Required to inform EPA/Government	Measurable environmental harm with mid-term recovery. Significant release of pollutants.	Long term environmental harm. Major contamination, unapproved clearance of native vegetation, damage to heritage site.	Serious impacts, long term environmental damage. Dislocation of people, significant breach of tailings storage, contamination of potable water
Reputation	No measurable impact	Minor or moderate impact. Local media coverage, public complaints	Short term measurable but recoverable impact. (recovery <6 months) Averse capital city media coverage	Medium term impact (recovery < 12 months). National adverse mainstream media, loss of investor confidence, possible staff losses or moral issues	Serious, permanent or irrecoverable damage. Forced shutdown of major installation, extended national adverse media campaign, parliamentary enquiry
Financial & Commercial	No measurable loss, no measurable impact on customers	Loss \$50-500K Minimal business interruption.	Loss \$0.5-5M Business impact, service interruption, loss of market share	Loss \$5-10M Business interruption, major equipment failure, major loss of market share	Loss >\$10M Major business interruption, significant loss of market share, plant catastrophe.
Legal Liability	Little or no liability	Third part claims <\$500K	Corporate fine <\$1M, multiple third part claims \$0.5-2M	Corporate fine \$1-5M, personal fine, multiple third part claims \$2-10M	Corporate fine >\$5M, Officer goaled, multiple third part claims >\$10M
Risk Level					
Likelihood	A	B	C	D	E
Almost certain: < 1 in 100 expected to occur within 1 yr	16	10	8	3	1
Likely: 1 in 100 - 1000 probably occur within 3 yrs	18	14	9	5	2
Possible: 1 in 1000 - 10,000 may occur in within 10 yrs	20	17	11	7	4
Unlikely: in normal situations 1 in 10,000 - 1M, >10 yrs	23	21	15	12	6
Rare: >1 in 1M theoretically possible	25	24	22	19	13

Table 6 Risk Assessment – Noise

Risk Description	Unmitigated Risk Level	Current Controls	Additional Controls Required	Residual Risk Level	Accept Y/N
Operational noise emissions are considered unacceptable by surrounding residents resulting in noise complaints	Moderate (14)	- Strictly comply with the approved hours of operation. - Regularly service all on-site equipment - Install frequency modulated reversing alarms. - Maintain an open dialogue with the surrounding community	Undertake real-time noise monitoring and adjust on-site activities in the event that nominated trigger levels are exceeded	Low (21)	Yes
Operational noise emissions result in non-compliance with the relevant noise criteria	Moderate (11)	- Strictly comply with the approved hours of operation. - Regularly service all on-site equipment - Install frequency modulated reversing alarms. - Maintain an open dialogue with the surrounding community	- Undertake real-time noise monitoring as described below and adjust on-site activities in the event that nominated trigger levels are exceeded - Undertake attended noise monitoring as described below and adjust surface activities as required in light of the results	Low (21)	Yes
Operational noise emissions under adverse meteorological conditions (when the noise criteria do not apply) result in noise impacts are considered unacceptable by surrounding residents resulting in noise complaints	Moderate (14)	- Strictly comply with the approved hours of operation. - Regularly service all on-site equipment - Install frequency modulated reversing alarms. - Maintain an open dialogue with the surrounding community	- Undertake real-time noise monitoring as described below and adjust on-site activities in the event that nominated trigger levels are exceeded - Review surface activities during periods of winds of more than 3m/s at 10m or when F- of G-class temperatures are present	Low (21)	Yes
Road traffic noise emissions are considered unacceptable by residents resulting in noise complaints	Low (22)	- Strictly comply with the approved hours of operation. - Regularly service all on-site equipment - Maintain an open dialogue with the surrounding community - Strictly comply with the approved traffic levels - Ensure that all drivers comply with the Driver's Code of Conduct and address matters of non-compliance	Nil	Low (22)	Yes
Operational noise emissions result in non-compliance with the relevant road traffic noise criteria	Low (22)	- Strictly comply with the approved hours of operation. - Regularly service all on-site equipment - Maintain an open dialogue with the surrounding community - Strictly comply with the approved traffic levels - Ensure that all drivers comply with the Driver's Code of Conduct and address matters of non-compliance	Nil	Low (22)	Yes

7 Existing Environment

Background noise conditions are described in Section 4.4.2 of RWC (2017). In summary, **Table 7** presents the measured background noise levels at three locations surrounding the Mine Site. **Figure 3** presents the location of each of the loggers.

Table 7 Background Noise Monitoring Summary

Location	Measured Rating Background Level (dBA)			Measured Equivalent Continuous Level (dBA)		
	Day¹	Evening¹	Night¹	Day¹	Evening¹	Night¹
L1	30 (29)2	31	30 (22) 2	43	43	38
L2	33	35	30 (26) 2	50	50	46
L3	31	31	30 (25) 2	48	47	45
Note 1: Day period is from 7:00am to 6:00pm. Evening period is from 6:00pm to 10:00pm. Night period is from 10:00pm to 7:00am						
Note 2: Where the measured rating background level is lower than 30dBA a level of 30dBA is applied and the measured level is shown in brackets						
Source: MAC (2017) after Table 5						

8 Compliance Criteria

Noise compliance criteria for the North Mine are set out in Condition 15 of Schedule 3 of SSD7538. **Table 8** reproduces the identified criteria. **Figure 3** presents the location of Noise Catchments (NC) NC1 to NC5.

Table 8 North Mine-related Compliance Criteria – Noise

<i>Location</i>	<i>Day LAeq(15min)</i>	<i>Evening LAeq(15min)</i>	<i>Night</i>	
			<i>LAeq(15min)</i>	<i>LA1(1min)</i>
NC1, NC2	38	38	35	45
NC3, NC4, NC5	36	36	35	45
All other residential receivers	35	35	35	45

It is noted that the compliance criteria identified in **Table 8** apply under all meteorological conditions, with the exception of the following.

- Wind speeds greater than 3m/s at 10m above ground level.
- Stability category F temperature inversion² conditions and wind speeds greater than 2m/s at 10m above ground level.
- Stability category G temperature inversion³ conditions.

² An F-class or moderate temperature inversion is relevantly defined by the NSW Industrial Noise Policy as a 3°C/100m temperature inversion.

³ A G-class or moderate temperature inversion is relevantly defined by the NSW Industrial Noise Policy as a 8°C/100m temperature inversion.

9 Management and Mitigation Measures

Table 9 presents the management and mitigation measures required to ameliorate potential North Mine-related noise impacts.

Table 9 Management and Mitigation Measures – Noise

Page 1 of 2

Mitigation Measure	Timing	Source	Responsibility	Evidence for compliance												
Operate a meteorological station capable of real-time monitoring at location EPA28 consistent with the requirements of Condition 3(14) of SSD 7538 and Condition P1.2 of EPL 2683 and ensure that - the station is monitored in real-time by the Mine Control Centre (MCC); and - notifications are provided to key management personnel in accordance with the triggers presented in Section 10.3.	Continuous throughout the life of the North Mine	SSD 7538 - Condition 3(14) EPL 2683 – Condition P1.2	Environment Superintendent	Photographs Initial calibration certificate MCC records												
Operate a real-time noise monitoring terminal at location EPA28 and ensure that - the station is monitored in real-time by the Mine Control Centre; and - notifications are provided to key management personnel in accordance with the triggers presented in Section 10.3.4.	Continuous throughout the life of the North Mine	SSD 7538 - Condition 3(17)(d)	Environment Superintendent	Photographs Initial calibration certificate MCC records												
Install frequency modulated reversing alarms to all mobile equipment.	Continuous throughout the life of the North Mine	EIS (Section 4.4.6)	Mechanical Workshop Supervisor	Equipment specifications, maintenance records												
Strictly comply with the approved hours of operation identified below	Continuous throughout the life of the North Mine	Development Consent (Condition 2(9))	North Mine Manager	Personnel records Mine Record Book Site access records Real-time noise records												
<table><tr><th>Activity</th><th>Hours</th></tr><tr><td>Construction</td><td>7 am to 6 pm, Monday to Friday 8 am to 1 pm, Saturday No activities on Sundays or public holidays</td></tr><tr><td>Crushing, tailings harvesting, waste rock harvesting, ore transportation (ROM pad to South Mine)</td><td>8 am to 6 pm, 7 days a week</td></tr><tr><td>Ore transportation (mine portal to ROM pad)</td><td>7 am to 6 pm and 7 pm to 6 am, 7 days a week</td></tr><tr><td>Production blasting, rehabilitation</td><td>6:45 am to 7:15 pm, 7 days a week</td></tr><tr><td>All other activities</td><td>24 hours a day, 7 days a week</td></tr></table>					Activity	Hours	Construction	7 am to 6 pm, Monday to Friday 8 am to 1 pm, Saturday No activities on Sundays or public holidays	Crushing, tailings harvesting, waste rock harvesting, ore transportation (ROM pad to South Mine)	8 am to 6 pm, 7 days a week	Ore transportation (mine portal to ROM pad)	7 am to 6 pm and 7 pm to 6 am, 7 days a week	Production blasting, rehabilitation	6:45 am to 7:15 pm, 7 days a week	All other activities	24 hours a day, 7 days a week
Activity	Hours															
Construction	7 am to 6 pm, Monday to Friday 8 am to 1 pm, Saturday No activities on Sundays or public holidays															
Crushing, tailings harvesting, waste rock harvesting, ore transportation (ROM pad to South Mine)	8 am to 6 pm, 7 days a week															
Ore transportation (mine portal to ROM pad)	7 am to 6 pm and 7 pm to 6 am, 7 days a week															
Production blasting, rehabilitation	6:45 am to 7:15 pm, 7 days a week															
All other activities	24 hours a day, 7 days a week															
Regularly service all on-site equipment to ensure sound power levels of each item remains at or below the default/or factory-set values.	Continuous throughout the life of the North Mine	EIS (Section 4.4.6)	Mechanical Workshop Supervisor	Maintenance records												

Table 9 Management and Mitigation Measures – Noise (Cont'd)

Page 2 of 2

Mitigation Measure	Timing	Source	Responsibility	Evidence for compliance
Ensure that all truck drivers comply with the Driver's Code of Conduct outlining procedures for reducing noise impacts during transportation within the Mine Site and off site.	Continuous throughout the life of the North Mine	EIS (Section 4.4.6)	Training Supervisor	Driver's Code of Conduct Training records Vehicle data and dashcam videos
Maintain an open dialogue with the surrounding community and neighbours to ensure any concerns over noise or vibration are addressed.	Continuous throughout the life of the North Mine	EIS (Section 4.4.6)	North Mine Manager	CCC Meeting notes Mine Manager diary notes Complaints and Communication records
Implement the complaint management system described in Section 13.3 and Tarp N1	On receipt of a complaint	TARP N1	North Mine Manager	Complaint register and log
Implement an attended noise monitoring system as described in Section 10.5 and TARP N2	Quarterly and as required	Development Consent (Condition 3(17))	North Mine Manager	Attended monitoring reports
Implement a real-time monitoring program as described in Section 13.3 and Tarp N3	Continuous	Development Consent (Condition 3(17))	North Mine Manager	Web portal
Implement a procedure to proactively and reactively manage noise emissions under adverse meteorological conditions as described in Tarps N4 and N5	Continuous throughout the life of the North Mine	Development Consent (Condition 3(16)(a) and (b))	North Mine Manager	Mine Record Book Real-time noise records Real-time meteorological Records

10 Monitoring Program

10.1 Introduction

The Noise Monitoring Plan will comprise three components, namely:

- a real-time meteorological monitoring program capable of detecting adverse meteorological conditions;
- a real-time noise monitoring program capable of facilitating adaptive management of noise within the Mine Site; and
- an attended monitoring program capable of demonstrating compliance with the criteria presented in Section 8.

10.2 Predictive Meteorology

Perilya uses KITE DustX system maintained by Katestone Environmental (<http://kite.katestone.com.au/>). This system provides a 7-day forecast of meteorological conditions, with a particular focus on dust generation. In addition, it provides updates at hourly resolution to the forecast weather conditions. **Figure 4** presents an example of the output of this system. Relevant units are as follows.

- Potential Inversion Strength – units = degrees/100m
- Wind speed – units = km/h.

DustX - Hourly Forecast Detail for Broken Hill

Dashboard		Observations																		Select Site:				
Monday 16, July 2018																								
Time	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
Dust	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
Liftoff	23	27	27	29	42	62	64	80	90	69	45	36	36	40	55	67	58	23	2	1	1	0	1	3
Pan Evap																								
Dispersion	0.08	0.08	0.10	0.08	0.08	0.10	0.12	0.12	0.14	0.21	0.31	0.39	0.47	0.50	0.50	0.47	0.39	0.25	0.05	0.02	0.01	0.00	0.00	0.00
Pot	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	L	L	L
Inversion																								
Strength	1.6	1.6	2.0	1.8	1.0	1.1	1.1	1.4	1.1	0.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.8	3.3	3.6	3.8
Inversion Base	0	0	0	0	0	0	0	0	0	47	116	-	-	-	-	-	-	-	-	0	0	0	0	0
Inversion Top	122	122	120	120	219	219	215	211	207	205	207	-	-	-	-	-	-	-	-	57	55	54	53	52
Soil Moisture	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
WSpeed	21	22	22	22	24	27	27	29	30	28	25	23	23	24	26	28	27	21	12	12	11	11	11	13
WDir	↘ NW	↓ N	↓ N	↓ N	↓ N	↓ N	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	↘ NW	
T	9	10	9	9	9	9	9	9	8	10	11	13	14	16	17	17	17	16	13	11	10	9	8	8
TD	-6	-6	-6	-6	-6	-6	-7	-7	-7	-8	-7	-7	-5	-2	-0	1	2	3	3	4	4	4	4	4
RH	35	33	35	35	34	33	33	33	32	27	28	25	25	30	32	34	37	40	53	59	65	70	73	74
Rain	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SR	0	0	0	0	0	0	0	0											0	0	0	0	0	0

Figure 4 Example of DUSTX Forecast Tool

As a result, in the example presented a moderate temperature inversion is expected to commence around 9:00pm, with light winds of 8km/h or 2.2m/s.

The daily forecast will be provided to the North Mine Manager, the North Mine Operations Superintendent and the Environmental Superintendent or their delegate for distribution at pre-start meetings. The data dashboard will be made available to all senior North Mine personnel. TARPs associated with “dust lift off” predictions are presented in Section 11.

Noise enhancing conditions are classified as follows.

- Winds from the east to southwest (100° - 230°) at less than 3m/s or 11km/h.
- Moderate temperature inversions with a strength of $3^{\circ}\text{C}/100\text{m}$.

10.3 Real-time Meteorological Monitoring

A real-time meteorological station is installed at EPL28 (**Figure 3**). The station records the following.

- Temperature ($^{\circ}\text{C}$) at 2m and 10m.
- Wind speed (m/s) and direction (degrees) at 10m.
- Rainfall (mm/h).

The following triggers will be established to alert the North Mine Manager or their delegate when the following adverse meteorological conditions are present. Following receipt of an alert, the North Mine Manager will implement the procedures presented in the TARPs in Section 11.

- Winds from the east to southwest (100° - 230°) at less than 3m/s or 11km/h.
- Moderate temperature inversions with a strength of $3^{\circ}\text{C}/100\text{m}$.

10.4 Real-time Noise Monitoring

A noise monitoring terminal with post processing capabilities will be installed at EPA28 as shown in **Figure 3**. The monitor will meet the following technical specifications:

- Be capable of measuring and storing Leq, Lmin, Lmax and statistical parameters (L1 - L99);
- Have A, C and Z weighting filters and measure 1/3 octaves;
- Automatic filtering of data using customisable Low Pass (frequencies below 1000Hz) and All Pass (all frequencies) filters for audio and statistical parameters;
- Capable of recording and storing high quality, high resolution audio files that can be used to identify noise sources; and
- connectivity to the existing Mine Control Centre’s control systems enables access to real time noise metrics and audio.

Typically, mining plant emissions below 1000Hz are likely to be the cause of significant noise contribution at offsite receivers, as higher frequencies are unlikely to propagate over such a distance at a significant magnitude. This is primarily due to distance and atmospheric attenuation, and topography which has a greater effect on higher frequencies, than lower frequencies.

As an interim measure, **Table 10** presents the preliminary Noise Monitoring Trigger Levels, expressed as All Pass and Low Pass Trigger Levels. The trigger levels are calculated from noise modelling results of the operation completed for the EIS. The trigger levels have been determined via modelling to calculate the All Pass and Low Pass levels at EPA28 equivalent to the noise criteria identified in **Table 8** at the closest residential receiver NC3 (**Figure 3**). Hence, for a noise event from the North Mine to cause an alert from the noise monitoring terminal, both the All Pass and Low Pass triggers must be exceeded simultaneously at EPA28.

Table 10 Preliminary Noise Monitoring Trigger Levels

<i>Period</i>	<i>Units</i>	<i>Noise Criteria at NC3</i>	<i>All Pass Trigger Level dB LAeq(15min)^{1,2}</i>	<i>Low Pass Trigger at dB LAeq(15min)^{1,2}</i>
Day	LAeq(15min)	36	44	41
Evening	LAeq(15min)	36	44	41
Night	LAeq(15min)	35	43	40
	LA1(1min)	45	53	50
Note 1: To be updated progressively throughout the life of the North Mine				
Note 2: Adopts a 5dB adjustment to account for the distance between NMT1 and NC3.				
Source: Muller Acoustic Consulting				

It is envisaged that the preliminary trigger levels will be calibrated in the field by operator attended monitoring and via a calibrated noise model during initial mining operations. This will allow real world operational noise levels to be accounted for, as well as other extraneous noise sources in the area. As a result, the trigger levels presented in **Table 10** will be updated within 6 months of the commencement of mining operations. Where required, the triggers will be reviewed progressively throughout the life of the North Mine to reflect findings from attended noise monitoring results and operational changes.

In the event that an exceedance is detected, an alert will be sent automatically to North Mine Manager or their delegate who will implement the TARP's identified in Section 11.

The real-time noise monitor will be maintained and calibrated in accordance with the manufacturer's instructions.

10.5 Attended Noise Monitoring

Attended noise monitoring will be undertaken by an independent, suitably qualified acoustic consultant quarterly as a minimum, prior to the commencement of mining operations. Perilya may undertake more frequent attended noise monitoring during the initial stages of construction to ensure that the proposed noise-related management and mitigation measures are operating as anticipated.

Attended noise monitoring will be undertaken from publicly accessible locations representative of each noise catchment, NC1 to NC8 (**Figure 3**).

Perilya has elected to undertake monitoring on publicly available land for the following reasons.

- Minimising disruption to residents when conducting night-time monitoring on private land.
- Ensuring continued access to all monitoring locations in the event of a change of ownership of a particular residence.
- Distance from residences to property boundaries are such that appropriate offset distances to structures may be obtained without access private property.

Attended monitoring will be undertaken during the daytime, evening and night-time at all monitoring locations as required in the EPL.

All attended noise monitoring will be conducted in accordance with the requirements of the following documents.

- NSW Noise Policy for Industry, 2017 (NPI).
- AS 1055-2018 “Acoustics – Description and Measurement of Environmental Noise – General Procedures”.

All attended monitoring equipment will be maintained and calibrated in accordance with the manufacturer’s instructions.

Information to be recorded for all operator attended monitoring will include:

- date and time, location and operator;
- meteorological conditions (i.e. temperature, humidity, cloud cover, and wind speed and direction);
- statistical noise level descriptors together with notes identifying the dominant noise sources;
- instrument make, model, serial number and calibration details;
- a brief description of activities on the Mine Site wherever possible;
- identify North Mine related noise sources and their relative contribution to overall ambient noise levels; and
- where possible, identify other extraneous and non-mining noise sources.

Any significant North Mine generated noise sources (i.e. haul trucks, bulldozers, front-end loaders, etc) will be recorded, together with any extraneous noise sources. In addition, Perilya will maintain copies of the relevant fixed plant and mobile equipment mining operating shift logs and mining locations for inclusion in the noise monitoring report.

In the event of an exceedance of the relevant noise criteria attributable to the North Mine identified during operator attended monitoring, the operator will contact the relevant site personnel promptly advising them of the exceedance and informing them of the location, the degree of exceedance and the source of emission where possible. In the event that the exceedance is attributable to in industrial noise source unrelated to the North Mine, Perilya will notify the relevant organisation that their operations may be having an adverse noise-related impact.

11 Trigger Action Response Plans

Table 11 presents the Trigger Action Response Plans (TARPs) for noise-related impacts. The order that the TARPs are presented correspond with the order in which risks are presented in the Risk Assessment presented in Section 6.

Table 11 Trigger Action Response Plan

Page 1 of 4

TARP No	Issue	Trigger Level	Alert Level	Action	Response
Noise					
N1	Noise-related complaint	No complaint received	Green	Nil	Nil
		Complaint received	Red	Personnel who receives the complaint records the required information in accordance with the procedures identified in the EMS and notifies the relevant North Mine Personnel.	Complaint is investigated, and remedial action implemented as required in accordance with the procedures identified in the EMS. The results of the investigation and any remedial action is communicated to the complainant.
N2	Operator attended noise monitoring ¹	Monitoring identifies North Mine-related noise levels are 3dB or more below relevant criteria.	Green	Review and file report Confirm dates for next monitoring program	Include results in monthly and annual reports.
		Monitoring identifies North Mine-related noise levels are within 3dB of the relevant criteria.	Yellow	Review activities occurring and real time noise monitoring results from the time that the attended monitoring was undertaken within 3 days of receipt of preliminary notification/report. Verify noise levels using real-time noise monitoring that noise levels have reduced below the relevant criteria before removing or downgrading the Alert status.	Undertake an investigation to determine activities that resulted in noise levels approaching relevant criteria. Adjust operational procedures if required to minimise risk of future exceedance.
		Monitoring identifies North Mine-related noise levels exceed the relevant criteria by up to 2dB (An exceedance – see Section 13.1).	Amber	Immediately on receipt of preliminary notification/report review activities occurring during the monitoring. Review real time noise monitoring results for the attended monitoring period to assist in validating the exceedance. Verify noise levels using real-time noise monitoring that noise levels have reduced below the relevant criteria before removing or downgrading the Alert status.	Once the exceedance is validated, notify the relevant government agencies in accordance with reporting procedures identified in Section 13.1, Environmental Management Strategy and Condition 11 of Schedule 4 of SSD 7538. Undertake an investigation to determine the cause of the exceedance within 7 days of receipt or the preliminary notification/report and implement appropriate remediation measures. Increase the frequency of attended noise monitoring and/or undertake follow up attended noise monitoring to confirm that noise levels no longer exceed the relevant criteria.

Table 11 Trigger Action Response Plan (Cont'd)

Page 2 of 4

TARP No	Issue	Trigger Level	Alert Level	Action	Response
Noise (Cont'd)					
N2 Cont'd	Attended noise monitoring Cont'd	Monitoring identifies North Mine-related noise levels exceed the relevant criteria by 2dB or more (A non-compliance – see Section 13.1).	Red	Immediately on receipt of preliminary notification/report review surface activities occurring and real time noise monitoring results from the time that the attended monitoring was undertaken and cease surface activities that may be contributing to recorded exceedance(s). Verify noise levels using real-time noise monitoring that noise levels have reduced below the relevant criteria before removing or downgrading the Alert status.	Once the exceedance is validated, notify the relevant government agencies in accordance with reporting procedures identified in Section 13.1, Environmental Management Strategy and Condition 11 of Schedule 4 of SSD 7538 Undertake an investigation to determine the cause of the non-compliance within 7 days of receipt or the preliminary notification/report of the non-compliance and implement appropriate remediation measures. Increase the frequency of attended noise monitoring and/or undertake follow up attended noise monitoring to confirm that noise levels no longer exceed the relevant criteria.
N3	Real time noise monitoring ¹	Recorded noise levels are more than 3dB below real time noise trigger levels (see Table 10)	Green	No action required	Nil
		Recorded noise levels are less than 3dB below real time noise trigger levels (see Table 10).	Yellow	North Mine Manager or their delegate reviews activities occurring and real time noise monitoring results within 1 hour of receipt of preliminary notification/report.	Identify activities that may have resulted in noise levels approaching trigger level. Adjust surface activities if required to minimise risk of exceedance. Continue to verify real-time noise levels to confirm that noise levels have been reduced below the relevant criteria before removing or downgrading the Alert status.
		Recorded noise levels are equal to or less than 2dB more than the real time noise trigger levels (see Table 10).	Amber	North Mine Manager or their delegate reviews activities occurring and real time noise monitoring results within 15 minutes of receipt of preliminary notification/report.	Identify activities that may have resulted in noise levels exceeding the trigger level. Immediately adjust surface activities if required to minimise risk of exceedance. Continue to verify real-time noise levels to confirm that noise levels have been reduced below the relevant criteria before removing or downgrading the Alert status.

Table 11 Trigger Action Response Plan (Cont'd)

Page 3 of 4

TARP No	Issue	Trigger Level	Alert Level	Action	Response
Noise (Cont'd)					
N3 Cont'd	Real time noise monitoring Cont'd	Recorded noise levels are more than 2dB higher than the real time noise trigger levels (see Table 10).	Red	Immediately cease all noise-generating surface activities. North Mine Manager or their delegate reviews activities that were occurring and real time noise monitoring results to identify activities that may have resulted in the exceedance.	Continue to monitor real-time noise levels associated with the North Mine to confirm that noise levels have been reduced below the relevant real time trigger level. Once noise levels have reduced below the relevant real time trigger level, progressively recommence surface operations while monitoring real-time noise levels to ensure that noise levels remain below the relevant criteria.
N4	Predicted adverse meteorological conditions	Predicted meteorological conditions in next 24 hours are unlikely to be noise enhancing, namely - No winds from the east to southwest (100° - 230°) at less than 3m/s or 11km/h OR - No temperature inversions with a strength of 3°C/100m or more.	Green	Nil	Implement standard noise mitigation measures.
		Predicted meteorological conditions in next 24 hours are likely to be noise enhancing, namely - winds from the east to southwest (100° - 230°) at less than 3m/s or 11km/h OR - Temperature inversions with a strength of 3°C/100m or more	Amber	Review proposed surface activities and relocate underground or reschedule potentially noisy activities during periods of noise enhancing conditions.	Ensure that the revised activities are communicated to North Mine personnel.

Table 11 Trigger Action Response Plan (Cont'd)

Page 4 of 4

TARP No	Issue	Trigger Level	Alert Level	Action	Response
Noise (Cont'd)					
N5	Actual adverse meteorological conditions	Meteorological conditions are not noise enhancing, namely - No winds from the east to southwest (100° - 230°) at less than 3m/s or 11km/h OR - No temperature inversions with a strength of 3°C/100m or more.	Green	Nil	Implement standard noise mitigation measures.
		Meteorological condition are noise enhancing, namely - winds from the east to southwest (100° - 230°) at less than 3m/s or 11km/h OR - temperature inversions with a strength of 3°C/100m or more	Amber	Review surface activities and relocate underground or cease potentially noisy activities Review real-time noise monitoring results to ensure that amended activities are not resulting in unacceptable noise emissions.	Ensure that the revised activities are communicated to North Mine personnel.
Note: Attended and real-time trigger levels were set by Muller Acoustic Consulting					

12 Compliance Review and Reporting

12.1 Data Validation

The North Mine noise monitoring program will generate two classes of data, namely:

- automatically generated data from the meteorological station and real-time noise monitors; and
- attended noise monitoring data.

Each class of data will be validated separately as follows.

- Automatically generated data.
 - Data loggers on the instruments or within the Mine Control Centre will provide an alert if data is no longer being recorded or if telemetry is lost.
 - Mine Control Centre personnel will inspect the data logs daily to provide a sense check of the data, namely is the data changing, are zero values being recorded, etc.
 - The Environmental Officer or their delegate will interrogate the data monthly during preparation of the monthly report described in Section 12.2.
- Attended noise monitoring data.
 - The acoustic consultant will be responsible for ensuring that all equipment used is appropriately calibrated and that the data collected is appropriately validated.

12.2 Adaptive Management and Reporting

Attended noise monitoring reports will be included as an Appendix to the monthly summary report once received and approved. In the event that non-compliances with the noise criteria are recorded, the Environmental Superintendent will review all surface activities and adjust as required.

The Environmental Superintendent or their delegate will prepare the following statutory and publicly available reports, including an analysis of all monitoring results.

- Monthly summary reports (Perilya website).
- Quarterly reports (NSW EPA).
- Community Consultative Committee Reports (CCC meeting schedule)
- Annual Return (NSW EPA).
- Annual Review (NSW DPE), incorporating and Annual Environmental Management Report for each calendar year (NSW DRG). This report will include
 - A review of compliance with all relevant compliance criteria and an assessment of the effectiveness of the environmental management systems identified in this document.
 - A review of measures that may be implemented to improve the environmental performance of the North Mine, taking into account the results of monitoring during the reporting period, experience operating the North Mine and advances in equipment design/technology.

12.3 Information regarding the operations and environmental performance

Refer to the *Environmental Management Strategy* for details of the issuance of information regarding operations progress and environmental performance.

13 Exceedance, Non-compliance and Incident Management

13.1 Exceedance, Non-compliance and Incident Identification

An exceedance is defined as a measured noise level that exceeds the relevant criteria the defined assessment period before returning to below the criteria, either as a result of actions taken by the operator of a site or changes meteorological conditions.

A non-compliance is defined as any event which is not in conformance with threshold levels as determined within the conditions of consent or an exceedance of any criteria under other approval or legislation, including EPL 2683.

An incident is defined as:

1. An event that causes, or threatens to cause, material environmental harm
2. Breaches or exceeds the limit or performance measure or criteria associated with the Conditions of Consent or Environmental Protection License.

For the purposes of this Management Plan,

- An exceedance is a temporary exceedance of:
 - the noise criteria identified in Section 8 identified during attended noise monitoring; or
 - the real-time noise triggers identified in Section 10.4.
- A non-compliance is a continued exceedance of the noise criteria identified in Section 8 identified during attended noise monitoring. Real-time noise monitoring will not be used to determine compliance/non-compliance with the criteria in Section 8. It may, however, in addition to its use as a proactive management tool, be used retrospectively during investigation of potential incidents or in response to a noise-related complaint.
- An incident is defined as any exceedance of the real-time noise trigger by more than 2dB (a red level in TARP N3)

Perilya will implement the measures identified in Section 11 to manage exceedances and ensure that they do not become non-compliances.

Sections 8.1 and 8.2 of the *Environmental Management Strategy* describe the procedures to be implemented in the event of an incident or non-compliance. In summary, Perilya will:

- Implement measures to control and/or manage the incident or non-compliance;
- Immediately report the incident or non-compliance to the Environment Protection Authority, Resources Regulator and Department of Planning and Environment;
- Prepare a written notification report within 7 days and provide a copy of that report to the above agencies;

- Prepare in the event of an incident a follow-up report within 30 days and provide that report to the above agencies.

13.2 Annual Review

As required under Condition 5 of Schedule 4, an Annual Review is required to be prepared on an annual basis, which is to be submitted by the end of March. The Annual Review will involve a review of the operations environmental and statutory compliance performance for the previous calendar year to the satisfaction of the Secretary. As per Condition 5 Schedule 4, the Annual Review will include the following:

- a) Describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;*
- b) Include a comprehensive review of the monitoring results and complaints records of the development over the past year, which includes a comparison of these results against the:*
 - *Relevant statutory requirements, limits or performance measures/criteria;*
 - *Monitoring results of previous years; and*
 - *Relevant predictions in the EIS;*
- c) Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance;*
- d) Identify any trends in the monitoring data over the life of the development;*
- e) Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and*
- f) Describe what measures will be implemented over the next year to improve the environmental performance of the development.*

13.3 Emergency Management Process

The Perilya *Emergency Response and Crisis Management Procedure* is the prevailing document that governs emergency response actions. That document incorporates the *Pollution Incident Response Management Plan* required under EPL2683. In summary, in an emergency situation, one or more crisis management teams are convened and those teams coordinate emergency response, including interactions with external agencies, including emergency services.

13.4 Complaints Management Process

Section 7.1 of the *Environmental Management Strategy* describes the procedures to be implemented in the event of a complaint. In summary, complaints may be received directly via telephone, email or web form from PBHL's website, or indirectly via relevant government agencies. Upon receipt, the name and contact details of the complainant and the nature of the complaint are recorded. Perilya will then investigate the complaint and implement system improvements if required. The results of the investigation are communicated back to the complainant.

14 Training and awareness

The environmental risk management process and the broader environmental risks for Perilya are communicated to all site personnel via the Perilya general induction.

Site specific risks are associated with site specific inductions (for example, Broken Hill North Mine). Training for relevant personnel in relation to the Standard Operating Procedures will be implemented as required. In particular, site personnel will receive training in potential impacts associated with noise emissions for surrounding residences and the need to consider noise when undertaking activities.

Job hazard analysis and 'take-time take-charge' are site-wide risk assessment tools used to identify health, safety and environment related risks and are used by operators and supervisors.

15 Roles and Responsibilities

Table 12 represents the roles and responsibilities specifically for the implementation of this Plan.

Table 12 Roles and Responsibilities

<i>Role</i>	<i>Responsibility</i>
General Manager	• Ensure adequate resources are available to enable implementation of the Plan.
North Mine Manager	• Accountable for the overall environmental performance of the North Mine, including the outcomes of this Plan.
Health, Environment, Safety and Training Manager	• Ensure adequate resources are available to enable implementation of the Plan.
Environmental Superintendent	• Accountable for the implementation of this Plan, including all management and mitigation measures, monitoring and reporting.
Environmental Advisor	• Accountable for the day-to-day implementation of this Plan, including ensuring standard operating procedures re complied with and all monitoring data is collected and stored appropriately.
All other employees and contractors	• Responsible for following directions and instructions from site management and supervisors.

16 Review and Revision Process

16.1 SSD 7538 Schedule 4 Condition 6

In accordance with the requirements of Condition 6 of Schedule 4, this Plan will be reviewed within 3 months of:

- a) the submission of an annual review;
- b) the submission of an incident report;
- c) the submission of an audit;
- d) any modification to the conditions of this consent, (unless the conditions require otherwise); and/or
- e) a direction from the Secretary.

16.2 SSD 7538 Schedule 4 Condition 7

In accordance with Schedule 4 Condition 7, PBHL may submit this plan to the Secretary where there are revisions of the plan as a result of the review detailed in Section 16.1. With agreement of the Secretary, PBHL may also submit the revised plan required by this consent on a staged basis.

The Secretary may approve the revised plan required under this consent at any time. With the agreement of the Secretary, PBHL may prepare the revised plan without undertaking consultation with all parties nominated under the condition in the consent.

17 References

Industrial Noise Policy (2000). *NSW Industrial Noise Policy*, Environment Protection Authority, 2000.

Muller Acoustic Consulting Pty Ltd (MAC) (2017). *Noise Impact Assessment*, presented as Part 3 of the *Specialist Consultant Studies Compendium*.

Noise Policy for Industry (2017). *Noise Policy for Industry*, Environment Protection Authority, 2017.

R.W. Corkery & Co Pty Limited (RWC) (2017). Environmental Impact Statement for the Recommencement of Mining Operations at the Broken Hill North Mine, prepared on behalf of Perilya Broken Hill Limited.