TARRAWONGA COAL MINE SOUND POWER LEVEL MODIFICATION ENVIRONMENTAL ASSESSMENT

PREPARED FOR TARRAWONGA COAL PTY LTD

JANUARY 2017

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	CONSULTATION	1
2	EXISTING/APPROVED TARRAWONGA COAL MINE	2
2.1	APPROVALS HISTORY	3
2.2	MINING OPERATIONS	3
2.3	OPERATIONAL NOISE	3
2.3.1	NOISE MONITORING	3
2.3.2	NOISE MANAGEMENT MEASURES	4
2.3.3	OPERATIONAL PERFORMANCE	5
3	MODIFICATION DESCRIPTION	6
3.1	NOISE	6
3.2	OTHER MINE COMPONENTS	8
4	CONCLUSIONS	8
5	REFERENCES	8

LIST OF FIGURES

Figure 1 Regional Location

Figure 2 Noise Monitoring Locations

LIST OF ATTACHMENTS

Attachment 1 Conditions 3, 6 and 8, Schedule 3 of

Project Approval 11_0047

1 INTRODUCTION

This document is an Environmental Assessment (EA) for a proposed modification to the Tarrawonga Coal Mine, an open cut coal mining operation which operates in accordance with Project Approval 11_0047.

The Tarrawonga Coal Mine is located approximately 42 kilometres (km) north-northwest of Gunnedah in New South Wales (NSW) (Figure 1). The Tarrawonga Coal Mine is owned and operated by Tarrawonga Coal Pty Ltd (TCPL), which is a joint venture between Whitehaven Coal Mining Pty Ltd (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (70 percent [%] interest) and Boggabri Coal Pty Ltd (BCPL) (30% interest).

The Tarrawonga Coal Mine Sound Power Level Modification (the Modification) is sought under section 75W of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act).

The Modification seeks to change a single condition within Project Approval 11_0047 (Condition 9a, Schedule 3), which stipulates that the Sound Power Levels (SWLs) of fixed and mobile plant at the Tarrawonga Coal Mine must be equal to, or less than, the indicative SWLs adopted for modelling purposes in the *Tarrawonga Coal Project Environmental Assessment* (the Project EA) (TCPL, 2012).

Compliance with this condition is determined by annual SWL testing, in accordance with Condition 10a, Schedule 3 of Project Approval 11_0047. SWL testing conducted in April 2016 identified four plant items that recorded SWLs higher than the indicative SWLs adopted for modelling purposes in the Project EA.

Of the four exceedances three were for excavators and one a drill. Four haul trucks were also tested and all were within approved limits.

Specific actions taken or planned to be taken in relation to the four plant items which delivered high readings include:

- Drill the machine has been removed from operation.
- RH170 excavators (2) planned installation of sound attenuation by the end February 2017 including an undertaking to retest the SWL.
- Hitachi EX1900 excavator installation of a new power pack is complete and undertake a new SWL test by the end February 2017.

Haul trucks typically contribute most to outside noise environments being high in number and operating at the extremities of mine sites (both height and extent). Conversely excavators and drills are limited in number and generally operate within the mine at depth.

Attended noise monitoring undertaken at nearby private receivers in the months prior to and following April 2016 testing were below noise limits specified in Project Approval 11_0047.

The consistent record of compliance with noise criteria over several years (Section 2.3.3) indicates that achieving compliance at private receivers is not dependent upon delivering SWLs equal to or less than the indicative SWLs adopted for modelling purposes in the Project EA.

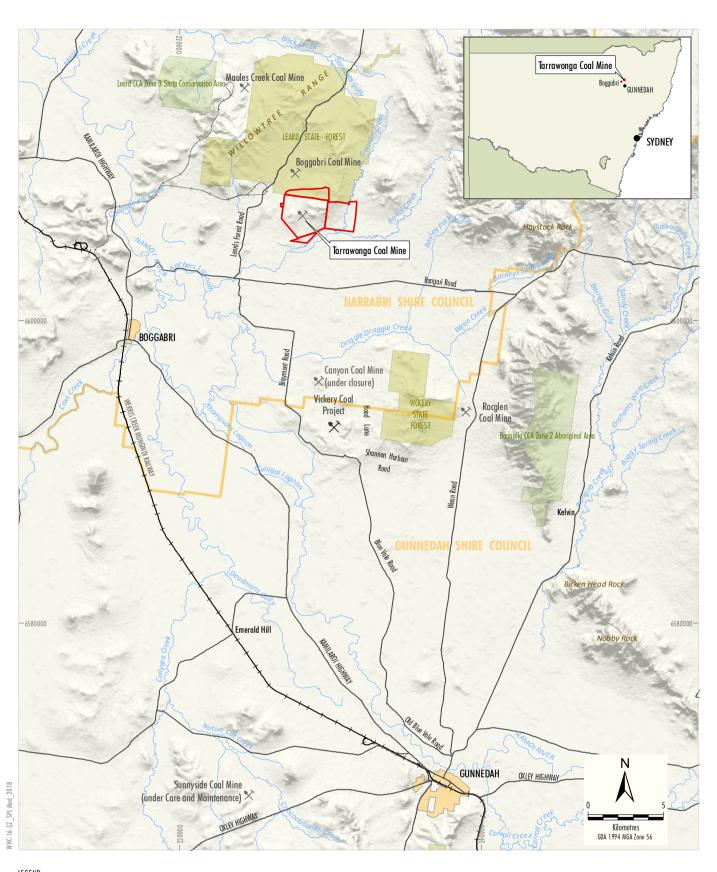
The Modification therefore proposes amendment of Condition 9a, Schedule 3 of Project Approval 11_0047 to remove the requirement for SWL's on fixed and mobile plant items to be equal to or less than the indicative SWL's used in Project EA noise modelling. The requirement for TCPL to manage/maintain/attenuate equipment and to maintain compliance with relevant noise levels at private receivers surrounding the Tarrawonga Coal Mine remain unchanged.

1.1 CONSULTATION

TCPL consults with NSW Government agencies on a regular basis in relation to the current Tarrawonga Coal Mine operations.

TCPL met with the NSW Department of Planning and Environment (DP&E) in August 2016 regarding the Modification. The strong record of compliance with mine noise limits at private receivers (Section 2.3.3) and the retention of conditions requiring SWL testwork within the Project Approval was discussed.

TCPL has written to the NSW Environment Protection Authority (EPA), Narrabri Shire Council and Gunnedah Shire Council in January 2017.





Source: LPMA - Topographic Base (2010); NSW Department of Industry (2015)



Regional Location

2 EXISTING/APPROVED TARRAWONGA COAL MINE

A summary description of the existing/approved Tarrawonga Coal Mine is provided below.

2.1 APPROVALS HISTORY

The Tarrawonga Coal Project (the Project) was approved (Project Approval 11_0047) by the NSW Planning Assessment Commission under delegation of the NSW Minister for Planning and Infrastructure pursuant to section 75J of the EP&A Act on 22 January 2013.

Additionally, the Tarrawonga Coal Mine was granted approval under the Environment Protection and Biodiversity Act on 11 March 2013 (Commonwealth Approval Decision 2011/5923).

Project Approval 11_0047 was modified in November 2014 to allow an increase in the road haulage of run-of-mine (ROM) coal to the Whitehaven Coal Handling and Preparation Plant (CHPP) near Gunnedah.

In addition to the approved modification, a second modification to allow the disposal of all types of coal reject material at the Tarrawonga Mine was granted in November 2016.

A third modification) is also being sought to allow a temporary increase in ROM coal haulage to the Whitehaven CHPP in 2017.

Approval of the Temporary Road Haulage Increase Modification was pending at the time of writing.

2.2 MINING OPERATIONS

Project Approval 11_0047 allows for:

- continued development of open cut mining operations to facilitate a ROM coal production of up to 3 million tonnes per annum (Mtpa) of ROM coal until the end of December 2030;
- exploration activities;
- construction and use of a new mine facilities area;
- use of a mobile crusher to produce domestic specification coal and gravel materials for collection by customers at the mine site;
- progressive development of water management structures;

- construction and use of a services corridor (including haul road link) directly to the upgraded Boggabri Coal Mine Infrastructure Facilities (and use of the facilities for the handling and processing of coal from the Tarrawonga Coal Mine, and the loading of product coal to trains for transport to the Werris Creek Mungindi Railway);
- progressive backfilling of the mine void behind the advancing open cut mining operation with waste rock and minor quantities of coarse reject material;
- realignment of sections of Goonbri Road and construction of new intersections;
- removal of a section of Goonbri Creek within the open cut and establishment of a permanent Goonbri Creek alignment and associated flood bund to the east and south-east of the open cut;
- ROM coal haulage along the northern section of the Approved Road Transport Route of up to 3 Mtpa; and
- other associated minor infrastructure, plant, equipment and activities.

2.3 OPERATIONAL NOISE

As required by Condition 11b, Schedule 3 of Project Approval 11_0047, TCPL operates a comprehensive on-site noise management system. The noise management system utilises a combination of predictive meteorological forecasting and real-time noise monitoring data to guide day to day planning of mining operations.

Attended monitoring is undertaken to determine compliance with noise criteria within Project Approval 11_0047.

2.3.1 Noise Monitoring

Noise management at the Tarrawonga Coal Mine is undertaken in accordance with a Noise Management Plan (NMP) that is updated as required to reflect changes in noise management at the mine. Therefore, references in this EA to content of the current NMP are provided as information only and are subject to change. The current NMP describes a number of noise management initiatives, including:

- real-time monitoring and management of noise;
- annual sound power level testwork;

- attended monitoring; and
- noise mitigation/attenuation measures.

Real-time and Attended Monitoring

Operational noise levels are recorded using a portable unattended noise monitor (real-time monitoring) and through attended monitoring, consistent with the current monitoring locations described in Environment Protection Licence (EPL) 12365. Noise monitoring locations at the time of preparation of this EA are shown on Figure 2.

Real-time monitoring includes noise from all sources (including mine noise) and is used as an on-site management tool (Section 2.3.2). Attended monitoring is undertaken by independent consultants to determine compliance with the noise limits at private receivers described in Project Approval 11_0047.

Further requirements for attended and real-time monitoring undertaken at the Tarrawonga Coal Mine are described in the current NMP, including the protocol implemented following a noise monitoring event above the noise criteria (i.e. during attended monitoring).

Annual Sound Power Level Testing

Annual SWL testing of fixed and mobile plant at the Tarrawonga Coal Mine is undertaken in accordance with Condition 10a, Schedule 3 of Project Approval 11_0047.

2.3.2 Noise Management Measures

Real-time Noise Monitoring Notification

TCPL has adopted a trigger level based on real-time noise monitoring results that is reviewed and updated as required.

The current real-time noise monitoring response protocol (which is subject to change over time) is as follows:

- When a trigger occurs, an SMS alert is sent to site personnel, and the real-time noise management unit interface is accessed to determine if the noise source is Tarrawonga Coal Mine related.
- If the noise source is identified as Tarrawonga Coal Mine related, site personnel would closely monitor noise levels to verify that noise levels remain below the designated threshold.

- If a second alert triggers within a two hour timeframe, and is confirmed to be Tarrawonga Coal Mine related, the Environmental Officer and Operations Manager would investigate operational measures to maintain noise levels below 35 A-weighted decibels (dBA) at relevant private receivers.
- Operational measures employed to maintain noise levels below 35 dBA at relevant private receivers may include, but would not be limited to, standing down specific items of equipment, or relocating equipment to alternate areas of the site.

Meteorological Forecasting

Daily review of meteorological forecast data is undertaken as part of proactive noise management planning.

The results of this analysis, and meteorological forecast data used, is provided on the Whitehaven website in accordance with Condition 13a, Schedule 5 of Project Approval 11_0047

Noise Mitigation

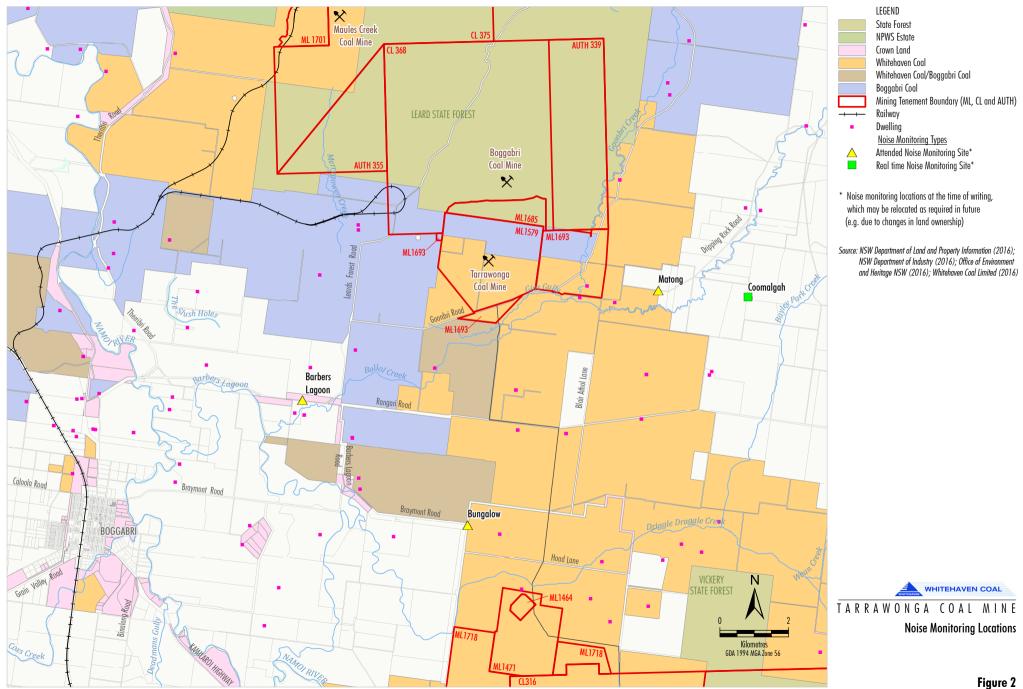
Noise mitigation measures (both proactive and reactive) have been implemented throughout the life of the Tarrawonga Coal Mine. Appropriate noise mitigation measures are determined based on the location and type of mining operations being undertaken, prevailing meteorological conditions and other factors.

Examples of proactive and reactive noise mitigation measures that have been implemented at the Tarrawonga Coal Mine include (TCPL, 2016):

- modification of operations in response to unfavourable meteorological conditions such as:
 - o reducing dump heights during unfavourable night time conditions;
 - restricting dump activity on out of pit locations and prioritising in-pit activity;
 and
 - reduction in fleet numbers during night time operations

Noise Complaints

In the event of a complaint from a community member about previous operations (i.e. complaint received post-event), all relevant information available pertaining to the time of the alleged noise nuisance is gathered and investigated based on the protocol outlined in the NMP.



WHC-16-52_SPL Mod_202B

2.3.3 Operational Performance

The operational performance of the Tarrawonga Coal Mine is reported in the Tarrawonga Coal Mine Annual Review and EPL 12365 Annual Return. Noise performance is discussed in the following subsections.

Attended Monitoring

As described in Section 2.3.1, attended monitoring is undertaken by an independent consultant to assess compliance with approved noise limits. Noise monitoring locations at the time of preparation of this EA are shown on Figure 2.

No exceedances of the relevant noise criteria have been recorded under the current Project Approval prior to September 2016, as documented in:

- the 2014 Independent Environmental Audit;
- the 2014-2015 and 2015-2016 Annual Reviews; and
- monthly EPL monitoring reports from January 2013 to August 2016.

In September 2016 an anomalous noise monitoring result was recorded at the Barbers Lagoon monitoring station, a site located approximately 7km from the Tarrawonga Coal Mine. An investigation into this result has been completed and a combination of unique atmospheric conditions and atypical ground conditions (highly saturated, surface water ponding) appear to be the primary causal factors for the exceedance.

Annual Sound Power Level Testing

As described in Section 2.3.1, annual SWL testing of fixed and mobile plant at the Tarrawonga Coal Mine is undertaken in accordance with Condition 10a, Schedule 3 of Project Approval 11_0047 and a summary of the results is presented in the Annual Review.

The results of SWL testing in April 2016 indicated that four plant items had actual SWLs above the indicative SWLs adopted for modelling purposes in the Project EA. The plant items were three excavators and one drill, with measured SWLs up to 4 dBA above the indicative modelled SWLs adopted in the Project EA (TCPL, 2016).

SWLs recorded for other items of plant are equal to or below the indicative SWLs adopted for modelling purposes in the Project EA (TCPL, 2016).

This result was reported to the NSW DP&E in May 2016 following receipt of the monitoring results.

Specific actions taken or planned to be taken in relation to the four plant items which delivered high readings include:

- Drill the machine has been removed from operation.
- RH170 excavators (2) planned installation of sound attenuation by the end February 2017 including an undertaking to retest the SWL.
- Hitachi EX1900 excavator installation of a new power pack is complete and undertake a new SWL test by the end February 2017.

Complaints

A small number of community complaints have been received at the Tarrawonga Coal Mine since approval of the Project:

- 2013 no operational noise complaints;
- 2014 one complaint about operational noise and three complaints regarding both operational noise and dust levels;
- 2015 no operational noise complaints; and
- 2016 (to November) one complaint regarding both operational noise and dust levels.

3 MODIFICATION DESCRIPTION

3.1 NOISE

Initial mine planning for the approved Tarrawonga Coal Mine was conducted during the Project EA to inform the environmental studies which support the Project EA. This included preliminary identification of indicative fixed and mobile plant items which would be required to operate the mine.

All indicative fixed and mobile plant identified in the Project EA that are prominent noise generators have indicative SWLs that were adopted for modelling purposes in the Project EA Noise and Blasting Impact Assessment (Wilkinson Murray, 2011). The SWLs were identified for the purposes of noise modelling to predict potential noise impacts associated with the Tarrawonga Coal Mine at private receivers.

Project Approval 11_0047 contains multiple conditions that relate to the management of noise, including:

 Conditions 3, 6 and 8, Schedule 3 – prescribe specific operational noise criteria for regulation of noise at nearby receivers. Compliance is determined by the results of attended noise monitoring results undertaken at several locations representative of private receivers.

- Conditions 9, 10 and 11, Schedule 3 which relate to the attenuation of fixed and mobile plant, annual testing of SWLs and preferential deployment of attenuated plant to reduce noise levels at nearby receivers. Compliance is determined by annual SWL testing.
- Condition 18, Schedule 2 Operation of Plant and Equipment which states that all plant and equipment used on site, or to transport coal from the site is: a) maintained in a proper and efficient condition; and b) operated in a proper and efficient manner.

These conditions are reproduced in Attachment 1.

Condition 9a, Schedule 3 of Project Approval 11_0047 contains specific requirements regarding the allowable SWLs of fixed and mobile plant at the Tarrawonga Coal Mine based on the indicative SWLs adopted for modelling purposes in the Project EA. In particular this condition states:

The Proponent shall:

- (a) ensure that:
 - all trucks, dozers, drills and excavators purchased for use on the site after the date of this approval are commissioned as noise suppressed (or attenuated) units;
 - all equipment and noise control measures deliver sound power levels that are equal to, or less than, the sound power levels identified in the EA, and correspond to best practice, or the application of best available economically achievable technology;
 - improvements are made to existing noise suppression equipment as improved technology becomes available where reasonable and feasible; and

As noted in Section 2.3.3, SWL testing conducted in April 2016 indicated that some plant items did not comply with Condition 9a, Schedule 3 of Project Approval 11_0047.

The Tarrawonga Coal Mine is operated in accordance with Conditions 3, 6 and 8, Schedule 3 and Condition 18, Schedule 2 of Project Approval 11_0047 using the existing noise management system and controls implemented at the site. This is supported by the lack of exceedances recorded prior to September 2016, and the small number of noise-related complaints received (Section 2.3.3).

This record indicates that achieving compliance at private receivers is not dependent upon delivering SWLs equal to or less than the indicative SWLs adopted for modelling purposes in the Project EA. Furthermore, received noise levels at private receivers are dependent on several factors in addition to the SWLs of plant, including meteorological conditions, topography (e.g. the presence of intervening topography) and the operating schedules of plant, including operational mitigation measures (such as the proactive mitigation measures described in Section 2.3.2).

Additionally Tarrawonga operate in accordance with the relevant Environmental Protection License (EPL) which states that:

All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- must be operated in a proper and efficient manner.

In order to comply with Condition 9a, TCPL would be required to implement additional noise mitigation measures to achieve the indicative equipment SWLs adopted for modelling purposes in the Project EA, notwithstanding that any additional measure will have limited impact on TCPL's ability to comply with key noise criteria at the private receivers.

The Modification therefore proposes amendment of Condition 9a, Schedule 3 of Project Approval 11_0047 whilst maintaining conditions which require TCPL to manage/maintain/attenuate equipment and to maintain compliance with relevant noise levels at private receivers in the vicinity of the Tarrawonga Coal Mine.

The amendment of Condition 9a, Schedule 3 of Project Approval 11_0047 sought is as follows:

The Proponent shall:

- (a) ensure that:
 - all trucks, dozers, drills and excavators purchased for use on the site after the date of this approval are commissioned as noise suppressed (or attenuated) units;
 - all equipment and noise control measures deliver sound power levels that are equal to, or less than, the sound power levels identified in the EA, and correspond to best practice, or the application of best available economically achievable technology;
 - improvements are made to existing noise suppression equipment as improved technology becomes available where reasonable and feasible; and

TCPL would continue to operate the noise management system described in Section 2.3 and implement noise mitigation measures to facilitate compliance at private receivers in accordance with Project Approval 11_0047 (i.e. Conditions 3, 6 and 8, Schedule 3 of Project Approval 11_0047). Furthermore, TCPL would continue to operate in accordance with the revised Condition 9a, Schedule 3 of Project Approval 11_0047 by:

- commissioning all trucks, dozers, drills and excavators purchased for use on site as noise suppressed (or attenuated) units; and
- continuing to make improvements to existing noise suppression equipment as improved technologies become available where reasonable and feasible.

TCPL would also continue to undertake annual SWL testing of fixed and mobile plant in accordance with Condition 10a, Schedule 3 of Project Approval 11_0047.

3.2 OTHER MINE COMPONENTS

There would be **no change** to the following key components of the existing/approved Tarrawonga Coal Mine due to the Modification:

- mine life and hours of operation;
- project boundary;
- mining operations (i.e. open cut mining);
- mine fleet;
- maximum annual ROM coal production rate;
- ROM coal processing operations;
- coal reject management;
- product coal transport;
- heavy vehicle site deliveries;
- water demand and supply;
- workforce;
- general noise management;
- rehabilitation strategy; and
- biodiversity offset.

4 CONCLUSIONS

This Modification conclusions are as follows:

- Achieving noise compliance at private receivers (i.e. operating in accordance with Conditions 3, 6 and 8, Schedule 3 of Project Approval 11_0047) is not dependent upon delivering SWLs equal to or less than the indicative SWLs adopted for modelling purposes in the Project EA.
- The Tarrawonga Coal Mine currently operates generally in accordance with Conditions 3, 6, 8 and 18, Schedule 3 of Project Approval 11_0047 and has a strong record of compliance, with no exceedances of the relevant criteria recorded prior to September 2016. Existing management and mitigation measures are utilised at the Tarrawonga Coal Mine to achieve compliance with Conditions 3, 6 and 8, Schedule 3 of Project Approval 11_0047.
- The existing management and mitigation measures as well as annual SWL testing will continue to be undertaken at the Tarrawonga Coal Mine.
- Consequently, Condition 9a, Schedule 3 of Project Approval 11_0047 is proposed to be revised to state:

The Proponent shall:

- (a) ensure that:
 - all trucks, dozers, drills and excavators purchased for use on the site after the date of this approval are commissioned as noise suppressed (or attenuated) units;
 - improvement are made to existing noise suppression equipment as improved technology becomes available where reasonable and feasible; and
- The Modification does not include any other changes to the existing/approved Tarrawonga Coal Mine.

5 REFERENCES

New South Wales Department of Planning and Environment (2016) *Tarrawonga Coal Mine* – Show Cause – SPL Exceedances.

New South Wales Environment Protection Authority (2000) NSW Industrial Noise Policy.

Tarrawonga Coal Pty Ltd (2012) Tarrawonga Coal Project Environmental Assessment.

Tarrawonga Coal Pty Ltd (2016) Tarrawonga Coal Mine 2015/2016 Annual Review.

Wilkinson Murray (2011) Tarrawonga Coal Project Noise and Blasting Assessment.

Attachment 1

Conditions 3, 6 and 8, Schedule 3 of Project Approval 11_0047

3. Except for the noise-affected land in Table 1, the Proponent shall ensure that operational noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land.

Table 2: Noise criteria dB(A)

Land	Day, Evening & Night	Night
	L _{Aeq(15 min)}	L _{A1(1 min)}
All other privately-owned residences	35	45

Notes:

- Operational noise includes noise from the mining operations and the use of private roads (excluding the Kamilaroi Highway overpass) and rail spurs.
- Noise is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions (also see condition 13)), of the NSW Industrial Noise Policy.

However, these noise criteria do not apply if the Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

6. Except for the land listed in Table 1, the Proponent shall ensure that the operational noise generated by the project combined with the noise generated by other mines does not exceed the criteria in Table 3 at any residence on privately-owned land.

Table 3: Cumulative noise criteria dB(A) L_{Aeq(period)}

Land	Day/Evening/ Night	
	$oldsymbol{\mathcal{L}_{Aeq(period)}}$	
All privately-owned land	40	

Notes:

- Cumulative noise is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions (also see condition 13)), of the NSW Industrial Noise Policy.
- Operational noise includes noise from the mining operations and the use of private roads (excluding the Kamilaroi Highway overpass) and rail spurs.
- **8.** The Proponent, together with the owners of the Rocglen and Vickery coal mines, shall ensure that the noise generated on public roads by the Project and the other mines, does not exceed the criteria in Table 4 at any existing residence on privately-owned land.

Table 4: Road traffic noise criteria dB(A)

Land	Day and Evening	Night
	L _{Aeq(15 hour)}	L _{Aeq(9 hour)}
All privately-owned residences	60	55

However, these criteria do not apply if the Proponent has a written agreement with the relevant landowner to exceed the criteria, and the Proponent has advised the Department in writing of the terms of this agreement.

Note: Traffic noise generated by the Project is to be measured in accordance with the relevant procedures in the NSW Road Noise Policy.

00822311 A1-1

9. The Proponent shall:

- (a) ensure that:
 - all trucks, dozers, drills and excavators purchased for use on the site after the date of this approval are commissioned as noise suppressed (or attenuated) units;
 - all equipment and noise control measures deliver sound power levels that are equal
 to, or less than, the sound power levels identified in the EA, and correspond to best
 practice, or the application of best available economically achievable technology;
 - improvements are made to existing noise suppression equipment as improved technology becomes available where reasonable and feasible; and
- (b) monitor and report on the implementation of these requirements annually on its website.

10. The Proponent shall:

- (a) conduct an annual testing program of the plant on site;
- (b) Restore the effectiveness of any attenuation if it is found to be defective; and
- (c) report on the results of any testing and/or attenuation work within the Annual Review.

11. The Proponent shall:

- (a) implement best management practice to minimise all operational, low frequency, road and rail traffic noise levels associated with the project;
- (b) operate a comprehensive on-site noise management system that uses a combination of predictive meteorological forecasting and real-time noise monitoring data to guide data to day planning of mining operations and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of this approval;
- (c) maintain the effectiveness of noise suppression equipment on plant at all times and ensure defective plant is not operationally used until fully repaired;
- (d) ensure that noise attenuated plant is deployed preferentially in locations near to sensitive receivers:
- (e) minimise the noise impacts of the project during meteorological conditions under which the noise limits in this approval do not apply (see condition 13);
- (f) ensure that project related trains on the Boggabri spur line only use locomotives that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC's EPL (No. 3142);
- (g) use its best endeavours to ensure that project-related rolling stock supplied by service providers on the Boggabri rail spur line is designed, constructed and maintained to minimise noise: and
- (h) co-ordinate the noise management on site with the noise management at other mines within the Leard Forest Mining Precinct, to minimise the cumulative noise impacts of these mines, to the satisfaction of the Secretary.

00822311 A1-2