



TARRAWONGA COAL MINE ENVIRONMENTAL MANAGEMENT SYSTEM

Document Owner:	Environmental Superintendent
Document Approver	Operations Manager
Last Revision Date:	Oct 2020

WHC_PLN_TAR_NOISE MANAGEMENT PLAN

NOISE MANAGEMENT PLAN

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FOREWORD

In accordance with Schedule 2, Condition 19 of Project Approval PA 11_0047, Tarrawonga Coal Pty Ltd (TCPL) may submit any strategy, plan or program required by the Project Approval on a progressive basis, with the approval of the Director-General. Until they are replaced by an equivalent strategy, plan or program approved under the consent, TCPL will continue to implement the existing strategies, plans and programs that apply to any development on site in accordance with Schedule 2, Condition 20 of PA 11_0047.

This Noise Management Plan will be submitted on a progressive basis.

The BTM Complex Noise Management Strategy (Appendix 1) incorporates cumulative noise impacts and management, as required under the conditions of PA 11_0047 for the Tarrawonga Coal Mine.



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Appendices

Appendix 1	BTM Noise Management Strategy
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ACRONYMS USED THROUGHOUT THIS DOCUMENT

AEMR	-	Annual Environmental Management Report
AR	-	Annual Review
AS	-	Australian Standard
CCC	-	Community Consultative Committee
DPI&E	-	Department of Planning, Industry and Environment
EA	-	Environmental Assessment
EPA	-	Environment Protection Authority
EPL	-	Environment Protection Licence
GSC	-	Gunnedah Shire Council
MEG	-	Regional NSW- Mining, Exploration and Geoscience
ML	-	Mining Lease
Mtpa	-	Million tonnes per annum
NMP	-	Noise Management Plan
NSC	-	Narrabri Shire Council
TCM	-	Tarrawonga Coal Mine
TCPL	-	Tarrawonga Coal Pty Ltd



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1 INTRODUCTION

The Tarrawonga Coal Mine (TCM) is located approximately 15km northeast of Boggabri, 10km north of the Canyon Coal Mine (formerly Whitehaven, in closure) and south of, and adjacent to, the Boggabri Coal Mine (Figure 1). The mine site is contained within Mining Lease (ML) 1579, ML 1693 and ML 1685 as shown in Figure 1. The mine is being developed by Tarrawonga Coal Pty Ltd (TCPL), a subsidiary of Whitehaven Coal Mining Pty Ltd and operates under Environment Protection Licence (EPL) 12365 and Project Approval (PA) 11_0047.

It is recognised that the operation of the mine has the potential to generate noise impacts on surrounding properties and residences. In order to manage the potential noise impacts, and in compliance with Condition 3(12) of PA 11_0047, this Noise Management Plan (NMP) has been developed. Potential noise sources from the Tarrawonga Mine Project include:

- Topsoil recovery using scrapers, excavators, dozers and trucks;
- Drill and blast activities;
- Open cut mining using predominantly hydraulic excavators and haul trucks;
- Haul road maintenance using dozers and graders;
- Overburden shaping and dozer push;
- Coal loading;
- Coal transport along Tarrawonga Haul Road to Gunnedah;
- Land rehabilitation activities;
- Maintenance activities; and
- Coal exploration drilling activities.

The NMP has been prepared with reference to relevant legislation, approvals and guidelines, follows the management plan requirements specified in PA 11_0047 Condition 12(3) and is consistent with the following documents:

- Tarrawonga Coal Project Environmental Assessment January 2012 – specifically Section 4.6; and
- Tarrawonga Coal Project – Appendix C Noise and Blasting Impact Assessment.

The NMP presents the relevant conditions of the PA 11_0047 (Section 2) and includes noise controls and management procedures (Section 3) to assist with compliance with noise criteria identified in Section 2. Section 4 presents the specific features of the noise monitoring program including monitoring locations, parameters measured and frequency of monitoring whilst Section 5 includes procedures for addressing complaints, exceedances and non-compliances.

The Tarrawonga Coal Mine Environmental Assessment and previous Annual Environmental Management Report/Annual Reviews (AEMR/Annual Review) for the site should be referred to for baseline data. It should be acknowledged that whilst the Noise Management Plan has been developed based on the noise assessment completed for the Tarrawonga Extension



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Project, all but one are of the properties with acquisition rights have since been acquired by Whitehaven Coal Limited. The private receptor that remains within proximity to the Tarrawonga site, and subject to monitoring requirements are identified in Section 4.2 and Figure 2.

At the time of development of this plan, there were no private agreements in place relating to noise impacts.

Other private residences in proximity to site, with noise level predictions less than the criteria of 35dBA, i.e. between 30 and 35dBA (based on Year 4 of operations) are shown in (see Figure 2) and are identified below:

- “Barbers Lagoon” (Property ID 79a)
- “Braymont” (Property ID 88)
- “Bungalow” (Property ID 89)
- “Bayley Park East” (Property ID 65a and 65b)
- “Coomalgah” (Property ID 60a)
- “Brighton” (Property ID 38a)

Based on the Project Approval and subsequent remaining privately owned receivers, the property that retains acquisition rights in relation to noise impacts is:

- Laird Property (Property ID 49) – maximum predicted noise level = >40dB (A) on more than 25% of the land.

Noise impacts are continuously monitored via a real time noise monitor under any meteorological conditions, with measures to reduce noise impacts undertaken when required.

The current operating fleet at the Tarrawonga mine will continue to be utilised, with no additional fleet requirements at this time.

Currently all equipment operating at site has suitable noise suppression technology (as per PA Condition 9(a)). If new equipment is purchased for site, it would be fitted with noise suppression per the requirements of the Project Approval.

It is noted that PA Condition 11(f) and 11(g) reference noise management requirements related to the use of the rail spur line at Boggabri Coal. As access to this rail spur will not occur in the immediate future, no further consideration to this requirement is provided in this NMP.

It should be noted that road noise monitoring and management measures associated with coal haulage are addressed in the Road Noise Management Plan and are therefore not discussed in this Plan.

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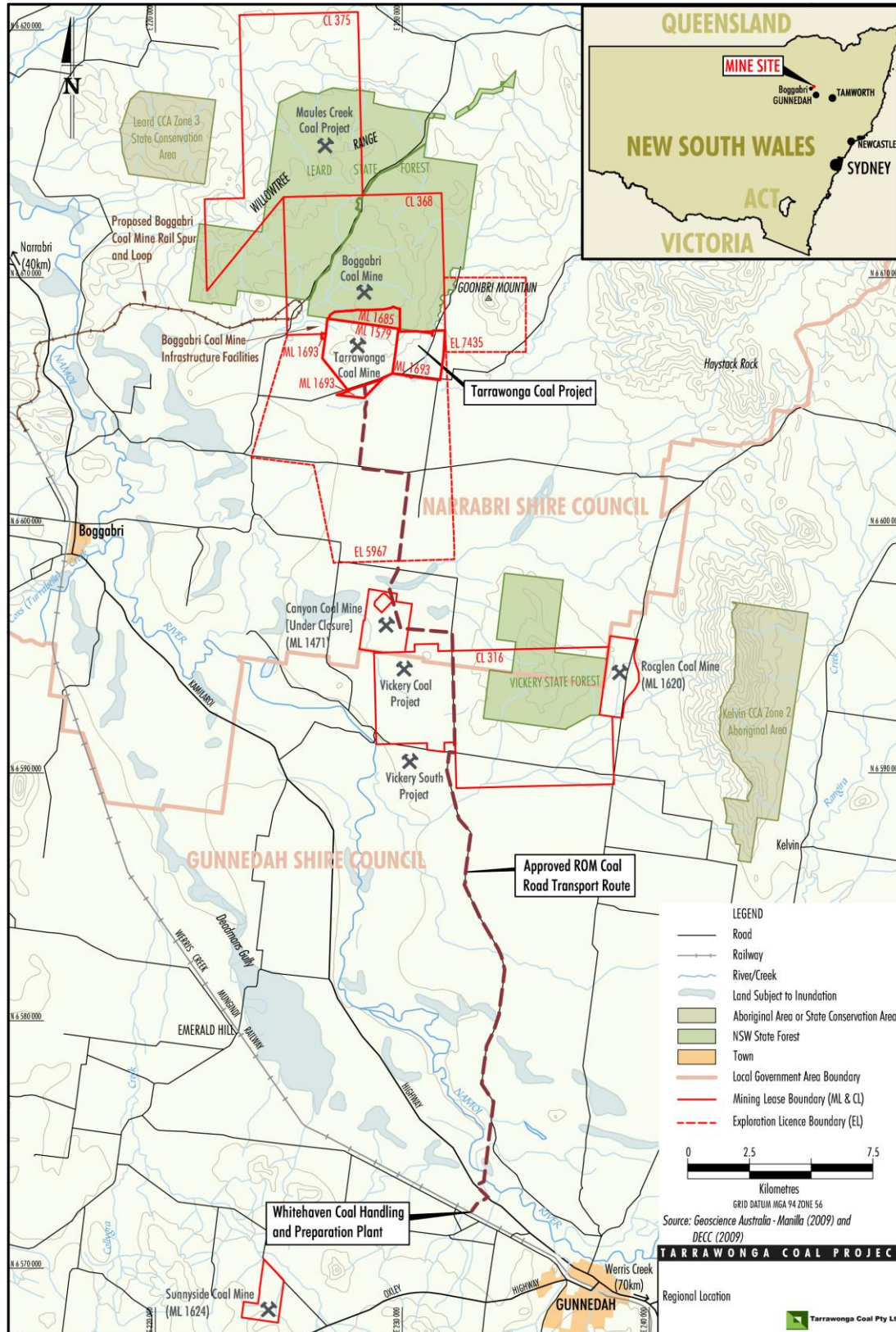


Figure 1 Tarrawonga Coal Mine Location

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2 NOISE IMPACT ASSESSMENT CRITERIA

TCM will implement all requirements as per the PA 11_0047.

2.1 Noise Criteria

In order to manage the potential noise impacts, and in compliance with PA Condition 3(12) this NMP has been developed.

Noise impact assessment criteria for the development were established in the Tarrawonga Coal Project EA using relevant DPIE and EPA guidelines. The NSW Industrial Noise Policy for Industry (2017) has replaced the NSW EPA Noise Policy. These criteria have been incorporated in PA Condition 3(3) which states:

3. Except for the land referred to 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)

Location	Day, Evening and Night LAeq (15 min)	Night LA1 (1 Min)
All privately-owned land	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 procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

Per PA 3 (11e and 13) the noise limits do not apply under G class inversion conditions. Under these conditions, mitigation actions as detailed in Section 3.3. will be undertaken to minimise noise impacts.

2.2 Noise Acquisition Criteria

In relation to noise acquisition, Condition 3(1) states:

1. Upon receiving a written request for acquisition from an owner(s) of the land listed in Table 1, the Proponent shall acquire the land in accordance with procedures in Conditions 8 and 9 of Schedule 4.

Table 1: Land subject to acquisition upon request

Acquisition Basis	Property ID
Noise and Air	44, 45, 49
Noise	43, 47

- Properties 43, 44 and 45 also have acquisition rights under the approval for the Boggabri Coal mine, and/or the existing consent (DA 88-4-2005) for the Tarrawonga Mine. The Proponent may acquire these properties on an equitable basis with the owner of Boggabri mine
- For the single purpose of acquisition under this condition, parcels of land that are in close proximity and operated as a single agricultural enterprise should be included as part of the land to be acquired. Where



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the Proponent and the owners(s) cannot agree on whether non contiguous parcels of land should be included, either party may refer the matter to the Secretary for resolution. The Secretary's decision as to the lands to be included for acquisition under the procedures in conditions 8 and 9 of Schedule 4 shall be final.

Note that properties 43, 44, 45 and 47 have now been acquired by either Tarrawonga or Boggabri Coal.

Apart from acquisition rights, the properties listed in Table 1 also retain additional noise mitigation rights as per PA Condition 3(2) which states:

2. Upon receiving a written request from the owner of any residence on the land listed in Table 1, the proponent shall implement additional noise and/or air quality mitigation measures (such as double glazing, insulation, air filters, a first flush roof water drainage system and/or air conditioning) at the residence in consultation with the owner. These measures must be reasonable and feasible and directed towards reducing the noise and/or air quality impacts of the project on the residence.

If within 3 months of receiving this request from the owner, the Proponent and the owner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

Under the terms of the approval, the rights to acquisition do not just relate to those properties listed under Table 1. Condition 3(4) relevantly states:

4. If the owner(s) of a privately owned residence, that is not listed in Table1, have reason to believe that operational noise from the project is causing the criteria in Table 2 to be exceeded at the residence, the owner(s) can request an independent noise impact assessment for the residence. The request shall be made in writing to the Secretary. If the Secretary considers that a noise impact assessment is warranted, then the Proponent shall commission the assessment.

If the noise assessment determines that the noise generated by the project causes sustained exceedances, or is likely to cause sustained exceedances of the criteria in Table 2, the owner(s) can make a written request to the proponent for one of the following:

- (a) mitigation (such as double glazing, insulation and air-conditioning) at the residence in consultation with the owner(s). These measures must be reasonable and feasible and directed towards reducing the noise impacts of the project on the residence. If within 3 months of receiving this request from the owner(s), the proponent and owner(s) cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution; or*
- (b) acquisition of the residence and land in accordance with the procedures in conditions 8 and 9 of Schedule 4.*

Upon receiving a written request from the owner(s), the proponent must undertake whichever option has been requested by the owner(s).

However this condition does not apply if the proponent has an agreement with the owner(s) of the relevant residence to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.



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Notes:

1. For the purposes of this condition a privately owned residence is defined as a residence not owned by a mining company that: is regularly occupied; or is an existing residence that is not regularly occupied but for which a valid development consent exists; or is a proposed residence for which a development application has been lodged with the relevant authority prior to the date of this approval.
2. For the purposes of acquisition under this condition, parcels of land that are in close proximity and operated as a single agricultural enterprise should be included as part of the land to be acquired. Where the proponent and owner(s) cannot agree on whether non-contiguous parcels of land should be included, either party may refer the matter to the Secretary for resolution. The Secretary's decision as to the lands to be included for acquisition under the procedures in conditions 8 and 9 of Schedule 4 shall be final.
3. The noise assessment must be undertaken by a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary and include either:
 - a. sufficient monitoring at the affected residence to allow for assessment of impacts under a range of meteorological conditions (including adverse conditions) likely to be experienced at the residence; or
 - b. sufficient monitoring to allow reliable prediction of the likely impacts under the range of meteorological conditions (including adverse conditions) likely to be experienced at the residence.
4. Monitoring should be conducted in accordance with the requirements of the NSW Industrial Noise Policy.
5. Where predictions of likely impacts is to be used, either in substitution for, or in conjunction with direct measurement of noise impacts at the residence, it must be based on sufficient monitoring data to provide a reliable estimate of the impacts (including under adverse meteorological conditions) and be derived using standard noise modelling techniques accepted by the EPA.
6. The proponent shall ensure that the requested noise impact assessment is submitted to the Secretary within 3 months of the Secretary's decision that the assessment was warranted. The proponent shall also provide a copy of the assessment to the owner(s) of the residence at the same time it is submitted to the Secretary.

Acquisition criteria also apply to vacant land, where it is identified that noise levels from the project exceed 40dB on more than 25% of the land on a systemic basis. PA Condition 3(5) states:

5. If the owner(s) of land containing a privately owned residence, which is not listed in Table 1, have reason to believe that operational noise from the project is causing noise levels to exceed 40dB(A) LAeq15min over more than 25% of that land, the owner(s) can request an independent noise impact assessment for the land. The request shall be made in writing to the Secretary. If the Secretary considers that a noise impact assessment is warranted, then the proponent shall commission the assessment.

If the noise impact assessment determines that the noise generated by the project causes sustained exceedances, or is likely to cause sustained exceedances of the 40dB(A) criteria the owner(s) can make a written request to the proponent for acquisition of the residence and land in accordance with the procedures in conditions 8 and 9 of Schedule 4.

However, this condition does not apply if the proponent has an agreement with the owner(s) of the relevant residence to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

Note: The notes to condition 4 of this Schedule also apply to this condition.

2.3 Cumulative Noise Criteria

In relation to cumulative noise, Condition 3(6) states:

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 the other mines does not exceed the criteria in Table 3 at any residence on privately-owned land.

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



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Land	Day, Evening and Night LAeq (15 min)
All privately owned land	40

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

Where it is demonstrated that cumulative noise is exceeding this criteria, cumulative noise acquisition requirements will apply in accordance with Condition 3(7) which states:

7. If the owner(s) of a privately owned residence, which is not listed in Table 1, reasonably believes that the noise limits in Table 3 are being exceeded at the residence and that the exceedance is caused by operational noise from the project and one or more other mines (including use of private roads or rail spurs), the owner(s) can request an independent noise impact assessment for the residence. The request shall be made in writing to the Secretary. If the Secretary considers that a noise impact assessment is warranted, then the proponent shall commission the assessment.

Where the noise impact assessment determines that the cumulative noise generated by the project combined with the noise from the other mine(s) causes, or is likely to cause sustained exceedances of the criteria in Table 3, then the owner(s) can make a written request to the proponent for one of the following:

- (a) mitigation (such as double glazing, insulation and air-conditioning) at the residence in consultation with the owner(s). These measures must be reasonable and feasible and directed towards reducing the noise impacts of the project on the residence. If within 3 months of receiving this request from the owner(s), the proponent and the owner(s) cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution; or*
- (b) acquisition of the residence and land in accordance with the procedures in Conditions 8 and 9 of Schedule 4.*

Upon receiving a written request from the owner(s), the proponent must undertake whichever option has been requested by the owner(s).

However, this condition does not apply if the Proponent has an agreement with the owner(s) of the relevant residence to generate higher noise levels, and the proponent has advised the Department in writing of the terms of this agreement.

The proponent may seek to recover an equitable share of the costs incurred from other mines contributing to the cumulative impact. Unless otherwise agreed between the mines, the proportional contributions should be based on expert analysis of the monitoring results to assess relative contribution to the impact. In the event of a dispute between the mines, the proponent, or one of the contributing mines may submit the matter to the Secretary for resolution. The Secretary's decision shall be final.

Notes:

- 1. The notes to condition 4 apply to this condition.*
- 2. The noise impact assessment shall include assessment of the relative contribution of the mines to the impact at the residence.*



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2.4 Attenuation of Plant

Under the terms of the Project Approval Condition 3(9), it is a requirement that new heavy mining equipment purchased post the date of the approval is to be commissioned as noise attenuated units. This is prescribed in Condition 3(9) as follows:

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;*
- *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.*

It is also a requirement that mining equipment be tested as part of an annual testing program and monitored to ensure the noise performance of operating equipment is maintained within specification. The requirements for this are identified in Condition 3(10) as follows:

10. *The proponent shall:*

(a) *conduct an annual testing program of the plant on the 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.*

2.5 Operating Conditions

Under the terms of the approval, the site is required to operate in a manner that minimises potential for noise impacts at privately owned receivers. The mechanisms to be utilised to achieve this requirement is defined in Condition 3(11) as follows:

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 the day 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*



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- (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 impacts of these mines, to the satisfaction of the Secretary.

2.6 Noise Management Plan

The requirements pertaining to noise as specified in the Project Approval are to be managed in accordance with a Noise Management Plan for the site (this document). The Noise Management Plan outlines the methods by which the site manages noise impacts and the response measures taken to address noise concerns. It also identifies the monitoring methods, including the use of real time monitors, attended noise monitoring and the measures to be implemented at site in response to noise outcomes. The Noise Management Plan also includes consideration to cumulative noise impacts, but is managed in accordance with the BTM Noise Management Strategy. The conditional requirements for the Noise Management Plan are outlined in Condition 3(12) and as identified below:

12. The proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:

- (a) be prepared in consultation with the EPA, and be submitted to the Secretary for approval by the end of May 2013;
- (b) describe the measures that would be implemented to ensure:
 - best practice management is being employed;
 - the noise impacts of the project are minimised during meteorological conditions under which the noise limits in this approval do not apply;
 - compliance with the relevant conditions of this approval.
- (c) describe the proposed noise management system in detail;
- (d) include a risk/response matrix to codify operational responses to varying levels of risk resulting from weather conditions and specific mining activities;
- (e) include commitments to provide summary reports and specific briefings at CCC meetings on issues arising from noise monitoring;
- (f) describe the measures that would be implemented to ensure the noise impacts from the operation of the Kamilaroi Highway overpass are minimised as far as practicable;
- (g) include a monitoring program that:
 - uses attended monitoring to evaluate the performance of the project against all noise criteria in this approval, including a minimum of four days attended monitoring per quarter at locations agreed to by the Secretary, or more regularly where required;
 - uses real time monitoring to support the proactive and reactive noise management system on site;
 - included monitoring of inversion strength at an appropriate sampling rate to determine compliance with noise limits;
 - evaluates and reports on the effectiveness of the noise management system on site;
 - provides for the annual validation of the noise model for the project (including the 10th percentile methodology); and
- (h) includes a Leard Forest Mining Precinct Noise Management Strategy, that has been prepared in consultation with other coal mines in the precinct, to minimise the cumulative noise impacts of all mines within the precinct, and includes:
 - a description of the measures that would be implemented to ensure that the noise management of the mines is properly coordinated to ensure compliance with the relevant noise criteria;
 - a suitable monitoring network for the precinct;



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- protocols for data sharing; and
- procedures for identifying and apportioning the source/s and contribution/s to cumulative noise impacts for the operating mines and other sources, using the noise and meteorological monitoring network and appropriate investigative tools.

Note: the Leard Forest Mining Precinct Noise Management Strategy can be developed in stages and will need to be subject to ongoing review dependent upon the determination and commencement of other mining projects in the area.

2.7 Noise Measurement

The Project Approval also prescribes the inversion class to be applied to noise measurements in accordance with the Industrial Noise Policy, now the NPI (2017). The inversion class to be applied is Class G as per Condition 3(13) which states:

13. Where conditions in this approval refer to measurement of noise within the context of the Industrial Noise Policy the inversion class to be applied to the project is Class G.

However, the proponent may undertake an investigation to determine whether a proposal for change in the classification could be considered for approval by the Secretary. Any such investigation must be conducted in consultation with the EPA and be conducted by a suitably qualified person whose appointment has been endorsed by the EPA and approved by the Secretary. The report and recommendation must be submitted to the EPA for endorsement prior to submission to the Secretary. If the Secretary is satisfied that the recommendation is reasonable, then the Secretary may amend the inversion class applying to the project under this approval.

This means that compliance is required under any class of conditions (A to G) but TCM may seek to amend this.

Note that the EPA Environment Protection licence EPL 12365 sets out several meteorological conditions under which compliance with the noise limits is excluded.

2.8 Notification Requirements

The Project Approval includes specific notification requirements relating to noise impacts and surrounding receivers. In particular Condition 4(1) states:

1. Within 3 months of the date of the approval the proponent shall:

(a) notify in writing the owners of:

- *the land listed in Table 1 of Schedule 3 that they have the right to require the proponent to acquire their land in accordance with the procedures in conditions 8 and 9 below at any stage during the project;*
- *any residence on the land listed in Table 1 of Schedule 3 that they have the right to request the proponent to ask for additional noise and/or air quality mitigation measures to be installed at their residence at any stage during the project; and*
- *any privately owned land within 2 kilometres of the approved open cut mining pit that they are entitled to ask for a property inspection, to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated;*

(b) notify the tenants of mine owned land of their rights under this approval; and



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Condition 4(2) states:

2. Prior to entering into any tenancy agreement for any land owned by the proponent that is predicted to experience exceedances of the recommended dust and/or noise criteria, or for any of the land listed in Table 1 that is subsequently purchased by the proponent, the proponent shall:

(b) advise the prospective tenants of the rights they would have under this approval; and

Condition 4(3) states:

3. As soon as practicable after obtaining monitoring results showing:

(a) an exceedance of the relevant criteria in Schedule 3, the proponent shall notify the affected landowner in writing of the exceedance, and provide regular monitoring results to the landowner until the project is complying with the relevant criteria again

2.9 On-line Information

The availability of monitoring data, including real time data is critical to the effective operation of this management plan. The responses to this data reflect the operation's capacity to adapt to noise enhancing conditions. As part of the Project Approval, it is a requirement that monitoring information relevant to noise impacts is published on the Whitehaven Coal website in accordance with the following requirement of Condition 5(13).

13. The proponent shall, within 3 months of the date of this approval:

(a) make the following information for the project publicly available on its website, on a daily basis and in a clearly understandable form:

- daily weather forecasts for the coming week;*
- proposed operational responses to these weather forecasts;*
- real time noise and air quality monitoring data (subject to any necessary caveats); and*

(b) make provision on its website for the provision of online and/or email comments by members of the community regarding this information, to the satisfaction of the Secretary.



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3 NOISE CONTROLS AND MANAGEMENT

Under the terms of the Project Approval, there is no defined noise management zone or noise affectation zone. Those properties that were predicted to exceed the noise criteria have been granted acquisition rights under the Project Approval, and can enact these rights at any time. As a consequence of this, the Noise Management Plan seeks to prioritise noise mitigation/management measures where noise impacts are predicted to and/or, are identified through monitoring, approach the noise criteria at those privately owned properties that do not have acquisition rights. Whilst the properties with acquisition rights will not be subject to the 35dB (A) criteria, the approach of seeking to minimise impacts on those privately owned properties that do not retain acquisition rights will also, inherently reduce impacts on those closest receivers with acquisition rights as listed in Table 1 of the Project Approval. On this basis, noise impacts will be managed to ensure the predicted noise levels from the Tarrawonga Extension EA are not exceeded.

Best practice management measures to be implemented to manage noise impacts on surrounding residents will include:

- Noise monitoring on-site (sound power level testing) and at nearby private receivers (attended monitoring);
- Refinement of on-site noise mitigation measures and mine operating procedures, where it is identified through monitoring that prevailing weather conditions are impacting on capacity to comply with noise criteria;
- Discussions with relevant landowners to assess concerns;
- Implementation of private noise agreements, where acceptable to the impacted landholder, with the terms of the agreement provided to the DPIE;
- Implementation of feasible and reasonable acoustical mitigation at receivers (which may include window glazing, insulation and/or air conditioning), where an independent noise impact assessment conducted under the terms of the Project Approval identifies systemic exceedances of the noise criteria, and the landowner requests such measures; and
- Acquisition of the property where an independent noise impact assessment conducted under the terms of the Project Approval identifies systemic exceedances of the noise criteria, and the landowner requests acquisition. Acquisition would be undertaken in accordance with the terms of the Project Approval.

A continuous noise monitor is located at the “Coomalgah” property to assist with noise management and enable real-time noise controls to be implemented. The real-time monitor will be retained at the “Coomalgah” property to form part of the real – time monitoring network for the Boggabri Tarrawonga Maules Creek (BTM) Complex. Should the necessity arise for the provision of a mobile real-time noise monitor in response to sustained noise related complaints, this matter will be considered with appropriate action taken to address these concerns. The mobile real-time noise monitor would be located at any appropriate alternative positions depending upon prevailing conditions at the time. Preference will be given to



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locating the mobile real-time noise monitor at or near locations most likely to be impacted by noise from the operation that are not subject to acquisition rights in the Project Approval.

3.1 General and Specific Noise Mitigation Measures

A number of general noise management measures will continue to be undertaken, including:

- Operational activities will give appropriate consideration to prevailing conditions to minimise potential for noise levels to exceed the relevant criteria. This will be managed by the use of predictive forecasts in mine planning and the use of real-time noise monitoring to enable reactive management to noise levels.
- Tarrawonga maintains a real-time weather monitoring system measures meteorological conditions that may affect noise propagation. The weather station monitors all parameters consistent with EPL requirements, including sigma theta, and calculates the stability class (A to G).
- Contractors, including all personnel and sub-contractors, will undergo environmental awareness training (including Noise control) via the generic induction and/or toolbox talk process.
- The Sound Power Levels of large mobile mining equipment will be tested annually.
- Any new dump trucks, dozers, drills or excavators purchased for the Tarrawonga operation will fitted with noise sound suppression.
- All complaints will be managed as outlined in Section 5.2.
- Where feasible and practical TCPL will implement the following noise management and mitigation measures to reduce noise emissions associated with the Project:
 - Installation of an earth bund on the southern side of exposed sections of the services corridor (ROM coal haul road to the Boggabri Coal Mine) is reliant on construction of infrastructure at Boggabri Coal and commercial arrangements between Boggabri Coal and Tarrawonga, and will not be constructed until these are finalised;
 - A reduction in the speed, number of, or relocation of mobile fleet items operating during the evening and night time periods where measured noise levels (real-time monitoring) indicate likely exceedance of noise criteria; and
 - Modified alignment of haul routes to reduce their exposure relative to nearby receivers.

As appropriate, the existing noise control and management methods will be reviewed in response to the results of noise monitoring, complaints or comments identified through TCPL's consultation effort.



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3.2 Cumulative Noise Mitigation Measures

Cumulative noise impacts are managed under the Boggabri-Tarrawonga-Maules Creek Complex (BTM Complex) noise Management Strategy. A noise monitoring network has been established to quantify cumulative noise levels from the BTM Complex and noise from individual mines' by monitoring in real-time (unattended) and attended noise levels at sensitive receivers.

3.3 Managing Noise Under Adverse Metrological Conditions

Per PA 3 (11e and 13) the noise limits do not apply under G class inversion conditions. When such conditions occur the following noise mitigation measures will be taken:

- A reduction in the speed, number of, or relocation of mobile fleet items operating during the evening and night time periods where measured noise levels (real-time monitoring) indicate likely exceedance of noise criteria; and
- Modified alignment of haul routes to reduce their exposure relative to nearby receivers.

As appropriate, the existing noise control and management methods will be reviewed in response to the results of noise monitoring, complaints or comments identified through TCPL's consultation effort.

4 MONITORING PROGRAM

This section outlines the monitoring and reporting requirements to measure the impacts and environmental performance of the mine and the effectiveness of noise management measures.

4.1 Monitoring Activities

4.1.1 Attended Noise monitoring

Attended noise monitoring will be undertaken on four days per quarter by an independent acoustic consultant for compliance purposes. All attended noise monitoring will be conducted in accordance with the NSW Noise Policy for Industry, AS 1055.1-1997 'Acoustics – Description and Measurement of environmental noise – General Procedures' (or any subsequent revision or replacement document), and will expressly monitor the modification factors referred to in the NSW Noise Policy for Industry. Attended noise monitoring will be undertaken during the night time period. It is noted that the inversion class to be applied to the project is Class G.

4.1.2 Real-time Noise Monitor

In order to actively manage noise emissions onsite and to adequately comply with the requirement for reactive noise control measures, TCPL will maintain a real-time noise monitor at the "Coomalgah" property. This monitor forms part of the BTM Complex real time noise monitoring network. The monitor is not used for compliance purposes but for operational

management/proactive response to potential noise issues. The key features the existing monitor include:

- Real-time access to monitoring information;
- Universal user interface platform (web based repository);
- Customised alarm settings;
- Automatic daily reporting;
- Streaming audio to PC; and
- Continuous audio recording.

This system provides real time access to noise data, and provides the capacity to set the unit to a target noise goal. Upon noise emissions reaching the identified target level, an automated SMS message is delivered to operational personnel on site which triggers an investigation into the noise source, both through review of audio files, and on site knowledge of surface operations. Upon determination that the noise source is mine site related, active measures can be put in place to modify operations, or stand down the noise source to ensure compliance with noise criteria is maintained.

The real-time continuous noise management unit will be set to trigger an SMS alert (during the night time period – 10pm to 7am) to site personnel upon recording of a continuous (cumulative) noise source at 33dBA (low frequency filtered) for a period of 30 minutes. Upon the issue of the alert, site personnel will access the web interface of the real-time noise management unit to identify the noise source and determine if it is project related. If the identified primary noise source is the mine, site personnel will closely monitor noise levels. In the event that noise levels continue to be elevated, the OCE will investigate and where noise is confirmed to be attributable to TCM the OCE will, where necessary, implement operational measures to ensure mine noise levels remain below 35dBA. These operational measures may include, but will not be limited to, standing down of specific items of equipment, and or relocating equipment to alternate areas of the site, e.g. discontinuing operations on the southern dump.

In accordance with the requirements of the consent, TCM will seek validation of the tenth percentile methodology used in the noise impact assessment for the Tarrawonga Coal Project. This will be completed on an annual basis by the provision of a report from an appropriately qualified acoustical consultant, utilising the data obtained over a 12-month period from the monitoring program and providing a comparative assessment against the modelled predictions from the tenth percentile methodology. The outcomes of this review will be reported in the AEMR/Annual Review.

4.2 Monitoring Locations

A review of monitoring stations conducted on 17 April 2018 (Todoroski Air Sciences, 2018) concluded that the “Coomalgah” noise monitor is not ideally situated due to noise from adjacent farming activities and a livestock watering point, which affect the quality of readings used for assessing mine noise. It is intended to move the monitor a few hundred metres away from the farming activity, on the Coomalgah property.

Figure 2 presents the attended noise monitoring locations and land ownership details. The proposed noise monitoring locations are as follows:

- Attended monitoring¹ - “Coomalgah” (eastern zone), “Bungalow” (southern zone), “Barber’s Lagoon” (western zone)
- Real-time monitor – /”Coomalgah”^{1 2}

Notes:

¹ Monitoring locations are subject to ongoing agreement with the property owner; any change may result in monitoring not been undertaken at a specified location.

² Should the provision for mobile monitoring be enacted, as outlined in Section 3, a trailer mounted noise monitor will be utilised.

The attended noise monitoring locations have been selected taking into account the proximity of surrounding non-project related residences to mining operations and will be used to assess compliance with noise criteria.

The location of the continuous real-time noise monitor has been established to form part of the real-time monitoring network for the Boggabri Tarrawonga Maules Creek (BTM) Complex.

The mobile real-time noise monitor will be relocated on an as needs basis, based on prevailing weather conditions, community complaints/concerns and operations at site so as TCM has capacity to effectively measure noise levels at the most likely affected receiver.

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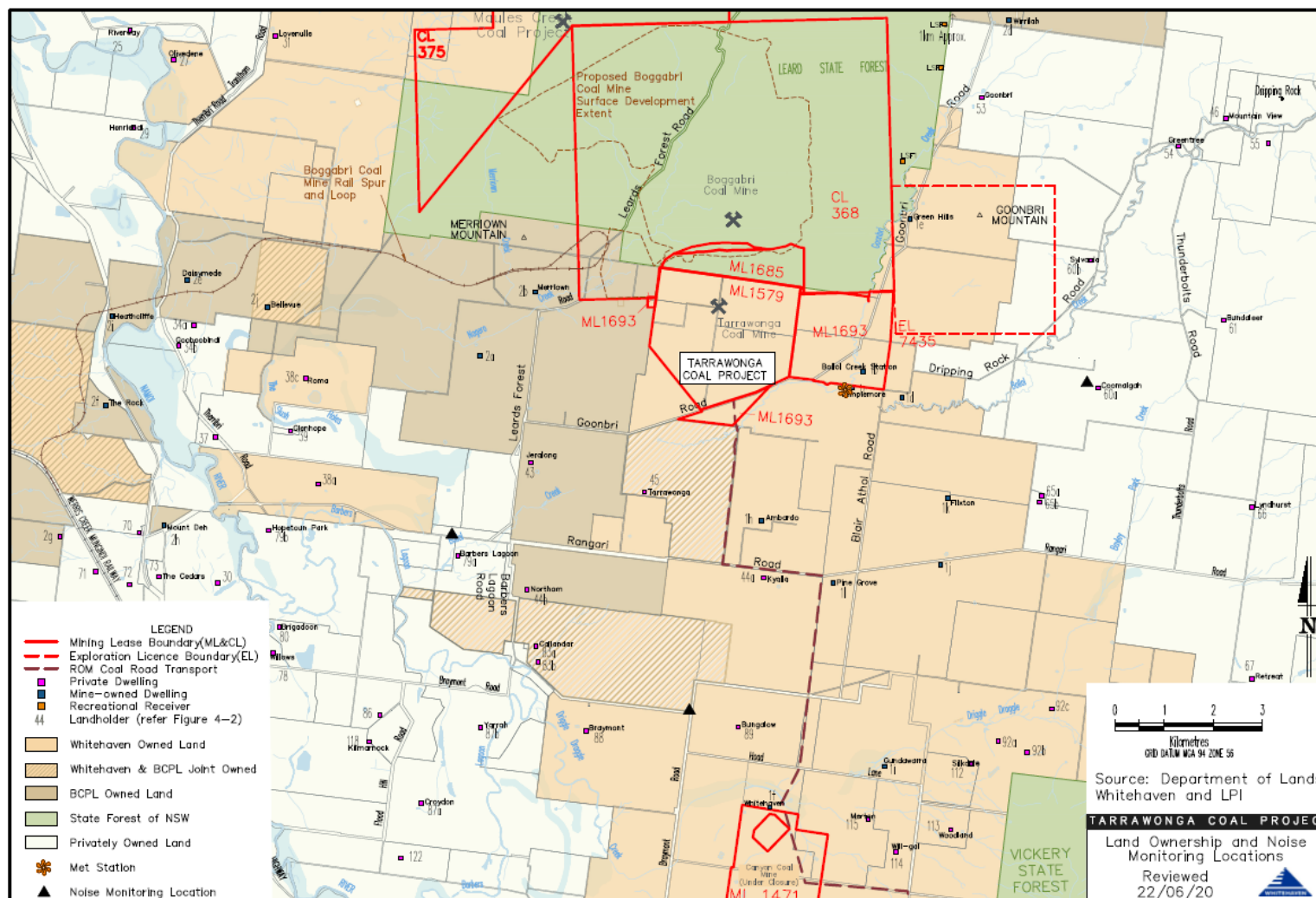


Figure 2 Noise Monitoring Locations

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4.3 Monitoring Frequency

Noise monitoring frequencies are nominated in Table 1. If conditions on the day of monitoring are not suitable (i.e. high winds, rain etc.) then the monitoring event must be rescheduled to ensure ongoing compliance with monitoring frequency.

Table 1 Noise Monitoring Summary with Roles and Responsibilities

Type	Frequency	Responsibility	Comments
Operational Noise Monitoring			
Attended noise monitoring	Four days per quarter	Suitably qualified acoustical consultant, in conjunction with Environmental Officer or representative	Noise monitoring methodology provided in Section 4.1
Real time noise monitoring	Continuous	Environmental Officer or representative, OCE and Operations Manager	Monitored in accordance with methodology provided in Section 4.1
Mobile real-time noise monitoring	As required	Environmental Officer or representative, OCE and Operations Manager	Monitored in accordance with methodology provided in Section 4.2
Mobile Mine Equipment Sound Power Levels			
Mobile mine equipment	Annually	Environmental Officer or representative	The sound power levels are to be recorded*

*The effectiveness of noise suppression equipment on plant will be maintained at all times and defective plant will not operate until fully repaired. If any attenuation is found to be defective will be restored and the results of any testing and/or attenuation work will be reported in the annual review.

4.4 Monitoring Procedures

Attended noise surveys will be conducted as follows:

- All noise investigations will be carried out in accordance with NSW EPA's Noise Policy for Industry, 2017 (NPI), Environmental Noise Control Manual (ENCM) and applicable Australian Standards;
- Noise levels will be measured in one-third octave bands using an instrument with IEC Type 1 characteristics as defined in Australian Standard AS IEC 61672.1 – 2004 “Electro acoustics – Sound Level Meters – Specifications” or any more recent version of the standard. The instrument will have current calibration as per manufacturer's instructions and field calibration will be confirmed before and after measurements with a sound level calibrator;
- The instrument will be set to A-weighting, “fast” response and measurements of L_{Aeq} (15 minute) will be taken at the location.
- Attended surveys will be conducted with a focus on night-time periods and according to relevant standards and the Noise Management Plan.
- Field notes will be taken during each measurement recording the time and duration of noise events, noise sources, instantaneous noise levels and the frequency range of identified site noise sources. Where an obvious noise



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exceedance is detected, the noise monitor must notify the TCM of the exceedance and obtain relevant information as to the possible source of the exceedance (i.e. malfunctioning equipment, additional activity contributing to noise levels) to ensure appropriate reporting and action on the exceedance;

- Extraneous noise sources will be excluded from the measured signal using robust methods approved by EPA and DPIE and the $L_{Aeq(15\text{-minute})}$ level attributable to TCPL activities will be identified and compared with the relevant criteria; and
- Details regarding plant configuration, survey interval, weather conditions, extraneous noise sources, monitoring locations and times of measurement will be recorded for inclusion in the noise monitoring report.
- Frequency of monitoring will be reviewed by the BTM mines in accordance with the BTM Complex Noise Management Strategy (Appendix 1).

Real-time noise monitoring will be conducted as follows:

- A real-time noise monitoring system utilising IEC Type 1 sound level meter with statistical and third-octave band capabilities or similar is located at the “Coomalgah” property.
- A mobile real-time noise monitoring system utilising IEC Type 1 sound level meter with statistical and third-octave band capabilities or similar may be located at properties should the necessity to arise (as per Section 3); that will most likely to be impacted by mine noise, as assessed in noise modelling for the Extension Project, or at properties where a complaint has been made in relation to mine noise. Site selection will be based on location of operational activity most likely to impact on that receiver;
- The unit will calculate, as a minimum, 15-minute statistics comprising L_{A90} , L_{Aeq} and L_{A10} and low-frequency filtered L_{Aeq} (nominal threshold 800Hz but able to be changed);
- Each 15-minute statistic will have an accompanying third-octave band spectrum;
- Statistical data and digital audio files (minimum duration one minute per 15 minute interval) will be continuously recorded into the web based repository using an appropriate communications format;
- A computer accessible to site personnel will display statistical results in real time via an web based repository and daily charts will be sent via email for later reference or printing;
- Noise levels nominally 2dBA below the site noise criteria 35dBA (i.e.33dBA) will be set as trigger points in the real-time system to send pre-programmed SMS messages to relevant personnel; and
- On receipt of an SMS alert, audio files will be reviewed to determine the cause of the noise and, if necessary, the management safeguards and ameliorative actions in Section 3 and 4.1 will be initiated.



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5 MANAGEMENT OF EXCEEDANCES, COMPLAINTS AND NON-COMPLIANCE

5.1 Noise Compliance Criteria Exceedance

If attended noise monitoring results exceed the levels outlined in Section 2, advice will be sought from an appropriate acoustic consultant to verify the source of the elevated noise and identify options to address noise related impacts. Such actions will include:

- Additional testing to confirm the elevated noise is sustained in nature. Further discussion will be undertaken with EPA and DPIE regarding additional monitoring requirements to determine whether a sustained exceedance constitutes a non-compliance;
- Consideration to changes to operational procedure or equipment type; and
- The installation of sound attenuation measures to plant and equipment, where necessary.

Where it is identified that the above options cannot achieve compliance with noise criteria identified through attended noise monitoring, TCPL will undertake negotiations with the affected landowners with a view to entering into private agreements.

Only attended noise monitoring will be utilised to determine compliance. Real time monitoring will be used for operational management purposes only.

5.1.1 Notification Requirements

Notification requirements are outlined in Section 6.

5.1.2 Independent Review and Land Acquisition

If an owner of privately-owned land considers the mine to be exceeding noise compliance criteria, they may ask the Secretary in writing for an independent review of the impacts on their land. Conditions 4, 5 and 6 of Schedule 4 of PA 11_0047 specify the independent review process.

Within 3 months of receiving a written request from a landholder with acquisition rights, TCPL shall make a binding written offer as detailed in Condition 4(8) of PA 11_0047. Noise acquisition criteria are specified in Condition 3(4) while Condition 4(9) requires TCPL to pay all reasonable costs associated with the land acquisition process.

5.2 Complaints

Whilst all endeavours will be made by TCPL to avoid adverse noise impacts on local landowners / residents, it is acknowledged that from time to time such impacts may occur. In order to ensure an appropriate and consistent level of reporting, response and follow-up to any complaints is adopted by TCPL, the following complaints management protocol will be followed:

- A publicly advertised telephone complaints line will be in place to receive complaints during operating hours and record complaints at other times.



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- Each complaint received will be recorded on a Complaints Register, which will include the following details:
 - The date and time of complaint.
 - Any personal details the complainant wishes to provide or if no such details are provided a note to that effect.
 - The nature of the incident that led to the complaint.
 - The action taken by TCPL in relation to the complaint, including any follow-up contact with the complainant.
 - If no action was taken by TCPL, the reason why no action was taken.
- The Environmental Officer or representative will be responsible for ensuring that an initial response is provided within 24 hours of receipt of a complaint (except in the event of complaints recorded when the mine is not operational).
- Data from the site weather station and the real time noise monitoring unit will be obtained for the time applicable to the complaint for use in determination of cause and identification of future remedial actions.
- Additional measures will be undertaken as required to address the complaint. This may include visiting the complainant, or inviting the complainant to the mine site.
- Once the identified measures are undertaken, the Environmental Officer will sign off on the relevant complaint within the Complaints Register.
- If necessary, follow-up monitoring will take place to confirm the source of the complaint is adequately mitigated.
- A copy of the Complaints Register will be kept by TCPL and made available to the CCC and the complainant (on request). A summary of complaints received every 12 months will be included in the Annual Review.

Based on the nature of individual complaints, specific contingency measures may be implemented to the (reasonable) satisfaction of the complainant. The Environmental Officer or representative retains responsibility for ensuring that complaints received are properly recorded and addressed appropriately.

5.3 Non- Compliance

With the exception of noise compliance criteria exceedances (as discussed in Section 5.1), non-compliances relating to noise would most likely relate to not achieving the required monthly attended monitoring events. If this was to occur, as per Schedule 5 Condition 2, all feasible and reasonable steps would be taken to ensure that the exceedance does not reoccur. Appropriate advice would be issued to the DPIE as soon as practicable describing remediation options which would then be implemented as directed by the Secretary. Arrangements made to reschedule the monitoring event as soon as practically possible. Any other non-compliances of this nature will be detailed in the Annual Review, and include details as to why the non-compliance occurred.

5.4 Unpredicted Impact Protocol

In the event that unpredicted or unforeseen noise impacts are identified, the following protocol will be adopted.

Table 2 Unpredicted Impact Protocol

Step	Procedure
1	Review the unpredicted impact including consideration of: - Any relevant monitoring data; and - Current mine activities as well as activities in the vicinity of the issue.
2	Commission an investigation by an appropriate specialist into the unpredicted impact, if considered appropriate.
3	Develop appropriate ameliorative measures based on the results of the above investigations, in consultation with relevant government departments.
4	Implement additional monitoring, where relevant, to measure the effectiveness of the improvement measures.

6 **RECORD KEEPING AND REPORTING REQUIREMENTS**

6.1 **Record Keeping**

Attended noise monitoring reports issued by the acoustic consultant will include details on the date and time of monitoring, location of monitoring and monitoring personnel.

Data obtained from the real-time noise monitor will be available in real time, as well as through daily reporting from the monitoring unit to selected personnel, including the Operations Manager and Environmental Officer or representative.

Noise monitoring results will be maintained by the Environmental Officer or representative. The results will be reviewed to determine any mining related exceedances in order to instigate an appropriate response.

6.2 **Reporting Requirements**

A summary of attended noise monitoring results will be reported on a quarterly basis to the CCC via the Environment Monitoring Report. This report will be periodically uploaded to the Whitehaven Coal website.

Each year, the results of the attended noise monitoring program will be summarised and presented in the Annual Review together with reference to prevailing meteorological data and site activities during the measurement period(s), where relevant. Reporting will also include an analysis of the monitoring results against the exceedance criteria, previous monitoring results, predictions made in the EA and thus an evaluation of the effectiveness of the noise management system. Where attenuation of plant is required, and testing of attenuation and/or sound power level tests are completed, the results of these tests will also be made available in the Annual Review and annually on the Whitehaven Coal website.

Incident reporting will be undertaken in accordance with Condition 5 (9) of the Project Approval. It is considered an incident when material harm to the environment has been caused, or threatens to cause or breaches/exceeds the limits or performance measures/criteria in this approval

All other reporting will be undertaken in accordance with Condition 5 (10); the Annual Review will be the primary tool used to provide regular reporting of the environmental performance of the project.

Relevant real-time data and operational responses incorporating meteorological data are made available to the public on the Whitehaven Coal website in accordance Schedule 5 Condition 13 of the PA 11_0047.

7 **DOCUMENT REVIEW AND CONTINUOUS IMPROVEMENT**

This document will be reviewed in accordance with the requirements of Condition 5 Schedule 5 of PA 11_0047.

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Appendix 1 BTM Noise Management Strategy