NOISE MANAGEMENT PLAN

<table>
<thead>
<tr>
<th>Version</th>
<th>Issue Date</th>
<th>Section Modified</th>
<th>Reason for Modification</th>
<th>Review Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mar 2010</td>
<td>All</td>
<td>Original Noise Management Plan</td>
<td>S. Peart</td>
</tr>
<tr>
<td>2</td>
<td>June 2013</td>
<td>All</td>
<td>Updated to include Open Cut 2 and Open Cut 3</td>
<td>Environmental Department</td>
</tr>
<tr>
<td>3</td>
<td>May 2015</td>
<td>All</td>
<td>To include management and mitigation measures for both Stage 1 and Stage 2 of the Project</td>
<td>MCO, SLR Consulting Australia Pty Ltd</td>
</tr>
</tbody>
</table>

Approved: S.J. Archinal Date: 23/06/2015

<table>
<thead>
<tr>
<th>Document</th>
<th>Version</th>
<th>Issue</th>
<th>Effective</th>
<th>Review</th>
<th>Author</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCO_ENV_PLN_0024</td>
<td>3</td>
<td>May 2015</td>
<td>June 2015</td>
<td>June 2016</td>
<td>MCO</td>
<td>S Archinal</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS

1.0 INTRODUCTION 1
   1.1 SCOPE 4
   1.2 STRUCTURE OF THE NMP 4

2.0 STATUTORY REQUIREMENTS 6
   2.1 EP&A ACT PROJECT APPROVAL 6
      2.1.1 Noise Management Plan 6
      2.1.2 Management Plan Requirements 7
   2.2 LICENCES, PERMITS AND LEASES 8

3.0 NOISE GENERATING ACTIVITIES 9
   3.1 STAGE 2 INITIAL ESTABLISHMENT AND CONSTRUCTION/DEVELOPMENT ACTIVITIES 9
   3.2 STAGE 1 OTHER APPROVED DEVELOPMENT ACTIVITIES 12
   3.3 MINE OPERATION 15

4.0 NOISE CRITERIA AND PERFORMANCE INDICATORS 18
   4.1 PROJECT APPROVAL CONDITIONS 18
   4.2 LICENCE CONDITIONS 18

5.0 BASELINE DATA 19
   5.1 BACKGROUND NOISE 19
   5.2 SENSITIVE RECEPTORS 19

6.0 MONITORING LOCATIONS 21
   6.1 NOISE MONITORING 21
   6.2 METEOROLOGICAL MONITORING 23

7.0 NOISE MANAGEMENT MEASURES 24
   7.1 MANAGEMENT PRACTICES 24
   7.2 SOURCE AND TRANSMISSION NOISE CONTROLS 25
   7.3 PREDICTIVE MODELLING 26
   7.4 REAL-TIME RESPONSE PROTOCOLS 26
   7.5 RECEIVER NOISE CONTROL 30
   7.6 CUMULATIVE NOISE MANAGEMENT 30

8.0 NOISE MONITORING PROGRAM 31
   8.1 GENERAL REQUIREMENTS 31
   8.2 ATTENDED NOISE MONITORING 31
      8.2.1 Purpose 31
      8.2.2 Monitoring Locations 32
      8.2.3 Methodology 32
      8.2.4 Applicable Meteorological Conditions 34
      8.2.5 Compliance Assessment Protocol 35
      8.2.6 Compliance with Cumulative Noise Goals 38
8.3 CONTINUOUS NOISE MONITORING 38
  8.3.1 Purpose 38
  8.3.2 Monitoring Locations 38
  8.3.3 Methodology 40
  8.3.4 Noise Monitoring Response Protocol 41
8.4 METEOROLOGICAL MONITORING AND FORECASTING 42
8.5 PLANT AND EQUIPMENT SOUND POWER LEVEL MONITORING 43
  8.5.1 Purpose 43
  8.5.2 Methodology 43

9.0 CONTINGENCY PLAN 44
  9.1 POTENTIAL CONTINGENCY MEASURES 44

10.0 ANNUAL REVIEW AND IMPROVEMENT OF NOISE MANAGEMENT PLAN 45
  10.1 ANNUAL REVIEW 45
  10.2 NOISE MANAGEMENT PLAN REVIEW 45

11.0 REPORTING SYSTEMS 47
  11.1 INCIDENT REPORTING 48

12.0 REFERENCES 49
LIST OF TABLES

Table 1: Management Plan Requirements
Table 2: Hours of Operation for Mining Phases
Table 3: Noise Criteria dB(A)
Table 4: Measured Rating Background Levels (RBL) (L_{eq} and L_{A90}) - July 2005
Table 5: Location of Monitoring Equipment
Table 6: Real-Time Response Trigger Levels (i.e. Performance Indicators)
Table 7: Real-Time Response Management Actions
Table 8: Location of Attended Monitoring
Table 9: Real-time Monitoring Locations

LIST OF FIGURES

Figure 1: Regional Location
Figure 2: Approved Moolarben Coal Project (Stage 1 and Stage 2) General Arrangement
Figure 3: Initial Establishment and Construction/Development Activities
Figure 3 – Inset 1: Stage 1 Other Approved Development Activities
Figure 3 – Inset 2: Stage 1 Other Approved Development Activities
Figure 4: Moolarben Coal Complex Noise Monitoring Sites
Figure 5: Real-Time Response Flow Chart
Figure 6: Compliance Review and Evaluation Process

LIST OF APPENDICES

Appendix A: Relevant NSW Project Approval Conditions (05_0117 and 08_0135)
Appendix B: Target Sound Power Levels (dBA re 1 pW)
Appendix C – Agency Correspondence
DEFINITIONS

Note: Terms in bold are defined in the Industrial Noise Policy, 2000.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance</td>
<td>The process of checking that source noise levels meet with the noise limits in a statutory context</td>
</tr>
<tr>
<td>Cumulative Noise Level</td>
<td>The total level of noise from all sources</td>
</tr>
<tr>
<td>Day</td>
<td>The period from 0700 to 1800 h (Monday to Saturday) and 0800 to 1800 h (Sundays and Public Holidays)</td>
</tr>
<tr>
<td>dB</td>
<td>Abbreviation for decibel – a unit of sound measurement. It is equivalent to 10 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure</td>
</tr>
<tr>
<td>dBA</td>
<td>Unit used to measure ‘A-weighted’ sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear</td>
</tr>
<tr>
<td>Exceedance</td>
<td>Monitored noise level greater than the criteria contained in the NSW Project Approvals (05_0117 and 08_0135)</td>
</tr>
<tr>
<td>Evening</td>
<td>The period from 1800 to 2200 h</td>
</tr>
<tr>
<td>Incident</td>
<td>An incident has been defined as a non-compliance for the purposes of the NMP</td>
</tr>
<tr>
<td>$L_{A1}$</td>
<td>The noise level which is exceeded for 1% of the measurement period. During the measurement period, the noise level is below the $L_{A2}$ level for 99% of the time</td>
</tr>
<tr>
<td>$L_{A10}$</td>
<td>The noise exceeded by 10% of the measurement period. Commonly referred to as the average maximum</td>
</tr>
<tr>
<td>$L_{Aeq}$</td>
<td>The equivalent continuous noise level – the level of noise equivalent to the energy-average of noise levels occurring over a measurement period</td>
</tr>
<tr>
<td>Low frequency</td>
<td>Noise containing major components in the low-frequency range (20 Hz to 250 Hz) of the frequency spectrum</td>
</tr>
<tr>
<td>Meteorological conditions</td>
<td>Wind and temperature-inversion conditions</td>
</tr>
<tr>
<td>Night</td>
<td>The period from 2200 to 0700 h (Monday to Saturday) and 2200 to 0800 h (Sundays and Public Holidays)</td>
</tr>
<tr>
<td>Non-Compliance</td>
<td>A development is deemed to be in non-compliance with its noise consent/licence conditions if the monitored noise levels exceed its statutory noise limit by more than 2 dB</td>
</tr>
<tr>
<td>Sound power level</td>
<td>Ten times the logarithm to the base 10 of the ratio of the sound power of the source to the reference sound power</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

The Moolarben Coal Complex is located approximately 40 kilometres (km) north of Mudgee in the Western Coalfield of New South Wales (NSW) (Figure 1).

Moolarben Coal Operations Pty Ltd (MCO) is the operator of the Moolarben Coal Complex on behalf of the Moolarben Joint Venture (Moolarben Coal Mines Pty Ltd [MCM], Sojitz Moolarben Resources Pty Ltd and a consortium of Korean power companies). MCO and MCM are wholly owned subsidiaries of Yancoal Australia Limited (Yancoal).

Mining operations at the Moolarben Coal Complex are currently approved until 31 December 2038 and would continue to be carried out in accordance with NSW Project Approval (05_0117) (Moolarben Coal Project Stage 1) as modified and NSW Project Approval (08_0135) (Moolarben Coal Project Stage 2).

The current Stage 1 mining operations are undertaken in accordance with Approval Decision (EPBC 2007/3297) granted on 24 October 2007 (and varied by notice on 25 February 2009 and 11 May 2010) and (EPBC 2013/6926) granted on 13 November 2014 under the Commonwealth Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act). A Variation of Proposal to take Action (EPBC 2008/4444) under the EPBC Act for Moolarben Coal Project Stage 2 was accepted on 26 April 2012. The Variation of Proposal to take Action (EPBC 2008/4444) will require approval under the EPBC Act now that the Moolarben Coal Project Stage 2 Project Approval (08_0135) has been determined.

The current mining operations at the Moolarben Coal Complex are conducted in accordance with the requirements of the conditions of Mining Lease (ML) 1605, ML 1606, ML 1628 and ML 1691 granted under the Mining Act, 1992. A Mining Lease Application for mining activities within Stage 2 of the Moolarben Coal Complex has been lodged with the NSW Department of Trade and Investment, Regional Infrastructure and Services.

Stage 1 of the Moolarben Coal Complex has commenced and at full development will comprise three open cut mines (OC1, OC2 and OC3), a longwall underground mine (UG4), and mining related infrastructure (including coal processing and transport facilities) (Figure 2).

Stage 2 of the Moolarben Coal Complex will include (Figure 2):

- construction and operation of an open cut mining operation (OC4) extracting up to 12 million tonnes per annum (Mtpa) run-of-mine (ROM) coal and up to 13 Mtpa combined rate with the Stage 1 open cut mines;
FIGURE 2
Approved Moolarben Coal Project (Stage 1 and Stage 2)
General Arrangement

LEGEND
Mining Lease Boundary
Exploration Licence Boundary
Existing/Approved Stage 1
Open Cut Mining Area
Out-of-pit Emplacement
Infrastructure Area
Underground Mining Area
Existing/Approved Stage 2
Open Cut Mining Area
Out-of-pit Emplacement
Infrastructure Area
Underground Mining Area
Haul Road

Source: MCO, 2015
• construction and operation of two underground mine operations (UG1 and UG2) extracting up to 4 Mtpa ROM coal cumulative with the Stage 1 underground mine (UG4);
• construction and operation of the Stage 2 ROM coal facility;
• extension of the use of the existing approved Stage 1 Coal Handling and Preparation Plant (CHPP) to Year 24 of Stage 2 and increased throughput of up to 17 Mtpa ROM coal (13 Mtpa open cut and 4 Mtpa underground);
• development of an out-of-pit emplacement area;
• construction and operation of two conveyors and associated facilities between the Stage 2 ROM coal facility and Stage 1 CHPP;
• construction and use of access roads;
• construction and operation of administration offices, workshops and related facilities;
• diversions of Murragamba and Eastern Creeks;
• development of water management infrastructure;
• installation of supporting power and communications infrastructure; and
• other associated minor infrastructure, plant, equipment and activities, including ancillary works, minor modifications and alterations to existing infrastructure as required.

Construction activities for the development of Stage 2 will commence in 2015 once all relevant licences and approvals are in place to enable commencement of development.

1.1 SCOPE

This Noise Management Plan (NMP) has been prepared by MCO (with input from experienced and qualified noise experts [SLR Consulting Australia Pty Ltd]) to satisfy the requirements of NSW Project Approval (05_0117) (as modified) and the requirements of NSW Project Approval (08_0135).

The NMP describes the management of noise at the Moolarben Coal Complex (i.e. Stage 1 and Stage 2 of the Moolarben Coal Complex) in accordance with the above listed Project Approvals.

1.2 STRUCTURE OF THE NMP

The remainder of the NMP is structured as follows:

Section 2: Outlines the statutory requirements applicable to the NMP.

Section 3: Outlines the noise generating activities relevant to Moolarben Coal Complex operations.

Section 4: Outlines the relevant noise criteria applicable to Moolarben Coal Complex operations.

Section 5: Provides baseline data.
Section 6: Outlines noise monitoring locations.

Section 7: Outlines noise management measures.

Section 8: Outlines the noise monitoring program components.

Section 9: Provides a contingency plan to manage any unprecedented impacts and their consequences.

Section 10: Provides details for the review and improvement of environmental performance process.

Section 11: Describes the management and reporting of incidents, complaints and non-compliances.

Section 12: Provides the references cited in the NMP.
2.0 STATUTORY REQUIREMENTS

MCO’s statutory obligations are contained in:

i. the conditions of the NSW Project Approval (05_0117) (as modified) and NSW Project Approval (08_0135);

ii. relevant licences and permits, including conditions attached to the Environment Protection Licence (EPL) and mining leases; and

iii. other relevant legislation.

Obligations relevant to this NMP are described below.

2.1 EP&A ACT PROJECT APPROVAL

The conditions of the NSW Project Approvals (05_0117 and 08_0135) relevant to the NMP are described below. A comprehensive list of all conditions in the NSW Project Approvals (05_0117 and 08_0135) relevant to noise, is provided in Appendix A. A summary of all commitments relevant to noise in Appendix 3 of the NSW Project Approvals (05_0117 and 08_0135), including where they are referenced in the NMP, is provided in Appendix A.

2.1.1 Noise Management Plan

Condition 7, Schedule 3 of the NSW Project Approval (05_0117) requires the preparation of a NMP. Condition 7 states:

Noise Management Plan
7. 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 31 March 2015;

(b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;

(c) describe the proposed noise management system in detail;

(d) include a monitoring program that:
   - uses attended noise monitoring to evaluate compliance of the project against the noise criteria in this approval;
   - includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria in this approval and trigger for further attended monitoring);
• evaluates and reports on:
  - the effectiveness of the noise management system; and
  - compliance against the noise operating conditions; and
• defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

Condition 8, Schedule 3 of the NSW Project Approval (08_0135) requires the preparation of a NMP. Condition 8 states:

**Noise Management Plan**

8. 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 submitted to the Secretary for approval prior to the commencement of any development on site under this approval;

(b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;

(c) describe the proposed noise management system in detail; and

(d) include a monitoring program that:
  • evaluates and reports on:
    - the effectiveness of the noise management system;
    - compliance against the noise criteria in this approval; and
    - compliance against the noise operating conditions;
  • includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria in this approval and trigger for further attended monitoring); and
  • defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

2.1.2 Management Plan Requirements

Condition 3, Schedule 5 and Condition 3, Schedule 6 of the NSW Project Approvals (05_0117 and 08_0135, respectively) outline general management plan requirements that are applicable to the preparation of the NMP. Table 1 presents these requirements and indicates where they are addressed within this NMP.
Table 1: Management Plan Requirements

<table>
<thead>
<tr>
<th>NSW Project Approval Condition</th>
<th>NMP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. The Proponent shall ensure that the management plans required under this approval are prepared in accordance with any relevant guidelines, and include:</td>
<td></td>
</tr>
<tr>
<td>(a) detailed baseline data;</td>
<td>Section 5</td>
</tr>
<tr>
<td>(b) a description of:</td>
<td>Section 2</td>
</tr>
<tr>
<td>• the relevant statutory requirements (including any relevant approval, licence or lease conditions);</td>
<td></td>
</tr>
<tr>
<td>• any relevant limits or performance measures/criteria;</td>
<td>Section 4</td>
</tr>
<tr>
<td>• the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;</td>
<td>Section 7.4</td>
</tr>
<tr>
<td>(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</td>
<td>Section 7</td>
</tr>
<tr>
<td>(d) a program to monitor and report on the:</td>
<td>Section 8</td>
</tr>
<tr>
<td>• impacts and environmental performance of the project;</td>
<td></td>
</tr>
<tr>
<td>• effectiveness of any management measures (see c above);</td>
<td>Section 8</td>
</tr>
<tr>
<td>(e) a contingency plan to manage any unpredicted impacts and their consequences;</td>
<td>Section 9</td>
</tr>
<tr>
<td>(f) a program to investigate and implement ways to improve the environmental performance of the project over time;</td>
<td>Section 10</td>
</tr>
<tr>
<td>(g) a protocol for managing and reporting any:</td>
<td>Section 11</td>
</tr>
<tr>
<td>• incidents;</td>
<td></td>
</tr>
<tr>
<td>• complaints;</td>
<td></td>
</tr>
<tr>
<td>• non-compliances with statutory requirements; and</td>
<td></td>
</tr>
<tr>
<td>• exceedances of the impact assessment criteria and/or performance criteria; and</td>
<td></td>
</tr>
<tr>
<td>(h) a protocol for periodic review of the plan.</td>
<td>Section 10</td>
</tr>
</tbody>
</table>

2.2 LICENCES, PERMITS AND LEASES

In addition to the NSW Project Approvals (05_0117 and 08_0135) and Commonwealth Approvals (EPBC 2007/3297, 2013/6936 and 2008/4444), all activities at the Moolarben Coal Complex will be conducted in accordance with a number of licences, permits and leases which have been issued or are pending issue.

Key licences, permits and leases pertaining to noise at the Moolarben Coal Complex include:

- Mining Operations Plan approved by the Division of Resources and Energy.

The Policies, Plans and Notes that may be applicable to the Moolarben Coal Complex include, but are not limited to, the:

- NSW Industrial Noise Policy (INP) (EPA, 2000); and
3.0 NOISE GENERATING ACTIVITIES

3.1 STAGE 2 INITIAL ESTABLISHMENT AND CONSTRUCTION/DEVELOPMENT ACTIVITIES

The initial establishment and construction/development works for Stage 2 at the Moolarben Coal Complex will be located entirely within the extent of the approved Project boundary (Figure 3). The initial establishment and construction/development works will be generally undertaken during the first 12 months with development of the following components (Figure 3):

- a temporary mine infrastructure area;
- conveyor trace (i.e. footprint clearance);
- diversion drains and sediment control structures;
- dirty water dam;
- topsoil stockpile;
- explosive storage facilities;
- initial box cut and out-of-pit emplacement area;
- UG1 highwall entries and surface support facilities;
- access road from Ulan-Wollar Road;
- electricity transmission line; and
- OC4 Strip 1.

The initial establishment and construction/development works will include all ancillary water diversion and sediment and erosion control structures (where required). These initial works are described further below.

Initial establishment and construction/development works for the Stage 2 Project will commence in 2015 once all relevant licences and approvals are in place to enable commencement of the Project.

Temporary Mine Infrastructure Area

The temporary mine infrastructure area will be located at the southern end of the conveyor trace (Figure 3) and will include a ROM coal pad, administration office, vehicle parking area, crib room, bathhouse, workshops hardstand areas (for mine vehicle parking), washdown bay, refuelling station, water truck refill point; equipment, fuel and lubrication stores.
FIGURE 3
Initial Establishment and Construction/Development Activities

Source: MCO, 2015
Conveyor Trace
A conveyor trace will be cleared to link the Stage 1 ROM Coal Facility with the temporary mine infrastructure area (Figure 3). The conveyor trace will be approximately 60 metres (m) wide and include the following:

- roadway to develop a conveyor to transport of ROM coal from OC4 to the Stage 1 ROM Coal Facility;
- topsoil stockpile areas (where required); and
- temporary laydown areas (where required).

Dirty Water Dam (and Temporary Laydown Area)
A dirty water dam will be constructed adjacent to the temporary mine infrastructure area (Figure 3). The dirty water dam will be constructed with a design capacity to contain approximately 550 Megalitres of water and would include an overflow spillway. The footprint proposed for the dirty water dam will initially be used as a temporary laydown area.

Topsoil Stockpile
A topsoil stockpile will be progressively constructed in the north-eastern section of OC4 and will be linked to the temporary mine infrastructure area via a haul road (Figure 3). The topsoil stockpile area will include sediment dams and associated spillways (Figure 3).

Explosive Storage Facilities
Explosive storage facilities will be constructed south of the temporary mine infrastructure area (Figure 3). The explosive storage facilities will include a storage shed and an access road which links to the topsoil stockpile haul road.

Initial Box Cut and Out-of-pit Dump
An initial box cut will be excavated within the OC4 extent (Figure 3). Waste rock will be placed in the adjacent out-of-pit emplacement area (Figure 3).

Water Diversion Structure
Water diversion structures will be constructed north-west of the OC4 boundary (Figure 3) where required to prevent up-catchment runoff water from entering the initial box cut.

UG1 Highwall Entries and Surface Support Facilities
Development works for the UG1 mine and highwall entries (Figure 3) in the eastern highwall of OC1 including:

- stabilisation of the OC1 highwall and pit crest, including up-catchment water diversions/drainages;
• pre-support and development of portal entries;
• mine infrastructure area (MIA) and underground mine support services within OC1 (e.g. power lines/cables, communication cables, water supply piping and storages);
• MIA facilities within OC1;
• ROM coal handling infrastructure (e.g. surface stockpile areas and conveyors) within OC1; and
• access and haul roads within OC1.

In accordance with Condition 7, Schedule 4 of the NSW Project Approval (08_0135), first workings will be designed to remain long-term stable and non-subsiding to the satisfaction of the DRE.

Access Road from Ulan-Wollar Road
An access road linking the Stage 1 ROM Coal Facility and Ulan-Wollar Road will be constructed (Figure 3). The access road will include an adjacent construction compound.

Electricity Transmission Line
An electricity transmission line and associated access tracks will be constructed to provide electricity to the temporary mine infrastructure area and southern end of the conveyor from the Stage 1 ROM Coal Facility (Figure 3).

OC4 Strip 1
Clearance (vegetation, soil and weathered surface material) of OC4 strip 1 will be undertaken ahead of the initial box cut to allow mining to advance to the west (Figure 3).

3.2 STAGE 1 OTHER APPROVED DEVELOPMENT ACTIVITIES

In addition to approved operational activities of the Moolarben Coal Complex (Section 3.3), other approved development activities will be undertaken within the extent of the existing approved Stage 1 of the Moolarben Coal Complex (Figure 3).

The other approved development activities will consist of the following:

• OC1 office upgrade;
• OC1 workshop and store extension;
• OC1 fuel farm upgrade;
• CHPP workshop and fuel upgrades; and
• CHPP upgrade.
These activities are described further below.

**OC1 Office Upgrade**
The OC1 office upgrade works is associated with the existing OC1 administration area (Figure 3 - Inset 1). These works will consist of the following:

- extension to administration building;
- crib and muster rooms;
- relocation of first aid building;
- new bathhouse walkway;
- two new bathhouses;
- new sewage treatment plant;
- new training building;
- maintenance planners offices;
- relocation of simulator and stores;
- new female toilets; and
- carpark extension and associated earthworks.

**OC1 Workshop and Store Extension**
The workshop and store extension works are associated with the existing OC1 Workshop (Figure 3 - Inset 1). These works will consist of the following:

- two additional service bays;
- extension to stores;
- extension to locker room; and
- new haul truck tyre slab.

**OC1 Fuel Farm Upgrade**
The fuel farm upgrade works are associated with the existing fuel farm located to the west of the existing OC1 Workshop (Figure 3 – Inset 1). These works will consist of a new 27,000 Litre tank and associated piping.
CHPP Workshop and Fuel Upgrades

The workshop and fuel upgrade works is associated with the existing CHPP workshop and stores, to the west of the CHPP Workshop (Figure 3 – Inset 2). These works will consist of the following:

- new fuel storage tank;
- new collection sump and associated drainage works;
- new dozer refill pad;
- new dozer parkup pad;
- new B-Double turning loop;
- workshop extension; and
- workshop store pad.

CHPP Upgrade

The CHPP upgrade works will consist of the following (Figure 3 – Inset 2):

- additional flocculation plant and associated building; and
- new building to house four new beltpress filters.

3.3 MINE OPERATION

The key noise generating activities/equipment from the operation of the Moolarben Coal Complex are as follows:

- drills;
- blasting;
- excavators;
- loaders;
- haul trucks;
- dozers;
- scrapers;
- other mobile fleet;
- fixed plant (e.g. CHPP); and
- rail loading facilities.
The approved hours of operation for these activities are shown in Table 2.

### Table 2: Hours of Operation for Mining Phases

<table>
<thead>
<tr>
<th>Operation</th>
<th>Description</th>
<th>Currently Approved¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Site</td>
<td>Mine maintenance, operation, coal handling</td>
<td>24 hours, 7 days per week</td>
</tr>
</tbody>
</table>
|             | Blasting²                                  | 0900 hours to 1700 hours  
 A maximum of 2 blasts per day and 9 blasts per week on average over any 12 month period |
| Off-Site    | Train Traffic                             | 24 hours, 7 days per week |
|             | Road Traffic                              | 24 hours, 7 days per week |

Note: ¹ As per Moolarben Coal Complex Stage 1 Project Approval (05_0117) and Moolarben Coal Complex Stage 2 Project Approval (08_0135). ² No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the Secretary.
4.0 NOISE CRITERIA AND PERFORMANCE INDICATORS

4.1 PROJECT APPROVAL CONDITIONS

The noise criteria outlined in Condition 3, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135) are provided in Table 3.

Table 3: Noise Criteria dB(A)

<table>
<thead>
<tr>
<th>Land Number</th>
<th>Day $L_{Aeq(15min)}$</th>
<th>Evening $L_{Aeq(15min)}$</th>
<th>Night $L_{A1(1min)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>30, 63</td>
<td>39</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>70</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>75</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>31</td>
<td>36</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>All other privately owned residences</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Note: * The Ulan Catholic Church was removed in 2014.

Noise acquisition criteria and noise mitigation criteria are provided in Conditions 1, 2 and 4-6, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135) (Appendix A).

4.2 LICENCE CONDITIONS

Prior to the commencement of mining operations for Stage 2 of the Moolarben Coal Complex, an application will be submitted to vary the noise limit conditions of EPL 12932 to be consistent with the NSW Project Approvals (05_0117 and 08_0135).

The application to vary EPL 12932 will seek to (among other things) extend the premise boundary of the EPL to include the Stage 2 development and to revise condition L5.1 relating to noise limits to be consistent with the Stage 1 (as modified) and Stage 2 Project Approvals (05_0117 and 08_0135, respectively).
5.0 BASELINE DATA

5.1 BACKGROUND NOISE

Background noise monitoring results to characterise and quantify the pre-mine noise environment in the area surrounding Moolarben Mine Complex were conducted in July 2005 for the *Noise and Vibration Impact Assessment Proposed Moolarben Coal Mine Ulan, NSW* (Spectrum Acoustics, 2006), which are summarised in Table 4 and shown on Figure 4.

<table>
<thead>
<tr>
<th>Location*</th>
<th>L_{Aeq}, period</th>
<th>L_{A90}, period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day</td>
<td>Evening</td>
</tr>
<tr>
<td>P. Renshaw N6</td>
<td>49</td>
<td>48</td>
</tr>
<tr>
<td>G. Tuck-Lee N4</td>
<td>55</td>
<td>44</td>
</tr>
<tr>
<td>D. Rayner N1</td>
<td>43</td>
<td>37</td>
</tr>
<tr>
<td>M. Powers (Ulan) N5</td>
<td>55</td>
<td>53</td>
</tr>
<tr>
<td>T. Roberts N3</td>
<td>49</td>
<td>45</td>
</tr>
<tr>
<td>B. Reid N2</td>
<td>47</td>
<td>40</td>
</tr>
</tbody>
</table>

Note: * Monitoring locations are shown on Figure 4.

5.2 SENSITIVE RECEPTORS

Receptors sensitive to noise impacts from operational activities associated with the Moolarben Coal Complex are listed in Appendix 5 of the NSW Project Approvals (05_0117 and 08_0135) and shown on Figure 4.

Noise impacts have been modelled as a component of the environmental assessments for the Moolarben Coal Project Stage 1 and Moolarben Coal Project Stage 2.
FIGURE 4
Moolarben Coal Complex
Noise Monitoring Sites

Source: MCO, Feb 2015
6.0 MONITORING LOCATIONS

6.1 NOISE MONITORING

MCO undertakes attended noise monitoring in the surrounding community to assess compliance with noise impact assessment criteria, additional noise mitigation criteria, land acquisition criteria and cumulative noise goals. MCO also operates real time noise monitoring units to assess ongoing performance of the operation.

Monitoring locations have been selected as being representative of residential receivers predicted to be impacted by mining operations at the Moolarben Coal Complex (Table 5). Locations were also selected based on prevailing weather conditions and with consideration given to the privacy of residents and requirements of the NSW Project Approvals (05_0117 and 08_0135) and EPL 12932.

Table 5: Location of Monitoring Equipment

<table>
<thead>
<tr>
<th>Location</th>
<th>Site ID</th>
<th>Type</th>
<th>Frequency</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulan Public School</td>
<td>NA1</td>
<td>Compliance - Attended</td>
<td>Monthly</td>
<td>Attended monitoring at Ulan Public School. Representative of nearest non-mine owned residences to the north west of OC1.</td>
</tr>
<tr>
<td>Cope Road (Receiver 258)</td>
<td>NA11</td>
<td>Management - Attended</td>
<td>Quarterly</td>
<td>Attended noise monitoring at Receiver 258 to determine and manage cumulative mine noise from Moolarben Coal Complex and Ulan Mine.</td>
</tr>
<tr>
<td>Lagoons Road</td>
<td>NA2</td>
<td>Validation - Attended</td>
<td>Annually³</td>
<td>Used to verify the results of real-time noise monitoring.</td>
</tr>
<tr>
<td>Winchester Crescent</td>
<td>NA12</td>
<td>Compliance/Validation - Attended</td>
<td>Monthly</td>
<td>Representative of non-mine owned residences to the south west of the mining operations in the Winchester Crescent/Ulan Road residential area. Used to verify the results of real-time noise monitoring.</td>
</tr>
<tr>
<td>NR4</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Real-time monitoring at Winchester Crescent. Representative of noise levels west of mining operations.</td>
<td></td>
</tr>
<tr>
<td>Upper Ridge Road</td>
<td>NA3</td>
<td>Validation - Attended</td>
<td>Annually³</td>
<td>Used to verify the results of real-time noise monitoring.</td>
</tr>
<tr>
<td>(Receiver 176)</td>
<td>NR5</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Representative of non-mine owned residences in the lower Ridge Road residential area.</td>
</tr>
<tr>
<td>Location</td>
<td>Site ID</td>
<td>Type</td>
<td>Frequency</td>
<td>Justification</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------</td>
<td>-----------------------------</td>
<td>-----------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lower Ridge Road</td>
<td>NA6</td>
<td>Compliance - Attended</td>
<td>Monthly</td>
<td>Representative of non-mine owned residences in the lower Ridge Road residential area.</td>
</tr>
<tr>
<td>Moolarben Road (Receiver 28)&lt;sup&gt;4&lt;/sup&gt;</td>
<td>NA10</td>
<td>Validation - Attended</td>
<td>Annually&lt;sup&gt;3&lt;/sup&gt;</td>
<td>Used to verify the results of real-time noise monitoring.</td>
</tr>
<tr>
<td></td>
<td>NR10</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Representative of non-mine owned residences to the south-west of mining operations in OC3. This site will be established once open cut mining operations in OC2 are within 3.5 km of Receiver 28.</td>
</tr>
<tr>
<td>Goulburn River National Park</td>
<td>GRNP</td>
<td>Compliance - Attended</td>
<td>Quarterly</td>
<td>Attended quarterly monitoring for 12 months within 50m of the Goulburn River National Park (at a representative location where accessible) to validate Moolarben Mine Complex noise emission levels at public recreation areas within the park.</td>
</tr>
<tr>
<td>Munghorn Gap Nature Reserve</td>
<td>MGNR</td>
<td>Compliance - Attended</td>
<td>Quarterly</td>
<td>Attended quarterly monitoring for 12 months within 50m of the Munghorn Gap Nature Reserve (at a representative location where accessible) to validate Moolarben Mine Complex noise emission levels at public recreation areas within the reserve.</td>
</tr>
<tr>
<td>MCO Administration</td>
<td>Weather Station (WS1)*</td>
<td>Full Meteorological Complement</td>
<td>Continuous</td>
<td>Permanent meteorological station representative of site conditions.</td>
</tr>
<tr>
<td>Ulan Road</td>
<td>Weather Station (WS3)*</td>
<td>Full Meteorological Complement</td>
<td>Continuous</td>
<td>Permanent meteorological station representative of conditions near non-mine owned residences to the south-west of the operation.</td>
</tr>
<tr>
<td>Mobile</td>
<td>Weather Station (WS5)*</td>
<td>Full Meteorological Complement</td>
<td>Continuous</td>
<td>Mobile unit moved as required to supplement data from other sites.</td>
</tr>
</tbody>
</table>

* Full Meteorological compliment consists of sensors and calculations that provide the following:
  - wind speed at 10m;
  - wind direction at 10m;
  - standard deviation of wind direction (sigma-theta) at 10m;
  - temperature at 2m and 10m;
  - relative humidity at 2m;
  - solar radiation at 2m;
  - temperature difference between 2m and 10m; and
  - rainfall (gauge at ground-level).

Note:  
1 If the results of attended noise monitoring determine that there is no noise impact from Moolarben Coal Complex, MCO will cease attended noise monitoring at Receiver 258 in consultation with the DP&E and EPA.
2 MCO has entered into a data sharing agreement with Ulan Coal Mine to access data from a directional monitor on Cope Road in order to determine and manage the contribution to cumulative mine noise at Receiver 258.
3 Attended monitoring will be undertaken monthly for a period of twelve months (i.e. to July 2016) and annually thereafter.
4 Site will be established once open cut mining operations in OC2 are within 3.5 km of Receiver 28.

MCO has entered into a data sharing agreement with the Ulan Coal Mine for site ND2 (Figure 4).
Noise monitoring locations will be reviewed and where necessary modified as a result of monitoring results, changes to the operation or regional land ownership. Once open cut mining operations in OC2 are within 3.5 km of Receiver 28, a real-time noise monitoring site (NR10) will be established in the vicinity of Moolarben Road\(^1\) (Figure 4). Prior to the commencement of mining operations in OC4, an attended monitoring location (NA11) will be established at Cope Road (in the vicinity of Receiver 258)\(^1\). All monitoring will be subject to agreement from the landowner to access their property. Where agreement cannot be reached the location may be removed from the monitoring program and an alternative location will be investigated.

When changes are made to noise monitoring locations based on land ownership or operational changes NSW Department of Planning and Environment (DP&E) and the Environment Protection Authority (EPA) will be informed of the changes and provided with justification as to why the change was made and this NMP will be revised accordingly. Ulan Coal Mine and Wilpinjong Coal Mine (WCM) will also be informed of the changes in accordance with the data sharing agreement protocols.

### 6.2 Meteorological Monitoring

Meteorological monitoring is undertaken at MCO, in accordance with NSW Project Approval and EPL requirements. MCO has three Automatic Weather Stations (AWSs) which measure a full meteorological complement (Table 5) (Figure 4). One is located at the mine site’s administration office (referred to as WS1), one is located on a property on Ulan Road and is referred to as WS3 and one is a mobile unit (referred to as WS5). WS3 is linked into the real-time monitoring system and is the main weather station for reporting purposes with WS1 and WS5 used to supplement weather data as required.

WCM operates an AWS which is capable of continuous real-time measurement of temperature lapse rate in accordance with the INP. Temperature lapse rate is determined through the measurement of temperature at two elevations 58 m apart (2 m and 60 m from ground level). The differential over 58 m is extrapolated to determine temperature lapse rate per °C/100 metres. MCO has an agreement to share the real-time temperature lapse rate data from the AWS at WCM.

A summary of meteorological conditions at the Moolarben Coal Complex are to be included in the MCO’s Annual Environmental Management Reports (AEMRs).

---

\(^1\) Final location dependent on land ownership and land access.
7.0 NOISE MANAGEMENT MEASURES

MCO has implemented management and control measures to identify and manage noise impacts to ensure noise from Moolarben Coal Complex is managed to acceptable levels, through a combination of the following:

- ensuring best management practices are implemented onsite by all staff and contractors;
- implementing noise controls to reduce noise from the source and attenuate noise transmission;
- if necessary, implementing measures to control noise at receivers; and
- specification of plant and equipment Sound Power Levels (SWLs) in supply contracts.

The effectiveness of noise management measures at the Moolarben Coal Complex will be assessed and continually improved through real-time and attended noise monitoring (refer to Section 8.0 of this NMP).

7.1 MANAGEMENT PRACTICES

The following noise management measures will be implemented at the Moolarben Coal Complex:

- An awareness and understanding of noise issues will be included in site inductions for all staff, contractors and visitors to the Moolarben Coal Complex.
- Weather conditions will be monitored (as per Section 6.2) and where adverse conditions are experienced or predicted, operational changes will be reviewed to avoid or reduce noise impacts.
- All machinery and plant used on site will be maintained regularly to minimise noise generation.
- Operation of some support fleet during the daytime only.
- Procurement of sound attenuated principal equipment.
- Utilisation of available Dura Tray fleet in noise onerous areas.
- Use of targeted acoustic bunding around the site (specifically targeting haul roads).
- OC4 out of pit emplacement of waste rock operations during evening and night-time periods at relatively lower elevations, utilising main dump shielding toward the Cooks Gap receivers.
- Adopting multilevel dumping operations where feasible.
- The volume of reversing sirens and start-up alarms will be reduced to the minimum practicable level (while still complying with coal mine safety regulations) and the least intrusive type of reversing alarms will be used.
- Noise monitoring will include a combination of real-time and attended monitoring of mine-generated noise.
• Operation of AWS to aid noise mitigation measures and the identification of noise enhancing conditions will be continued (refer to Section 8.4).

• An awareness of industry developments will be maintained in relation to noise mitigation engineering for individual plant items in order to assess inherent cost and practicality.

• The use of locomotives and rolling stock that are approved to operate on the NSW rail network in accordance with the Australian Rail Track Corporation EPL.

MCO will schedule its major employee shift changes to times outside the hours of 8.15 to 9.00 am and 3.15 to 4.00 pm Monday to Friday to seek to reduce overlap of employee traffic and school transport.

In accordance with Condition 20C, Schedule 3 and Condition 23, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively) MCO will consult with the NSW Department of Education and Communities and, if requested:

• implement agreed reasonable and feasible measures to ameliorate potential noise and/or dust impacts to Ulan Public School; or

• on a reasonable basis relating to the adverse effect of noise and/or dust from the project, contribute to or meet reasonable costs toward relocating the school.

MCO will review the results of noise and air quality monitoring at the Ulan Public School and in conjunction with consultation undertaken with the Ulan Public School as part of CCC meetings, determine any requirement to relocate the Ulan Public School.

7.2 SOURCE AND TRANSMISSION NOISE CONTROLS

Source and transmission noise controls include the following:

• Enclosure of high noise emission risk stationary equipment at the CHPP such as conveyors, crushers and reject bins to an adequate level to maintain compliance with relevant criteria, where noise monitoring and noise modelling indicate attenuation would be required.

• Attenuation of mobile equipment such as haul trucks, shovels and excavators, dozers and drills to an adequate level to maintain compliance with relevant criteria, where noise monitoring and noise modelling indicate attenuation would be required.

• Where applicable, the use of rubber lined truck bodies (Dura-Tray).

• Selective placement of waste rock materials to the west of the OC2 in order to provide an acoustic barrier.

• Use of a temporary power supply generator located near the borefield pipeline outlet, at least 4 kilometres from the nearest private residence, unless power is provided from the electricity network.
• Limiting CHPP surface water management infrastructure upgrades (as described in the Stage 1 Modification 9 Environmental Assessment [EA]) construction hours from 7:00 am to 5:00 pm Monday to Saturday (inclusive).

• Fitting northern borefield (Figure 4) water supply/dewatering bores with submersible pumps.

• Limiting northern borefield (Figure 4) construction hours from 7:00 am to 6:00 pm, Monday to Friday (inclusive).

7.3 PREDICTIVE MODELLING

In accordance with Condition 6, Schedule 3 and Condition 6, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively) MCO operate two predictive models which are used in conjunction with real-time response protocols (Section 7.4) as part of the comprehensive noise management system at the Moolarben Coal Complex:

• Predictive meteorological forecasting (Environmental Forecasting System) – which predicts the presence of favourable or unfavourable noise conditions based on meteorological data; and

• Predictive noise level forecasting (SoundAdvice) – which predicts noise levels at nearby receivers based on meteorological conditions, operating locations and equipment information.

7.4 REAL-TIME RESPONSE PROTOCOLS

Real-time response triggers are implemented where reasonable and feasible. The real-time response triggers evolve over time as a result of gaining a greater understanding of the weather patterns and operational conditions. The real-time response triggers are based on algorithms which are written within the real-time noise software to post-process noise, and meteorological data. The algorithms have been based upon noise modelling conducted for the various EAs and actual noise and meteorological results recorded since commencement of operations in 2009. The triggers are developed based on noise frequency.

The real time response trigger levels are shown in Table 6 with the responses shown in Table 7. A flow chart of the response is shown in Figure 5. SMS alarms will be directed to key staff/operational personnel. The adequacy of these alarms will be reviewed on an annual basis with any changes reported in the AEMR and subsequent revisions of this NMP.

Since implementation of the Upper Ridge Road noise unit (NR5), the adequacy of the trigger levels have been reviewed by MCO as a result of false alarms being triggered between the hours of 5:00 am and 7:00 am on most mornings. Investigations by MCO continue to report that the triggering noise source is from traffic during shift changes between the hours of 5:00 am and 7:00 am. Therefore the real-time response trigger alarm would rely on the Lagoons Road noise unit (NR3) as a performance indicator between hours of 5:00 am and 7:00 am rather than the Upper Ridge Road noise unit (NR5).
MCO will investigate the development of real-time response trigger for NR10 to ensure adequate control of noise levels in the vicinity of Receiver 28.

**Table 6: Real Time Response Trigger Levels (i.e. Performance Indicators)**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Location</th>
<th>Green</th>
<th>Amber</th>
<th>Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day (7am-6pm)</td>
<td>Lagoons Road (NR3)</td>
<td>Low frequency noise LAeq &gt;34 dBA for 24 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;36 dBA for 24 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;38 dBA for 12 consecutive 5 minute periods</td>
</tr>
<tr>
<td>Ridge Road (NR5)</td>
<td>Low frequency noise LAeq &gt;31 dBA for 24 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;33 dBA for 24 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 12 consecutive 5 minute periods</td>
<td></td>
</tr>
<tr>
<td>Winchester Crescent (NR4)</td>
<td>Low frequency noise LAeq &gt;31 dBA for 24 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;33 dBA for 24 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 12 consecutive 5 minute periods</td>
<td></td>
</tr>
<tr>
<td>Evening (6pm-10pm)</td>
<td>Lagoons Road (NR3)</td>
<td>Low frequency noise LAeq &gt;34 dBA for 12 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;36 dBA for 6 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;38 dBA for 6 consecutive 5 minute periods</td>
</tr>
<tr>
<td>Ridge Road (NR5)</td>
<td>Low frequency noise LAeq &gt;31 dBA for 12 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;33 dBA for 6 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 6 consecutive 5 minute periods</td>
<td></td>
</tr>
<tr>
<td>Winchester Crescent (NR4)</td>
<td>Low frequency noise LAeq &gt;31 dBA for 12 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;33 dBA for 6 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 6 consecutive 5 minute periods</td>
<td></td>
</tr>
<tr>
<td>Night (10pm-7am)</td>
<td>Lagoons Road (NR3)</td>
<td>Low frequency noise LAeq &gt;33 dBA for 12 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 6 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;37 dBA for 6 consecutive 5 minute periods</td>
</tr>
<tr>
<td>Ridge Road* (NR5)</td>
<td>Low frequency noise LAeq &gt;31 dBA for 12 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;33 dBA for 6 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 6 consecutive 5 minute periods</td>
<td></td>
</tr>
<tr>
<td>Winchester Crescent (NR4)</td>
<td>Low frequency noise LAeq &gt;31 dBA for 12 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;33 dBA for 6 consecutive 5 minute periods</td>
<td>Low frequency noise LAeq &gt;35 dBA for 6 consecutive 5 minute periods</td>
<td></td>
</tr>
</tbody>
</table>

Note: For all triggers wind speed is <3m/s and there is no rainfall.

* The real-time response trigger alarms at the Upper Ridge Road unit (NR5) between 5:00 am and 7:00 am will not be used as a performance indicator.
Table 7: Real-Time Response Management Actions

<table>
<thead>
<tr>
<th>Colour</th>
<th>Management/Control Action</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>• Confirm that the prevailing weather conditions are relevant in accordance with the NSW Project Approvals and EPL and the noise criteria apply.</td>
<td>Production Department</td>
</tr>
<tr>
<td></td>
<td>• Review the audio to determine noise source. Record observations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If MCO noise is audible:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review predicted weather conditions to identify if noise enhancing conditions are forecast for the rest of the shift. Rerun the model(^1) if forecast has changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review predicted noise impacts for the shift against actual observations. Rerun the model(^1) if predictions have changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Monitor changes in noise levels.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Record management strategies. This includes details of investigation, type of response (if any required), real time monitoring results and actions taken.</td>
<td></td>
</tr>
<tr>
<td>Amber</td>
<td>• Confirm that the prevailing weather conditions are relevant in accordance with the NSW Project Approvals and EPL and the noise criteria apply.</td>
<td>Production Department</td>
</tr>
<tr>
<td></td>
<td>• Drive to alarm location to determine noise source. Record observations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If MCO noise is audible:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The Production Department Representative (or delegate) alerts the Open Cut Examiner (OCE) of the noise observations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review noise generating activities and make preparations for moving into a protected area or temporarily shutting down equipment if noise levels remain elevated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review predicted weather conditions to identify if noise enhancing conditions are forecast for the rest of the shift. Rerun the model(^1) if forecast has changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review predicted noise impacts for the shift against actual observations. Rerun the model(^1) if predictions have changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Monitor changes in noise levels.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Record management strategies. This includes details of investigation, type of response (if any required), real time monitoring results and actions taken.</td>
<td></td>
</tr>
<tr>
<td>Red</td>
<td>• Confirm that the prevailing weather conditions are relevant in accordance with the NSW Project Approvals and EPL and the noise criteria apply.</td>
<td>Production Department</td>
</tr>
<tr>
<td></td>
<td>• Drive to alarm location to determine noise source. Record observations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If MCO noise is audible:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- The Production Department Representative (or delegate) alerts the OCE of the noise observations.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Implement mitigation measures such as moving equipment into protected areas or temporarily shutting down equipment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Monitor changes in noise levels against operational changes:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review predicted weather conditions to identify if noise enhancing conditions are forecast for the rest of the shift Rerun the model(^1) if forecast has changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Review predicted noise impacts for the shift against actual observations. Rerun the model(^1) if predictions have changed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Recording of management strategies. This includes details of investigation, type of response (if any required), real time monitoring results and actions taken.</td>
<td></td>
</tr>
</tbody>
</table>

Note:  
\(^1\) Environmental Forecasting System outlined in Section 7.3.  
\(^2\) SoundAdvice model outlined in Section 7.3.
Do weather conditions exclude the result as per conditions in Project Approvals and EPL?

- Yes: MCO is not considered in non-compliance. Take all reasonable and feasible measures to reduce noise.
- No: Continue monitoring. Take all reasonable and feasible measures to reduce noise.

Determine Type of Alarm

- Green Alarm: Respond as per NMP.
- Amber Alarm: Respond as per NMP.
- Red Alarm: Respond as per NMP.

Record noise sources.
Record actions taken.
Assess effectiveness of controls.
Record any follow up required.

Were actions effective?

Continue monitoring.
Take all reasonable and feasible measures to reduce noise.
7.5 RECEIVER NOISE CONTROL

Upon receipt of a written request, MCO will implement reasonable and feasible mitigation measures at noise-affected receivers identified in Condition 5, Schedule 3 and Condition 2, Schedule 3 in the NSW Project Approvals (05_0117 and 08_0135, respectively) (Appendix A), such as double-glazing, insulation and/or air conditioning.

In accordance with Condition 4, Schedule 3 and Condition 1(a)(b), Schedule 4 of NSW Project Approval (05_0117) and Condition 6, Schedule 3 and Condition 1(a), Schedule 5 of NSW Project Approval (08_0135), if requested MCO will implement additional noise mitigation measures at any residence exceeding the criteria in Table 3A of Schedule 3 and Table 6 of Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively).

7.6 CUMULATIVE NOISE MANAGEMENT

Condition 6(e), Schedule 3 and Condition 7(e), Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively) require MCO to coordinate noise management with the noise management at Ulan Coal Mine and WCM.

MCO has implemented a data sharing protocol with Ulan Coal Mine and WCM to assist in cumulative noise management. Noise monitoring locations used to manage cumulative mine noise are described in Section 6.1.

MCO has entered into a data sharing agreement with Ulan Coal Mine to access data from a directional monitor on Cope Road in order to determine and manage the contribution to cumulative mine noise at Receiver 258 (Figure 4).
8.0 NOISE MONITORING PROGRAM

8.1 GENERAL REQUIREMENTS

As per the requirements of the NSW Project Approvals, the MCO noise monitoring program will comprise both attended and real-time monitoring (Sections 8.2 and 8.3, respectively).

The results of attended monitoring will be used to assess compliance with relevant noise impact assessment criteria (Appendix A). Real-time monitoring will be used as a management tool to assist MCO to take pre-emptive management actions to avoid potential non-compliances.

Meteorological monitoring will also be conducted (Section 8.4).

8.2 ATTENDED NOISE MONITORING

8.2.1 Purpose

Attended noise monitoring is undertaken by MCO at locations described in Table 8 to determine compliance with the noise criteria in the NSW Project Approvals (05_0117 and 08_0135) (Appendix A).

Table 8: Location of Attended Monitoring

<table>
<thead>
<tr>
<th>Location</th>
<th>Site ID</th>
<th>Type</th>
<th>Frequency</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulan Public School</td>
<td>NA1</td>
<td>Compliance - Attended</td>
<td>Monthly</td>
<td>Attended noise monitoring at Ulan Public School. Representative of nearest non mine owned residences to the north west of OC1.</td>
</tr>
<tr>
<td>Cope Road (Receiver 258)</td>
<td>NA11</td>
<td>Management - Attended</td>
<td>Quarterly</td>
<td>Attended noise monitoring in the vicinity of Receiver 258 to determine and manage cumulative mine noise from Moolarben Coal Complex and Ulan Coal Mine¹.</td>
</tr>
<tr>
<td>Lagoons Road</td>
<td>NA2</td>
<td>Validation - Attended</td>
<td>Annually²</td>
<td>Used to verify the results of real-time monitoring.</td>
</tr>
<tr>
<td>Winchester Crescent</td>
<td>NA12</td>
<td>Compliance/Validation - Attended</td>
<td>Annually²</td>
<td>Used to verify the results of real-time monitoring.</td>
</tr>
<tr>
<td>Upper Ridge Road (Receiver 176)</td>
<td>NA3</td>
<td>Validation - Attended</td>
<td>Annually²</td>
<td>Used to verify the results of real-time monitoring.</td>
</tr>
<tr>
<td>Lower Ridge Road</td>
<td>NA6</td>
<td>Compliance -Attended</td>
<td>Monthly</td>
<td>Representative of non-mine owned residences in the lower Ridge Road residential area.</td>
</tr>
<tr>
<td>Moolarben Road (Receiver 28)</td>
<td>NA10</td>
<td>Validation - Attended</td>
<td>Annually²</td>
<td>Used to verify the results of real-time monitoring.</td>
</tr>
</tbody>
</table>
Results from attended noise monitoring will also be used to verify data collected from real-time noise monitoring. This will be achieved by conducting attended monitoring directly adjacent to real-time monitors (NA2, NA12, NA3 and NA10) (Figure 4). The attended monitoring data will be used to determine the nature of the relationship between the real-time continuous data and the long-term attended monitoring as well as to calibrate the real-time continuous monitor. For example, if there is a consistent correlation between a real-time monitor and an attended monitoring site, then the real-time monitor could reasonably be used to predict noise levels at the attended site when attended monitoring is not being undertaken. This will be undertaken monthly for a period of twelve months (i.e. to July 2016) before being undertaken annually thereafter, to complement the regular maintenance of the continuous noise monitors.

### 8.2.2 Monitoring Locations

Monitoring locations have been selected as being representative of residential and other sensitive receivers in the vicinity of mining at the Moolarben Coal Complex. Locations were also selected based on prevailing weather conditions and with consideration given to the privacy of residents. The noise monitoring program is representative of the acquisition and noise impact zones identified in the Stage 1 and Stage 2 Environmental Assessments, and requirements of the NSW Project Approvals (05_0117 and 08_0135) and EPL 12932. Attended monitoring locations are described in Table 8 and Figure 4.

### 8.2.3 Methodology

The attended noise monitoring will continue to be conducted on a monthly basis, in accordance with Australian Standard (AS) 1055:1997 Acoustics - Description and Measurement of Environmental Noise and the INP.
In accordance with Condition 4(b), Schedule 5 and 4(b), Schedule 6 of the NSW Project Approvals (05_0117 and 08_0135, respectively), the results of the attended noise monitoring will be compared with the NSW Project Approval noise criteria (Appendix A).

The monthly monitoring reports will be made publicly available on the Moolarben Coal website in accordance with Condition 11(a), Schedule 5 and 11(a), Schedule 6 of the NSW Project Approval (05_0117 and 08_0135, respectively). A summary of all monitoring results for each year will be reported in the MCO AEMR at the end of that year, in accordance with Condition 4, Schedule 5 and Condition 4, Schedule 6 of the NSW Project Approvals (05_0117 and 08_0135, respectively).

**Timing**

Attended noise monitoring is undertaken during night time periods, except for Ulan Public School where monitoring is undertaken during school hours only.

**Measurement**

Measurement will be undertaken by a suitably experienced and capable person.

Acoustic instrumentation used in attended monitoring will comply with AS 1259.2:1990 “Sound Level Meters” and carry current National Association of Testing Authorities or manufacturer calibration certificates. Instrument calibration will be conducted before and after each survey, with the variation in calibrated levels not to exceed ± 0.5 A weighted decibels (dBA).

Wind direction, wind speed, air temperature and relative humidity are all recorded as part of the attended noise monitoring. Notes are taken if there are changes in wind speed/direction at the various monitoring locations or if other relevant changes occur. While this information is gathered, the site data (wind speed/direction) is included in compliance reports as this is taken at the required 10 m above ground level.

In accordance with EPL requirements, $L_{A_{eq(15\,\text{minute})}}$ noise monitoring for compliance purposes will be conducted approximately on the property boundary where any dwelling is situated 30 m or less from the property boundary closest the premises or within 30 m of the dwelling, where the dwelling is more than 30 m from the boundary, if previously agreed with the landholder.

Comprehensive field notes will be taken to indicate mine sources (haul truck, dozer tracks, etc.) and other sources (birds, insects, dogs, passing cars, etc.) and when they occurred during the measurement to the nearest 1-second. The recorded time-trace at 1-second intervals is analysed in the office to quantify the noise contribution from each source. Notes about maximum mine noise levels (source and times) will also be taken.
The intrusive noise level ($L_{\text{Aeq(15minute)}}$) contribution from Moolarben Coal Complex operation activities will be quantified over a 15 minute measurement period. In addition, all percentiles ($L_1, L_{10}, L_{50}, L_{90}, L_{\text{min}}, L_{\text{max}}, L_{\text{eq}}$) are measured in both A- and C-weighting. Only parameters relevant to noise criteria are reported.

Modifying factors from Section 4 of the INP (EPA, 2000) will be used where applicable. Tonality and low frequency will be assessed by analysis of the measured $L_{\text{Aeq}}$ spectrum.

Details of corrective actions to address any noise criteria exceedances, and confirmation of its successful implementation will be recorded.

**Recording**

The following information will be recorded for each monitoring survey:

- operator’s name;
- time and date;
- locations of attended or unattended noise instruments;
- recording intervals;
- meteorological conditions for each measurement location (as collected by a hand held meter) and also a combination of graphs and tables presenting the weather conditions for the entire survey period;
- statistical noise level descriptors together with notes identifying the principal noise sources;
- project operating conditions including train loading times together with mobile and ancillary equipment operation and predominant location; and
- instrument calibration details.

### 8.2.4 Applicable Meteorological Conditions

NSW Project Approvals (05_0017) and (08_0135) and EPL 12932 state that the criteria in Condition 3, Schedule 3 and Condition L5.1, respectively do not apply under the following meteorological conditions:

- wind speeds greater than 3m/s at 10 metres above ground level; or
- stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10 metres above ground level; or
- stability category G temperature inversion conditions.
Notwithstanding the above, weather conditions will be monitored (as per Section 8.4) and where adverse conditions are experienced or predicted, operational changes will be reviewed to avoid or reduce noise impacts.

### 8.2.5 Compliance Assessment Protocol

Attended noise surveys are the primary method for describing the acoustic environment and determining the sites compliance against the relevant noise criteria. Attended noise monitoring is the method for determining compliance with the Impact Assessment Criteria (Appendix A), and Land Acquisition Criteria (Appendix A) as this allows for an accurate determination of MCO’s contribution to the measured ambient noise levels.

To determine compliance with the $\text{LA}_{eq}(15\text{ minute})$ noise limits, attended noise surveys will measure $\text{LA}_{eq}(15\text{minute})$ noise levels at a standard representative monitoring location$^2$. Recorded results will be compared with the criteria in Appendix A.

To determine compliance with the $\text{LA}_{1}(1\text{minute})$ noise levels generated by MCO, attended noise surveys will measure $\text{LA}_{1}(1\text{minute})$ noise levels at the standard monitoring location and then compare the recorded result with the criteria in Appendix A. A minimum of one $\text{LA}_{1}(1\text{minute})$ survey will be conducted per each $\text{LA}_{eq}(15\text{ minute})$ survey. If it is evident that the $\text{LA}_{1}(1\text{minute})$ criterion may be approached or exceeded, arrangements will be made with the land owner to identify the potentially most impacted area of the residence and to conduct future measurements at 1 m from that area where access has been previously agreed with the landholder.

For the purposes of determining the noise generated at the Moolarben Coal Complex the modification factors in Section 4 of the INP will be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

Based on the Stage 1 Modification 9 EA, Moolarben Coal Complex operations are unlikely to exceed the Amenity Criteria at the Spring Gully Campground (i.e. publically accessible area$^3$) within the Goulburn River National Park or the Moolarben Picnic Area (i.e. publically accessible area) within the Munghorn Gap Nature Reserve.

---

$^2$ In accordance with Condition L5.6 of EPL 12932, a non-compliance will still occur where noise generated from the Moolarben Coal Mine in excess of the appropriate limit is measured at a location other than specified in Section 8.2.5.

$^3$ The INP (Table 2.1) recommends an amenity noise level ($\text{LA}_{eq}$) from industrial noise sources at passive recreation areas (such as a national park) of 50 dB(A) when in use.
Notwithstanding, MCO will conduct quarterly attended noise monitoring for 12 months within 50 m of the park and reserve boundaries to validate predicted noise levels from the Moolarben Coal Complex at these publicly accessible areas.

In determining the noise emission contribution from the Moolarben Coal Complex, an assessment of the following factors is undertaken:

- the applicability of the prevailing meteorological conditions (Section 8.2.4).
- irregular monitoring site activities such as:
  - adjacent non-mining related construction activities;
  - adjacent agricultural activities; and
  - adjacent residential activities (i.e. mowing lawns);
- neighbouring mining activities;
- intermittent, tonal or low frequency sound modification factors; and
- reasonableness of data.

In the event of an exceedance of the noise criteria, an assessment will be conducted to determine whether the exceedance is valid. This assessment will include:

- The timing of the exceedance.
- The location of the exceedance.
- The exclusion of non-mine related noise and noise from non-Moolarben Coal Complex mining activities (e.g. can the exceedance be attributed directly to the Moolarben Coal Complex). This will include consideration of:
  - The methods and type of equipment being used at the Moolarben Coal Complex at the time of the exceedance and proximity to the locations at which the exceedance was recorded.
  - The location of non-Moolarben Coal Complex mining activities or agricultural activities and proximity to the locations at which the exceedance was recorded.
  - The meteorological conditions at the time of the exceedance, including confirmation that meteorological conditions are relevant in accordance with the NSW Project Approvals (05_0117 and 08_0135) and EPL and the noise criteria apply.
  - Whether the exceedance is a non-compliance with NSW Project Approval (05_0117 and 08_0135) noise limits, as defined in the INP.

If the above assessment determines that an exceedance is due to Moolarben Coal Complex-related noise during relevant meteorological conditions and is not a non-compliance (i.e. within 2 dB of the noise limits contained in Condition 1, Schedule 3 and Condition 3, Schedule 3 of the NSW Project Approvals [05_0117 and 08_0135]) then DP&E will be advised of the results of the above assessment and the results will be reported in the Monthly Environmental Monitoring Reports and the AEMRs.
If the above assessment determines that an exceedance is due to Moolarben Coal Complex-related noise during relevant meteorological conditions and is a non-compliance with the noise limits contained in Condition 1, Schedule 3 and Condition 3, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135), then reporting of non-compliances with the noise criteria will be determined in consideration of Section 11.1.3 of the INP (EPA, 2000), which states the following in relation to when a development is in non-compliance with a noise condition:

A development will be deemed to be in non-compliance with a noise consent or licence condition if the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition.

....

A development will be in breach of a noise consent or licence condition if sustained non-compliances are not addressed and rectified.

For the purposes of this NMP, the monitored noise level for compliance is the attended noise monitoring results at the locations listed in Table 8.

Accordingly, in accordance with the NSW INP, MCO will be deemed to have exceeded the relevant noise criteria where monitored levels indicate that MCO’s contribution to the recorded result exceeds the Impact Assessment Criteria by more than 2 dB.

Where this is the case, or where a landowner considers MCO to be exceeding the Impact Assessment or Land Acquisition Criteria, the landowner may request an independent review of the impacts in accordance with Condition 4, Schedule 4 and Condition 4, Schedule 5 of NSW Project Approvals (05_0117 and 08_0135, respectively). The Compliance Review and Evaluation Process is illustrated in Figure 6.

Any relevant incidents (i.e. non-compliances) which have caused, or threaten to cause, material harm to the environment will be reported to the Secretary and any other relevant agencies as immediately after MCO becomes aware of the incident occurring. For any other incident, MCO will notify the Secretary and any other relevant agencies as soon as practicable after it becomes aware of the incident, in accordance with Condition 7, Schedule 5 and Condition 7, Schedule 6 of the NSW Project Approvals (05_0117 and 08_0135, respectively).
8.2.6 Compliance with Cumulative Noise Goals

Attended noise monitoring results will include identification of noise from all industrial sources, as well as all traffic and environmental sources. The total identified industrial noise level will be compared with the cumulative noise goals (in consideration of noise levels outlined in the Ulan Coal Mine Project Approval [08_0184]) to determine whether the goals are likely to be exceeded, and if further analysis is warranted.

If the short-term (i.e. 15-minute) attended monitoring results indicate that the cumulative noise goals may be exceeded, consideration of achievement of the cumulative noise goals will be further informed using results from the real time noise monitoring system (i.e. monitor ND12). LA_{eq(period)} noise levels from all industrial noise sources (mining) will be recorded by the real time noise system and then compared against the goals in Appendix A.

An exceedance of the cumulative noise goals will be deemed to have occurred where monitored LA_{eq(period)} noise levels from all industrial noise sources (mining) exceed the goals by more than 2 dB. This process will include investigation of the audio files for the relevant period(s) to enable identification of non-mining noise sources, an estimation of their contribution and subtraction from the total noise level.

8.3 CONTINUOUS NOISE MONITORING

8.3.1 Purpose

Real-time noise monitoring will be used as a noise management tool, and will not be used to assess compliance with noise criteria. This will involve the use of noise investigation triggers (i.e. performance indicators) for ongoing performance assessment and will assist in the implementation of pre-emptive management actions to avoid potential non-compliances.

8.3.2 Monitoring Locations

The approximate real-time monitoring locations are shown in Table 9 and Figure 4. MCO will ensure that the following is managed appropriately:

- Occupational health and safety requirements;
- Security of the monitoring equipment; and
- Access to the monitoring equipment for installation, maintenance and recovery.
Compliance based attended noise monitoring

Take 15 minute reading

Does the reading exceed the applicable criteria?

Yes

Is noise attributable to MCO?

No

Move on to the next monitoring site

Yes

Site has passed, record the result

No

Report exceedance to DP&E and EPA within 24 hours with action taken to reduce the noise

Move on to the next monitoring site

Do weather conditions exclude the result as per conditions in Project Approvals and EPL

Yes

Within 75 minutes after the first reading (and no earlier than 10pm) take second 15 minute reading

Yes

Record the reading and advise MCO the criteria have been exceeded. MCO to take action to reduce noise

Site has passed, record the result

No

Schedule additional monitoring test to be undertaken at the site within 1 week

Is noise attributable to MCO?

No

Report monitoring to DP&E, EPA and the affected community as per the notification requirements

Yes

Does the 2nd reading exceed the criteria by greater than 2dB?

No

Site has failed and is deemed a noise affected night site. Record the result

Yes

Do weather conditions exclude the result as per conditions in Project Approvals and EPL?

Yes

Report incident * to DP&E and EPA immediately with action taken to reduce the noise

*In accordance with Condition 7, Schedule 5 and Condition 7, Schedule 6 of NSW Project Approvals (05_0117 and 08_135, respectively) any incident that has caused, or threatens to cause, material harm to the environment will be reported to the Secretary and other relevant agencies immediately. For any other incident at the Moolarben Coal Complex, the Secretary and other relevant agencies will be notified as soon as practicable after MCO becomes aware of the incident.
MCO has entered into a data sharing agreement with Ulan Coal Mine to access data from a directional monitor on Cope Road in order to determine and manage the contribution to cumulative mine noise at Receiver 258.

Table 9 : Real-time Monitoring Locations

<table>
<thead>
<tr>
<th>Location</th>
<th>Site ID</th>
<th>Type</th>
<th>Frequency</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cope Road (Receiver 258)</td>
<td>ND2</td>
<td>Management - Real-time Directional (audio analysis available)</td>
<td>Continuous</td>
<td>Real-time directional noise monitoring operated by Ulan Coal Mine.</td>
</tr>
<tr>
<td>Lagoons Road</td>
<td>NR3</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Real-time monitoring at Lagoons Road. Representative of noise levels south-west of mining operations.</td>
</tr>
<tr>
<td>Winchester Crescent</td>
<td>NR4</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Real-time monitoring at Winchester Crescent. Representative of noise levels west of mining operations.</td>
</tr>
<tr>
<td>Upper Ridge Road (Receiver 176)</td>
<td>NR5</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Representative of non-mine owned residences in the lower Ridge Road residential area.</td>
</tr>
<tr>
<td>Moolarben Road (Receiver 28)</td>
<td>NR10</td>
<td>Management - Real-time (audio analysis available)</td>
<td>Continuous</td>
<td>Representative of non-mine owned residences to the south-west of mining operations in OC3. This site will be established once open cut mining operations in OC2 are within 3.5 km of Receiver 28..</td>
</tr>
</tbody>
</table>

8.3.3 Methodology

The real-time noise monitors will include the following general specifications:

- Recording of 15 minute statistical noise data (including LA1, LA10, LA90);
- LAeq(15minute) and LAeq period noise levels;
- LAeq(1minute) data in 1/3 octave;
- LAeq(15minute) in the 20 to 630 Hz range (LAeq,LF);
- 15 minute audio files 24 hours per day, seven days per week; and
- 15 minute wind direction, wind speed, temperature, humidity and rainfall.

Each monitor is set up to record noise levels 24 hours per day, seven days per week. A graphical summary of the previous 24 hours of noise levels will be emailed to mine staff on a daily basis. The continuous recording will also include an audio function which allows the monitor to record audio of the noise signal. This audio information can be downloaded so the listener can determine whether the noise source is mine-related. There are numerous other potential noise sources apart from mine noise, such as wind, traffic, machinery, animals and general non-mining anthropogenic activities which may influence noise monitoring results.
Noise data will be processed to exclude data recorded during meteorological conditions that are not relevant to the noise criteria in accordance with the INP (EPA, 2000). The temperature lapse rate data from WCM AWS and wind speed data from the Moolarben Coal Complex AWSs will be used to determine these conditions.

**Noise Investigation Triggers**

The system also enables remote triggering to start or stop recording $L_{10}(1\text{minute})$ statistical noise levels to assist in the assessment of sleep disturbance. Real time data from the system can be received at predetermined intervals or can be accessed remotely as required. The system has been programmed to provide SMS alerts to relevant staff/operators where noise levels reach predetermined triggers.

**Validation**

As outlined in Section 8.2.1, attended monitoring will be conducted monthly for a period of twelve months (i.e. to July 2016) and annually thereafter to determine the nature of the relationship between the real-time continuous data and the long-term attended monitoring as well as to validate the real-time continuous monitor.

**8.3.4 Noise Monitoring Response Protocol**

The implementation of the real-time noise monitoring protocol will be the responsibility of the MCO Production Department Site Officer (or delegate).

**Ongoing Assessment**

An important component of the protocol is the review of noise monitoring results, noise control and management measures. These will be assessed by daily graphical analysis by the Environmental Coordinator (or delegate), incorporating all meteorological exclusions and review of recorded audio files, where necessary.

**Response to Noise Investigation Trigger**

The protocol for responding to noise investigation triggers (Section 7.4) will include:

- An SMS or radio message will be sent to the on-site MCO Production Representative (or delegate).
- The Production Department Representative (or delegate) will review the available meteorological data (i.e. temperature inversions and wind speed) to determine if the noise criteria detailed in Appendix A of this NMP apply at the time of the exceedance of the noise investigation trigger.
- Following notification of the activation of a noise investigation trigger, the Production Department Representative (or delegate) will respond by examining the noise levels in real-time or the audio to determine whether the noise is mine-related and the likely source of the noise as follows:

<table>
<thead>
<tr>
<th>Document</th>
<th>Version</th>
<th>Issue</th>
<th>Effective</th>
<th>Review</th>
<th>Author</th>
<th>Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCO_ENV_PLN_0024</td>
<td>3</td>
<td>May 2015</td>
<td>June 2015</td>
<td>June 2016</td>
<td>MCO</td>
<td>S Archinal</td>
</tr>
</tbody>
</table>
Green: The Production Department Representative (or delegate) will respond to the trigger within a practical timeframe, with the response time depending on examination of audio file information (e.g. Downloading audio files can take between 5 and 20 minutes. Audio files record a time interval of 15 minutes which means that listening to an audio file can take between 1 and 15 minutes).

Amber/Red: The Production Department Representative (or delegate) will respond to the trigger within a practical timeframe, with the response time depending on the time required to drive to the monitor location of the monitor.

- Determination of appropriate noise control and management measures that will be used to minimise noise emissions by the Production Department Representative in consultation with the OCE, based on the results of the source identification stage as well as the review of meteorological data (described above). This may include relocating equipment, and temporarily modifying and/or stopping operations on site to assist with compliance with noise criteria. Where noise control and management measures at the Moolarben Coal Complex are required, the Production Department Representative and OCE will implement noise management measures within 75 minutes of receipt of the trigger, if practicable.

- Implementation of the noise control and management measures chosen in the management strategy process. The OCE will be responsible for the timely implementation of the selected measures.

- Management strategies for noise investigation triggers will be recorded by MCO personnel. The records will include details of the investigation, the type of response and the real-time noise monitor’s response (i.e. whether the management strategy results in a discernible reduction of noise as indicated by the real-time monitor).

- Review of real-time monitoring data by the Environmental Coordinator (or delegate) to check the effectiveness of response to noise investigation triggers.

## 8.4 Meteorological Monitoring and Forecasting

Meteorological data will continue to be collected by the two AWSs at the MCO. Temperature lapse rates will be continuously measured from the temperature tower installed at WCM over a vertical height interval of 58 m apart (2 m and 60 m from ground level) and shared with MCO.

Meteorological forecasting using the Environmental Forecasting System (Section 7.3) will continue to be undertaken as part of the noise management system.
8.5 PLANT AND EQUIPMENT SOUND POWER LEVEL MONITORING

A program has been implemented to test the SWLs of all mobile equipment on a rolling three yearly basis. The results of this testing will be maintained by MCO in their monitoring database and will be used to inform ongoing servicing and maintenance of mobile equipment. The noise model will be rerun every three years and will use the updated results from the SWL testing. The results of this modelling will be used to inform further attenuation or mine planning (if required).

8.5.1 Purpose

MCO has developed an equipment noise specification which details equipment SWLs. Noise specification forms part of the MCO equipment procurement process so that the necessary SWLs are achieved. The plant and equipment SWL targets are shown in Appendix B. These levels will be used as indicative SWLs with ongoing attended noise monitoring to update the predictive noise model and assist in the implementation of pre-emptive management actions to avoid potential non-compliances.

8.5.2 Methodology

The plant and equipment SWL monitoring will be conducted on a three yearly basis, in accordance with the following standards:

- ISO 6395 “Earth-moving machinery - Determination of sound power level noise emissions - Dynamic test conditions”;
- AS 2012.2 “Acoustics - Measurement of airborne noise emitted by earth-moving machinery and agricultural tractors - Stationary test condition - Operator’s Position”; and

Recording

The following information will be recorded for each SWL survey:

- operator’s name, time and date;
- equipment ID, type, make and model;
- location and operating mode of the equipment (e.g. OC2 haul road, waste, loaded, upgrade);
- meteorological conditions during the survey period;
- $L_{Aeq}$ and $L_{Am}$ noise level descriptors together with notes identifying the principal noise sources;
- details of any extraneous noise; and
- instrument calibration details.
9.0 CONTINGENCY PLAN

In the event that a noise criterion detailed in Section 4 is considered to have been exceeded, as per the Protocol described in Section 8.2.5, MCO will implement the following Contingency Plan:

- The Environmental Coordinator will report the likely exceedance to the Environment and Community Manager within 24 hours of assessment completion.

- In the event that the incident has caused, or threatens to cause, material harm to the environment, MCO will report the non-compliance with the noise criteria to the EPA and the DP&E immediately. All other incidents will be reported to the EPA and DP&E as soon as practicable after MCO becomes aware of the incident.

- MCO will identify an appropriate course of action with respect to the identified impact(s), in consultation with specialists, DP&E and the EPA, as necessary. For example contingency measures, such as, but not limited to, those described in Section 9.1 of this NMP.

- MCO will, on request, submit the proposed course of action to the DP&E for approval.

- MCO will implement the approved course of action to the satisfaction of the DP&E.

9.1 POTENTIAL CONTINGENCY MEASURES

Potential contingency measures will be reviewed during revisions of this NMP. Key potential contingency measures to be implemented (following the exceedance of noise criteria and completion of compliance assessment protocol as described in Section 8.2.5) may include the following:

- MCO will notify affected landholder and tenants of the exceedance as soon as practicable and provide them with monthly noise monitoring results, until the results show that the MCO is complying with the noise criteria.

- MCO will, on request, implement reasonable and feasible at-receiver noise controls in accordance with Conditions 4 and 5, Schedule 3 and Conditions 2 and 6, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively).

- MCO will investigate strategic long term pit design to provide alternative dump locations and review long term operational sequencing with a view to minimise noise, if noise results indicate this is required.

- MCO will acquire affected properties on request in accordance with Conditions 1A, 2 and 3, Schedule 3 and Conditions 1, 4 and 5, Schedule 3 of the NSW Project Approvals (05_0117 and 08_0135, respectively).
10.0 ANNUAL REVIEW AND IMPROVEMENT OF NOISE MANAGEMENT PLAN

10.1 ANNUAL REVIEW

In accordance with Condition 4, Schedule 5 and Condition 4, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively) MCO will conduct an annual review of MCO operations prior to 31 March and annually thereafter.

This annual review will specifically address the following aspects of Condition 4, which directly relate to noise:

- Include a comprehensive review of the monitoring results and complaints records of MCO operations over the previous calendar 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 EA.

- Identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance.

- Identify any trends in the monitoring data over the life of the project.

- Identify any discrepancies between the predicted and actual impacts of MCO operations, and analyse the potential cause of any significant discrepancies.

The annual review will be made publically available on the Moolarben Coal website in accordance with Condition 11, Schedule 5 and Condition 11, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively).

10.2 NOISE MANAGEMENT PLAN REVIEW

In accordance with Condition 5, Schedule 5 and Condition 5, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively) this NMP will be reviewed, and if necessary revised to the satisfaction of the Secretary, within 3 months of the submission of:

(a) An Annual Review in accordance with Condition 5, Schedule 5 and Condition 5, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively);

(b) An incident report in accordance with Condition 7, Schedule 5 and Condition 7, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively);

(c) An audit in accordance with Condition 9, Schedule 5 and Condition 9, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively); and

(d) Any modification to the conditions of the Project Approvals.
This NMP will be made publically available on the Moolarben Coal website, in accordance with Condition 11, Schedule 5 and Condition 11, Schedule 6 of the Project Approvals (05_0117 and 08_0135, respectively).

As outlined in Section 6.1, when changes are made to noise monitoring locations based on land ownership or operational changes DP&E and the EPA will be informed of the changes and provided with justification as to why the change was made and this NMP will be revised accordingly.
11.0 REPORTING SYSTEMS

Noise monitoring and management is reported as part of the Annual Review described in Section 10.1.

In accordance with EPL 12932, MCO submits noise compliance assessment reports to the EPA within 30 days of the completion of the second round of quarterly monitoring. The assessment is prepared by a suitably qualified and experienced acoustical consultant. The report includes an assessment of compliance with the noise limits in the EPL, and an outline of any management actions taken within the monitoring period to address any exceedances of the noise limits.

MCO will prepare Monthly Environmental Monitoring Reports which contain the following information relevant to noise:

- monitoring location;
- time and date;
- measured noise level (for 1 minute period and equivalent continuous level);
- clear identification of the contribution of Moolarben Coal Complex to the measured noise level;
- weather conditions;
- observations; and
- whether the observation was a non-compliance.

If monitoring determines that an exceedance is due to Moolarben Coal Complex-related noise during relevant meteorological conditions and is not a non-compliance (i.e. within 2 dB of the noise limits contained in Condition 1, Schedule 3 and Condition 3, Schedule 3 of the NSW Project Approvals [05_0117 and 08_0135]) then DP&E will be advised of the results of the monitoring and the results will be reported in the Monthly Environmental Monitoring Reports and the AEMRs.

In accordance with Condition 3, Schedule 6 and Condition 3, Schedule 5 of the NSW Project Approvals (05_0117 and 08_0135, respectively), MCO has developed protocols for managing and reporting the following:

- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria.

These protocols are described in detail in Section 6 of the Environmental Management Strategy.
11.1 INCIDENT REPORTING

In the event that the Compliance Evaluation and Review Process concludes that a non-compliance of the relevant noise criteria which has caused, or threatens to cause, material harm to the environment has occurred (i.e. an incident), the event will be reported to DP&E, EPA and other relevant agencies immediately upon identifying the exceedance. All other non-compliances will be reported to the DP&E, EPA and other relevant agencies as soon as MCO becomes aware of the incident.

Within seven days of notifying the DP&E, EPA and other relevant agencies of an exceedance, MCO will submit a written report that:

(a) Describes the date, time, and nature of the exceedance;
(b) Identifies the cause (or likely cause) of the exceedance;
(c) Describes what action has been taken to date; and
(d) Describes the proposed measures to address the exceedance.

MCO will also provide monthly monitoring results to DP&E, EPA, other relevant agencies and affected landowners until the results show that the project is complying with relevant criteria.
12.0 REFERENCES


Appendix A - Relevant NSW Project Approval Conditions
(05_0117 and 08_0135)
### Table A-1 Noise Management Plan Requirements

<table>
<thead>
<tr>
<th>Stage 1 - NSW Project Approval (05_0117)</th>
<th>NMP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise Management Plan</td>
<td></td>
</tr>
<tr>
<td>7. The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:</td>
<td></td>
</tr>
<tr>
<td>(a) be prepared in consultation with the EPA and be submitted to the Secretary for approval by 31 March 2015;</td>
<td></td>
</tr>
<tr>
<td>(b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;</td>
<td>Section 7</td>
</tr>
<tr>
<td>(c) describe the proposed noise management system in detail;</td>
<td>Section 7</td>
</tr>
<tr>
<td>(d) include a monitoring program that:</td>
<td></td>
</tr>
<tr>
<td>- uses attended noise monitoring to evaluate compliance of the project against the noise criteria in this approval;</td>
<td>Section 8.2</td>
</tr>
<tr>
<td>- includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria in this approval and trigger for further attended monitoring);</td>
<td>Section 8.2.1</td>
</tr>
<tr>
<td>- evaluates and reports on:</td>
<td></td>
</tr>
<tr>
<td>- the effectiveness of the noise management system; and</td>
<td>Sections 8 and 11</td>
</tr>
<tr>
<td>- compliance against the noise operating conditions; and</td>
<td>Sections 8.2.5 and 11</td>
</tr>
<tr>
<td>- defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.</td>
<td>Section 11.1</td>
</tr>
</tbody>
</table>
### Table A-2 Noise Management Plan Requirements

<table>
<thead>
<tr>
<th>Stage 2 - NSW Project Approval (08_0135)</th>
<th>NMP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Noise Management Plan</strong></td>
<td></td>
</tr>
<tr>
<td>8. The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:</td>
<td></td>
</tr>
<tr>
<td>(a) be prepared in consultation with the EPA, and submitted to the Secretary for approval prior to the commencement of any development on site under this approval;</td>
<td>Section 7</td>
</tr>
<tr>
<td>(b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this approval;</td>
<td>Section 7</td>
</tr>
<tr>
<td>(c) describe the proposed noise management system in detail; and</td>
<td></td>
</tr>
<tr>
<td>(d) include a monitoring program that:</td>
<td></td>
</tr>
<tr>
<td>• evaluates and reports on:</td>
<td></td>
</tr>
<tr>
<td>- the effectiveness of the noise management system;</td>
<td>Sections 8 and 11</td>
</tr>
<tr>
<td>- compliance against the noise criteria in this approval; and</td>
<td>Sections 8 and 11</td>
</tr>
<tr>
<td>- compliance against the noise operating conditions;</td>
<td>Sections 8 and 11</td>
</tr>
<tr>
<td>• includes a program to calibrate and validate the real-time noise monitoring results with the attended monitoring results over time (so the real-time noise monitoring program can be used as a better indicator of compliance with the noise criteria in this approval and trigger for further attended monitoring); and</td>
<td>Section 8.2.1</td>
</tr>
<tr>
<td>• defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.</td>
<td>Section 11.1</td>
</tr>
</tbody>
</table>
### Table A-3 NSW Project Approval Conditions Relating to Noise

<table>
<thead>
<tr>
<th>Schedule 3</th>
<th>NSW Project Approval (05_0117)</th>
<th>Schedule 3</th>
<th>NSW Project Approval (08_0135)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOISE</td>
<td></td>
<td>NOISE</td>
<td></td>
</tr>
<tr>
<td>Noise Criteria</td>
<td></td>
<td>Acquisition Upon Request</td>
<td></td>
</tr>
<tr>
<td>Acquisition Upon Request</td>
<td></td>
<td>1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1A, the Applicant shall acquire the land in accordance with the procedures in conditions 10 and 11 of Schedule 4</td>
<td></td>
</tr>
<tr>
<td>Table 1A: Land subject to acquisition upon request</td>
<td>32</td>
<td></td>
<td>Table 1: Land subject to acquisition upon request</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>32</td>
</tr>
</tbody>
</table>

Note: To interpret the land referred to in Table 1, see the applicable figures in Appendix 5.

### Transitional Acquisition and Mitigation Arrangements

1B. Any receiver that had made a written request for acquisition or mitigation prior to the determination of Modification 3, on 30 January 2015 shall be granted the acquisition or mitigation options in accordance with the condition that applied at the date of that request.

Note: Receivers 30, 63, 70, 75 and 31 were granted acquisition and mitigation rights with the approval of Modification 9 in June 2014. A new Voluntary Land Acquisition and Mitigation Policy was gazetted on 19 December 2014, consequently the conditions have been updated to reflect the new policy, however transitional arrangements are provided for the owners of any privately owned land, if a written request for acquisition or mitigation had already been made, prior to the determination of Modification 3.

1. The Proponent shall ensure that the noise generated by the Moolarben mine complex does not exceed the noise criteria in Table 1 at any residence on privately-owned land or the other specified locations.

### Noise Criteria

3. The Proponent shall ensure that the noise generated by the Moolarben mine complex does not exceed the criteria in Table 3 at any residence on privately-owned land or the other specified locations.
Table 1: Noise criteria dB(A)

<table>
<thead>
<tr>
<th>Land Number</th>
<th>Day $L_{Aeq(15min)}$</th>
<th>Evening $L_{Aeq(15min)}$</th>
<th>Night $L_{Aeq(15min)}$</th>
<th>$L_{A1(1min)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>30, 63</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>70</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>45</td>
</tr>
<tr>
<td>75</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>45</td>
</tr>
<tr>
<td>31</td>
<td>36</td>
<td>35</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>All other privately owned residences</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Ulan Primary School</td>
<td>35 (internal) when in use</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ulan Anglican Church</td>
<td>35 (internal) when in use</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ulan Catholic Church</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Goulburn River National Park, Munghorn Gap Nature Reserve</td>
<td>50</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: To interpret the land referred to in Table 1 see the applicable figures in Appendix 5.

Noise generated by the complex is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 6 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 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.

Table 3: Noise criteria dB(A)

<table>
<thead>
<tr>
<th>Land Number</th>
<th>Day $L_{Aeq(15min)}$</th>
<th>Evening $L_{Aeq(15min)}$</th>
<th>Night $L_{Aeq(15min)}$</th>
<th>$L_{A1(1min)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>30, 63</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>70</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>45</td>
</tr>
<tr>
<td>75</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>45</td>
</tr>
<tr>
<td>31</td>
<td>36</td>
<td>35</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>All other privately owned residences</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Ulan Primary School</td>
<td>35 (internal) when in use</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ulan Anglican Church</td>
<td>35 (internal) when in use</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ulan Catholic Church</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Goulburn River National Park, Munghorn Gap Nature Reserve</td>
<td>50</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: To interpret the land referred to in Table 3 see the applicable figures in Appendix 5.

Noise generated by the Moolarben mine complex is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 6 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 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.
Land Acquisition Criteria

2. If the noise generated by the Moolarben mine complex exceeds the criteria in Table 2A at any residence on privately-owned land, then upon receiving a written request for acquisition from an owner of the land listed in Table 2A, the Proponent shall acquire the land in accordance with the procedures in conditions 10 and 11 of Schedule 4.

<table>
<thead>
<tr>
<th>Receiver ID</th>
<th>Day (LAeq(period))</th>
<th>Evening (LAeq(period))</th>
<th>Night (LAeq(period))</th>
</tr>
</thead>
<tbody>
<tr>
<td>All privately-owned residences</td>
<td>63</td>
<td>43</td>
<td>42</td>
</tr>
</tbody>
</table>

Table 2A: Acquisition criteria dBA LAeq(period)

3. If the noise generated by the Moolarben mine complex contributes to exceedances of the relevant criteria in Table 2 on more than 25% of any privately-owned land (and a dwelling could be built on that land under existing planning controls), the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 10-11 of Schedule 4.

Table 2: Land acquisition criteria

<table>
<thead>
<tr>
<th>Day/Evening/Night L(Aeq(period))</th>
<th>Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>55/50/45</td>
<td>All privately-owned land</td>
</tr>
</tbody>
</table>

Note: Noise generated by the complex is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 6 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 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.

4. If the noise generated by the Moolarben mine complex exceeds the criteria in Table 4 at any residence on privately-owned land, then upon receiving a written request for acquisition from an owner of the land listed in Table 4, the Proponent shall acquire the land in accordance with the procedures in conditions 5 and 6 of Schedule 5.

<table>
<thead>
<tr>
<th>Receiver ID</th>
<th>Day (LAeq(period))</th>
<th>Evening (LAeq(period))</th>
<th>Night (LAeq(period))</th>
</tr>
</thead>
<tbody>
<tr>
<td>All other privately-owned residences</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

Table 4: Acquisition criteria dBA LAeq(period)

5. If the noise generated by the Moolarben mine complex contributes to exceedances of the relevant criteria in Table 5 on more than 25% of any privately-owned land (and a dwelling could be built on that land under existing planning controls), the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 5 and 6 of Schedule 5.

Table 5: Land acquisition criteria

<table>
<thead>
<tr>
<th>Day/Evening/Night L(Aeq(period))</th>
<th>Receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>55/50/45</td>
<td>All privately-owned land</td>
</tr>
</tbody>
</table>

Note: Noise generated by the project is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 6 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 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.
Noise Mitigation Criteria

4. If the noise generated by the Moolarben mine complex exceeds the criteria in Table 3A at any privately owned residence, then upon receiving a written request the Proponent shall implement additional noise mitigation measures (such as double-glazing, insulation and/or air conditioning) at the residence in consultation with the landowner. 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, 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.

Table 3A: Mitigation criteria dB(A) LAeq (15min)

<table>
<thead>
<tr>
<th>Receiver ID</th>
<th>Day (LAeq (period))</th>
<th>Evening (LAeq (15min))</th>
<th>Night (LAeq (15min))</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>40</td>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>All other privately owned residences</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
</tbody>
</table>

Note: To interpret the land referred to Table 3A, see the applicable figures in Appendix 5.

Noise Mitigation Criteria

6. If the noise generated by the Moolarben mine complex exceeds the criteria in Table 6 at any privately owned residence, then upon receiving a written request the Proponent shall implement additional noise mitigation measures (such as double-glazing, insulation and/or air conditioning) at the residence in consultation with the landowner. 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, 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.

Table 6: Mitigation criteria dB(A) LAeq (15min)

<table>
<thead>
<tr>
<th>Receiver ID</th>
<th>Day (LAeq (period))</th>
<th>Evening (LAeq (15min))</th>
<th>Night (LAeq (15min))</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
<td>40</td>
<td>40</td>
<td>39</td>
</tr>
<tr>
<td>All other privately owned residences</td>
<td>37</td>
<td>37</td>
<td>37</td>
</tr>
</tbody>
</table>

Note: To interpret the land referred to Table 6, see the applicable figures in Appendix 5.

Mitigation Upon Request

5. Upon receiving a written request from the owner of the residence on the land listed in Table 3, the Proponent shall implement additional noise mitigation measures (such as double-glazing, insulation and/or air conditioning) at the residence in consultation with the landowner. These measures must be reasonable and feasible, and directed towards reducing the noise impacts of the complex 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.

Mitigation Upon Request

2. Upon receiving a written request from the owner of any residence on the land listed in Table 2, the Proponent shall implement additional noise mitigation measures (such as double-glazing, insulation and/or air conditioning) at the residence in consultation with the landowner. These measures must be reasonable and feasible, and directed towards reducing the noise impacts of the complex 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.
Operating Conditions

6. The Proponent shall:

(a) implement best management practice to minimise the operational, road and rail noise of the project;
(b) operate a comprehensive noise management system on site 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) minimise the noise impacts of the project during meteorological conditions when the noise limits in this approval do not apply (see Appendix 6);
(d) only use locomotives and rolling stock that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC’s EPL;
(e) co-ordinate noise management with the noise management at Ulan and Wilpinjong mines to minimise cumulative noise impacts; and
(f) carry out regular monitoring to determine whether the project is complying with the relevant conditions of this approval, to the satisfaction of the Secretary.

Operating Conditions

7. The Proponent shall:

(a) implement best management practice to minimise the operational and road noise of the project;
(b) operate a comprehensive 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) minimise the noise impacts of the project during meteorological conditions when the noise limits in this approval do not apply (see Appendix 6);
(d) only use locomotives and rolling stock that are approved to operate on the NSW rail network in accordance with the noise limits in ARTC’s EPL;
(e) co-ordinate noise management at the Moolarben mine complex with the noise management at Ulan and Wilpinjong mines to minimise cumulative noise impacts; and
(f) carry out regular monitoring to determine whether the Moolarben mine complex is complying with the relevant conditions of this approval, to the satisfaction of the Secretary.
### Meteorological Monitoring

20B. For the life of the project, the Proponent shall ensure that there is a meteorological station in the vicinity of the site 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 lapse rate in accordance with the NSW Industrial Noise Policy, unless a suitable alternative is approved by the Secretary following consultation with the EPA.

#### Ulan Public School

20C. The Proponent shall consult with DEC and, if requested: (a) implement agreed reasonable and feasible measures to ameliorate potential noise and/or dust impacts to Ulan Public School; or (b) on a reasonable basis relating to the adverse effect of noise and/or dust from the project, contribute to or meet reasonable costs toward relocating the school.

### Schedule 4

#### Notification of Landowners/Tenants

1. By the end of March 2015, the Proponent shall:
   - notify in writing the owners of:
     - any land in Table 1A and any land or residence exceeding the criteria in Tables 2A and 2 (respectively) of Schedule 3 that they have the right to require the Proponent to acquire their land at any stage during the project;
     - any residence on the land listed in Table 3 and any residence exceeding the criteria in Table 3A of Schedule 3 that they have the right to request the Proponent for additional noise 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/s that they are entitled to ask for an inspection to establish the baseline condition of any buildings or structures on their land, or to have a previous property inspection report updated;

### Schedule 5

#### Notification of Landowners/Tenants

1. Within 1 month of the date of this approval, the Proponent shall:
   - notify in writing the owners of:
     - any land listed in Table 1 and any residence or land exceeding the criteria in Tables 4 or 5 (respectively) of Schedule 3 that they have the right to require the Proponent to acquire their land at any stage during the project;
     - any residence on the land listed in Table 2 and any residence exceeding the criteria in Table 6 of Schedule 3 that they have the right to request the Proponent for additional noise 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/s that they are entitled to ask for an 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 any mine-owned land of their rights under this approval; and

(c) send a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time) to the owners and/or existing tenants of any land (including mine-owned land) where the predictions in the EA identify that dust emissions generated by the project are likely to be greater than the relevant air quality criteria in Schedule 3 at any time during the life of the project.

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 3 that is subsequently purchased by the Proponent, the Proponent shall:

(a) advise the prospective tenants of the potential health and amenity impacts associated with living on the land, and give them a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time); and

(b) advise the prospective tenants of the rights they would have under this approval, to the satisfaction of the Secretary.

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

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

(b) an exceedance of the relevant air quality criteria in Schedule 3, the Proponent shall send a copy of the NSW Health fact sheet entitled “Mine Dust and You” (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).
### Applicable Meteorological Conditions

1. The noise criteria in Table 2 of the conditions are to apply under all meteorological conditions except the following:
   - (a) wind speeds greater than 3 m/s at 10 metres above ground level; or
   - (b) stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
   - (c) stability category G temperature inversion conditions.

### Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site.

### Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. This monitoring must be carried out at least 12 times a year, unless the Secretary directs otherwise.
5. Unless the Secretary agrees otherwise, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:
   - (a) monitoring locations for the collection of representative noise data;
   - (b) meteorological conditions during which collection of noise data is not appropriate;
   - (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   - (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.
### Table A-4 Relevant Commitments Relating to Noise in Appendix 3 of Stage 1 NSW Project Approval Conditions

<table>
<thead>
<tr>
<th>Appendix 3: Statement of Commitments</th>
<th>NMP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 1 - NSW Project Approval (05_0117)</strong></td>
<td><strong>Section 7</strong></td>
</tr>
<tr>
<td>(2) MCM will ensure that open cut plant and equipment meet the sound power levels described in the noise impact assessment for the project, including specifying sound power levels and factory fitting of attenuation kits in relevant plant and equipment purchase contracts.</td>
<td></td>
</tr>
</tbody>
</table>

(5) Noise in School Rooms

Moolarben in consultation with the Ulan Public School and the Department of Education will undertake agreed works to ameliorate potential noise and dust impacts associated with the Moolarben Coal Project upon classrooms and general school operations.

OR

Moolarben will, should the Department of Education request, on a reasonable basis relating to the effect of noise and dust from the Moolarben Coal Project, negotiate to contribute to or meet reasonable costs toward relocating the school.

(18) Additional Management and Mitigation – Modification of Stage 1

- Management and monitoring of noise will continue to be undertaken in accordance with an approved Noise Management Plan, including proactive and reactive management.

- MCO further commits to:
  - Designing and locating the haul roads behind earthen bunds as far as practically possible.
  - Limiting surface water management infrastructure upgrade construction hours from 7:00am to 5:00pm Monday to Saturday (inclusive).
  - Fitting haul trucks with noise attenuation equipment to meet sound power levels assumed in the Stage 1 EA and subsequent noise Impact assessments
  - Specifying sound power levels in supply contracts for mobile plant and equipment, where appropriate.
  - Fitting northern borefield water supply/dewatering bores with submersible pumps.
  - Use of a temporary power supply generator located near the borefield pipeline outlet, at least 4km from the nearest private residence, unless power is provided from the electricity network.
  - Maintaining awareness of best practice noise mitigation technologies and alternative operating methodologies, and continuing to investigate the potential for further noise reductions to the haul truck fleet through potential additional noise attenuation and mitigation opportunities (such as Duratray).
  - Limiting northern borefield construction hours from 7am to 6pm Monday to Friday (inclusive).
### Table A-5 Relevant Commitments Relating to Noise in Appendix 3 of Stage 3 NSW Project Approval Conditions

<table>
<thead>
<tr>
<th>Appendix 3: Statement of Commitments</th>
<th>NMP Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) MCM will revise the Stage 1 Environmental Management System to incorporate the MCC Stage 2 project in consultation with relevant regulators and stakeholders (where appropriate). This may require revision or preparation of monitoring and management plans as prescribed by the Project Approval, such as (where relevant):</td>
<td>This NMP</td>
</tr>
<tr>
<td>• Environmental Monitoring Program;</td>
<td></td>
</tr>
<tr>
<td>• Air Quality and Greenhouse Gas Management Plan (including energy savings actions);</td>
<td></td>
</tr>
<tr>
<td>• Spontaneous Combustion Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Noise Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Blast Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Water Management Plan (including groundwater and surface water);</td>
<td></td>
</tr>
<tr>
<td>• Creek and Aquatic Rehabilitation Plan;</td>
<td></td>
</tr>
<tr>
<td>• Rehabilitation Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Biodiversity Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Subsidence Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Aboriginal Cultural Heritage Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Non Aboriginal Heritage Management Plan;</td>
<td></td>
</tr>
<tr>
<td>• Erosion and Sediment Control Plan;</td>
<td></td>
</tr>
<tr>
<td>• Social Engagement and Issue Response Strategy;</td>
<td></td>
</tr>
<tr>
<td>• Bushfire Management Plan; and</td>
<td></td>
</tr>
<tr>
<td>• Waste Management Plan.</td>
<td></td>
</tr>
<tr>
<td>(Note where applicable or appropriate some of these plans may be combined).</td>
<td></td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>(11) MCM will use its best endeavours to implement industry best practice noise control and management measures to minimise the noise impacts of the MCC.</td>
<td>Section 7.1</td>
</tr>
<tr>
<td>(12) MCM will proactively manage its operations to ensure noise impacts are within the worst case predicted noise envelope.</td>
<td>Section 7</td>
</tr>
<tr>
<td>(13) MCM will ensure noise monitoring is implemented to determine and manage the contribution to cumulative mine noise from the MCC at Property 258, including implementing at least quarterly attended noise monitoring and installing a directional noise monitor in the vicinity of the property in conjunction with the Ulan Mine, unless monitoring indicates there is no noise impact from the MCC at this property.</td>
<td>Section 6.1 and Section 8.2</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>(15) The sound power of the conveyor used in the NIA will be provided to equipment manufacturers and suppliers to help ensure that the conveyor is maintained at these levels during operations</td>
<td>Section 7</td>
</tr>
</tbody>
</table>
Appendix B - Target Sound Power Levels (dBA re 1 pW)
<table>
<thead>
<tr>
<th>Equipment</th>
<th>Type/Capacity</th>
<th>SWL per Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drill</td>
<td>Atlas Copco DML60</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>Pit Viper 275</td>
<td>115</td>
</tr>
<tr>
<td>Excavator</td>
<td>Liebherr 996</td>
<td>117</td>
</tr>
<tr>
<td></td>
<td>Liebherr 996B</td>
<td>111</td>
</tr>
<tr>
<td></td>
<td>Liebherr 9800</td>
<td>114</td>
</tr>
<tr>
<td></td>
<td>CAT 6050</td>
<td>118</td>
</tr>
<tr>
<td>Front-end Loader</td>
<td>Komatsu WA1200</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td>Komatsu WD900</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>CAT 854</td>
<td>114</td>
</tr>
<tr>
<td>Truck</td>
<td>Komatsu 830E</td>
<td>115</td>
</tr>
<tr>
<td></td>
<td>Komatsu 730E/CAT 789</td>
<td>114</td>
</tr>
<tr>
<td>Dozer</td>
<td>Komatsu D475</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>Komatsu D375</td>
<td>113</td>
</tr>
<tr>
<td></td>
<td>CAT D11T</td>
<td>116</td>
</tr>
<tr>
<td></td>
<td>CAT D10T</td>
<td>114</td>
</tr>
<tr>
<td>Water Truck</td>
<td>Komatsu HD785</td>
<td>115</td>
</tr>
<tr>
<td>Grader</td>
<td>Komatsu GD825</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>CAT 24M</td>
<td>110</td>
</tr>
<tr>
<td></td>
<td>CAT 16M</td>
<td>108</td>
</tr>
<tr>
<td>Support Loader</td>
<td>Komatsu WA580-6</td>
<td>115</td>
</tr>
<tr>
<td>Support Excavator</td>
<td>Komatsu PC450</td>
<td>105</td>
</tr>
<tr>
<td>Support Scaper</td>
<td>CAT 657G</td>
<td>117</td>
</tr>
<tr>
<td>Service Truck</td>
<td>Komatsu HD785</td>
<td>115</td>
</tr>
<tr>
<td>Service Truck</td>
<td>CAT 773F</td>
<td>114</td>
</tr>
<tr>
<td>CHPP</td>
<td></td>
<td>118</td>
</tr>
<tr>
<td>Reject Bin</td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>Feeder</td>
<td></td>
<td>114</td>
</tr>
<tr>
<td>Crusher</td>
<td></td>
<td>114</td>
</tr>
<tr>
<td>Transfer Station</td>
<td></td>
<td>115</td>
</tr>
<tr>
<td>Sizing Station</td>
<td></td>
<td>116</td>
</tr>
<tr>
<td>Stacker</td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>Conveyor</td>
<td></td>
<td>101 (per 100m)</td>
</tr>
<tr>
<td>Conveyor Drive</td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>Ventilation Fans</td>
<td></td>
<td>112</td>
</tr>
<tr>
<td>Loadout Bin</td>
<td></td>
<td>113</td>
</tr>
<tr>
<td>Locomotive</td>
<td></td>
<td>109</td>
</tr>
</tbody>
</table>
Appendix C – Agency Correspondence
Mr Graham Chase  
Environment & Community Manager  
Moolarben Coal Operations Pty Ltd  
Locked Bag 2033  
MUDGEE NSW 2850

Dear Graham,

Moolarben Coal  
Approval of Management Plans

Thank you for forwarding the following management plans required under NSW Project Approval (05_0117) (Stage 1) as modified and Project Approval (08_0135) (Stage 2) for the Department’s consideration:

- Blast Management Plan - Version 4 - May 2015
- Heritage Management Plan - Version 4 - April 2015

The Department's has reviewed these plans and is satisfied that they generally address the requirements set out in the relevant conditions of each project approval. Accordingly the Secretary has approved these management plans.

Please ensure a copy of these management plans are placed on your website in accordance with PA 05_0117, Schedule 5, Condition 11 and PA 08_0135, Schedule 6, Condition 11.

If you require further information please contact Wayne on 6575 3406 or by email to wayne.jones@planning.nsw.gov.au.

Yours sincerely

Wayne Jones  
A/Investigations (Lead) Compliance  
As the Secretary's Nominee

22 JUNE 2015