Awaba Colliery
Noise Management Plan

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1 INTRODUCTION

The Planning and Assessment Commission of New South Wales has granted conditional approval to Centennial Newstan Pty Ltd (Centennial Newstan) for their Part 3A Application for the Awaba Colliery Mining Project (the “Project”), located approximately 1 km south of Awaba and 5.5 km south-west of Toronto on the western side of Lake Macquarie, New South Wales.

This report addresses the conditions of the Project Approval (dated 13 May 2011) and reflects recommendations provided by SLR Consulting Pty Ltd (formerly Heggies Pty Ltd) in their report entitled “Awaba Colliery Mining Project Part 3A Application Noise Impact Assessment” dated 28 February 2011 (NIA).

The following report contains the Noise Management Plan (NMP) for the Project Site, detailing the assessment criteria, monitoring locations and procedures, and compliance checking procedures for subsequent reporting in accordance with the Department of Planning and Infrastructure (DoPI) and the Office of Environment and Heritage (OEH) requirements.

2 OBJECTIVES

The objectives of the NMP are to fulfil the requirement of Schedule 3, Condition 2 and Schedule 5 Conditions 2 & 7 and of the Project Approval (10_0038).

The objectives of the NMP are as follows:

- Ensure all relevant statutory requirements and standards are met.
- Identify potential noise sources and their relative contribution to noise impacts from the development.
- Include regular attended monitoring and a noise monitoring protocol for evaluating compliance with the applicable noise impact assessment criteria.
- Manage and minimise the impact of noise from mining operations at nearby residences.
- Maintain reasonable levels of amenity for surrounding residents.
- Maintain an effective response mechanism to deal with issues and complaints.
- Ensure the results of noise monitoring comply with applicable criteria.
3 PROJECT APPROVAL CONDITIONS

3.1 Noise Management Plan Requirements

Schedule 3, Condition 2 of the Project Approval details the requirements for the NMP.

Noise Management Plan

2. The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Director-General. This plan must:

(a) be prepared in consultation with OEH, and submitted for approval to the Director-General within 6 months of this approval;

(b) include regular attended monitoring and a noise monitoring protocol for evaluating compliance with the noise impact assessment noise criteria in this approval.

3.2 Compliance with Project Approval

Table 1 shows the NMP compliance with the Project Approval and the relevant Section of document where it has been addressed.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Condition Requirement</th>
<th>Section Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>2(b)</td>
<td>include regular attended monitoring and a noise monitoring protocol for evaluating compliance with the noise impact assessment noise criteria in this approval</td>
<td>7 &amp; 9</td>
</tr>
</tbody>
</table>

4 PROJECT BACKGROUND

4.1 Project Setting

Awaba Colliery is a small underground coal mine operated by Centennial Newstan, a wholly owned subsidiary of Centennial Coal Company Ltd (Centennial). The mine entry and primary surface facilities are located approximately one kilometre south of the Awaba village and 5.5 kilometres (km) south west of Toronto on the western side of Lake Macquarie, near Newcastle NSW.

Awaba Colliery has been producing coal by bord and pillar method since 1947. The site is situated on crown land under lease to Centennial for the purpose of mining under Consolidated Coal Lease CCL746, and is adjacent to the Newstan-Eraring haul road owned by Eraring Energy. The locality of the mine is illustrated in Figure 1.
Figure 1  Locality Plan

NEWSTAN COLLIERY LOCALITY PLAN

LEGEND

- Main Northern Railway Line

NS2668
4.2 Sensitive Receivers

A number of residences are located in the area surrounding the Project Site. The nearest residences have been identified as sensitive receptor locations to be taken into account during the assessment. A list of the nearest sensitive receptors (R1 to R4) identified in the immediate vicinity of the Project Site, and their respective distances from the Project Site boundary, are presented in Table 2 and Figure 2.

Table 2 Nearest Sensitive Receptors

<table>
<thead>
<tr>
<th>Receptor ID</th>
<th>Location</th>
<th>Location (m, MGA56)</th>
<th>Distance (km) / Direction From Site Boundary</th>
<th>Elevation (m, AHD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Easting</td>
<td>Northing</td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>9 Olney Street, Awaba</td>
<td>363733</td>
<td>6346064</td>
<td>0.6 / NNE</td>
</tr>
<tr>
<td>R2</td>
<td>15 Evans Street, Awaba</td>
<td>363203</td>
<td>6346323</td>
<td>0.8 / N</td>
</tr>
<tr>
<td>R3</td>
<td>51 Puddy Lane, Awaba</td>
<td>363220</td>
<td>6346274</td>
<td>0.7 / N</td>
</tr>
<tr>
<td>R4</td>
<td>1A Olney Street, Awaba</td>
<td>363547</td>
<td>6346080</td>
<td>0.5 / NNE</td>
</tr>
</tbody>
</table>
Figure 2  Surrounding Sensitive Receptor Locations

Source: Google Earth
4.3 Acoustically Significant Noise Sources

Awaba Colliery utilises two continuous miners for coal extraction and a range of other ancillary equipment both in the underground workings and during operations at the Surface Facilities.

Noise measurements have been conducted of acoustically significant plant and equipment utilised during operations at the Surface Facilities. Sound power levels of such plant have been determined and utilised for the purpose of this noise assessment. Where on-site measurements could not be conducted sound power levels have been obtained from a SLR Consulting database of similar equipment. The relevant acoustically significant plant and equipment and the associated sound power levels are provided in Table 3.

Table 3  Awaba Colliery - Acoustically Significant Plant and Equipment

<table>
<thead>
<tr>
<th>Plant and Equipment</th>
<th>Sound Power Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mining - Surface Operations</strong></td>
<td></td>
</tr>
<tr>
<td>Conveyor drive (adjacent to ROM bin)</td>
<td>97 dBA</td>
</tr>
<tr>
<td>Compressor shed</td>
<td>105 dBA</td>
</tr>
<tr>
<td>Processing plant</td>
<td>116 dBA</td>
</tr>
<tr>
<td>Forklift*</td>
<td>93 dBA</td>
</tr>
<tr>
<td>Underground man transport vehicle</td>
<td>111 dBA</td>
</tr>
<tr>
<td>Truck loaded (at 500t final product bin)</td>
<td>107 dBA</td>
</tr>
<tr>
<td>Front end loader (utilised during occasions where coal is stockpiled)</td>
<td>107 dBA</td>
</tr>
<tr>
<td>Workshop* (eg use of grinder)</td>
<td>104 dBA</td>
</tr>
<tr>
<td>Ventilation fan</td>
<td>88 dBA</td>
</tr>
<tr>
<td>Haul truck</td>
<td>98 dBA</td>
</tr>
<tr>
<td><strong>Quarry</strong></td>
<td></td>
</tr>
<tr>
<td>Excavator*</td>
<td>106 dBA</td>
</tr>
<tr>
<td>Truck (approx. 20t) Pass-by*</td>
<td>98 dBA</td>
</tr>
</tbody>
</table>

* Sound power levels for these sources have been obtained from a SLR Consulting database. All other sound power level data presented here has been obtained from noise measurements undertaken at the project site.

It should be noted that the plant and equipment utilised underground has not been considered as acoustically significant.
4.4 Review of Predicted Noise Levels

The key findings of the Awaba Colliery NIA are detailed below:

Results presented in Table 18 indicate that operational noise levels are predicted to meet the project specific noise criteria at the nearest affected residential locations under calm and prevailing weather conditions. Since noise levels at the nearest affected locations meet the project specific noise criteria under all meteorological conditions no further receiver locations were deemed necessary for inclusion in the noise model for assessment purposes.

Furthermore, noise contour plots were produced under all identified prevailing meteorological conditions (it should be noted that the weather conditions are also worst case with southerly winds blowing towards the nearest receivers). The noise contour plots indicate that all residences with the exception of 1A Olney Street fall outside the 36 dBA noise contour under all meteorological conditions. All residences to the west of the Main Northern railway fall well outside the 36 dBA noise contour and are therefore likely to be below 35 dBA.

Since the operational scenario modelled is likely to represent an acoustically worst-case scenario, actual operational noise levels from the project are likely to be less than those predicted.

In addition, L_{Amax} noise levels are predicted to meet the most stringent recommended sleep disturbance noise goal of 46 dBA.
5 RELEVANT CONSENT CONDITIONS AND IMPACT ASSESSMENT CRITERIA

The relevant conditions relating to noise from the Awaba Colliery Project Approval are reproduced below:

NOISE

Noise Criteria

1. The Proponent shall ensure that the noise generated by the project does not exceed the criteria in Table 1 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.

Table 1: Noise criteria dB(A)

<table>
<thead>
<tr>
<th>Location</th>
<th>Day</th>
<th>Evening</th>
<th>Night</th>
</tr>
</thead>
<tbody>
<tr>
<td>R4 - 1A Onley Street, Awaba</td>
<td>37</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>All other privately-owned land</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
</tbody>
</table>

Notes:
- To identify the locations referred to, see the figure in Appendix 3; and
- Noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy.

6 NOISE MITIGATION MEASURES

Noise mitigation and management measures currently implemented at Awaba Colliery include the following:

- Standard work procedures and maintenance tasks to minimise noise emissions.
- Enclosed conveyors and coal handling plant.
7 NOISE MONITORING PROGRAM

The monitoring program is designed to ensure that noise is measured at representative locations in the vicinity of the Project Site. Data from the monitoring program will be used to determine the noise impact of Awaba Colliery's operations at the surrounding receivers, and the compliance status of the mining operations in relation to the relevant Project Approval conditions.

7.1 General Requirements

The noise measurement procedures employed throughout the monitoring program shall be guided by the requirements of AS 1055-1997 "Acoustics - Description and Measurement of Environmental Noise" and the NSW Industrial Noise Policy.

7.2 Operator Attended Noise Surveys

Operator attended noise surveys shall be conducted at up to two (2) potentially most affected receiver locations relevant to mining operations at the time of monitoring, in order to quantify noise emissions and estimate the $L_{Aeq}$ noise contribution from Awaba Colliery as well as the overall ambient noise level.

The operator attended noise surveys should be conducted on a quarterly basis.

The operator shall quantify and characterise the maximum ($L_{Amax}$), the energy equivalent ($L_{Aeq}$) and background ($L_{A90}$) noise levels from ambient noise sources and mining operations over a 15 minute measurement period.

During attended monitoring, digital recordings will be conducted to allow for additional post analysis of the mine contributed $L_{Aeq(15minute)}$, $L_{A10(15minute)}$ and $L_{A1(1minute)}$ noise levels and to assist in source identification.

It is intended that noise monitoring will involve noise measurements at the following locations identified in Figure 2:

- Location R4
- Location R3
8 INSTRUMENTATION AND MEASUREMENT PARAMETERS

8.1 Operator-Attended Surveys

All acoustic instrumentation employed throughout the monitoring program shall meet with the requirements of AS IEC 61672.1-2004 Electroacoustics - Sound level meters - Specifications and carry current NATA and manufacturer calibration certificates. Instrument calibration shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dBA.

Portable sound level meters used for operator attended noise monitoring should be capable of conducting real time third octave analysis.

8.2 Meteorological Parameters

All noise measurements shall be accompanied by both qualitative description (including cloud cover) and quantitative measurements of prevailing local weather conditions throughout the survey period.

Meteorological measurements shall be guided by the requirements of AS 2923-1987 “Ambient Air-Guide for Measurements of Horizontal Wind for Air Quality Applications” and the OEH.

The weather station situated on the Awaba Colliery mine site will be programmed to continuously record the meteorological parameters as shown in Table 4.

Table 4 Meteorological Measurement Parameters

<table>
<thead>
<tr>
<th>Measured Parameter</th>
<th>Unit</th>
<th>Sample Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean wind speed</td>
<td>m/s</td>
<td>15 minute</td>
</tr>
<tr>
<td>Mean wind direction</td>
<td>Degrees</td>
<td>15 minute</td>
</tr>
<tr>
<td>Aggregate rainfall</td>
<td>mm</td>
<td>15 minute</td>
</tr>
<tr>
<td>Mean air temperature (including sigma-theta)</td>
<td>°C</td>
<td>15 minute</td>
</tr>
</tbody>
</table>

Incidents of temperature inversion will be quantified from measurements of sigma theta data from the weather station.

8.3 Plant and Equipment Observations and Log

During the attended noise measurements, the operator shall record any significant mine generated noise sources (i.e. haul trucks, dozers, etc). In addition, the operator shall obtain copies of the relevant fixed plant and mobile equipment mining operating shift logs to be included in the noise monitoring report.
9 DATA ANALYSIS

9.1 Determining Compliance

The $L_{Aeq} (15\text{minute})$ noise level contributions from all mining operations as well as the overall ambient noise levels together with the weather and mine operating conditions shall be reported on a quarterly basis.

The contributed noise emissions from mining operations shall be evaluated and assessed against the noise level criteria given in Project Approval and NIA. Compliance may be determined by:

- Analysis of operator attended noise monitoring results.
- From post analysis of audio recordings.
- Direct measurement of the consent criteria - $L_{Aeq(15\text{minute})}$.
- Operator estimated $L_{Aeq(15\text{minute})}$ contribution.
- Operator estimated $L_{A1(1\text{minute})}$ contribution.
- By calculation from near field measurements.
- By measurement at a representative location.
- A combination of any or all the methods shown.

10 REPORTING

10.1 Noise Monitoring Report

All routine monitoring results will be documented and reported initially on a quarterly basis. This information is also included in the Annual Environmental Management Review (AEMR) which is sent to the relevant authorities.

Quarterly reports should consist of the following information:

- Summary of all attended and unattended noise monitoring results.
- Measured/calculated and/or operator estimated Awaba Colliery $L_{Aeq(15\text{minute})}$ contributed noise levels for each monitoring location.
- Measured/ calculated and/or operator estimated Awaba Colliery $L_{A1(1\text{minute})}$ contributed noise levels for each monitoring location..
- Statement of compliance/ non-compliance.
- Details of any complaints relating to noise and their state of resolution.

10.2 Reporting Non-Compliances

In the event of a potential exceedance of the relevant noise emission criteria, an investigation will be undertaken. Consideration will be given to the margin of exceedance and the source of emission, if it has been identified. The noise, weather and plant operating data shall be documented so that the matter can be investigated and appropriate actions undertaken accordingly.

Additional noise measurement methods such as near field monitoring or unattended directional noise monitoring may be utilised to investigate noise emissions in relation to noise complaints, or to determine compliance with the Project Approval conditions where potential non-compliances have been measured or are difficult to quantify from operator-attended or unattended noise measurements.
The results of noise monitoring will be included in the AEMR. Details of any exceedances and results of related investigations will be reported to the relevant authorities.

10.3 Recording Noise Complaints

Awaba Colliery will keep a record of any noise complaint made to Awaba Colliery or any employee or any agent of Awaba Colliery in relation to noise from the Colliery. Records will include:

- Date and time of complaint.
- Method by which complaint was made.
- Personal details from the complaint.
- Nature of the complaint.
- Action taken by Awaba Colliery and any follow up.
- If no action was taken, the reason why no action was taken.

11 PERFORMANCE INDICATORS

Compliance of this NMP with the Project Approval conditions and any other relevant agency requirements will be measured according to the following performance indicators:

1. Compliance with relevant noise criteria at monitoring locations.
2. The frequency and nature of complaints reported to the mine in relation to noise.
3. Contractor and employee awareness of the company’s Environmental Policy and this NMP.
4. Compliance with this NMP, as indicated by statutory reporting.

12 PERIODIC REVIEW

In line with Condition 4 of Schedule 5 of the Project Approval, review of the NMP will take place within 3 months of the submission of an annual review, incident report or an audit, and following any modification to the conditions of the Project Approval. Any modifications to the NMP will be undertaken to the satisfaction of the Director-General and in consultation with the appropriate government agencies.

By 13 May 2012, an Independent Environmental Audit shall be commissioned by Centennial Newstan in line with Condition 8 of Schedule 5 of the Project Approval.

13 REFERENCES

- Standards Australia
14 CLOSURE

This report has been prepared by SLR Consulting Australia Pty Ltd with all reasonable skill, care and diligence, and taking account of the manpower and resources devoted to it by agreement with the client. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

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