

45.6685.R9:GA/DT/2015

The Wallerawang Collieries Ltd  
Baal Bone Colliery  
Castlereagh Highway  
**CULLEN BULLEN NSW 2790**

**Attention:** Emma Mudford

14 August 2015

**BAAL BONE COLLIERY**  
**COMPLIANCE NOISE AUDIT**  
**AUGUST 2015**

## 1.0 Introduction

*Atkins Acoustics* was engaged by The Wallerawang Collieries Ltd to conduct an environmental compliance noise audit for Baal Bone Colliery (*BBC*). The results and findings presented in this report are based on-site attended noise monitoring conducted on Tuesday 11 August 2015 between 3.00pm and 11.45pm. The audit was conducted by Graham Atkins, Grahams qualifications and membership include BE; MAAS, MIEAust, CPEng and MINCE. Graham is employed by Atkins Acoustics and Associates Pty Ltd a Member Firm of the AAAC.

Site plant/equipment identified during the attended audit included the mine ventilation fan, it is understood that no mobile plant was operational during the audit. The reference measurement locations (*Attachment 1*) selected for noise monitoring are summarised in *Table 1*.

**Table 1. Noise Monitoring Locations**

Measurement Location	Description
R1	'Muldon' Residence
R2/R3	'Speirs/Desch' Residence



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**Atkins Acoustics and Associates Pty Ltd.**  
Consulting Acoustical & Vibration Engineers

## 2.0 Measurement Instrumentation

The noise measurement instrumentation selected comprised a SVAN949 Sound and Vibration Analyzer. The meter was programmed to calculate and record 15 minute statistical levels. The reference calibration level of the meter was checked prior to and after the measurements with a Bruel & Kjaer Sound Level Calibrator Type 4230 and remained within  $\pm 0.5$  dBA. The meter carried appropriate and current NATA calibration (*Attachment 2*).

The noise audit and measurements were undertaken in accordance with procedures documented in Australian Standard AS1055-1997 'Acoustics - Description and Measurement of Environmental Noise' and the NSW Environmental Protection Authority Industrial Noise Policy (*INP*).

## 3.0 Weather Conditions

Weather conditions during the audit varied from calm to light variable winds from the west, <20% cloud cover during the day/evening/night. The day temperatures ranged between 10°C and 13°C. Evening/night temperatures ranged from 8.5°C and -0.5°C. An analysis of the evening and night sigma-theta and wind speed data confirmed that positive temperature inversion conditions were not a feature of the results. No rainfall was recorded during the audit.

## 4.0 Project Consent Noise Limits

The Licence noise limits for *BBC* are documented in Schedule 3 'Specific Environmental Conditions' of the *DoPI* Conditional Approval (Project Approval 09\_0178) dated 14 January 2011.

### 4.1 Noise Assessment Limits ROM Surface Infrastructure (09\_0178)

*Condition 4.*

By 31 December 2011, the Proponent will ensure that noise generated by the project does not exceed the long-term noise assessment criteria in *Table 1* at any residence on privately owned land or on more than 25 percent of any privately-owned land.

**Table 1: Long Term Noise Assessment Criteria**

Assessment Location	All periods dBA LAeq, 15 min	Night dBA LA1, 1 min
Location R1	46	47
Location R2	41	48
Location R3	41	48
All other privately-owned land	35	45

*Condition 5.*

Until 31 December 2011, the Proponent will ensure that noise generated by the project does not exceed the interim noise assessment criteria in *Table 2* at any residence on privately owned land or on more than 25 per cent of any privately-owned land.

**Table 2: Interim Noise Impact Assessment Criteria**

Assessment Location	All periods dBA LAeq, 15 min	Night dBA LA1, 1 min
Location R1	48	47
Location R2	43	48
Location R3	43	48
All other privately-owned land	35	45

*Notes to Tables 1 and 2:*

- *Noise generated to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy; and*
- *These noise assessment criteria do not apply if the Proponent has an agreement with the relevant owner/s to generate higher noise levels, and the Proponent has advised the DoPI in writing of the terms of this agreement.*

**4.2 Comments**

Referenced to the *BBC* Noise Management Plan (*NMP*) and the *EPA, Industrial Noise Policy* environmental noise (*INP Section 2.2.1*) is measured or assessed at the most affected point on or within the residential property boundary or, if this is more than 30m from the residence, at the most affected point within 30m of the residence. In accordance with *INP* procedures, the noise levels summarised in this report were measured within approximately 30m of the residences.

**5.0 Measurement Results**

*Tables 3 and 4* present a summary of the measured ambient sound pressure levels, calculated *BBC* noise contributions and observations noted during the audit.

**Table 3. Attended Noise Measurement Results (Day/Evening)**  
*dBA re: 20 x 10<sup>-6</sup> Pa*

Measurement Location	Measured Ambient Sound Pressure Levels						License Noise Limits	Measured Predicted Colliery Noise	Comments
	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A50</sub>	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>	L <sub>Aeq</sub> *	L <sub>Aeq</sub>	
<b>Daytime Audit (1350-1505)</b>									
Location R1 (1600 hours)	35.5	30.9	34.8	41.7	47.1	52.8	46	<30	Mine ventilation fan <30dBA; Dist road traffic 35/48dBA Birds 35/40dBA
Location R1 (1615 hours)	46.2	30.5	36.1	49.8	58.6	64.0	46	<30	Mine ventilation fan <30dBA; Birds 55/58dBA; Dist road traffic 35/8dBA
Location R2/3 (1648 hours)	44.5	30.4	37.7	44.3	51.5	58.8	41	<30	Breeze in trees, Dist road traffic 40/45dBA, Birds 38/45dBA
Location R2/3 (1710 hours)	46.5	35.2	40.8	48.1	57.0	62.0	41	<30	Breeze in trees, Dist road traffic 38/45dBA, Birds 35/48dBA
<b>Evening Audit (2000 to 2130)</b>									
Location R1 (1840 hours)	43.1	34.5	39.5	47.6	51.4	59.5	46	<30	Mine ventilation fan <30dBA; Dist road traffic 46/54dBA; Insects
Location R1 (1855 hours)	45.1	35.6	43.2	47.7	51.7	58.2	46	<30	Mine ventilation fan <30dBA; Dist road traffic 46/54dBA; Insects
Location R2/3 (1805 hours)	44.1	34.5	41.0	46.8	51.6	57.6	41	<30	Dist road traffic 45/54dBA Birds; Domestic;. Dogs
Location R2/3 (1820 hours)	40.6	32.5	37.6	44.2	49.5	59.8	41	<30	Dist road traffic 48-55dBA; Birds; Domestic. Dogs

**Table 4. Attended Noise Measurement Results. (Night)**  
*dBA re: 20 x 10<sup>-6</sup> Pa*

Measurement Location	Measured Ambient Sound Pressure Levels						License Noise Limits		Measured Predicted Colliery Noise		Comments
	L <sub>Aeq</sub>	L <sub>A90</sub>	L <sub>A50</sub>	L <sub>A10</sub>	L <sub>A1</sub>	L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>Amax</sub>	L <sub>Aeq</sub>	L <sub>Amax</sub>	
<b>Night Audit (2200 to 2330)</b>											
Location R1 (2205 hours)	34.3	27.4	29.3	35.7	45.1	47.1	46	47	<30	<30	Ventilation fan <30dBA; Road traffic 46/8dBA; Insects.
Location R1 (2220 hours)	38.1	29.0	33.5	41.5	46.0	48.4	46	47	<30	<30	Ventilation fan <30dBA; Road traffic 46/8dBA; Insects.
Location R2/3 (2250 hours)	33.7	26.1	26.7	35.4	45.8	47.5	41	48	<30	<30	Ventilation fan <30dBA; Road traffic 46/8dBA; Insects
Location R2/3 (2303 hours)	35.0	26.2	27.5	39.6	45.8	48.4	41	48	<30	<30	Ventilation fan <30dBA; Cows; Insects

Table 5 presents a summary of the measured L<sub>Aeq</sub> octave band sound pressure levels with the overall A-weighted and C-weighted levels.

**Table 5. Attended Ambient LAeq Octave Band Noise Measurements**  
*L<sub>Aeq, 15 min</sub> dB re: 20 x 10<sup>-6</sup> Pa*

Measurement Location	Sound Pressure Level										
	31	62	125	250	500	1K	2K	4K	8K	dBA	dBC
<b>Day</b>											
Location R1	52.8	47.3	40.9	31.0	30.5	30.4	28.1	26.3	22.9	35.5	55.2
Location R1	50.3	44.7	40.1	32.3	33.2	38.6	42.9	37.4	21.6	46.1	53.0
Location R2/3	44.7	45.0	46.3	43.8	42.8	38.5	35.3	35.1	32.9	44.5	51.5
Location R2/3	47.7	45.1	50.6	46.3	44.7	42.9	34.4	31.1	29.8	46.5	54.5
<b>Evening</b>											
Location R1	46.4	48.1	44.9	40.6	38.8	41.4	29.2	24.7	22.7	43.1	51.5
Location R1	49.0	52.5	48.1	43.4	40.4	42.8	33.7	30.2	24.7	45.1	55.0
Location R2/3	51.7	50.3	47.6	43.7	41.9	39.9	34.6	25.9	20.1	44.1	54.8
Location R2/3	43.7	43.3	42.7	34.2	34.3	38.2	31.9	27.5	26.1	40.6	48.5
<b>Night</b>											
Location R1	40.5	38.9	38.3	34.6	31.4	29.5	25.0	23.3	22.0	34.3	44.0
Location R1	49.4	47.6	45.2	38.8	36.0	34.0	25.2	22.0	20.9	38.1	51.7
Location R2/3	37.4	34.0	32.7	28.7	27.4	27.1	26.6	27.0	25.4	33.7	40.3
Location R2/3	37.0	34.5	31.6	27.4	29.3	28.1	27.8	28.4	27.3	35.0	40.4

## 5.1 Review of Site Investigations

Inquires with the *BBC Environmental Officer* confirmed that no environmental noise incidents were reported during the period from 23 July 2014 to 10 August 2015.

## 6.0 Discussion

For the purpose of assessing the compliance status of *BBC* with licence noise limits a site-attended audit and noise measurements were conducted on Tuesday 11 August 2015.

During the daytime audit noise from the mine ventilation fan was audible at the Muldon residence (R1). Other noise sources identified included local domestic activities, wind in trees, insects, aircraft and distant road traffic. During the evening and night audits noise from the ventilation fan was audible at both the Muldon (R1) and Desch (R2/3) residences.

During the site-attended audits noise from the ventilation fan would not be described as tonal, impulsive, irregularity or with low frequency content. Accordingly no 'modifying factor' corrections are required to satisfy EPL 765 (L4.7). From the audit measurements and assessment, the *L<sub>Aeq, 15 min</sub>* noise contributions from *BBC* during the day, evening and night assessment periods satisfied the long-term licence noise limits.

*BBC* related *L<sub>Amax</sub>* noise levels were not observed to cause exceedances of the licence noise limits at measurement locations for the duration of the audit.

### ATKINS ACOUSTICS & ASSOCIATES PTY LTD.



Graham Atkins

## ATTACHMENT 1. REFERENCE MEASUREMENT LOCATIONS





**ATTACHMENT 2: SVAN Certificate of Calibration.**

**CERTIFICATE OF CALIBRATION**

CERTIFICATE NO.: **SLM 39908 & FILT 0246**

**Equipment Description:** Sound & Vibration Analyzer

**Manufacturer:** Svantek

**Model No:** Svan-949      **Serial No:** 9713

**Microphone Type:** SV-22      **Serial No:** 4011885

**Filter Type:** 1/3 Octave      **Serial No:** 9713

**Comments:** All tests passed for type 1.  
(See over for details)

**Owner:** Atkins Acoustics  
8-10 Wharf Road  
Gladesville, NSW 2111

**Ambient Pressure:** 985 hPa  $\pm 1.5$  hPa

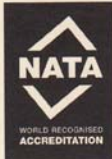
**Temperature:** 23 °C  $\pm 2^\circ$  C      **Relative Humidity:** 40%  $\pm 5\%$

**Date of Calibration:** 17/09/2013      **Issue Date:** 18/09/2013


**Acu-Vib Test Procedure:** AVP05 (SLM) & AVP06 (Filters)

**CHECKED BY:** .....      **AUTHORISED SIGNATURE:** .....  
*Jack Rielt*

Accredited for compliance with ISO/IEC 17025  
The results of the tests, calibration and/or measurements included in this document are traceable to  
Australian/national standards.



**NATA**  
WORLD RECOGNISED  
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**ACU-VIB**  
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**Accredited Lab. No. 9262**  
Acoustic and Vibration  
Measurements

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