APPENDIX F

SIX-MONTHLY ATTENDED NOISE MONITORING REPORTS

(Source: Global Acoustics, 2011)

Wilpinjong Coal

Noise Compliance Assessment Report

January to June2011

Environmental Noise Monitoring

Prepared for

Wilpinjong Coal Pty Limited

Global Acoustics

Noise and Vibration Analysis and Solutions

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Wilpinjong Coal Noise Compliance Assessment Report

January to June 2011
Environmental Noise Monitoring

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Global Acoustics Pty Ltd ~ Environmental noise modeling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

EXECUTIVE SUMMARY

Global Acoustics was engaged by Wilpinjong Coal Pty Ltd to provide a summary of the environmental noise surveys conducted around Wilpinjong Coal Project (WCP) from 1 January to 30 June 2011.

An environment protection licence (EPL) was issued in early 2006 a variation was approved on the 8 December 2010. A revised noise-monitoring program (NMP) for WCP was approved in July 2009. Results of two-monthly monitoring have been compared to relevant noise limits. The relevant sections of these consents are reproduced in Appendix A.

Attended environmental noise monitoring described in this report was undertaken on a two monthly basis at five sites around the mine. The survey purpose is to quantify and describe the existing acoustic environment around WCP and compare results with specified limits.

Noise levels from WCP complied with noise consent limits at all sites during the January to June 2011 attended monitoring, with the exception of N12 in March/April 2011. At N12, the WCP site-only L_{Aeq} of 38 dB exceeded the relevant criterion by 2 dB on the 27 April 2011 during the night period. Noise sources during this measurement included a continuum, dozer tracks and horns.

This exceedance is not considered significant as Chapter 11 of the OEH 'Industrial Noise Policy' deems a development to be in non-compliance only when "*the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition.*"

It is noted that wind speed and/or estimated temperature inversion conditions resulted in development consent criteria not always being applicable.

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1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Wilpinjong Coal Pty Ltd to provide a summary of the environmental noise surveys conducted around Wilpinjong Coal Project (WCP) from 1 January to 30 June 2011.

Attended environmental noise monitoring described in this report was undertaken on a two monthly basis at five sites around the mine. The survey purpose is to quantify and describe the existing acoustic environment around WCP and compare results with specified limits.

The purpose of the survey is to quantify and describe the acoustic environment around the site and compare results with specified limits.

1.2 Monitoring Locations

There were five regular monitoring locations during this survey as listed in Table 1.1 and shown on Figure 1. These monitoring locations are detailed in the Noise Monitoring Program (NMP).

Table 1.1 NOISE MONITORING LOCATIONS

NMP Descriptor	Monitoring Location	Owner
N4	'Hillview' Cumbo Road, Wollar	Langshaw
N6	St Laurence O'Toole Catholic Church, representative of Wollar - Residential	NA
N7	Ulan-Wollar Road (East)	Smith
N9	Slate Gully Road, Wollar	Maher
N12	Ulan-Wollar Road (West)	Ulan Coal Mines

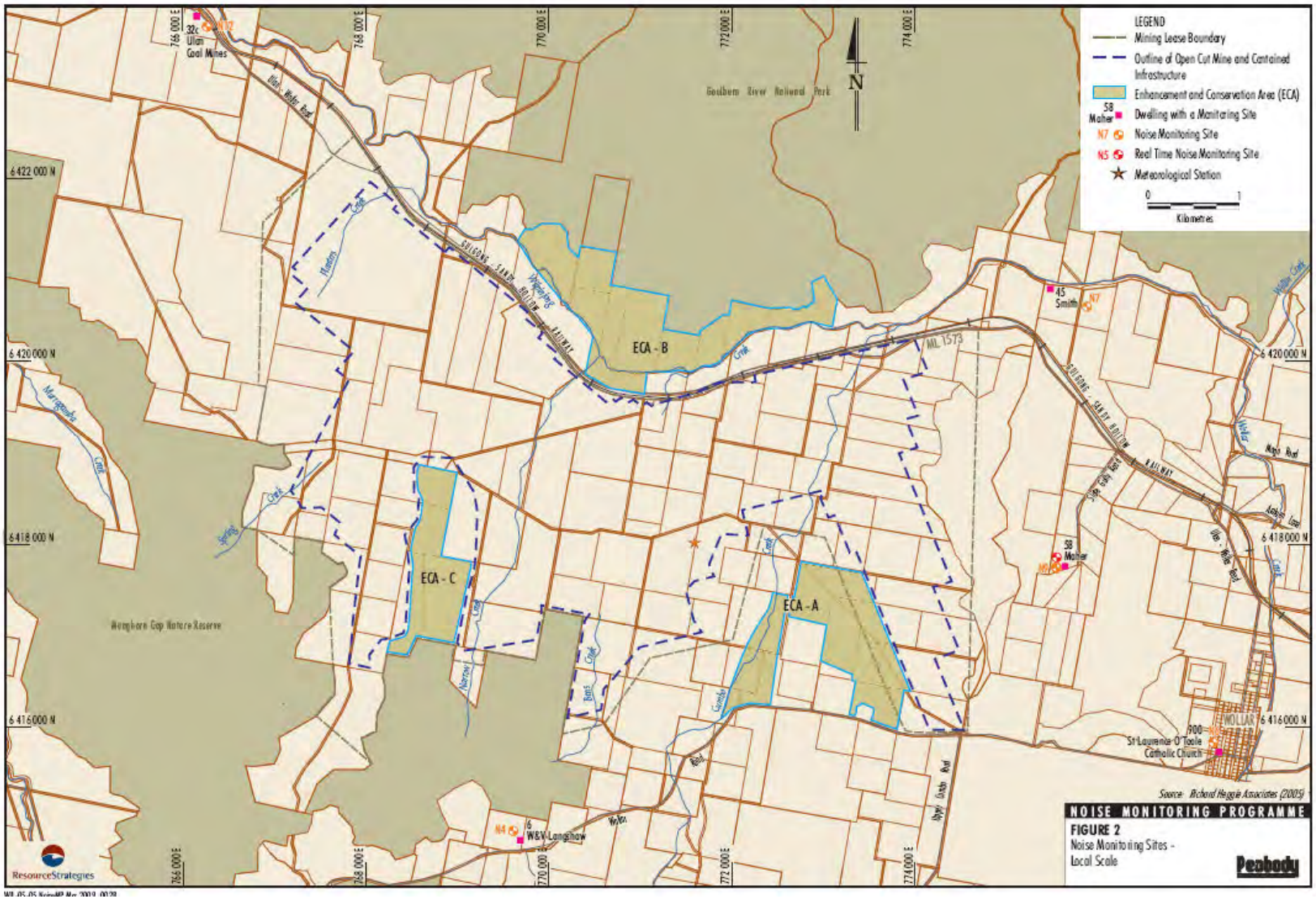


Figure 1 Monitoring Sites

1.3 Terminology

Some definitions of terminology, which may be used in this report, are provided in Table 1.2.

Table 1.2 TERMINOLOGY

Descriptor	Definition
L_A	The A-weighted root mean squared (RMS) noise level at any instant
L_{A10}	The noise level which is exceeded for 10 per cent of the time, which is approximately the average of the maximum noise levels
L_{A90}	The level exceeded for 90 per cent of the time, which is approximately the average of the minimum noise levels. The LA90 level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes
L_{Aeq}	The average noise energy during a measurement period
L_{pk}	The unweighted peak noise level at any instant
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise
SPL	Sound pressure level (SPL), fluctuations in pressure measured as 10 times a logarithmic scale, the reference pressure being 20 micropascals
SEL	Sound exposure level (SEL), the A-weighted noise energy during a measurement period normalised to one second
Hertz (Hz)	Cycles per second, the frequency of fluctuations in pressure, sound is usually a combination of many frequencies together
ABL	Assessment background level (ABL), the 10th percentile background noise level for a single period (day, evening or night) of a 24 hour monitoring period
RBL	Rating background level (RBL), the background noise level for a period (day, evening or night) determined from ABL data
Day	This is the period 7:00am to 6:00pm
Evening	This is the period 6:00pm to 10:00pm
Night	The period 10:00pm to 7:00am

1.4 Development Consent

WCP was given approval on 1 February 2006. A modification to the consent was approved in August 2010. The relevant noise conditions from Section 3 - Specific Environmental Conditions of the consent are reproduced in Appendix A.

1.5 Environment Protection Licence

In February 2006 Wilpinjong Coal were issued with Environment Protection Licence No. 12425. There have been several variations to the EPL with the most recent approved on the in February 2011. Section L6 of the licence outlines noise limits and is reproduced in Appendix A.

1.6 Noise Monitoring Program

The noise-monitoring program for WCP was revised in July 2009. Section 5.1 details attended monitoring locations and methodology. The relevant sections are reproduced in Appendix A.

1.7 Project Specific Criteria

Day, evening and night criteria are detailed in Table 1.3. These have been selected as the most appropriate for each monitoring location and are based on the development consent or environment protection licence associated with Wilpinjong Coal Project operations.

Table 1.3 WILPINJONG COAL PROJECT SPECIFIC NOISE CRITERIA, dB

NMP Descriptor / Resident number[1]	Criterion	Day L_{Aeq} (15 minute)	Evening L_{Aeq} (15 minute)	Night L_{Aeq} (15 minute) / L_{A1} (1 minute)
N4	Hillview' Cumbo Road, Wollar[5]	NA	NA	NA/NA
N6 / Wollar	Catholic Church representative of Wollar – Residential	36[2]	35[2]	35[2]/45[2]
N7 / 45	Ulan-Wollar Road (East)	35[3]	40[3]	47[3]/45[3]
N9 / 58	Slate Gully Road, Wollar	35[2]	39[2]	39[2]/45[2]
N12 / All	Ulan-Wollar Road (West) [4]	35[3]	35[3]	36[3]/45[3]

Notes:
1. *"Äll" indicates location is not mentioned specifically in Section 2 of the 2010 Modification and therefore has criteria applied to "all other privately owned land";*
2. *From 2006 Development Consent; and*
3. *From Environment Protection Licence No. 12425;*
4. *Property is designated as a non-WPL mining interest in the 2010 Modification; and*
5. *This property is owned by WCP, so criteria are NA, 'not applicable'.*

Condition L6.3 in the EPL states:

The noise limits set out in condition 6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres per second at 10 metres above ground level; or

b) Temperature inversion conditions of up to 3°C per 100 m and wind speeds greater than 2 metres per second at 10 metres above the ground level; or

c) Temperature inversion conditions greater than 3°C per 100 m.

1.8 Acquisition criteria

As detailed in conditions 5 of Schedule 3 of the consent, acquisition criteria for WCP are to consider noise in respect to the criteria detailed in Table 1.4 for all privately owned land (excluding land owned by Gaffney – 30, Smith – 45 and Power – 5).

Table 1.4 WILPINJONG COAL ACQUISITION CRITERIA, dB

Property	$L_{Aeq\ (15\ minute)}$
All privately owned land	40

1.9 Cumulative Noise Criteria

As detailed in conditions 4 and 5 of Schedule 3 of the consent, WCP are to consider cumulative noise in respect to the criteria detailed in Table 1.5 for all privately owned land (excluding land owned by Gaffney – 30, Smith – 45 and Power – 5).

Table 1.5 WILPINJONG COAL CUMULATIVE NOISE CRITERIA, dB

Consent Condition	Criterion	Day $L_{Aeq\ (11\ hour)}$	Evening $L_{Aeq\ (4\ hour)}$	Night $L_{Aeq\ (9\ hour)}$
4	Amenity	50	45	40
5	Land acquisition	53	48	43

1.10 Additional Mitigation Criteria

As detailed in condition 4 of Schedule 3 of the consent modification, additional mitigation criteria for WCP are to consider noise in respect to the criteria detailed in Table 1.6 for most privately owned land.

Table 1.6 WILPINJONG COAL ADDITIONAL MITIGATION CRITERIA, dB

Property	$L_{Aeq\ (15\ minute)}$
All other privately owned land, excluding those listed below	38

Land listed in Table 1 of the consent, or property numbers 23B, 25, 52A, 52B, 53 or 58 will receive mitigation upon request. This has only been addressed during May/June 2011 monitoring.

2 METHODOLOGY

2.1 Assessment Method

Attended monitoring was conducted in accordance with the Office of Environment and Heritage (OEH, formerly the Department of Environment, Climate Change and Water) 'Industrial Noise Policy' (INP) guidelines and Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise'. Atmospheric condition measurement was also undertaken. The duration of each evening and night measurement was 15 minutes.

The terms "Inaudible" (IA) and "Not Measurable" (NM) are used in this report. When site noise is noted as IA then there was no site noise at the monitoring location.

However, if site noise is noted as NM, this means some noise was audible but could not be quantified. This means that noise from the site was either very low, or, being masked by other noise that was relatively loud. In the former case (very low site levels) we consider it not necessary to attempt to accurately quantify site noise as it would be significantly less than any criterion and most unlikely to cause annoyance (and in many cases, to be even noticed).

If site noise were NM due to masking then we would employ methods as per the Industrial Noise Policy (e.g. measure closer and back calculate) to determine a value for reporting if deemed necessary. All site NM in this report are due to low absolute values.

A measurement of $L_{A1(1\ minute)}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level emitted from the Wilpinjong Coal Project (WCP) noise source during the entire measurement period (i.e. the highest level of the worst minute during the 15-minute measurement).

As indicated in note (a) and (b) below Table 2 of the consent conditions, the L_{A1} measurement should be undertaken at 1 metre from the dwelling façade and the L_{Aeq} measurement within 30 metres of the dwelling. However, the direct measurement of noise at 1 metre from the façade is not practical during monitoring for this project. In most cases, monitoring near the residence is impractical due to barking dogs or issues with obtaining access. In all cases, measurements for this survey were undertaken at a suitable and representative location.

As indicated in note (a) of Table 2 of the consent, modifying factors from Section 4 of the INP should be implemented where applicable. Tonality and low frequency from WCP were assessed by analysis of the measured L_{Aeq} spectrum.

Years of monitoring have indicated that noise levels from mining operations, particularly those levels measured at significant distances from the source are relatively continuous. Given this, noise levels from WCP at the monitoring locations are unlikely to be intermittent. In addition, there is no equipment on site at WCP that would generate impulsive noise as defined in the INP.

3 RESULTS

3.1 Attended Noise Monitoring – January/February, 2011

Overall noise levels measured at each location during attended measurement in February 2011 are provided in Table 3.1. Table 3.2 and Table 3.3 detail $L_{Aeq\ (15\ minute)}$ and $L_{A1\ (1\ minute)}$ noise levels from WCP in the absence of other noise sources. Criteria are then applied if weather conditions are in accordance with the mine's development consent. There were no modifying factors applicable to measured noise levels during this survey.

Table 3.1 MEASURED NOISE LEVELS – JANUARY/FEBRUARY 2011

Location	Date / Start Time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB	L_{Aeq} dB
	Evening							
N4	23/02/11 19:06	54	44	39	37	36	35	38
N6	23/02/11 19:46	59	50	45	42	35	31	43
N7	23/02/11 21:05	43	33	32	31	30	28	31
N9	23/02/11 20:18	38	34	33	31	29	27	31
N12	23/02/11 21:35	48	41	40	39	37	35	39
	Night-Time							
N4	24/02/11 00:06	39	30	27	25	23	21	25
N6	23/02/11 23:37	48	40	36	32	29	26	33
N7	23/02/11 22:37	39	33	30	28	25	23	28
N9	23/02/11 23:06	38	31	29	28	27	25	28
N12	23/02/11 22:00	44	40	39	38	37	35	38
	Evening							
N4	24/02/11 19:29	51	46	43	41	40	38	42
N6	24/02/11 19:55	53	49	44	38	34	31	41
N7	24/02/11 20:44	41	37	36	36	35	33	36
N9	24/02/11 20:21	46	40	37	35	33	31	36
N12	24/02/11 21:15	44	39	38	37	36	34	37
	Night-Time							
N4	25/02/11 00:03	40	34	33	30	28	26	31
N6	24/02/11 23:37	40	31	29	27	26	23	27
N7	24/02/11 22:46	36	31	30	28	27	25	28
N9	24/02/11 23:11	41	36	35	33	32	30	33
N12	24/02/11 22:14	52	39	38	35	34	33	36

Note: Noise levels in this table are not necessarily the result of activities at WCP.

Table 3.2 $L_{Aeq(15\ minute)}$ dB GENERATED BY WCP – JANUARY/FEBRUARY 2011

Location	Date / Start Time	Wind Speed m/s[8]	VTG °C per 100m [6,8]	Criterion dB	Criterion Applies?[1,5]	WCP L_{Aeq} (15min) dB [2,3]	Exceedance [4,5,7]
	Evening						
N4	23/02/11 19:06	3.4	-1.0	35	N	IA	NA
N6	23/02/11 19:46	2.3	-1.0	35	Y	IA	N
N7	23/02/11 21:05	3.4	-1.0	40	N	IA	NA
N9	23/02/11 20:18	2.6	3.0	39	N	IA	NA
N12	23/02/11 21:35	2.5	-1.0	35	Y	33	N
	Night-Time						
N4	24/02/11 00:06	2.2	-1.0	35	Y	21	N
N6	23/02/11 23:37	3.0	-1.0	35	N	IA	NA
N7	23/02/11 22:37	2.5	-1.0	47	Y	IA	N
N9	23/02/11 23:06	3.0	-1.0	39	N	IA	NA
N12	23/02/11 22:00	3.1	-1.0	36	N	33	NA
	Evening						
N4	24/02/11 19:29	0.5	-1.9	35	Y	25	N
N6	24/02/11 19:55	0.3	3.0	35	N	IA	NA
N7	24/02/11 20:44	1.3	3.0	40	N	IA	NA
N9	24/02/11 20:21	0.6	3.0	39	N	IA	NA
N12	24/02/11 21:15	1.7	-1.0	35	Y	28	N
	Night-Time						
N4	25/02/11 00:03	0.2	4.1	35	N	IA	NA
N6	24/02/11 23:37	0.2	3.0	35	N	IA	NA
N7	24/02/11 22:46	0.2	0.5	47	Y	IA	N
N9	24/02/11 23:11	0.2	3.0	39	N	IA	NA
N12	24/02/11 22:14	0.2	4.1	36	N	30	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) estimated from sigma theta and wind speed data;*
7. *NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 3.3 $L_{A1(1\ minute)}$ dB GENERATED BY WCP AGAINST NOISE CRITERIA – JANUARY/FEBRUARY 2011

Location	Date / Start Time	Wind Speed (m/s)	VTG[7] (^{0}C/100m)	Criterion $L_{A1(1\ min)}$ dB [1]	Criterion Applies? [3]	WCP $L_{A1(1\ min)}$ dB [4,5]	Exceedance [6,8]
	Night-Time						
N4	24/02/11 00:06	2.2	-1.0	45	Y	37	N
N6	23/02/11 23:37	3.0	-1.0	45	N	IA	NA
N7	23/02/11 22:37	2.5	-1.0	45	Y	IA	N
N9	23/02/11 23:06	3.0	-1.0	45	N	IA	NA
N12	23/02/11 22:00	3.1	-1.0	45	N	39	NA
	Night-Time						
N4	25/02/11 00:03	0.2	4.1	45	N	IA	NA
N6	24/02/11 23:37	0.2	3.0	45	N	IA	NA
N7	24/02/11 22:46	0.2	0.5	45	Y	IA	N
N9	24/02/11 23:11	0.2	3.0	45	N	IA	NA
N12	24/02/11 22:14	0.2	4.1	45	N	33	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) estimated from sigma theta and wind speed data;*
7. *NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable; and*
8. *Atmospheric data is sourced from the WCP weather station.*

3.2 Cumulative Noise

All other mining noise sources were inaudible during the January/February 2011 survey.

3.3 Attended Noise Monitoring – March/April, 2011

Overall noise levels measured at each location during attended measurement in April 2011 are provided in Table 3.4. Table 3.5 and Table 3.6 detail $L_{Aeq\ (15\ minute)}$ and $L_{A1\ (1\ minute)}$ noise levels from WCP in the absence of other noise sources. Criteria are then applied if weather conditions are in accordance with the mine's development consent. There were no modifying factors applicable to measured noise levels during this survey.

Table 3.4 MEASURED NOISE LEVELS – MARCH/APRIL 2011

Location	Date / Start Time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB	L_{Aeq} dB
	Evening							
N4	19/04/11 21:12	39	36	33	29	26	23	30
N6	19/04/11 20:44	77	47	38	28	25	22	41
N7	19/04/11 19:47	47	35	33	29	27	25	30
N9	19/04/11 20:18	50	36	30	26	22	19	28
N12	19/04/11 19:11	57	50	40	38	37	35	40
	Night-Time							
N4	20/04/11 00:30	37	32	22	20	18	17	22
N6	20/04/11 00:04	49	43	37	30	24	21	33
N7	19/04/11 22:53	39	32	29	27	26	23	28
N9	19/04/11 23:18	51	40	34	26	21	17	31
N12	19/04/11 22:18	45	40	37	36	34	33	36
	Evening							
N4	20/04/11 19:31	43	30	29	27	26	24	27
N6	20/04/11 19:56	44	36	31	27	26	23	29
N7	20/04/11 20:45	47	42	40	36	34	31	37
N9	20/04/11 20:21	47	40	36	33	31	27	34
N12	20/04/11 21:23	44	41	39	37	35	32	37
	Night-Time							
N4	28/04/11 01:33	40	28	24	21	18	16	22
N6	28/04/11 00:56	49	32	27	26	24	23	26
N7	27/04/11 23:57	45	33	30	26	23	18	27
N9	28/04/11 00:25	39	28	24	20	17	15	21
N12	27/04/11 23:12	53	48	43	41	40	37	42

Note: Noise levels in this table are not necessarily the result of activities at WCP.

Table 3.5 $L_{Aeq(15\ minute)}$ dB GENERATED BY WCP – MARCH/APRIL 2011

Location	Date / Start Time	Wind Speed m/s[8]	VTG °C per 100m [6,8]	Criterion dB	Criterion Applies?[1,5]	WCP L_{Aeq} (15min) dB [2,3]	Exceedance [4,5,7]
	Evening						
N4	19/04/11 21:12	0.2	0.5	35	Y	29	N
N6	19/04/11 20:44	0.2	3.0	35	N	<20	NA
N7	19/04/11 19:47	0.3	3.0	40	N	26	NA
N9	19/04/11 20:18	0.2	3.0	39	N	<20	NA
N12	19/04/11 19:11	0.2	3.0	35	N	35	NA
	Night-Time						
N4	20/04/11 00:30	0.2	4.1	35	N	<20	NA
N6	20/04/11 00:04	0.2	-1.0	35	Y	IA	N
N7	19/04/11 22:53	0.3	3.0	47	N	24	NA
N9	19/04/11 23:18	0.2	0.5	39	Y	IA	N
N12	19/04/11 22:18	0.2	4.1	36	N	33	NA
	Evening						
N4	20/04/11 19:31	0.2	3.0	35	N	IA	NA
N6	20/04/11 19:56	0.2	4.1	35	N	IA	NA
N7	20/04/11 20:45	1.3	-1.0	40	Y	33	N
N9	20/04/11 20:21	0.2	3.0	39	N	29	NA
N12	20/04/11 21:23	0.7	3.0	35	N	35	NA
	Night-Time						
N4	28/04/11 01:33	0.2	4.1	35	N	<20	NA
N6	28/04/11 00:56	0.3	-1.0	35	Y	<20	N
N7	27/04/11 23:57	0.5	3.0	47	N	IA	NA
N9	28/04/11 00:25	0.4	3.0	39	N	IA	NA
N12	27/04/11 23:12	1.1	-1.0	36	Y	**38**	**2**

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) estimated from sigma theta and wind speed data;*
7. *NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 3.6 $L_{A1(1\ minute)}$ dB GENERATED BY WCP AGAINST NOISE CRITERIA – MARCH/APRIL 2011

Location	Date / Start Time	Wind Speed (m/s)	VTG[7] (^{0}C/100m)	Criterion $L_{A1(1\ min)}$ dB [1]	Criterion Applies? [3]	WCP $L_{A1(1\ min)}$ dB [4,5]	Exceedance [6,8]
	Night-Time						
N4	20/04/11 00:30	0.2	4.1	45	N	25	NA
N6	20/04/11 00:04	0.2	-1.0	45	Y	IA	N
N7	19/04/11 22:53	0.3	3.0	45	N	35	NA
N9	19/04/11 23:18	0.2	0.5	45	Y	IA	N
N12	19/04/11 22:18	0.2	4.1	45	N	45	NA
	Night-Time						
N4	28/04/11 01:33	0.2	4.1	45	N	24	NA
N6	28/04/11 00:56	0.3	-1.0	45	Y	20	N
N7	27/04/11 23:57	0.5	3.0	45	N	IA	NA
N9	28/04/11 00:25	0.4	3.0	45	N	IA	NA
N12	27/04/11 23:12	1.1	-1.0	45	Y	41	N

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) estimated from sigma theta and wind speed data;*
7. *NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable; and*
8. *Atmospheric data is sourced from the WCP weather station.*

3.4 Cumulative Noise

All other mining noise sources were inaudible during the March/April 2011 survey.

3.5 Attended Noise Monitoring – May/June, 2011

Overall noise levels measured at each location during attended measurement in June 2011 are provided in Table 3.7. Table 3.8 and Table 3.9 detail $L_{Aeq\ (15\ minute)}$ and $L_{A1\ (1\ minute)}$ noise levels from WCP in the absence of other noise sources. Criteria are then applied if weather conditions are in accordance with the mine's development consent. There were no modifying factors applicable to measured noise levels during this survey.

Table 3.7 MEASURED NOISE LEVELS – MAY/JUNE 2011

Location	Date / Start Time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB	L_{Aeq} dB
	Evening							
N4	07/06/11 18:35	52	34	25	22	21	20	24
N6	07/06/11 19:08	59	44	39	31	27	25	36
N7	07/06/11 19:42	47	38	34	31	27	24	32
N9	07/06/11 20:12	47	41	37	35	32	30	35
N12	07/06/11 20:52	47	36	35	33	32	30	33
	Night-Time							
N4	08/06/11 00:18	48	31	27	24	22	20	25
N6	07/06/11 23:37	44	37	34	30	28	26	31
N7	07/06/11 22:39	48	38	35	32	29	25	33
N9	07/06/11 23:07	42	39	36	33	30	27	34
N12	07/06/11 22:00	45	35	33	31	30	28	32
	Evening							
N4	08/06/11 19:00	45	36	31	26	24	22	28
N6	08/06/11 19:37	37	33	31	28	26	23	29
N7	08/06/11 20:37	49	40	38	34	32	30	35
N9	08/06/11 20:09	50	44	39	36	33	31	37
N12	08/06/11 21:13	40	34	32	29	27	24	30
	Night-Time							
N4	09/06/11 00:18	34	25	23	21	19	18	21
N6	08/06/11 23:44	37	33	29	27	25	24	28
N7	08/06/11 22:45	47	39	37	33	32	29	34
N9	08/06/11 23:15	34	30	29	28	26	24	28
N12	08/06/11 22:09	45	42	39	36	34	31	37

Note: Noise levels in this table are not necessarily the result of activities at WCP.

Table 3.8 $L_{Aeq(15\ minute)}$ dB GENERATED BY WCP – MAY/JUNE 2011

Location	Date / Start Time	Wind Speed m/s[8]	VTG °C per 100m [6,8]	Criterion dB	Criterion Applies?[1,5]	WCP L_{Aeq} (15min) dB [2,3]	Exceedance [4,5,7]
	Evening						
N4	07/06/11 18:35	0.2	3.0	NA	N	IA	NA
N6	07/06/11 19:08	0.2	3.0	35	N	28	NA
N7	07/06/11 19:42	0.2	3.0	40	N	31	NA
N9	07/06/11 20:12	0.2	3.0	39	N	35	NA
N12	07/06/11 20:52	0.2	3.0	35	N	IA	NA
	Night-Time						
N4	08/06/11 00:18	0.2	4.1	NA	N	25	NA
N6	07/06/11 23:37	0.2	3.0	35	N	31	NA
N7	07/06/11 22:39	0.2	3.0	47	N	32	NA
N9	07/06/11 23:07	0.2	3.0	39	N	34	NA
N12	07/06/11 22:00	0.2	3.0	35	N	IA	NA
	Evening						
N4	08/06/11 19:00	3.4	-1.0	NA	N	<25	NA
N6	08/06/11 19:37	2.8	-1.0	35	Y	29	N
N7	08/06/11 20:37	2.7	-1.0	40	Y	32	N
N9	08/06/11 20:09	3.9	-1.0	39	N	37	NA
N12	08/06/11 21:13	3.1	-1.0	35	N	<25	NA
	Night-Time						
N4	09/06/11 00:18	1.4	0.5	NA	Y	IA	NA
N6	08/06/11 23:44	1.4	0.5	35	Y	27	N
N7	08/06/11 22:45	2.5	-1.0	47	Y	33	N
N9	08/06/11 23:15	2.2	-1.0	39	Y	27	N
N12	08/06/11 22:09	1.4	3.0	35	N	37	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) estimated from sigma theta and wind speed data;*
7. *NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 3.9 $L_{A1(1\ minute)}$ dB GENERATED BY WCP AGAINST NOISE CRITERIA – MAY/JUNE 2011

Location	Date / Start Time	Wind Speed (m/s)	VTG[7] (°C/100m)	Criterion $L_{A1(1\ min)}$ dB [1]	Criterion Applies? [3]	WCP $L_{A1(1\ min)}$ dB [4,5]	Exceedance [6,8]
	Night-Time						
N4	08/06/11 00:18	0.2	4.1	NA	N	31	NA
N6	07/06/11 23:37	0.2	3.0	45	N	37	NA
N7	07/06/11 22:39	0.2	3.0	45	N	35	NA
N9	07/06/11 23:07	0.2	3.0	45	N	40	NA
N12	07/06/11 22:00	0.2	3.0	45	N	IA	NA
	Night-Time						
N4	09/06/2011 00:18	1.4	0.5	NA	Y	IA	NA
N6	08/06/2011 23:44	1.4	0.5	45	Y	32	N
N7	08/06/2011 22:45	2.5	-1.0	45	Y	40	N
N9	08/06/2011 23:15	2.2	-1.0	45	Y	30	N
N12	08/06/2011 22:09	1.4	3.0	45	N	40	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) estimated from sigma theta and wind speed data;*
7. *NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable; and*
8. *Atmospheric data is sourced from the WCP weather station.*

3.6 Cumulative Noise

Another mining noise source was audible on a total of four occasions during the May/June 2011 survey at Location N12. On two of the occasions the other source was the only mining noise and WCP was inaudible, resulting in no cumulative noise impact. During the evening of the 8 June 2011, the other mine site was the dominant noise source with a WCP L_{Aeq} of less than 25 dB. During the night of the 8 June 2011, WCP was responsible for measured levels with a low level continuum from another site audible on occasion.

3.7 Additional Noise Mitigation

Table 3.10 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP during June 2011 in the absence of other noise sources against additional noise mitigation criteria.

Table 3.10 $L_{Aeq(15\ minute)}$ dB GENERATED BY WCP AGAINST ADDITIONAL NOISE MITIGATION CRITERIA – MAY/JUNE 2011

Location	Date / Start Time	Criterion dB [5]	WCP $L_{Aeq\ (15min)}$ dB [1,2]	Exceedance [3,4]
	Evening			
N4	07/06/11 18:35	NA	IA	NA
N6	07/06/11 19:08	NA	28	NA
N7	07/06/11 19:42	38	31	N
N9	07/06/11 20:12	NA	35	NA
N12	07/06/11 20:52	38	IA	N
	Night-Time			
N4	08/06/11 00:18	NA	25	NA
N6	07/06/11 23:37	NA	31	NA
N7	07/06/11 22:39	38	32	N
N9	07/06/11 23:07	NA	34	NA
N12	07/06/11 22:00	38	IA	N
	Evening			
N4	08/06/11 19:00	NA	<25	NA
N6	08/06/11 19:37	NA	29	NA
N7	08/06/11 20:37	38	32	N
N9	08/06/11 20:09	NA	37	NA
N12	08/06/11 21:13	38	<25	N
	Night-Time			
N4	09/06/11 00:18	NA	IA	NA
N6	08/06/11 23:44	NA	27	NA
N7	08/06/11 22:45	38	33	N
N9	08/06/11 23:15	NA	27	NA
N12	08/06/11 22:09	38	37	N

Notes:
1. *These are results for WCP in the absence of all other noise sources;*
2. *NM denotes audible but not measurable, IA denotes inaudible;*
3. *Bolded results in red are those greater than the relevant criterion (if applicable);*
4. *Y denotes Yes, N denotes No;*
5. *NA in criterion column means the criteria are not applicable at this location.*

4 SUMMARY OF COMPLIANCE

4.1 Summary

Noise levels from WCP complied with noise consent limits at all sites during the January to June 2011 attended monitoring, with the exception of N12 in March/April 2011. At N12, the WCP site-only L_{Aeq} of 38 dB exceeded the relevant criterion by 2 dB on the 27 April 2011 during the night period. Noise sources during this measurement included a continuum, dozer tracks and horns.

This exceedance is not considered significant as Chapter 11 of the OEH 'Industrial Noise Policy' deems a development to be in non-compliance only when "*the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or licence condition.*"

It is noted that wind speed and/or estimated temperature inversion conditions resulted in development consent criteria not always being applicable.

A. DEVELOPMENT CONSENT

Several documents specifying noise criteria apply to the Wilpinjong operation. The noise sections of the relevant consent, licence and NMP are reproduced below.

A.1 WILPINJONG COAL PROJECT DEVELOPMENT CONSENT

Wilpinjong Coal Project was given approval on 1 February 2006. A modification to the consent was approved in August 2010.

The relevant noise conditions from Section 3 - Specific Environmental Conditions of the modified consent is reproduced below.

ACQUISITION UPON REQUEST

1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1, the Proponent shall acquire the land in accordance with the procedures in conditions 6 – 7 of schedule 4.

Table 1: Land subject to acquisition upon request

30 – Gaffney	45 – Smith
48 – Evans	50 – Thompson & Hopper
94 – McKenzie	

Note:

- *To interpret the locations referred to in Table 1, see the applicable figures in Appendix 7.*

Noise Impact Assessment Criteria

2. Except for the land referred to in Table 1, the Proponent shall ensure that the noise generated by the project does not exceed the 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: Noise impact assessment criteria dB(A)

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
58 – Maher 52A – Long 52B – Long 53 – Reynolds	35	39	39	45
23B – Bishop	35	39	37	45
25 – Pettit	35	39	36	45
31A – Conradt	35	37	37	45
31B – Conradt	35	36	36	45
100 – Rheinberger 125 – Roberts	35	37	35	45
Wollar Village – Residential	36	35	35	45
All other privately owned land	35	35	35	45
901 – Wollar School		35(internal) 45 (external) When in use		-
150A – St Luke's Anglican Church 900 – St Laurence O'Toole Catholic Church		40 (internal) When in use		-
Goulburn River National Park/Munghorn Gap Nature Reserve		50 When in use		-

However, the criteria in Table 2 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 Department in writing of the terms of this agreement.

Notes:

- *To interpret the locations referred to in Table 2, see the applicable figures in Appendix 7.*
- *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.*
- *For the Goulburn River National Park/Munghorn Nature Reserve noise levels are to be assessed at the most affected point at the boundary of the Goulburn River National Park/Munghorn Nature Reserve.*

Noise Acquisition Criteria

3. If the noise generated by the project exceeds the criteria in Table 3 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 6 – 7 of schedule 4.

Table 3: Land acquisition criteria dB(A)

Day/Evening/Night $L_{Aeq(15\ minute)}$	***Land***
40	*All privately owned land, excluding the land listed in Table 1*

Note:

- *Noise generated by the project is to be measured in accordance with the notes presented below Table 2. For the condition to apply, the exceedances must be systemic.*

Additional Noise Mitigation Measures

4. Upon receiving a written request from the owner of any residence:
   (a) on the land listed in Table 1; or
   (b) on the land listed 23B, 25, 52A, 52B, 53, or 58 in the applicable figures in Appendix 7; or
   (c) where subsequent noise monitoring shows that the noise generated by the project is greater than, or equal to, $L_{Aeq(15\ minute)}$ 38 dB(A),

   the Proponent shall implement reasonable and feasible noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner.

   If within 3 months of receiving this request from the landowner, the Proponent and the landowner 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 Director-General for resolution.

5. By 30 November 2010, or within 1 month of obtaining monitoring results showing an exceedance of the relevant criteria listed in condition 4(c) above, the Proponent shall notify all applicable owners that they are entitled to ask for additional noise mitigation measures to be installed at their residence.

Operating Conditions

6. The Proponent shall:
   (a) implement all reasonable and feasible noise mitigation measures;
   (b) ensure that the real-time noise monitoring and meteorological forecasting data are assessed regularly, and that operations on site are relocated, modified, and/or stopped to ensure compliance with the relevant criteria in conditions 2 to 4 of this schedule; and
   (c) regularly investigate ways to reduce the operational, low frequency, rail, and road traffic noise generated by the project; and report on these investigations in the annual review (see condition 2 of schedule 5),

   to the satisfaction of the Director-General.

Noise Management Plan

7. The Proponent shall prepare and implement a Noise Management Plan for the project, in consultation with DECCW, and to the satisfaction of the Director-General. This plan must:
   (a) describe the noise mitigation measures that would be implemented to ensure compliance with the relevant noise impact assessment criteria in this approval, including the proposed real-time noise management system and associated meteorological forecasting; and
   (b) include a noise monitoring program, that uses a combination of real-time and supplementary attended monitoring measures to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.

A.2 ENVIRONMENT PROTECTION LICENCE

The EPL (number 12425) for WCP was originally issued in February 2006 and has been the subject of subsequent variations, the most recent in February 2011.

The relevant section reproduced below.

L6 Noise Limits

L6.1 Noise generated at the premises must not exceed the noise limits presented in the table below. The locations referred to in the table below are indicated by the property identification numbers on Figure 4A Relevant Land Ownership Plan Wilpinjong Coal Mine Mining Rate Modification Environmental Assessment 17 May 2010. The property identification numbers are indicated on Figure 4B Relevant Land Ownership List Wilpinjong Coal Mine Mining Rate Modification Environmental Assessment 17 May 2010.

Locality	Location	NOISE LIMITS dB(A)			
		Day	Evening	Night	
		$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
Araluen	25 Petit Lot 16 DP250053	35	39	36	45
	125 E & K Roberts	35	37	35	45
	52A Long Lot 8 DP250053	35	39	39	45
	52B Long Lot 8 DP250053	35	39	39	45
	51 Bailey Lot 5, 6, 7 DP250053	35	39	39	45
	58 Maher	35	39	39	45
	31A Conradt	35	37	37	45
	Lot 10, 11, 12 DP250053 Lot 160 DP723767				
	31B Conradt Lot 10, 11, 12 DP250053 Lot 160 DP723767	35	36	36	45
Wilpinjong (NE)	45 Smith Lot 4, 8, 50, 78, 85, 94, 116 & 130 DP755455	35	40	47	45
Wollar	Wollar village	36	35	35	45
Conservation Areas	Goulburn River National Park	50	50	50	-
	Munghorn Gap Nature Reserve	50	50	50	-

L6.2 For the purpose of condition L6.1;

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holiday's.
- Evening is defined as the period 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holiday's.

L6.3 The noise limits set out in condition L6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or

b) Temperature inversion conditions of up to 3°C/100m and wind speeds greater than 2 metres/second at 10 metres above the ground level; or

c) Temperature inversion conditions greater than 3°C/100m.

L6.4 For the purpose of condition L6.3:

a) The meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station identified as EPA identification Point 21 in condition P1.1; and

b) Temperature inversion conditions (vertical temperature gradient in degrees C) are to be determined by direct measurement over a minimum 50m height interval as referred to in Part E2 of Appendix E to the NSW Industrial Noise Policy.

L6.5 To determine compliance:

a) With the $L_{eq(15\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located:

- approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
- within 30 metres of a dwelling façade, but not closer than 3 metres where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
- within approximately 50 metres of the boundary of a National Park or Nature Reserve

b) With the $L_{A1(1\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) With the noise limits in condition L6.1, the noise measurement equipment must be located:

- at the most affected point at a location where there is no dwelling at the location; or
- at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b).

L6.6 A non-compliance of condition L6.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions L6.5(a) and L6.5(b); and/or
- at a point other than the most affected point at a location.

L6.7 For the purpose of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

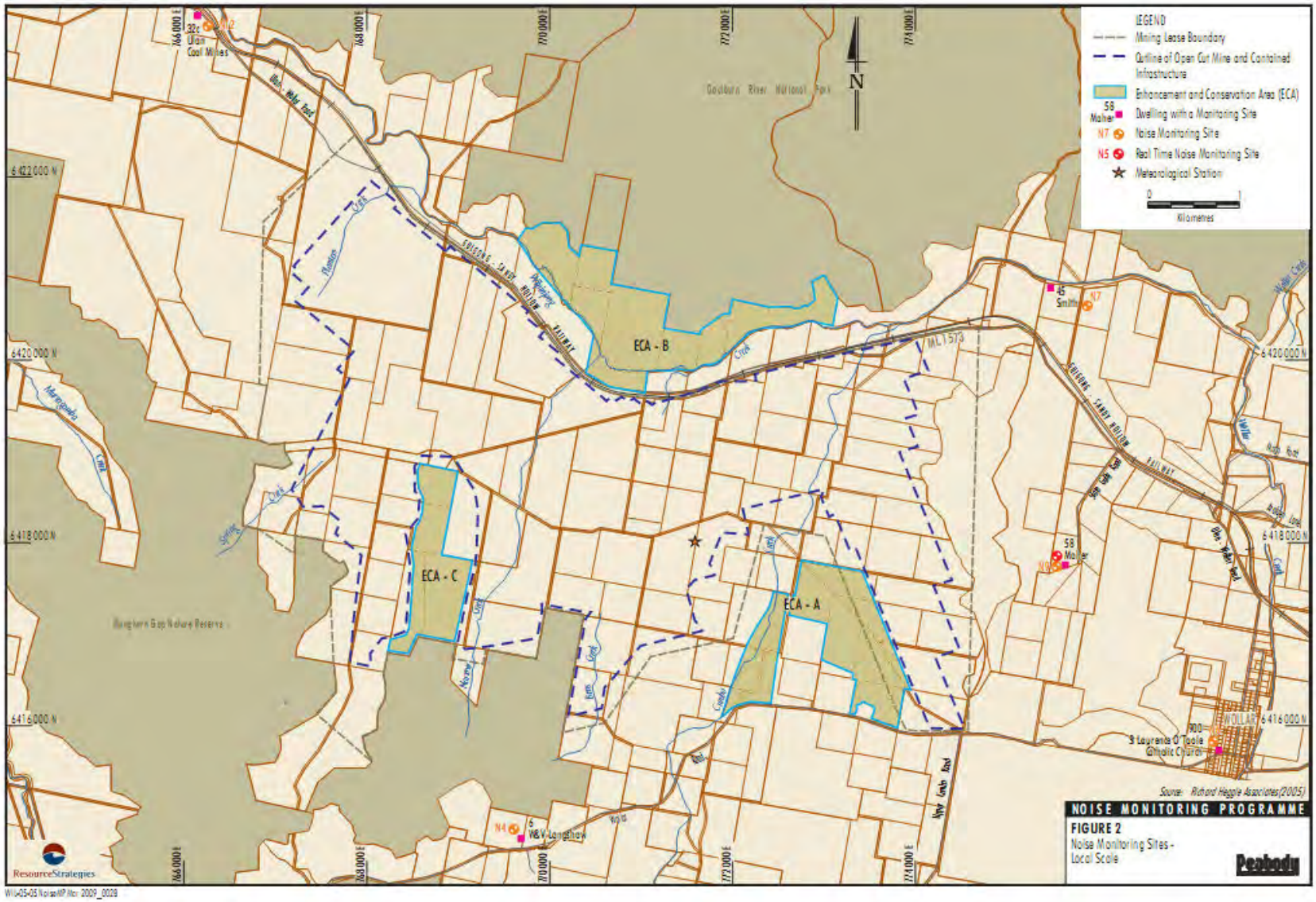
A.3 NOISE MONITORING PROGRAMME

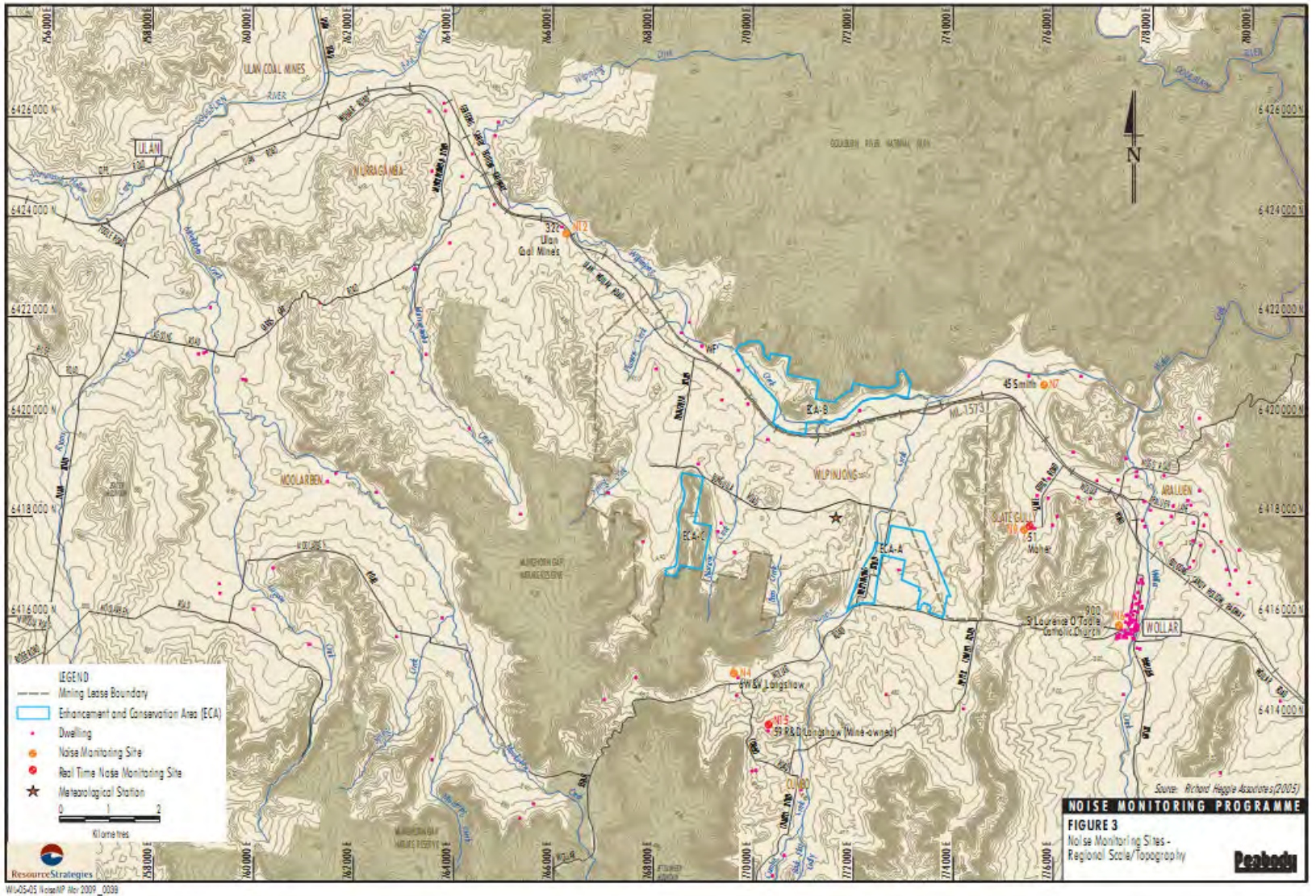
The noise monitoring program for WCP was revised in July 2009 and the relevant sections are reproduced below.

The attended noise monitoring programme will be conducted at sites adjacent to the Mine on non-Mine owned land to measure noise levels at nearby residences. Operational experience and investigations (Section 7.1) have shown that the Mine noise effects are experienced predominantly to the south and east of the Mine. Attended noise monitoring is presently concentrated in these areas, however this does not exclude monitoring to the west of the Mine.

Attended noise monitoring locations are shown on Figures 2 and 3. These locations provide good coverage in all directions from the Mine and are a combination of compliance sites and population centres. These locations include:

- *N4 – W&V Langshaw dwelling 'Hillview';*
- *N6 – St Laurence O'Toole Catholic Church;*
- *N7 – Road reserve adjacent the Smith property;*
- *N9 – Maher dwelling; and*
- *N12 – Ulan Coal Mine Limited-owned dwelling.*


LEGEND
Mining Lease Boundary
Outline of Open Cut Mine and Contained Infrastructure
Enhancement and Conservation Area (ECA)
Dwelling with a Monitoring Site
Noise Monitoring Site
Real Time Noise Monitoring Site
Meteorological Station
Kilometres
N
ECA - A
ECA - B
ECA - C
ML1573
Goulburn River National Park
Munghorn Gap Nature Reserve
Source: Richard Heggie Associates (2005)
NOISE MONITORING PROGRAMME
FIGURE 2
Noise Monitoring Sites - Local Scale
Peabody
ResourceStrategies



W\405-05 NoiseMP Nov 2009_0038

Methodology

Attended noise monitoring will be carried out by an independent expert (i.e. not by mine staff) and will be conducted every 2 months. Monitoring will be conducted in accordance with Australian Standard (AS) 1055:1997 Acoustics – Description and Measurement of Environmental Noise and the INP (EPA, 2000). These operator-attended noise measurements will be conducted during normal operations to quantify the intrusive noise emissions from the Mine as well as the overall level of ambient noise.

Following the completion of the attended noise monitoring by the independent expert, the two monthly monitoring reports will be submitted to DECC and DoP and will be made publicly available on the Peabody website (Section 8.2).

Timing

Attended noise monitoring will be conducted for 15 minute periods evening and night. Evening is defined as being between 6pm and 10pm and night is between 10pm and 7am.

The monitoring will be carried out on two consecutive nights resulting in 2 x 15 minute samples for each location every two months. By sampling two consecutive nights, it is likely that different meteorological conditions are sampled for each site, providing more useful information.

Particular attention will be given to monitoring between 7pm and 2am (i.e. evening/night-time periods).

Experience has shown that it is during these periods that noise can be at its most intrusive and results in more complaints. This is due to the very low background noise levels experienced during these periods and the presence of temperature inversions that are a relatively common phenomenon in this area, particularly during colder months.

Measurement

Acoustic instrumentation used in attended monitoring will comply with AS 1259.2:1990 Sound Level Meters.

The intrusive noise level (LAmax, LA1, LA10 and LAeq) contribution from mine operation activities will be quantified over a 15 minute measurement period. In addition, the overall levels of ambient noise (i.e. LAmax, LA1, LA10, LA50, LA90, LAmin and LAeq) over the 15 minute period will be quantified and characterised.

A measurement of LA1 (1 minute) corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level emitted from the Mine during the entire measurement period (i.e. the highest level of the maximum minute during the 15 minute measurement).

The LA1 measurement should be undertaken at 1 m from the dwelling façade and the LAeq measurement within 30 m of the dwelling. However, the direct measurement of noise at 1 m from the

façade is not always practical. In most cases monitoring near the residence is impractical due to barking dogs or issues with obtaining access. In these cases measurements are undertaken at a suitable and representative location as close to the dwelling as practicable. Modifying factors from section 4 of the INP are used where applicable. Tonality and low frequency are assessed by analysis of the measured LAeq spectrum.

Wilpinjong Coal

Noise Compliance Assessment

July to December 2011

Environmental Noise Monitoring

Prepared for

Wilpinjong Coal Pty Limited

Global Acoustics

Noise and Vibration Analysis and Solutions

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Wilpinjong Coal Noise Compliance Assessment

July to December 2011
Environmental Noise Monitoring

Reference: 12081_R01.doc

Report date: 12 February 2012

Prepared for

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Thornton NSW 2322

Prepared:	Katie Weekes Environmental Scientist	QA Review:	Robert Kirwan Acoustics Engineer

Global Acoustics Pty Ltd ~ Environmental noise modeling and impact assessment ~ Sound power testing ~ Noise control advice ~ Noise and vibration monitoring ~ OHS noise monitoring and advice ~ Expert evidence in Land and Environment and Compensation Courts ~ Architectural acoustics ~ Blasting assessments and monitoring ~ Noise management plans (NMP) ~ Sound level meter and noise logger sales and hire

EXECUTIVE SUMMARY

Global Acoustics was engaged by Wilpinjong Coal Pty Ltd to provide a summary of the environmental noise surveys conducted around Wilpinjong Coal Project (WCP) from 1 July to 31 December 2011.

An environment protection licence (EPL) was issued in early 2006 a variation was approved on the 8 December 2010. A revised noise-monitoring program (NMP) for WCP was approved in September 2011. Results of two-monthly monitoring have been compared to relevant noise limits. The relevant sections of these documents are reproduced in Appendix A.

Attended environmental noise monitoring described in this report was undertaken on a two monthly basis at five sites around the mine. The survey purpose is to quantify and describe the existing acoustic environment around WCP and compare results with specified limits.

Noise levels from WCP complied with noise consent limits at all sites during the July to December 2011 attended monitoring.

It is noted that wind speed and/or estimated temperature inversion conditions resulted in development consent criteria not always being applicable.

Table of Contents

Appendices

1 INTRODUCTION

1.1 Background

Global Acoustics was engaged by Wilpinjong Coal Pty Ltd to provide a summary of the environmental noise surveys conducted around Wilpinjong Coal Project (WCP) from 1 July to 31 December 2011.

Attended environmental noise monitoring described in this report was undertaken on a two monthly basis at five sites around the mine. The survey purpose is to quantify and describe the existing acoustic environment around WCP and compare results with specified limits.

1.2 Monitoring Locations

There were five regular monitoring locations during this survey as listed in Table 1.1 and shown on Figure 1. These monitoring locations are detailed in the Noise Monitoring Program (NMP).

Table 1.1 NOISE MONITORING LOCATIONS

NMP Descriptor	Monitoring Location	Owner
N4	'Hillview' Cumbo Road, Wollar	Langshaw
N6	St Laurence O'Toole Catholic Church, representative of Wollar - Residential	NA
N7	Ulan-Wollar Road (East)	Smith
N9	Slate Gully Road, Wollar	Maher
N12	Ulan-Wollar Road (West)	Ulan Coal Mines

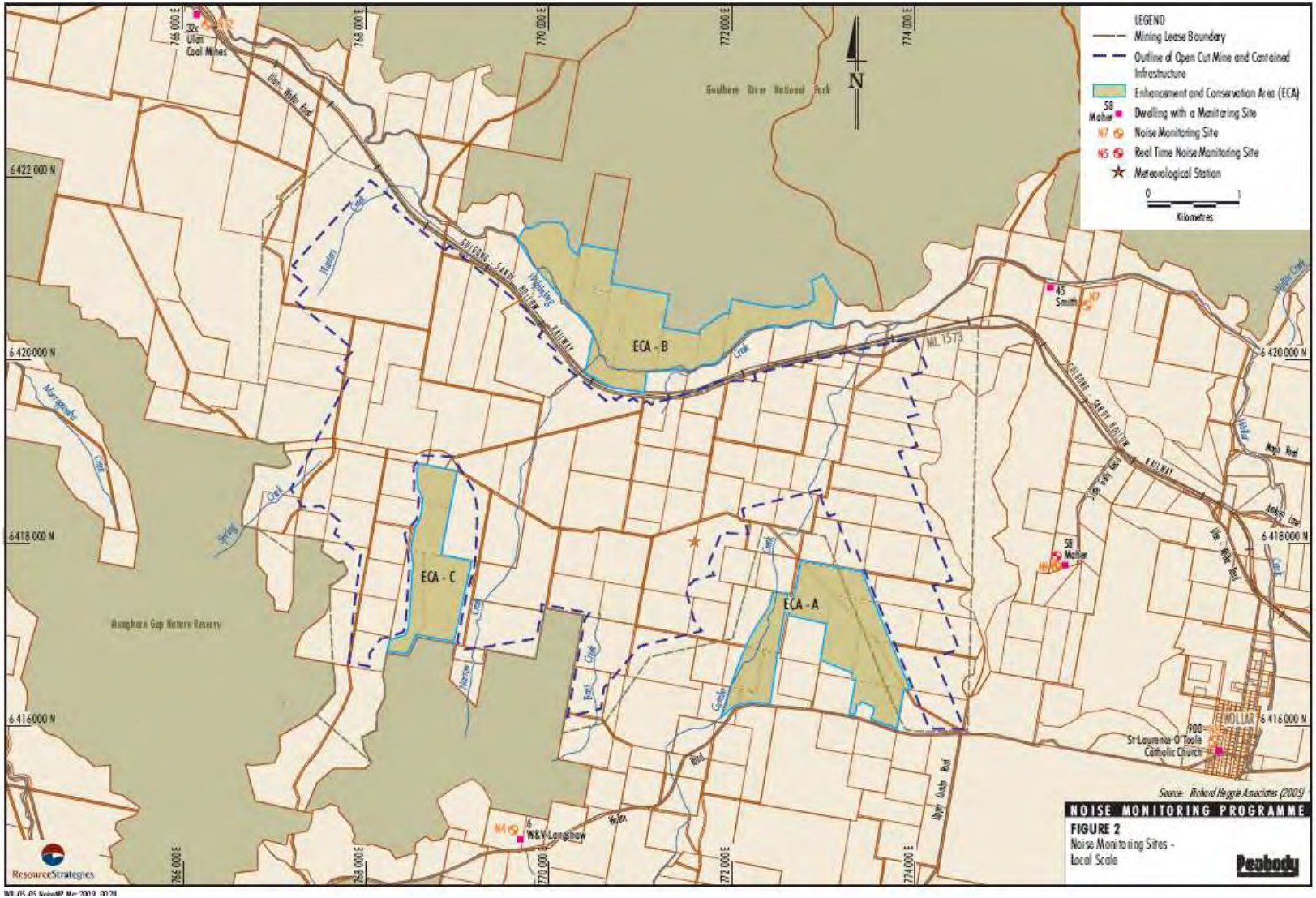


Figure 1 Monitoring Sites

1.3 Terminology

Some definitions of terminology, which may be used in this report, are provided in Table 1.2.

Table 1.2 TERMINOLOGY

Descriptor	Definition
L_A	The A-weighted root mean squared (RMS) noise level at any instant
L_{A10}	The noise level which is exceeded for 10 per cent of the time, which is approximately the average of the maximum noise levels
L_{A90}	The level exceeded for 90 per cent of the time, which is approximately the average of the minimum noise levels. The LA90 level is often referred to as the "background" noise level and is commonly used to determine noise criteria for assessment purposes
L_{Aeq}	The average noise energy during a measurement period
L_{pk}	The unweighted peak noise level at any instant
dB(A)	Noise level measurement units are decibels (dB). The "A" weighting scale is used to describe human response to noise
SPL	Sound pressure level (SPL), fluctuations in pressure measured as 10 times a logarithmic scale, the reference pressure being 20 micropascals
SEL	Sound exposure level (SEL), the A-weighted noise energy during a measurement period normalised to one second
Hertz (Hz)	Cycles per second, the frequency of fluctuations in pressure, sound is usually a combination of many frequencies together
Day	This is the period 7:00am to 6:00pm
Evening	This is the period 6:00pm to 10:00pm
Night	The period 10:00pm to 7:00am

2 CONSENT AND LICENCE CONDITIONS

2.1 Development Consent

WCP was given approval on 1 February 2006. A modification to the consent was approved in August 2010. The relevant noise conditions from Section 3 - Specific Environmental Conditions of the consent are reproduced in Appendix A.

2.2 Environment Protection Licence

In February 2006 Wilpinjong Coal were issued with Environment Protection Licence No.12425. There have been several variations to the EPL with the most recent approved on the in February 2011. Section L6 of the licence outlines noise limits and is reproduced in Appendix A.

2.3 Noise Monitoring Program

The noise-monitoring program for WCP was revised in July 2009. Section 5.1 details attended monitoring locations and methodology. The relevant sections are reproduced in Appendix A.

2.4 Project Specific Criteria

Day, evening and night criteria are detailed in Table 2.1. These have been selected as the most appropriate for each monitoring location and are based on the development consent or environment protection licence associated with Wilpinjong Coal Project operations.

Table 2.1 WILPINJONG COAL PROJECT SPECIFIC NOISE CRITERIA, dB

NMP Descriptor / Resident number[1]	Criterion	Day L_{Aeq} (15 minute)	Evening L_{Aeq} (15 minute)	Night L_{Aeq} (15 minute) / L_{A1} (1 minute)
N4	Hillview' Cumbo Road, Wollar[5]	NA	NA	NA/NA
N6 / Wollar	Catholic Church representative of Wollar – Residential	36[2]	35[2]	35[2]/45[2]
N7 / 45	Ulan-Wollar Road (East)	35[3]	40[3]	47[3]/45[3]
N9 / 58	Slate Gully Road, Wollar	35[2]	39[2]	39[2]/45[2]
N12 / All	Ulan-Wollar Road (West) [4]	35[3]	35[3]	36[3]/45[3]

Notes:
1. *"Äll" indicates location is not mentioned specifically in Section 2 of the 2010 Modification and therefore has criteria applied to "all other privately owned land";*
2. *From 2006 Development Consent; and*
3. *From Environment Protection Licence No. 12425;*
4. *Property is designated as a non-WPL mining interest in the 2010 Modification; and*
5. *This property is owned by WCP, so criteria are NA, 'not applicable'.*

Condition L6.3 in the EPL states:

The noise limits set out in condition 6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres per second at 10 metres above ground level; or

b) Temperature inversion conditions of up to 3°C per 100 m and wind speeds greater than 2 metres per second at 10 metres above the ground level; or

c) Temperature inversion conditions greater than 3°C per 100 m.

2.5 Acquisition Criteria

As detailed in conditions 5 of Schedule 3 of the consent, acquisition criteria for WCP are to consider noise in respect to the criteria detailed in Table 2.2 for all privately owned land (excluding land owned by Gaffney – 30, Smith – 45 and Power – 5).

Table 2.2 WILPINJONG COAL ACQUISITION CRITERIA, dB

Property	$L_{Aeq\ (15\ minute)}$
All privately owned land	40

2.6 Cumulative Noise Criteria

As detailed in conditions 4 and 5 of Schedule 3 of the consent, WCP are to consider cumulative noise in respect to the criteria detailed in Table 2.3 for all privately owned land (excluding land owned by Gaffney – 30, Smith – 45 and Power – 5).

Table 2.3 WILPINJONG COAL CUMULATIVE NOISE CRITERIA, dB

Consent Condition	Criterion	Day $L_{Aeq\ (11\ hour)}$	Evening $L_{Aeq\ (4\ hour)}$	Night $L_{Aeq\ (9\ hour)}$
4	Amenity	50	45	40
5	Land acquisition	53	48	43

2.7 Additional Mitigation Criteria

As detailed in condition 4 of Schedule 3 of the consent modification, additional mitigation criteria for WCP are to consider noise in respect to the criteria detailed in Table 2.4 for most privately owned land.

Table 2.4 WILPINJONG COAL ADDITIONAL MITIGATION CRITERIA, dB

Property	$L_{Aeq\ (15\ minute)}$
All other privately owned land, excluding those listed below	38

Land listed in Table 1 of the consent, or property numbers 23B, 25, 52A, 52B, 53 or 58 will receive mitigation upon request.

3 METHODOLOGY

3.1 Assessment Method

Attended monitoring was conducted in accordance with the Office of Environment and Heritage (OEH, formerly the Department of Environment, Climate Change and Water) 'Industrial Noise Policy' (INP) guidelines and Australian Standard AS 1055 'Acoustics, Description and Measurement of Environmental Noise'. Atmospheric condition measurement was also undertaken. The duration of each evening and night measurement was 15 minutes.

The terms "Inaudible" (IA) and "Not Measurable" (NM) are used in this report. When site noise is noted as IA then there was no site noise at the monitoring location.

However, if site noise is noted as NM, this means some noise was audible but could not be quantified. This means that noise from the site was either very low, or, being masked by other noise that was relatively loud. In the former case (very low site levels) we consider it not necessary to attempt to accurately quantify site noise as it would be significantly less than any criterion and most unlikely to cause annoyance (and in many cases, to be even noticed).

If site noise were NM due to masking then we would employ methods as per the Industrial Noise Policy (e.g. measure closer and back calculate) to determine a value for reporting if deemed necessary. All site NM in this report are due to low absolute values.

A measurement of $L_{A1(1\ minute)}$ corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level emitted from the Wilpinjong Coal Project (WCP) noise source during the entire measurement period (i.e. the highest level of the worst minute during the 15-minute measurement).

As indicated in note (a) and (b) below Table 2 of the consent conditions, the L_{A1} measurement should be undertaken at 1 metre from the dwelling façade and the L_{Aeq} measurement within 30 metres of the dwelling. However, the direct measurement of noise at 1 metre from the façade is not practical during monitoring for this project. In most cases, monitoring near the residence is impractical due to barking dogs or issues with obtaining access. In all cases, measurements for this survey were undertaken at a suitable and representative location.

As indicated in note (a) of Table 2 of the consent, modifying factors from Section 4 of the INP should be implemented where applicable. Tonality and low frequency from WCP were assessed by analysis of the measured L_{Aeq} spectrum.

Years of monitoring have indicated that noise levels from mining operations, particularly those levels measured at significant distances from the source are relatively continuous. Given this, noise levels from WCP at the monitoring locations are unlikely to be intermittent. In addition, there is no equipment on site at WCP that would generate impulsive noise as defined in the INP.

4 RESULTS

4.1 Attended Noise Monitoring – July/August, 2011

Overall noise levels measured at each location during attended measurement in August 2011 are provided in Table 4.1. Table 4.2 and Table 4.3 detail $L_{Aeq\ (15\ minute)}$ and $L_{A1\ (1\ minute)}$ noise levels from WCP in the absence of other noise sources. Criteria are then applied if weather conditions are in accordance with the mine's development consent. There were no modifying factors applicable to measured noise levels during this survey.

Table 4.1 MEASURED NOISE LEVELS – JULY / AUGUST 2011

Location	Date And Time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB	L_{Aeq} dB
	Evening							
N4	24/08/11 18:35	34	31	28	29	25	40	22
N6	24/08/11 19:09	41	39	37	37	36	45	34
N7	24/08/11 20:10	34	30	27	28	25	42	24
N9	24/08/11 19:38	39	34	26	30	19	44	16
N12	24/08/11 20:50	40	39	37	38	36	58	34
	Night-Time							
N4	25/08/11 00:10	27	25	21	22	19	41	16
N6	24/08/11 23:37	46	41	32	37	30	49	29
N7	24/08/11 22:38	29	28	26	26	25	41	23
N9	24/08/11 23:06	40	35	20	29	18	44	16
N12	24/08/11 22:01	39	37	36	36	34	40	32
	Evening							
N4	25/08/11 18:46	39	30	25	29	23	54	21
N6	25/08/11 19:17	39	34	31	32	30	44	29
N7	25/08/11 20:17	36	33	31	32	29	53	27
N9	25/08/11 19:52	37	34	31	32	29	41	26
N12	25/08/11 20:53	39	37	36	36	35	43	33
	Night-Time							
N4	26/08/11 00:00	29	24	20	22	17	37	15
N6	25/08/11 23:30	32	28	26	27	25	41	24
N7	25/08/11 22:37	47	38	33	36	31	53	28
N9	25/08/11 23:01	42	38	33	35	29	45	26
N12	25/08/11 22:04	40	38	37	37	35	45	34

Note: Noise levels in this table are not necessarily the result of activities at WCP.

Table 4.2 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST IMPACT ASSESSMENT CRITERIA – JULY / AUGUST 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB [,7]	Criterion Applies?[1,5]	WCP L_{Aeq} (15min) dB [2,3]	Exceedance[4, 5,7]
	Evening						
N4	24/08/11 18:35	1.1	2.1	NA	Y	25	NA
N6	24/08/11 19:09	1.8	1.2	35	Y	IA	N
N7	24/08/11 20:10	0.3	6.4	40	N	IA	NA
N9	24/08/11 19:38	1.6	0.7	NA	Y	IA	NA
N12	24/08/11 20:50	0.5	8.1	35	N	30	NA
	Night-Time						
N4	25/08/11 00:10	0.1	2.4	NA	Y	20	NA
N6	24/08/11 23:37	0.0	3.3	35	N	IA	NA
N7	24/08/11 22:38	0.1	5.5	47	N	NM	NA
N9	24/08/11 23:06	0.0	4.0	NA	N	NM	NA
N12	24/08/11 22:01	0.1	6.4	35	N	33	NA
	Evening						
N4	25/08/11 18:46	0.3	6.6	NA	N	IA	NA
N6	25/08/11 19:17	0.1	7.4	35	N	22	NA
N7	25/08/11 20:17	0.1	5.3	40	N	31	NA
N9	25/08/11 19:52	0.0	5.5	NA	N	30	NA
N12	25/08/11 20:53	0.4	5.3	35	N	30	NA
	Night-Time						
N4	26/08/11 00:00	0.2	5.0	NA	N	<20	NA
N6	25/08/11 23:30	0.6	4.1	35	N	20	N
N7	25/08/11 22:37	0.0	6.2	47	N	34	NA
N9	25/08/11 23:01	0.0	5.9	NA	N	35	NA
N12	25/08/11 22:04	0.4	5.5	35	N	32	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
2. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
7. *Atmospheric data is sourced from the WCP weather station.*

Table 4.3 $L_{A1\,(1\,minute)}$ dB GENERATED BY WCP AGAINST IMPACT ASSESSMENT CRITERIA – JULY / AUGUST 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB [,7]	Criterion Applies? [1,5]	WCP L_{A1} (1 min) dB [2,3]	Exceedance [4, 5,7]
	Night-Time						
N4	25/08/11 00:10	0.1	2.4	NA	Y	23	NA
N6	24/08/11 23:37	0.0	3.3	45	N	IA	NA
N7	24/08/11 22:38	0.1	5.5	45	N	NM	NA
N9	24/08/11 23:06	0.0	4.0	NA	N	NM	NA
N12	24/08/11 22:01	0.1	6.4	45	N	37	NA
	Night-Time						
N4	26/08/11 00:00	0.2	5.0	NA	N	23	NA
N6	25/08/11 23:30	0.6	4.1	45	N	24	NA
N7	25/08/11 22:37	0.0	6.2	45	N	44	NA
N9	25/08/11 23:01	0.0	5.9	NA	N	42	NA
N12	25/08/11 22:04	0.4	5.5	45	N	35	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, and, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.4 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP in the absence of other noise sources against acquisition criteria.

Table 4.4 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST ACQUISITION CRITERIA – JULY / AUGUST 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB	Criterion Applies? [1,5]	WCP LAeq (15min) dB [2,3]	Exceedance [4, 5,7]
	Evening						
N4	24/08/11 18:35	1.1	2.1	NA	Y	25	NA
N6	24/08/11 19:09	1.8	1.2	40	Y	IA	N
N7	24/08/11 20:10	0.3	6.4	40	N	IA	NA
N9	24/08/11 19:38	1.6	0.7	NA	Y	IA	NA
N12	24/08/11 20:50	0.5	8.1	40	N	30	NA
	Night-Time						
N4	25/08/11 00:10	0.1	2.4	NA	Y	20	NA
N6	24/08/11 23:37	0.0	3.3	40	N	IA	NA
N7	24/08/11 22:38	0.1	5.5	40	N	NM	NA
N9	24/08/11 23:06	0.0	4.0	NA	N	NM	NA
N12	24/08/11 22:01	0.1	6.4	40	N	33	NA
	Evening						
N4	25/08/11 18:46	0.3	6.6	NA	N	IA	NA
N6	25/08/11 19:17	0.1	7.4	40	N	22	NA
N7	25/08/11 20:17	0.1	5.3	40	N	31	NA
N9	25/08/11 19:52	0.0	5.5	NA	N	30	NA
N12	25/08/11 20:53	0.4	5.3	40	N	30	NA
	Night-Time						
N4	26/08/11 00:00	0.2	5.0	NA	N	<20	NA
N6	25/08/11 23:30	0.6	4.1	40	N	20	N
N7	25/08/11 22:37	0.0	6.2	40	N	34	NA
N9	25/08/11 23:01	0.0	5.9	NA	N	35	NA
N12	25/08/11 22:04	0.4	5.5	40	N	32	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.5 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP in the absence of other noise sources against additional noise mitigation criteria.

Table 4.5 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST ADDITIONAL NOISE MITIGATION CRITERIA – JULY / AUGUST 2011

Location	Date And Time	Criterion dB [5]	WCP $L_{Aeq\ (15min)}$ dB [1,2]	Exceedance[3,4]
	Evening			
N4	24/08/11 18:35	NA	25	NA
N6	24/08/11 19:09	38	IA	N
N7	24/08/11 20:10	38	IA	NA
N9	24/08/11 19:38	NA	IA	NA
N12	24/08/11 20:50	38	30	NA
	Night-Time			
N4	25/08/11 00:10	NA	20	NA
N6	24/08/11 23:37	38	IA	NA
N7	24/08/11 22:38	38	NM	NA
N9	24/08/11 23:06	NA	NM	NA
N12	24/08/11 22:01	38	33	NA
	Evening			
N4	25/08/11 18:46	NA	IA	NA
N6	25/08/11 19:17	38	22	NA
N7	25/08/11 20:17	38	31	NA
N9	25/08/11 19:52	NA	30	NA
N12	25/08/11 20:53	38	30	NA
	Night-Time			
N4	26/08/11 00:00	NA	<20	NA
N6	25/08/11 23:30	38	20	N
N7	25/08/11 22:37	38	34	NA
N9	25/08/11 23:01	NA	35	NA
N12	25/08/11 22:04	38	32	NA

Notes:
1. *These are results for WCP in the absence of all other noise sources;*
2. *NM denotes audible but not measurable, IA denotes inaudible;*
3. *Bolded results in red are those greater than the relevant criterion (if applicable);*
4. *Y denotes Yes, N denotes No; and*
5. *NA in criterion column means the criteria are not applicable at this location.*

4.2 Attended Noise Monitoring – September/October 2011

Overall noise levels measured at each location during attended measurement in October 2011 are provided in Table 4.6. Table 4.7 and Table 4.8 detail $L_{Aeq\ (15\ minute)}$ and $L_{A1\ (1\ minute)}$ noise levels from WCP in the absence of other noise sources. Criteria are then applied if weather conditions are in accordance with the mine's development consent. There were no modifying factors applicable to measured noise levels during this survey.

Table 4.6 MEASURED NOISE LEVELS – SEPTEMBER / OCTOBER 2011

Location	Date And Time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB	L_{Aeq} dB
	Evening							
N4	18/10/11 18:03	61	50	35	30	28	26	36
N6	18/10/11 18:39	62	51	40	32	28	26	39
N7	18/10/11 19:49	44	36	29	26	24	22	27
N9	18/10/11 19:12	64	57	43	30	24	22	43
N12	18/10/11 20:25	46	41	40	39	39	34	39
	Night-Time							
N4	19/10/11 00:08	43	30	27	22	20	18	24
N6	18/10/11 23:39	24	45	40	33	29	24	36
N7	18/10/11 22:41	59	55	43	24	20	18	41
N9	18/10/11 23:08	46	37	23	18	16	15	24
N12	18/10/11 22:00	48	40	37	34	33	30	35
	Evening							
N4	19/10/11 18:01	50	42	34	27	25	23	32
N6	19/10/11 18:43	62	47	40	32	28	25	38
N7	19/10/11 19:48	49	38	33	29	26	22	31
N9	19/10/11 19:20	56	44	37	27	22	20	34
N12	19/10/11 20:25	46	42	40	39	38	36	39
	Night-Time							
N4	20/10/11 00:26	49	35	28	23	21	18	26
N6	19/10/11 23:54	36	30	27	25	23	21	25
N7	19/10/11 22:35	44	34	30	26	23	20	27
N9	19/10/11 23:17	44	28	23	19	17	15	21
N12	19/10/11 22:00	49	40	38	36	34	32	36

Note: Noise levels in this table are not necessarily the result of activities at WCP.

Table 4.7 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST IMPACT ASSESSMENT CRITERIA – SEPTEMBER / OCTOBER 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB [,7]	Criterion Applies? [1,5]	WCP L_{Aeq} (15min) dB [2,3]	Exceedance [4, 5,7]
	Evening						
N4	18/10/11 18:03	2.7	0.0	NA	Y	22	NA
N6	18/10/11 18:39	2.7	0.9	35	N	IA	NA
N7	18/10/11 19:49	2.5	0.2	40	N	IA	NA
N9	18/10/11 19:12	2.6	0.3	NA	N	<20	NA
N12	18/10/11 20:25	1.6	0.0	35	Y	31	N
	Night-Time						
N4	19/10/11 00:08	1.6	4.1	NA	N	20	NA
N6	18/10/11 23:39	1.4	3.4	35	N	IA	NA
N7	18/10/11 22:41	2.1	1.0	47	N	IA	NA
N9	18/10/11 23:08	2.1	2.2	NA	N	IA	NA
N12	18/10/11 22:00	1.0	0.0	35	Y	32	N
	Evening						
N4	19/10/11 18:01	2.8	2.6	NA	N	22	NA
N6	19/10/11 18:43	2.2	2.6	35	N	IA	NA
N7	19/10/11 19:48	1.9	3.1	40	N	IA	NA
N9	19/10/11 19:20	2.0	3.6	NA	N	IA	NA
N12	19/10/11 20:25	1.4	4.1	35	N	31	NA
	Night-Time						
N4	20/10/11 00:26	0.7	3.8	NA	N	<20	NA
N6	19/10/11 23:54	0.3	2.9	35	Y	IA	N
N7	19/10/11 22:35	1.0	3.1	47	N	24	NA
N9	19/10/11 23:17	0.7	2.9	NA	Y	<20	NA
N12	19/10/11 22:00	0.1	3.6	35	N	32	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.8 $L_{A1\,(1\,minute)}$ dB GENRATED BY WCP AGAINST IMPACT ASSESSMENT CRITERIA – SEPTEMBER / OCTOBER 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB [,7]	Criterion Applies? [1,5]	WCP L_{A1} (1 min) dB [2,3]	Exceedance [4, 5,7]
	Night-Time						
N4	19/10/11 00:08	1.6	4.1	NA	N	31	NA
N6	18/10/11 23:39	1.4	3.4	45	N	IA	NA
N7	18/10/11 22:41	2.1	1.0	45	N	IA	NA
N9	18/10/11 23:08	2.1	2.2	NA	N	IA	NA
N12	18/10/11 22:00	1.0	0.0	45	Y	44	N
N4	20/10/11 00:26	0.7	3.8	NA	N	22	NA
N6	19/10/11 23:54	0.3	2.9	45	Y	IA	N
N7	19/10/11 22:35	1.0	3.1	45	N	32	NA
N9	19/10/11 23:17	0.7	2.9	NA	Y	25	NA
N12	19/10/11 22:00	0.1	3.6	45	N	40	NA

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, and, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.9 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP in the absence of other noise sources against acquisition criteria.

Table 4.9 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST ACQUISITION CRITERIA – SEPTEMBER / OCTOBER 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB	Criterion Applies? [1,5]	WCP LAeq (15min) dB [2,3]	Exceedance [4, 5,7]
	Evening						
N4	18/10/11 18:03	2.7	0.0	NA	Y	22	NA
N6	18/10/11 18:39	2.7	0.9	40	N	IA	NA
N7	18/10/11 19:49	2.5	0.2	40	N	IA	NA
N9	18/10/11 19:12	2.6	0.3	NA	N	<20	NA
N12	18/10/11 20:25	1.6	0.0	40	Y	31	N
	Night-Time						
N4	19/10/11 00:08	1.6	4.1	NA	N	20	NA
N6	18/10/11 23:39	1.4	3.4	40	N	IA	NA
N7	18/10/11 22:41	2.1	1.0	40	N	IA	NA
N9	18/10/11 23:08	2.1	2.2	NA	N	IA	NA
N12	18/10/11 22:00	1.0	0.0	40	Y	32	N
	Evening						
N4	19/10/11 18:01	2.8	2.6	NA	N	22	NA
N6	19/10/11 18:43	2.2	2.6	40	N	IA	NA
N7	19/10/11 19:48	1.9	3.1	40	N	IA	NA
N9	19/10/11 19:20	2.0	3.6	NA	N	IA	NA
N12	19/10/11 20:25	1.4	4.1	40	N	31	NA
	Night-Time						
N4	20/10/11 00:26	0.7	3.8	NA	N	<20	NA
N6	19/10/11 23:54	0.3	2.9	40	Y	IA	N
N7	19/10/11 22:35	1.0	3.1	40	N	24	NA
N9	19/10/11 23:17	0.7	2.9	NA	Y	<20	NA
N12	19/10/11 22:00	0.1	3.6	40	N	32	NA

Notes:
1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.10 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP in the absence of other noise sources against additional noise mitigation criteria.

Table 4.10 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST ADDITIONAL NOISE MITIGATION CRITERIA – SEPTEMBER / OCTOBER 2011

Location	Date And Time	Criterion dB [5]	WCP $L_{Aeq\ (15min)}$ dB [1,2]	Exceedance[3,4]
	Evening			
N4	18/10/11 18:03	NA	22	NA
N6	18/10/11 18:39	38	IA	NA
N7	18/10/11 19:49	38	IA	NA
N9	18/10/11 19:12	NA	<20	NA
N12	18/10/11 20:25	38	31	N
	Night-Time			
N4	19/10/11 00:08	NA	20	NA
N6	18/10/11 23:39	38	IA	NA
N7	18/10/11 22:41	38	IA	NA
N9	18/10/11 23:08	NA	IA	NA
N12	18/10/11 22:00	38	32	N
	Evening			
N4	19/10/11 18:01	NA	22	NA
N6	19/10/11 18:43	38	IA	NA
N7	19/10/11 19:48	38	IA	NA
N9	19/10/11 19:20	NA	IA	NA
N12	19/10/11 20:25	38	31	NA
	Night-Time			
N4	20/10/11 00:26	NA	<20	NA
N6	19/10/11 23:54	38	IA	N
N7	19/10/11 22:35	38	24	NA
N9	19/10/11 23:17	NA	<20	NA
N12	19/10/11 22:00	38	32	NA

Notes:
1. *These are results for WCP in the absence of all other noise sources;*
2. *NM denotes audible but not measurable, IA denotes inaudible;*
3. *Bolded results in red are those greater than the relevant criterion (if applicable);*
4. *Y denotes Yes, N denotes No; and*
5. *NA in criterion column means the criteria are not applicable at this location.*

4.3 Attended Noise Monitoring – November/December 2011

Overall noise levels measured at each location during attended measurement in November 2011 are provided in Table 4.11. Table 4.12 and Table 4.13 detail $L_{Aeq\ (15\ minute)}$ and $L_{A1\ (1\ minute)}$ noise levels from WCP in the absence of other noise sources. Criteria are then applied if weather conditions are in accordance with the mine's development consent. There were no modifying factors applicable to measured noise levels during this survey.

Table 4.11 MEASURED NOISE LEVELS – NOVEMBER / DECEMBER 2011

Location	Date And Time	L_{Amax} dB	L_{A1} dB	L_{A10} dB	L_{A50} dB	L_{A90} dB	L_{Amin} dB	L_{Aeq} dB
	Evening							
N4	14/11/11 19:12	53	40	33	28	26	24	31
N6	14/11/11 19:48	52	48	45	36	32	30	40
N7	14/11/11 20:57	57	54	50	44	39	34	46
N9	14/11/11 20:16	47	39	36	32	30	28	33
N12	14/11/11 21:31	51	41	40	39	37	36	39
	Night-Time							
N4	15/11/11 00:27	46	38	33	28	25	22	30
N6	14/11/11 23:58	47	38	34	29	26	22	31
N7	14/11/11 23:04	51	47	43	38	34	27	40
N9	14/11/11 23:30	46	34	29	27	26	24	28
N12	14/11/11 22:12	44	40	39	37	36	34	38
	Evening							
N4	15/11/11 19:13	67	50	38	31	29	26	40
N6	15/11/11 19:40	59	46	41	37	34	28	39
N7	15/11/11 20:38	45	42	38	33	29	26	35
N9	15/11/11 20:13	51	40	34	32	30	28	33
N12	15/11/11 21:11	51	41	39	38	37	36	38
	Night-Time							
N4	15/11/11 23:46	43	34	28	24	22	20	26
N6	15/11/11 23:17	44	42	40	35	28	22	36
N7	15/11/11 23:21	60	48	44	40	34	28	41
N9	15/11/11 23:45	39	34	30	26	24	22	27
N12	15/11/11 22:44	57	42	40	38	37	35	39

Note: Noise levels in this table are not necessarily the result of activities at WCP.

Table 4.12 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST IMPACT ASSESSMENT CRITERIA – NOVEMBER / DECEMBER 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB [,7]	Criterion Applies? [1,5]	WCP L_{Aeq} (15min) dB [2,3]	Exceedance [4, 5,7]
	Evening						
N4	14/11/11 19:12	2.8	-0.2	NA	Y	IA	NA
N6	14/11/11 19:48	3.8	-0.2	35	N	<20	NA
N7	14/11/11 20:57	2.0	0.3	40	N	32	NA
N9	14/11/11 20:16	3.5	0.2	NA	N	30	NA
N12	14/11/11 21:31	0.6	3.4	35	N	31	NA
	Night-Time						
N4	15/11/11 00:27	0.8	5.2	NA	N	<20	NA
N6	14/11/11 23:58	0.8	8.3	35	N	IA	NA
N7	14/11/11 23:04	0.3	6.4	47	N	27	NA
N9	14/11/11 23:30	0.4	7.1	NA	N	<20	NA
N12	14/11/11 22:12	0.3	3.8	35	N	31	NA
	Evening						
N4	15/11/11 19:13	1.9	-0.2	NA	Y	24	NA
N6	15/11/11 19:40	2.0	0.0	35	Y	IA	N
N7	15/11/11 20:38	2.2	-0.2	40	Y	NM	N
N9	15/11/11 20:13	2.2	-0.2	NA	Y	NM	NA
N12	15/11/11 21:11	3.1	-0.3	35	N	28	NA
	Night-Time						
N4	15/11/11 23:46	0.8	0.3	NA	Y	IA	NA
N6	15/11/11 23:17	1.4	0.7	35	Y	IA	N
N7	15/11/11 23:21	1.4	0.7	47	Y	NM	N
N9	15/11/11 23:45	0.8	0.3	NA	Y	<20	NA
N12	15/11/11 22:44	1.9	0.0	35	Y	34	N

Notes:

1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.13 $L_{A1\,(1\,minute)}$ dB GENRATED BY WCP AGAINST IMPACT ASSESSMENT CRITERIA – NOVEMBER / DECEMBER 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB [,7]	Criterion Applies? [1,5]	WCP L_{A1} (1 min) dB [2,3]	Exceedance [4, 5,7]
	Night-Time						
N4	15/11/11 00:27	0.8	5.2	NA	N	21	NA
N6	14/11/11 23:58	0.8	8.3	45	N	IA	NA
N7	14/11/11 23:04	0.3	6.4	45	N	32	NA
N9	14/11/11 23:30	0.4	7.1	NA	N	22	NA
N12	14/11/11 22:12	0.3	3.8	45	N	36	NA
N4	15/11/11 23:46	0.8	0.3	NA	Y	IA	NA
N6	15/11/11 23:17	1.4	0.7	45	Y	IA	N
N7	15/11/11 23:21	1.4	0.7	45	Y	NM	N
N9	15/11/11 23:45	0.8	0.3	NA	Y	23	NA
N12	15/11/11 22:44	1.9	0.0	45	Y	40	N

Notes:
1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, and, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*
8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.14 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP in the absence of other noise sources against acquisition criteria.

Table 4.14 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST ACQUISITION CRITERIA – NOVEMBER / DECEMBER 2011

Location	Date And Time	Wind Speed m/s [8]	VTG °C per 100m [6,8]	Criterion dB	Criterion Applies? [1,5]	WCP LAeq (15min) dB [2,3]	Exceedance [4, 5,7]
	Evening						
N4	14/11/11 19:12	2.8	-0.2	NA	Y	IA	NA
N6	14/11/11 19:48	3.8	-0.2	40	N	<20	NA
N7	14/11/11 20:57	2.0	0.3	40	N	32	NA
N9	14/11/11 20:16	3.5	0.2	NA	N	30	NA
N12	14/11/11 21:31	0.6	3.4	40	N	31	NA
	Night-Time						
N4	15/11/11 00:27	0.8	5.2	NA	N	<20	NA
N6	14/11/11 23:58	0.8	8.3	40	N	IA	NA
N7	14/11/11 23:04	0.3	6.4	40	N	27	NA
N9	14/11/11 23:30	0.4	7.1	NA	N	<20	NA
N12	14/11/11 22:12	0.3	3.8	40	N	31	NA
	Evening						
N4	15/11/11 19:13	1.9	-0.2	NA	Y	24	NA
N6	15/11/11 19:40	2.0	0.0	40	Y	IA	N
N7	15/11/11 20:38	2.2	-0.2	40	Y	NM	N
N9	15/11/11 20:13	2.2	-0.2	NA	Y	NM	NA
N12	15/11/11 21:11	3.1	-0.3	40	N	28	NA
	Night-Time						
N4	15/11/11 23:46	0.8	0.3	NA	Y	IA	NA
N6	15/11/11 23:17	1.4	0.7	40	Y	IA	N
N7	15/11/11 23:21	1.4	0.7	40	Y	NM	N
N9	15/11/11 23:45	0.8	0.3	NA	Y	<20	NA
N12	15/11/11 22:44	1.9	0.0	40	Y	34	N

Notes:
1. *Noise emission limits apply for winds up to 3 metres per second (at a height of 10 metres, or, vertical temperature gradients of up to 3 degrees/100m with wind speed up to 2 m/s;*
2. *These are results for WCP in the absence of all other noise sources;*
3. *NM denotes audible but not measurable, IA denotes inaudible;*
4. *Bolded results in red are those greater than the relevant criterion (if applicable);*
5. *Y denotes Yes, N denotes No;*
6. *Vertical Temperature Gradient (VTG) is sourced from the WCP inversion tower;*
7. *NA in criterion column means the criteria are not applicable at this location, NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable or criterion not specified; and*

8. *Atmospheric data is sourced from the WCP weather station.*

Table 4.15 details $L_{Aeq\ (15\ minute)}$ noise levels from WCP in the absence of other noise sources against additional noise mitigation criteria.

Table 4.15 $L_{Aeq\ (15\ minute)}$ dB GENERATED BY WCP AGAINST ADDITIONAL NOISE MITIGATION CRITERIA – NOVEMBER / DECEMBER 2011

Location	Date And Time	Criterion dB [5]	WCP $L_{Aeq\ (15min)}$ dB [1,2]	Exceedance[3,4]
Evening				
N4	14/11/11 19:12	NA	IA	NA
N6	14/11/11 19:48	38	<20	NA
N7	14/11/11 20:57	38	32	NA
N9	14/11/11 20:16	NA	30	NA
N12	14/11/11 21:31	38	31	NA
Night-Time				
N4	15/11/11 00:27	NA	<20	NA
N6	14/11/11 23:58	38	IA	NA
N7	14/11/11 23:04	38	27	NA
N9	14/11/11 23:30	NA	<20	NA
N12	14/11/11 22:12	38	31	NA
Evening				
N4	15/11/11 19:13	NA	24	NA
N6	15/11/11 19:40	38	IA	N
N7	15/11/11 20:38	38	NM	N
N9	15/11/11 20:13	NA	NM	NA
N12	15/11/11 21:11	38	28	NA
Night-Time				
N4	15/11/11 23:46	NA	IA	NA
N6	15/11/11 23:17	38	IA	N
N7	15/11/11 23:21	38	NM	N
N9	15/11/11 23:45	NA	<20	NA
N12	15/11/11 22:44	38	34	N

Notes:
1. *These are results for WCP in the absence of all other noise sources;*
2. *NM denotes audible but not measurable, IA denotes inaudible;*
3. *Bolded results in red are those greater than the relevant criterion (if applicable);*
4. *Y denotes Yes, N denotes No; and*
5. *NA in criterion column means the criteria are not applicable at this location.*

5 SUMMARY OF COMPLIANCE

5.1 Summary

Noise levels from WCP complied with noise consent limits at all sites during the July to December 2011 attended monitoring.

It is noted that wind speed and/or estimated temperature inversion conditions resulted in development consent criteria not always being applicable.

A. DEVELOPMENT CONSENT

Several documents specifying noise criteria apply to the Wilpinjong operation. The noise sections of the relevant consent, licence and NMP are reproduced below.

A.1 WILPINJONG COAL PROJECT DEVELOPMENT CONSENT

Wilpinjong Coal Project was given approval on 1 February 2006. A modification to the consent was approved in August 2010.

The relevant noise conditions from Section 3 - Specific Environmental Conditions of the modified consent is reproduced below.

ACQUISITION UPON REQUEST

1. Upon receiving a written request for acquisition from the owner of the land listed in Table 1, the Proponent shall acquire the land in accordance with the procedures in conditions 6 – 7 of schedule 4.

Table 1: Land subject to acquisition upon request

30 – Gaffney	45 – Smith
48 – Evans	50 – Thompson & Hopper
94 – McKenzie	

Note:

- *To interpret the locations referred to in Table 1, see the applicable figures in Appendix 7.*

Noise Impact Assessment Criteria

2. Except for the land referred to in Table 1, the Proponent shall ensure that the noise generated by the project does not exceed the 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: Noise impact assessment criteria dB(A)

Location	Day	Evening	Night	
	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{Aeq(15\ minute)}$	$L_{A1(1\ minute)}$
58 – Maher 52A – Long 52B – Long 53 – Reynolds	35	39	39	45
23B – Bishop	35	39	37	45
25 – Pettit	35	39	36	45
31A – Conradt	35	37	37	45
31B – Conradt	35	36	36	45
100 – Rheinberger 125 – Roberts	35	37	35	45
Wollar Village – Residential	36	35	35	45
All other privately owned land	35	35	35	45
901 – Wollar School		35(internal) 45 (external) When in use		-
150A – St Luke's Anglican Church 900 – St Laurence O'Toole Catholic Church		40 (internal) When in use		-
Goulburn River National Park/Munghorn Gap Nature Reserve		50 When in use		-

However, the criteria in Table 2 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 Department in writing of the terms of this agreement.

Notes:

- *To interpret the locations referred to in Table 2, see the applicable figures in Appendix 7.*
- *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.*
- *For the Goulburn River National Park/Munghorn Nature Reserve noise levels are to be assessed at the most affected point at the boundary of the Goulburn River National Park/Munghorn Nature Reserve.*

Noise Acquisition Criteria

3. If the noise generated by the project exceeds the criteria in Table 3 at any residence on privately-owned land or on more than 25 per cent of any privately-owned land, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 6 – 7 of schedule 4.

Table 3: Land acquisition criteria dB(A)

Day/Evening/Night $L_{Aeq(15\ minute)}$	***Land***
40	*All privately owned land, excluding the land listed in Table 1*

Note:

- *Noise generated by the project is to be measured in accordance with the notes presented below Table 2. For the condition to apply, the exceedances must be systemic.*

Additional Noise Mitigation Measures

4. Upon receiving a written request from the owner of any residence:
   (a) on the land listed in Table 1; or
   (b) on the land listed 23B, 25, 52A, 52B, 53, or 58 in the applicable figures in Appendix 7; or
   (c) where subsequent noise monitoring shows that the noise generated by the project is greater than, or equal to, $L_{Aeq(15\ minute)}$ 38 dB(A),

   the Proponent shall implement reasonable and feasible noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the landowner.

   If within 3 months of receiving this request from the landowner, the Proponent and the landowner 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 Director-General for resolution.

5. By 30 November 2010, or within 1 month of obtaining monitoring results showing an exceedance of the relevant criteria listed in condition 4(c) above, the Proponent shall notify all applicable owners that they are entitled to ask for additional noise mitigation measures to be installed at their residence.

Operating Conditions

6. The Proponent shall:
   (a) implement all reasonable and feasible noise mitigation measures;
   (b) ensure that the real-time noise monitoring and meteorological forecasting data are assessed regularly, and that operations on site are relocated, modified, and/or stopped to ensure compliance with the relevant criteria in conditions 2 to 4 of this schedule; and
   (c) regularly investigate ways to reduce the operational, low frequency, rail, and road traffic noise generated by the project; and report on these investigations in the annual review (see condition 2 of schedule 5),

   to the satisfaction of the Director-General.

Noise Management Plan

7. The Proponent shall prepare and implement a Noise Management Plan for the project, in consultation with DECCW, and to the satisfaction of the Director-General. This plan must:
   (a) describe the noise mitigation measures that would be implemented to ensure compliance with the relevant noise impact assessment criteria in this approval, including the proposed real-time noise management system and associated meteorological forecasting; and
   (b) include a noise monitoring program, that uses a combination of real-time and supplementary attended monitoring measures to evaluate the performance of the project, and includes a protocol for determining exceedances with the relevant conditions of this approval.

A.2 ENVIRONMENT PROTECTION LICENCE

The EPL (number 12425) for WCP was originally issued in February 2006 and has been the subject of subsequent variations, the most recent in February 2011.

The relevant section reproduced below.

L6 Noise Limits

L6.1 Noise generated at the premises must not exceed the noise limits presented in the table below. The locations referred to in the table below are indicated by the property identification numbers on Figure 4A Relevant Land Ownership Plan Wilpinjong Coal Mine Mining Rate Modification Environmental Assessment 17 May 2010. The property identification numbers are indicated on Figure 4B Relevant Land Ownership List Wilpinjong Coal Mine Mining Rate Modification Environmental Assessment 17 May 2010.

Locality	Location	NOISE LIMITS dB(A)			
		Day	Evening	Night	
		$L_{Aeq\ (15\ minute)}$	$L_{Aeq\ (15\ minute)}$	$L_{Aeq\ (15\ minute)}$	$L_{A1\ (1\ minute)}$
Ariluen	25 Pettit Lot 16 DP250053	35	39	36	45
	125 E & K Roberts	35	37	35	45
	52A Long Lot 8 DP250053	35	39	39	45
	52B Long Lot 8 DP250053	35	39	39	45
	51 Bailey Lot 5, 6, 7 DP250053	35	39	39	45
	58 Maher	35	39	39	45
	31A Conradt	35	37	37	45
	Lot 10, 11, 12 DP250053 Lot 160 DP723767				
	31B Conradt Lot 10, 11, 12 DP250053 Lot 160 DP723767	35	38	38	45
Wilpinjong (NE)	45 Smith Lot 4, 8, 50, 78, 85, 94, 116 & 130 DP755455	35	40	47	45
Wollar	Wollar village	36	35	35	45
Conservation Areas	Goulburn River National Park	50	50	50	-
	Munghorn Gap Nature Reserve	50	50	50	-

L6.2 For the purpose of condition L6.1;

- Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holiday's.
- Evening is defined as the period 6pm to 10pm.
- Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holiday's.

L6.3 The noise limits set out in condition L6.1 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or

b) Temperature inversion conditions of up to 3°C/100m and wind speeds greater than 2 metres/second at 10 metres above the ground level; or

c) Temperature inversion conditions greater than 3°C/100m.

L6.4 For the purpose of condition L6.3:

a) The meteorological data to be used for determining meteorological conditions is the data recorded by the meteorological weather station identified as EPA identification Point 21 in condition P1.1; and

b) Temperature inversion conditions (vertical temperature gradient in degrees C) are to be determined by direct measurement over a minimum 50m height interval as referred to in Part E2 of Appendix E to the NSW Industrial Noise Policy.

L6.5 To determine compliance:

a) With the $L_{eq(15\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located:

- approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
- within 30 metres of a dwelling façade, but not closer than 3 metres where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
- within approximately 50 metres of the boundary of a National Park or Nature Reserve

b) With the $L_{A1(1\ minute)}$ noise limits in condition L6.1, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) With the noise limits in condition L6.1, the noise measurement equipment must be located:

- at the most affected point at a location where there is no dwelling at the location; or
- at the most affected point within an area at a location prescribed by conditions L6.5(a) or L6.5(b).

L6.6 A non-compliance of condition L6.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions L6.5(a) and L6.5(b); and/or
- at a point other than the most affected point at a location.

L6.7 For the purpose of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

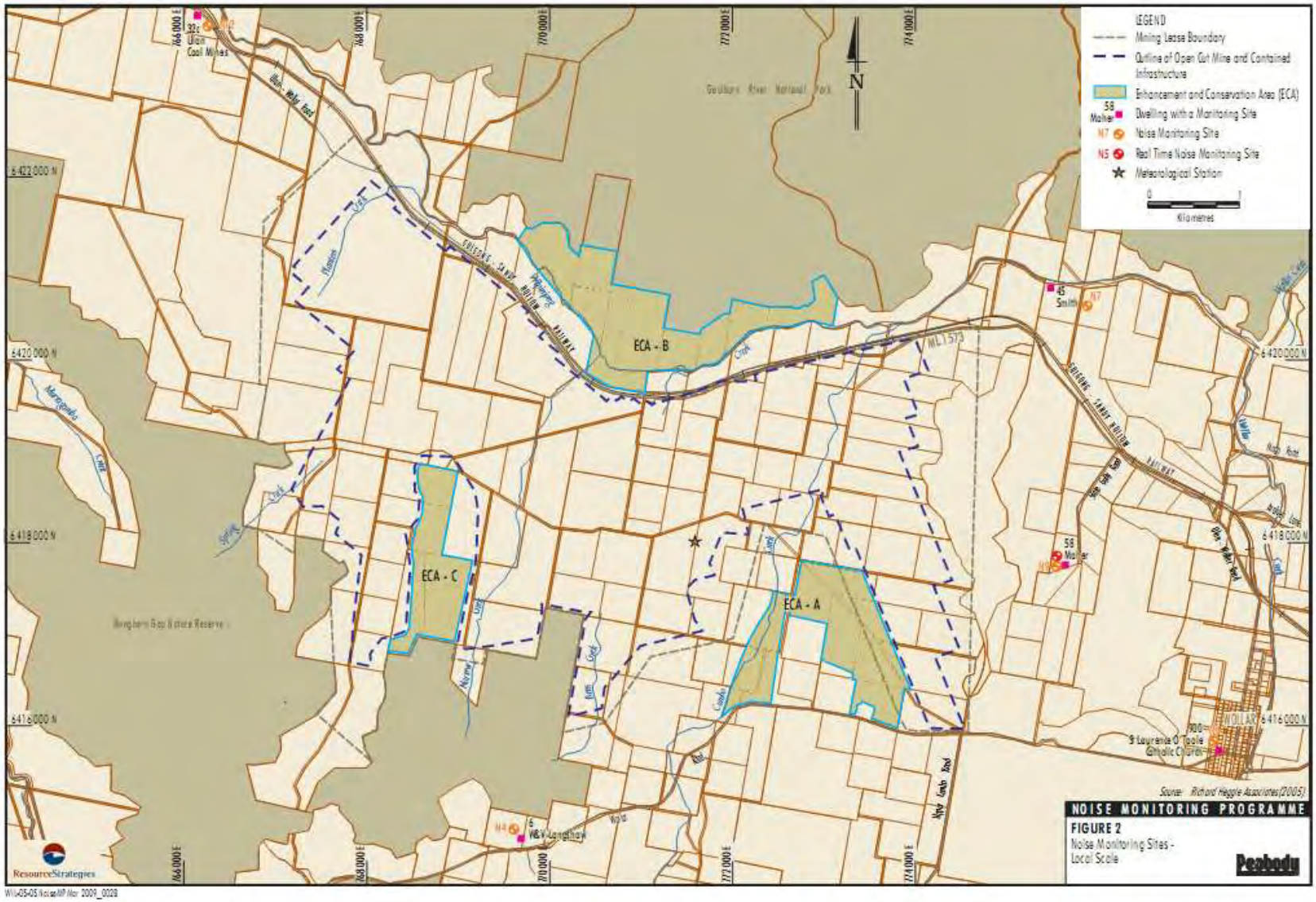
A.3 NOISE MONITORING PROGRAMME

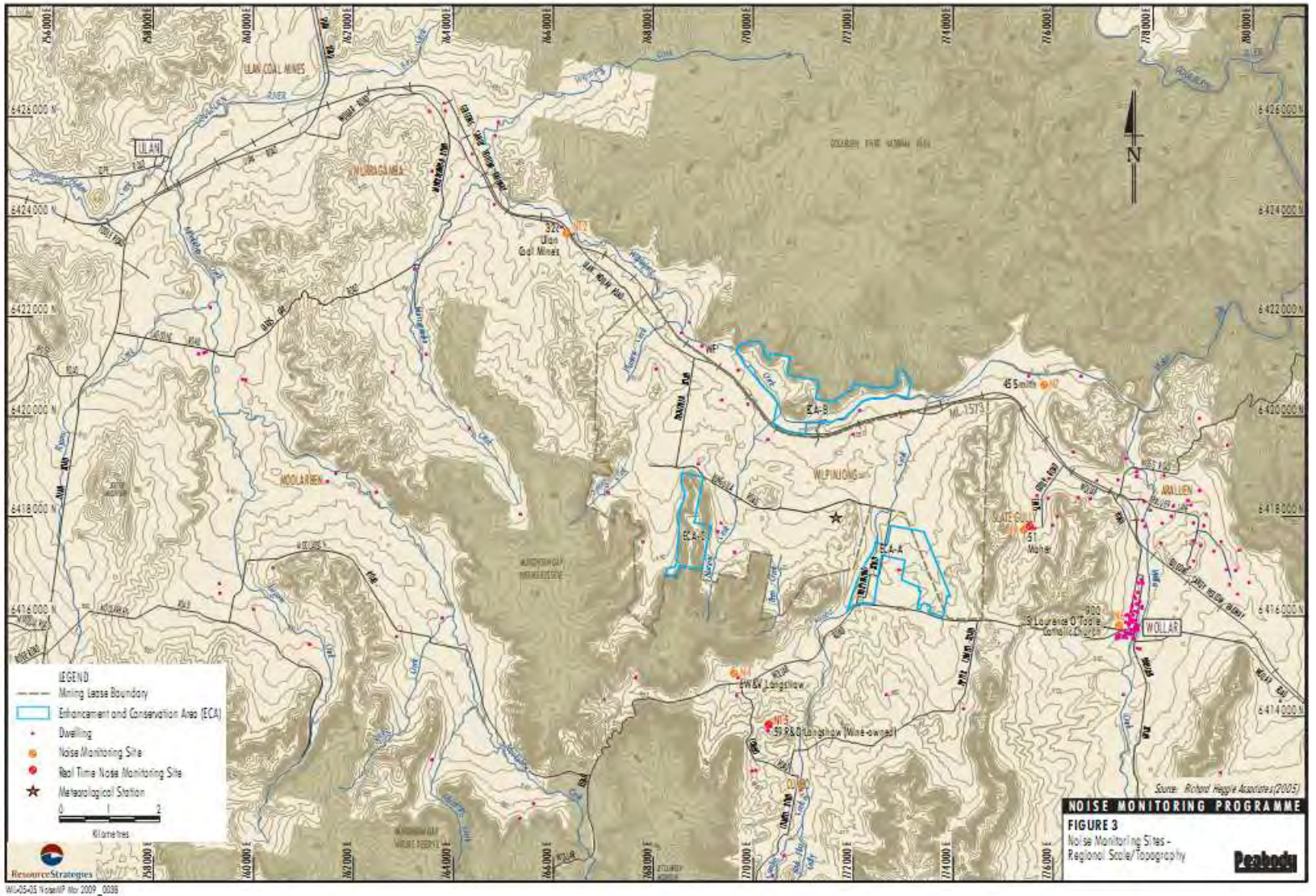
The noise monitoring program for WCP was revised in July 2009 and the relevant sections are reproduced below.

The attended noise monitoring programme will be conducted at sites adjacent to the Mine on non-Mine owned land to measure noise levels at nearby residences. Operational experience and investigations (Section 7.1) have shown that the Mine noise effects are experienced predominantly to the south and east of the Mine. Attended noise monitoring is presently concentrated in these areas, however this does not exclude monitoring to the west of the Mine.

Attended noise monitoring locations are shown on Figures 2 and 3. These locations provide good coverage in all directions from the Mine and are a combination of compliance sites and population centres. These locations include:

- *N4 – W&V Langshaw dwelling 'Hillview';*
- *N6 – St Laurence O'Toole Catholic Church;*
- *N7 – Road reserve adjacent the Smith property;*
- *N9 – Maher dwelling; and*
- *N12 – Ulan Coal Mine Limited-owned dwelling.*


LEGEND
Mining Lease Boundary
Outline of Open Cut Mine and Contained Infrastructure
Enhancement and Conservation Area (ECA)
Dwelling with a Monitoring Site
Noise Monitoring Site
Real Time Noise Monitoring Site
Meteorological Station
Kilometres
N
ECA - A
ECA - B
ECA - C
Source: Richard Heggie Associates (2005)
NOISE MONITORING PROGRAMME
FIGURE 2
Noise Monitoring Sites - Local Scale
Peabody
ResourceStrategies


LEGEND
Mining Lease Boundary
Enhancement and Conservation Area (ECA)
Dwelling
Noise Monitoring Site
Real Time Noise Monitoring Site
Meteorological Station
Kilometres
ResourceStrategies
Source: Richard Heggie Associates (2005)
NOISE MONITORING PROGRAMME
FIGURE 3
Noise Monitoring Sites -
Regional Scale/Topography
Peabody
ULAN COAL MINES
MOOLAREEN
WILPINJONG
WOLLAR
ECA-A
ECA-B
ECA-C
N

Methodology

Attended noise monitoring will be carried out by an independent expert (i.e. not by mine staff) and will be conducted every 2 months. Monitoring will be conducted in accordance with Australian Standard (AS) 1055:1997 Acoustics – Description and Measurement of Environmental Noise and the INP (EPA, 2000). These operator-attended noise measurements will be conducted during normal operations to quantify the intrusive noise emissions from the Mine as well as the overall level of ambient noise.

Following the completion of the attended noise monitoring by the independent expert, the two monthly monitoring reports will be submitted to DECC and DoP and will be made publicly available on the Peabody website (Section 8.2).

Timing

Attended noise monitoring will be conducted for 15 minute periods evening and night. Evening is defined as being between 6pm and 10pm and night is between 10pm and 7am.

The monitoring will be carried out on two consecutive nights resulting in 2 x 15 minute samples for each location every two months. By sampling two consecutive nights, it is likely that different meteorological conditions are sampled for each site, providing more useful information.

Particular attention will be given to monitoring between 7pm and 2am (i.e. evening/night-time periods).

Experience has shown that it is during these periods that noise can be at its most intrusive and results in more complaints. This is due to the very low background noise levels experienced during these periods and the presence of temperature inversions that are a relatively common phenomenon in this area, particularly during colder months.

Measurement

Acoustic instrumentation used in attended monitoring will comply with AS 1259.2:1990 Sound Level Meters.

The intrusive noise level (LAmax, LA1, LA10 and LAeq) contribution from mine operation activities will be quantified over a 15 minute measurement period. In addition, the overall levels of ambient noise (i.e. LAmax, LA1, LA10, LA50, LA90, LAmin and LAeq) over the 15 minute period will be quantified and characterised.

A measurement of LA1 (1 minute) corresponds to the highest noise level generated for 0.6 second during one minute. In practical terms this is the highest noise level emitted from the Mine during the entire measurement period (i.e. the highest level of the maximum minute during the 15 minute measurement).

The LA1 measurement should be undertaken at 1 m from the dwelling façade and the LAeq measurement within 30 m of the dwelling. However, the direct measurement of noise at 1 m from the

façade is not always practical. In most cases monitoring near the residence is impractical due to barking dogs or issues with obtaining access. In these cases measurements are undertaken at a suitable and representative location as close to the dwelling as practicable. Modifying factors from section 4 of the INP are used where applicable. Tonality and low frequency are assessed by analysis of the measured LAeq spectrum.