

DENDROBIUM COAL  
QUARTERLY NOISE MONITORING - WINTER 2011

ACOUSTICS AND AIR

REPORT NO. 05134-AP-R6  
VERSION A

WILKINSON  MURRAY

DENDROBIUM COAL  
QUARTERLY NOISE MONITORING - WINTER 2011

**REPORT NO. 05134-AP-R6  
VERSION A**

**JULY 2011**

**PREPARED FOR**

DENDROBIUM COAL PTY LIMITED  
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## **1 INTRODUCTION**

Wilkinson Murray Pty Limited conducted routine quarterly noise monitoring at receiver locations surrounding the Dendrobium Coal Mine in July 2011. This included monitoring of operational noise from the Pit Top and the Kemira Valley Coal Loading Facility (KVCLF).

The monitoring is conducted to satisfy the requirements of various Conditions of Consent from the Department of Planning (DOP). The monitoring is also conducted to satisfy the intent of the Noise Management Plan (NMP),

Attended noise monitoring was conducted at five locations around the Pit Top and KVCLF during the July survey period. In response to the Department of Planning audit report (March 2006), this monitoring has focused on late evening and early morning periods which are likely to be the most sensitive times identified by the audit report.

A revised Noise Management Plan was prepared in 2009 and was approved by the Department of Planning in December 2009. The number of noise monitoring locations was reduced as recommended in the review of noise monitoring locations undertaken by Wilkinson Murray, the results of which were incorporated into this version of the Noise Management Plan.

Section 2 of the report contains a summary of the salient results and non compliances.

This report (in Appendix B) provides the detailed results at each receiver from the monitoring and provides conclusions about the degree of compliance with the consent conditions.

## 2 ATTENDED OPERATIONAL NOISE MONITORING

### 2.1 Noise Criteria

Noise criteria for Dendrobium Coal mine and KVCLF for daytime, evening, and night time periods are set out in the Dendrobium Consent Conditions. Table 2-1 presents the required criterion for each monitoring location, which only apply under certain meteorological conditions. Noise acquisition criteria are 5dBA higher.

**Table 2-1 Summary of Receiver Locations & Intrusive Noise Criteria**

Location (Consent Conditions)	Noise Criteria $L_{Aeq,15min}$ (dBA)		
	Daytime (7.00am-6.00pm)	Evening (6.00-10.00pm)	Night Time (10.00pm-7.00am)
R1	40	40	39
R5a	40	40	37
R6a	40	40	37
R15a	40	40	39
R39a	37	35	35

Table 2-2 presents the required criterion for each monitoring location to protect against sleep disturbance. These sleep disturbance criteria for the Dendrobium site apply between 10.00pm-7.00am. Considering that  $L_{A1,1min}$  and  $L_{Amax}$  descriptors are similar, the  $L_{Amax}$  noise levels have been used for the purpose of this assessment (refer to Appendix A).

**Table 2-2 Sleep Disturbance Noise Criteria for Dendrobium Operations**

Location (Consent Conditions)	Noise Limits for Dendrobium Operations, $L_{A1,1min}$ (dBA)
R1	49
R5a	47
R6a	47
R15a	49
R39a	45

### 2.2 Noise Measurement Survey

Figure 2-1 shows the measurement locations and Table 2-2 is a summary of the exact addresses of measurement locations where attended monitoring was conducted. The reference label from the NMP is adopted for each receiver location. The NMP has been updated and now adopts the EIS and Consent Condition labelling protocol.

**Figure 2-1 Aerial Showing Measurement Locations**



**Table 2-2 Address of Measurement Locations for Operational Noise**

<b>Location</b>	<b>Address</b>	<b>Owned By</b>	<b>Description</b>	<b>Priority Level*</b>
R1	17 High St	Dendrobium	South-western corner of driveway, next to parking shed	High
R15a	View St	Dendrobium	South of Bowling Club, next to street sign	Low
R6a	374 Cordeaux Rd	Private Residence	Next to dust monitor at the boundary of No. 374	High
R5a	8 Benjamin Rd	Private Residence	40m from the corner of Cordeaux Rd, at the front yard of No. 8	Low
R39a	Figtree Farm	Private Residence	On the western end of the house with direct line of sight to the KVCLF site	High

\***Priority Level:** Low priority locations require a minimum of two 15 minutes measurements whilst high priority locations a minimum of two 15 minutes measurements performed on consecutive days.

### 2.3 Attended Operational Noise Monitoring Procedure

Attended monitoring was conducted at all operational noise locations as shown in Table 2-2. Most sites were visited at least twice between the monitoring period from Wednesday, 6 to Friday, 8 July 2011.

Attended monitoring was conducted using a Bruel and Kjaer Type 2236 Sound Level Meter. This sound level meter conforms to Australian Standard 1259 *Acoustics - Sound Level Meters* as a Type 1 Precision Sound Level Meter which has accuracy suitable for field and laboratory use. The A-Weighting filter of the meter was selected and the time weighting was set to "Fast". The calibration of the meter was checked before and after the measurements and no significant drift was noted.

Wind speed was measured using a hand held anemometer at 1.5m above ground level and any rainfall was noted. Appendix D presents a summary of wind data for the entire monitoring period obtained from Kemira Valley weather station.

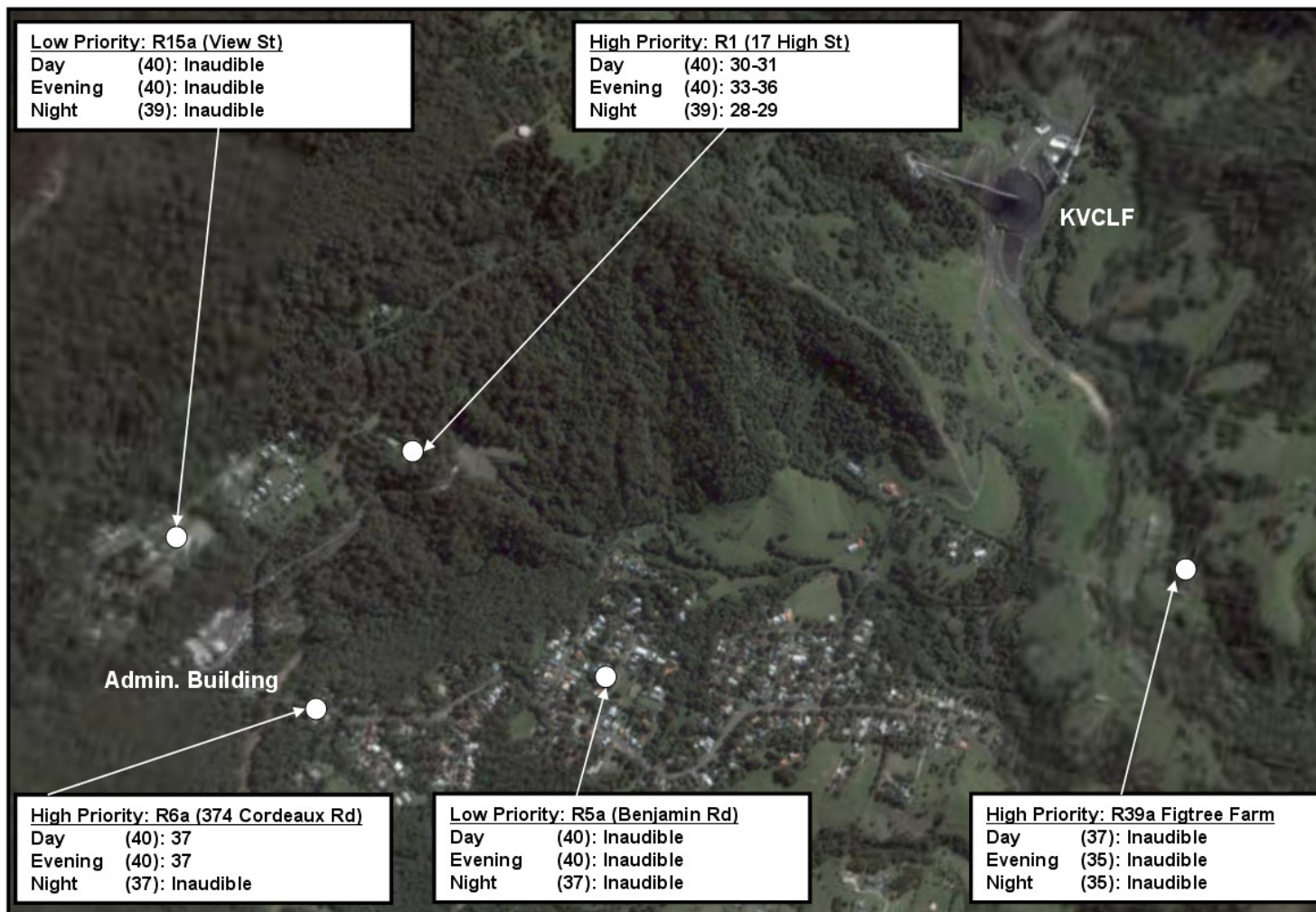
## 2.4 Attended Operational Noise Monitoring Results

Appendix B of this report shows the overall measured  $L_{Aeq}$  noise levels and the estimated  $L_{Aeq}$  level from the mine only, over the 15-minute monitoring periods at each location, as well as comments recorded during the measurements. The estimated level is calculated by noting the level and duration of mine activity and accumulating the noise from these individual events over the 15-minute period. This relies heavily on the judgement of the survey engineer. Figure 2-2 shows an aerial photo with measurement locations and summary of the range of estimated Dendrobium Mine  $L_{Aeq,15min}$  levels during this round of monitoring.

Appendix B also contains a summary of the measured  $L_{Amax}$  levels from Dendrobium operational noise and comments about the likely causes. Figure 2-3 shows an aerial photo with measurement locations and summary of the estimated Dendrobium Mine  $L_{Amax}$  levels during this round of monitoring.

During all surveys a range of different times is selected at random to monitor at each of the properties.

**Figure 2-2 Measurement Locations & Summary of Estimated Noise Levels Contribution from Dendrobium Mine ( $L_{Aeq,15min}$ )**



Note: Site specific relevant time period operational noise criteria are enclosed in brackets.

**Figure 2-3 Measurement Locations & Summary of Estimated Noise Levels Contribution from Dendrobium Mine ( $L_{Amax}$ )**



Note: Site specific sleep disturbance criteria are enclosed in brackets.

## 2.5 Comparison of Estimated Dendrobium Noise Levels to Criteria

A review of the detailed data shown in the tables for the various receivers in Appendix B indicates noise levels achieve compliance with the criteria at all locations during this round of survey. Gale force wind was recorded during this round of survey.

## 3 CONCLUSION

Quarterly noise monitoring was conducted at residences surrounding Dendrobium Coal Mine surface facilities during July 2011. This included attended monitoring of operational noise from the Pit Top and the KVCLF.

In summary, it is considered that the overall operations at the Pit Top and KVCLF are being relatively well managed although there are some intermittent activities particularly during night time period which can cause exceedances.

### Note

All materials specified by Wilkinson Murray Pty Limited have been selected solely on the basis of acoustic performance. Any other properties of these materials, such as fire rating, chemical properties etc. should be checked with the suppliers or other specialised bodies for fitness for a given purpose.

### Quality Assurance

We are committed to and have implemented AS/NZS ISO 9001:2008 "Quality Management Systems – Requirements". This management system has been externally certified and Licence No. QEC 13457 has been issued.

### AAAC

This firm is a member firm of the Association of Australian Acoustical Consultants and the work here reported has been carried out in accordance with the terms of that membership.

Version	Status	Date	Prepared by	Checked by
A	Final	21 July 2011	Jimi Ang	-

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# APPENDIX A

## NOISE DESCRIPTORS

## NOISE DESCRIPTORS

Most environments are affected by environmental noise which continuously varies, largely as a result of road traffic. To describe the overall noise environment, a number of noise descriptors have been developed and these involve statistical and other analysis of the varying noise over sampling periods, typically taken as 15 minutes. These descriptors, which are demonstrated in the graph overleaf, are here defined.

**Maximum Noise Level ( $L_{Amax}$ )** – The maximum noise level over a sample period is the maximum level, measured on fast response, during the sample period.

**$L_{A1}$**  – The  $L_{A1}$  level is the noise level which is exceeded for 1% of the sample period. During the sample period, the noise level is below the  $L_{A1}$  level for 99% of the time.

**$L_{A10}$**  – The  $L_{A10}$  level is the noise level which is exceeded for 10% of the sample period. During the sample period, the noise level is below the  $L_{A10}$  level for 90% of the time. The  $L_{A10}$  is a common noise descriptor for environmental noise and road traffic noise.

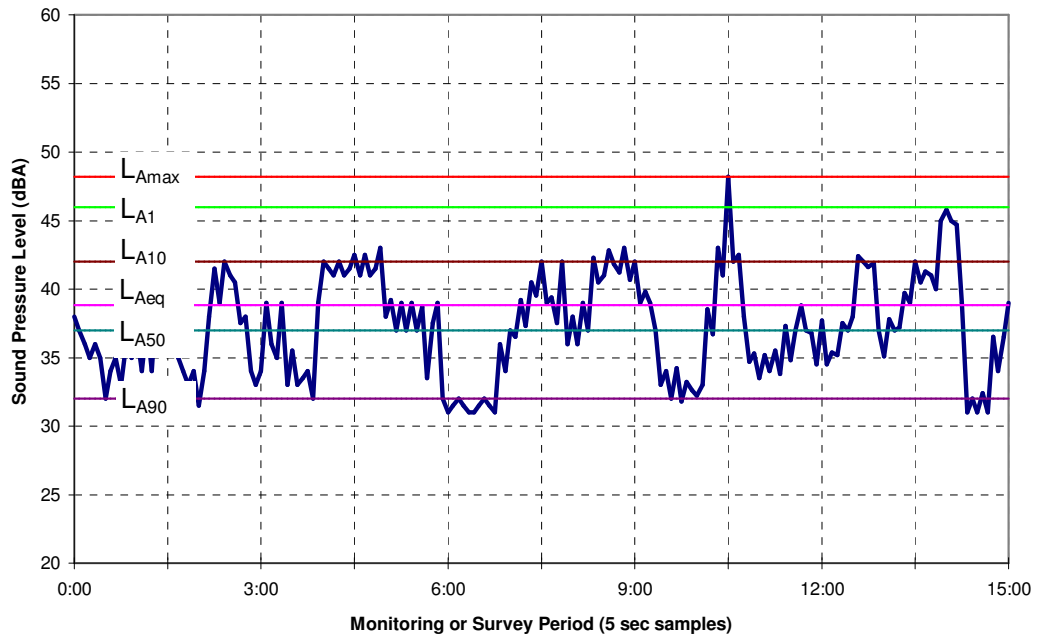
**$L_{Aeq}$**  – The equivalent continuous sound level ( $L_{Aeq}$ ) is the energy average of the varying noise over the sample period and is equivalent to the level of a constant noise which contains the same energy as the varying noise environment. This measure is also a common measure of environmental noise and road traffic noise.

**$L_{A50}$**  – The  $L_{A50}$  level is the noise level which is exceeded for 50% of the sample period. During the sample period, the noise level is below the  $L_{A50}$  level for 50% of the time.

**$L_{A90}$**  – The  $L_{A90}$  level is the noise level which is exceeded for 90% of the sample period. During the sample period, the noise level is below the  $L_{A90}$  level for 10% of the time. This measure is commonly referred to as the background noise level.

**ABL** – The Assessment Background Level is the single figure background level representing each assessment period (daytime, evening and night time) for each day. It is determined by calculating the 10<sup>th</sup> percentile (lowest 10<sup>th</sup> percent) background level ( $L_{A90}$ ) for each period.

**RBL** – The Rating Background Level for each period is the median value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period – daytime, evening and night time.



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## APPENDIX B

### RESULTS OF ATTENDED OPERATIONAL NOISE MEASUREMENTS



**Table B1 EIS Monitoring Location R1: 17 High Street, Mine Managers Residence****MEASURED RESULTS JULY QUARTER 2011**

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>DAY</b>	2.00pm	40	60	52	<52 (Inaudible)
2	06/07/11	2.15pm	40	62	53	<53 (Inaudible)
3	07/07/11	11.00am	40	48	41	31
4		11.15am	40	46	40	30

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion at Day (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 58-64dBA. Pit top related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 58-63dBA. Pit top related noise inaudible during time of survey.
- 3) Yes – Mine vehicle audible at times, est. range of SPL 40-45dBA.
- 4) Yes – Mine vehicle audible at times, est. range of SPL 40-44dBA.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>EVENING</b>	7.00pm	40	58	50	<50 (Inaudible)
2	06/07/11	7.15pm	40	57	50	<50 (Inaudible)
3	07/07/11	7.00pm	40	48	42	36
4		7.15pm	40	46	42	33

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion Evening (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 55-63dBA. Pit top related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 56-63dBA. Pit top related noise inaudible during time of survey.
- 3) Yes – Mine vehicles audible for approx. 3min, est. range of SPL 36-50dBA. On site compressor noise constantly just audible, est. range of SPL 33-34dBA.
- 4) Yes – On site compressor noise constantly just audible, est. range of SPL 33-34dBA.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>NIGHT</b>	10.00pm	39	57	50	<50 (Inaudible)
2	06/07/11	10.15pm	39	57	50	<50 (Inaudible)
3	07/07/11	10.45pm	39	42	39	28
4		11.00pm	39	44	41	29

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion Night (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 55-63dBA. Pit top related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 55-63dBA. Pit top related noise inaudible during time of survey.

- 3) Yes – Vehicular movements audible for approx. 1.5mins, est. range of SPL 37-46dBA.  
 4) Yes – Vehicular movements audible for approx. 1.5mins, est. range of SPL 37-46dBA.

**Table B2 EIS Monitoring Location R15a: View Street**

**MEASURED RESULTS JULY QUARTER 2011**

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>DAY</b>	2.30pm	40	55	51	<51 (Inaudible)
2	06/07/11	2.45pm	40	55	48	<48 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 55-63dBA. Pit top related noise inaudible during time of survey.  
 2) Yes – Wind in tree noise dominates, est. range of SPL 55-63dBA. Pit top related noise inaudible during time of survey.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>EVENING</b>	7.30pm	40	57	51	<51 (Inaudible)
2	06/07/11	7.45pm	40	56	50	<50 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Pit top related noise inaudible during time of survey.  
 2) Yes – Wind in tree noise dominates, est. range of SPL 55-63dBA. Pit top related noise inaudible during time of survey.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>NIGHT</b>	10.30pm	39	56	49	<49 (Inaudible)
2	06/07/11	10.45pm	39	56	49	<49 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Pit top related noise inaudible during time of survey.  
 2) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Pit top related noise inaudible during time of survey.

**Table B3 EIS Monitoring Location R6a: 374 Cordeaux Road****MEASURED RESULTS JULY QUARTER 2011**

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>DAY</b>	1.30pm	40	63	58	<58 (Inaudible)
2	06/07/11	1.45pm	40	64	58	<58 (Inaudible)
3	07/07/11	2.00pm	40	48	42	37
4		2.15pm	40	48	43	37

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest.

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 58-66dBA. Pit top related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 58-66dBA. Pit top related noise inaudible during time of survey.
- 3) Yes – Compressor constantly just audible, est. range of SPL36-37dBA.
- 4) Yes – Compressor constantly just audible, est. range of SPL36-37dBA.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>EVENING</b>	6.00pm	40	48	44	37
2	06/07/11	6.15pm	40	49	45	37
3	07/07/11	6.00pm	40	48	44	37
4		6.15pm	40	47	43	37

Wind Direction & Wind Speed (m/s) : Minimal wind condition

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Compressor constantly just audible, est. range of SPL36-37dBA.
- 2) Yes – Compressor constantly just audible, est. range of SPL36-37dBA.
- 3) Yes – Compressor constantly just audible, est. range of SPL36-37dBA.
- 4) Yes – Compressor constantly just audible, est. range of SPL36-37dBA.

**Table B3 (con't) EIS Monitoring Location R6a: 374 Cordeaux Road**

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>NIGHT</b>	11.00pm	37	65	53	<53 (Inaudible)
2	06/07/11	11.15pm	37	66	53	<53 (Inaudible)
3	07/07/11	10.00pm	37	55	48	<48 (Inaudible)
4		10.15pm	37	53	48	<48 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 57-68dBA. Pit top related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 59-68dBA. Pit top related noise inaudible during time of survey.
- 3) Yes – Wind in tree noise dominates, est. range of SPL 50-58dBA. Pit top related noise inaudible during time of survey.
- 4) Yes – Wind in tree noise dominates, est. range of SPL 50-58dBA. Pit top related noise inaudible during time of survey.

**Table B4 EIS Monitoring Location R5a: 8 Benjamin Road****MEASURED RESULTS JULY QUARTER 2011**

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>DAY</b>	4.00pm	40	56	46	<46 (Inaudible)
2	06/07/11	4.15pm	40	56	46	<46 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 50-56dBA. Mine related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 50-56dBA. Mine related noise inaudible during time of survey.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>EVENING</b>	8.30pm	40	54	48	<48 (Inaudible)
2	06/07/11	8.45pm	40	57	49	<49 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

**Meet Criterion (Yes/No) & Comments**

- 1) Yes – Wind in tree noise dominates, est. range of SPL 50-56dBA. Mine related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 50-56dBA. Mine related noise inaudible during time of survey.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>NIGHT</b>	12.00am	37	58	51	<51 (Inaudible)
2	07/07/11	12.15am	37	57	51	<51 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

#### Meet Criterion (Yes/No) & Comments

- 1) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Mine related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Mine related noise inaudible during time of survey.

**Table B5 EIS Monitoring Location R39a: Figtree Farm**

#### MEASURED RESULTS JULY QUARTER 2011

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>DAY</b>	5.00pm	40	56	45	<45 (Inaudible)
2	06/07/11	5.15pm	40	56	46	<46 (Inaudible)
3	07/07/11	9.30am	40	54	44	<44 (Inaudible)
4		9.45am	40	56	45	<45 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

#### Meet Criterion (Yes/No) & Comments

- 1) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 3) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Conveyor related noise inaudible during time of survey.
- 4) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Conveyor related noise inaudible during time of survey.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	<b>EVENING</b>	9.30pm	40	54	46	<46 (Inaudible)
2	06/07/11	9.45pm	40	55	46	<46 (Inaudible)
3	07/007/11	8.00pm	40	53	44	<44 (Inaudible)
4		8.15pm	40	53	46	<46 (Inaudible)

Wind Direction & Wind Speed (m/s) : Gale force wind from Southwest

#### Meet Criterion (Yes/No) & Comments

- 1) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 2) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 3) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Conveyor related noise inaudible during time of survey.

- 4) Yes – Wind in tree noise dominates, est. range of SPL 53-61dBA. Conveyor related noise inaudible during time of survey.

Meas. No.	Date	Start Time	Criterion	Overall Measured Level		Estimated Mine
				L <sub>Aeq,15min</sub>	L <sub>A90</sub>	L <sub>Aeq,15min</sub>
1	NIGHT	1.00am	37	56	50	<50 (Inaudible)
2	07/07/11	1.15am	37	57	51	<51 (Inaudible)
3	07/07/11	11.30pm	37	56	45	<45 (Inaudible)
4		11.45pm	37	56	45	<45 (Inaudible)

Wind Direction & Wind Speed (m/s) : Minimal wind condition

#### Meet Criterion (Yes/No) & Comments

- 5) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 6) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 7) Yes – Wind in tree noise dominates, est. range of SPL 53-58dBA. Conveyor related noise inaudible during time of survey.
- 8) Yes – Wind in tree noise dominates, est. range of SPL 53-60dBA. Conveyor related noise inaudible during time of survey.

**Table B6 Summary of L<sub>Amax</sub> Measured**

Location (EIS)	Criterion, L <sub>A1,1min</sub> (dBA)	Data & Time of Occurrence	Measured L <sub>Amax</sub> (dBA)	Cause	Meet Criterion (Yes/No)
R1 17 High St	49	07/07/2011 10.45pm-11.15pm	46	Operational Noise (vehicular) from Pit Top utility area	Yes
R15a View St	49	06/07/2011 10.30pm-11.00pm	Inaudible	-	Yes
R6a 374 Cordeaux Rd	47	07/07/2011 10.00pm-10.30pm	Inaudible	-	Yes
R5a 8 Benjamin Rd	47	07/07/2011 12.00am-12.30am	Inaudible	-	Yes
R39a Figtree Farm	45	07/07/2011 11.30pm-12.00am	Inaudible	-	Yes

---

# APPENDIX C

## SUMMARY OF MEASURED LOCATIONS





<b>EIS &amp; Consent Locations as per EIS (noise) &amp; Consent Conditions</b>		<b>NMP Locations as per where Attended Monitoring at A1 to A10</b>		<b>October Quarter 5 Locations (WM)</b>	<b>January 2011 Quarter 5 Locations (WM)</b>	<b>April 2011 Quarter 5 Locations (WM)</b>	<b>July 2011 Quarter 5 Locations (WM)</b>				
R6	374 Cordeaux Rd	R6a	374 Cordeaux Rd – by the dust gauge	R6a	374 Cordeaux Rd – by the dust gauge	R6a	374 Cordeaux Rd – by the dust gauge	R6a	374 Cordeaux Rd – by the dust gauge		
		R6b	1 Araluen Ave	R6a	1 Araluen Ave	R6b	1 Araluen Ave	R6b	-	R6b	-
<b>Mt Kembla – Stones Road North of Rail Line</b>											
R2	4 Stones Rd	R2	Stones Rd – 40m from the corner of Cordeaux Rd	R2	20 Stones Rd	R2	20 Stones Rd	R2	-	R2	-
			Stones Rd – at the trig-point south of KVCLF								
<b>Nareena Hills</b>											
R39	Ashmount Farm O'Briens Rd Figtree	R39a	Figtree Farm – by gate Northwest of the house	R39a	Figtree Farm, O'Briens Rd – western end of house	R39a	Figtree Farm, O'Briens Rd – western end of house	R39a	Figtree Farm, O'Briens Rd – western end of house	R39a	Figtree Farm, O'Briens Rd – western end of house
<b>Kemira Valley Rail Line</b>											
R5	Cordeaux Rd between Benjamin Rd & Cudgee Cr		200 Cordeaux Rd – 40m south of house, 9m from rail line		Not conducted		Noise Assessment conducted on KVRL		Not conducted		Not conducted



# APPENDIX D

## SUMMARY OF WIND DATA FROM KEMIRA VALLEY WEATHER STATION



