



WILPINJONG COAL PTY LTD

Environment Protection Licence (EPL) 12425

[Link to Environment Protection Licence EPL12425](#)

**LICENCE MONITORING DATA
MONTHLY SUMMARY REPORT**

for

1 December 2017 to 31 December 2017

Air Monitoring

Air quality surrounding the Wilpinjong Coal Mine is monitored using:

- tapered element oscillating microbalances (TEOM);
- high volume air samplers (HV); and
- dust deposition gauges (DG).

In terms of the above equipment:

1. the TEOM and HVAS measure fine dust particles up to 10 microns in diameter (i.e. PM10); and
2. the DG measure the total dust deposited in the gauge during the sample period.

All are influenced by mining as well as non mining activities in the local area.

The locations of the above monitoring equipment in relation to Wilpinjong Coal Mine are shown in Figures 5 and 7.

A summary of the monitoring results for the month is provided in Table 1 and the yearly trends are also shown in Figures 1 to 3.

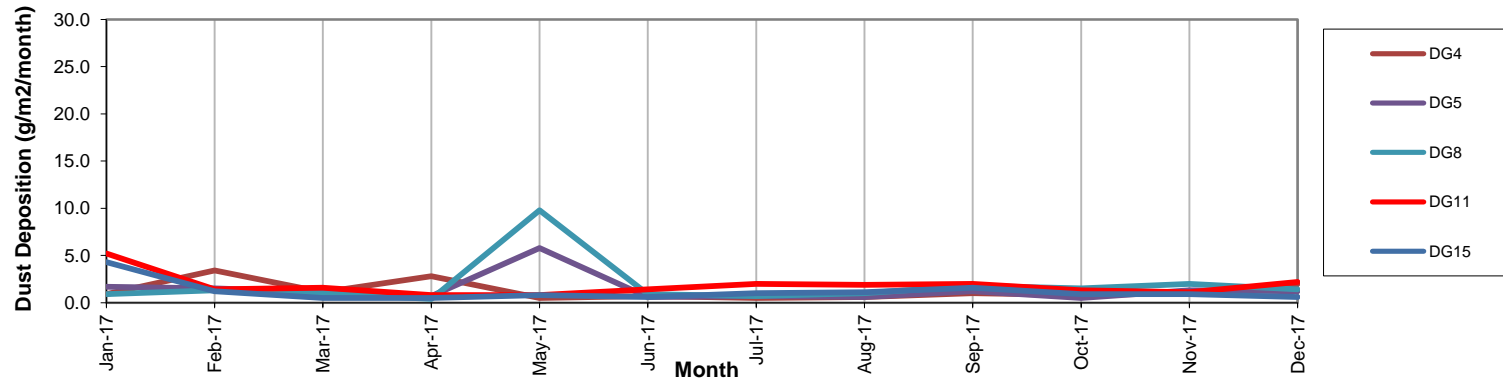
Table 1

EPL ID No.	Monitoring Point ID.	Pollutant	Unit of Measure	Monitoring Frequency required by EPL	No. of times measured during month	Min. Value	Max. Value	Mean Value	Measurement	Annual Average	Limit	Exceed ⁿ (yes/no)	Date Last Sampled	Date Reported
3	DG4	Particulates - TSM	grams per square metre per month	Monthly	1				2.0				28/12/17	09/01/18
4	DG5	Particulates - TSM	grams per square metre per month	Monthly	1				1.2	1.4	4.0	No	28/12/17	09/01/18
6	DG8	Particulates - TSM	grams per square metre per month	Monthly	1				1.4				28/12/17	09/01/18
9	DG11	Particulates - TSM	grams per square metre per month	Monthly	1				2.2				28/12/17	09/01/18
17	DG15	Particulates - TSM	grams per square metre per month	Monthly	1				0.6				28/12/17	09/01/18
13	HV1	PM10	micrograms per cubic metre	Every 6 days	5	7.3	22.6	14.6			50		26/12/17	09/01/18
19	HV4	PM10	micrograms per cubic metre	Every 6 days	5	7.3	30.7	19.5			50		26/12/17	09/01/18
20	HV5	PM10	micrograms per cubic metre	Every 6 days	5	7.0	26.0	16.8			50		26/12/17	09/01/18
22	TEOM3	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	96.8%	2.2	20.7	11.1			50			
23	TEOM4	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	3.8	31.4	12.5			50			

Notes:

- Limits specified in the above table are from Project Approval 05-0021.

Figure 1a. DG Results - 12 Month Trend



Notes:

1. Limit of 4 g/m²/month (annual average) applies to DG5 (Wollar Village) - refer Figure 1b.
2. DG5 and DG8 results in May contained 70% and 80% organic matter respectively.

Figure 1b. DG 5 Results - Annual Average

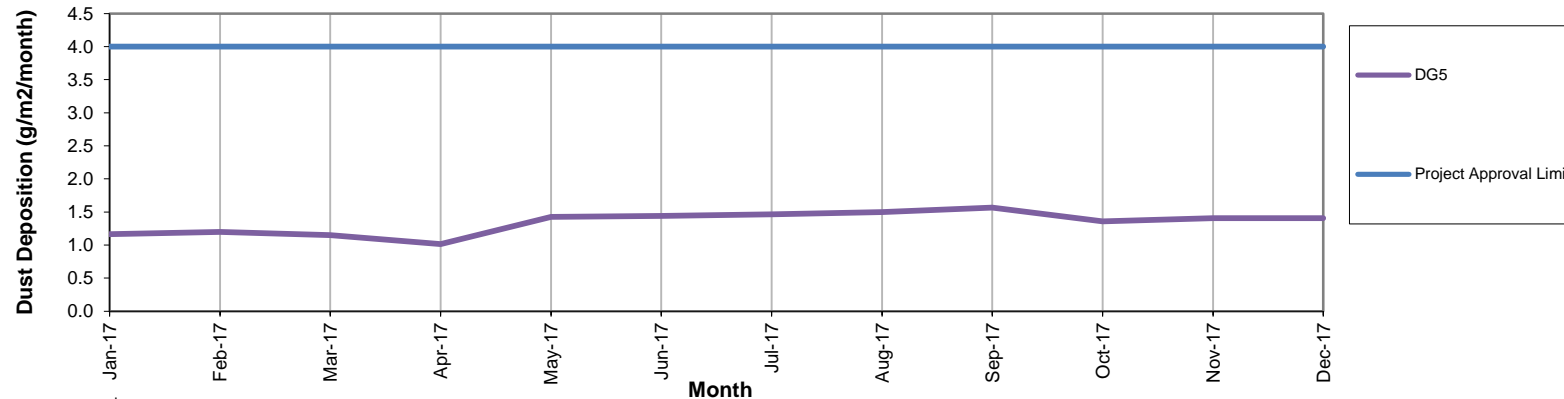
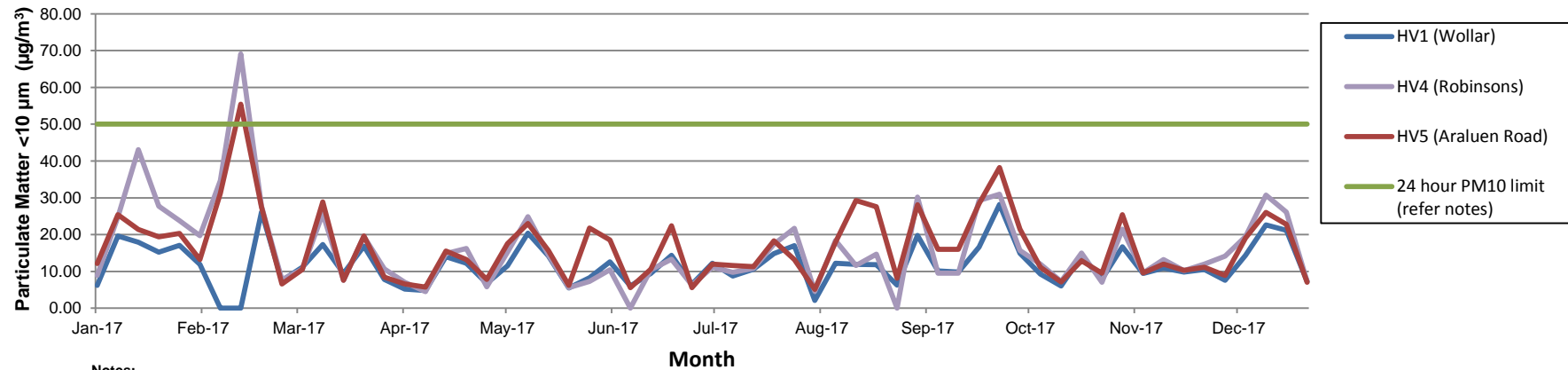


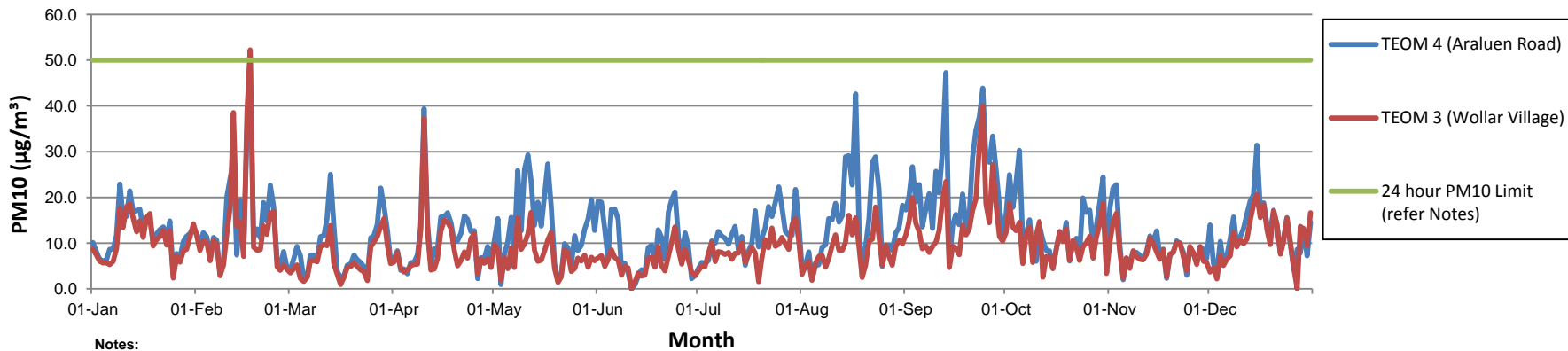
Figure 2. HV (PM10) Results - 12 Month Trend



Notes:

1. Limit doesn't apply for extraordinary events such as bushfires, prescribed burning, or dust storms.
2. High PM10 dust levels recorded on 17 Feb 2017 caused by Kains Flat bushfire.
3. A power outage and instrument fault prevented dust sample being collected from HV1 on 6 March 2016 and 11 & 17 Feb 2017.
4. A power outage prevented dust sample being collected from HV4 on 13 November 2016, 11 June 2017 and 28 August 2017.

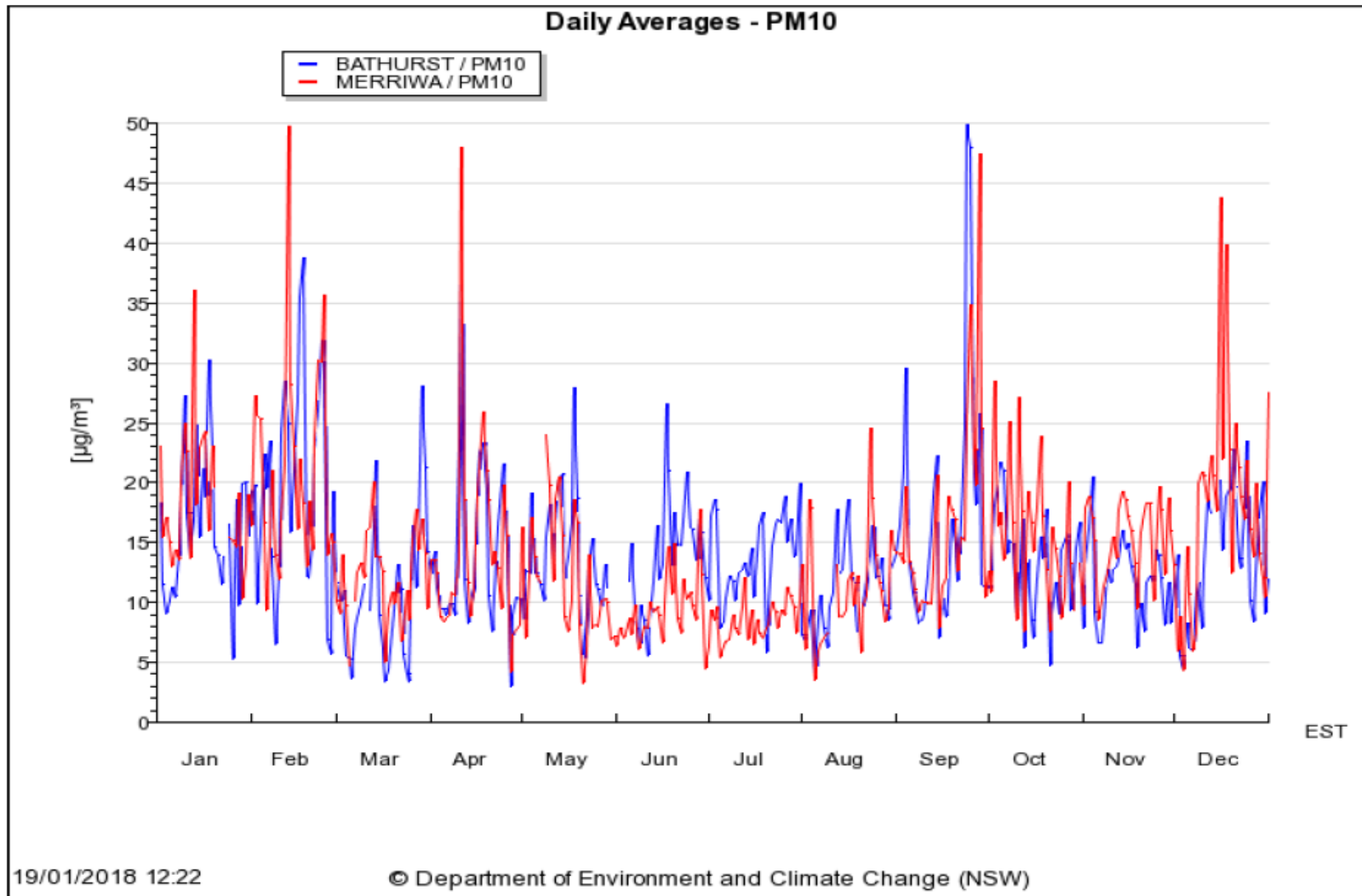
Figure 3. TEOM (PM10) Results - 12 Month Trend



Notes:

1. Limit doesn't apply for extraordinary events such as bushfires, prescribed burning or dust storms
2. Elevated PM10 dust levels recorded by both TEOMs 3 & 4 on 17 Feb 2017 caused by Kains Flat bushfire.
3. Elevated PM10 dust levels on 10 April 2017 due to regional dust event - refer PM10 dust levels recorded by EPA on page 6 of this report.
4. TEOM 3 (Wollar Village) taken offline for repairs June 31 to July 4.
5. TEOM 4 (Araluen Rd) influenced by dust from Araluen Road generally during stable atmospheric conditions (i.e. temperature inversions)
6. TEOM 3 (Wollar Village) replaced 27 December 2017.

Shown below and for comparison with Figures 2 and 3 is the 24Hr Av. PM₁₀ dust levels recorded at Bathurst and Merriwa by NSW EPA from 1 January 2017 to 31 December 2017.



Surface Water Monitoring

Surface water runoff is isolated and diverted around disturbed areas through the construction of water diversion bunds. Runoff from disturbed areas is diverted into on-site water retention dams.

A Reverse Osmosis (RO) Plant treats all water from the retention dams before it is discharged to Wilpinjong Creek. The EPL specifies limits for the quantity and quality of water that may be discharged from the site.

A summary of the water analysis results for the month is provided in Table 2.

Table 2

EPL ID No.	Monitoring Point ID.	Pollutant	Unit of Measure	Monitoring Frequency required by EPL	No. of times measured during month	Min. Value	Max. Value	Mean Value	Measurement	Limit	Exceed ⁿ (yes/no)	Date Last Sampled	Date Reported
24	RO Plant Discharge	Conductivity	microSiemens per centimetre (uS/cm)	Continuous during discharge	100%	56	459	342		500	No		
		Oil and Grease	milligrams per litre (mg/L)	Weekly during any discharge	11	<5	<5	<5		10.0	No	31/12/17	10/01/17
		pH	pH Unit	Continuous during discharge	100%	6.8	8.0	7.2		≥6.5≤8.5	No		
		Total Suspended Solids	milligrams per litre (mg/L)	Weekly during any discharge	11	<1	<1	<1		50	No	31/12/17	10/01/17
		Volume discharged	megalitres per day	Continuous during discharge	100%	2.995	9.044	7.189		15.0	No		

Notes:

Noise Monitoring

Environmental noise monitoring (“monitoring”) is carried out on a monthly basis.

The purpose of the monitoring is to assess whether mining operations are consistent with the objectives of the EPL and the development consent conditions.

In terms of this monitoring, it is undertaken:

- by an independent noise consultant;
- during the night-time; and
- at the sites shown in Figures 6 and 7.

On pages 9, 10 and 11 of this report are the noise levels and findings from the consultant’s environmental noise monitoring report (**noise monitoring report**).

Table 4.2: $L_{Aeq,15minute}$ GENERATED BY WCP AGAINST PROJECT APPROVAL IMPACT ASSESSMENT CRITERIA – DECEMBER 2017

Location	Start Date and Time	Wind Speed m/s ^{1,2}	Stability Class ^{1,2}	Criterion dB	Criterion Applies? ^{2,3}	WCP $L_{Aeq,15min}$ dB ^{4,5}	Exceedance ⁶
N6	8/12/2017 2:06	0.5	G	35	No	<30	NA
N13	8/12/2017 2:50	0.6	G	35	No	IA	NA
N14	8/12/2017 1:13	0.8	G	35	No	<25	NA
N15	7/12/2017 23:17	0.0	G	35	No	34	NA
N17	7/12/2017 22:31	0.6	G	35	No	<20	NA
N19	7/12/2017 22:02	0.0	G	35	No	IA	NA
N20	8/12/2017 0:31	0.5	G	35	No	IA	NA
N21	8/12/2017 1:46	0.7	G	35	No	28	NA

Notes:

1. Wind speed is sourced from WCP weather station, stability class is determined based on WCP inversion tower data;
2. Criterion may or may not apply due to rounding of meteorological data values;
3. Noise emission limits apply for all meteorological conditions, except for the following: wind speeds greater than 3 m/s above ground level; or stability category F temperature inversions and wind speeds greater than 2 m/s at 10m above ground level; or stability category G temperature inversion conditions;
4. These are results for WCP in the absence of all other noise sources;
5. Bold results in red are those greater than the relevant criterion (if applicable); and
6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 4.3: $L_{A1,1minute}$ GENERATED BY WCP AGAINST PROJECT APPROVAL IMPACT ASSESSMENT CRITERIA – DECEMBER 2017

Location	Start Date and Time	Wind Speed m/s ^{1,2}	Stability Class ^{1,2}	Criterion dB	Criterion Applies? ^{2,3}	WCP $L_{A1,1min}$ dB ^{4,5}	Exceedance ⁶
N6	8/12/2017 2:06	0.5	G	45	No	<30	NA
N13	8/12/2017 2:50	0.6	G	45	No	IA	NA
N14	8/12/2017 1:13	0.8	G	45	No	<25	NA
N15	7/12/2017 23:17	0.0	G	45	No	44	NA
N17	7/12/2017 22:31	0.6	G	45	No	<20	NA
N19	7/12/2017 22:02	0.0	G	45	No	IA	NA
N20	8/12/2017 0:31	0.5	G	45	No	IA	NA
N21	8/12/2017 1:46	0.7	G	45	No	36	NA

Notes:

1. Wind speed is sourced from WCP weather station, stability class is determined based on WCP inversion tower data;
2. Criterion may or may not apply due to rounding of meteorological data values;
3. Noise emission limits apply for all meteorological conditions, except for the following: wind speeds greater than 3 m/s above ground level; or stability category F temperature inversions and wind speeds greater than 2 m/s at 10m above ground level; or stability category G temperature inversion conditions;
4. These are results for WCP in the absence of all other noise sources;
5. Bold results in red are those greater than the relevant criterion (if applicable); and
6. NA in exceedance column means atmospheric conditions outside conditions specified in development consent and so criterion is not applicable.

Table 4.4: $L_{Aeq,15minute}$ GENERATED BY WCP AGAINST EPL ASSESSMENT CRITERIA – DECEMBER 2017

Location	Start Date and Time	Wind Speed m/s ^{1,2}	VTG °C per 100m ^{1,2}	Criterion dB	Criterion Applies? ^{2,3}	WCP $L_{Aeq,15min}$ dB ^{4,5}	Exceedance ⁶
N6	8/12/2017 2:06	0.5	11.6	35	No	<30	NA
N13	8/12/2017 2:50	0.6	6.6	35	No	IA	NA
N14	8/12/2017 1:13	0.8	7.2	35	No	<25	NA
N15	7/12/2017 23:17	0.0	6.6	35	No	34	NA
N17	7/12/2017 22:31	0.6	7.8	35	No	<20	NA
N19	7/12/2017 22:02	0.0	9.6	35	No	IA	NA
N20	8/12/2017 0:31	0.5	7.2	35	No	IA	NA
N21	8/12/2017 1:46	0.7	7.4	35	No	28	NA

Notes:

1. Wind speed is sourced from WCP weather station, Vertical Temperature Gradient (VTG) is calculated from WCP inversion tower data;
2. Criterion may or may not apply due to rounding of meteorological data values;
3. Noise emission limits apply for all meteorological conditions except for the following: wind speeds greater than 3 m/s at 10 metres above ground level; or temperature inversion conditions up to 3°C/100m and wind speeds greater than 2 m/s at 10 metres above ground level; or temperature inversion conditions greater than 3°C/100m;
4. These are results for WCP in the absence of all other noise sources;
5. Bold results in red are those greater than the relevant criterion (if applicable); and
6. NA in exceedance column means atmospheric conditions outside conditions specified in EPL and so criterion is not applicable.

Table 4.5: $L_{A1,1minute}$ GENERATED BY WCP AGAINST EPL IMPACT ASSESSMENT CRITERIA – DECEMBER 2017

Location	Start Date and Time	Wind Speed m/s ^{1,2}	VTG °C per 100m ^{1,2}	Criterion dB	Criterion Applies? ^{2,3}	WCP $L_{A1,1min}$ dB ^{4,5}	Exceedance ⁶
N6	8/12/2017 2:06	0.5	11.6	45	No	<30	NA
N13	8/12/2017 2:50	0.6	6.6	45	No	IA	NA
N14	8/12/2017 1:13	0.8	7.2	45	No	<25	NA
N15	7/12/2017 23:17	0.0	6.6	45	No	44	NA
N17	7/12/2017 22:31	0.6	7.8	45	No	<20	NA
N19	7/12/2017 22:02	0.0	9.6	45	No	IA	NA
N20	8/12/2017 0:31	0.5	7.2	45	No	IA	NA
N21	8/12/2017 1:46	0.7	7.4	45	No	36	NA

Notes:

1. Wind speed is sourced from WCP weather station, Vertical Temperature Gradient (VTG) is calculated from WCP inversion tower data;
2. Criterion may or may not apply due to rounding of meteorological data values;
3. Noise emission limits apply for all meteorological conditions except for the following: wind speeds greater than 3 m/s at 10 metres above ground level; or temperature inversion conditions up to 3°C/100m and wind speeds greater than 2 m/s at 10 metres above ground level; or temperature inversion conditions greater than 3°C/100m;
4. These are results for WCP in the absence of all other noise sources;
5. Bold results in red are those greater than the relevant criterion (if applicable); and
6. NA in exceedance column means atmospheric conditions outside conditions specified in EPL and so criterion is not applicable.

6 SUMMARY OF COMPLIANCE

Environmental noise monitoring described in this report was undertaken during the night period of 7/8 December 2017. Attended noise monitoring was conducted at eight sites. The duration of all measurements was 15 minutes.

6.1 Operational Noise Assessment

Wilpinjong Coal Project complied with noise limits at the monitoring locations during the December 2017 monitoring period.

6.2 Low Frequency Assessment

During the December 2017 survey, WCP complied with the relevant limits where meteorological conditions applied using the NPFI method of assessing low frequency. No further assessment of low frequency noise was required.

Wilpinjong Coal received the noise monitoring report from Global Acoustics Pty Ltd on 1 January 2018.

Blasting

Monitoring is carried out near sensitive locations during blasting activities to determine the vibration in the air (overpressure) and earth (ground vibration). A summary of the results of this monitoring, and the limits specified in the EPL, are shown in Tables 3 and 4. Figure 4 shows the actual overpressure and vibration levels recorded during the month.

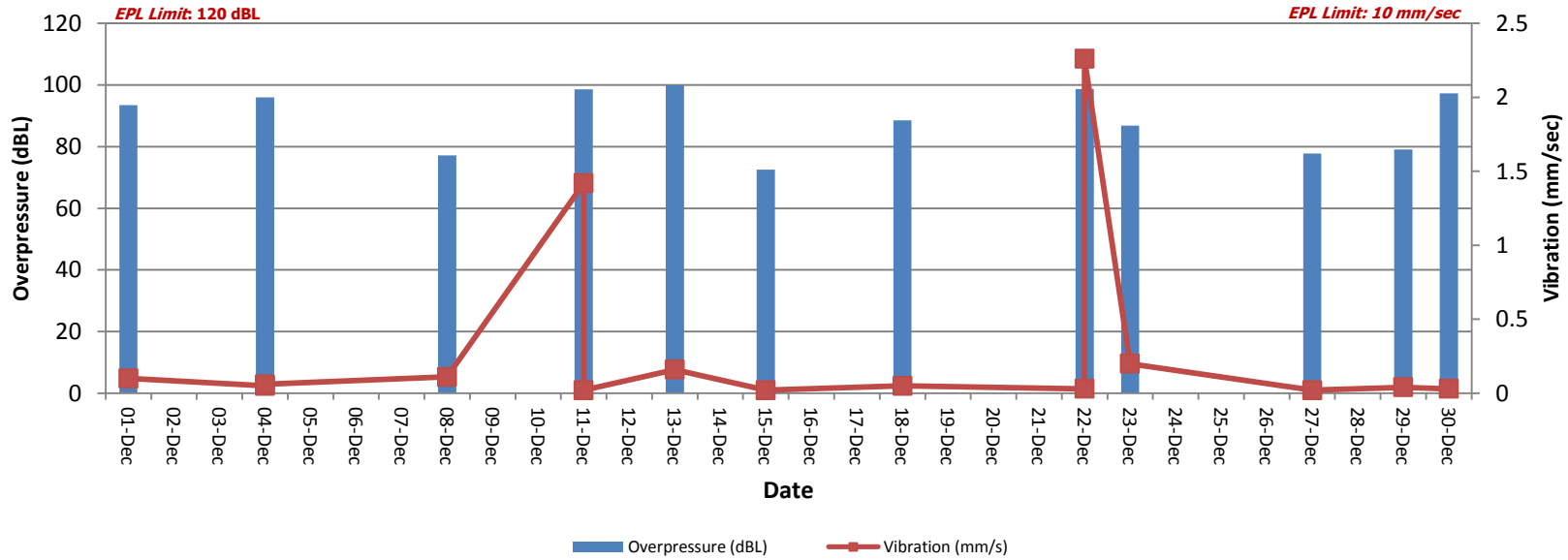
Table 3 – Overpressure Monitoring Results

Location	Month	Number of Blasts	Minimum overpressure (dB(L))	Maximum overpressure (dB(L))	Mean overpressure (dB(L))	EPL overpressure Limits (dB(L))	Exceedance (yes/no)
Approx. 50m west of the Wollar Public School	December	15	68.8	99.9	86.4	115dB (95% blasts) 120 dB (100% blasts)	no

Table 4 – Vibration Monitoring Results

Location	Month	Number of Blasts	Minimum vibration (mm/sec)	Maximum vibration (mm/sec)	Mean vibration (mm/sec)	EPL vibration Limits (mm/sec)	Exceedance (yes/no)
Approx. 50m west of the Wollar Public School	December	15	0.02	2.26	0.30	5 mm/s (95% blasts) 10 mm/s (100% blasts)	no

Figure 4. Overpressure (dBL) and Vibration (mm/sec) recorded during Month



Weather Monitoring

Continuous weather monitoring occurs onsite at the location shown on Figures 5 and 6 (**Meteorological Station**). The Meteorological Station continuously monitors for: rainfall; relative humidity; temperature (i.e. at 2m, 10m & 60m), barometric pressure, wind speed, wind direction and temperature lapse rate.

The temperature lapse rate is a measure of stable atmospheric conditions and is determined by measuring air temperature at two elevations 58m apart (i.e. 2m and 60m from ground level) and extrapolating the temperature difference over 58m to determine the lapse rate per °C/100m.

Table 5 shows the meteorological data recorded during the month.

Table 5

Date	Temperature (°C)									Humidity (%)			Prevailing Wind			Rain (mm)	Bar (hPa)	Lapse Rate (°C/100m)	
	2m			10m			60m			Speed			Dir (Deg)						
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max		Avg	Min	Max			
1/12/2017	25.8	16.9	32.7	25.8	18	31.7	25.5	19.9	30.5	50.2	29.7	83.5	1	0	4.7	329	0	1011.2	3.3
2/12/2017	21	16	26	21.1	16.3	26.4	21	16.5	26.6	69.6	46.7	92	1.5	0	4.5	301	40.2	1006.6	5.0
3/12/2017	17.9	14.1	22.3	17.7	14	21.8	17.3	13.8	21	60.9	39.9	83.5	3.3	0.8	6.1	260	0.2	1008.2	1.7
4/12/2017	17.8	11.7	25.8	17.8	11.9	25.1	17.9	12.5	24.4	64.1	29	87.6	0.6	0.1	4.3	77	12.8	1007.7	3.8
5/12/2017	18.8	15.3	25	18.7	15.4	24.3	18.6	15.8	23.3	68.9	39.5	88.9	1	0	4.4	70	0	1004.4	2.8
6/12/2017	17.6	12.1	23.7	17.6	12.6	23	17.8	12.9	22.4	69.1	38.9	95.1	2.1	0	6.6	264	0	1004.1	5.2
7/12/2017	21.3	10.7	30.4	21.5	11.4	30	22.9	13	31.1	51.4	17.3	96.5	1.8	0	5.7	269	0	1005.8	11.6
8/12/2017	21.8	13.7	29.3	21.9	14.6	28.6	23.1	17.5	29.1	48.5	26.4	75.7	0.8	0	5.4	231	0	1008.9	11.2
9/12/2017	21.3	17.9	26.4	21.1	17.9	26	21.4	18.2	26.3	54.9	35	71.2	2.4	0.6	4.1	85	0	1016.6	1.6
10/12/2017	21.5	13.2	28.2	21.5	13.7	27.9	21.9	14.3	28.2	51.2	27.8	82.1	2	0	4.2	76	0	1019.2	4.7
11/12/2017	24	14.1	32.3	24.2	14.7	32	24.8	16.1	32.5	47.4	23.7	83.7	0.9	0	3.4	90	0	1016.2	5.9
12/12/2017	25.1	17.8	33.3	25.3	18	32.9	26.1	18.2	34.3	45.3	16.9	71.2	0.8	0	4	88	0	1014.4	9.1
13/12/2017	26.1	15.7	34.9	26.4	16.9	34.6	28.1	18.8	36.1	43.5	17.7	78.3	1	0	4.1	264	0	1011.1	10.7
14/12/2017	27.4	16.1	36.8	27.8	17	36.3	29.4	19.2	37.7	39.1	16.6	68.8	1.6	0	4.7	273	0	1007.8	11.7
15/12/2017	27.7	18.3	34.9	27.9	19.5	34.4	29.6	22.1	36.2	41.1	20.3	64.1	1	0	4.9	133	0	1008.8	11.0
16/12/2017	28.1	20	36.3	28.3	20	36	29.3	21.6	36.9	47.9	19.6	81.2	0.8	0	6.6	155	4.8	1010.7	10.0
17/12/2017	27	19.6	34.7	27.2	20.3	34.5	28.1	22.8	34.7	51.8	29	82.9	1.7	0	7.5	86	29	1012.1	7.2
18/12/2017	26.6	18.9	35.8	26.6	19.3	35.5	27.8	20.7	36.6	61.6	27.7	91.4	0.4	0	4.2	110	0.2	1010	9.1
19/12/2017	29.3	20.9	37.3	29.5	21.7	36.6	31.1	22.8	37.9	49.7	23.4	85.7	1.1	0	5.4	316	0	1006.4	13.4
20/12/2017	29.5	21.6	37.1	29.8	22.7	36.8	32.2	24.1	38.5	41.9	21.8	76.5	2	0	7.3	251	0.2	1006.4	15.2
21/12/2017	22.3	20.8	24.1	22.2	20.7	23.7	22.8	21.2	24.2	65.7	51.6	82.8	3.8	1	6.2	79	0	1014.1	2.4
22/12/2017	22	18.8	27	21.9	18.7	26.6	22.5	19.2	27.2	70.8	50.4	93.9	2.6	0.9	4.2	78	6.8	1014	2.8
23/12/2017	25.6	17	34.5	25.9	17.5	34.2	27.4	18.7	37	52.6	17.9	93.5	0.8	0	3.9	230	0	1009.6	11.4
24/12/2017	28.3	16.5	37.6	28.7	17.5	37.2	31	20	40	38.7	12.8	75.6	1.4	0	7.2	273	0	1006	11.2
25/12/2017	21.5	18.1	26.5	21.4	18.1	27	22	18.4	29.4	64.2	44.4	70.5	4.6	1.4	7.5	75	0	1012	5.5
26/12/2017	19.4	17	21.7	19.2	17	21.2	19.3	17.4	21	69.3	60.1	78.6	4.8	2	7	86	0	1015.5	1.0
27/12/2017	23.4	19.3	28.9	23.2	19.2	28.5	23.1	19.3	28.2	57.5	37.2	73.5	4.3	2.8	5.4	80	0	1014.1	0.9
28/12/2017	26.2	16.7	34.1	26.2	17.5	33.5	26.2	18.5	32.8	48	22.5	82.3	1	0	3.7	86	0	1012.7	6.6
29/12/2017	28.2	19.1	35.5	28.6	19.8	34.6	29	21.8	34	40.7	20.1	69.2	1.3	0	5.9	292	0	1009.1	7.4
30/12/2017	26	21	31.3	26	21.1	31	25.8	21	30.7	58.8	34.4	92.3	2.9	0	6.4	246	8.4	1005.8	5.5
31/12/2017	23.4	16.3	31	23.5	16.7	30.7	23.9	18.7	30.3	60.5	34.1	79.6	1.8	0	4.1	68	0	1007.5	10.0

Figure 5 – Air (Dust) Monitoring Locations

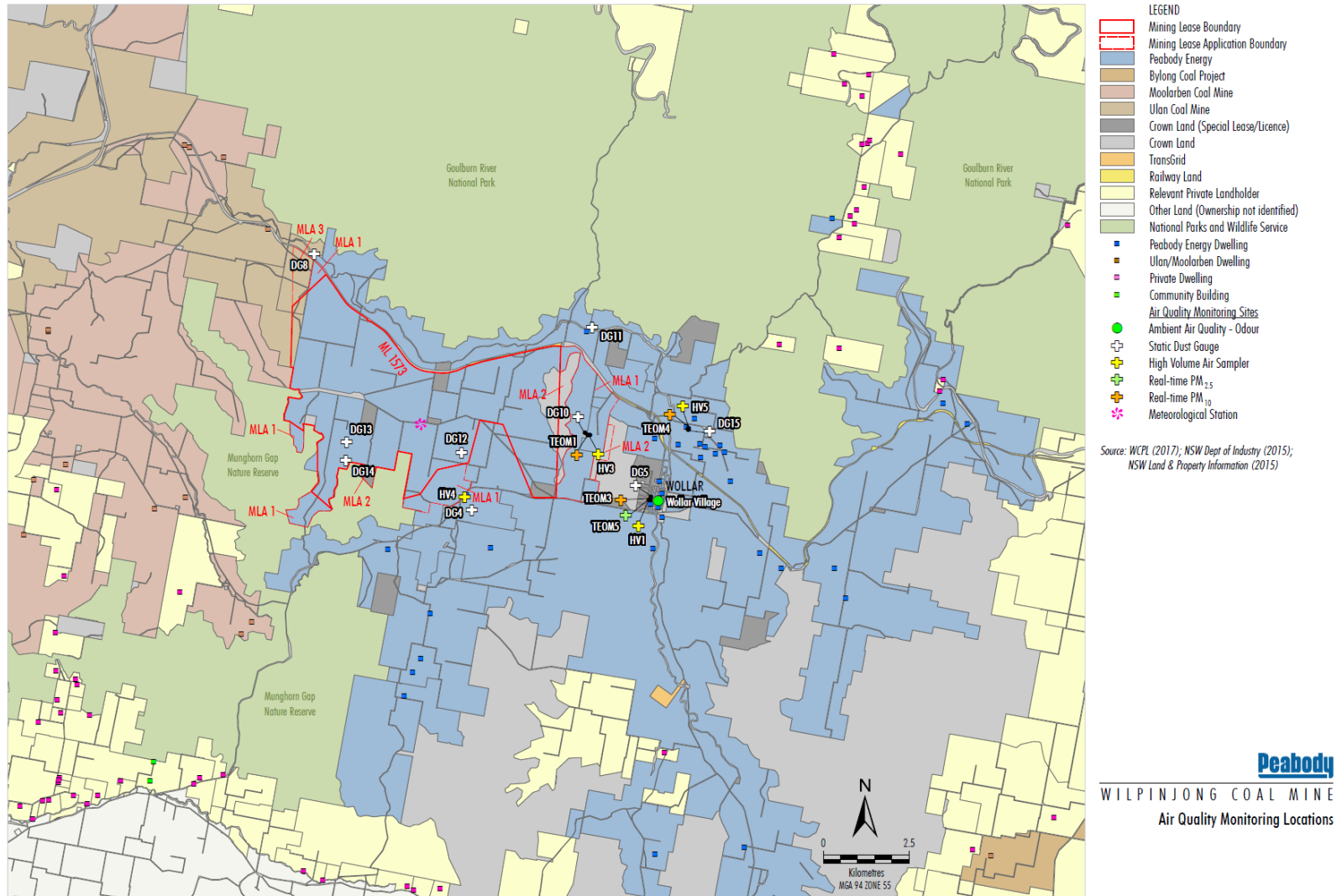


Figure 6 – Attended Noise Monitoring Locations

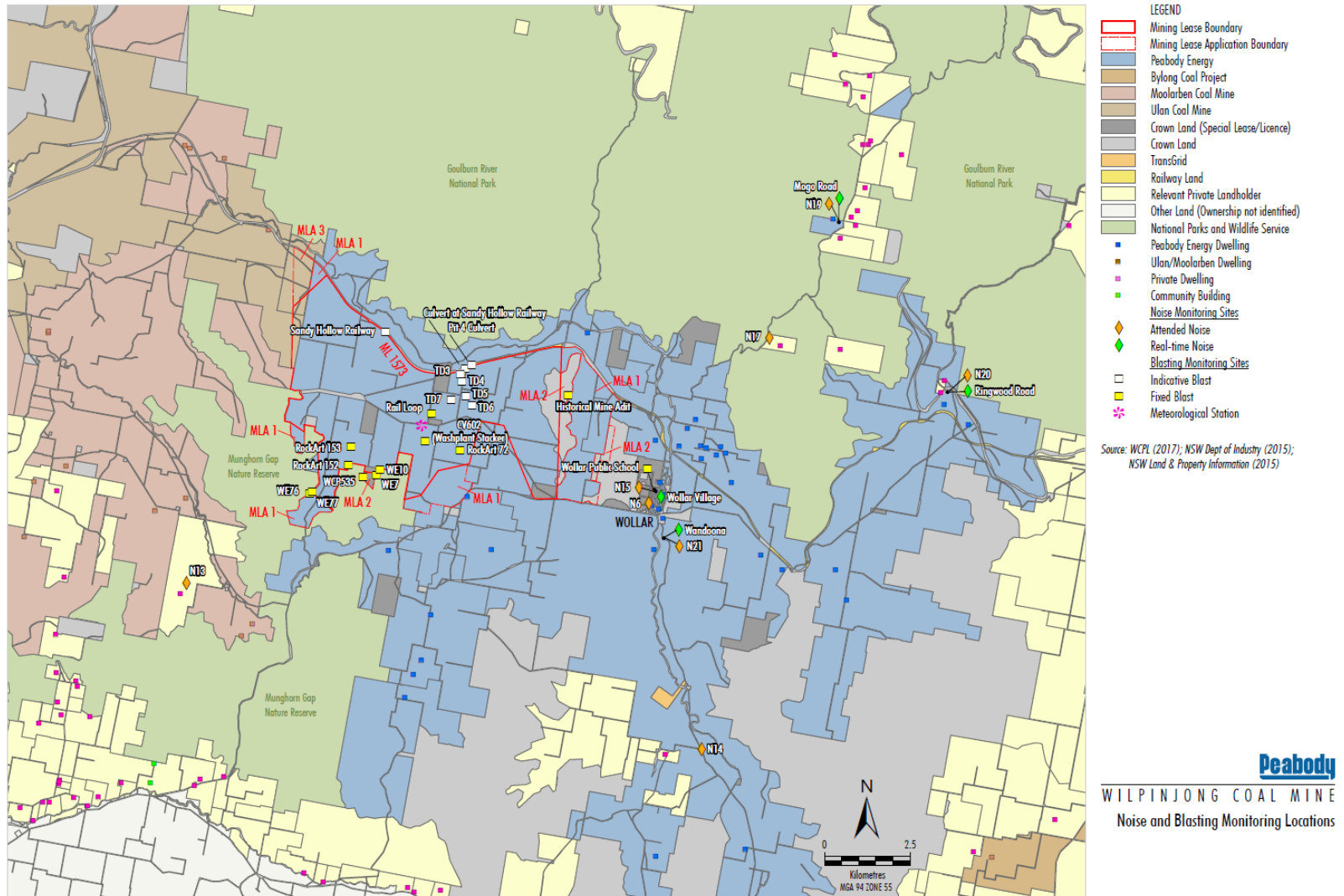


Figure 7 – Wollar Village Environmental Monitoring Sites



LEGEND

- Peabody Energy
- Crown Land (Special Lease/Licence)
- Crown Land
- Railway Land
- Relevant Private Landholder
- 1 Landholder Reference Number
- Peabody Energy Dwelling
- Community Building
- Private Dwelling
- # Special Lease/Licence Holder

Noise Monitoring Sites

- Attended Noise
- Real-time Noise

Blasting Monitoring Sites

- Fixed Blast

Air Quality Monitoring Sites

- Ambient Air Quality - Odour
- Static Dust Gauge
- High Volume Air Sampler
- Real-time PM_{2.5}
- Real-time PM₁₀

Source: WCPL (2017); NSW Dept of Industry (2015); NSW Land & Property Information (2016)

Peabody
 WILPINJONG COAL MINE
 Wollar Environmental Monitoring Sites