



WILPINJONG COAL PTY LTD

Environment Protection Licence (EPL) 12425

[Link to Environment Protection Licence EPL12425](#)

**LICENCE MONITORING DATA
MONTHLY SUMMARY REPORT**

for

1 December 2018 to 31 December 2018

Air Monitoring

Air quality surrounding the Wilpinjong Coal Mine is monitored using:

1. tapered element oscillating microbalances (TEOM);
2. high volume air samplers (HV); and
3. 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 location of the above monitoring equipment in relation to Wilpinjong Coal Mine is shown in Figures 6 and 8.

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.

For comparison with Figures 2 and 3, Figure 4 displays the Regional 24Hr PM10 Average. PM10 dust levels have been recorded in Bathurst and Merriwa by NSW EPA from 1 November 2017 to 31 October 2018.

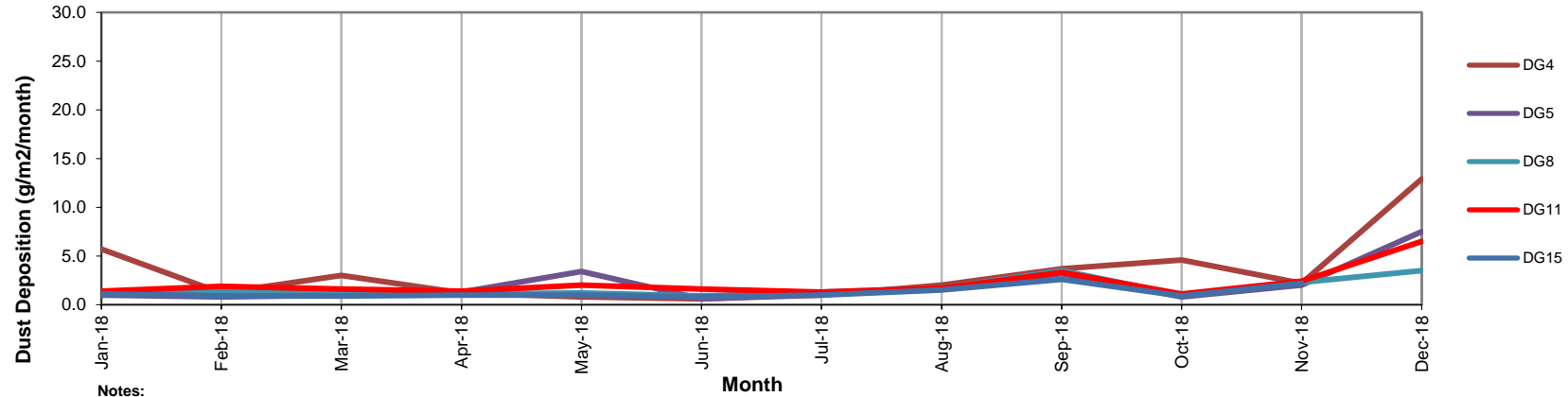
Table 1 - Air Monitoring

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* (yes/no)	Date Last Sampled	Date Reported
3	DG4	Particulates - TSM	grams per square metre per month	Monthly	1				12.9				28/12/18	08/01/19
4	DG5	Particulates - TSM	grams per square metre per month	Monthly	1				7.5	1.5	4.0	Yes	28/12/18	08/01/19
6	DG8	Particulates - TSM	grams per square metre per month	Monthly	1				3.5				28/12/18	08/01/19
9	DG11	Particulates - TSM	grams per square metre per month	Monthly	1				6.5				28/12/18	08/01/19
17	DG15	Particulates - TSM	grams per square metre per month	Monthly	1				2.2				28/12/18	08/01/19
13	HV1	PM10	micrograms per cubic metre	Every 6 days	5	22.8	168.0	52.2			50	Yes	27/12/18	09/01/19
19	HV4	PM10	micrograms per cubic metre	Every 6 days	3	14.7	208.0	81.9			50		27/12/18	09/01/19
20	HV5	PM10	micrograms per cubic metre	Every 6 days	5	23.6	167.0	54.0			50		27/12/18	09/01/19
22	TEQM3	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	71.4%	6.8	143.3	22.1			50	No		
23	TEQM4	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	71.4%	8.4	156.8	27.2			50			

Notes:

- Limits specified in the above table are from Development Consent SSD-6764.
- Elevated dust levels recorded by DG4,5,11 and HV1 are due to a regional dust event (refer to EPA dust graph on page 6 of this report).

Figure 1a. DG Results - 12 Month Trend



Notes:

1. A limit of 4 g/m2/month (annual average) applies to DG5 (Wollar Village) - refer Figure 1b.
2. DG4 result for Jan contained 75% organic matter (i.e. from bird droppings).
3. Excessive dust deposition results for DG4,5 and 11 are due to a regional dust event (refer to EPA dust graph on page 6 of this report).

Figure 1b. DG 5 Results - Annual Average

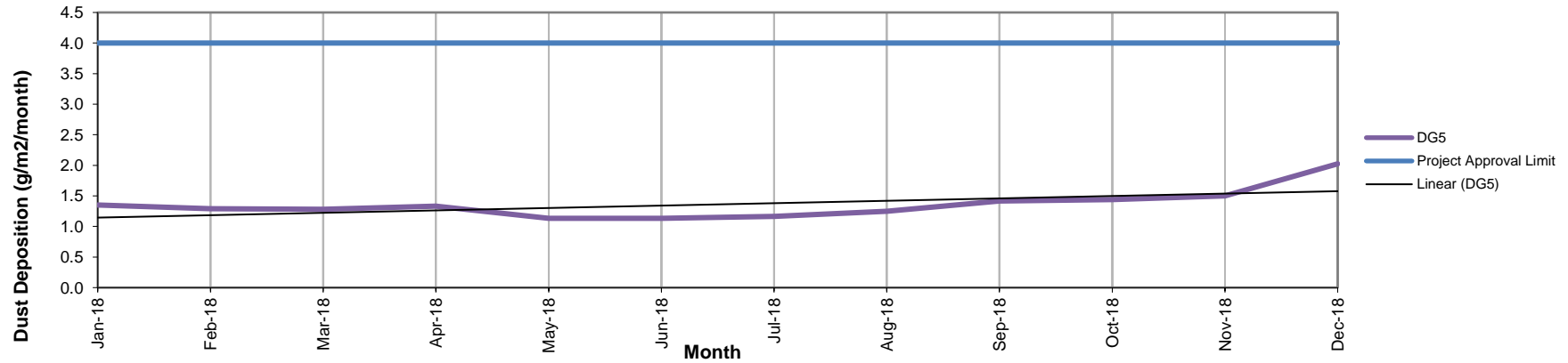
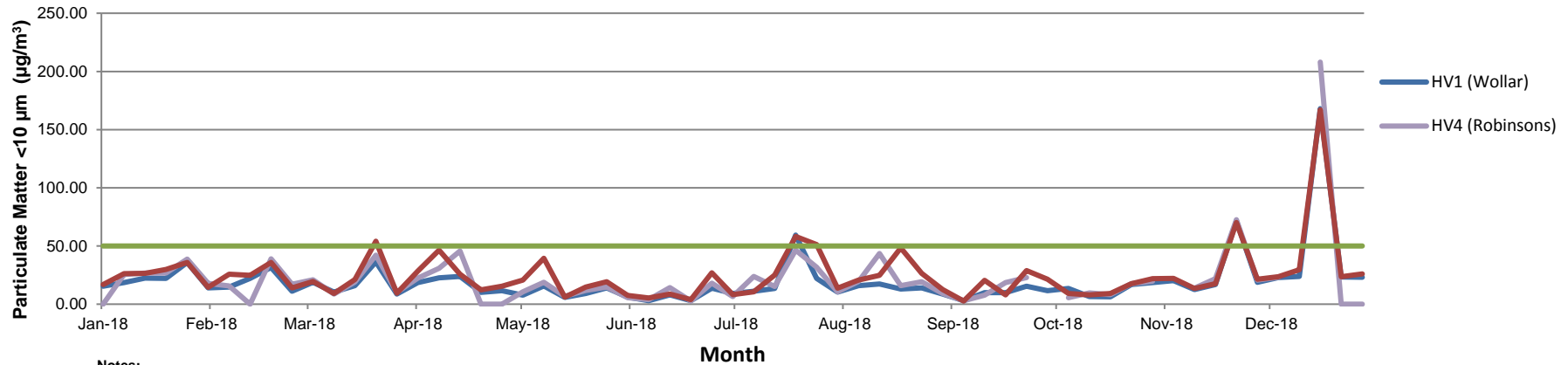


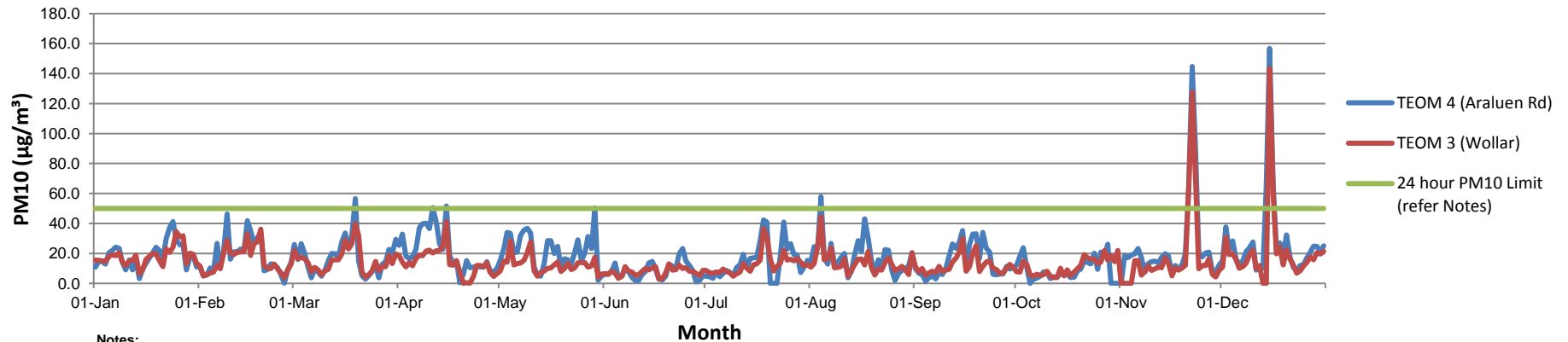
Figure 2. HV (PM10) Results - 12 Month Trend



Notes:

1. Limit doesn't apply for extraordinary events such as bushfires, prescribed burning, or dust storms.
2. A power outage prevented dust samples being collected from HV4 : 1 January 2018, 12 February 2018, 19 & 25 April 2018 (power outage resulted in HV fault on 25 April 2018), 28 September and 21 and 27 December.
3. Recorded PM10 dust levels above 50 $\mu\text{g}/\text{m}^3$ recorded in February, June, July, October, November and December were caused by regional dust events - refer EPA PM10 dust graph on page 6 of this report.

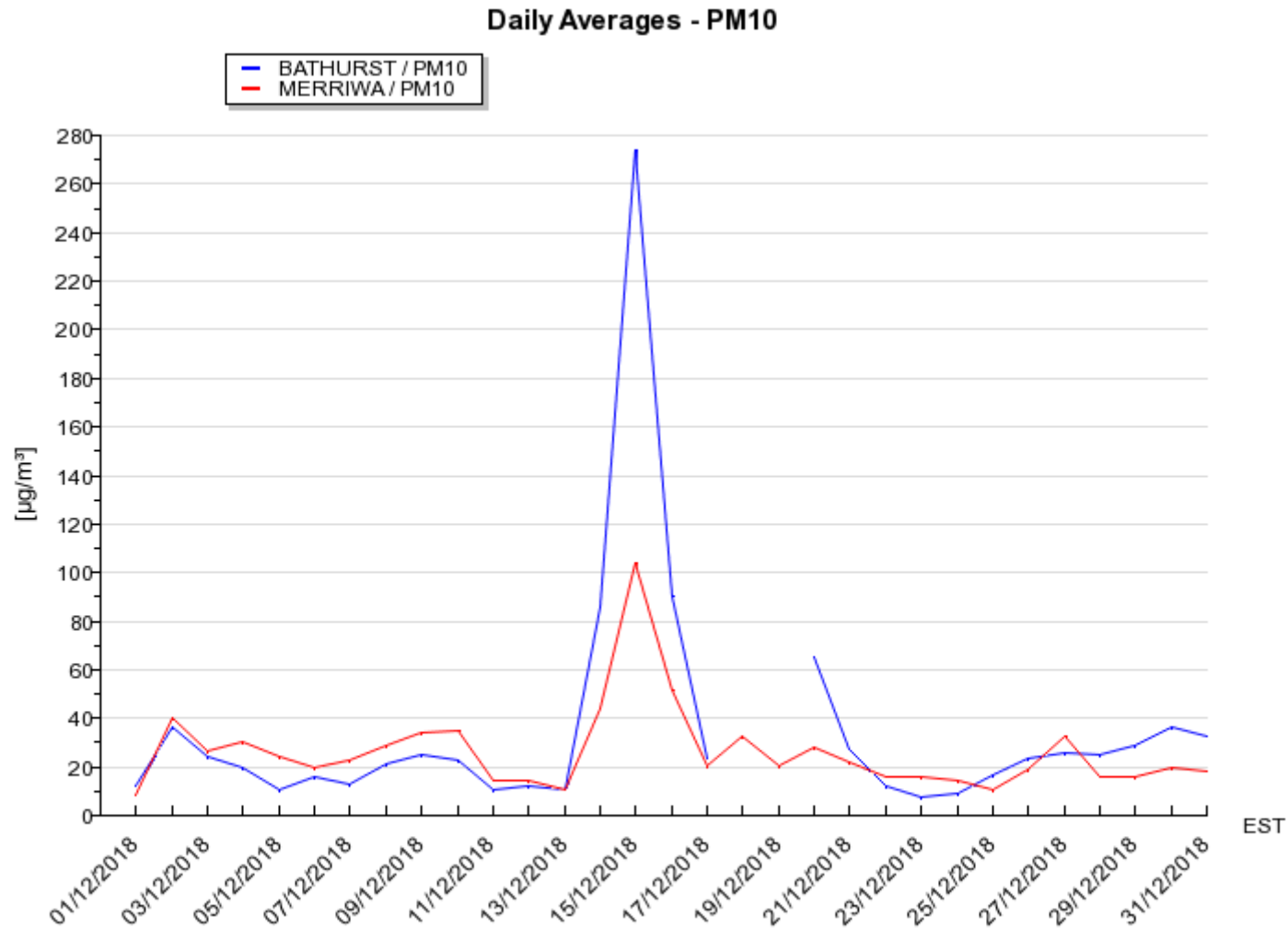
Figure 3. TEOM (PM10) Results - 12 Month Trend



Notes:

1. Limit doesn't apply for extraordinary events such as bushfires, prescribed burning or dust storms
2. TEOM 4 (Araluen Rd) influenced by dust from Araluen Road generally during stable atmospheric conditions (i.e. temperature inversions)
3. Elevated PM10 dust levels recorded in March, April, May, July, November and December 2018 due to regional dust events - refer EPA PM10 dust graph on page 6 of this report.
4. TEOM 4 offline from July 20 to July 23 due to instrument fault and repairs.
5. TEOM 3 offline from December 13 to 14 due to instrument failure and repair

Figure 4. Daily PM10 Average Regional Results



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 in provided in Table 2.

Table 2 – Water Monitoring

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	0	0	0	0		500	No		
		Oil and Grease	milligrams per litre (mg/L)	Weekly during any discharge	0	0	0	0		10.0	No	13-Nov-2018	
		pH	pH Unit	Continuous during discharge	0	0	0	0		≥6.5≤8.5	No		
		Total Suspended Solids	milligrams per litre (mg/L)	Weekly during any discharge	0	0	0	0		50	No	13-Nov-2018	
		Volume discharged	megalitres per day	Continuous during discharge	0	0	0	0		15.0	No		

Note: During December, the RO Plant did not operate and as such there was no water discharge to Wilpinjong Creek

Noise Monitoring

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

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:

1. by an independent noise consultant;
2. during the night-time; and
3. at the sites shown in Figure 9.

On pages 9 and 10 of this report are the noise levels and findings from the consultant’s report.

Table 4.2: $L_{Aeq,15minute}$ GENERATED BY WCP AGAINST PROJECT SPECIFIC CRITERIA – DECEMBER 2018

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 ^{5,6}
N6	04/12/2018 01:09	0.0	G	37	No	<20	NA
N13	04/12/2018 00:42	0.0	G	36	No	IA	NA
N14	04/12/2018 00:17	0.0	G	35	No	<20	NA
N15	03/12/2018 23:02	1.1	G	35	No	<20	NA
N17	03/12/2018 22:28	1.8	F	35	Yes	<20	Nil
N19	03/12/2018 22:01	2.2	E	35	Yes	<20	Nil
N20	03/12/2018 23:36	1.4	G	35	No	IA	NA
N21	04/12/2018 00:46	0.0	G	35	No	<20	NA

Notes:

1. Wind speed is sourced from the 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 have determined that criterion is not applicable.

Table 4.3: $L_{A1,1minute}$ GENERATED BY WCP AGAINST PROJECT SPECIFIC CRITERIA – DECEMBER 2018

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 ^{5,6}
N6	04/12/2018 01:09	0.0	G	45	No	<20	NA
N13	04/12/2018 00:42	0.0	G	45	No	IA	NA
N14	04/12/2018 00:17	0.0	G	45	No	<25	NA
N15	03/12/2018 23:02	1.1	G	45	No	<20	NA
N17	03/12/2018 22:28	1.8	F	45	Yes	<20	Nil
N19	03/12/2018 22:01	2.2	E	45	Yes	<20	Nil
N20	03/12/2018 23:36	1.4	G	45	No	IA	NA
N21	04/12/2018 00:46	0.0	G	45	No	<20	NA

Notes:

1. Wind speed is sourced from the 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 have determined that criterion is not applicable.

6 SUMMARY OF COMPLIANCE

Global Acoustics was engaged by Wilpinjong Coal Pty Ltd to conduct a noise survey around Wilpinjong Coal Project (WCP), an open cut coal mine located approximately 40 kilometres north east of Mudgee.

Environmental noise monitoring described in this report was undertaken during the night period of 3/4 December 2018. Attended noise monitoring was conducted at eight sites. The duration of all measurements was 15 minutes.

Noise levels from WCP complied with relevant noise limits at all monitoring locations during the December 2018 monitoring. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

Wilpinjong Coal received report from Global Acoustics Pty Ltd on 9th January 2019.

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 7 shows the actual overpressure and vibration levels recorded during the month.

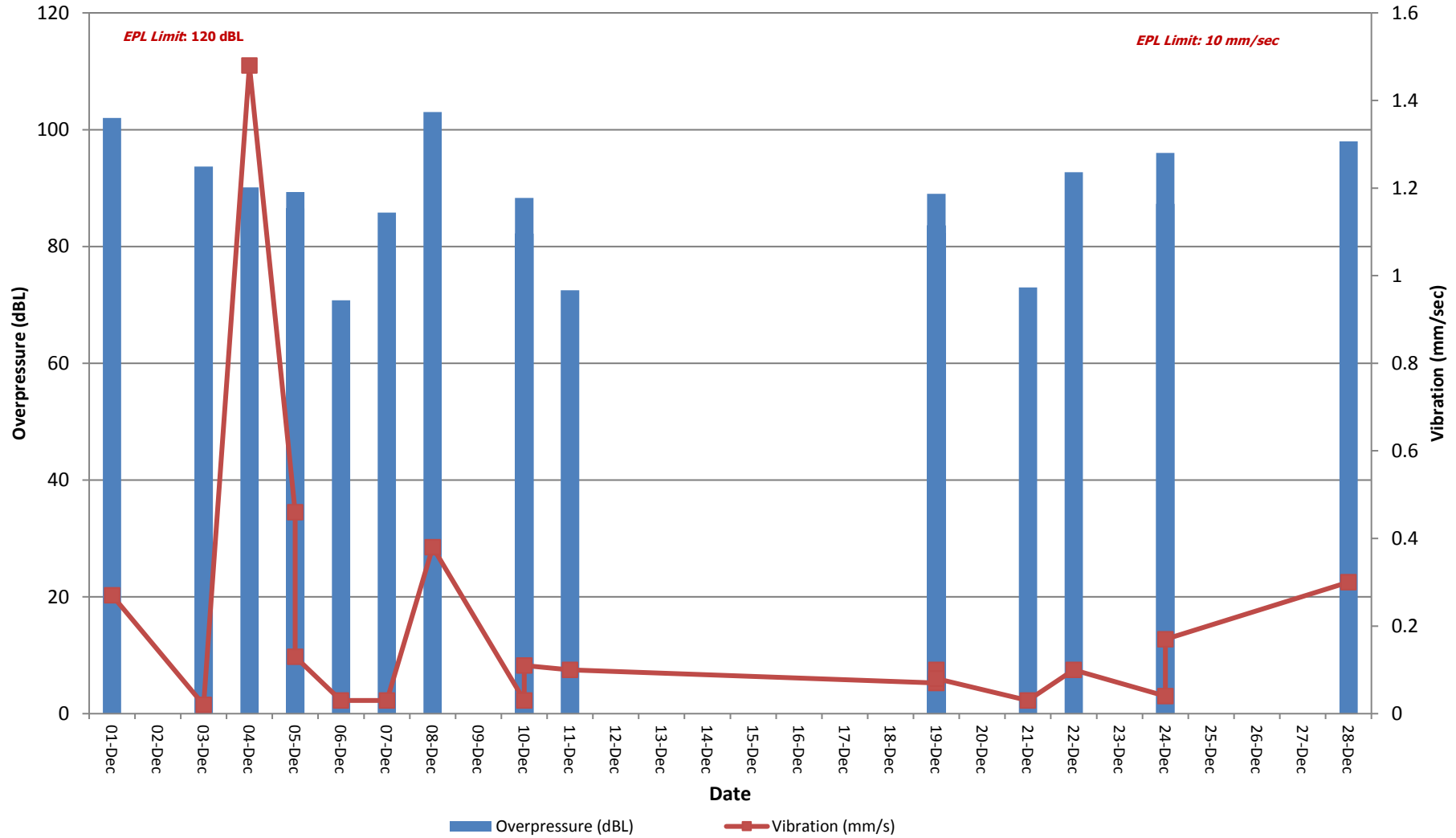
Table 3 – Overpressure Monitoring Results

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	21	70.8	103.0	87.7	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	21	0.02	1.48	0.207	5 mm/s (95% blasts) 10 mm/s (100% blasts)	no

Figure 7. 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 – Monthly Meteorological Data

Date	Temperature (°C)									Humidity (%)			Prevailing Wind			Rain (mm)	Bar (kPa)	Lapse Rate (°C/100m)	
	2m			10m			60m			Speed			Dir (Deg)						
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max							
1/12/2018	22	10.6	31.4	22.2	11.5	31	24	13.5	32.1	42.4	12.9	88.5	1.6	0	6.1	252	0	1008.6	12.2
2/12/2018	22.6	11.1	33.3	22.8	12.2	32.5	24.1	14.4	33.5	39.4	17	74.4	3.6	0	11.3	255	0	1003.1	8.6
3/12/2018	21	10.4	27.5	21	11.3	27	21.9	14.7	27.4	32.2	19.4	62.9	2.6	0	6.5	226	0	1009.2	9.5
4/12/2018	21.7	11.5	31	21.7	12.7	30.5	23	15.1	31.9	45.4	20.5	68	1.2	0	6.5	61	0	1012.6	7.6
5/12/2018	21.1	17.7	26.4	20.8	17.7	25.6	21	18.1	25.7	61.8	43.6	74	4.6	3.3	6.7	77	0	1018.5	1.0
6/12/2018	21.5	16.1	27.9	21.2	16.1	27.4	21.5	16.7	27.6	55.4	30.9	79.3	3.7	2.2	5.8	78	0	1020.1	1.6
7/12/2018	22.5	14.7	30.2	22.4	14.8	29.4	22.9	16.3	29.9	46.8	18.8	78.4	2.4	0.7	4.7	82	0	1019.3	4.7
8/12/2018	25.4	14.4	34.3	25.4	14.9	33.8	26.5	17.1	34.9	42.5	13.2	84.3	0.9	0	3	67	0	1016.8	7.1
9/12/2018	26.9	14.3	36	27.1	15.4	35.5	28.8	18	37.1	36	14.2	71.9	0.5	0	5.3	65	0	1013.7	9.1
10/12/2018	26.2	17.8	34.5	26.3	18.8	33.3	28.2	21.8	35.3	42.9	20.8	60.9	1.1	0	7.5	118	0	1012.7	10.0
11/12/2018	19.5	18	23.4	19.4	18.2	23.4	20	18.5	24.4	85.9	55.3	94.4	2.3	0.6	4.2	86	16.8	1017.1	2.2
12/12/2018	20.1	17.7	22.9	20	17.7	22.6	20.1	17.8	22.6	80.2	69	93.3	3.1	0.4	4.5	78	16.2	1012.3	1.9
13/12/2018	22.1	17.4	29.3	22	17.5	28.8	22.6	18	29.1	79.4	53.5	96.6	0.4	0	5.4	348	10.6	1002	2.9
14/12/2018	21.5	18.4	26.8	21.4	18.5	26.3	22.3	19.3	27	78.9	43.6	96.4	0.6	0	3.6	295	11.4	1001.2	4.7
15/12/2018	23.7	19.4	29.7	23.7	19.4	29.1	24.7	20.2	30.1	65.5	34	94.6	0.8	0	3.6	25	0.6	1004.2	9.0
16/12/2018	25.3	16.3	33.5	25.3	16.9	33.1	27	18.7	35.9	59.4	21	97.5	0.8	0	5.8	292	0	1005.2	8.6
17/12/2018	26.1	18.4	33	26.1	18.8	32.8	27.8	20.2	35.6	61	27.9	94.1	1.1	0	4.8	258	0	1007.2	9.5
18/12/2018	26.1	19.1	33.1	26.2	20.2	32.8	27.3	22.3	35.3	65.7	38.4	94.2	1.9	0	4.4	65	0	1009.5	6.4
19/12/2018	NsN	19.3	NsN	23.8	19.3	32.4	NsN	19.3	NsN	75.4	46.3	93.4	2.2	0	9.2	84	30.4	1010.9	4.7
20/12/2018	26	19.6	36.7	26	19.8	36.4	25.5	19.5	35.3	71.7	35.2	96.8	0.7	0.3	6.5	340	5	1053.9	2.6
21/12/2018	23.3	18.9	28.9	23.1	19.1	28.6	22.5	18.8	27.5	70.5	49.8	88.4	2.8	0.7	4.8	66	0	1004.4	0.9
22/12/2018	20.1	15.2	25.2	20	15.4	24.8	19.6	15.6	24	67.6	41.2	96.9	1.5	0.3	5.3	73	0.2	1009.1	1.8
23/12/2018	19.3	13.2	24.4	19.1	13.9	24.2	18.4	13.8	23.1	55	33.8	78.3	3.1	0.7	5.5	83	0	1018	1.4
24/12/2018	21.3	14.1	28.8	21.2	14.1	28.5	20.6	14.1	27.5	51.3	18.4	82	2.3	0.5	4.8	88	0	1018.6	1.2
25/12/2018	24.9	14.1	33.6	25.1	14.7	33.1	24.9	15.4	32.1	50.3	18.4	93.4	0.4	0	3	302	0	1015.4	4.9
26/12/2018	27.1	15.8	35.6	27.4	16.6	35.1	27.5	18	34.1	42	19.9	77.3	0.7	0	3.3	48	0	1013.2	8.9
27/12/2018	28.3	17.5	37.3	28.8	18.3	36.8	29	19.6	35.7	40.9	16.5	76.6	0.5	0	4.9	21	0	1011.2	8.8
28/12/2018	28.8	17.6	37.7	29.3	19	37.6	29.9	20.4	36.5	38.3	15.2	73	0.6	0	4.3	297	0	1010.8	11.1
29/12/2018	28.2	17.8	36.7	28.6	19.2	36.6	29.1	21.5	35.3	38.7	18.7	67.2	0.9	0	5.2	284	0	1012	9.8
30/12/2018	28.2	18	36.3	28.5	19	36	28.9	21.3	35	38.2	18	66	1	0	4.9	285	0	1012.4	10.7
31/12/2018	28	18.5	37.3	28.2	18.8	36.5	28.3	20.8	35.2	41.9	19.1	68.6	0.8	0	5.3	277	0	1010.8	6.8

Figure 6 – Air (Dust) Monitoring Locations

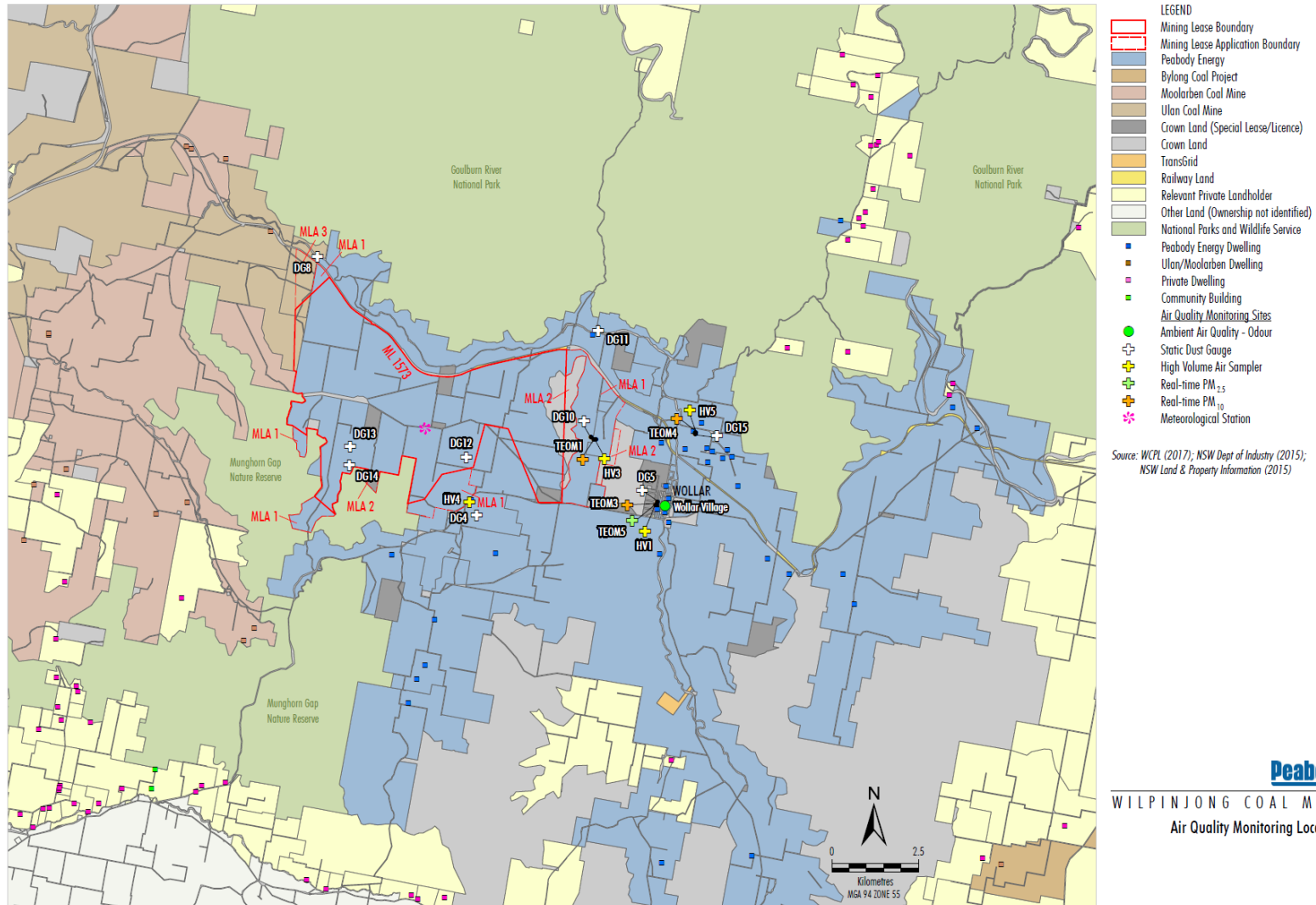


Figure 7 – Attended Noise Monitoring Locations

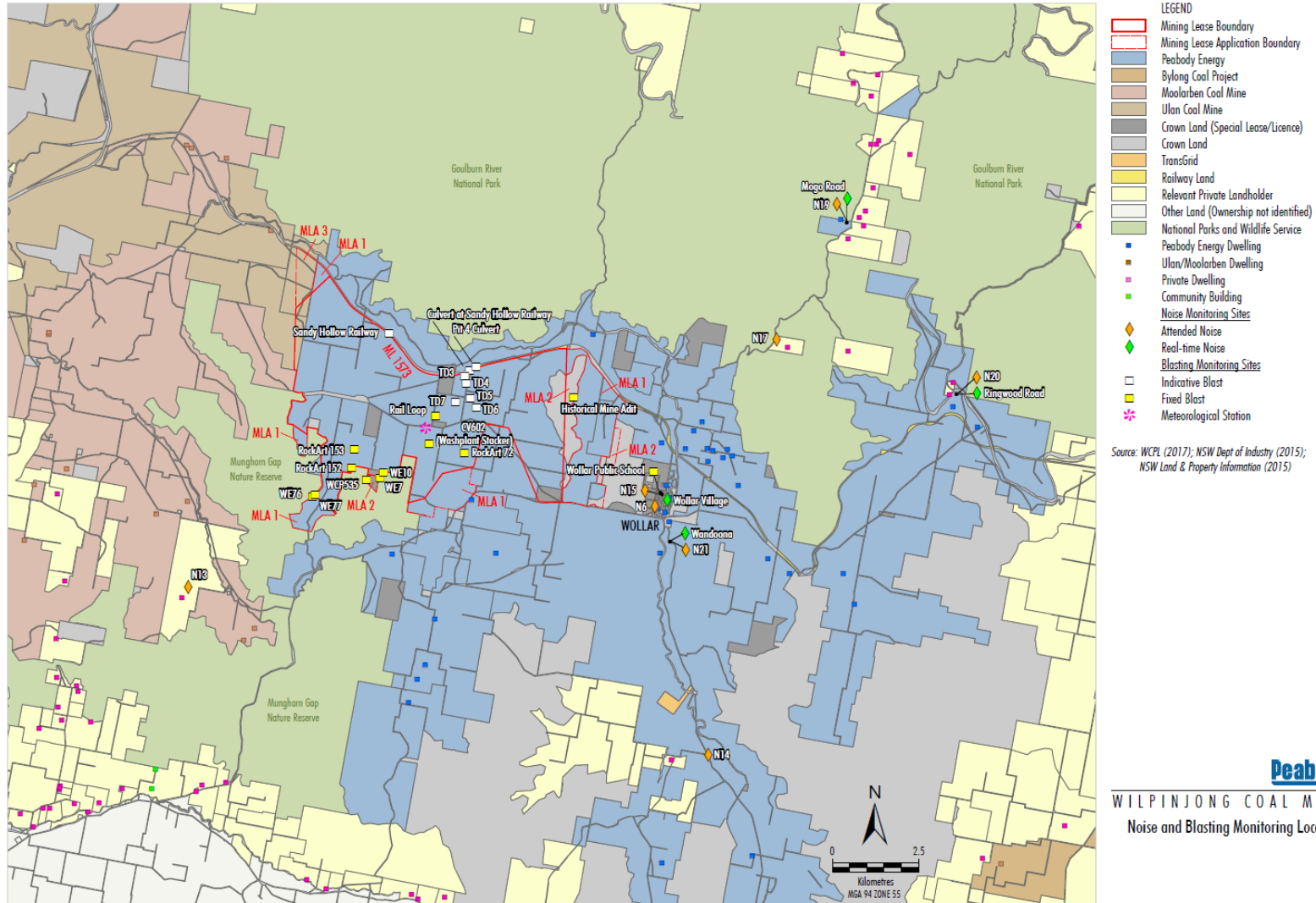


Figure 7 – Wollar Village Environmental Monitoring Sites



LEGEND		Noise Monitoring Sites	
	Peabody Energy	◆	Attended Noise
	Crown Land (Special Lease/Licence)	◆	Real-time Noise
	Crown Land		Blasting Monitoring Sites
	Railway Land		Fixed Blast
	Relevant Private Landholder	+	Air Quality Monitoring Sites
1	Landholder Reference Number	+	Ambient Air Quality - Odour
■	Peabody Energy Dwelling	+	Static Dust Gauge
■	Community Building	+	High Volume Air Sampler
■	Private Dwelling	+	Real-time PM _{2.5}
#	Special Lease/Licence Holder	+	Real-time PM ₁₀

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

Peabody
WILPINJONG COAL MINE
Wollar Environmental Monitoring Sites