



WILPINJONG COAL PTY LTD

Environment Protection Licence (EPL) 12425

[Link to Environment Protection Licence EPL12425](#)

**LICENCE MONITORING DATA
MONTHLY SUMMARY REPORT**

for

1 November 2019 to 30 November 2019

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 for the month have been recorded in Bathurst and Merriwa by NSW EPA.

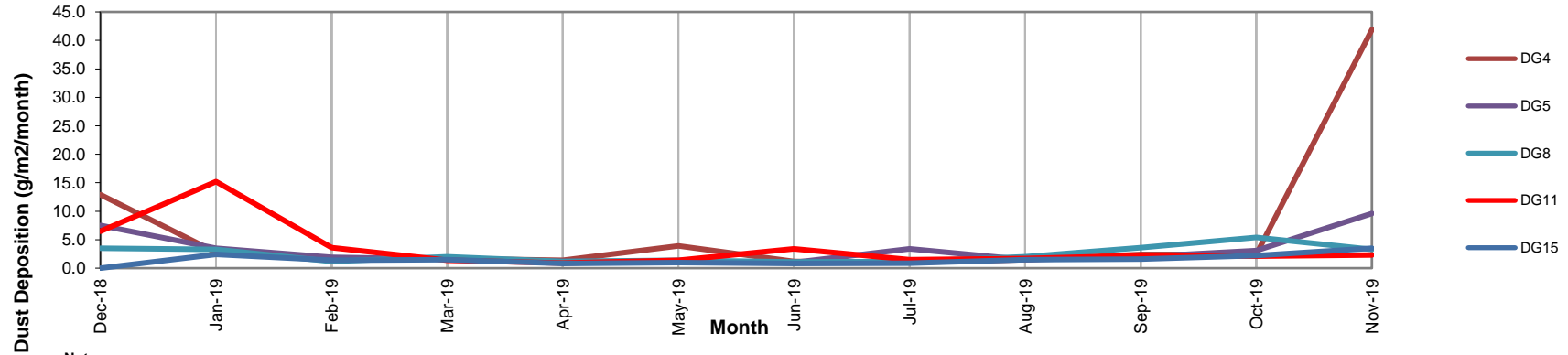
Table 1 - Air Monitoring

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 - TIM	grams per square metre per month	Monthly	1				41.9				29/11/19	05/12/19
4	DG5	Particulates - TIM	grams per square metre per month	Monthly	1				9.6	3.1	4.0	Yes	29/11/19	05/12/19
6	DG8	Particulates - TIM	grams per square metre per month	Monthly	1				3.3				29/11/19	05/12/19
9	DG11	Particulates - TIM	grams per square metre per month	Monthly	1				2.3				29/11/19	05/12/19
17	DG15	Particulates - TIM	grams per square metre per month	Monthly	1				3.5				29/11/19	05/12/19
13	HV1	PM10	micrograms per cubic metre	Every 6 days	5	8.4	170.0	57.0			50	Yes	28/11/19	05/12/19
19	HV4	PM10	micrograms per cubic metre	Every 6 days	5	10.3	183.0	55.3			50		28/11/19	05/12/19
20	HV5	PM10	micrograms per cubic metre	Every 6 days	5	9.3	190.0	70.5			50		28/11/19	05/12/19
22	TEOM3	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	7.1	242.8	49.8			50	Yes		
23	TEOM4	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	7.6	273.1	61.0			50			

Notes:

- Limits specified in the above table are from Development Consent SSD-6764.
- The exceedance recorded at DG4 during the month was due to a high concentration of organic matter.
- Regional dust events and bushfires resulted in exceedances recorded at TEOMs 3 and 4, HVs 1,4 and 5 and DG 5 during the month.

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. The excessive dust levels recorded at DG4 in December 2018 and November 2019 were due to high concentrations of organic matter. DG8's excessive dust level recorded in October 2019 was also due to a high concentration of organic matter.
3. Excessive dust levels recorded by DG5 in December 2018 and DG11 in January 2019 were caused by agricultural activities. During November 2019, DG5 accumulated a high concentration of ash due to bushfires in the area.

Figure 1b. DG 5 Results - Annual Average

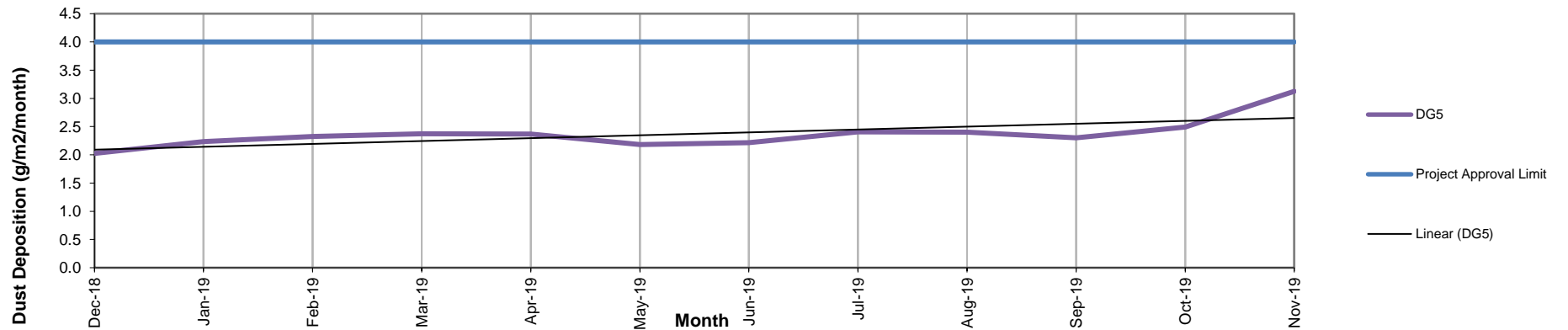
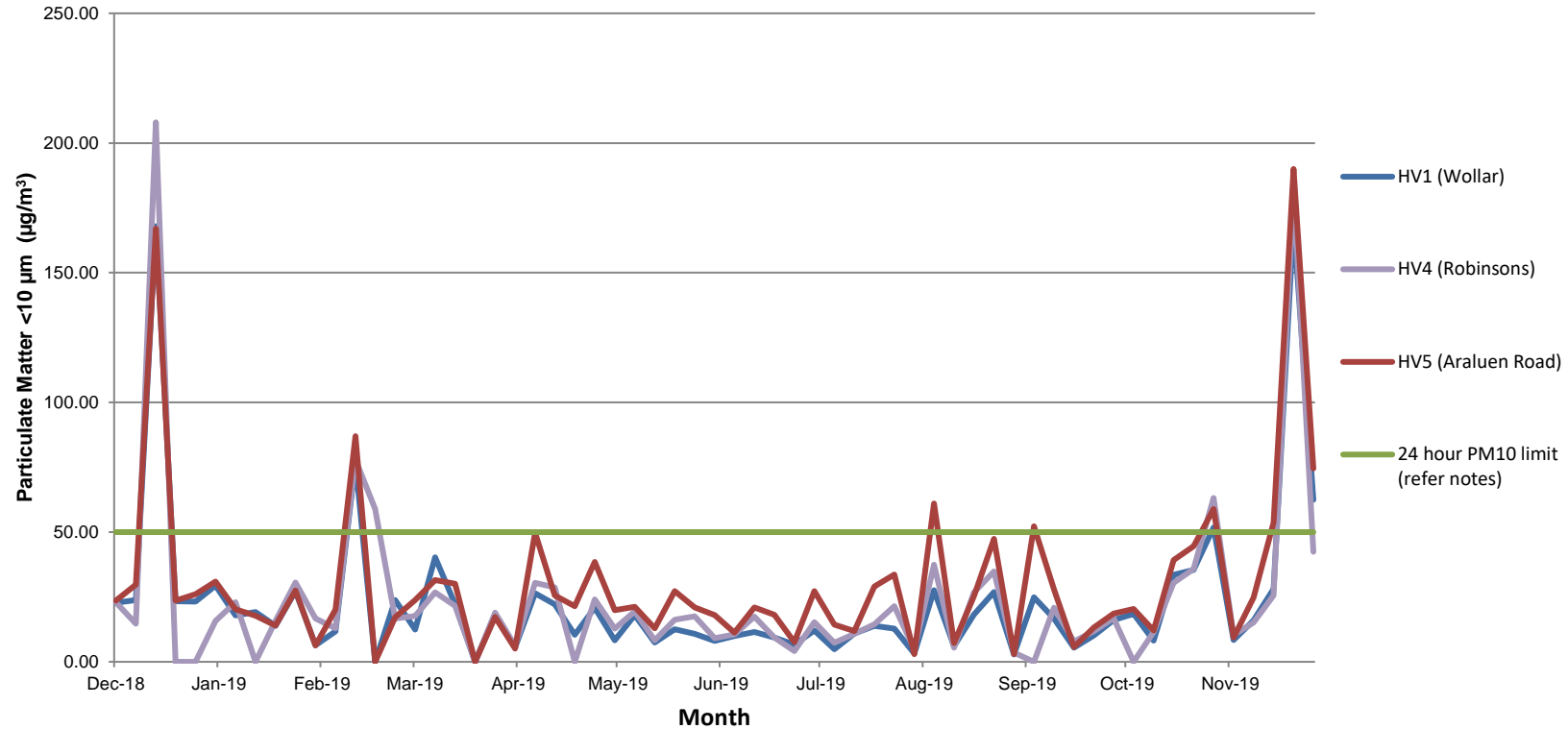


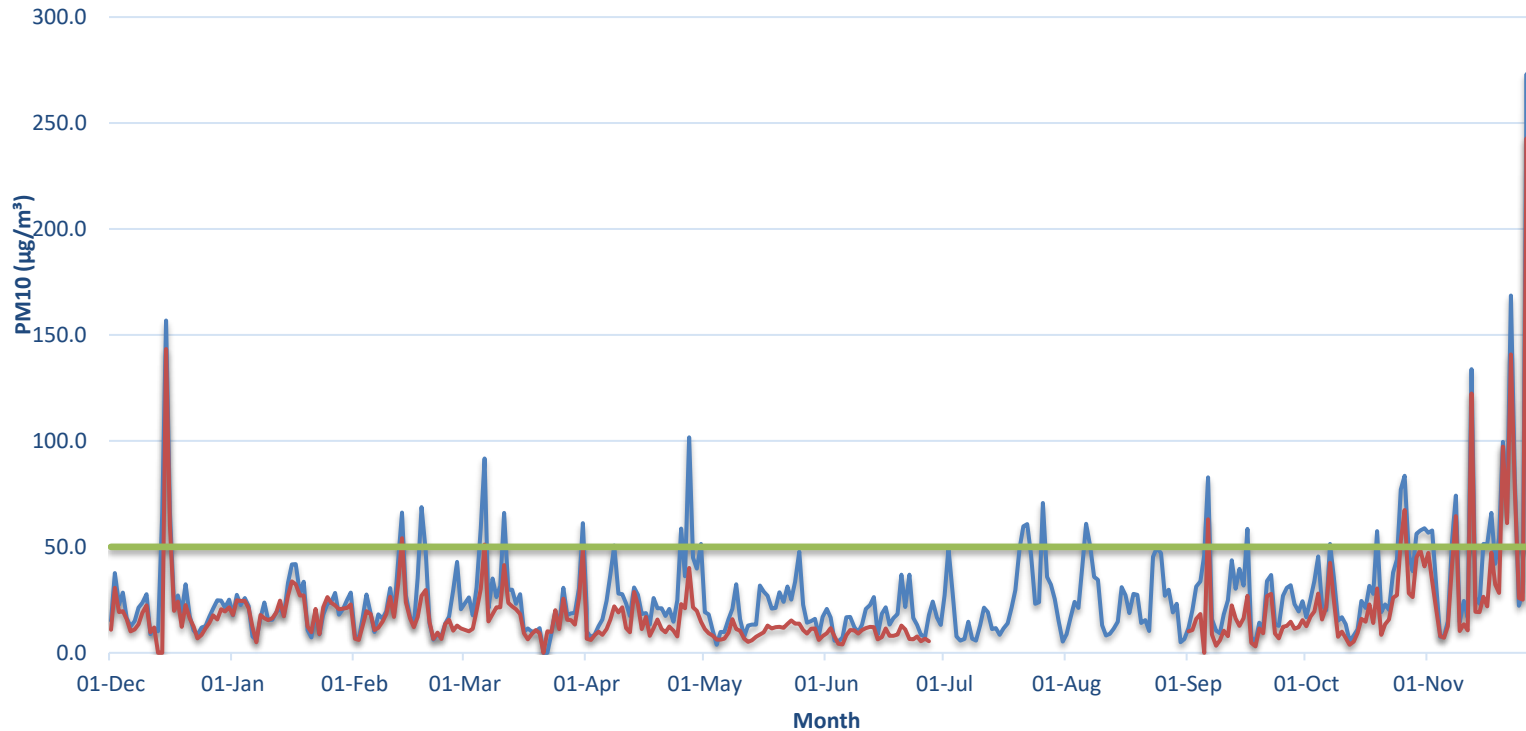
Figure 2. HV (PM10) Results - 12 Month Trend



Notes:

1. Limit doesn't apply for extraordinary events such as bushfires, prescribed burning, or dust storms.
2. Power outages prevented dust samples being collected from **HV4**: 21 and 27 December 2018, 14 January 2019 and 20 April 2019, **HV1**: 19 February 2019 and 21 March 2019, **HV5**: 19 February and 21 March.
3. Recorded PM10 dust levels above 50 μg/m³ recorded in December 2018 and February 2019, October and November 2019 were caused by regional dust events and bushfires - refer EPA PM10 dust graph on page 6 of this report.
4. The PM10 dust level exceeding 50μg/m³ recorded at HV5 in August 2019 was due to a hazard reduction burn to the west of Wilpinjong Mine in the Goodman State Conservation Area.

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

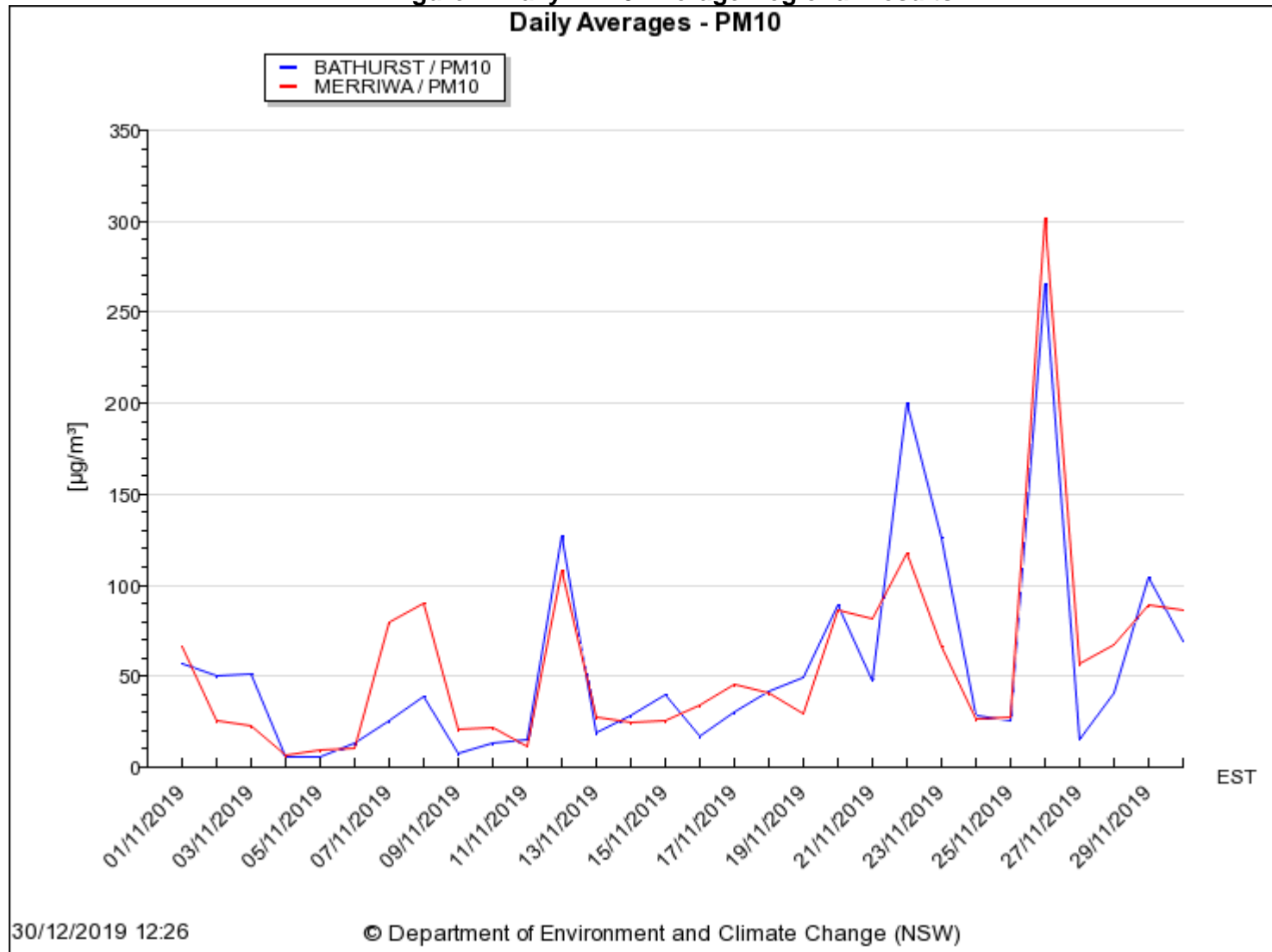


Notes:

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 December 2018 and February, March, April, September, October and November 2019 due to regional dust events and bushfires.
4. The elevated PM10 dust levels recorded at TEOM 4 on 6th August and 16th September 2019 were due to a temperature inversion trapping road dust and lack of rainfall. Additionally, a hazard reduction burn was taking place to the west of Wilpinjong Mine in the Goodman State Forest which also contributed to the high reading.
4. PM10 data recorded at TEOM 3 between 28 June and 31 August 2019 is invalid due to instrument fault causing inaccurate results. The data is unable to be corrected or adjusted due to the nature of the failure.
5. TEOM 3 offline from December 13 to 14 2018 due to instrument failure and repair

— TEOM 4 (Araluen Rd) — TEOM 3 (Wollar) — 24 hour PM10 Limit (refer Notes)

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.

The RO Plant has been non-operational since the end of November 2018. For this reason, no discharge data was recorded during the month.

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 7**.

On pages 10 and 11 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 – NOVEMBER 2019

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	19/11/2019 01:59	0.0	F	37	Yes	<20	Nil
N13	19/11/2019 02:19	0.6	F	35	Yes	IA	Nil
N14	19/11/2019 01:10	0.0	G	35	No	IA	NA
N15	19/11/2019 00:05	1.1	F	37	Yes	23	Nil
N17	18/11/2019 23:30	0.7	F	38	Yes	<20	Nil
N19	18/11/2019 23:06	0.3	G	35	No	IA	NA
N20	19/11/2019 00:34	1.2	F	35	Yes	<20	Nil
N21	19/11/2019 01:38	0.0	F	35	Yes	23	Nil

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 – NOVEMBER 2019

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	19/11/2019 01:59	0.0	F	45	Yes	26	Nil
N13	19/11/2019 02:19	0.6	F	45	Yes	IA	Nil
N14	19/11/2019 01:10	0.0	G	45	No	IA	NA
N15	19/11/2019 00:05	1.1	F	45	Yes	28	Nil
N17	18/11/2019 23:30	0.7	F	45	Yes	<20	Nil
N19	18/11/2019 23:06	0.3	G	45	No	IA	NA
N20	19/11/2019 00:34	1.2	F	45	Yes	<20	Nil
N21	19/11/2019 01:38	0.0	F	45	Yes	30	Nil

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 18/19 November 2019. 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 November 2019 monitoring. Criteria may not always be applicable due to meteorological conditions at the time of monitoring.

Global Acoustics Pty Ltd

Wilpinjong Coal received the report from Global Acoustics Pty Ltd on 13th December 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.

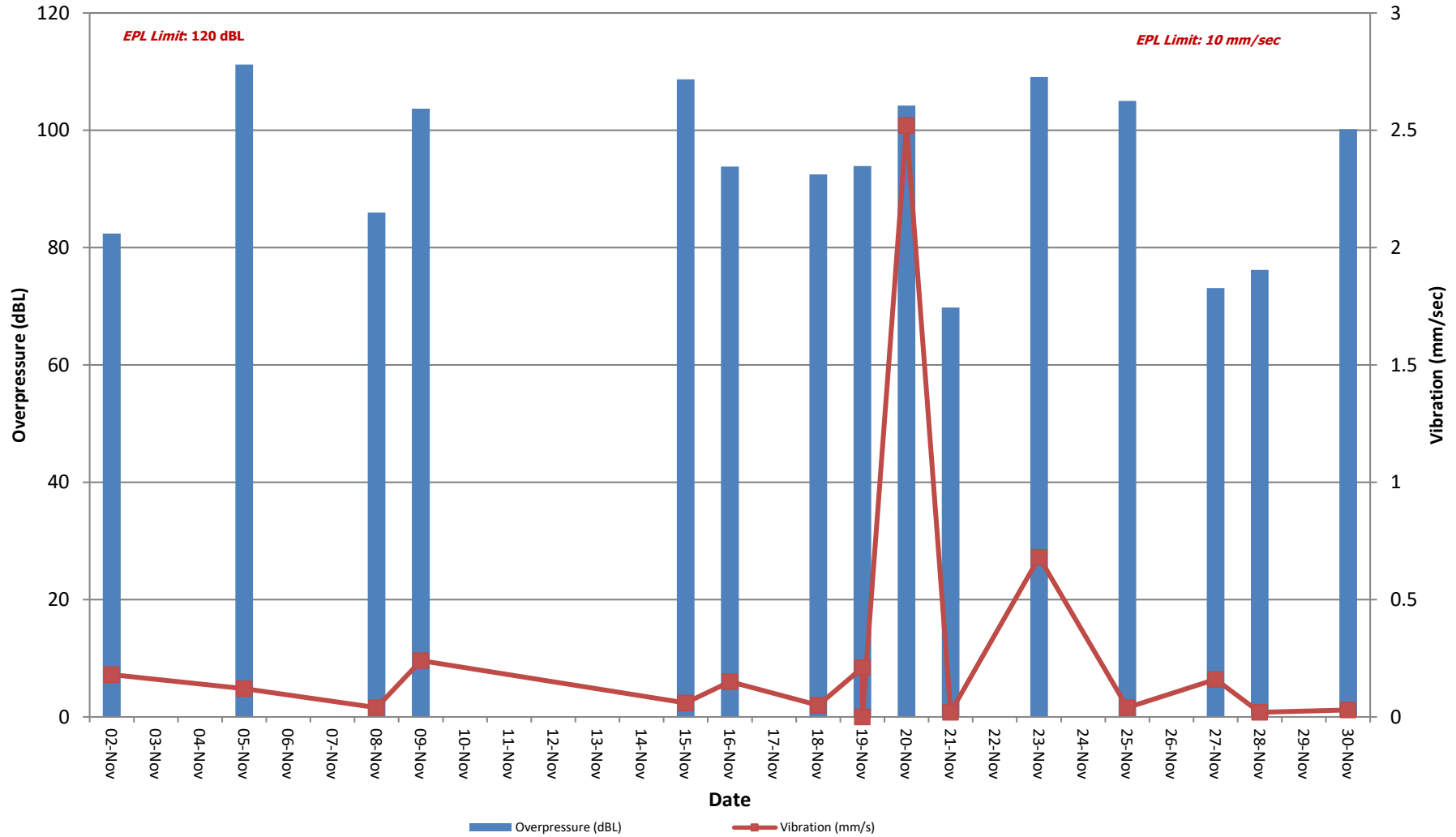
Table 3 – Overpressure Monitoring Results

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	November	15	69.8	111.2	94.0	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	November	15	0.02	2.52	0.30	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 (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			
1/11/2019	23.9	12.8	33	24.1	14.1	31.6	24.5	15.6	30.6	37.8	14.6	67.5	0.3	0	3.5	346	0	1013.6	7.9
2/11/2019	23.8	14.2	31.7	24	15.5	30.4	24.3	17	29	41.6	22.3	70	1.6	0	5.2	306	0	1013.9	7.7
3/11/2019	21.3	17.1	27.1	21.5	17.7	26.5	21.5	17.1	25.6	62.7	41.4	95.3	2.2	0	8.3	290	20.6	1012.9	8.6
4/11/2019	19.3	14.8	24.2	19	14.8	23.4	18.5	14.6	22.7	61.5	31.5	93	3.1	1	6	255	0.2	1013.7	2.1
5/11/2019	16.1	11.8	21.2	15.6	11.6	20.5	15.1	11.2	19.6	43.1	21.8	88.5	3	0	6.6	221	0	1014.2	0.5
6/11/2019	17.6	6.8	26.5	17.1	5.8	25.9	17.4	8	24.8	44.3	14.3	94.3	2.5	0	6.4	269	0	1012.4	7.5
7/11/2019	22	14.7	27.7	22	15.5	26.8	21.9	18.5	25.6	24.6	11.6	46.4	5.1	0	11.9	269	0	1007.1	6.8
8/11/2019	19.1	11.8	26.5	19	12.9	25.5	19.5	13.9	24.5	38.9	21.8	57.5	4.2	0	9.8	256	0	1004.8	9.6
9/11/2019	14.6	10.4	19.4	14.1	10.2	18.5	13.5	9.9	17.5	33.1	12.9	54.2	4	2	6.6	231	0	1012.3	0.5
10/11/2019	18	11.2	24.7	17.6	11.1	23.9	17.1	11.1	23	33.6	24.6	43.4	3.4	1.1	6.1	236	0	1013.1	1.1
11/11/2019	19.3	8.4	28.1	19.1	9	27.4	19.6	10.5	26.8	41.5	15.4	80.3	0.8	0	4.4	252	0	1013.9	8.2
12/11/2019	22.8	8.1	33.3	22.6	9	32.4	23	11.4	31.7	27.3	6.9	64.9	4.1	0	9.7	264	0	1007.6	7.7
13/11/2019	18.6	13.3	23.3	18.1	13.4	22.6	17.4	13	21.6	21.2	10.6	33.5	3.5	1.1	5.6	229	0	1012.8	0.7
14/11/2019	19.6	8.7	26.6	19.2	9.7	25.8	19.1	11.2	25.1	27.7	18	47.2	2.1	0.2	5.8	265	0	1013.4	6.1
15/11/2019	21.6	10	29.5	21.6	11.1	28.9	22.1	13.5	28.1	29	11.1	61.6	3	0	7.8	263	0	1010.4	10.9
16/11/2019	21.7	10.9	29.2	21.4	12.1	28.3	22	14.1	27.5	27.3	9.3	59.4	1.2	0	4.5	241	0	1030.7	10.0
17/11/2019	20.6	12.4	27.8	20.1	12.6	26.8	19.9	14.2	26	44.5	4	80.4	0.6	0	5.3	207	0	1013.6	3.9
18/11/2019	20.8	17.9	25.7	21.6	19	25.9	NaN	20.7	25.9	26.3	18.2	32.5	0.7	0.3	2.7	245	0	1014.3	9.6
19/11/2019	24.5	10.7	34.4	24.7	11.7	33.7	25.6	14.2	32.9	24.3	9.5	50.3	1.8	0	5.7	240	0	1010.7	13.9
20/11/2019	23	16.3	31.2	22.9	17.3	30.7	22.8	16.8	29.8	45.8	24.9	70.2	2.7	0	5.1	74	0	1013	11.2
21/11/2019	25.5	16.3	37.1	25.4	16.4	36	25.3	16.1	34.8	46.3	10.2	82.4	1	0	3.7	81	0	1011.8	9.5
22/11/2019	28.7	19	36.7	28.5	20.4	35.6	29	22.2	34.7	34.2	16.6	66.9	1.3	0	6	279	0	1010	14.2
23/11/2019	27.8	20.6	36	26.7	19.8	34.9	26.9	21.7	33.9	45.1	16.7	71.2	0.2	0	6.9	304	0	1010.8	1.9
24/11/2019	22.2	19	27.7	21.2	17.9	26.3	21.1	18.2	25.8	64.9	42.8	80.8	3.1	0	5.9	75	0	1014.5	-0.5
25/11/2019	24.7	18.4	31.7	24	17	29.9	24	17.9	28.6	51.6	29.5	78.1	1.6	0	7.2	293	0	1009.8	4.0
26/11/2019	23.6	15.6	33.4	23.4	15.6	32.1	23.5	15.4	30.6	40.4	18.4	75.4	3.5	0	10.9	263	1.2	1005.6	6.7
27/11/2019	20.1	7.7	29.9	19.7	8.3	28.9	19.7	10.5	28.2	28.6	10.1	61.4	0.4	0	3.6	274	0	1012.8	6.3
28/11/2019	23.6	10.7	34.1	23.3	11.2	33	23.6	12.8	32.5	32.4	7.4	65.8	0.2	0	3.8	266	0	1012.3	6.3
29/11/2019	25.2	15.6	35	25	15.9	33.7	25.3	17.9	32.6	36.5	9.8	64.8	1.9	0	8.5	285	0	1011.3	5.8
30/11/2019	26.5	17.8	34	26.5	18.9	32.6	26.8	20.5	31.5	28.3	15.1	49	3.3	0	8.4	258	0	1006.3	10.9

Figure 6 – Air (Dust) Monitoring Locations

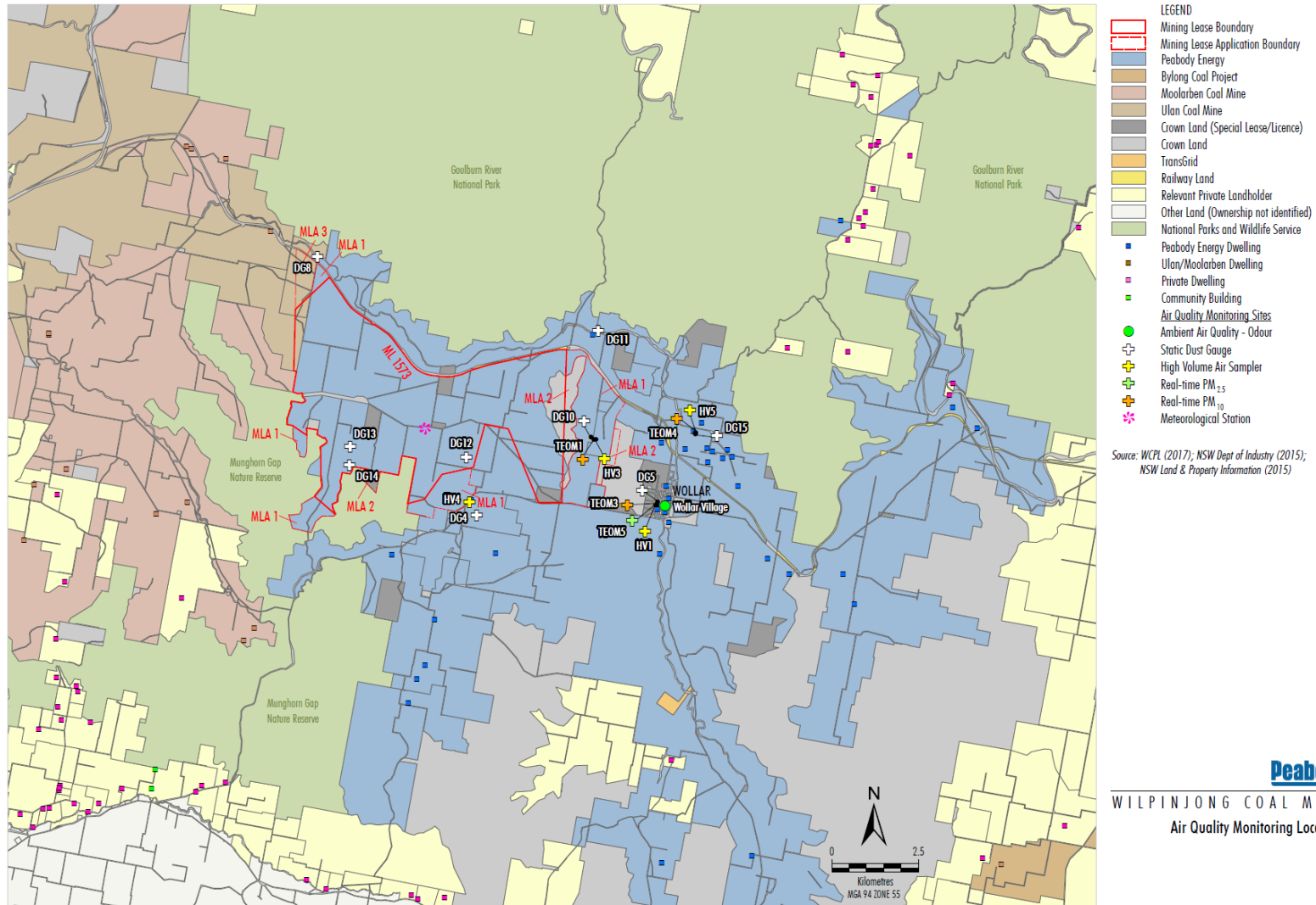


Figure 7 – Attended Noise Monitoring Locations

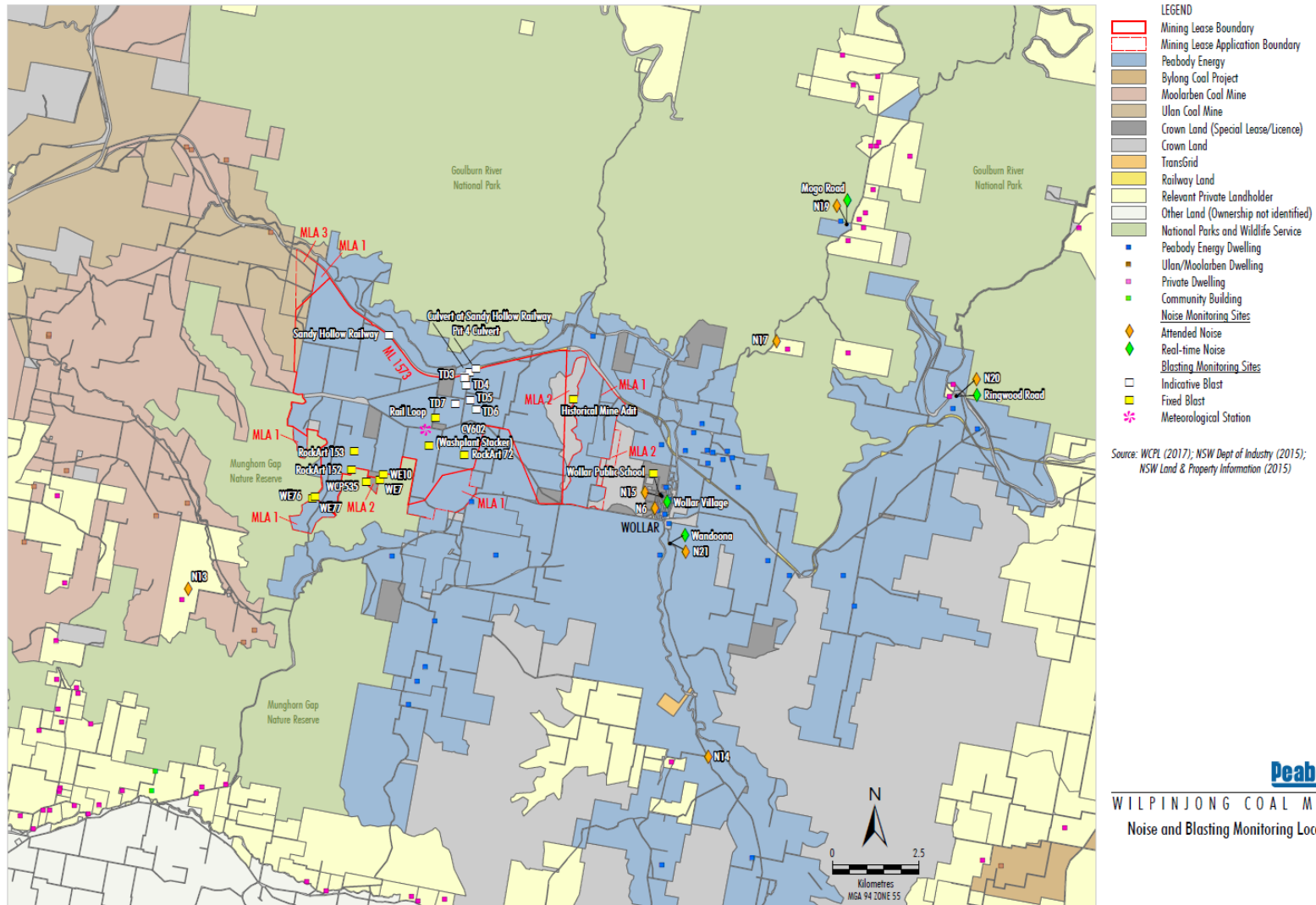


Figure 8 – Wollar Village Environmental Monitoring Sites



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 PM ₁₀

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

Peabody
WILPINJONG COAL MINE
Wollar Environmental Monitoring Sites