WILPINJONG COAL PTY LTD

Environment Protection Licence (EPL) 12425

Link to Environment Protection Licence EPL12425

LICENCE MONITORING DATA
MONTHLY SUMMARY REPORT

for

1 April 2019 to 31 April 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 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				1.4				29/04/19	13/05/19
4	DG5	Particulates – TSM	grams per square metre per month	Monthly	1				1.2	2.4	4.0	No	29/04/19	13/05/19
6	DG8	Particulates – TSM	grams per square metre per month	Monthly	1				1.2				29/04/19	13/05/19
9	DG11	Particulates – TSM	grams per square metre per month	Monthly	1				0.9				29/04/19	13/05/19
17	DG15	Particulates – TSM	grams per square metre per month	Monthly	1				0.8				29/04/19	13/05/19
13	HV1	PM10	micrograms per cubic metre	Every 6 days	4	5.6	26.4	17.1			50	No	26/04/19	29/04/19
19	HV4	PM10	micrograms per cubic metre	Every 6 days	4	6.2	30.5	22.4			50		26/04/19	29/04/19
20	HV5	PM10	micrograms per cubic metre	Every 6 days	4	5.1	49.8	28.1			50		26/04/19	29/04/19
22	TEOM3	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	0.0%	5.0	33.7	20.5			50	No		
23	TEOM4	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	0.0%	6.0	41.9	21.5			50			

Notes:
1. Limits specified in the above table are from Development Consent SSD-6764.

Figure 1a. DG Results - 12 Month Trend
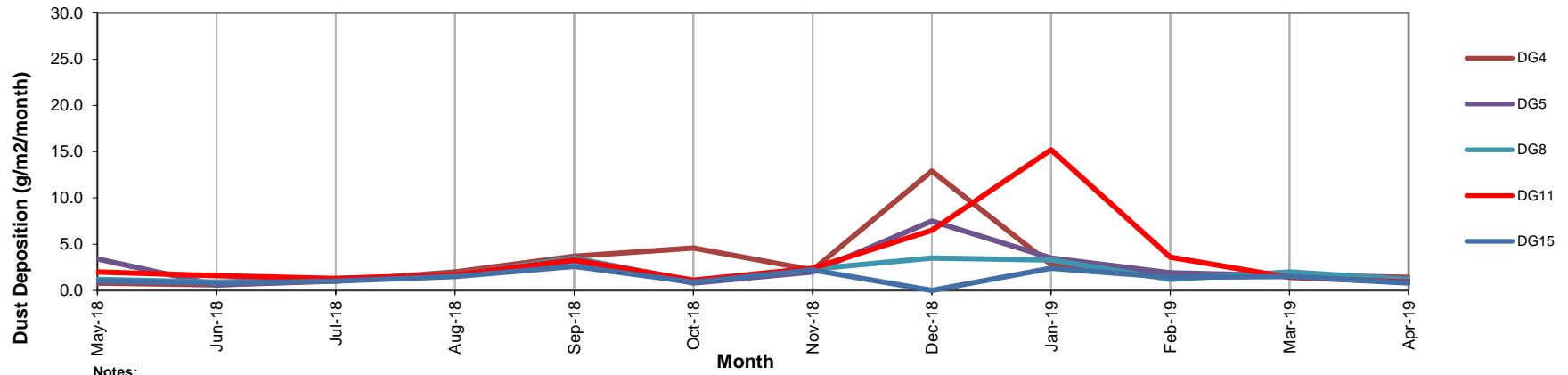
Notes:
1. Limit of 4 g/m2/month (annual average) applies to DG5 (Wollar Village) - refer Figure 1b.

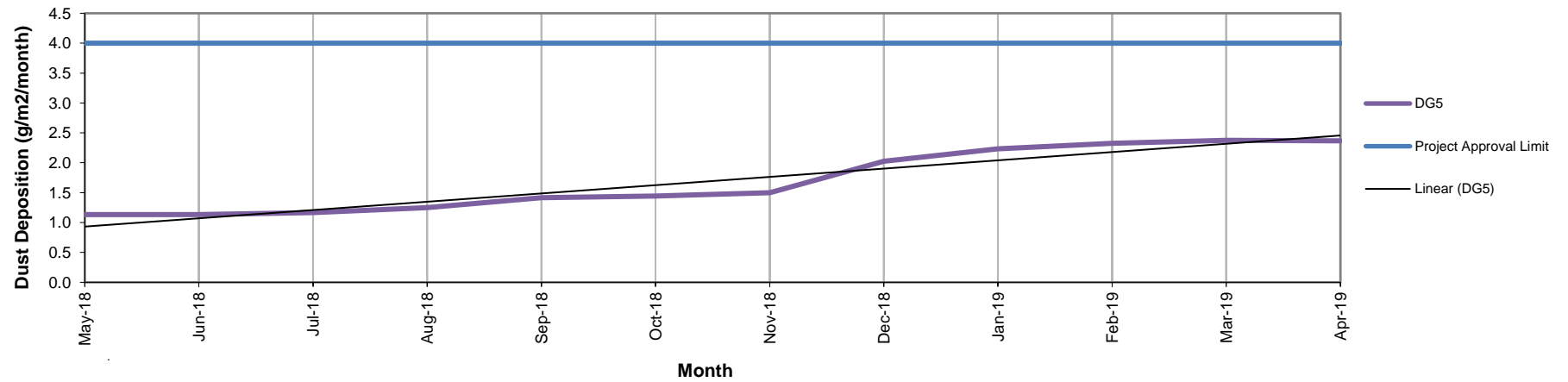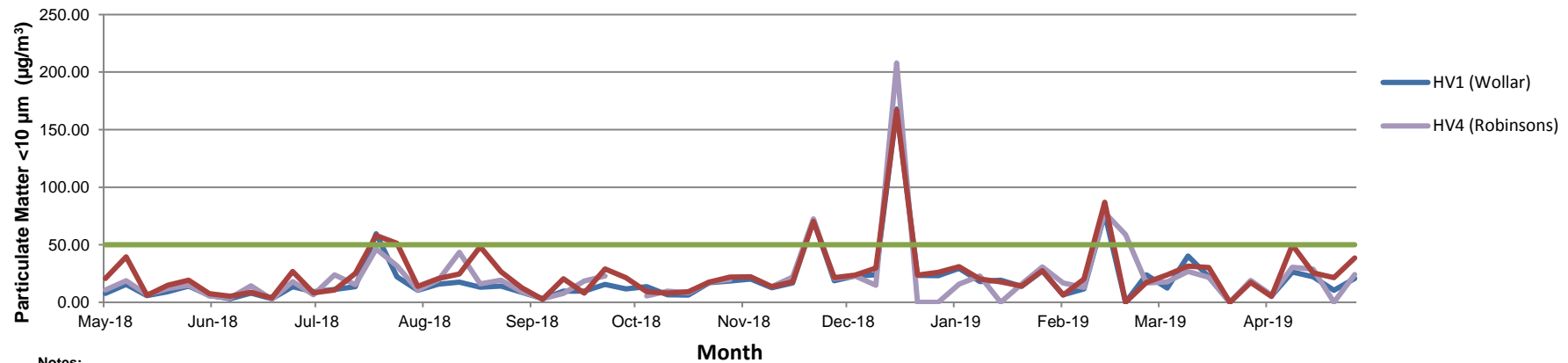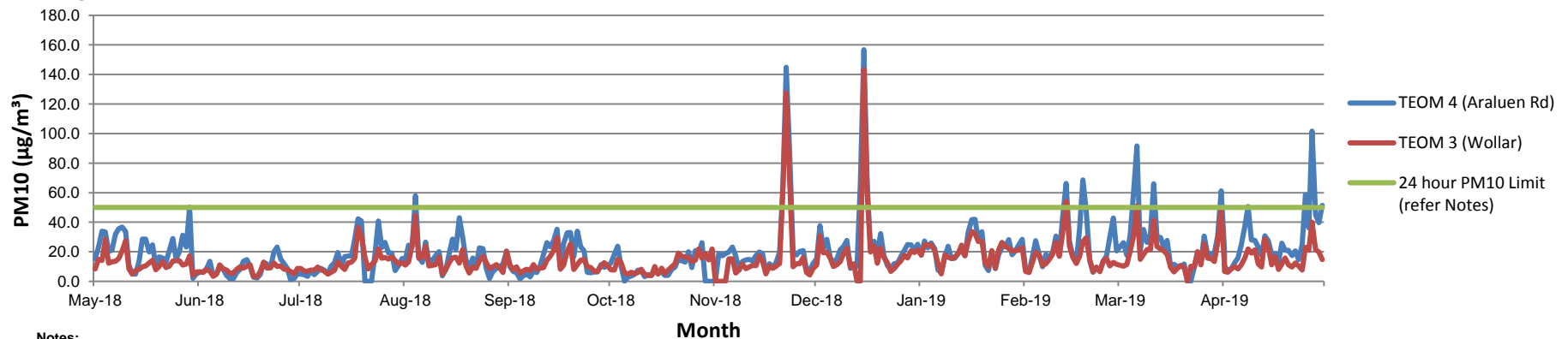## Figure 1b. DG 5 Results - Annual Average

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: 28 September 2018, 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 June, July, October, November and December 2018 and January 2019 were caused by regional dust events.

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

Notes:
1. Limit dosen'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 May, July, November and December 2018 and February, March and April 2019 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 2018 due to instrument fault and repairs.
5. TEOM 3 offline from December 13 to 14 2018 due to instrument failure and repair

Figure 4. Daily PM10 Average Regional Results

Daily Averages - PM10
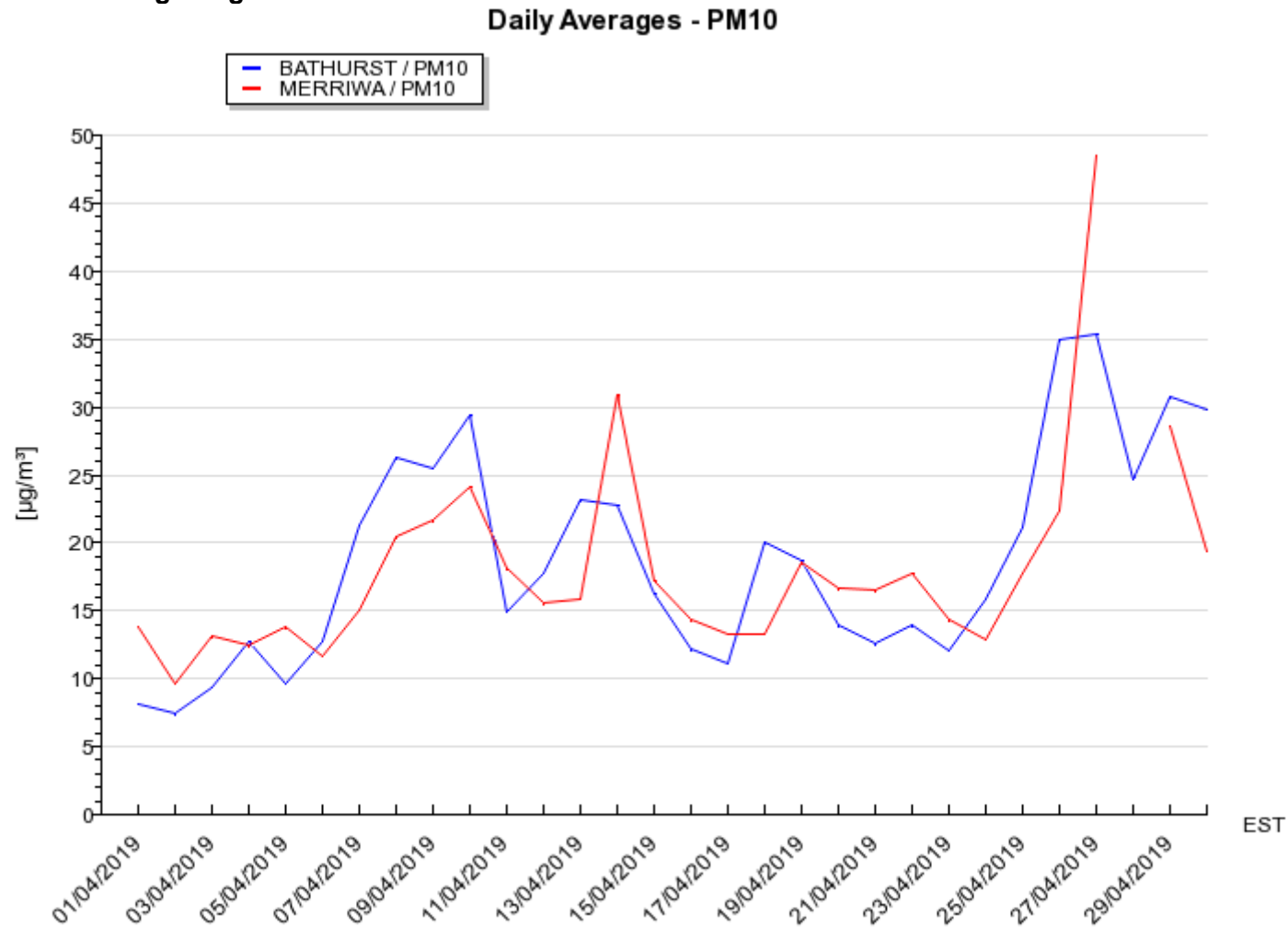
09/05/2019 15:42   © Department of Environment and Climate Change (NSW)

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* (yes/no)	Date Last Sampled	Date Reported
24	RO Plant Discharge	Conductivity	microSiemens per centimetre (uS/cm)	Continuous during discharge	100%	234	426	310		500	No		
		Oil and Grease	milligrams per litre (mg/L)	Weekly during any discharge	3	<5	<5	<5		10.0	No	13-Nov-2018	12-Dec-2018
		pH	pH Unit	Continuous during discharge	100%	6.9	8.3	7.2		≥6.5≤8.5	No		
		Total Suspended Solids	milligrams per litre (mg/L)	Weekly during any discharge	3	<1	<1	<1		50	No	13-Nov-2018	12-Dec-2018
		Volume discharged	megalitres per day	Continuous during discharge	100%	0.025	1.217	0.629		15.0	No		

Note: During the time between December 2018 and April 2019, the RO Plant did not operate and as such there was no water to discharge into 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 – APRIL 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	01/04/2019 23:19	3.2	D	37	No	IA	NA
N13	02/04/2019 00:59	2.4	D	36	Yes	<30	Nil
N14	02/04/2019 00:24	3.3	D	35	No	IA	NA
N15	01/04/2019 23:01	3.4	D	35	No	IA	NA
N17	01/04/2019 22:31	3.4	D	35	No	IA	NA
N19	01/04/2019 22:06	3.8	D	35	No	IA	NA
N20	01/04/2019 23:50	2.7	D	35	Yes	IA	Nil
N21	02/04/2019 00:49	2.6	D	35	Yes	IA	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 – APRIL 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	01/04/2019 23:19	3.2	D	45	No	IA	NA
N13	02/04/2019 00:59	2.4	D	45	Yes	<30	Nil
N14	02/04/2019 00:24	3.3	D	45	No	IA	NA
N15	01/04/2019 23:01	3.4	D	45	No	IA	NA
N17	01/04/2019 22:31	3.4	D	45	No	IA	NA
N19	01/04/2019 22:06	3.8	D	45	No	IA	NA
N20	01/04/2019 23:50	2.7	D	45	Yes	IA	Nil
N21	02/04/2019 00:49	2.6	D	45	Yes	IA	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 1/2 April 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 April 2019 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 15th May 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	April	20	68.1	110.3	88.5	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	April	20	0.03	2.23	0.35	5 mm/s (95% blasts) 10 mm/s (100% blasts)	no

Figure 7. Overpressure (dBL) and Vibration (mm/sec) recorded during Month
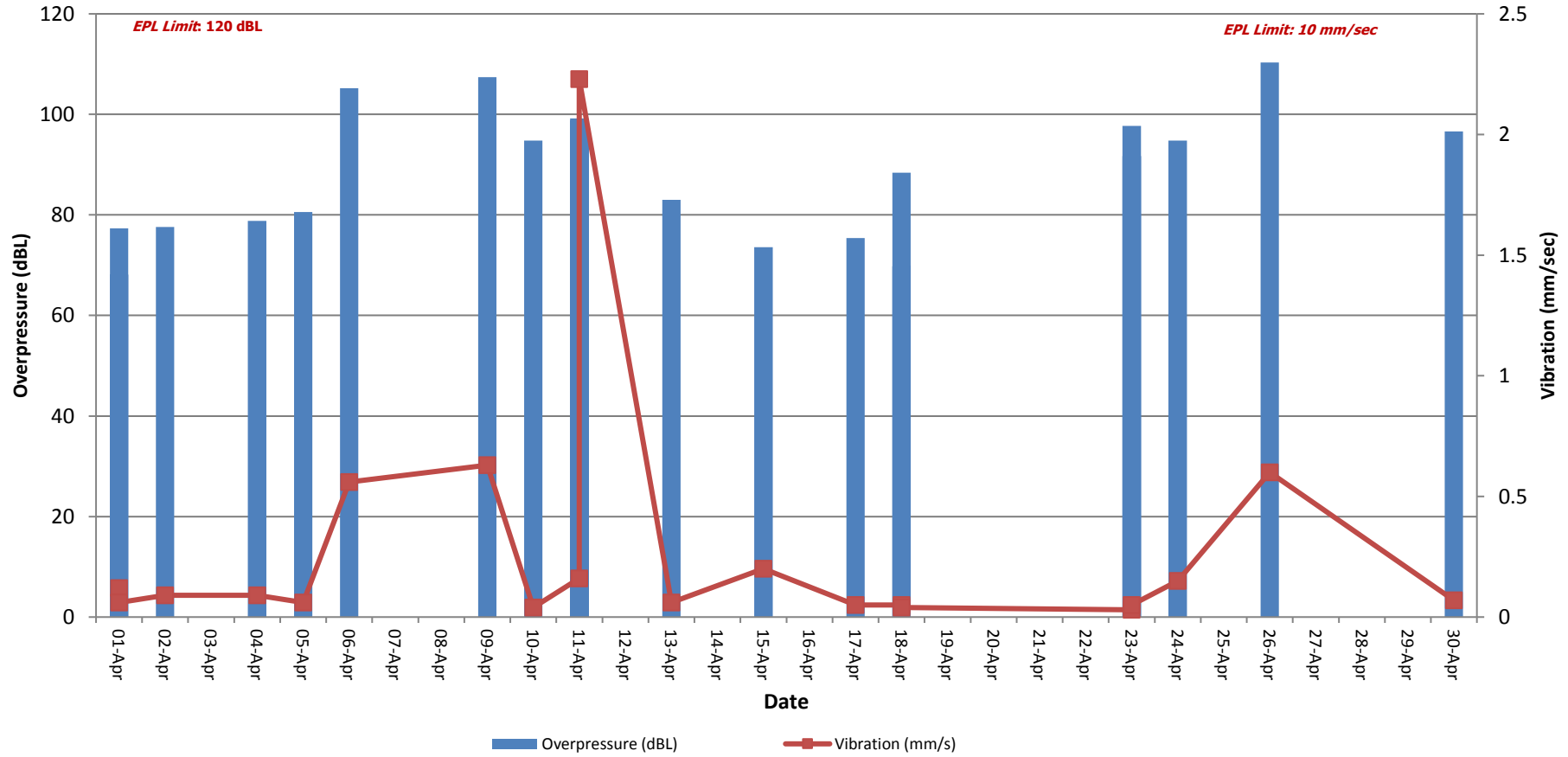
Weather Monitoring

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	Bar	Lapse Rate
	2m			10m			60m						Speed			Dir	(mm)	(hPa)	(oC/100m)
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	(Deg)			Max
1/04/2019	14.6	6.1	22.3	14.5	6.5	21.6	14.5	7.1	20.8	63.4	36.3	96.7	2.1	0	5.4	79	0	1022.1	5.1
2/04/2019	18.3	15.7	21.4	18.1	15.6	20.9	17.6	15.4	20.2	71.7	60.3	83.1	3.1	1.6	4.9	89	0	1025.3	0.0
3/04/2019	18.8	11.3	25.4	18.8	11.9	24.8	18.9	12.7	24.1	67.4	40	96.8	1	0	3.3	80	0	1046.3	6.3
4/04/2019	18.2	11.2	24.6	18.3	11.9	24	18.4	12.8	23.3	69	42.2	95.8	1.8	0	5.6	78	0	1026.8	6.8
5/04/2019	18.6	13.4	23.5	18.6	13.9	23	18.4	14.7	22.1	71.9	50.9	92.3	2.2	0	4.7	78	0	1026.1	3.3
6/04/2019	21	15	28	20.9	15.7	27.6	20.9	15.7	26.9	63.5	32.2	92.3	0.5	0	4.3	250	0	1020.8	6.8
7/04/2019	20.8	12.3	30.2	21.2	13.2	29.9	21.9	14.1	29.2	57.6	23.9	93	2	0	7.5	277	0	1017.8	9.8
8/04/2019	20.7	11.3	30.6	21.3	12.3	30	22.2	14.1	29.3	54.2	20.9	88.5	1.5	0	5.8	276	0	1015.4	3.5
9/04/2019	19.4	12.5	27.5	19.6	13.7	26.8	20	15.2	25.8	49.7	28.8	82.2	2.4	0	8	232	0	1013.9	10.9
10/04/2019	15.3	7.5	20.6	15.1	8.2	19.7	14.9	9.6	19.1	56.6	40.3	80.2	2.4	0	5.9	87	0	1021.5	4.7
11/04/2019	16	10	21.5	15.5	10.6	20.7	15.6	11.3	20.1	67.1	48.6	86.6	2.6	0.7	5.4	89	0	1023.7	3.5
12/04/2019	16	10	23.6	16.1	10.4	23	16.5	11.4	21.6	73.2	33.1	94.7	0.9	0	3.5	57	0	1066.2	6.1
13/04/2019	16.5	9.5	25	16.7	9.9	24.2	17.2	11	23.4	71.6	35.7	96	0.5	0	2.5	54	0	1022.9	8.2
14/04/2019	16.1	9.9	21.3	16	10.5	20.2	16.5	12.4	19.7	71.2	48.4	92.6	1.6	0	4.1	77	0	1023.1	6.1
15/04/2019	17.2	11.7	23.5	17.1	13	22.3	17.2	14.5	21.5	67.5	42.9	85.5	1.5	0	3.9	83	0	1037.9	4.9
16/04/2019	16.6	9	23.5	16.4	9.5	22.9	16.6	10.3	22.5	71.6	41.7	95.4	1.6	0	4.1	84	0	1023.5	5.8
17/04/2019	17.7	11.9	23.6	17.7	12.4	22.9	17.9	13.4	22.1	70.4	41	92.7	1.6	0	3.9	72	0	1023.8	8.4
18/04/2019	17.5	9.1	25.8	18	10	25.1	18.4	11.1	24.4	70.5	35.8	97.2	0.7	0	2.8	80	0	1024.4	8.8
19/04/2019	17.8	11.2	24.3	18	11.8	23.5	18.8	14.2	23	74.9	49.7	94.8	1.4	0	4.3	80	0	1026.1	8.8
20/04/2019	19.2	13.8	24.9	19.3	14.9	24.1	19.3	15.8	23.6	75.7	52.5	93.3	1.9	0	4.2	83	0	1023.9	6.0
21/04/2019	19.2	13.2	25.5	19.3	13.4	25	19.4	14.6	24.3	74.9	46.5	97.2	1.1	0	2.9	83	0	1021.8	4.4
22/04/2019	19.4	13.2	26.6	19.4	13.5	26.1	19.6	14.4	24.7	72	43.7	95.7	0.9	0	3	64	0	1021.1	6.0
23/04/2019	18.9	12.6	24.9	18.8	13.2	24.2	19	14	23.6	72.1	44.1	95.6	1.6	0	4.2	88	0	1024	5.6
24/04/2019	18.8	12.5	25.6	18.9	13.1	24.8	19.3	14.2	23.8	68.7	42.1	91.9	0.7	0	2.7	82	0	1022.4	6.3
25/04/2019	18.7	10.8	27.9	18.9	11.5	27	19.5	12.3	26.6	64.4	30.8	92.1	0.5	0	3.3	257	0	1018.9	6.5
26/04/2019	18.6	11.5	25.4	18.6	12.3	24.7	18.7	13.7	23.9	58.2	35.8	90.6	2.3	0	7.1	253	0	1016	5.6
27/04/2019	13.7	5.7	21.4	13.9	6.8	20.7	14.3	9.6	19.3	56.5	31.5	85	0.2	0	3.2	71	0	1021.7	7.4
28/04/2019	13.3	3.1	23	13.5	4	22.5	13.9	5.4	21.9	51.4	23.1	83.4	1.8	0	5.3	277	0	1022.1	7.4
29/04/2019	13.9	3.9	21.9	14.1	4.8	21.5	14.6	6.5	20.5	63.3	38.3	82.5	1.9	0	6.1	77	0	1023.5	9.8
30/04/2019	14.9	8.3	21.1	15.3	9.1	20.6	16	10.5	19.9	79.3	57	97	0.5	0	1.9	53	0	1021.2	6.5

Figure 6 – Air (Dust) Monitoring Locations
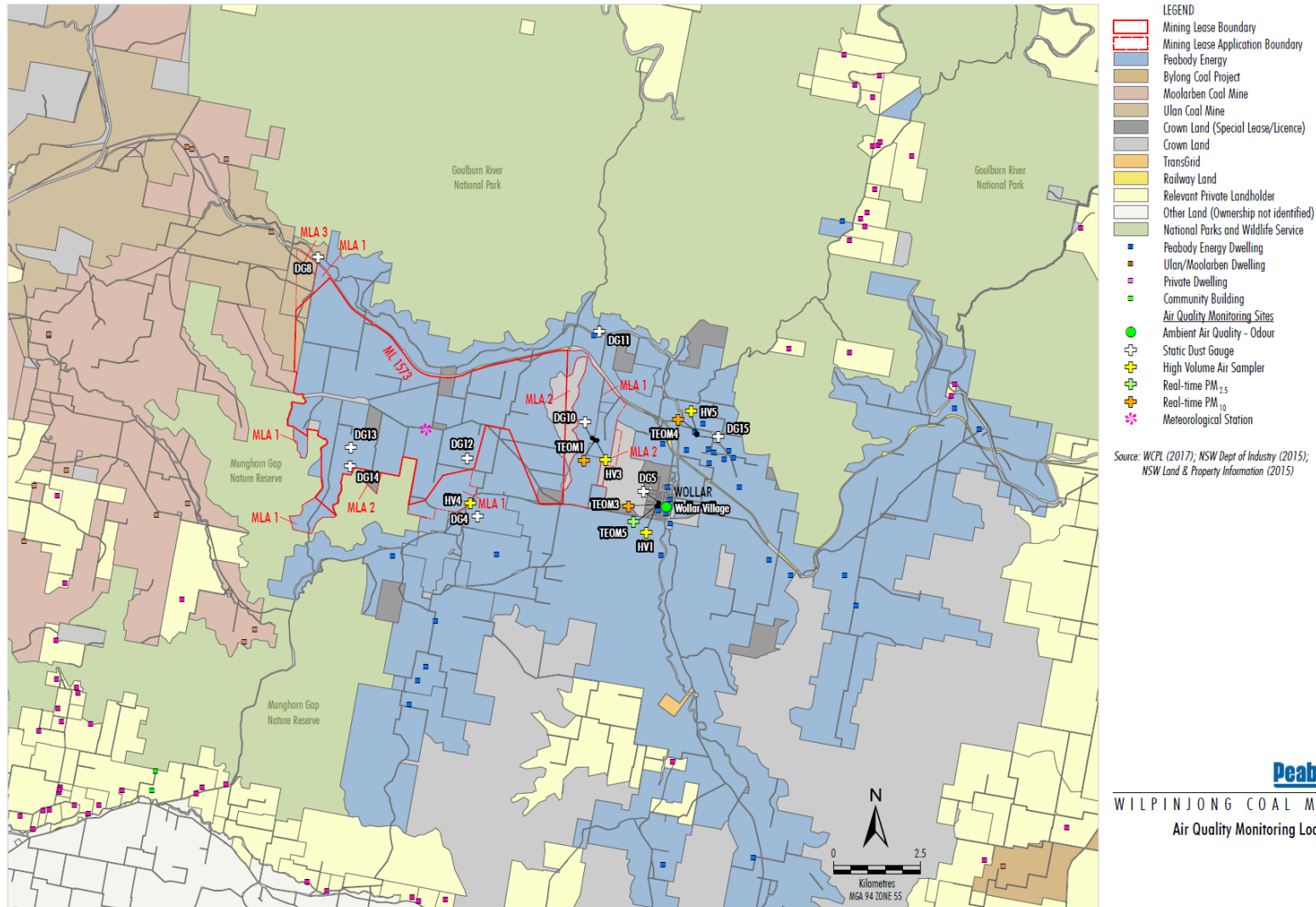
Figure 7 – Attended Noise Monitoring Locations
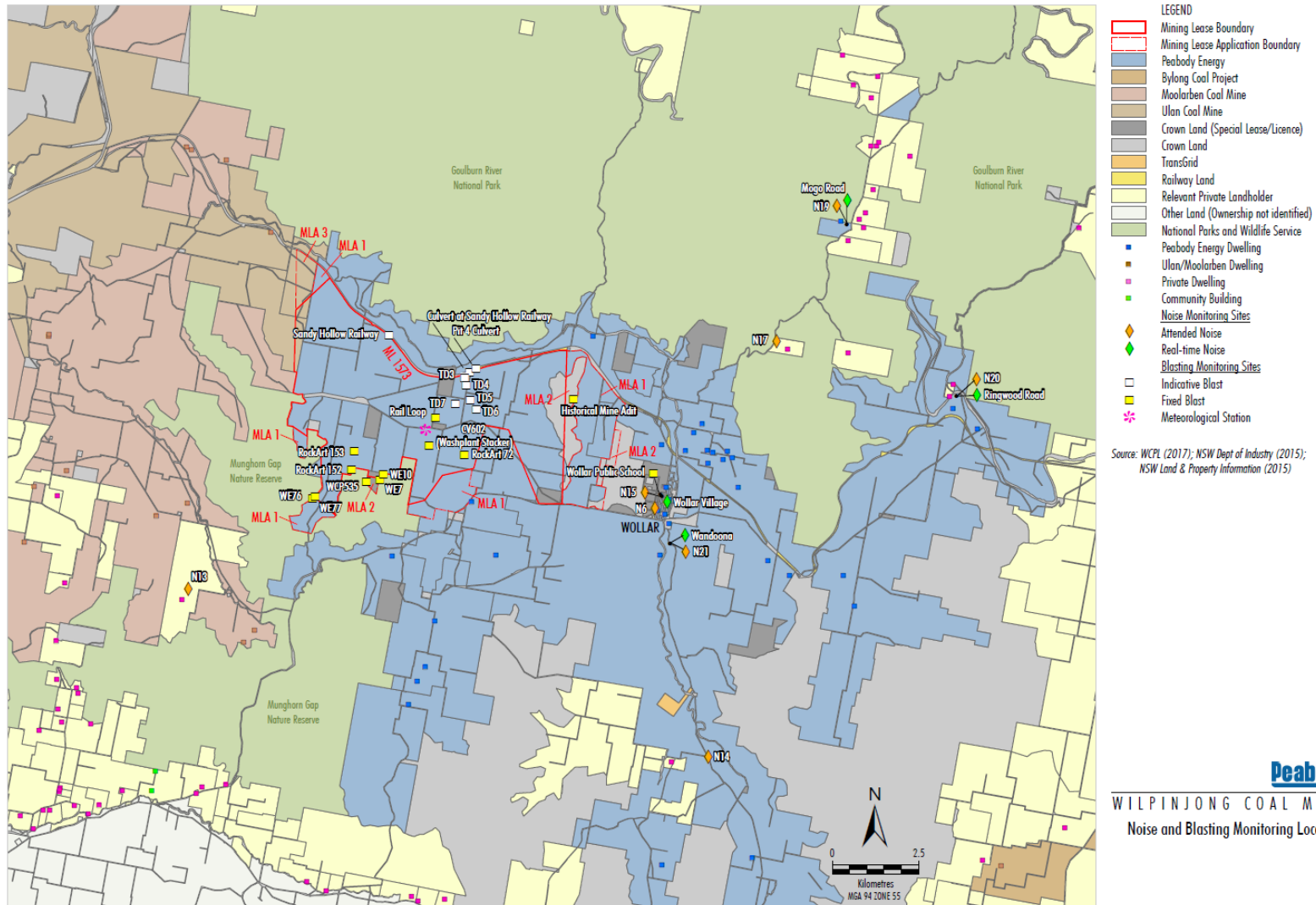
Figure 7 – Wollar Village Environmental Monitoring Sites