WILPINJONG COAL PTY LTD

Environment Protection Licence (EPL) 12425

Link to Environment Protection Licence EPL12425

LICENCE MONITORING DATA
MONTHLY SUMMARY REPORT

for

1 June 2021 to 30 June 2021

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.

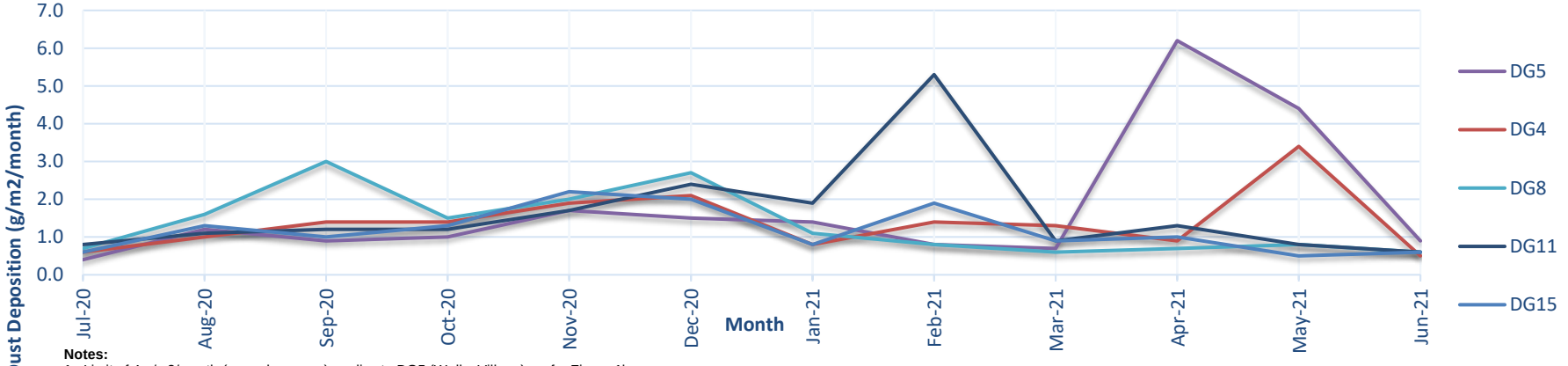
Table 1 - Air Monitoring

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				0.5				25/06/21	15/07/21
4	DG5	Particulates - TIM	grams per square metre per month	Monthly	1				0.9	1.8	4.0	Yes	25/06/21	15/07/21
6	DG8	Particulates - TIM	grams per square metre per month	Monthly	1				0.6				25/06/21	15/07/21
9	DG11	Particulates - TIM	grams per square metre per month	Monthly	1				0.6				25/06/21	15/07/21
17	DG15	Particulates - TIM	grams per square metre per month	Monthly	1				0.6				25/06/21	15/07/21
13	HV1	PM10	micrograms per cubic metre	Every 6 days	5	3.6	11.5	5.9			50	No	26/06/21	15/07/21
19	HV4	PM10	micrograms per cubic metre	Every 6 days	5	3.4	15.2	6.7			50		26/06/21	15/07/21
20	HV5	PM10	micrograms per cubic metre	Every 6 days	5	4.7	17.5	9.1			50		26/06/21	15/07/21
22	TEOM3	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	1.0	11.6	3.9			50	No		
23	TEOM4	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	3.1	18.5	7.7			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.
2. In February 2021, DG11 recorded 5.3g/m^2 of total insoluble matter. Upon further inspection, less than 5% was attributed to dark particles indicating that the result was not due to mining operations. The majority of the result consisted of organic matter (35%) and ash (65%).
3. In April 2021, DG5 recorded 6.2g/m^2 of total insoluble matter. The sampler recorded bird droppings as being present in the funnel justifying an organic composition of 50%. It is determined that mining operations did not contribute to this exceedance.
4. In May 2021, DG5 recorded 4.4g/m^2 of total insoluble matter. The sampler recorded a dead mouse as being present in the funnel majorly contributing to the exceedance. It is determined that mining operations did not majorly impact the result.

Figure 1b. DG 5 Results - Annual Average

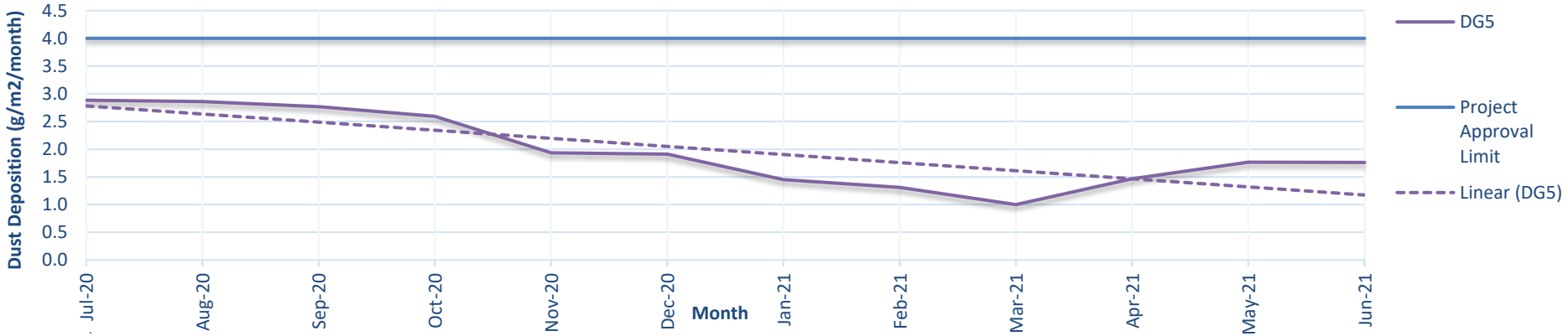
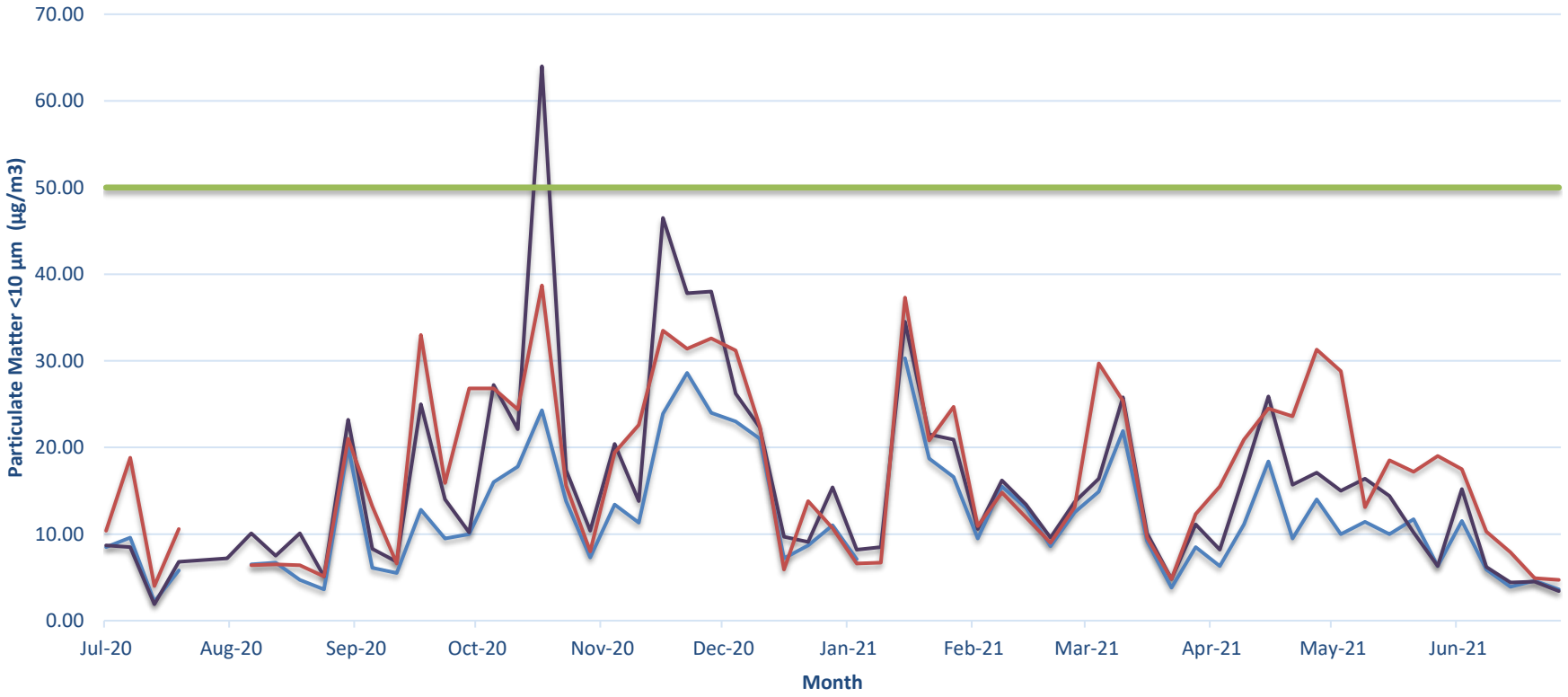
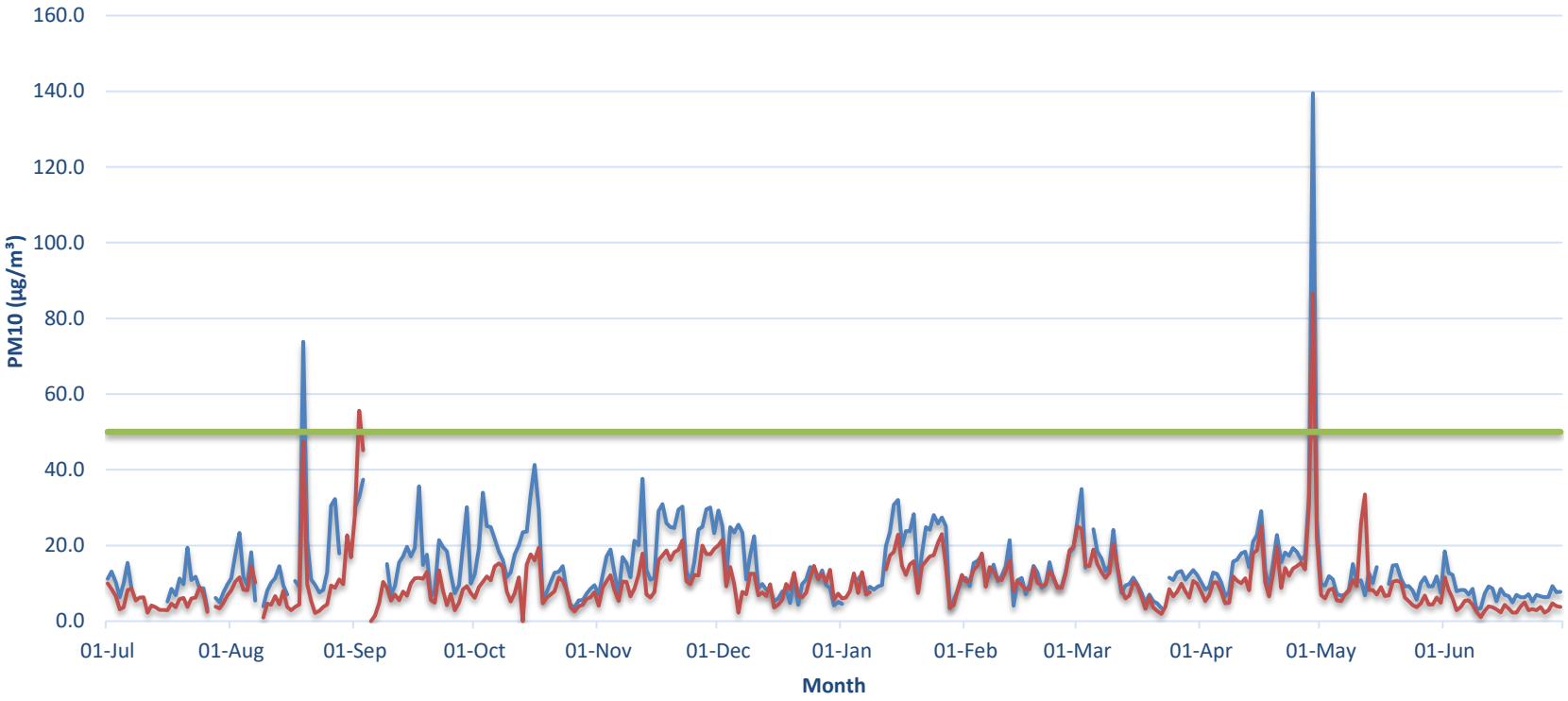


Figure 2. HV (PM10) Results - 12 Month Trend



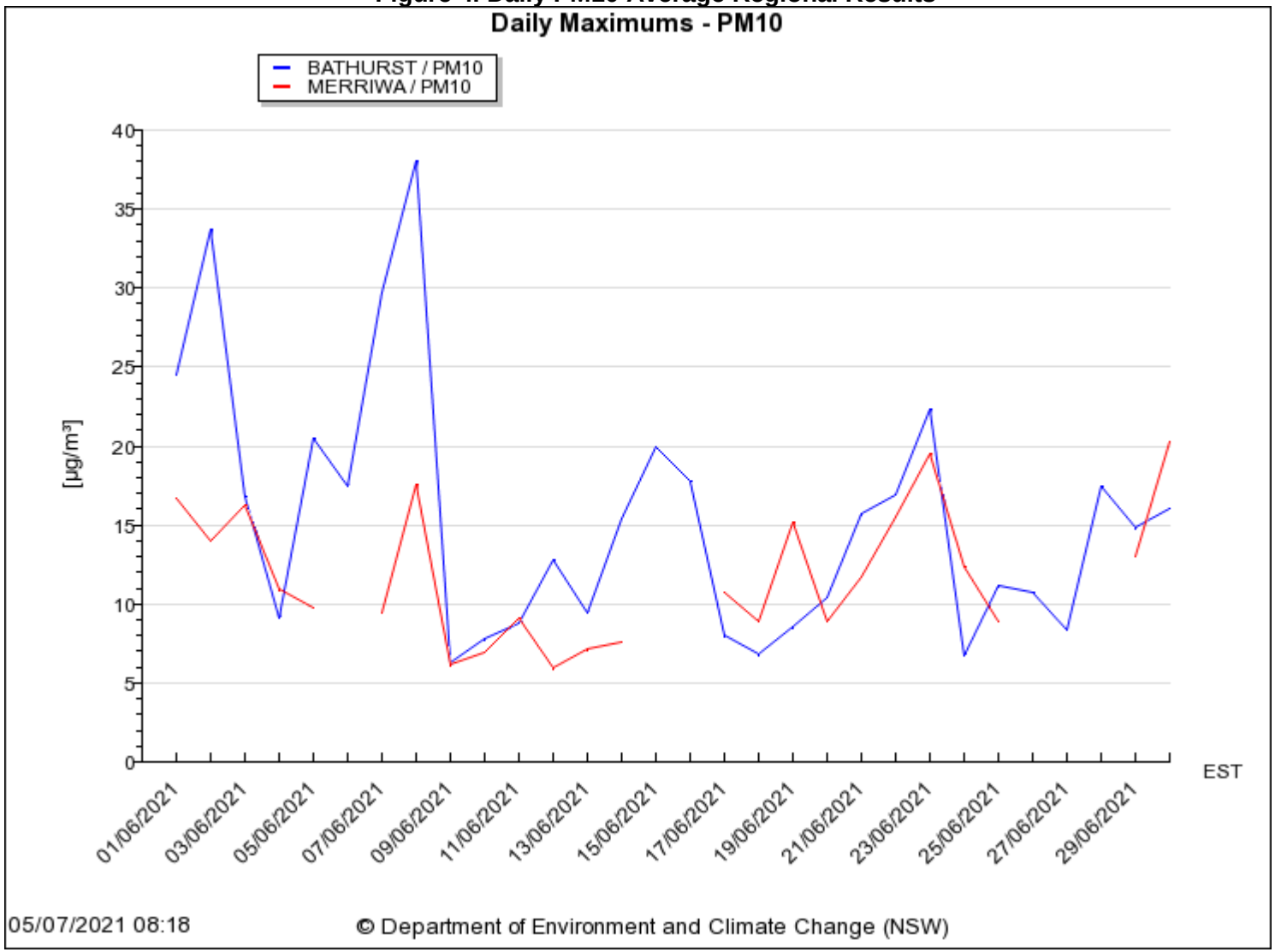
Notes:
1. Limit doesn't apply for extraordinary events such as bushfires, prescribed burning, or dust storms.
2. Recorded PM10 dust levels above 50 µg/m^3 recorded in October 2020 were caused by regional dust events.
3. A power outage prevented a sample from being collected at HV1 on 9th January 2021.
4. Power outages prevented samples from being collected at HV1 and HV5 during July 2020.

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. Power outages during July and September 2020 and January and March 2021 resulted in periods of no data at TEOM 4.
4. PM10 data recorded at TEOM 3 between 28 June and 31 July 2020 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. The elevated dust level recorded on 19 August 2020 align with the regional dust event recorded by the Department of Planning, Industry and Environment.
6. The significantly elevated dust level recorded on 29 April 2021 was due to a nearby hazard reduction burn undertaken by National Parks and Wildlife Services.
7. The operating system of TEOM 4 locked up on 16 May 2021 preventing accurate data recording until 18 May 2021.

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.

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%	159	455	361		500	No		
		Oil and Grease	milligrams per litre (mg/L)	Weekly during any discharge	3	<5	<5	<5		10.0	No	31/06/2021	15-Jul-2021
		pH	pH Unit	Continuous during discharge	100%	6.9	7.9	7.1		≥6.5≤8.5	No		
		Total Suspended Solids	milligrams per litre (mg/L)	Weekly during any discharge	3	<1	<1	<1		50	No	31/06/2021	15-Jul-2021
		Volume discharged	megalitres per day	Continuous during discharge	100%	1.780	2.732	2.410		5.0	No		

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 – JUNE 2021

Location	Start Date and Time	Wind Speed m/s [1]	Stability Class [1]	Criterion dB	Criterion Applies? [2]	WCP $L_{Aeq,15min}$ dB [3]	Exceedance [4]
N6	22/06/2021 23:54	2.0	E	37	Yes	IA	Nil
N14	22/06/2021 23:30	2.0	F	35	Yes	<25	Nil
N15	22/06/2021 23:00	0.9	F	37	Yes	IA	Nil
N17	22/06/2021 22:25	0.8	F	38	Yes	IA	Nil
N19	22/06/2021 22:00	1.0	F	35	Yes	IA	Nil
N20	23/06/2021 00:30	1.6	E	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. *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;*
3. *Site-only $L_{Aeq,15minute}$ attributed to WCP, including modifying factors if applicable; and*
4. *NA in exceedance column means criterion was not applicable due to atmospheric conditions outside those specified in EPL.*

Table 4.3: $L_{A1,1minute}$ GENERATED BY WCP AGAINST PROJECT SPECIFIC CRITERIA – JUNE 2021

Location	Start Date and Time	Wind Speed m/s [1]	Stability Class [1]	Criterion dB	Criterion Applies? [2]	WCP $L_{A1,1min}$ dB [3]	Exceedance [4]
N6	22/06/2021 23:54	2.0	E	45	Yes	IA	Nil
N14	22/06/2021 23:30	2.0	F	45	Yes	26	Nil
N15	22/06/2021 23:00	0.9	F	45	Yes	IA	Nil
N17	22/06/2021 22:25	0.8	F	45	Yes	IA	Nil
N19	22/06/2021 22:00	1.0	F	45	Yes	IA	Nil
N20	23/06/2021 00:30	1.6	E	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. *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;*
3. *Site-only $L_{A1,1minute}$ attributed to WCP; and*
4. *NA in exceedance column means criterion was not applicable due to atmospheric conditions outside those specified in EPL.*

6 SUMMARY

Global Acoustics was engaged by Wilpinjong Coal Pty Ltd to conduct a monthly noise survey of operations at WCP, an open cut coal mine located approximately 40 kilometres north east of Mudgee. The purpose of the attended noise monitoring survey is to quantify and describe the acoustic environment around the site and compare results with specified limits.

Attended environmental noise monitoring described in this report was undertaken during the night period of 22/23 June 2021 at eight monitoring locations.

Noise levels from WCP complied with relevant noise limits at all monitoring locations during the June 2021 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 30th June 2021.

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**. **Figures 7 & 8** 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	June	9	84.1	102.4	96.01	115dB (95% blasts) 120dB (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	June	9	0.03	0.51	0.16	5 mm/s (95% blasts) 10 mm/s (100% blasts)	no

Figure 7. Overpressure (dBL) recorded during Month

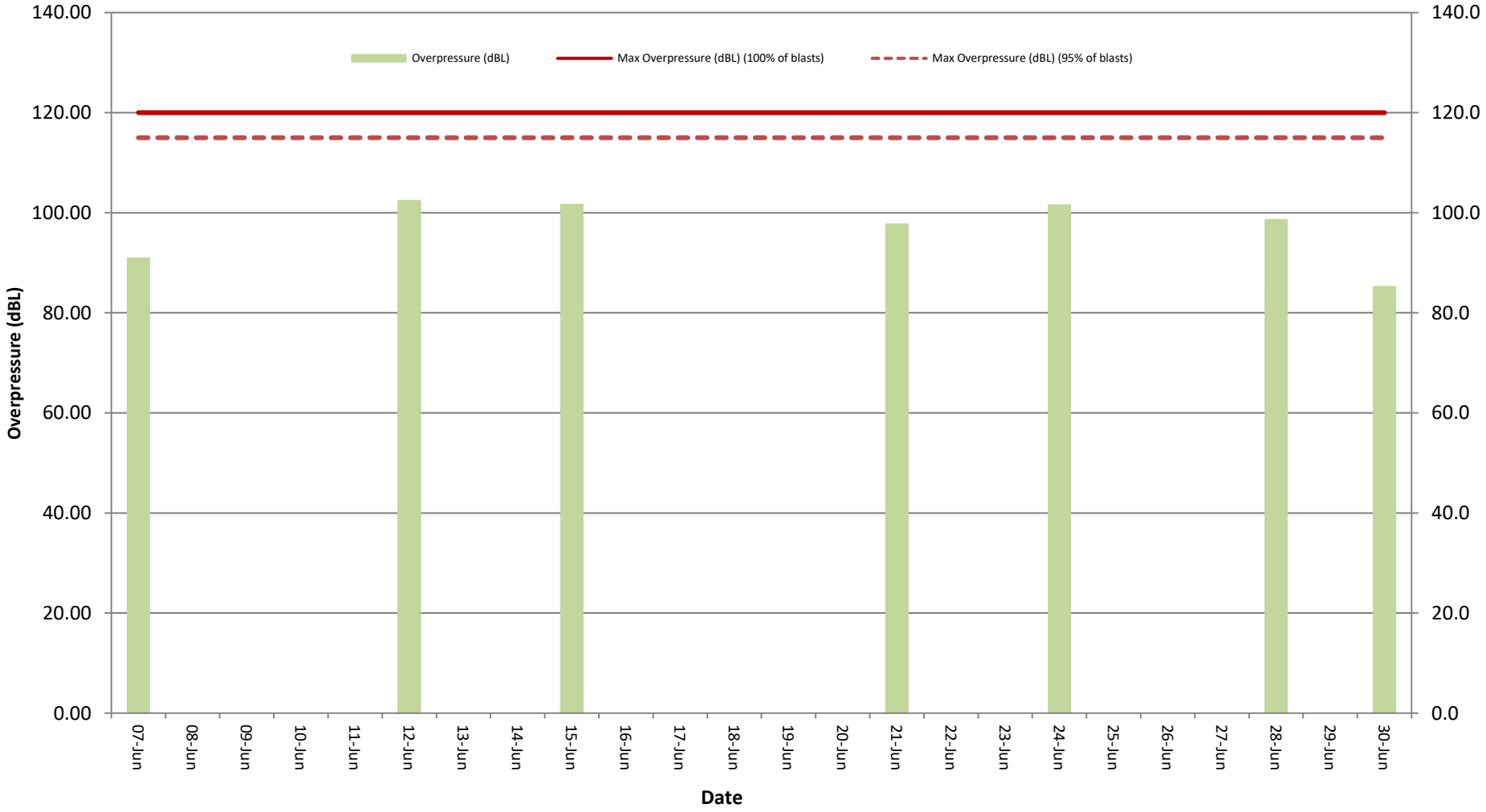
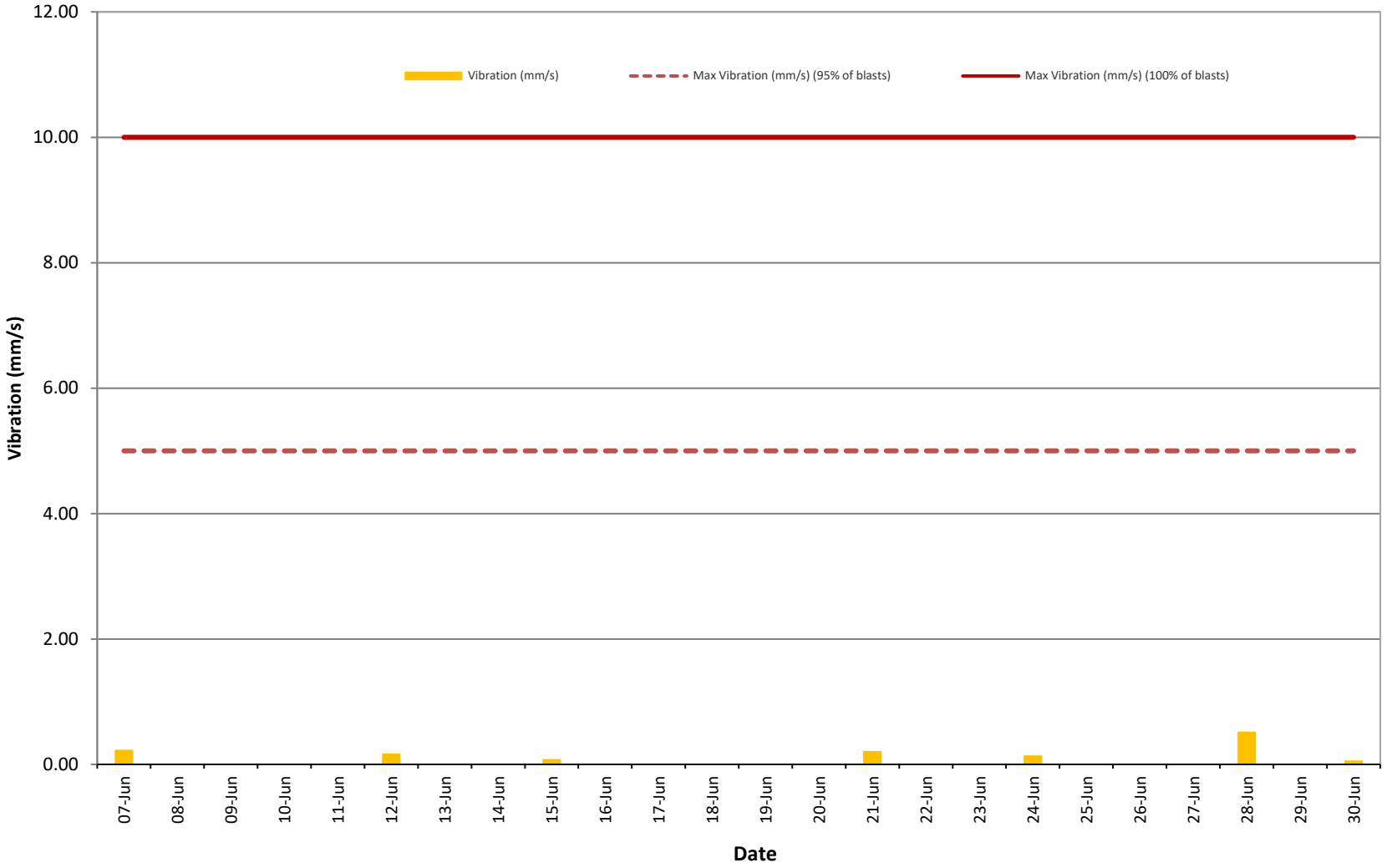


Figure 8. Vibration (mm/s) recorded during Month



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 ^{o}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
1/06/2021	8.6	0.2	18.6	9	0.6	17.9	10.1	2.7	17.4	75	38.6	96.6	0.4	0	4.2	243	0	1022.8	7.0
2/06/2021	11.7	5.3	21.9	12	5.6	21.2	13	7.1	20.2	73.2	35.4	94.3	0.2	0	2	344	0	1019.2	9.1
3/06/2021	10.8	7.2	12.8	10.9	7.6	12.7	11.2	9	12.2	92	85.5	96	0.7	0	4.7	280	19.4	1012.4	4.7
4/06/2021	12.3	10	15.4	12.3	10.2	14.8	11.8	9.9	14	77.5	55.6	90.9	3.2	1.7	5.8	253	0.6	1013.7	0.7
5/06/2021	9	2.3	15.2	9.1	3.1	14.5	9.4	4.2	13.9	72.9	46.5	97.1	1.3	0	3.8	266	0	1021.2	6.3
6/06/2021	8.1	1.4	18.2	8.2	2.3	17.3	8.8	2.8	16.3	76	38.2	95.1	1.2	0	4	297	0	1023.8	6.5
7/06/2021	7.8	0	19.1	8.1	0.3	18.1	9.2	1.7	17.5	77.4	31.6	97.5	0.6	0	2.6	295	0	1021.2	8.2
8/06/2021	8	1	15.7	8.2	1.7	15.3	9.1	3.6	15.1	88.2	52.4	97.2	0.6	0	3.8	294	14.6	1011.7	8.9
9/06/2021	6	4.4	9	5.9	4.4	9.1	5.6	4	9.1	89.2	75.4	95.4	3.3	0	6.6	278	6	1006.1	3.2
10/06/2021	5.2	4	6.4	5.2	4	6.3	4.8	3.5	6.1	91.4	85.7	94.8	0.9	0	4.7	338	27.8	1003.2	-0.2
11/06/2021	6.6	3.4	11.1	6.5	3.6	10.8	6.2	3.5	10.2	84.5	66.9	93.7	2.8	0.4	6.4	271	0	1013.7	1.4
12/06/2021	8.6	4.4	13.9	8.6	4.6	13.2	9	6.1	12.5	79.3	56.5	95.2	2.7	1	5.1	278	0	1018	4.4
13/06/2021	9.7	4.7	14.6	9.8	5.3	13.8	10.2	6.7	13.2	70.1	44.8	92.5	1.8	0	4.8	262	0	1017.6	7.0
14/06/2021	6.8	0.3	15	6.9	1.1	14.3	7.6	2.1	13.5	77.7	42.4	97.3	1	0	4.6	250	0	1016.5	5.8
15/06/2021	7.1	0.5	16.6	7.3	1	15.8	8	2	15.3	81.4	48.7	96.7	0.5	0	2.8	272	0	1016.7	6.7
16/06/2021	9	0.2	17.9	9.3	0.7	17.5	10	2.2	16.7	80.5	49.7	97.7	0.3	0	6.8	92	0.8	1013.9	6.8
17/06/2021	10.2	6.2	13.9	10.1	6.5	13	9.8	6.6	12.3	71.2	51.3	93.7	4	1.8	7.6	262	0.8	1011.8	1.8
18/06/2021	10	7.9	14	9.9	7.9	13.2	9.6	8.3	12.5	82.4	64	94.5	3	0.2	6	265	2.2	1010.3	0.9
19/06/2021	11.1	6	16.5	11.1	6.7	15.3	11.1	7.9	14.5	68.8	45.7	91.4	2	0	4	236	0	1015.1	6.5
20/06/2021	10.1	3.7	16	10.3	4.6	15.1	11.2	6.8	14.4	75.7	54.2	95.8	1.2	0	4.5	103	0	1021.6	8.1
21/06/2021	8.3	2.2	16.3	8.5	2.7	15.5	9.6	3.7	14.7	79.7	46.9	97.5	0.9	0	3.9	72	0	1025.4	7.7
22/06/2021	9	2.5	16.2	9.1	3.1	15.5	9.7	3.9	14.8	81.9	53.2	96.7	1.3	0	4.5	71	0	1028.7	6.0
23/06/2021	10.8	4.9	15.8	11	5.3	15.5	11.5	6.2	14.6	84.4	61.7	96.9	0.5	0	2.6	69	0	1024.4	5.3
24/06/2021	13.3	9.7	17.3	13.5	9.7	17	13.7	10.6	16.4	85.3	61.6	96.6	2.1	0	5.2	300	8	1015.2	5.6
25/06/2021	11.6	7.2	15.4	11.5	7.8	14.7	11.6	9	14.1	78.1	54.7	93.3	2.5	0	5.7	272	0	1015.9	4.7
26/06/2021	9.1	4.7	14.3	9.3	5.3	13.8	9.5	6.2	13.2	80.5	49.1	96	2.1	0	5.7	269	4.2	1021.1	6.5
27/06/2021	7.8	1.3	15.5	8	1.9	14.6	8.8	4.6	13.9	76.6	40.1	97.3	1.2	0	3.9	249	0	1026.1	7.2
28/06/2021	7.4	-0.1	15.2	7.6	0.3	14.5	8.4	1.6	13.6	84.2	59.8	97.5	0.9	0	4.8	68	0	1029.8	5.3
29/06/2021	10.2	4.8	15.9	10.4	5.4	15.3	11.2	7.1	14.5	83.4	60.5	96.4	1.5	0	5.7	80	0	1030.8	6.3
30/06/2021	12.2	9.5	16.5	11.9	9.6	15.9	12	10.1	15.3	80.9	58.7	92.5	1.9	0	4.1	91	0	1027.7	3.9

Figure 6 – Air (Dust) Monitoring Locations

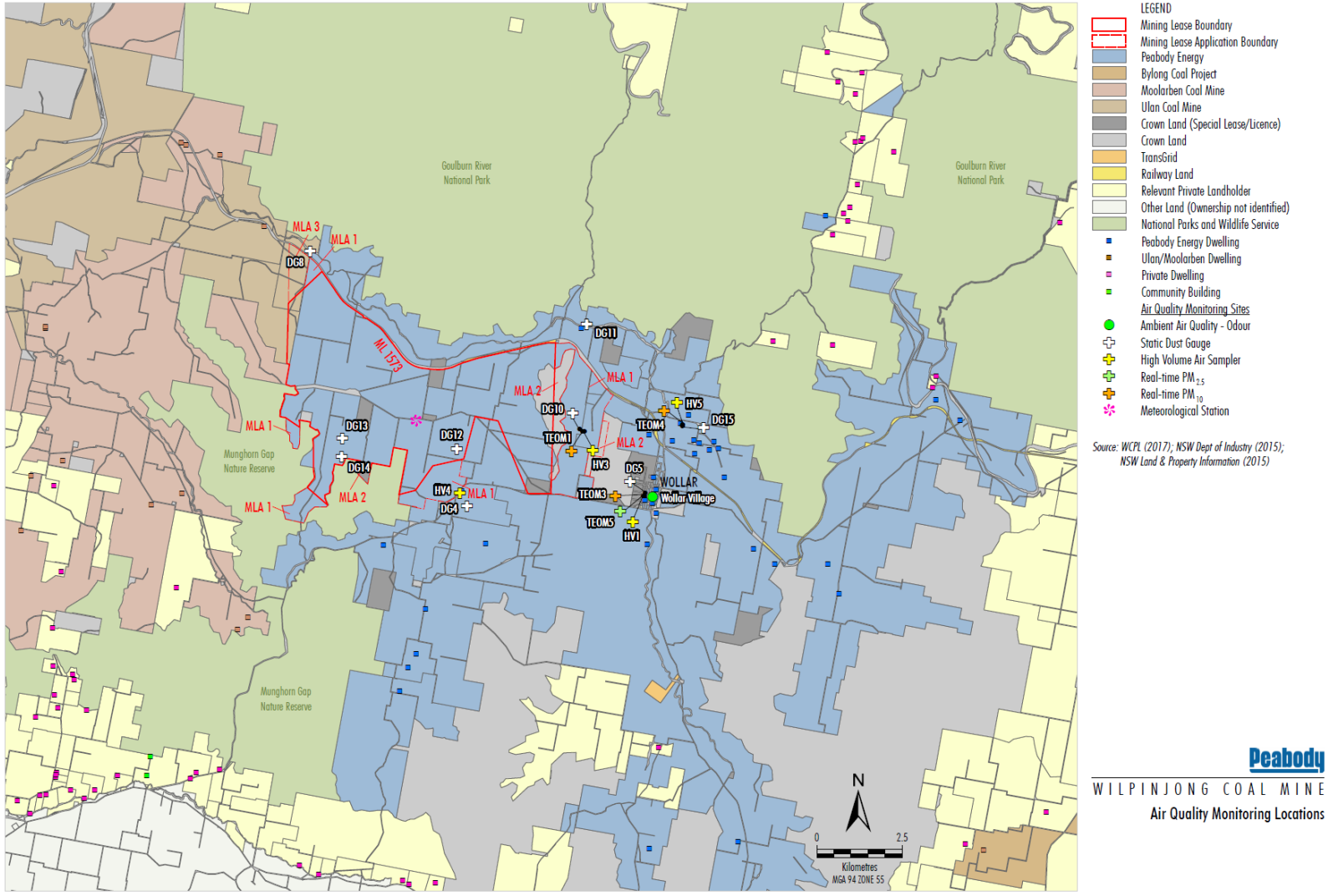


Figure 7 – Attended Noise Monitoring Locations

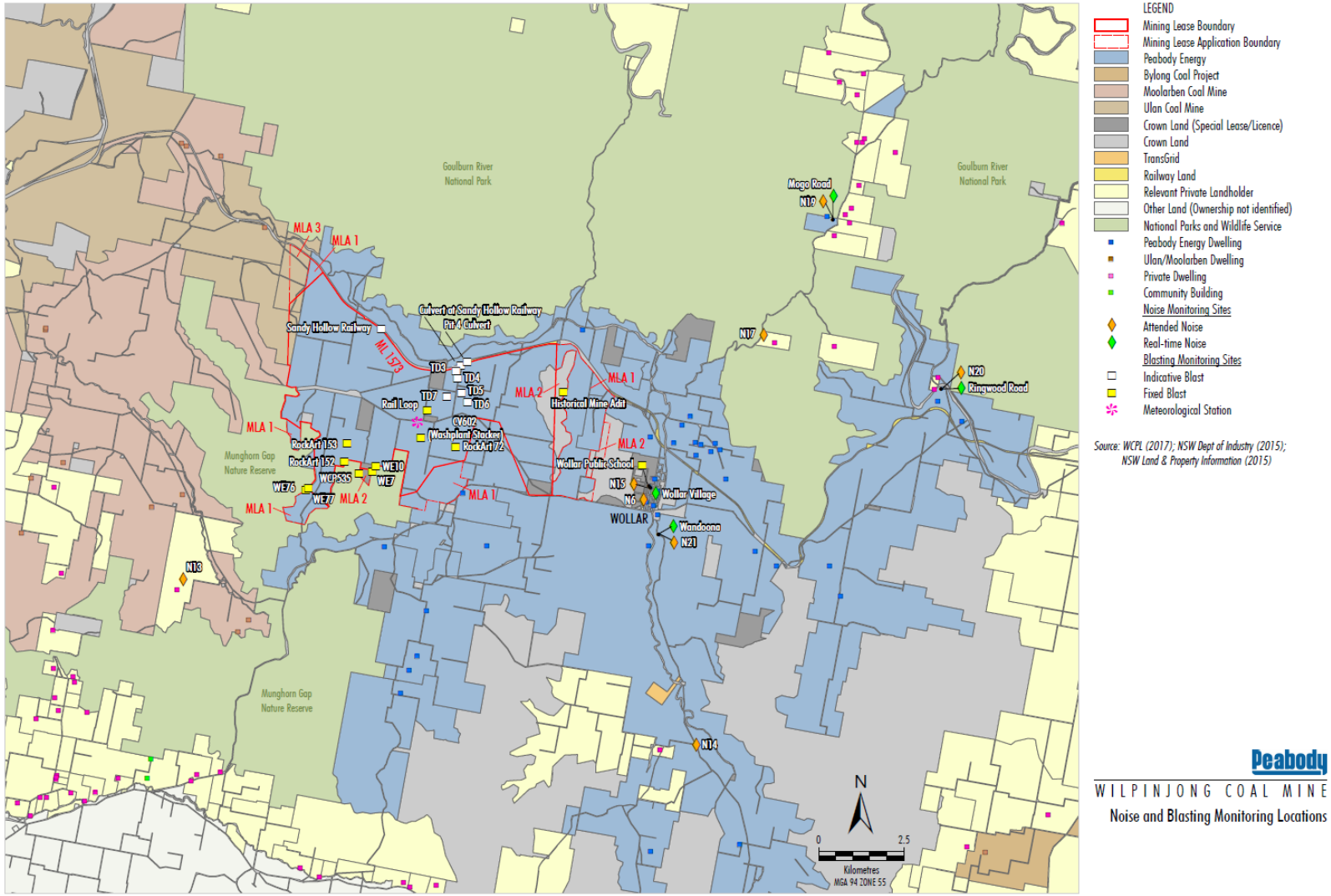


Figure 8 – Wollar Village Environmental Monitoring Sites