WILPINJONG COAL PTY LTD

Environment Protection Licence (EPL) 12425

Link to Environment Protection Licence EPL12425

LICENCE MONITORING DATA
MONTHLY SUMMARY REPORT

for

1 February 2020 to 29 February 2020

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				2.1				25/02/20	20/03/20
4	DG5	Particulates – TIM	grams per square metre per month	Monthly	1				2.5	3.0	4.0	Yes	25/02/20	20/03/20
6	DG8	Particulates – TIM	grams per square metre per month	Monthly	1				7.5				25/02/20	20/03/20
9	DG11	Particulates – TIM	grams per square metre per month	Monthly	1				2.9				25/02/20	20/03/20
17	DG15	Particulates – TIM	grams per square metre per month	Monthly	1				1.9				25/02/20	20/03/20
13	HV1	PM10	micrograms per cubic metre	Every 6 days	5	3.6	59.1	21.4			50	Yes	26/02/20	05/04/20
19	HV4	PM10	micrograms per cubic metre	Every 6 days	5	4.5	106.0	32.6			50		26/02/20	05/04/20
20	HV5	PM10	micrograms per cubic metre	Every 6 days	5	3.4	66.2	24.3			50		26/02/20	05/04/20
22	TEOM3	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	0.3	49.0	13.6			50	Yes		
23	TEOM4	PM10	micrograms per cubic metre	Continuous (24 Hr Average)	100.0%	2.4	72.1	19.2			50			

Notes:
1. Limits specified in the above table are from Development Consent SSD-6764.
2. Excessive PM10 results at TEOMs 3 and 4 during the month were due to a regional dust event as shown in Figure 4.
3. The excessive result recorded at DG8 for the month consisted of 50% ash and 50% organic matter. Thic can be attributed to the regional bushfires present during the month.

Figure 1a. DG Results - 12 Month Trend
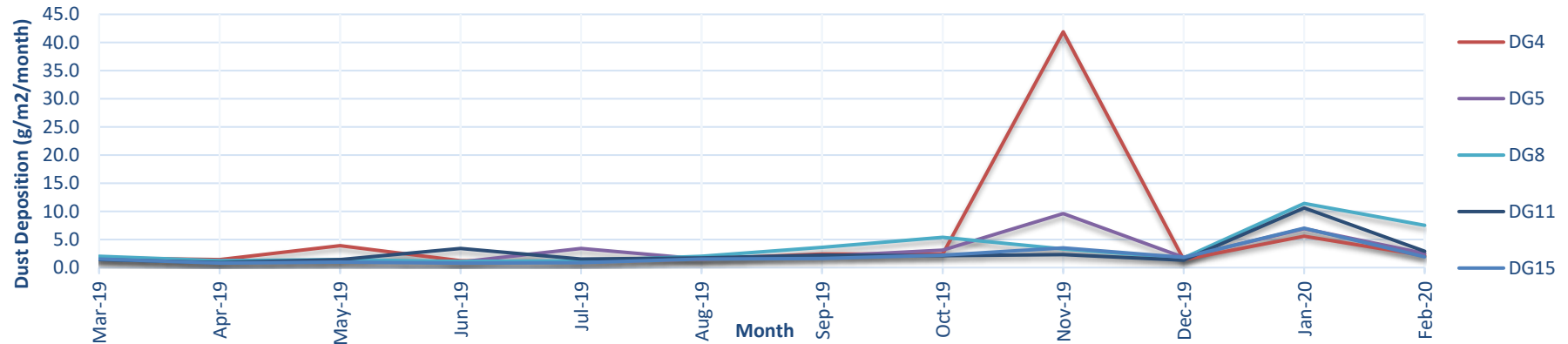
Notes:
1.. Limit of 4 g/m2/month (annual average) applies to DG5 (Wollar Village) - refer Figure 1b.
2. The excessive dust result recorded at DG4 in November 2019 was due to high concentrations of organic matter. DG8's excessive dust level recorded in October 2019 was also due to a high concentration of organic matter.
3. During November 2019, DG5 accumulated a high concentration of ash due to bushfires in the area.During January 2020, all dust gauges recorded an ash content higher than 80% due to the regional bushfires.
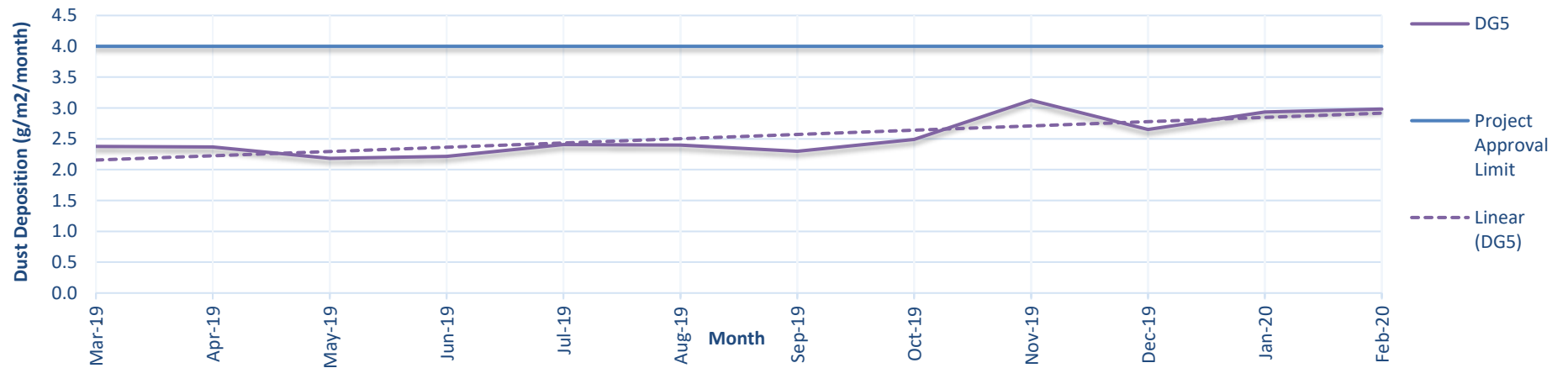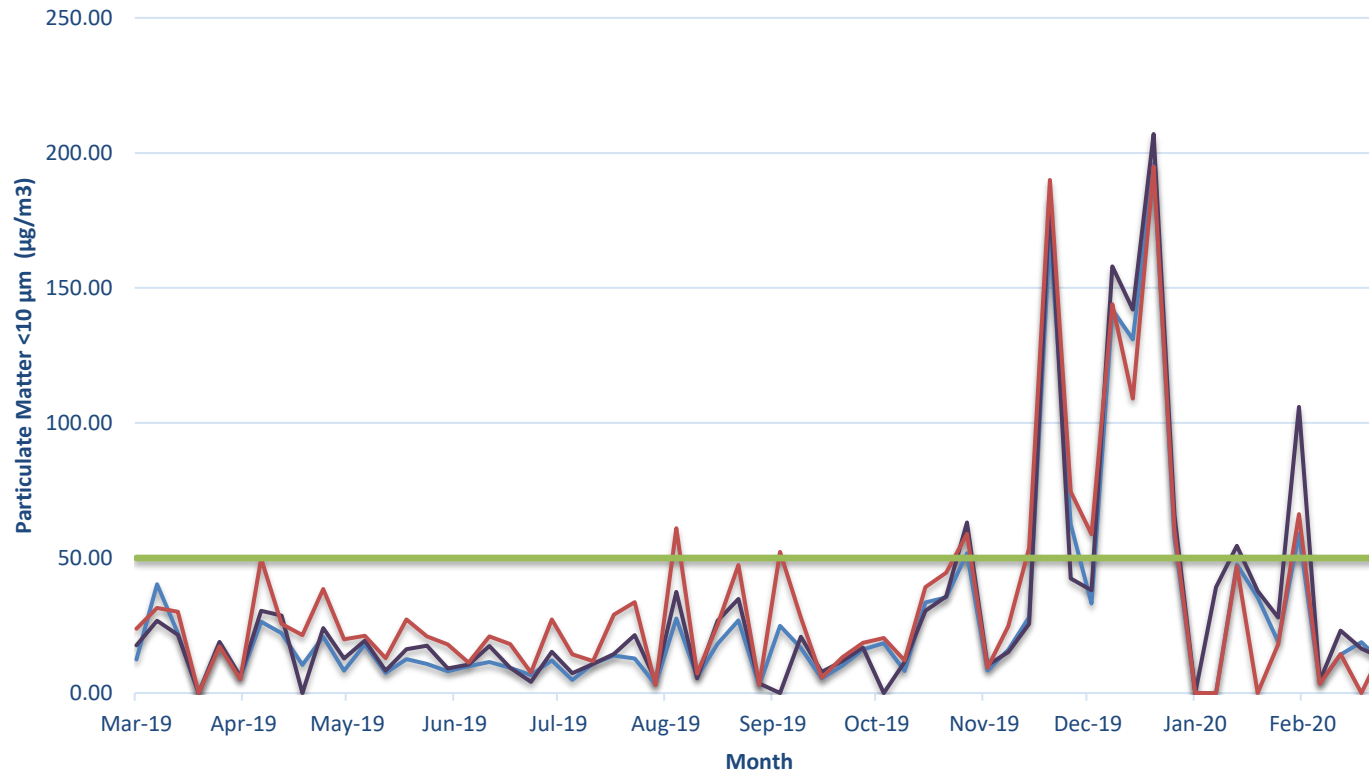
Figure 1b. DG 5 Results - Annual Average

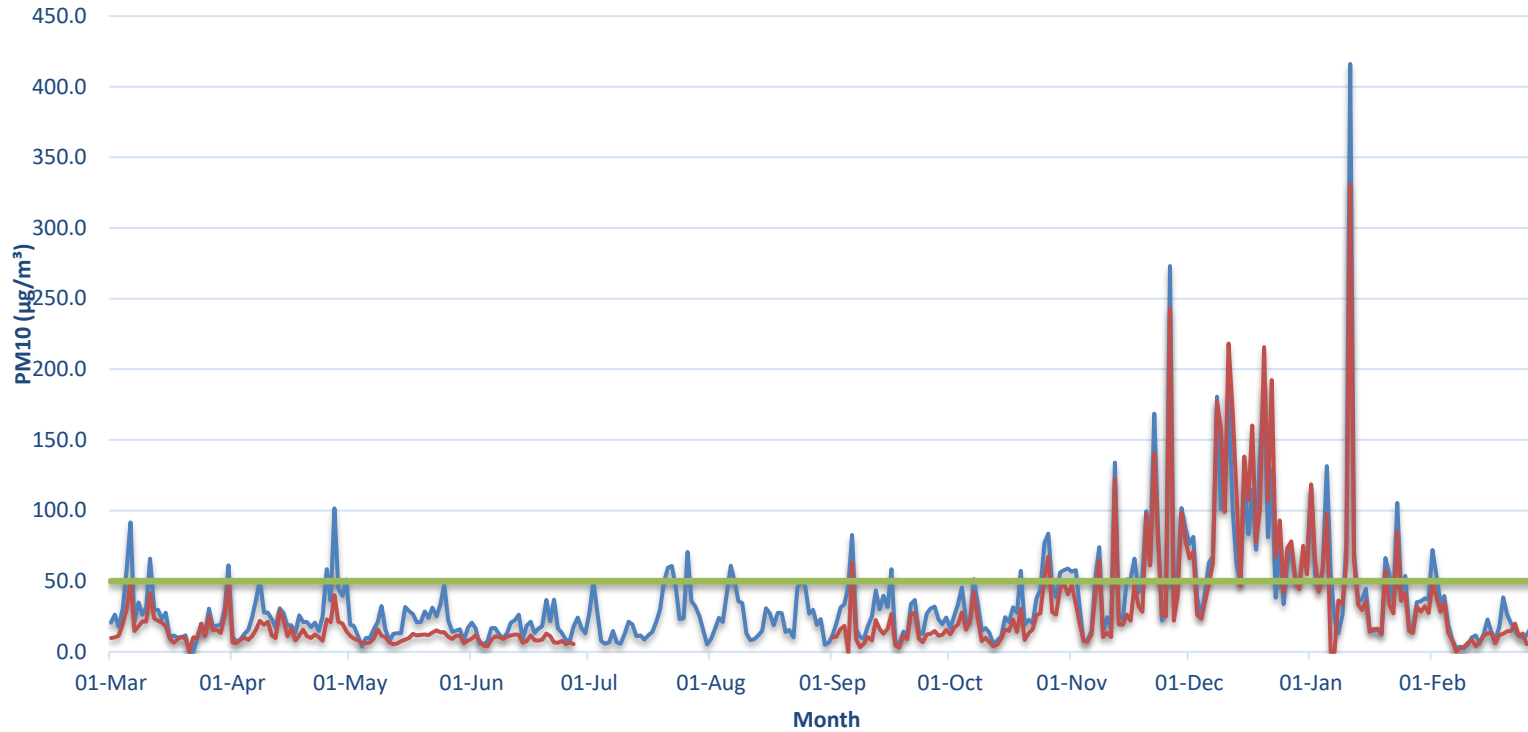## Figure 2. HV (PM10) Results - 12 Month Trend

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:** 20 April 2019, **HV1:** 21 March 2019, **HV5:** 21 March 2019.
3. Recorded PM10 dust levels above 50 µg/m³ recorded in February, October and November 2019 and January and February 2020 were caused by regional dust events - 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.
5. Due to operator error, all results recorded on the 9th January 2020 were invalid.

**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 February, March, April, September, October, November and December 2019 and January 2020 due to regional dust events and/or bushfire smoke.
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.
5. 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.

Figure 4. Daily PM10 Average Regional Results
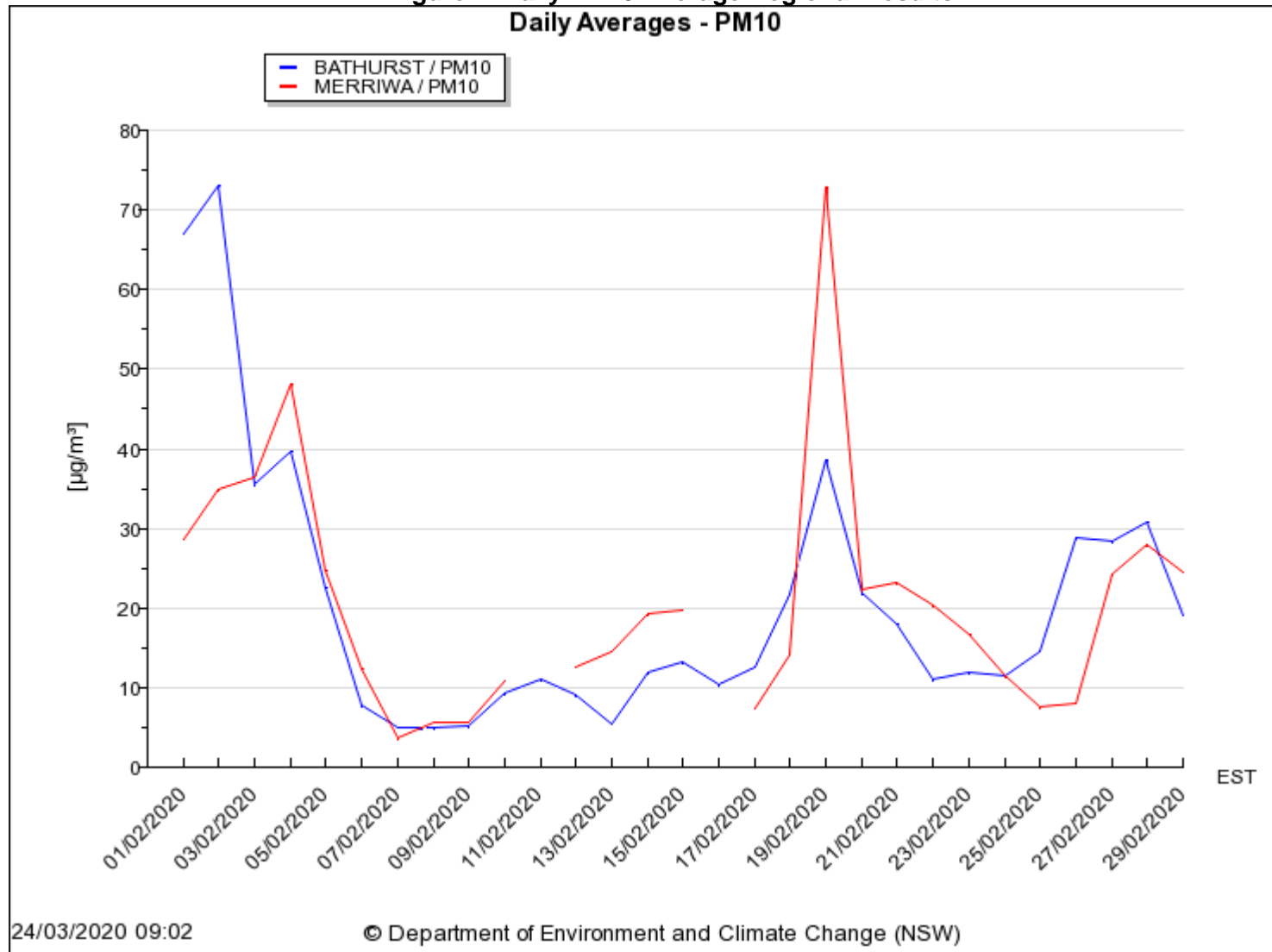
Surface Water Monitoring

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 – FEBRUARY 2020

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	06/02/2020 01:06	5.4	E	37	No	IA	NA
N13	06/02/2020 01:19	5.0	E	35	No	IA	NA
N14	06/02/2020 00:18	4.2	E	35	No	IA	NA
N15	05/02/2020 23:04	1.1	E	37	Yes	IA	Nil
N17	05/02/2020 22:30	1.0	E	38	Yes	IA	Nil
N19	05/02/2020 22:02	0.9	E	35	Yes	IA	Nil
N20	05/02/2020 23:36	3.5	F	35	No	IA	NA
N21	06/02/2020 00:45	5.5	D	35	No	IA	NA

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 – FEBRUARY 2020

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	06/02/2020 01:06	5.4	E	45	No	IA	NA
N13	06/02/2020 01:19	5.0	E	45	No	IA	NA
N14	06/02/2020 00:18	4.2	E	45	No	IA	NA
N15	05/02/2020 23:04	1.1	E	45	Yes	IA	Nil
N17	05/02/2020 22:30	1.0	E	45	Yes	IA	Nil
N19	05/02/2020 22:02	0.9	E	45	Yes	IA	Nil
N20	05/02/2020 23:36	3.5	F	45	No	IA	NA
N21	06/02/2020 00:45	5.5	D	45	No	IA	NA

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

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 5/6 February 2020 at eight monitoring locations.

Noise levels from WCP complied with relevant noise limits at all monitoring locations during the February 2020 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 March 2020.

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	February	15	72.5	110.7	91.1	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	February	15	0.02	0.69	0.2	5 mm/s (95% blasts) 10 mm/s (100% blasts)	no

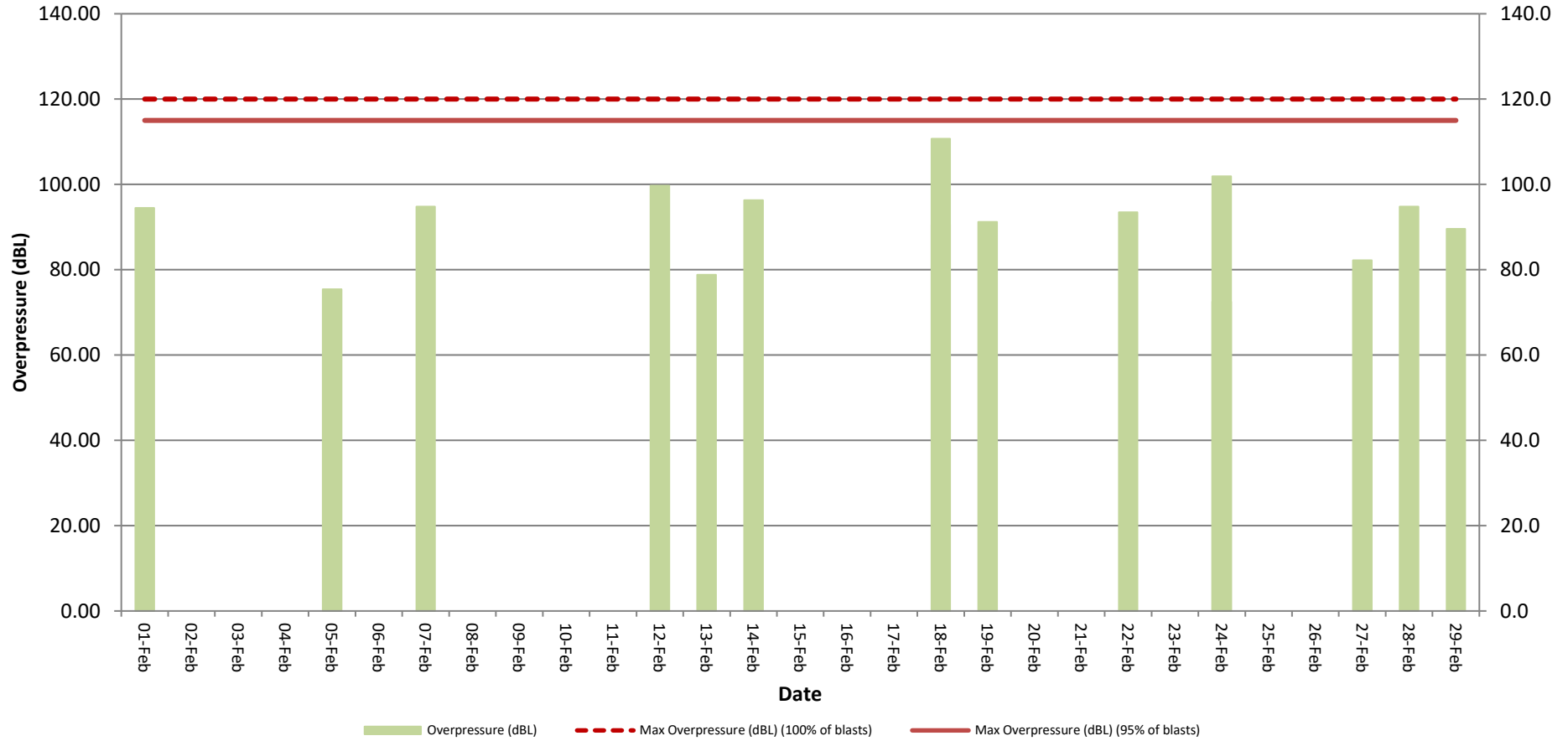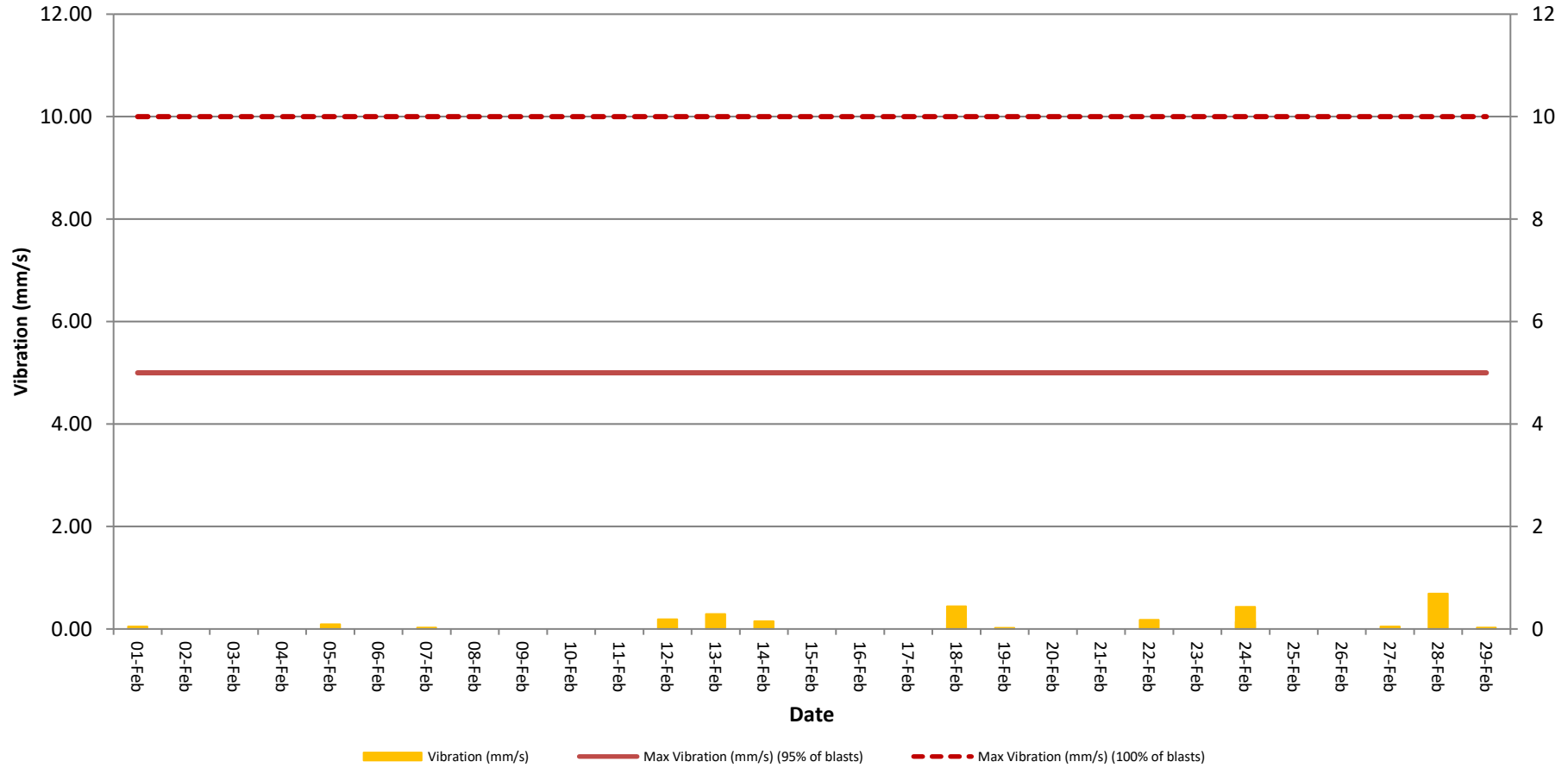Figure 7. Overpressure (dBL) recorded during Month

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 °C/100m.

Table 5 shows the meteorological data recorded during the month.

Table 5 – Monthly Meteorological Data

Date	Temperature (°C) 2m			Temperature (°C) 10m			Temperature (°C) 60m			Humidity (%)			Prevailing Wind Speed			Prevailing Wind Dir	Rain (mm)	Bar (hPa)	Lapse Rate (oC/100m)
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	(Deg)			Max
1/02/2020	34	24.6	41.3	33.9	25	40.4	33.9	26.9	39.4	35.3	20	60.2	2.2	0	6	275	0	1008.7	7.4
2/02/2020	33.7	27.4	40.1	33.2	26.6	39.1	32.8	26.7	38	36.2	19.6	58.6	3.2	0	9.6	273	0	1004.9	4.9
3/02/2020	27.4	23.1	32.5	27	23.3	31.5	26.4	23	30.4	48.2	14.8	90.1	2.2	0	7	230	0.8	1005.8	0.2
4/02/2020	21.2	17.9	25.6	20.5	17.2	24.5	19.9	16.9	23.4	53.3	36.9	69.4	5.8	2.5	8.1	78	0	1015.6	-0.9
5/02/2020	20.9	17.1	25.2	19.9	13.9	24.5	20	16.9	24.2	58	42.7	71.8	1.9	0.5	6.1	93	0	1017.7	0.5
6/02/2020	20.1	18.3	22.4	19.4	17.3	21.8	19.3	17.6	21.9	74.4	58.9	90.6	4.5	2.7	6.8	89	9.8	1017.6	-0.9
7/02/2020	21	18.6	24.1	20	16.7	23.1	20.2	18	23.2	77.2	61.4	93.5	4.1	2.2	6.5	93	5.8	1015.6	-0.5
8/02/2020	20.8	18.6	23	20.3	18.6	22.5	20.2	18.2	22.2	78	63.7	90.7	5	2.6	7.4	87	7.8	1013.4	-0.4
9/02/2020	20.2	18.1	22.3	19.6	18.1	21.1	19.7	17.7	21.5	86.3	80.3	95.3	3.2	0	6.7	97	36	1006.2	-0.2
10/02/2020	22.7	18.3	27.8	22	17.4	27.1	22.3	18.6	26.5	72.7	48.1	93.7	1.8	0	3.7	76	0.8	1006.3	2.3
11/02/2020	21.7	18.9	29.1	21.1	18.3	28.1	21.4	18.5	27.7	78.1	46.8	91.4	0.9	0	8	120	10	1006.7	2.6
12/02/2020	22.3	17.6	28.7	21.5	17.3	28	21.8	17.7	27.5	80	51.1	96.2	1.6	0	5.2	84	0	1006.6	1.1
13/02/2020	23.6	21.2	27	22.6	20.2	25.9	22.9	20.7	25.9	75.9	63.7	87.7	3	0	5.8	84	0.4	1007.8	0.0
14/02/2020	23.7	17.6	30.4	22.7	16.6	29.7	23.1	18.7	28.7	60.2	34	85.3	1.6	0	4.8	80	0	1005.9	2.1
15/02/2020	24.9	17.1	32.8	24.5	17	32.4	24.2	17.6	31.5	62.9	35.2	90.7	0.7	0	5.9	274	0	1004.7	1.2
16/02/2020	23	19.5	27.1	22.3	18.7	26.4	22	19	25.6	72.2	52.7	86.7	3.4	1.6	5.6	76	0	1010.7	-0.7
17/02/2020	20.1	18.6	21.7	19.8	18.5	21.3	19.5	18.1	20.9	89	77.3	94.9	2	0	5.2	82	26.8	1012.2	0.2
18/02/2020	24.6	17.9	31.8	24.4	17.7	31.1	24.2	17.7	30.4	75.5	48.8	97.1	1.1	0	4.4	300	0	1006.5	3.0
19/02/2020	21.6	17.6	26.7	21.4	18	26.3	21.1	17	27	54.6	37	95.6	2.3	0	8.7	246	15	1005.2	1.8
20/02/2020	20.4	12.7	27.2	20.2	13.1	26.6	20.5	14.3	25.8	52	26.2	87	1.4	0	4.4	278	0	1008.7	4.6
21/02/2020	21.2	15.8	26.4	21	16.5	25.8	20.5	16.3	25.3	65.7	33.9	87.2	2.8	0.8	5.3	84	0	1013.7	1.2
22/02/2020	21.3	18.4	24.9	21	18.3	24.3	20.5	18	23.4	66.4	53.7	76	4.6	3.2	5.9	87	0	1019.6	-0.5
23/02/2020	20.6	18.8	22.9	20.5	18.6	22.7	20	18.2	22.1	68.1	54.1	78.3	3	1.2	5.1	84	0	1021.8	0.2
24/02/2020	21.3	17	25.5	21.1	17.4	24.7	20.8	17.8	23.8	69	53.2	85.3	2.3	0	4.7	73	0	1018.6	1.9
25/02/2020	23	16.5	29.1	22.8	17.1	28.1	22.6	17.2	27.6	68.1	42.5	94.8	0.3	0	2	11	0	1013.6	3.3
26/02/2020	21.7	18.5	29	21.6	18.3	28.1	21.7	19.2	27.6	79.2	51.4	94.9	1.5	0	7.6	273	13.6	1008	3.3
27/02/2020	21.5	17.3	27.2	20.9	16.8	26.8	21.1	17.6	26.2	68.3	32.6	97.1	0.3	0	3.7	24	0.2	1007.8	3.7
28/02/2020	20.6	10.4	29.7	20.2	10.4	28.9	20.7	12.7	28.3	49.1	18	84.2	1.1	0	6.3	38	0	1009.3	6.1

Figure 6 – Air (Dust) Monitoring Locations
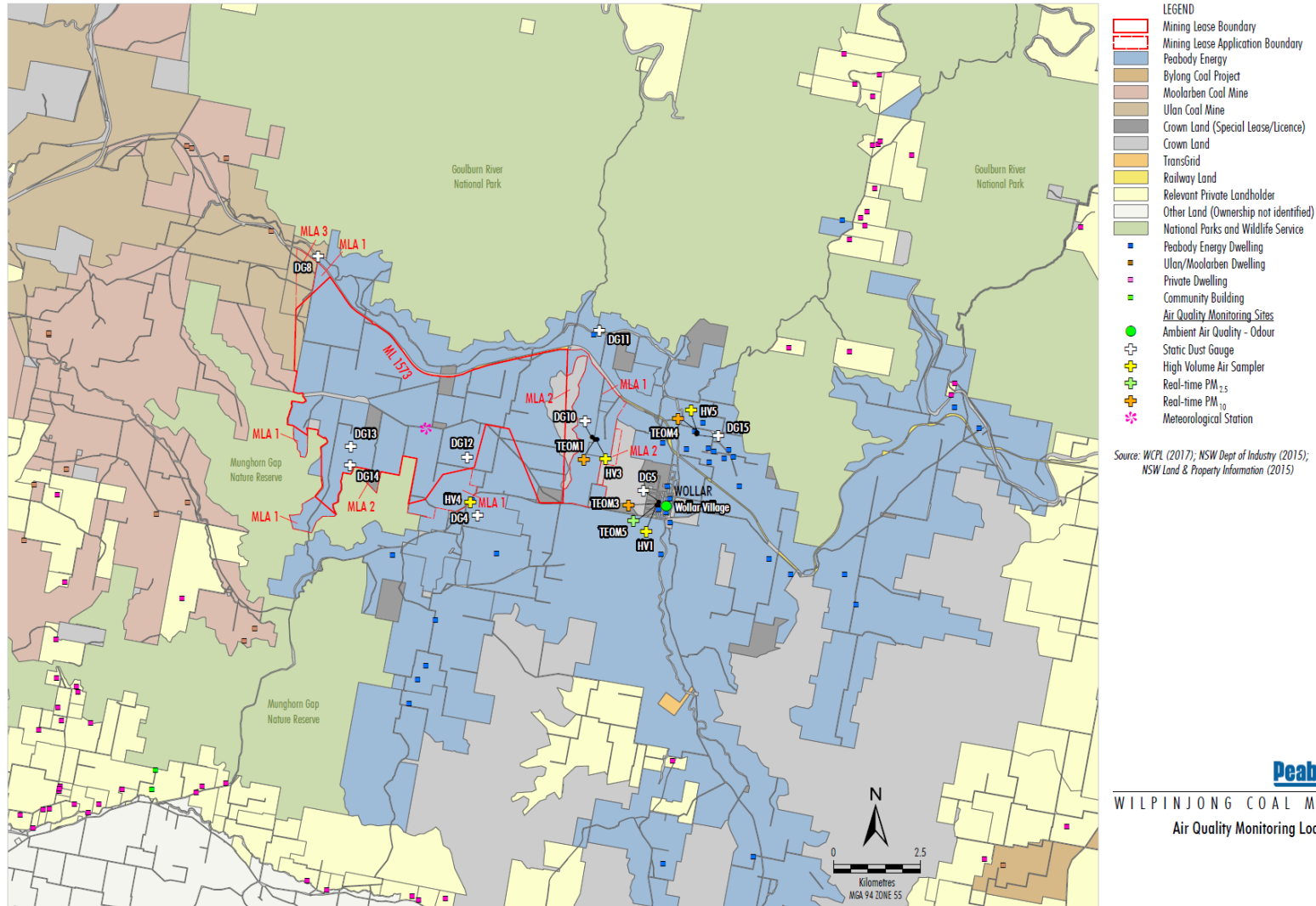
Figure 7 – Attended Noise Monitoring Locations

Wilpinjong Coal Mine
Noise and Blasting Monitoring Locations

Source: WCPL (2017); NSW Dept of Industry (2015);
NSW Land & Property Information (2015)
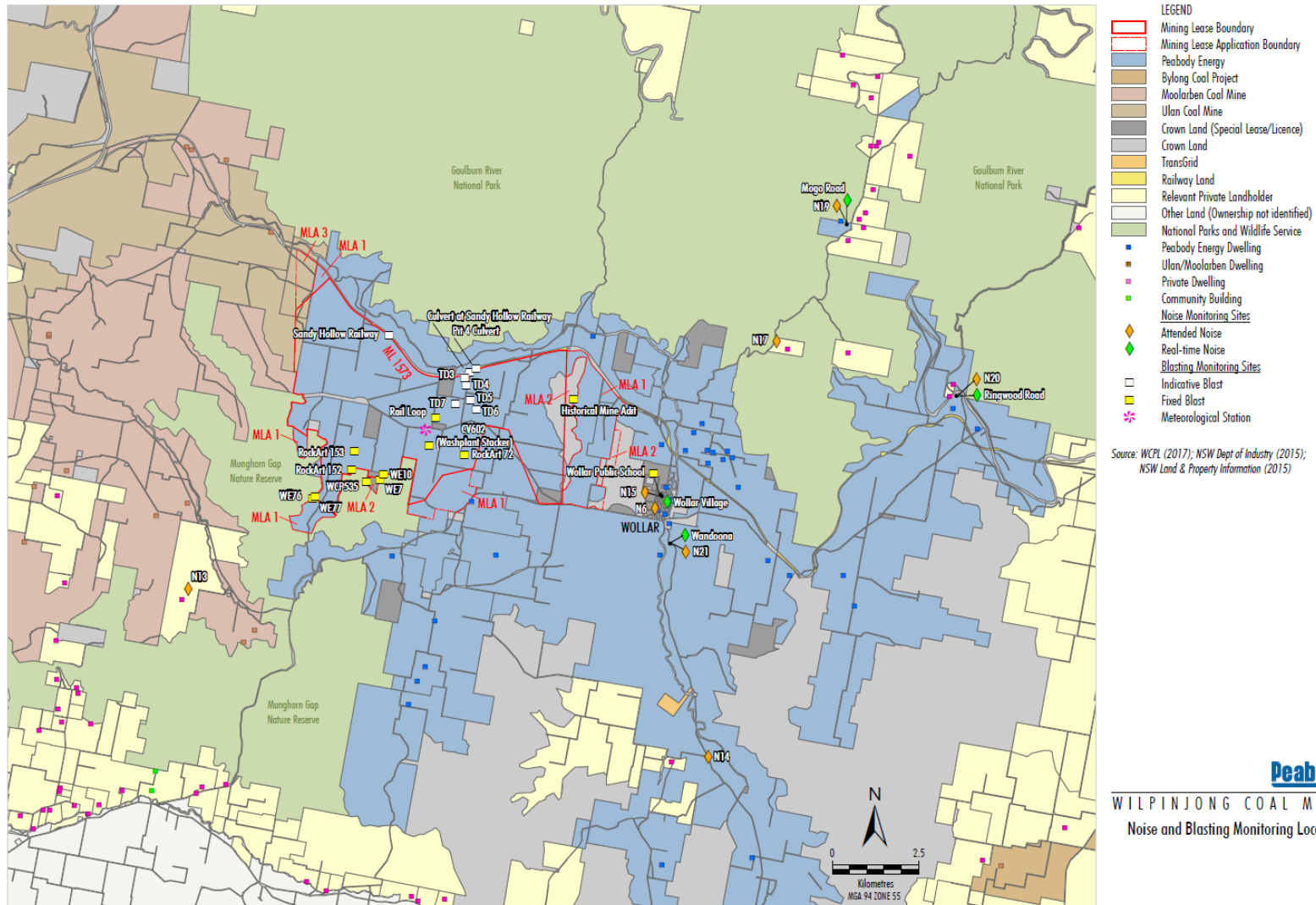
Figure 8 – Wollar Village Environmental Monitoring Sites