



Bengalla Mining Company Pty. Limited

Bengalla Road, (Locked Mailbag 5)

Muswellbrook NSW 2333 Australia

A.B.N. 32 053 909 470

Bengalla Mine

State Significant Development 5170 Monthly Monitoring Data Summary

December 2018



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1. INTRODUCTION

State Significant Development (SSD) 5170 requires the Bengalla Mining Company Pty Ltd (BMC) to make a comprehensive summary of the Bengalla Mine (Bengalla) monitoring results, reported in accordance with the specifications in any conditions of SSD-5170, or any approved plans and programs, publicly available on its website. This document has been prepared in accordance with the Department of Planning and Environment (DPE) *Web-Based Reporting Guideline* (October 2015) to satisfy the above requirement.

This document provides a summary of environmental monitoring data sampled as prescribed by SSD-5170 for December 2018 (Reporting Period). Monitoring data provided is as follows:

- Air quality, particulate matter less than 10 microns (PM₁₀), total suspended particulate (TSP) matter and depositional dust;
- Noise; and
- Blast overpressure and ground vibration.

Monitoring Data Obtained: 15 January 2018

Monitoring Data Published: 23 January 2018

Revised¹ Monitoring Data Published: 20 February 2019

¹ Monitoring Summary updated to include the 2018 annual average air quality data.



2. AIR QUALITY

The air quality monitoring program at Bengalla is undertaken in accordance with the requirements of SSD-5170 (as modified), EPL 6538 and the Bengalla Air Quality Management Plan (AQMP). Air quality monitoring results relevant to SSD-5170 are summarised in the following sections.

2.1 Particulate Matter less than 10 Microns

To evaluate the performance of Bengalla against the SSD-5170 criterion for particulate matter, BMC operates and maintains three High Volume Air Samplers (HVAS) measuring PM₁₀. Additional PM₁₀ data is sourced from Mt Arthur Coal through an information sharing agreement. The HVAS are run for 24 hours every six days.

PM₁₀ data for the Reporting Period is provided in **Table 1**.

Pollutant:	PM ₁₀
Unit of measure:	Micrograms per cubic metre (µg/m ³)
Monitoring location:	See Table 1 and Appendix A .
Monitoring frequency:	24 hours every 6 days
24 Hour Average Criteria:	50 µg/m ³
Annual Average Criteria:	30 µg/m ³
Sampled:	03/12/2018 – 27/12/2018

Table 1. PM₁₀ Monitoring Summary

Run Date	Run Date Reading (µg/m ³)			
	PM10-1 Racecourse Road	PM10-2 St James School	PM10-3* Roxburgh Road	PM10-4 Wybong Road
03/12/2018	47	45	36	33
09/12/2018	43	38	58	71
15/12/2018	37	29	41	50
21/12/2018	28	27	29	36
27/12/2018	41	39	63	84
2018 Annual Average	33	27	28	38

* Data sourced from Mt Arthur Coal



2.2 Total Suspended Particle Matter

To evaluate the performance of Bengalla against the SSD-5170 criterion for particulate matter, BMC operates and maintains five HVAS measuring TSP. The HVAS are run for 24 hours every six days.

TSP data for the Reporting Period is provided in **Table 2**.

Pollutant:	TSP
Unit of measure:	µg/m ³
Monitoring location:	See Table 2 and Appendix B .
Monitoring frequency:	24 hours every 6 days
Annual Average Criteria:	90 µg/m ³
Sampled:	03/12/2018 – 27/12/2018

Table 2. TSP Monitoring Summary

Run Date	Run Date Reading (µg/m ³)				
	HV01 Wybong Road (East)	HV02 Racecourse Road	HV03 Logues Lane	HV04 St James School	HV06 Wybong Road (West)
03/12/2018	169	125	103	110	85
09/12/2018	97	115	105	79	244
15/12/2018	77	66	57	54	125
21/12/2018	82	81	74	72	155
27/12/2018	93	89	63	77	228
2018 Annual Average	94	91	70	72	122



2.3 Depositional Dust

To evaluate the performance of Bengalla against the SSD-5170 criterion for depositional dust, BMC operates and maintains 14 depositional dust gauges surrounding the Bengalla operations.

Depositional dust data for the Reporting Period is provided in **Table 3**.

Pollutant:	Depositional Dust
Unit of measure:	Grams per metre squared per month (g/m ² /month)
Monitoring location:	See Table 3 and Appendix C .
Monitoring frequency:	Monthly
Maximum depositional dust increase criteria:	2 g/m ² /month
Maximum total depositional dust criteria:	4 g/m ² /month
Sampled:	15/11/2018 – 17/12/2018



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Table 3. Depositional Dust Monitoring Summary

Sampling point		Measured Value	2018 Annual Average	Sampling Comments
D01	Queen Street, Muswellbrook	2.7	1.3	Insects
D02	King Street, Muswellbrook	3.7	1.9	Insects
D04A	Industrial Estate, Muswellbrook	4.3	2.9	Insects
D05	Intersection Kayuga and Wybong Road, Muswellbrook	2.8	2.2	Insects
D06	Logues Lane, Muswellbrook	3.8	2.8	Insects
D07A	St James School, Muswellbrook	3.0	2.2	Insects, vegetation
D08	Denman Road, Muswellbrook	2.5	2.0	Insects
D09	Wybong Road, Muswellbrook	3.7	2.6	Insects
D10	Racecourse Road, Muswellbrook	3.7	3.0	Insects
D20	Wyndams Arms R.O.W., Muswellbrook	5.4	4.6	Insects
D23B	Logues Lane, Muswellbrook	2.7	1.8	Insects
D25	Roxburgh Road, Muswellbrook	3.9	3.2	Insects
D26	Wybong Road, Muswellbrook	4.3	2.5	Insects
DA	Roxburgh Road, Muswellbrook	4.6	2.7	Insects



3. NOISE

The noise monitoring program at Bengalla is undertaken in accordance with the requirements of SSD-5170 (as modified), EPL 6538 and the Bengalla Noise Management Plan (NMP).

BMC undertakes compliance attended noise monitoring for 15 minutes once per calendar month during the night period (10 pm to 7 am) at three locations representative of the nearest private receivers.

Noise monitoring data for the Reporting Period is provided in **Table 4**.

Pollutant:	Noise – Bengalla Only
Unit of measure:	L _{Aeq} (15 minute)
Monitoring location:	See Table 4 and Appendix D .
Monitoring frequency:	Monthly
AN01 criteria:	35 dB(A)
AN04 criteria:	35 dB(A)
AN03 criteria:	40 dB(A)
Sampled:	22 December 2018

Table 4. Noise – Bengalla Only¹ LAeq (15 minute) Monitoring Summary

Sampling point		Sample Date	Sample Time	Measured value
AN01	1431 Wybong Road	22/12/18	00:58 – 01:13	23
AN03	1312 Denman Road	22/12/18	01:32 – 01:47	IA
AN04	Opposite 9 Racecourse Road	22/12/18	02:03 – 02:18	24

1. LAeq, 15minute operational noise levels for Bengalla in the absence of all other noise sources.

IA - Inaudible. When there was no noise from the source of interest (Bengalla Mine) audible at the monitoring location.



4. BLASTING

BMC maintains three blast monitors to measure blast overpressure and ground vibration against the SSD-5170 criteria.

The blast overpressure and ground vibration data for the Reporting Period is provided in **Table 5**.

Pollutant:	Air blast overpressure & ground vibration peak particle velocity
Unit of measure:	dB (Lin Peak) and millimetres per second (mm/s)
Monitoring locations:	See Tables 5 and Appendix D .
Monitoring frequency:	All blasts
Overpressure criteria:	a) 115 linear decibels (dB(L)) for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and b) 120 dB(L) at any time.
Ground vibration criteria:	a) exceed 5 millimetres/second (mm/s) for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and b) 10mm/s at any time.
Sampled:	01/12/2018 – 31/12/2018

Table 5. Blast Overpressure Monitoring Summary

Date	Time of Blast	Ground Vibration (mm/s)			Overpressure (dBL)		
		BLK	MRE	SCH	BLK	MRE	SCH
01/12/18	11:19:12 AM	0.30	1.32	0.19	88.50	92.30	93.40
03/12/18	12:34:06 PM	0.07	0.59	0.03	96.90	97.30	90.20
03/12/18	12:36:55 PM	0.03	0.18	0.03	98.80	102.40	93.40
06/12/18	10:56:45 AM	0.12	0.96	0.05	100.30	105.30	100.70
08/12/18	3:00:47 PM	0.30	1.35	0.16	98.10	93.50	83.80
10/12/18	3:01:09 PM	0.08	0.52	0.03	93.60	100.90	91.20
17/12/18	10:29:55 AM	0.14	0.57	0.04	94.20	99.00	94.60
20/12/18	7:41:10 AM	0.17	1.24	0.07	92.60	94.90	94.00
21/12/18	2:59:00 PM	0.36	0.73	0.08	96.50	105.00	89.60
24/12/18	2:01:48 PM	0.19	1.22	0.08	100.70	96.40	91.80
31/12/18	10:55:28 AM	0.16	0.83	0.06	93.40	96.70	92.40

Appendix A

PM10 Monitoring Locations



PRJ31060_BengallaMineNSW_50cm_19102017_gda94mga56_ortho_full-area



BENGALLA MINE
PM10 Monitoring Locations

Appendix B

TSP Monitoring Locations



Wybong Road

Bengalla Link Road

MUSWELLBROOK

HV6

HV1

HV3

HV2

HV4



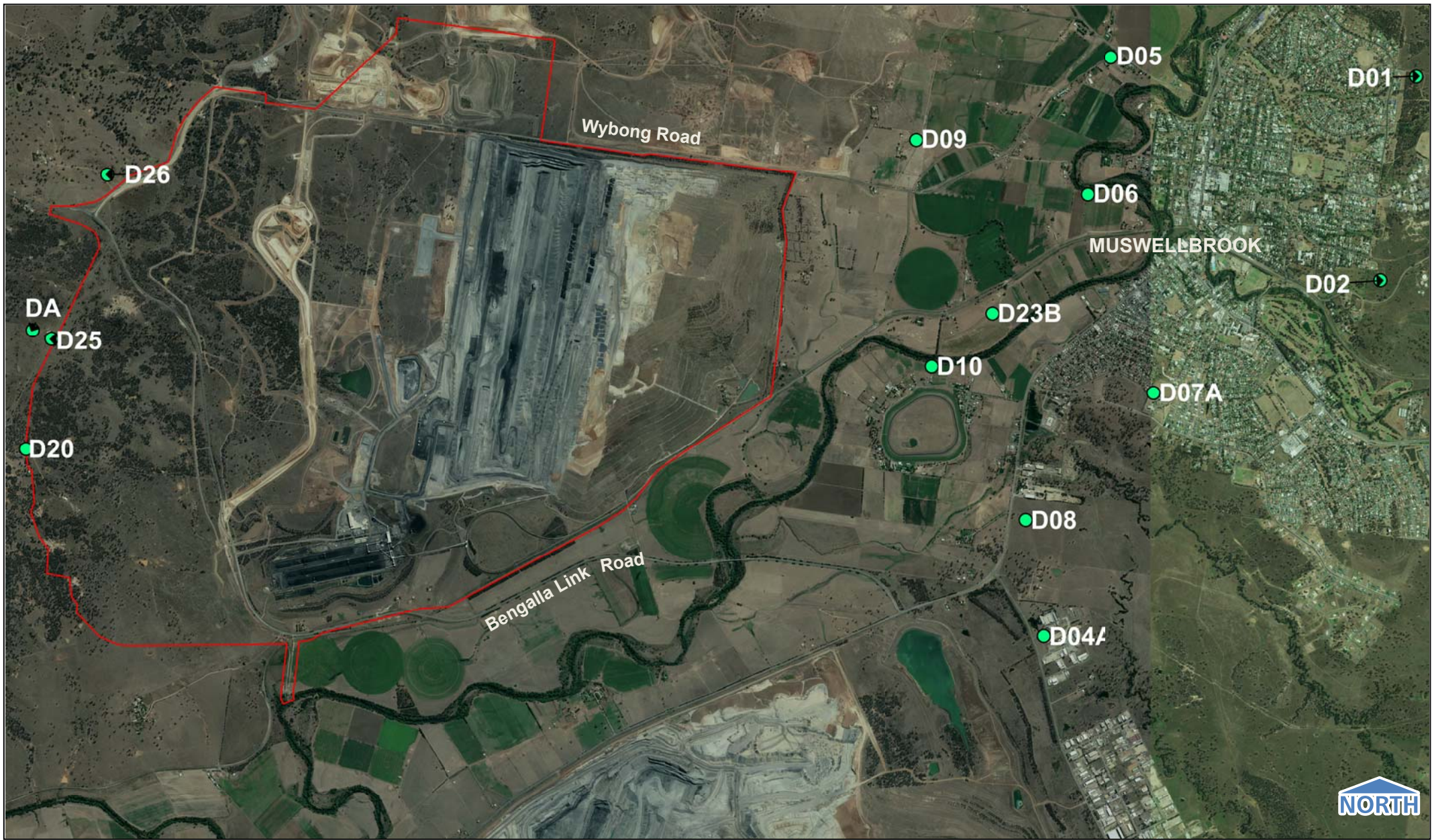
BENGALLA MINE
TSP Monitoring Locations

PRJ31060_BengallaMineNSW_50cm_19102017_gda94mga56_ortho_full-area

Appendix C

Depositional Dust Monitoring Locations

PRJ31060_BengallaMineNSW_50cm_19102017_gda94mga56_ortho_full-area



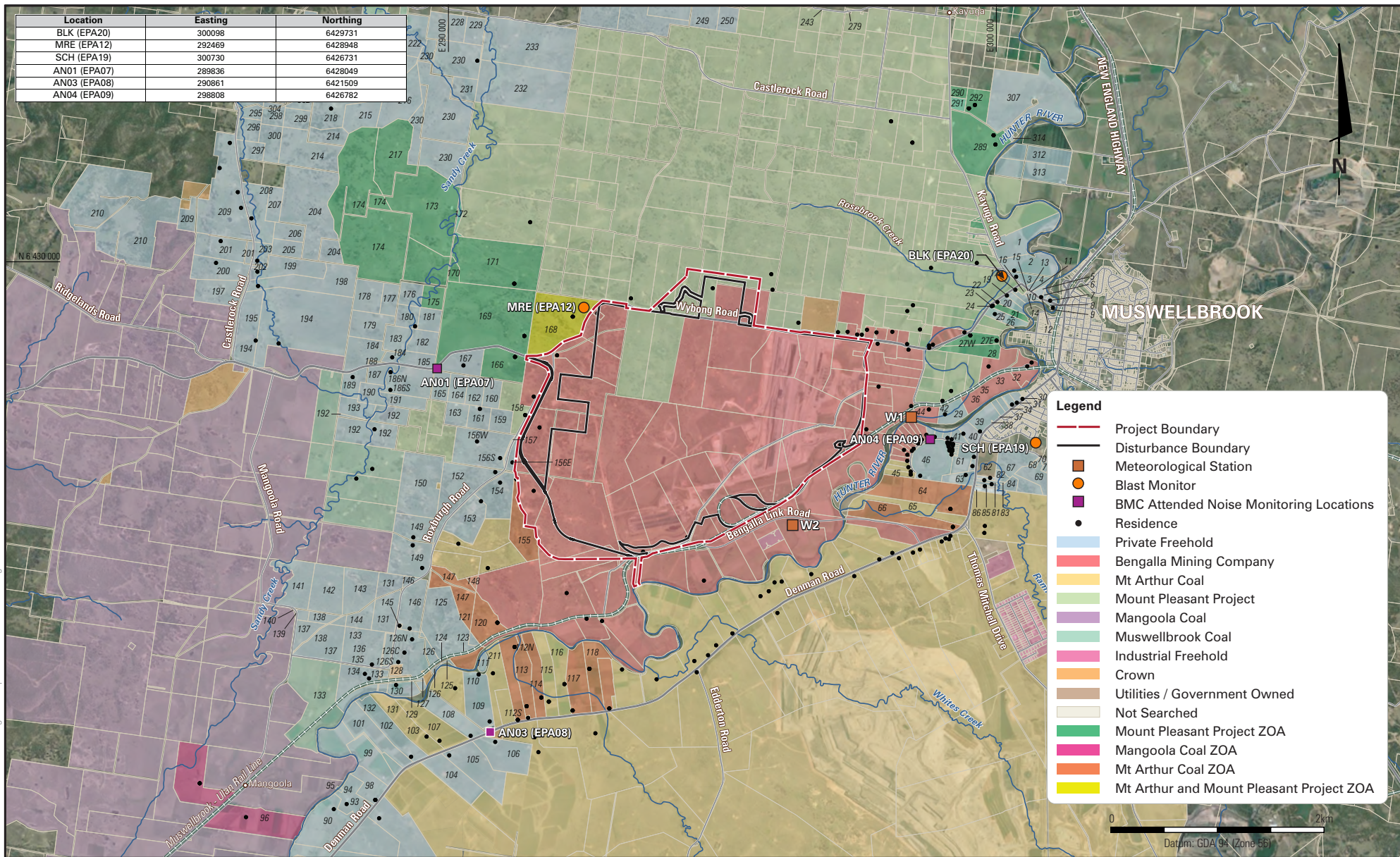
BENGALLA MINE
Depositional Dust Monitoring Locations

Appendix D

Noise and Blast Monitoring Locations

Location	Easting	Northing
BLK (EPA20)	300098	6429731
MRE (EPA12)	292469	6428948
SCH (EPA19)	300730	6426731
AN01 (EPA07)	289836	6428049
AN03 (EPA08)	290861	6421509
AN04 (EPA09)	298808	6426782

HB BENGALLA EPL 1428 F1 Bengalla Compliance Acoustic Monitoring Network - Aerial Version 09 09 2016



BENGALLA MINE



Bengalla Compliance Acoustic Monitoring Network

FIGURE 1