



Bengalla Mining Company Pty. Limited

Bengalla Road, (Locked Mailbag 5)

Muswellbrook NSW 2333 Australia

A.B.N. 32 053 909 470

Bengalla Mine

Environment Protection Licence 6538 Monthly Monitoring Data Summary

August 2016

Operator, for and on behalf of Bengalla Joint Venture, an unincorporated joint venture between:
Harcove Pty Ltd, Wesfarmers Bengalla Limited, Taipower Bengalla Pty Limited & Mitsui Bengalla Investment Pty Limited.

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1. INTRODUCTION

Environmental Protection Licence (EPL) holders are required under the *Protection of the Environment Operations Act 1997* to make publicly available their monitoring results for those parameters specified in the EPL. This document has been prepared to satisfy this requirement.

Bengalla Mining Company Pty Limited's (BMC) operations are conducted in accordance with EPL 6538. The licence details are as follows:

License Holder:	Bengalla Mining Company Pty Limited
Licence Number:	6538
Premises:	Bengalla Mine Bengalla Road via Muswellbrook NSW 2333
Access to Licence:	http://www.epa.nsw.gov.au/prpoeoapp/Detail.aspx?instid=6538&id=6538&option=licence&searchrange=licence&range=POEOlicence&prp=no&status=Issued
Monitoring Locations:	See main text and Appendix A

This document provides a summary of environmental monitoring data sampled as prescribed by EPL 6538 for August 2016 (reporting period). Monitoring data provided is as follows:

- Air quality, including total suspended particulates (TSP), particulate matter less than 10 microns (PM₁₀) and deposited dust matter;
- Surface water, including mine water discharge; and
- Blast vibration and overpressure.



2. AIR QUALITY

In accordance with Condition M2.2 of EPL 6538, and to monitor regional air quality, Bengalla Mine operates and maintains a network of five high volume air samplers (HVAS) measuring TSP, three HVAS measuring PM₁₀ and 14 depositional dust gauges on land representative of private receivers surrounding its operations. Additional PM₁₀ data is also sourced from Mt Arthur Coal through an information sharing agreement. The air quality monitoring network, as described, is shown in **Appendix A**.

2.1. Total Suspended Particulates

Pollutant	TSP
Unit of measure:	Micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)
Monitoring location:	See Table 1 and Appendix A
Monitoring frequency required by licence:	Every 6 days (24 hours)
Sampled:	22/07/2016, 28/07/2016, 03/08/2016, 09/08/2016, 15/08/2016 Results for 22/07/2016 and 28/07/2016 to be presented in this summary due to sample schedule.
Obtained:	9 September 2016
Published:	29 September 2016
Development consent limit:	Annual average 90 $\mu\text{g}/\text{m}^3$



In accordance with Condition M2.2 of EPL 6538, TSP data (EPA Monitoring Point 3) for the reporting period is provided in **Table 1**.

Table 1: Total Suspended Particulates Monitoring Summary

Sampling point		No. of samples required by licence	No. of samples collected and analysed*	Minimum sample value	Maximum sample value	Monthly mean of samples	Annual rolling average *
HV01	Wybong Road (East), Muswellbrook	5	5	4	43	20	54
HV02	Racecourse Road, Muswellbrook	5	5	17	61	30	57
HV03	Logues Lane, Muswellbrook	5	5	6	49	21	41
HV04	St James School, Muswellbrook	5	5	14	57	27	46
HV06	Wybong Road (West), Muswellbrook	5	5	5	150	41	81

* Annual rolling average as at 15/08/16.

For the reporting period, annual average TSP data were below the annual average Development Consent limit of 90 µg/m³.



2.2. Particulate Matter less than 10 Microns

Pollutant	PM ₁₀
Unit of measure:	Micrograms per cubic metre (µg/m ³)
Monitoring location:	See Table 2 and Appendix A
Monitoring frequency required by licence:	Every 6 days (24 hours)
Sampled:	22/07/2016, 28/07/2016, 03/08/2016, 09/08/2016, 15/08/2016 Results for 22/07/2016 and 28/07/2016 to be presented in this summary due to sample schedule.
Obtained:	9 September 2016
Published:	29 September 2016
Development consent limit:	Annual average 30 µg/m ³ 24-hour average 50 µg/m ³



In accordance with Condition M2.2 of EPL 6538, PM10 data (EPA Monitoring Point 4) for the reporting period is provided in **Table 2**.

Table 2: PM₁₀ Monitoring Summary

Sampling point		No. of samples required by licence	No. of samples collected and analysed*	Minimum sample value	Maximum sample value	Monthly mean of sample	Annual rolling average *
PM ₁₀ - 1	Racecourse Road, Muswellbrook	5	5	5	25	12	21
PM ₁₀ - 2	St James School, Muswellbrook	5	5	6	27	16	19
PM ₁₀ - 3	Mt Arthur Coal Residence, Muswellbrook †	5	5	<1	18	8	22
PM ₁₀ - 4	Wybong Road (West), Muswellbrook	5	5	2	46	14	25

* Annual rolling average as at 15/08/16.

† Data sourced from Mt Arthur Coal

For the reporting period, annual average PM₁₀ data were below the Development Consent limit of 30 µg/m³.

For the reporting period, 24-hour average PM₁₀ data were below the Development Consent limit of 50 µg/m³.



2.3. Dust Deposition

Pollutant	Particulates – deposited matter
Unit of measure:	Grams per square metre per month (g/m ² /month)
Monitoring location:	See Table 3 and Appendix A
Monitoring frequency required by licence:	Once a month (minimum of 4 weeks)
Sampling period:	22 July 2016 – 22 September 2016
Obtained:	9 September 2016
Published:	29 September 2016
Development consent limit:	Annual average 4 g/m ² /month



In accordance with Condition M2.2 of EPL 6538, dust deposition data (EPA Monitoring Point 5) is provided in **Table 3**.

Table 3: Dust Deposition Monitoring Summary

Sampling point	No. of samples required by licence	No. of samples collected and analysed	Measured value	Observations	Annual rolling average	
D01	Queen Street, Muswellbrook	1	1	0.4	Insects	0.9
D02	King Street, Muswellbrook	1	1	0.4	Insects	1.1
D04A	Industrial Estate, Muswellbrook	1	1	1.4	Insects	1.8
D05	Intersection Kayuga and Wybong Road, Muswellbrook	1	1	0.6	Insects	1.0
D06	Logues Lane, Muswellbrook	1	1	0.3	Insects	1.9
D07A	St James School, Muswellbrook	1	1	0.6	Insects	1.4
D08	Denman Road, Muswellbrook	1	1	0.8	Insects	1.3
D09	Wybong Road, Muswellbrook	1	1	1.1	Insects, bird droppings	1.3
D10	Racecourse Road, Muswellbrook	1	1	1.1	Insects, spider	1.6
D20	Wyndams Arms R.O.W., Muswellbrook	1	1	1.1	Insects	3.3
D23B	Logues Lane, Muswellbrook	1	1	15.0	Insects, bird droppings	3.2
D25	Roxburgh Road, Muswellbrook	1	1	0.9	Insects	2.8
D26	Wybong Road, Muswellbrook	1	1	0.9	Insects, vegetation	2.3
DA	Roxburgh Road, Muswellbrook	1	1	2.9c	Insects, bird droppings, vegetation	3.3

(c) Sample contaminated. Results for contaminated gauges are not included in the calculation of the annual averages.



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Dust deposition samples can be contaminated by a variety of means, notably by the presence of insects and bird droppings. Results for contaminated gauges are not included in the calculation of the annual averages for the reporting period.

The Australian Standard does not provide criteria for the determination of contamination of a dust deposition sample. In this regard, a dust deposition sample is determined to be contaminated if it meets at least three of the following criteria:

1. Contents – gauge contains organic matter or bird droppings;
2. Water colour/turbidity – gauge water is coloured and turbid;
3. Ash to insoluble ratio – <50% or <70% for gauges within close proximity to mining operations; or
4. ARA comparison – insoluble result is higher than the annual rolling average.

For the reporting period, annual average dust deposition data were below the annual average Development Consent limit of 4 g/m²/month.

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3. SURFACE WATER

3.1. Mine Water Discharge

Bengalla Mine participates in the Hunter River Salinity Trading Scheme (HRSTS). In accordance with Condition P1, M2.3 and M7 of EPL6538, Bengalla Mine maintains two monitoring locations to measure concentration, volume and mass of mine water discharges.

The location of these monitoring points is provided in **Appendix A**.

Pollutant	Mine water
Unit of measure:	Megalitres per day (ML/day)
Volume/mass limit: (Condition L3)	200 ML/day
Monitoring location:	EPA Monitoring Identification Point 1 (EPA01) – Outlet pipe from 280 ML HRSTS storage dam See Appendix A
Monitoring frequency required by licence:	Continuous during all discharge events
Sampling period:	Not applicable. During the reporting period, Bengalla Mine did not discharge any mine water under the HRSTS.
Obtained:	Not applicable
Published:	29 September 2016



Pollutant	Conductivity
Unit of measure:	Microsiemens per centimetre ($\mu\text{S}/\text{cm}$)
Monitoring location:	EPA Monitoring Identification Point 1 (EPA01) – Outlet pipe from 280 ML HRSTS storage dam EPA Monitoring Identification Point 2 (EPA02) – Downstream of Discharge Point 1 in Dry Creek See Appendix A
Monitoring frequency required by licence:	Continuous during all discharge events
Sampling period:	Not applicable. During the reporting period, Bengalla Mine did not discharge any mine water under the HRSTS.
Obtained:	Not applicable
Published:	29 September 2016



Pollutant	pH
Unit of measure:	pH
pH limit: (Condition L2)	6.5 – 9.5 (100 th percentile)
Monitoring location:	EPA Monitoring Identification Point 1 (EPA01) – Outlet pipe from 280 ML HRSTS storage dam EPA Monitoring Identification Point 2 (EPA02) – Downstream of Discharge Point 1 in Dry Creek See Appendix A
Monitoring frequency required by licence:	Daily during all discharge events
Sampling period:	Not applicable. During the reporting period, Bengalla Mine did not discharge any mine water under the HRSTS.
Obtained:	Not applicable
Published:	29 September 2016



Pollutant	Total suspended solids (TSS)
Unit of measure:	Milligrams per litre (mg/L)
Total suspended solids limit: (Condition L2)	120 mg/L (100 th percentile)
Monitoring location:	EPA Monitoring Identification Point 1 (EPA01) – Outlet pipe from 280 ML HRSTS storage dam EPA Monitoring Identification Point 2 (EPA02) – Downstream of Discharge Point 1 in Dry Creek See Appendix A
Monitoring frequency required by licence:	Daily during all discharge events
Sampling period:	Not applicable. During the reporting period, Bengalla Mine did not discharge any mine water under the HRSTS.
Obtained:	Not applicable
Published:	29 September 2016



4. BLASTING

In accordance with the requirements of Condition M8 of EPL 6538, Bengalla Mine maintains a network of three blast monitors on private (non-mine owned) land to measure air-blast overpressure and ground vibration for all blasts events undertaken by the operation. The location of these monitors is provided in **Appendix A**.

Overpressure limits:
(Condition L4)

- 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 limits:
(Condition L4)

- 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: 1 – 31 August 2016

Obtained: 1 – 31 August 2016

Published: 29 September 2016



In accordance with Condition M8 of EPL 6538, overpressure and ground vibration data is provided in **Table 4**.

Table 4: Blast Monitoring Summary

Sampling point	Pollutant	Unit of measure	No. of samples required by licence	No. of samples collected and analysed	Minimum value	Maximum value	Mean of samples
Blake (BLM)	Overpressure	dB(L)	All blast events	16	83.5	103.1	93.9
	Ground vibration	mm/s	All blast events	16	0.02	0.46	0.2
St James School (SCH)	Overpressure	dB(L)	All blast events	16	84.4	103.1	91.8
	Ground vibration	mm/s	All blast events	16	0.01	0.17	0.09
Moore (MRE)	Overpressure	dB(L)	All blast events	16	87.6	108.6	97.5
	Ground vibration	mm/s	All blast events	16	0.04	2.42	0.96

For the reporting period, overpressure and ground vibration data were below the maximum limit and within the 5% allowance limit specified in Condition L4 of EPL 6538.

Appendix A

EPL 6538 Monitoring Locations



BENGALLA MINE
EPL 6538 Monitoring Locations

Figure 1