Monthly Environmental Monitoring Report

For the Month Ending 30 April 2023

Name of Operation	Moolarben Coal Complex
Name of License Holder	Moolarben Coal Operations Pty Ltd
Premises	Moolarben Coal Mine 12 Ulan-Wollar Rd, Ulan NSW 2850
Environmental Protection Licence Number	12932
EPL Link	https://apps.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=270376&SYSUID=1&LICID=12932
Premises	Moolarben Coal Mine
Reporting Period	1 April 2023 to 30 April 2023
Date last sampled data obtained	24 May 2023
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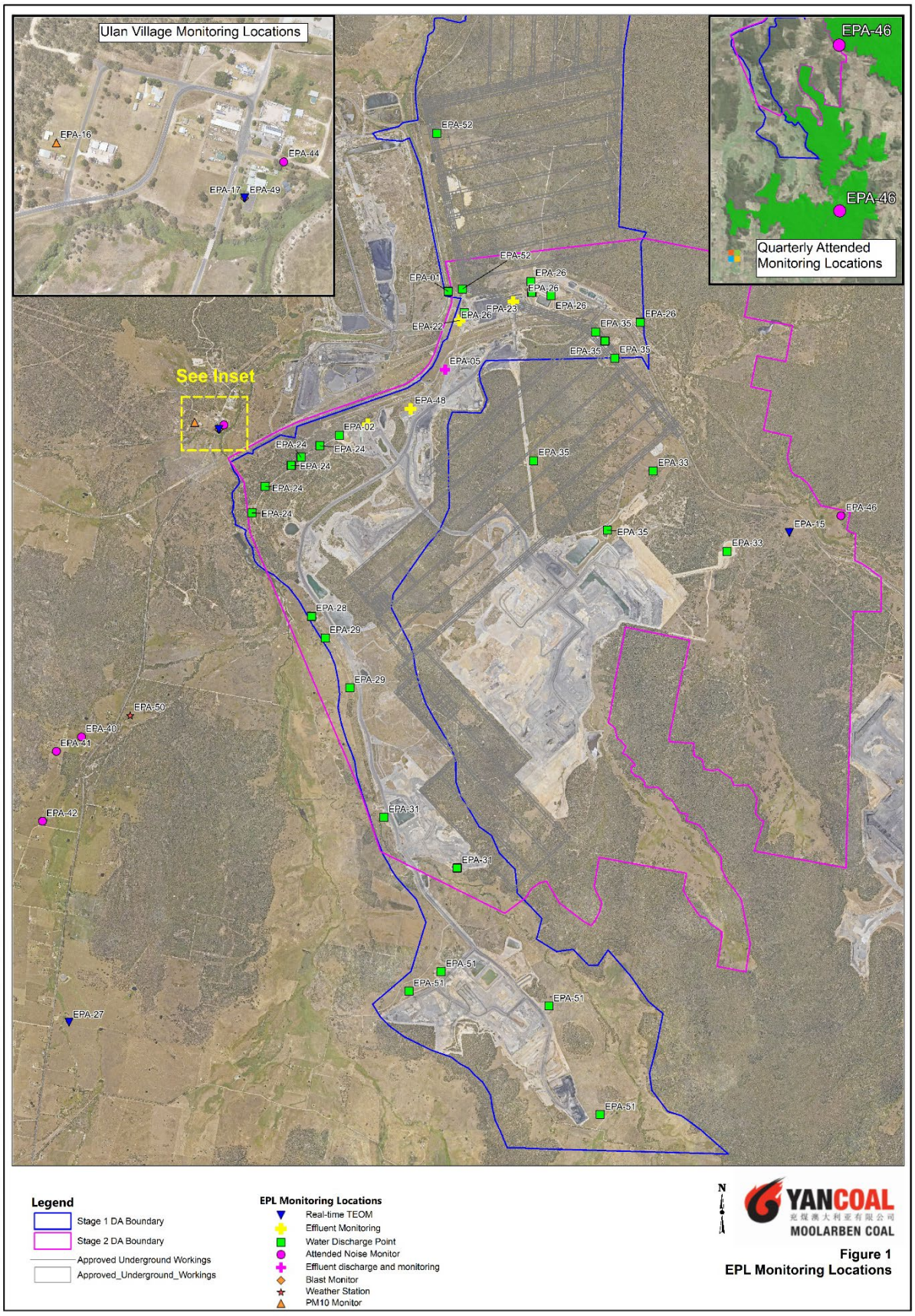
Version	1
Author	E. Scanlon
Approver	R.Shanks

EPL 12932 MCO Environmental Monitoring Network



Concentration Monitoring Summary

Table 1 – Air Quality Monitoring (Annual Average)

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed annually	12 Month Rolling Average			Annual concentration limit	Exceedance (Yes/No)
						Min Value	Mean Value	Max Value		
16	PM01	PM10	µg/m³	Every 6 days	5	8.0	8.1	8.1	25	No
N/A	PM02	PM10	µg/m³	N/A	5	7.0	7.0	7.1	25	No
15	TEOM 6	PM10	µg/m³	Continuous	99.2%	12.4	12.6	12.9	N/A	N/A
17	TEOM 1	PM10	µg/m³	Continuous	100%	12.1	12.3	12.5	25	No
27	TEOM 7	PM10	µg/m³	Continuous	98.3%	7.6	7.7	7.9	25	No
27	TEOM 7	PM2.5	µg/m³	Continuous	98.3%	3.8	3.9	4.0	8	No
N/A	TEOM 4	PM10	µg/m³	N/A	99.2%	11.2	11.3	11.5	25	No

Table 2 – Air Quality Monitoring (Monthly)

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Min Value	Mean Value	Max Value	24 hr concentration limit	Exceedance (Yes/No)
16	PM01	PM10	µg/m³	Every 6 days	5	4.8	10.2	20.1	50	No
N/A	PM02	PM10	µg/m³	N/A	5	5.0	7.6	12.4	50	No
15	TEOM 6	PM10	µg/m³	Continuous (24 Hr Average)	100%	5.7	16.2	40.8	N/A	N/A
17	TEOM 1	PM10	µg/m³	Continuous (24 Hr Average)	100%	6.4	15.8	49.8	50	No
27	TEOM 7	PM10	µg/m³	Continuous (24 Hr Average)	100%	3.4	8.9	27.2	50	No
27	TEOM 7	PM2.5	µg/m³	Continuous (24 Hr Average)	100%	2.4	4.5	18.4	25	No
N/A	TEOM 4	PM10	µg/m³	N/A (24 Hr Average)	96.7%	4.6	12.7	39.3	50	No

Table 3 – Surface Water Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	Date Sampled	Results
N/A	SW01	Conductivity	µS/cm	1	4/04/2023	601
		pH	pH	1	4/04/2023	8.0
		Total Suspended Solids	mg/L	1	4/04/2023	<5
N/A	SW02	Conductivity	µS/cm	1	4/04/2023	611
		pH	pH	1	4/04/2023	8.2
		Total Suspended Solids	mg/L	1	4/04/2023	<5
N/A	SW04	Conductivity	µS/cm	0	4/04/2023	**
		pH	pH	0	4/04/2023	**
		Total Suspended Solids	mg/L	0	4/04/2023	**
N/A	SW05	Conductivity	µS/cm	1	4/04/2023	375
		pH	pH	1	4/04/2023	7.8
		Total Suspended Solids	mg/L	1	4/04/2023	22
N/A	SW07	Conductivity	µS/cm	1	4/04/2023	1720
		pH	pH	1	4/04/2023	8.0
		Total Suspended Solids	mg/L	1	4/04/2023	<5
N/A	SW08	Conductivity	µS/cm	1	4/04/2023	1360
		pH	pH	1	4/04/2023	7.7
		Total Suspended Solids	mg/L	1	4/04/2023	<5
N/A	SW09	Conductivity	µS/cm	1	4/04/2023	1100
		pH	pH	1	4/04/2023	7.5
		Total Suspended Solids	mg/L	1	4/04/2023	10
N/A	SW12	Conductivity	µS/cm	1	4/04/2023	343
		pH	pH	1	4/04/2023	7.6
		Total Suspended Solids	mg/L	1	4/04/2023	24
N/A	SW15	Conductivity	µS/cm	0	4/04/2023	**
		pH	pH	0	4/04/2023	**
		Total Suspended Solids	mg/L	0	4/04/2023	**
N/A	SW16	Conductivity	µS/cm	0	4/04/2023	**
		pH	pH	0	4/04/2023	**
		Total Suspended Solids	mg/L	0	4/04/2023	**

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	Date Sampled	Results
N/A	SW17	Conductivity	µS/cm	0	4/04/2023	*
		pH	pH	0	4/04/2023	*
		Total Suspended Solids	mg/L	0	4/04/2023	*
N/A	SW18	Conductivity	µS/cm	0	4/04/2023	*
		pH	pH	0	4/04/2023	*
		Total Suspended Solids	mg/L	0	4/04/2023	*
N/A	SW22	Conductivity	µS/cm	1	4/04/2023	604
		pH	pH	1	4/04/2023	8.27
		Total Suspended Solids	mg/L	1	4/04/2023	<5
N/A	SW23	Conductivity	µS/cm	0	4/04/2023	*
		pH	pH	0	4/04/2023	*
		Total Suspended Solids	mg/L	0	4/04/2023	*
N/A	SW24	Conductivity	µS/cm	0	4/04/2023	*
		pH	pH	0	4/04/2023	*
		Total Suspended Solids	mg/L	0	4/04/2023	*

*NOTE: * Dry, ** No flow*

Table 4 – Blasting

	Location	Pollutant	Unit of Measure	Frequency	No. of Blasts during the reporting period	Results			Limits dBL	Exceedance (Yes/No)
						Min Value	Mean Value	Max Value		
49	BM1 Ulan School	Blast Overpressure	dBL	Every Blast	16	85.0	94.1	111.3	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.03	0.13	0.27	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	16	90.3	97.7	108.3	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.01	0.19	0.75	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No
N/A	BM8 Moolarben Rd	Blast Overpressure	dBL	Every Blast	16	84.8	97.2	105.9	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.01	0.11	0.33	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No

Table 5 – Noise

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level [1,2,3] LAeq dB (15min)	Measured Level [1,2,3] LA1,1dB (1min)	Noise Criteria [4]	Monitoring Completed during the period	Exceedance (Yes/No)
44	Ulan Public School	NA1	Compliance - Attended	Monthly	IA	IA	Daytime (07:00 – 18:00) LAeq, 15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	-	-	-	No	-
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	18	21	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Yes	No
N/A	Upper Ridge Road (Receiver 176)	NA3	Validation - Attended	Annually	-	-	-	No	-
40, 41	Lower Ridge Road	NA6	Compliance -Attended	Monthly	IA	IA	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1, 1minute: 45 dB	Yes	No
N/A	Moolarben Road (Receiver 28)	NA10	Validation - Attended	Annually	-	-	-	No	-
46	Goulburn River National Park	GRNP	Compliance -Attended	Annually	-	-	All periods LAeq, 15minute: 50 dB	No	-
46	Munghorn Gap Nature Reserve	MGNR	Compliance -Attended	Annually	-	-	All periods LAeq, 15minute: 50 dB	No	-

1. NA indicates meteorological conditions during the measurement did not correspond with any modelled meteorological conditions and were not applicable for comparison.
2. IA is Inaudible. When site only noise is noted as IA, there was no noise from the source of interest audible at the monitoring location.
3. Site-only noise levels attributed to MCO, including modifying factors where applicable.
4. As detailed in the EPL, noise emission limits apply under all meteorological conditions except:
   - Wind speeds greater than 3 m/s at 10 metres above ground level; or
   - Stability class F temperature inversion conditions, and wind speeds greater than 2 m/s at 10 metres above ground level; or
   - Stability class G temperature inversions.
5. NA in last column means atmospheric conditions outside those specified in EPL, therefore criterion was not applicable.

Table 6 – Effluent Discharge Points

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Result
5	BOD	mg/L	Quarterly			
	Nitrogen (total)	mg/L	Quarterly			
	Oil and Grease	mg/L	Quarterly			
	pH	pH	Quarterly			
	Phosphorus (total)	mg/L	Quarterly			
	Total Suspended Solids	mg/L	Quarterly			
22	BOD	mg/L	Quarterly			
	Nitrogen (total)	mg/L	Quarterly			
	Oil and Grease	mg/L	Quarterly			
	pH	pH	Quarterly			
	Phosphorus (total)	mg/L	Quarterly			
	Total Suspended Solids	mg/L	Quarterly			
23	BOD	mg/L	Quarterly			
	Nitrogen (total)	mg/L	Quarterly			
	Oil and Grease	mg/L	Quarterly			
	pH	pH	Quarterly			
	Phosphorus (total)	mg/L	Quarterly			
	Total Suspended Solids	mg/L	Quarterly			
48	BOD	mg/L	Quarterly			
	Nitrogen (total)	mg/L	Quarterly			
	Oil and Grease	mg/L	Quarterly			
	pH	pH	Quarterly			
	Phosphorus (total)	mg/L	Quarterly			
	Total Suspended Solids	mg/L	Quarterly			

Table 7 – Discharge Points

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Min Value	Mean Value	Max Value	100%ile concentration limit	Exceedance (Yes/No)
1	Conductivity	µS/cm	Continuous during discharge	Continuous during discharge	121	192	282	619 [1]	No
	Oil and Grease	mg/L	Weekly during discharge	4	<5	<5	<5	10	No
	pH	pH	Continuous during discharge	Continuous during discharge	7.0	7.2	7.6	6.5-8.5	No
	Total Suspended Solids	mg/L	Weekly during discharge	3	<1	<1	<1	50	No
	Turbidity	NTU	Continuous during discharge	Continuous during discharge	0.0	0.0	7.0	25	No
	Discharge Volume	Megalitres per day	Continuous during discharge	Continuous during discharge	0.0	8.7	10.5	20 [1,2]	No
2	Conductivity	µS/cm	Continuous during discharge	No licensed discharges during the period				619 [1]	NA
	Oil and Grease	mg/L	Daily during discharge					10	NA
	pH	pH	Continuous during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Continuous during discharge					25	NA
	Discharge Volume	Megalitres per day	Continuous during discharge					NA	NA
24	pH	pH	Daily during discharge	No licensed discharges during the period				6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
26	pH	pH	Daily during discharge	No licensed discharges during the period				6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
28	Conductivity	µS/cm	Continuous during discharge	No licensed discharges during the period				619 [1]	NA
	Oil and Grease	mg/L	Daily during discharge					10	NA
	pH	pH	Continuous during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Continuous during discharge					25	NA

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Min Value	Mean Value	Max Value	100%ile concentration limit	Exceedance (Yes/No)
	Discharge Volume	Kilolitres per day	Continuous during discharge					NA	NA
29	pH	pH	Daily during discharge	No licensed discharges during the period				6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
31	pH	pH	Daily during discharge	No licensed discharges during the period				6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
35	pH	pH	Daily during discharge	No licensed discharges during the period				6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
51	pH	pH	Daily during discharge	No licensed discharges during the period				6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
53	pH	pH	Daily during discharge	No licensed discharges during the period				NA	NA
	Total Suspended Solids	mg/L	Daily during discharge					NA	NA
	Turbidity	NTU	Daily during discharge					NA	NA
	Discharge Volume	Megalitres per day	Continuous during discharge					30	No
54	pH	pH	Daily during discharge	No licensed discharges during the period				NA	NA
	Total Suspended Solids	mg/L	Daily during discharge					NA	NA
	Turbidity	NTU	Daily during discharge					NA	NA
	Discharge Volume	Megalitres per day	Continuous during discharge					20	No

1. Updated as per the EPL No. 12932 Variation Notice Number 1627466, dated 27 April 2023.
2. Only applies when mining operations at the premises include that undertaken in the areas “UG4”.