



Monthly Environmental Monitoring Report

For the Month Ending 31 December 2021

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=228352&SYSUID=1&LICID=12932
Premises	Moolarben Coal Mine
Reporting Period	1 December 2021 to 31 December 2021
Date last sampled data obtained	24 January 2021
Publication Date	1 February 2022
Version	1
Author	M. Yeatman
Approver	R. Shanks

EPL 12932 MCO Environmental Monitoring Network

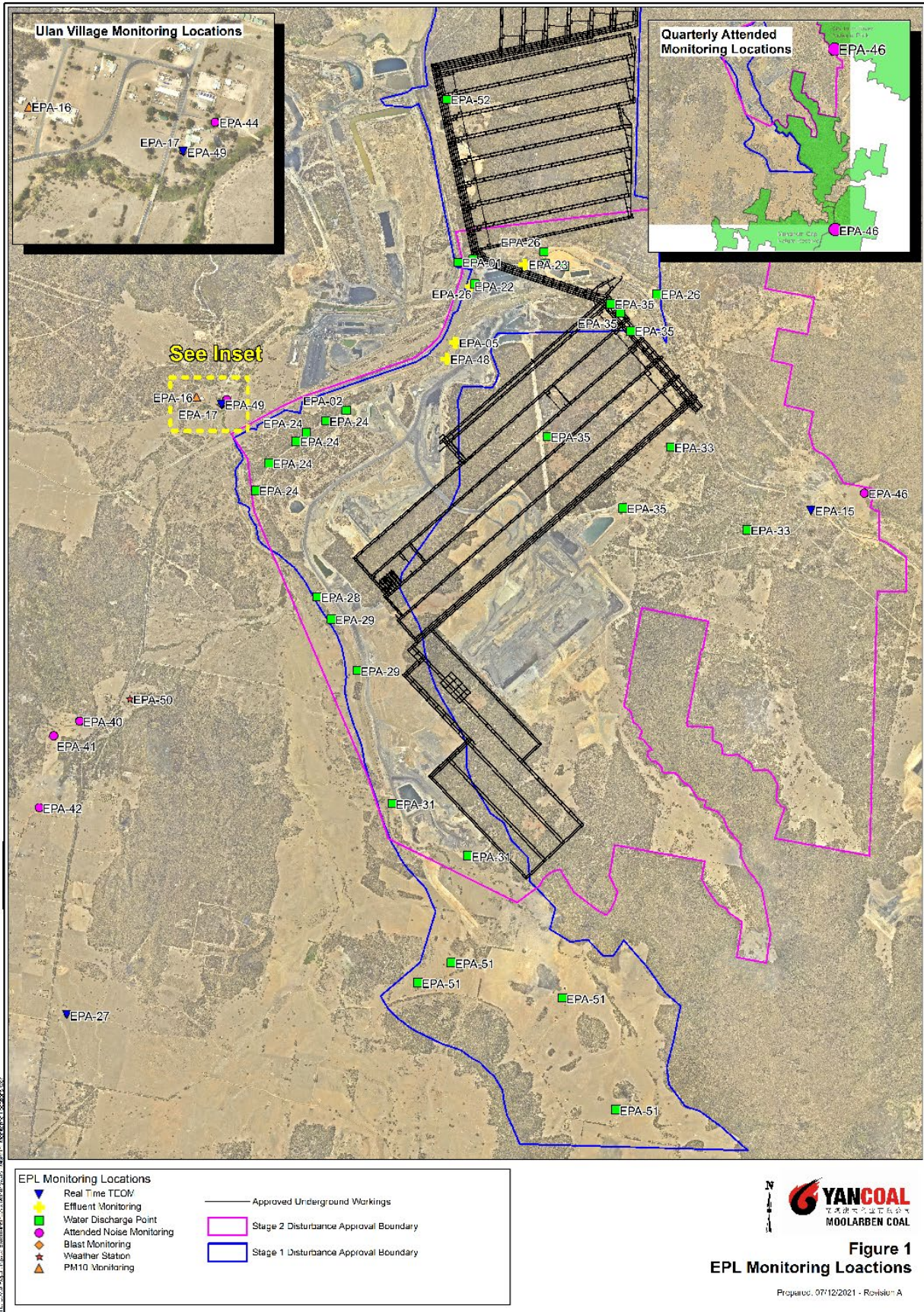


Figure 1
 EPL Monitoring Locations

Prepared: 07/12/2021 - Revision: A

Concentration Monitoring Summary

Air Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed annually	12 mth rolling average			Annual concentration limit	Exceedance (Yes/No)
						Min Value	Mean Value	Max Value		
16	PM01	PM10	µg/m ³	Every 6 days	4	7.9	8.1	8.3	25	No
N/A	PM02	PM10	µg/m ³	N/A	4	8.4	8.7	8.8	25	No
15	TEOM 6	PM10	µg/m ³	Continuous	98.6%	11.8	11.9	12.0	25	No
17	TEOM 1	PM10	µg/m ³	Continuous	98.9%	12.1	12.2	12.3	25	No
27	TEOM 7	PM10	µg/m ³	Continuous	94.3%	7.8	8.0	8.3	25	No
27	TEOM 7	PM2.5	µg/m ³	Continuous	94.3%	4.4	4.5	4.6	8	No
N/A	TEOM 4	PM10	µg/m ³	N/A	99.2%	11.1	11.3	11.4	25	No

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/m ³	Every 6 days	4	4.8	11.9	20.2	50	No
N/A	PM02	PM10	µg/m ³	N/A	4	4.7	12.8	23.6	50	No
15	TEOM 6	PM10	µg/m ³	Continuous (24 Hr Average)	100%	4.8	11.3	25.6	50	No
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	100%	7.8	14.0	22.3	50	No
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	80.6%	2.2	9.2	18	50	No
27	TEOM 7	PM2.5	µg/m ³	Continuous (24 Hr Average)	80.6%	1.1	4.9	11.3	25	No
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	100%	6.6	14.1	23.1	50	No

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	01/12/2021	412
		pH	pH	1	01/12/2021	7.2
		Total Suspended Solids	mg/L	1	01/12/2021	31
N/A	SW02	Conductivity	µS/cm	1	01/12/2021	420
		pH	pH	1	01/12/2021	7.2
		Total Suspended Solids	mg/L	1	01/12/2021	22
N/A	SW04	Conductivity	µS/cm	1	01/12/2021	197
		pH	pH	1	01/12/2021	6.78
		Total Suspended Solids	mg/L	1	01/12/2021	<5
N/A	SW05	Conductivity	µS/cm	1	01/12/2021	617
		pH	pH	1	01/12/2021	7.3
		Total Suspended Solids	mg/L	1	01/12/2021	<5
N/A	SW07	Conductivity	µS/cm	1	01/12/2021	861
		pH	pH	1	01/12/2021	7.5
		Total Suspended Solids	mg/L	1	01/12/2021	<5
N/A	SW08	Conductivity	µS/cm	1	01/12/2021	571
		pH	pH	1	01/12/2021	7.2
		Total Suspended Solids	mg/L	1	01/12/2021	<5
N/A	SW09	Conductivity	µS/cm	1	01/12/2021	805
		pH	pH	1	01/12/2021	7.13
		Total Suspended Solids	mg/L	1	01/12/2021	<5
N/A	SW12	Conductivity	µS/cm	1	01/12/2021	107
		pH	pH	1	01/12/2021	6.4
		Total Suspended Solids	mg/L	1	01/12/2021	33
N/A	SW15	Conductivity	µS/cm	1	01/12/2021	126
		pH	pH	1	01/12/2021	6.67
		Total Suspended Solids	mg/L	1	01/12/2021	<5
N/A	SW16	Conductivity	µS/cm	1	01/12/2021	138
		pH	pH	1	01/12/2021	6.65

MONTHLY ENVIRONMENTAL MONITORING REPORTFor the Month Ending 31 December 2021

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	Date Sampled	Results
		Total Suspended Solids	mg/L	1	01/12/2021	8
N/A	SW17	Conductivity	µS/cm	1	01/12/2021	191
		pH	pH	1	01/12/2021	6.71
		Total Suspended Solids	mg/L	1	01/12/2021	14
N/A	SW18	Conductivity	µS/cm	1	01/12/2021	140
		pH	pH	1	01/12/2021	6.45
		Total Suspended Solids	mg/L	1	01/12/2021	9

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	14	86.0	96.3	109.3	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.05	0.1	0.2	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	14	86.2	97.7	111.2	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.04	0.2	0.6	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No
N/A	BM8 Moolarben Rd	Blast Overpressure	dBL	Every Blast	14	81.3	95.5	111.1 ¹	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.02	0.2	2.1	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No

¹ Excludes environmental influenced results

MONTHLY ENVIRONMENTAL MONITORING REPORT

For the Month Ending 31 December 2021

Noise

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level ^{1,2,3,6} LAeq dB (15min)	Measured Level ^{1,2,3,6} LA1,1dB (1min)	Noise Criteria ⁴	Monitoring Completed during the period	Exceedance (Yes/No) ⁵
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	IA	IA	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
6. NM in Not Measurable. When site noise is noted as NM, this means some noise was audible but could not be quantified.

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			

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	259	312.3	382	685	No
	Oil and Grease	mg/L	Weekly during discharge	4	<2	<2	<2	10	No
	pH	pH	Continuous during discharge	Continuous during discharge	7.1	7.4	7.8	6.5-8.5	No
	Total Suspended Solids	mg/L	Weekly during discharge	4	<1	<1	<1	50	No
	Turbidity	NTU	Continuous during discharge	Continuous during discharge	0	0.01	1	25	No
	Discharge Volume	Megalitres per day	Continuous during discharge	Continuous during discharge	6.1	8.2	9.7	15*	No
2	Conductivity	µS/cm	Continuous during discharge	No licensed discharges during the period				685	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
24	Oil and Grease	mg/L	Daily during discharge	No licensed discharges during the period					NA
	pH	pH	Daily during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
26	Oil and Grease	mg/L	Daily during discharge	No licensed discharges during the period					NA
	pH	pH	Daily during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA

MONTHLY ENVIRONMENTAL MONITORING REPORT

For the Month Ending 31 December 2021

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)
28	Conductivity	µS/cm	Continuous during discharge	No licensed discharges during the period				685	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	Kilolitres per day	Continuous during discharge						NA
29	Oil and Grease	mg/L	Daily during discharge	No licensed discharges during the period					NA
	pH	pH	Daily during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
31	Oil and Grease	mg/L	Daily during discharge	No licensed discharges during the period					NA
	pH	pH	Daily during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
35	Oil and Grease	mg/L	Daily during discharge	No licensed discharges during the period					NA
	pH	pH	Daily during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA
51	Oil and Grease	mg/L	Daily during discharge	No licensed discharges during the period					NA
	pH	pH	Daily during discharge					6.5-8.5	NA
	Total Suspended Solids	mg/L	Daily during discharge					50	NA
	Turbidity	NTU	Daily during discharge					25	NA

*As per the SWMP V5 October 2020 as operations have commenced in UG4 the daily discharge volume limit has increased to 15 ML/d.