

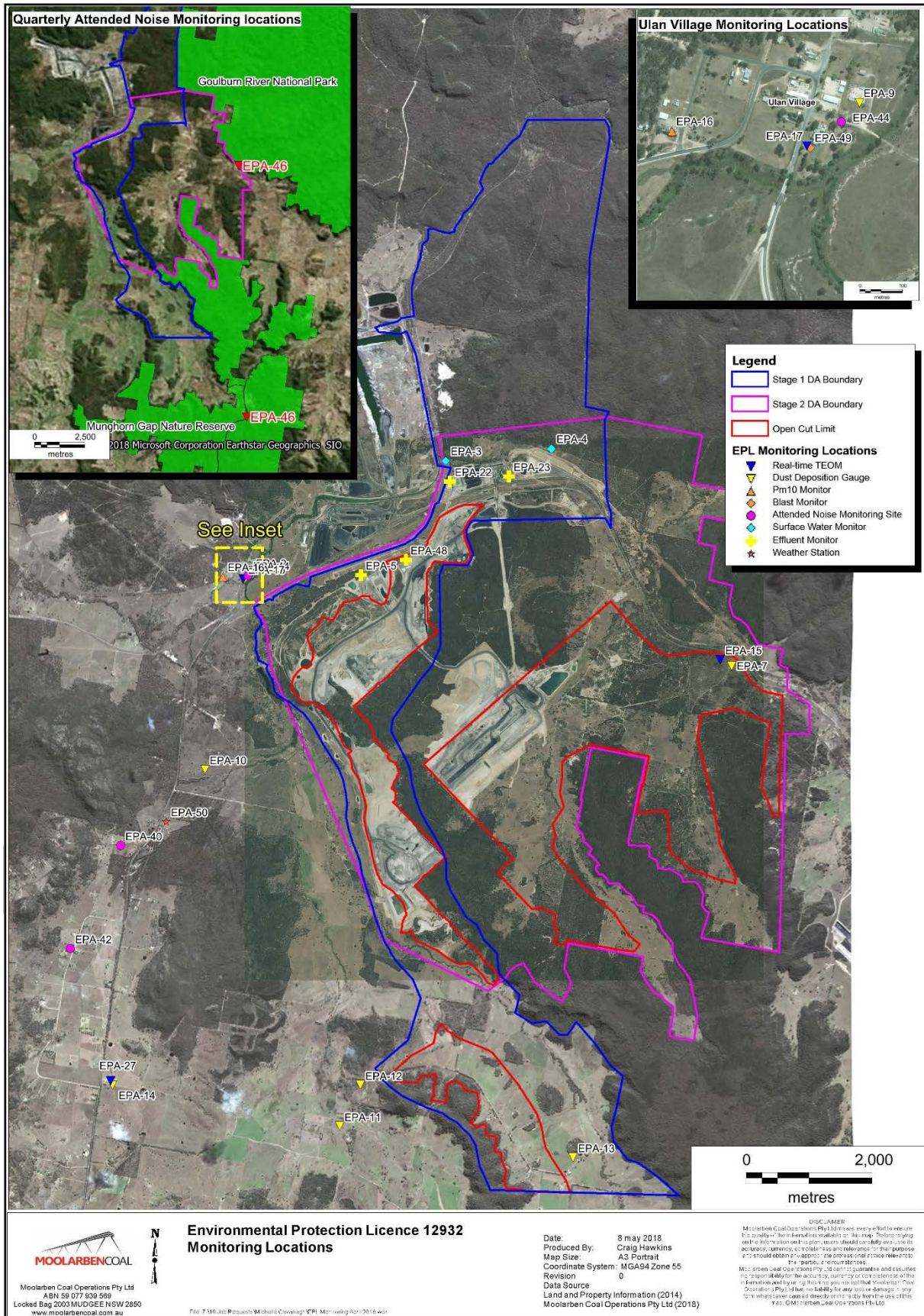


Monthly Environmental Monitoring Report

For the Month Ending 31 December 2018

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	http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&SYSUID=1&LICID=12932
Premises	Moolarben Coal Mine
Reporting Period	1 December 2018 to 31 December 2018
Date last sampled data obtained	15 January 2019
Publication Date	29 January 2019
Version	1
Author	M. Yeatman
Approver	G. Chase

EPL 12932 MCO Environmental Monitoring Network



Concentration Monitoring Summary

Air Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Date Sampled	Value	Annual Average (Rolling)	Annual 100%ile concentration limit
6	DG01	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	1.9	0.93	4.0
7	DG12	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	4.5	2.06	4.0
9	DG04	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	4.7	1.35	4.0
10	DG05	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	4.0	1.84	4.0
11	DG06	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	8.2	1.67	4.0
12	DG07	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	4.4	1.44	4.0
13	DG08	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	6.0	1.67	4.0
14	DG09	Particulates – Deposited Matter	g/m ² /month	Monthly	1	28/12/2018	9.7	1.90	4.0
N/A	DG13	Particulates – Deposited Matter	g/m ² /month	N/A	1	28/12/2018	5.2	1.58	4.0

c*- sample contaminated

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	Date Sampled	12 mth rolling average			Annual 100%ile concentration limit
						Min Value	Mean Value	Max Value	
15	TEOM 6	PM10	µg/m ³	100%	Continuous	15.33	15.57	15.7	N/A
16	PM01	PM10	µg/m ³	5	Every 6 days	16.90	19.53	21.43	30
N/A	PM02	PM10	µg/m ³	5	Every 6 days	17.84	20.81	22.95	30
17	TEOM 1	PM10	µg/m ³	100%	Continuous	14.62	14.94	15.08	30
27	TEOM 7	PM10	µg/m ³	100%	Continuous	15.67	16.13	16.51	30
N/A	TEOM 4	PM10	µg/m ³	100%	Continuous	18.14	18.47	18.7	30

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EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value	100%ile concentration limit
15	TEOM 6	PM10	µg/m ³	Continuous (24 Hr Average)	100%	Continuous	2.5	17.68	41.1 (200.8)*	N/A
16	PM01	PM10	µg/m ³	Every 6 days	5	Every 6 days	22	27.3	31 (251)*	50
N/A	PM02	PM10	µg/m ³	N/A	5	Every 6 days	25	32.3	39 (271)*	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	100%	Continuous	3.6	18.35	39.6 (234.5)*	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	100%	Continuous	8.6	21.17	44.3 (268.7)*	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	100%	Continuous	11	23.14	46.6 (253.6)*	50

*Elevated readings excluded based on exceptional event (dust storm)

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Surface Water Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
N/A	SW01	Conductivity	µS/cm	N/A	1	10/12/2018	818	818	818
		pH	pH	N/A	1	10/12/2018	7.83	7.83	7.83
		Total Suspended Solids	mg/L	N/A	1	10/12/2018	5	5	5
N/A	SW02	Conductivity	µS/cm	N/A	1	10/12/2018	853	853	853
		pH	pH	N/A	1	10/12/2018	7.75	7.75	7.75
		Total Suspended Solids	mg/L	N/A	1	10/12/2018	5	5	5
N/A	SW04	Conductivity	µS/cm	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		pH	pH	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	10/12/2018	628	628	628
		pH	pH	N/A	1	10/12/2018	7.79	7.79	7.79
		Total Suspended Solids	mg/L	N/A	1	10/12/2018	10	10	10
N/A	SW07	Conductivity	µS/cm	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		pH	pH	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	10/12/2018	4570	4570	4570
		pH	pH	N/A	1	10/12/2018	7.99	7.99	7.99
		Total Suspended Solids	mg/L	N/A	1	10/12/2018	16	16	16
N/A	SW09	Conductivity	µS/cm	N/A	1	10/12/2018	4480	4480	4480
		pH	pH	N/A	1	10/12/2018	7.97	7.97	7.97
		Total Suspended Solids	mg/L	N/A	1	10/12/2018	21	21	21
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry

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		Total Suspended Solids	mg/L	Special Frequency 1	0	10/12/2018	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	10/12/2018	600	600	600
		pH	pH	N/A	1	10/12/2018	7.59	7.59	7.59
		Total Suspended Solids	mg/L	N/A	1	10/12/2018	5	5	5
N/A	SW15	Conductivity	µS/cm	N/A	0	10/12/2018	Dry	Dry	Dry
		pH	pH	N/A	0	10/12/2018	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	10/12/2018	Dry	Dry	Dry
		pH	pH	N/A	0	10/12/2018	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	Dry	Dry	Dry
N/A	SW17	Conductivity	µS/cm	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		pH	pH	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	10/12/2018	Dry	Dry	Dry
		pH	pH	N/A	0	10/12/2018	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		pH	pH	N/A	0	10/12/2018	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	10/12/2018	Dry	Dry	Dry
		pH	pH	N/A	0	10/12/2018	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	10/12/2018	Dry	Dry	Dry

Blasting

EPL ID	Location	Pollutant	Unit of Measure	Frequency	No. of Blasts during the reporting period	Min Value	Mean Value	Max Value	Limits dBL
49	BM1 Ulan School	Blast Overpressure	dBL	Every Blast	7	87.2	93.9	116.6	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.05	0.17	0.3	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	7	89.6	98.54	114.9	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.06	0.19	0.27	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)

Noise

Location	Start Date and Time ¹	Measured Level ² L _{A1,1minute} dB	Measured Level ² L _{Aeq} dB	Limit(s) ³	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
NA1	04/12/2018 11:00	NA	IA	Daytime (07:00 – 18:00) L _{Aeq,15minute} : 43 dB	Cloud Cover 2/8, wind at 10m 2.2 m/s, Stability Class D	Attended monitoring, nomination of noise sources: Birds and insects were primarily responsible for all measured noise levels. Breeze in the foliage and road traffic noise contributed to the measured L _{A50} , L _{Aeq} and L _{A90} . Estimate of contribution of subject noise source: MCO was inaudible.	Nil
NA6	03/12/2018 22:00	IA	IA	Night time (22:00 – 07:00) L _{Aeq,15minute} : 37 dB L _{A1,1minute} : 45 dB	Cloud Cover 0/8, wind at 10m 2.2 m/s, Stability Class F	Attended monitoring, nomination of noise sources: Road traffic tyre noise and bats were responsible for the measured L _{A1} and contributed to the measured L _{A10} and L _{Aeq} . Insects were responsible for the measured L _{A50} and L _{A90} and contributed to the measured L _{Aeq} . Estimate of contribution of subject noise source: MCO was inaudible.	Nil
NA12	03/12/2018 22:30	IA	IA	Night time (22:00 – 07:00) L _{Aeq,15minute} : 35 dB	Cloud Cover 0/8, wind at 10m 1.8 m/s, Stability Class F	Attended monitoring, nomination of noise sources: Dogs were responsible for all measured noise	Nil

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Location	Start Date and Time ¹	Measured Level ² LA1,1minute dB	Measured Level ² LAeq dB	Limit(s) ³	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
				LA1,1minute: 45 dB		levels. Estimate of contribution of subject noise source: MCO was inaudible.	

Notes:

1. Measurement period is 15 minutes;
2. Levels in these columns are MCO only;
3. 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;
4. Cloud cover from field sheet observations. Wind speed, wind direction and stability class based on WCM weather station data; and
5. NA in last column means atmospheric conditions outside those specified in EPL and so criterion is not applicable.

Effluent Discharge Points

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value
5	BOD	mg/L	Quarterly	0				
	Nitrogen (total)	mg/L	Quarterly	0				
	Oil and Grease	mg/L	Quarterly	0				
	pH	pH	Quarterly	0				
	Phosphorus (total)	mg/L	Quarterly	0				
	Total Suspended Solids	mg/L	Quarterly	0				
22	BOD	mg/L	Quarterly	0				
	Nitrogen (total)	mg/L	Quarterly	0				
	Oil and Grease	mg/L	Quarterly	0				
	pH	pH	Quarterly	0				
	Phosphorus (total)	mg/L	Quarterly	0				
	Total Suspended Solids	mg/L	Quarterly	0				
23	BOD	mg/L	Quarterly	0				
	Nitrogen (total)	mg/L	Quarterly	0				
	Oil and Grease	mg/L	Quarterly	0				
	pH	pH	Quarterly	0				
	Phosphorus (total)	mg/L	Quarterly	0				
	Total Suspended Solids	mg/L	Quarterly	0				
48	BOD	mg/L	Quarterly	0				
	Nitrogen (total)	mg/L	Quarterly	0				
	Oil and Grease	mg/L	Quarterly	0				
	pH	pH	Quarterly	0				
	Phosphorus (total)	mg/L	Quarterly	0				
	Total Suspended Solids	mg/L	Quarterly	0				

Discharge Points

Moolarben Coal did not have any licensed discharges during the period.

EPL ID	Pollutant	Unit of Measure	No. of samples required by Licence	No. of Samples collected and analysed	Date Sampled	Min Value	Mean Value	Max Value	100%ile concentration limit
1	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Megalitres per day	Continuous during discharge	0					10
2	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Megalitres per day	Continuous during discharge	0					10
24	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
26	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5

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	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
28	Conductivity	µS/cm	Continuous during discharge	0					900
	Iron	mg/L	Daily During Discharge	0					
	Oil and Grease	mg/L	Daily During Discharge	0					10
	pH	pH	Continuous during discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Continuous during discharge	0					25
	Zinc	mg/L	Daily During Discharge	0					
	Discharge Volume	Kilolitres per day	Continuous during discharge	0					1
29	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
30	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
31	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
33	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5

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	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25
35	Oil and Grease	mg/L	Daily During Discharge	0					
	pH	pH	Daily During Discharge	0					6.5-8.5
	Total Suspended Solids	mg/L	Daily During Discharge	0					50
	Turbidity	NTU	Daily During Discharge	0					25