

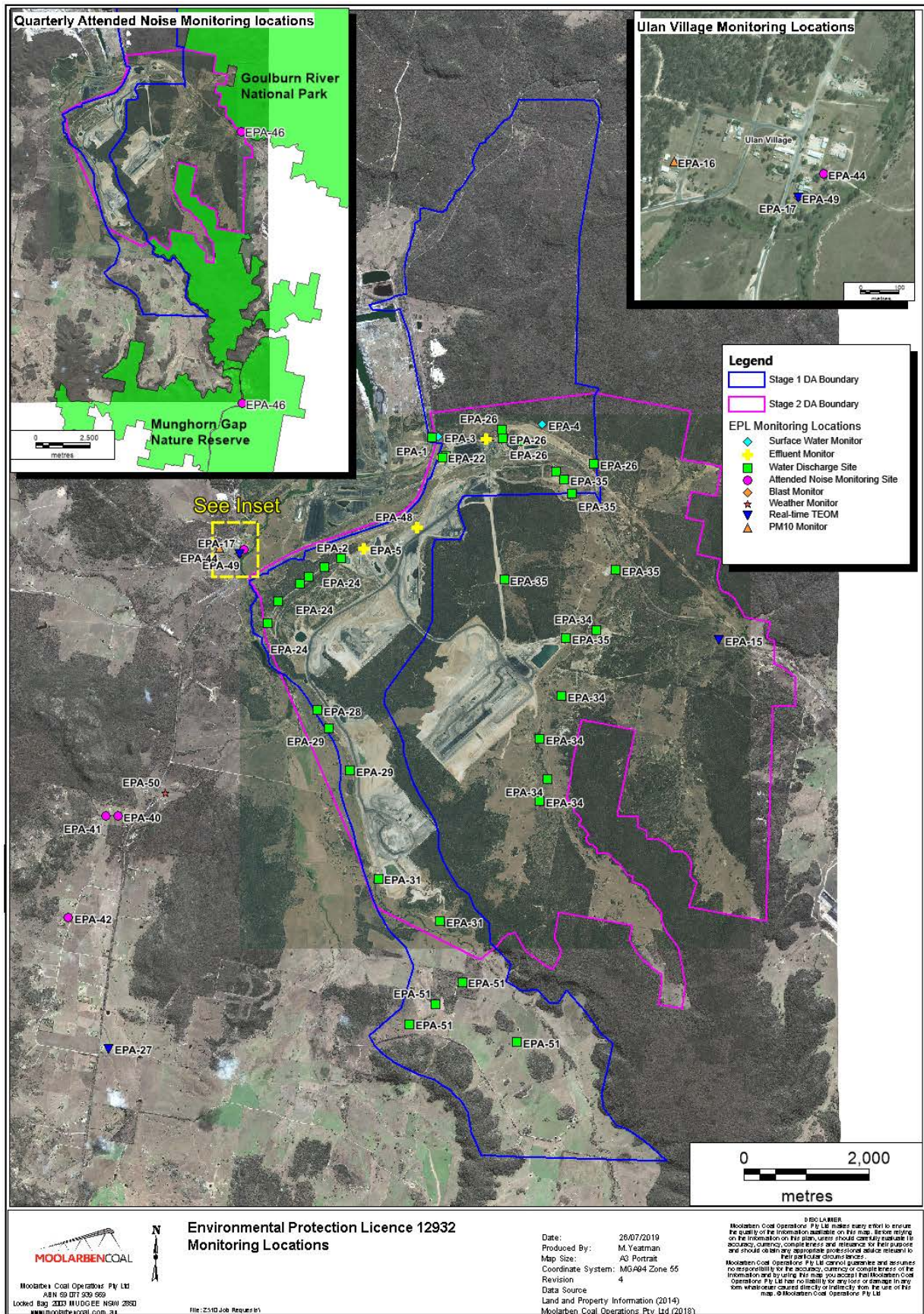


Monthly Environmental Monitoring Report

For the Month Ending 31 October 2019

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 October 2019 to 31 October 2019
Date last sampled data obtained	15 November 2019
Publication Date	29 November 2019
Version	1
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Approver	T. Cini

EPL 12932 MCO Environmental Monitoring Network



Concentration Monitoring Summary
Air Quality Monitoring

EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	EPL Monitoring Frequency	12 mth rolling average			Annual 100%ile concentration limit
						Min Value	Mean Value	Max Value	
15	TEOM 6	PM10	µg/m ³	97.7%	Continuous	17.03	17.65	18.34	25
16	PM01	PM10	µg/m ³	5	Every 6 days	18.04	18.59	19.44	25
N/A	PM02	PM10	µg/m ³	5	Every 6 days	18.68	19.13	19.67	25
17	TEOM 1	PM10	µg/m ³	92.0%	Continuous	14.98	15.46	16.06	25
27	TEOM 7	PM10	µg/m ³	87.6%	Continuous	15.21	15.51	15.74	25
N/A	TEOM 4	PM10	µg/m ³	95.8%	Continuous	18.76	19.18	19.48	25

EPL ID	Location	Pollutant	Unit of Measure	EPL Monitoring Frequency	No. of Samples collected and analysed	Min Value	Mean Value	Max Value	100%ile concentration limit
15	TEOM 6	PM10	µg/m ³	Continuous (24 Hr Average)	97.7%	6.84	29.46	49.78 (*94.66)	50
16	PM01	PM10	µg/m ³	Every 6 days	5	10.0	31.4	39.0	50
N/A	PM02	PM10	µg/m ³	N/A	5	9.0	28.8	32.0	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	92.0%	7.54	25.68	49.02 (*81.64)	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	87.6%	3.41	19.64	44.48 (*80.26)	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	95.8%	7.49	25.6	49.63 (*76.65)	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	14/10/2019	819	819	819
		pH	pH	N/A	1	14/10/2019	7.7	7.7	7.7
		Total Suspended Solids	mg/L	N/A	1	14/10/2019	<5	<5	<5
N/A	SW02	Conductivity	µS/cm	N/A	1	14/10/2019	847	847	847
		pH	pH	N/A	1	14/10/2019	7.76	7.76	7.76
		Total Suspended Solids	mg/L	N/A	1	14/10/2019	<5	<5	<5
N/A	SW04	Conductivity	µS/cm	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	14/10/2019	888	888	888
		pH	pH	N/A	1	14/10/2019	7.02	7.02	7.02
		Total Suspended Solids	mg/L	N/A	1	14/10/2019	<5	<5	<5
N/A	SW07	Conductivity	µS/cm	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	14/10/2019	5100	5100	5100
		pH	pH	N/A	1	14/10/2019	6.92	6.92	6.92
		Total Suspended Solids	mg/L	N/A	1	14/10/2019	9	9	9
N/A	SW09	Conductivity	µS/cm	N/A	1	14/10/2019	4290	4290	4290
		pH	pH	N/A	1	14/10/2019	6.62	6.62	6.62
		Total Suspended Solids	mg/L	N/A	1	14/10/2019	8	8	8
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry

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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
		Total Suspended Solids	mg/L	Special Frequency 1	0	14/10/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	14/10/2019	655	655	655
		pH	pH	N/A	1	14/10/2019	7.11	7.11	7.11
		Total Suspended Solids	mg/L	N/A	1	14/10/2019	<5	<5	<5
N/A	SW15	Conductivity	µS/cm	N/A	0	14/10/2019	Dry	Dry	Dry
		pH	pH	N/A	0	14/10/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	No Flow	No Flow	No Flow
N/A	SW17	Conductivity	µS/cm	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	14/10/2019	Dry	Dry	Dry
		pH	pH	N/A	0	14/10/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	14/10/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	14/10/2019	Dry	Dry	Dry
		pH	pH	N/A	0	14/10/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	14/10/2019	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	13	87.1	102.04	114.1	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.04	0.23	0.58	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	13	88.1	99.93	107.0	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.05	0.15	0.3	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)

Noise

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
NA1	02/10/2019 09:00	NA	IA	Daytime (07:00 – 18:00) LAeq,15minute: 43 dB	Cloud Cover: 0/8 Wind: 2.6 m/s Direction: 298 degrees Stability Class: A	Attended monitoring, nomination of noise sources: Road traffic noise generated the measured LA1. Road traffic noise and local industrial noise were primarily responsible for the measured LA10, LAeq, LA50, and LA90. Birds were a minor contributor to the measured LA10 and breeze in the foliage contributed to the measured LA90. Estimate of contribution of subject noise source: MCO was inaudible during the measurement.	Nil
NA6	01/10/2019 22:00	39	32	Night time (22:00 – 07:00) LAeq,15minute: 37 dB LA1,1minute: 45 dB	Cloud Cover: 0/8 Wind: 0.7 m/s Direction: 48 degrees Stability Class: F	Attended monitoring, nomination of noise sources: MCO continuum was primarily responsible for all measured noise levels. Distant road traffic tyre noise and nearby wind chimes contributed to the measured LA10 and LAeq. Estimate of contribution of subject noise source: A mining continuum from MCO was audible throughout the measurement generating the site-only LAeq of 32 dB. Surges in this continuum were responsible for the measured site-only LA1,1minute of 39 dB.	Nil
NA12	01/10/2019	32	28	Night time (22:00 – 07:00)	Cloud Cover: 0/8	Attended monitoring, nomination of 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
	22:30			LAeq,15minute: 35 dB LA1,1minute: 45 dB	Wind: 1.2 m/s Direction: 48 degrees Stability Class: F	<p>sources:</p> <p>Aircraft noise generated the measured LA1. Aircraft noise, road traffic noise, and MCO continuum were responsible for the measured LA10 and LAeq. MCO continuum generated the measured LA50 and LA90.</p> <p>Estimate of contribution of subject noise source:</p> <p>A mining continuum from MCO was audible throughout the measurement generating the site-only LAeq of 28 dB. Surges in this continuum generated the site-only LA1,1minute of 32 dB.</p>	

Notes:

1. Measurement period is 15 minutes;
2. Site-only noise levels attributed to MCO, including modifying factors where applicable;
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, therefore criterion was 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					
	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					

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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
	Total Suspended Solids	mg/L	Daily During Discharge	0					50

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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
28	Turbidity	NTU	Daily During Discharge	0					25
	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
	Total Suspended Solids	mg/L	Daily During Discharge	0					50

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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
	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