

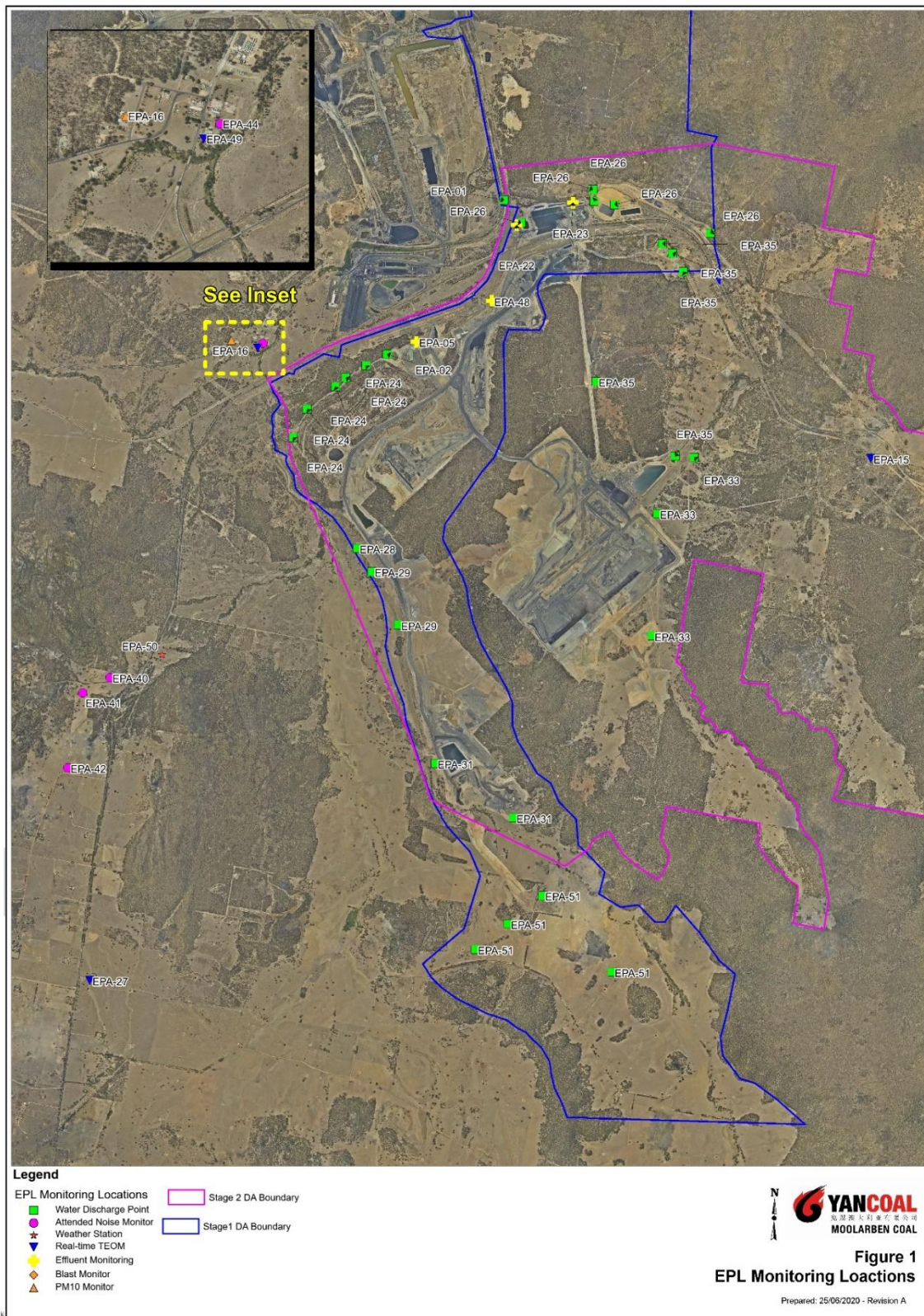


# Monthly Environmental Monitoring Report

For the Month Ending 30 November 2020

<b>Name of Operation</b>	Moolarben Coal Complex
<b>Name of License Holder</b>	Moolarben Coal Operations Pty Ltd
<b>Premises</b>	Moolarben Coal Mine 12 Ulan-Wollar Rd, Ulan NSW 2850
<b>Environmental Protection Licence Number</b>	12932
<b>EPL Link</b>	<a href="http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&amp;SYSUID=1&amp;LICID=12932">http://www.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=75423&amp;SYSUID=1&amp;LICID=12932</a>
<b>Premises</b>	Moolarben Coal Mine
<b>Reporting Period</b>	1 November 2020 to 30 November 2020
<b>Date last sampled data obtained</b>	11 <sup>th</sup> December 2020
<b>Publication Date</b>	17 <sup>th</sup> December 2020
<b>Version</b>	1
<b>Author</b>	L. Martin
<b>Approver</b>	T. Cini

### 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	12 mth rolling average			Annual concentration limit	Exceedance (Yes/No)
						Min Value	Mean Value	Max Value		
15	TEOM 6	PM10	µg/m <sup>3</sup>	Continuous	98.2%	17.2	17.3	17.5	25	No
16	PM01	PM10	µg/m <sup>3</sup>	Every 6 days	5	11.3	11.5	11.9	25	No
N/A	PM02	PM10	µg/m <sup>3</sup>	Every 6 days	5	11.7	12	12.5	25	No
17	TEOM 1	PM10	µg/m <sup>3</sup>	Continuous	98.5%	15.8	15.9	16	25	No
27	TEOM 7	PM10	µg/m <sup>3</sup>	Continuous	96.7%	11.3	11.4	11.6	25	No
27	TEOM 7	PM2.5	µg/m <sup>3</sup>	Continuous	96.7%	5.3	5.4	5.6	8	No
N/A	TEOM 4	PM10	µg/m <sup>3</sup>	Continuous	97.6%	14.8	14.9	14.9	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 <sup>a</sup>	Exceedance (Yes/No)
15	TEOM 6	PM10	µg/m <sup>3</sup>	Continuous (24 Hr Average)	98.2%	8.8	21.3	43	50	No
16	PM01	PM10	µg/m <sup>3</sup>	Every 6 days	5	12	20.8	29	50	No
N/A	PM02	PM10	µg/m <sup>3</sup>	N/A	5	13	23	29	50	No
17	TEOM 1	PM10	µg/m <sup>3</sup>	Continuous (24 Hr Average)	98.5%	7.4	19.9	32.5	50	No
27	TEOM 7	PM10	µg/m <sup>3</sup>	Continuous (24 Hr Average)	96.7%	4	17.6	37.8	50	No
27	TEOM 7	PM2.5	µg/m <sup>3</sup>	Continuous (24 Hr Average)	96.7%	2.4	8.9	28*	25	No
N/A	TEOM 4	PM10	µg/m <sup>3</sup>	N/A (24 Hr Average)	97.6%	5.2	19.4	31.7	50	No

<sup>a</sup>Concentration limit is cumulative for PM10 and Incremental for PM2.5

\*Maximum Cumulative result including concentrations due to all other sources MCO's contribution <9.2



**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	10/11/2020	479
		pH	pH	1	10/11/2020	7.6
		Total Suspended Solids	mg/L	1	10/11/2020	<5
N/A	SW02	Conductivity	µS/cm	1	10/11/2020	505
		pH	pH	1	10/11/2020	7.6
		Total Suspended Solids	mg/L	1	10/11/2020	<5
N/A	SW04	Conductivity	µS/cm	1	10/11/2020	392
		pH	pH	1	10/11/2020	7.1
		Total Suspended Solids	mg/L	1	10/11/2020	<5
N/A	SW05	Conductivity	µS/cm	1	10/11/2020	367
		pH	pH	1	10/11/2020	6.9
		Total Suspended Solids	mg/L	1	10/11/2020	<5
N/A	SW07	Conductivity	µS/cm	1	10/11/2020	2020
		pH	pH	1	10/11/2020	7.3
		Total Suspended Solids	mg/L	1	10/11/2020	21
N/A	SW08	Conductivity	µS/cm	1	10/11/2020	2890
		pH	pH	1	10/11/2020	6.4
		Total Suspended Solids	mg/L	1	10/11/2020	7
N/A	SW09	Conductivity	µS/cm	1	10/11/2020	4870
		pH	pH	1	10/11/2020	6.5
		Total Suspended Solids	mg/L	1	10/11/2020	79
N/A	SW12	Conductivity	µS/cm	1	10/11/2020	197
		pH	pH	1	10/11/2020	6.7
		Total Suspended Solids	mg/L	1	10/11/2020	8
N/A	SW15	Conductivity	µS/cm	1	10/11/2020	163
		pH	pH	1	10/11/2020	6.3
		Total Suspended Solids	mg/L	1	10/11/2020	6
N/A	SW16	Conductivity	µS/cm	1	10/11/2020	173
		pH	pH	1	10/11/2020	6.5

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EPL ID	Location	Pollutant	Unit of Measure	No. of Samples collected and analysed	Date Sampled	Results
		Total Suspended Solids	mg/L	1	10/11/2020	<5
N/A	SW17	Conductivity	µS/cm	0	10/11/2020	No Flow
		pH	pH	0	10/11/2020	No Flow
		Total Suspended Solids	mg/L	0	10/11/2020	No Flow
N/A	SW18	Conductivity	µS/cm	1	10/11/2020	274
		pH	pH	1	10/11/2020	6.4
		Total Suspended Solids	mg/L	1	10/11/2020	<5

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**Blasting**

EPL ID	Location	Pollutant	Unit of Measure	Frequency	No. of Blasts during the reporting period	Min Value	Mean Value	Max Value	Limits dBL	Exceedance (Yes/No)
49	BM1 Ulan School	Blast Overpressure	dBL	Every Blast	14	80.2	92.8	100.4	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.04	0.17	0.43	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	14	83.6	94.9	104.8	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.05	0.2	0.56	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No
N/A	BM8 Moolarben Rd	Blast Overpressure	dBL	Every Blast	14	72.2	95.2	113.2	115 (95% of Blasts) 120 (100% of Blasts)	No
		Ground Vibration	mm/s	Every Blast		0.06	0.16	0.07	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)	No

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**Noise**

EPL ID	Location	Site ID	Monitoring Type	Frequency	Measured Level <sup>1,2,3</sup> LA1,1minutedB (15min)	Measured Level <sup>1,2,3</sup> LAeqdB (1min)	Noise Criteria <sup>4</sup>	Monitoring Completed during the period	Exceedance (Yes/No) <sup>5</sup>
44	Ulan Public School	NA1	Compliance - Attended	Monthly	NA	IA	Daytime (07:00 – 18:00) LAeq,15minute: 35 dB	Yes	No
N/A	Cope Road (Receiver 258)	NA11	Management - Attended	Quarterly	NA	IA	-	Yes	No
N/A	Lagoons Road	NA2	Validation - Attended	Annually	-	-	-	No	-
42	Winchester Crescent	NA12	Compliance/Validation - Attended	Monthly	25	<25	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	32	27	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



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- 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

**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	1	3/11/2020	34
	Nitrogen (total)	mg/L	Quarterly	1	3/11/2020	38
	Oil and Grease	mg/L	Quarterly	1	3/11/2020	<5
	pH	pH	Quarterly	1	3/11/2020	7.3
	Phosphorus (total)	mg/L	Quarterly	1	3/11/2020	5
	Total Suspended Solids	mg/L	Quarterly	1	3/11/2020	18
22	BOD	mg/L	Quarterly	1	3/11/2020	2
	Nitrogen (total)	mg/L	Quarterly	1	3/11/2020	16
	Oil and Grease	mg/L	Quarterly	1	3/11/2020	<5
	pH	pH	Quarterly	1	3/11/2020	7
	Phosphorus (total)	mg/L	Quarterly	1	3/11/2020	24
	Total Suspended Solids	mg/L	Quarterly	1	3/11/2020	10
23	BOD	mg/L	Quarterly	1	3/11/2020	6
	Nitrogen (total)	mg/L	Quarterly	1	3/11/2020	4
	Oil and Grease	mg/L	Quarterly	1	3/11/2020	<5
	pH	pH	Quarterly	1	3/11/2020	7.2
	Phosphorus (total)	mg/L	Quarterly	1	3/11/2020	0.2
	Total Suspended Solids	mg/L	Quarterly	1	3/11/2020	46
48	BOD	mg/L	Quarterly	1	5/11/2020	39
	Nitrogen (total)	mg/L	Quarterly	1	5/11/2020	7
	Oil and Grease	mg/L	Quarterly	1	5/11/2020	10
	pH	pH	Quarterly	1	5/11/2020	7.4
	Phosphorus (total)	mg/L	Quarterly	1	5/11/2020	0.7
	Total Suspended Solids	mg/L	Quarterly	1	5/11/2020	32

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**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	208	218	231	685	No
	Oil and Grease	mg/L	Weekly during discharge	5	<2	<2	<2	10	No
	pH	pH	Continuous during discharge	Continuous during discharge	6.8	6.9	7.3	6.5-8.5	No
	Total Suspended Solids	mg/L	Weekly during discharge	5	<1	<1	<1	50	No
	Turbidity	NTU	Continuous during discharge	Continuous during discharge	0	0	0	25	No
	Discharge Volume	Megalitres per day	Continuous during discharge	Continuous during discharge	2.1	7.6	9.9	10	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

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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