

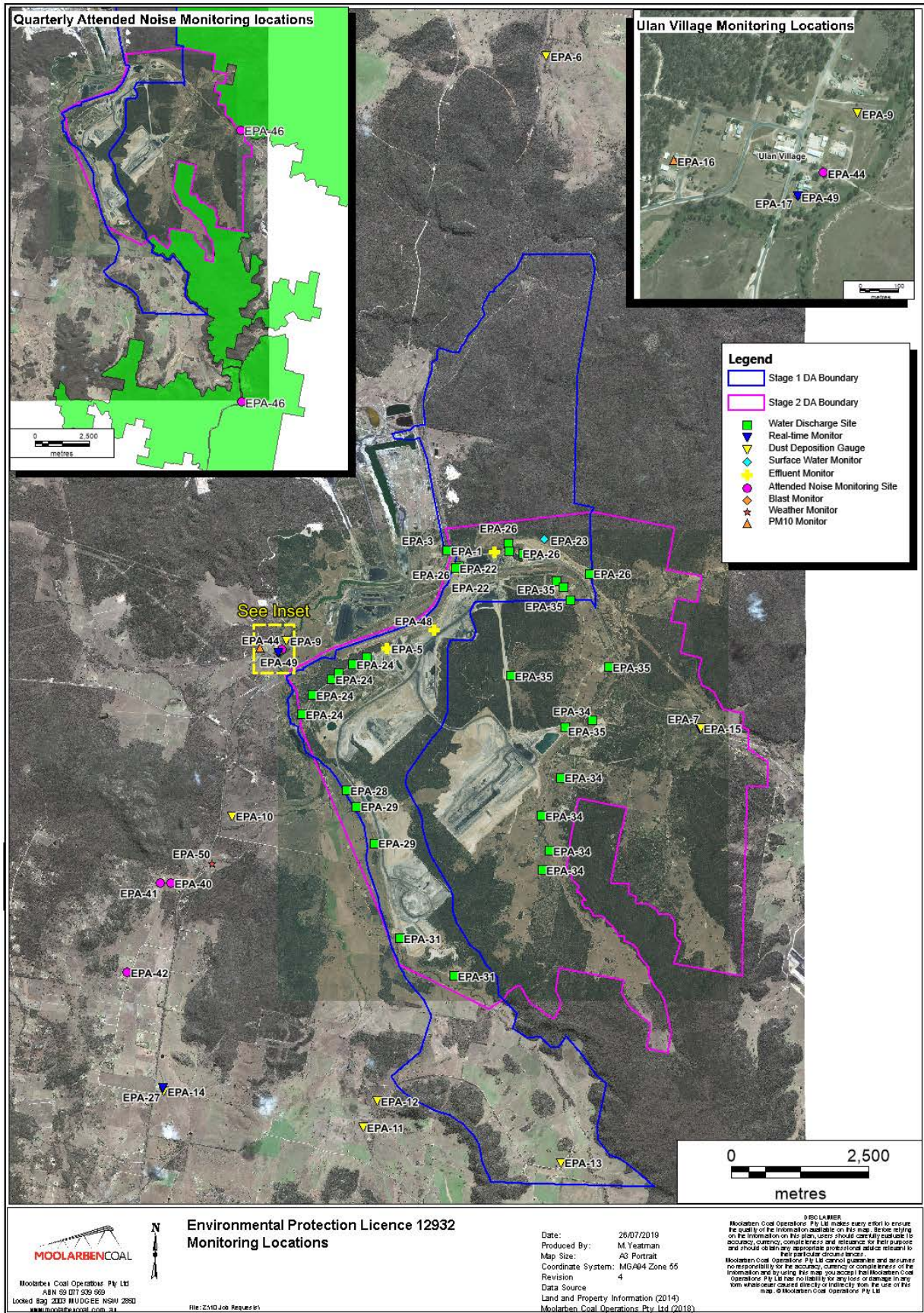


Monthly Environmental Monitoring Report

For the Month Ending 31 August 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 August 2019 to 31 August 2019
Date last sampled data obtained	13 September 2019
Publication Date	23 September 2019
Version	1
Author	M. Yeatman
Approver	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	Date Sampled	Value	Annual Average (Rolling)	Annual 100%ile concentration limit
6	DG01	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	1.1	1.07	4.0
7	DG12	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	1.8	1.93	4.0
9	DG04	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	1.0	1.54	4.0
10	DG05	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	0.4	1.63	4.0
11	DG06	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	0.8	1.75	4.0
12	DG07	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	0.4	1.42	4.0
13	DG08	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	0.4	1.88	4.0
14	DG09	Particulates – Deposited Matter	g/m ² /month	Monthly	1	29/08/2019	0.9	2.12	4.0
N/A	DG13	Particulates – Deposited Matter	g/m ² /month	N/A	1	29/08/2019	0.9	1.8	4.0

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	99.5%	Continuous	14.69	15.63	16.23	25
16	PM01	PM10	µg/m ³	5	Every 6 days	15.39	16.66	21.43	25
N/A	PM02	PM10	µg/m ³	5	Every 6 days	16.16	17.97	22.95	25
17	TEOM 1	PM10	µg/m ³	100%	Continuous	14.31	14.99	15.60	25
27	TEOM 7	PM10	µg/m ³	96.4%	Continuous	14.59	15.85	17.0	25
N/A	TEOM 4	PM10	µg/m ³	100%	Continuous	17.47	18.52	19.39	25

MONTHLY ENVIRONMENTAL MONITORING REPORT42TFor the Month Ending 31 August 2019

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)	99.5%	5.44	22.24	44.58	50
16	PM01	PM10	µg/m ³	Every 6 days	5	16.79	17.07	17.26	50
N/A	PM02	PM10	µg/m ³	N/A	5	17.72	18.0	18.21	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	100%	4.33	14.52	30.55	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	96.4%	3.24	14.68	33.26	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	100%	5.18	17.36	31.09	50

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	12/08/2019	738	738	738
		pH	pH	N/A	1	12/08/2019	7.17	7.17	7.17
		Total Suspended Solids	mg/L	N/A	1	12/08/2019	<5	<5	<5
N/A	SW02	Conductivity	µS/cm	N/A	1	12/08/2019	746	746	746
		pH	pH	N/A	1	12/08/2019	7.28	7.28	7.28
		Total Suspended Solids	mg/L	N/A	1	12/08/2019	<5	<5	<5
N/A	SW04	Conductivity	µS/cm	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	12/08/2019	659	659	659
		pH	pH	N/A	1	12/08/2019	7.32	7.32	7.32
		Total Suspended Solids	mg/L	N/A	1	12/08/2019	<5	<5	<5
N/A	SW07	Conductivity	µS/cm	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	12/08/2019	4450	4450	4450
		pH	pH	N/A	1	12/08/2019	6.88	6.88	6.88
		Total Suspended Solids	mg/L	N/A	1	12/08/2019	<5	<5	<5
N/A	SW09	Conductivity	µS/cm	N/A	1	12/08/2019	4030	4030	4030
		pH	pH	N/A	1	12/08/2019	6.55	6.55	6.55
		Total Suspended Solids	mg/L	N/A	1	12/08/2019	11	11	11
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	12/08/2019	Dry	Dry	Dry

MONTHLY ENVIRONMENTAL MONITORING REPORT

42T For the Month Ending 31 August 2019

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	12/08/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	12/08/2019	571	571	571
		pH	pH	N/A	1	12/08/2019	7.19	7.19	7.19
		Total Suspended Solids	mg/L	N/A	1	12/08/2019	<5	<5	<5
N/A	SW15	Conductivity	µS/cm	N/A	0	12/08/2019	Dry	Dry	Dry
		pH	pH	N/A	0	12/08/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	No Flow	No Flow	No Flow
N/A	SW17	Conductivity	µS/cm	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	12/08/2019	Dry	Dry	Dry
		pH	pH	N/A	0	12/08/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	12/08/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	12/08/2019	Dry	Dry	Dry
		pH	pH	N/A	0	12/08/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	12/08/2019	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	86.7	96.18	108.7	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.08	0.15	0.25	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	13	80.6	91.68	102.5	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.05	0.16	0.35	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)

Noise

Location	Start Date and Time ²	Measured Level ¹ L _{A1,1minute} dB	Measured Level ¹ L _{Aeq} dB	Limit(s) ²	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
NA1	02/08/2019 13:23	NA	IA	Daytime (07:00 – 18:00) L _{Aeq,15minute} : 43 dB	Cloud Cover 4/8, wind at 10m 1.5m/s, Stability Class A	Attended monitoring, nomination of noise sources: Continuum and impacts from the nearby industrial area primarily generated all measured noise levels. Birds, road traffic noise and voices from the school yard also contributed to the measured L _{A1} , L _{A10} and L _{Aeq} . Estimate of contribution of subject noise source: MCO was inaudible.	Nil
NA6	01/08/2019 23:52	39	35	Night time (22:00 – 07:00) L _{Aeq,15minute} : 37 dB L _{A1,1minute} : 45 dB	Cloud Cover 0/8, wind at 10m 0.0m/s, Stability Class G	Attended monitoring, nomination of noise sources: A train horn generated the measured L _{A1} and contributed to the measured L _{Aeq} . Dogs contributed to the measured L _{A10} and L _{Aeq} . MCO continuum also contributed to the measured L _{A10} and L _{Aeq} , and generated the measured L _{A50} and L _{A90} . Estimate of contribution of subject noise source: A mining continuum from MCO was audible throughout the measurement generating the site-only L _{Aeq} of 35 dB. Surges in the continuum generated the measured L _{A1,1minute} of 39 dB.	Nil
NA12	02/08/2019 00:45	31	26	Night time (22:00 – 07:00) L _{Aeq,15minute} : 35 dB L _{A1,1minute} : 45 dB	Cloud Cover 0/8, wind at 10m 0.0m/s, Stability Class G	Attended monitoring, nomination of noise sources: Road traffic tyre noise and dogs generated the measured L _{A1} , L _{A10} and L _{Aeq} . Road traffic noise and MCO continuum were responsible for the measured L _{A50} and L _{A90} .	Nil

Location	Start Date and Time ²	Measured Level ¹ L _{A1,1minute} dB	Measured Level ¹ L _{Aeq} dB	Limit(s) ²	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
GRNP	01/08/2019 22:00	NA	35	All periods L _{Aeq,15minute} : 50 dB	Cloud Cover 0/8, wind at 10m 1.9m/s, Stability Class G	<p>Estimate of contribution of subject noise source: A mining continuum from MCO was audible throughout the measurement generating the site-only L_{Aeq} of 26 dB. Surges in this continuum generated the site-only L_{A1,1minute} of 31 dB.</p> <p>Attended monitoring, nomination of noise sources: Mining noise sources from MCO, frogs and insects were responsible for all measured noise levels.</p> <p>Estimate of contribution of subject noise source: A mining continuum and fan noise were audible throughout the measurement, generating the site-only L_{Aeq,15minute} of 35 dB. Impacts generated the site-only L_{A1,1minute} of 50 dB.</p>	Nil
MGNR	02/08/2019 01:47	NA	IA	All periods L _{Aeq,15minute} : 50 dB	Cloud Cover 0/8, wind at 10m 0.0m/s, Stability Class G	<p>Attended monitoring, nomination of noise sources: Continuum from another mining operation generated all measured noise levels.</p> <p>Estimate of contribution of subject noise source: MCO was inaudible.</p>	Nil

Notes:

1. Levels in these columns are MCO only;
2. Measurement period is 15 minutes;
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	1	15/08/2019	<2	<2	<2
	Nitrogen (total)	mg/L	Quarterly	1	15/08/2019	4.8	4.8	4.8
	Oil and Grease	mg/L	Quarterly	1	15/08/2019	<5	<5	<5
	pH	pH	Quarterly	1	15/08/2019	6.85	6.85	6.85
	Phosphorus (total)	mg/L	Quarterly	1	15/08/2019	2.1	2.1	2.1
	Total Suspended Solids	mg/L	Quarterly	1	15/08/2019	16	16	16
22	BOD	mg/L	Quarterly	1	15/08/2019	<2	<2	<2
	Nitrogen (total)	mg/L	Quarterly	1	15/08/2019	118	118	118
	Oil and Grease	mg/L	Quarterly	1	15/08/2019	<5	<5	<5
	pH	pH	Quarterly	1	15/08/2019	6.36	6.36	6.36
	Phosphorus (total)	mg/L	Quarterly	1	15/08/2019	28.3	28.3	28.3
	Total Suspended Solids	mg/L	Quarterly	1	15/08/2019	20	20	20
23	BOD	mg/L	Quarterly	1	15/08/2019	4	4	4
	Nitrogen (total)	mg/L	Quarterly	1	15/08/2019	3.5	3.5	3.5
	Oil and Grease	mg/L	Quarterly	1	15/08/2019	<5	<5	<5
	pH	pH	Quarterly	1	15/08/2019	6.88	6.88	6.88
	Phosphorus (total)	mg/L	Quarterly	1	15/08/2019	0.14	0.14	0.14
	Total Suspended Solids	mg/L	Quarterly	1	15/08/2019	35	35	35
48	BOD	mg/L	Quarterly	1	15/08/2019	53	53	53
	Nitrogen (total)	mg/L	Quarterly	1	15/08/2019	7.5	7.5	7.5
	Oil and Grease	mg/L	Quarterly	1	15/08/2019	<5	<5	<5
	pH	pH	Quarterly	1	15/08/2019	6.88	6.88	6.88
	Phosphorus (total)	mg/L	Quarterly	1	15/08/2019	0.14	0.14	0.14
	Total Suspended Solids	mg/L	Quarterly	1	15/08/2019	35	35	35

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

MONTHLY ENVIRONMENTAL MONITORING REPORT

42T For the Month Ending 31 August 2019

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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

MONTHLY ENVIRONMENTAL MONITORING REPORT42T For the Month Ending 31 August 2019

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