

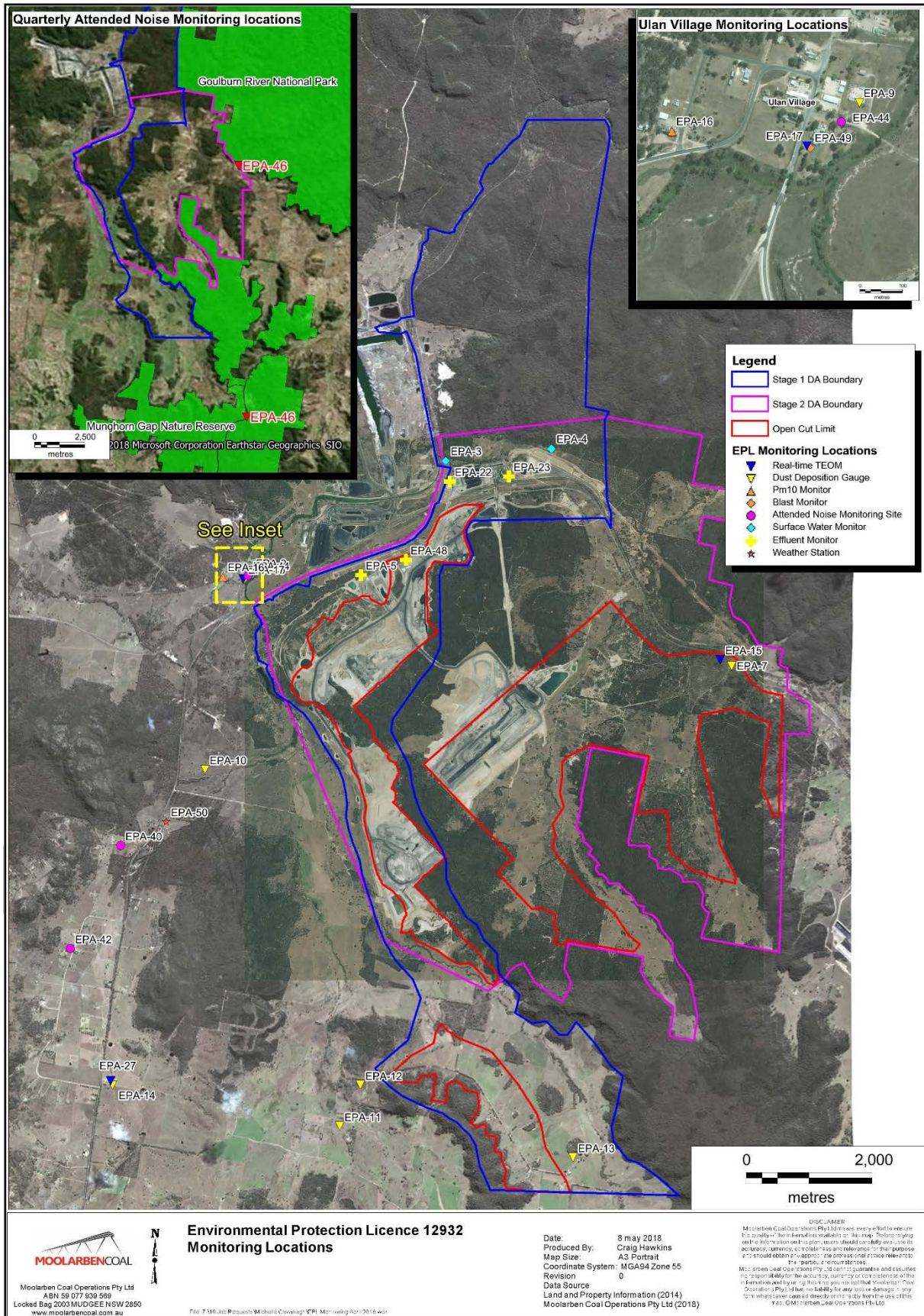


Monthly Environmental Monitoring Report

For the Month Ending 28 February 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 February 2019 to 28 February 2019
Date last sampled data obtained	13 March 2019
Publication Date	1 May 2019
Version	2
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	27/02/2019	0.7	1.02	4.0
7	DG12	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.3	2.10	4.0
9	DG04	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.6	1.46	4.0
10	DG05	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.8	1.91	4.0
11	DG06	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.6	1.75	4.0
12	DG07	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.1	1.58	4.0
13	DG08	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	1.0	1.79	4.0
14	DG09	Particulates – Deposited Matter	g/m ² /month	Monthly	1	27/02/2019	0.9	1.87	4.0
N/A	DG13	Particulates – Deposited Matter	g/m ² /month	N/A	1	27/02/2019	1.6	1.79	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	81.8%	Continuous	15.51	15.77	16.08	30
16	PM01	PM10	µg/m ³	5	Every 6 days	16	19.33	24	30
N/A	PM02	PM10	µg/m ³	5	Every 6 days	18	22	27	30
17	TEOM 1	PM10	µg/m ³	94.2%	Continuous	15.39	15.48	15.56	30
27	TEOM 7	PM10	µg/m ³	85.6%	Continuous	16.71	16.86	16.99	30
N/A	TEOM 4	PM10	µg/m ³	94.5%	Continuous	18.82	18.94	19.08	30

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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)	81.8%	13.76	3.25	42.27	50
16	PM01	PM10	µg/m ³	Every 6 days	5	16.19	16.53	16.88	50
N/A	PM02	PM10	µg/m ³	N/A	5	17.70	18.00	18.22	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	94.2%	9.85	19.64	41.95 (65.47)*	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	85.6%	6.91	16.92	39.6 (74.2)*	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	94.5%	10.14	24.08	48.49 (73.04)*	50

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

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	11/02/2019	784	784	784
		pH	pH	N/A	1	11/02/2019	7.46	7.46	7.46
		Total Suspended Solids	mg/L	N/A	1	11/02/2019	11	11	11
N/A	SW02	Conductivity	µS/cm	N/A	1	11/02/2019	783	783	783
		pH	pH	N/A	1	11/02/2019	7.48	7.48	7.48
		Total Suspended Solids	mg/L	N/A	1	11/02/2019	<5	<5	<5
N/A	SW04	Conductivity	µS/cm	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	11/02/2019	843	843	843
		pH	pH	N/A	1	11/02/2019	6.89	6.89	6.89
		Total Suspended Solids	mg/L	N/A	1	11/02/2019	7	7	7
N/A	SW07	Conductivity	µS/cm	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	11/02/2019	3180	3180	3180
		pH	pH	N/A	1	11/02/2019	6.81	6.81	6.81
		Total Suspended Solids	mg/L	N/A	1	11/02/2019	16	16	16
N/A	SW09	Conductivity	µS/cm	N/A	1	11/02/2019	4740	4740	4740
		pH	pH	N/A	1	11/02/2019	6.55	6.55	6.55
		Total Suspended Solids	mg/L	N/A	1	11/02/2019	21	21	21
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry

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		Total Suspended Solids	mg/L	Special Frequency 1	0	11/02/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	11/02/2019	487	487	487
		pH	pH	N/A	1	11/02/2019	7.12	7.12	7.12
		Total Suspended Solids	mg/L	N/A	1	11/02/2019	<5	<5	<5
N/A	SW15	Conductivity	µS/cm	N/A	0	11/02/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/02/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	11/02/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/02/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	Dry	Dry	Dry
N/A	SW17	Conductivity	µS/cm	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	11/02/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/02/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/02/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	11/02/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/02/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/02/2019	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	8	97	105.66	114.5	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.1	0.22	0.37	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	8	87.5	102.46	114.5	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.13	0.25	0.46	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	05/02/2019 11:46	NA	IA	Daytime (07:00 – 18:00) L _{Aeq,15minute} : 43 dB	Cloud Cover 0/8, wind at 10m 3.1m/s, Stability Class A	<p>Attended monitoring, nomination of noise sources:</p> <p>Insects, and road traffic noise generated all measured levels. Other mine and breeze in foliage were also noted.</p> <p>Estimate of contribution of subject noise source: MCO was inaudible.</p>	Nil
NA6	04/02/2019 23:43	30	<30	Night time (22:00 – 07:00) L _{Aeq,15minute} : 37 dB L _{A1,1minute} : 45 dB	Cloud Cover 7/8, wind at 10m 1.8m/s, Stability Class E	<p>Attended monitoring, nomination of noise sources:</p> <p>MCO continuum was a minor contributor to the measured L_{A50} and L_{Aeq}. Insects generated the measured L_{A50}, L_{A90} and were a major contributor to the measured L_{A1}, L_{A10} and L_{Aeq}. Road traffic noise and farm animals generated the measured L_{A1}, L_{A10}, L_{A50} and L_{Aeq}. Dogs and bats were also noted.</p> <p>Estimate of contribution of subject noise source:</p>	Nil

Location	Start Date and Time ²	Measured Level ¹ LA1,1minute dB	Measured Level ¹ LAeq dB	Limit(s) ²	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
						A mining continuum from MCO was audible throughout the measurement generating the site-only LAeq of less than 30 dB. Surges generated the measured LA1,1minute of 30 dB.	
NA12	05/02/2019 00:15	<25	<25	Night time (22:00 – 07:00) LAeq,15minute: 35 dB LA1,1minute: 45 dB	Cloud Cover 8/8, wind at 10m 2.1m/s, Stability Class E	<p>Attended monitoring, nomination of noise sources:</p> <p>Insects generated primarily generated all measured levels. Road traffic tyre noise contributed to the measured LA1, LA10 and LAeq. Farm animals, bats and breeze on microphone were also noted.</p> <p>Estimate of contribution of subject noise source:</p> <p>MCO continuum was audible at low levels, generating a site-only LAeq and LA1,1minute of less than 25 dB.</p>	Nil
GRNP	04/02/2019 22:00	<25	<25	All periods LAeq,15minute: 50 dB	Cloud Cover 6/8, wind at 10m 3.5m/s, Stability Class F	<p>Attended monitoring, nomination of noise sources:</p> <p>Other mine continuum and insects generated the measured LA10, LA50, LA90, and were a minor contributor to the measured LAeq. Trains and aircraft generated the measured LA1, LAeq and contributed to the measured LA10. Bats and road traffic tyre noise were also noted</p> <p>Estimate of contribution of subject noise source:</p> <p>MCO continuum was audible at low levels, generating a site-only LAeq and LA1,1minute of less than 25 dB.</p>	Nil

Location	Start Date and Time ²	Measured Level ¹ LA1,1minute dB	Measured Level ¹ LAeq dB	Limit(s) ²	Weather ⁴	Observation	(Potential) Non-Compliance/Breach ⁵
MGNR	05/02/2019 01:35	NA	IA	All periods LAeq,15minute: 50 dB	Cloud Cover 8/8, wind at 10m 1.1m/s, Stability Class F	Attended monitoring, nomination of noise sources: Insects and bats generated all measured levels. Estimate of contribution of subject noise source: MCO was inaudible.	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	13/02/2019	6	6	6
	Nitrogen (total)	mg/L	Quarterly	1	13/02/2019	17.4	17.4	17.4
	Oil and Grease	mg/L	Quarterly	1	13/02/2019	<5	5	5
	pH	pH	Quarterly	1	13/02/2019	7.42	7.42	7.42
	Phosphorus (total)	mg/L	Quarterly	1	13/02/2019	2.18	2.18	2.18
	Total Suspended Solids	mg/L	Quarterly	1	13/02/2019	56	56	56
22	BOD	mg/L	Quarterly	1	14/02/2019	2	2	2
	Nitrogen (total)	mg/L	Quarterly	1	14/02/2019	29	29	29
	Oil and Grease	mg/L	Quarterly	1	14/02/2019	<5	5	5
	pH	pH	Quarterly	1	13/02/2019	6.6	6.6	6.6
	Phosphorus (total)	mg/L	Quarterly	1	14/02/2019	23	23	23
	Total Suspended Solids	mg/L	Quarterly	1	14/02/2019	8	8	8
23	BOD	mg/L	Quarterly	1	14/02/2019	75	75	75
	Nitrogen (total)	mg/L	Quarterly	1	14/02/2019	5.7	5.7	5.7
	Oil and Grease	mg/L	Quarterly	1	14/02/2019	<5	<5	<5
	pH	pH	Quarterly	1	13/02/2019	7.2	7.2	7.2
	Phosphorus (total)	mg/L	Quarterly	1	14/02/2019	0.3	0.3	0.3
	Total Suspended Solids	mg/L	Quarterly	1	14/02/2019	14	14	14
48	BOD	mg/L	Quarterly	1	14/02/2019	49	49	49
	Nitrogen (total)	mg/L	Quarterly	1	14/02/2019	6.6	6.6	6.6
	Oil and Grease	mg/L	Quarterly	1	14/02/2019	<5	<5	<5
	pH	pH	Quarterly	1	14/02/2019	7.35	7.35	7.35
	Phosphorus (total)	mg/L	Quarterly	1	14/02/2019	1.18	1.18	1.18
	Total Suspended Solids	mg/L	Quarterly	1	14/02/2019	24	24	24

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