Monthly Environmental Monitoring Report

For the Month Ending 30 June 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 June 2019 to 30 June 2019
Date last sampled data obtained	15 July 2019
Publication Date	26 July 2019
Version	1
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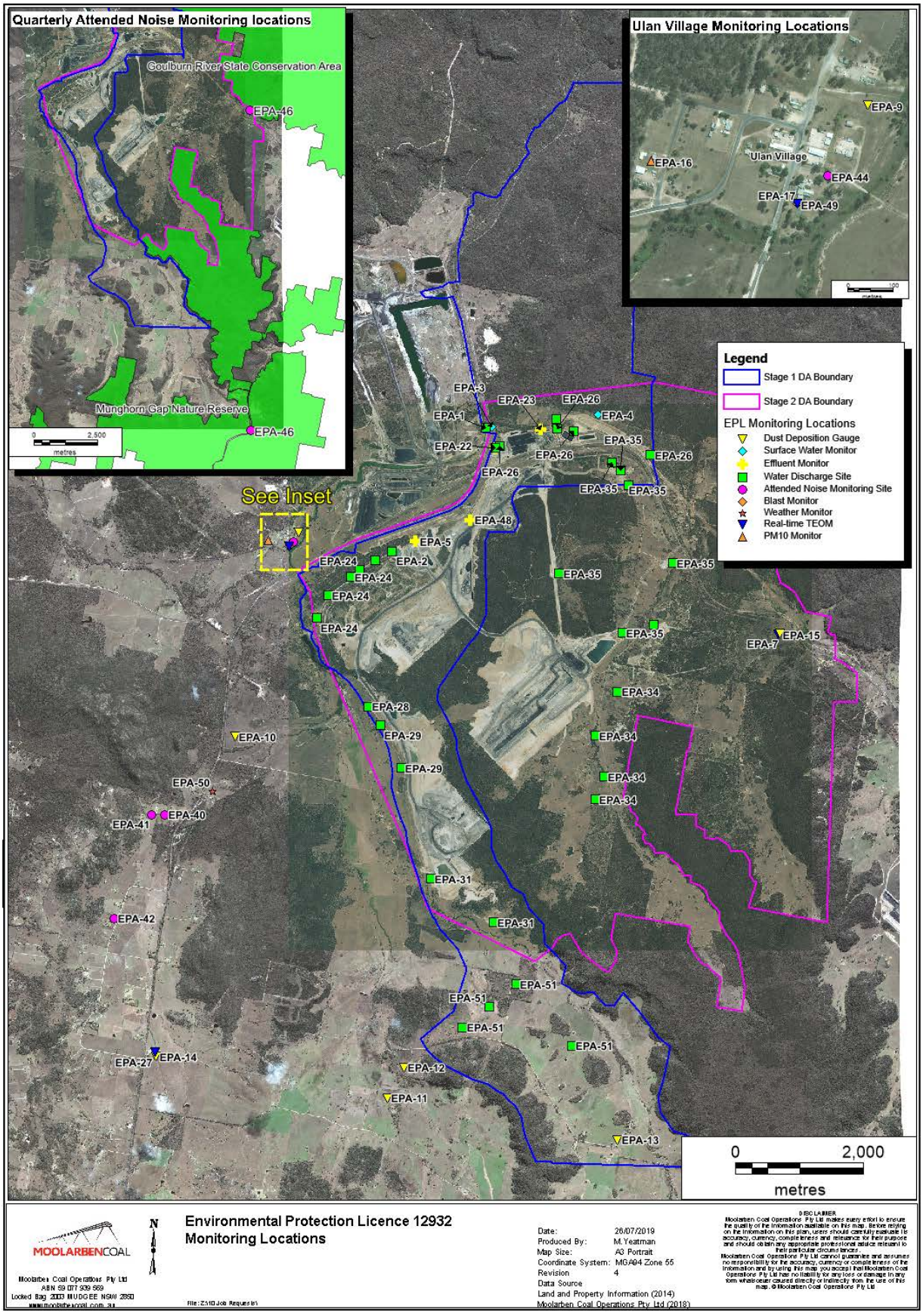
EPL 12932 MCO Environmental Monitoring Network



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	28/06/2019	0.3	1.01	4.0
7	DG12	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	1.7	1.92	4.0
9	DG04	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	0.7	1.52	4.0
10	DG05	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	0.7	1.62	4.0
11	DG06	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	0.6	1.72	4.0
12	DG07	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	0.5	1.43	4.0
13	DG08	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	0.4	1.87	4.0
14	DG09	Particulates – Deposited Matter	$g/m^2/month$	Monthly	1	28/06/2019	0.4	2.05	4.0
N/A	DG13	Particulates – Deposited Matter	$g/m^2/month$	N/A	1	28/06/2019	0.4	1.78	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	$\mu g/m^3$	97.3%	Continuous	15.7	15.86	16.02	30
16	PM01	PM10	$\mu g/m^3$	5	Every 6 days	16.63	16.81	16.93	30
N/A	PM02	PM10	$\mu g/m^3$	5	Every 6 days	18.26	18.36	18.49	30
17	TEOM 1	PM10	$\mu g/m^3$	96.8%	Continuous	14.99	15.02	15.07	30
27	TEOM 7	PM10	$\mu g/m^3$	98.9%	Continuous	15.6	15.67	15.72	30
N/A	TEOM 4	PM10	$\mu g/m^3$	97.9%	Continuous	18.41	18.46	18.53	30

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)	97.3%	2.88	12.68	25.45	50
16	PM01	PM10	µg/m^3	Every 6 days	5	8.0	10.6	13.0	50
N/A	PM02	PM10	µg/m^3	N/A	5	4.0	8.2	12.0	50
17	TEOM 1	PM10	µg/m^3	Continuous (24 Hr Average)	96.8%	2.7	9.26	17.94	50
27	TEOM 7	PM10	µg/m^3	Continuous (24 Hr Average)	98.9%	4.0	8.66	15.1	50
N/A	TEOM 4	PM10	µg/m^3	N/A (24 Hr Average)	97.9%	4.7	11.14	18.74	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	11/06/2019	794	794	794
		pH	pH	N/A	1	11/06/2019	7.41	7.41	7.41
		Total Suspended Solids	mg/L	N/A	1	11/06/2019	<5	<5	<5
N/A	SW02	Conductivity	µS/cm	N/A	1	11/06/2019	812	812	812
		pH	pH	N/A	1	11/06/2019	7.52	7.52	7.52
		Total Suspended Solids	mg/L	N/A	1	11/06/2019	<5	<5	<5
N/A	SW04	Conductivity	µS/cm	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	11/06/2019	677	677	677
		pH	pH	N/A	1	11/06/2019	6.97	6.97	6.97
		Total Suspended Solids	mg/L	N/A	1	11/06/2019	15	15	15
N/A	SW07	Conductivity	µS/cm	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	11/06/2019	4980	4980	4980
		pH	pH	N/A	1	11/06/2019	6.7	6.7	6.7
		Total Suspended Solids	mg/L	N/A	1	11/06/2019	7	7	7
N/A	SW09	Conductivity	µS/cm	N/A	1	11/06/2019	4780	4780	4780
		pH	pH	N/A	1	11/06/2019	6.36	6.36	6.36
		Total Suspended Solids	mg/L	N/A	1	11/06/2019	15	15	15
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	11/06/2019	Dry	Dry	Dry

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	11/06/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	11/06/2019	638	638	638
		pH	pH	N/A	1	11/06/2019	6.79	6.79	6.79
		Total Suspended Solids	mg/L	N/A	1	11/06/2019	8	8	8
N/A	SW15	Conductivity	µS/cm	N/A	0	11/06/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/06/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	No Flow	No Flow	No Flow
N/A	SW17	Conductivity	µS/cm	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	11/06/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/06/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	11/06/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	11/06/2019	Dry	Dry	Dry
		pH	pH	N/A	0	11/06/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	11/06/2019	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	11	86.7	98.8	111.8	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.09	0.2	0.3	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	11	76.1	92.02	103.2	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.08	0.18	0.3	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	18/06/2019 10:55	NA	IA	Daytime (07:00 – 18:00) $L_{Aeq,15minute}$: 43 dB	Cloud Cover: 8/8 Wind: 1.8 m/s Direction: 242 degrees Stability Class: B	**Attended monitoring, nomination of noise sources:** Birds and local road tyre traffic were responsible for the measured L_{A1} and were primarily responsible for the measured L_{A10} and L_{Aeq}. Local industrial continuum also contributed to the measured L_{Aeq}, and combined with road traffic noise to generate the measured L_{A50} and L_{A90}. **Estimate of contribution of subject noise source:** MCO was inaudible during the measurement.	Nil
NA6	17/06/2019 22:23	34	28	Night time (22:00 – 07:00) $L_{Aeq,15minute}$: 37 dB $L_{A1,1minute}$: 45 dB	Cloud Cover: 3/8 Wind: 1.5 m/s Direction: 198 degrees Stability Class: D	**Attended monitoring, nomination of noise sources:** Dogs, birds, and road traffic tyre noise was responsible for the measured L_{A1}, L_{A10}, and L_{Aeq}. MCO continuum and road traffic tyre noise 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 28 dB. Impact noise was responsible	Nil

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]
						for the measured site-only $L_{A1,1minute}$ of 34 dB. Track noise and engine surges were also noted.	
NA12	17/06/2019 22:00	26	<25	Night time (22:00 – 07:00) $L_{Aeq,15minute}$: 35 dB $L_{A1,1minute}$: 45 dB	Cloud Cover: 6/8 Wind: 1.3 m/s Direction: 208 degrees Stability Class: D	**Attended monitoring, nomination of noise sources:** Birds, dogs, and road traffic tyre noise 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}. **Estimate of contribution of subject noise source:** A low-level continuum from MCO was audible throughout the measurement generating the site-only L_{Aeq} of less than 25 dB. Surges in this continuum generated the site-only $L_{A1,1minute}$ of 26 dB.	Nil

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

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
	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

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
	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