

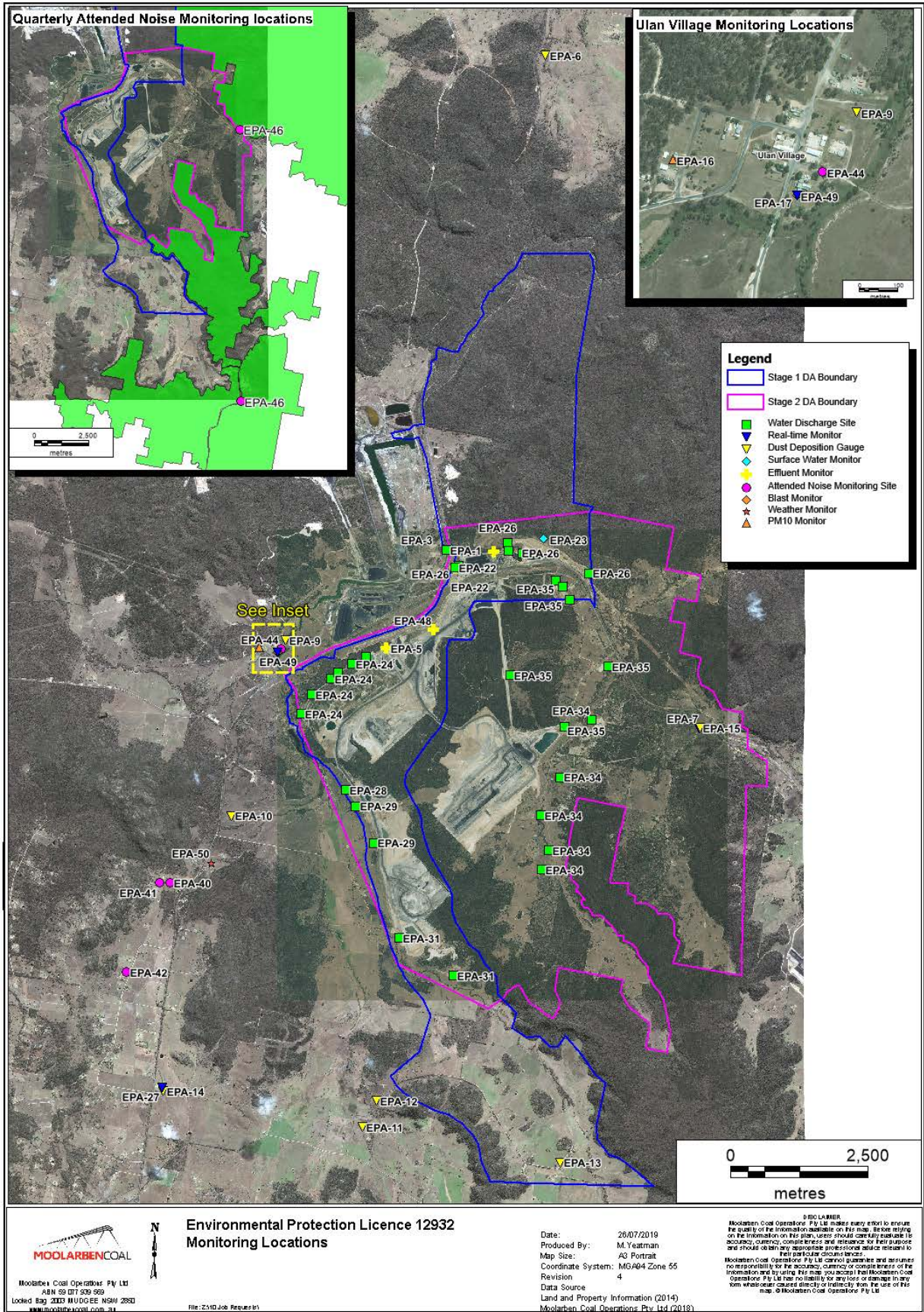


Monthly Environmental Monitoring Report

For the Month Ending 31 July 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 July 2019 to 31 July 2019
Date last sampled data obtained	20 August 2019
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Version	1
Author	M. Yeatman
Approver	T. Cini

EPL 12932 MCO Environmental Monitoring Network



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Environmental Protection Licence 12932
Monitoring Locations

Date: 26/07/2019
Produced By: M. Yeatman
Map Size: A3 Portrait
Coordinate System: MGA94 Zone 55
Revision: 4
Data Source: Land and Property Information (2014)
Moolarben Coal Operations Pty Ltd (2018)

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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	30/07/2019	0.4	1.07	4.0
7	DG12	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	1.5	1.94	4.0
9	DG04	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	0.9	1.58	4.0
10	DG05	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	1.4	1.73	4.0
11	DG06	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	0.6	1.83	4.0
12	DG07	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	0.6	1.51	4.0
13	DG08	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	0.5	1.97	4.0
14	DG09	Particulates – Deposited Matter	g/m ² /month	Monthly	1	30/07/2019	1.0	2.26	4.0
N/A	DG13	Particulates – Deposited Matter	g/m ² /month	N/A	1	30/07/2019	0.9	1.87	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	100%	Continuous	15.69	15.93	16.09	25
16	PM01	PM10	µg/m ³	5	Every 6 days	16.82	17.1	17.42	25
N/A	PM02	PM10	µg/m ³	5	Every 6 days	17.93	18.26	18.68	25
17	TEOM 1	PM10	µg/m ³	99%	Continuous	14.54	14.83	15.06	25
27	TEOM 7	PM10	µg/m ³	100%	Continuous	18.32	18.5	18.66	25
N/A	TEOM 4	PM10	µg/m ³	99.1%	Continuous	15.24	15.49	15.68	25

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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)	100%	3.08	16.42	38.43	50
16	PM01	PM10	µg/m ³	Every 6 days	5	7.0	14.5	27.0	50
N/A	PM02	PM10	µg/m ³	N/A	5	5.0	12.83	22.0	50
17	TEOM 1	PM10	µg/m ³	Continuous (24 Hr Average)	99%	2.51	9.48	19.62	50
27	TEOM 7	PM10	µg/m ³	Continuous (24 Hr Average)	100%	5.02	13.5	27.08	50
N/A	TEOM 4	PM10	µg/m ³	N/A (24 Hr Average)	99.1%	3.1	10.04	20.1	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	08/07/2019	778	778	778
		pH	pH	N/A	1	08/07/2019	7.34	7.34	7.34
		Total Suspended Solids	mg/L	N/A	1	08/07/2019	<5	<5	<5
N/A	SW02	Conductivity	µS/cm	N/A	1	08/07/2019	831	831	831
		pH	pH	N/A	1	08/07/2019	7.47	7.47	7.47
		Total Suspended Solids	mg/L	N/A	1	08/07/2019	<5	<5	<5
N/A	SW04	Conductivity	µS/cm	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	No Flow	No Flow	No Flow
N/A	SW05	Conductivity	µS/cm	N/A	1	08/07/2019	718	718	718
		pH	pH	N/A	1	08/07/2019	7.17	7.17	7.17
		Total Suspended Solids	mg/L	N/A	1	08/07/2019	7	7	7
N/A	SW07	Conductivity	µS/cm	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	No Flow	No Flow	No Flow
N/A	SW08	Conductivity	µS/cm	N/A	1	08/07/2019	5070	5070	5070
		pH	pH	N/A	1	08/07/2019	7.32	7.32	7.32
		Total Suspended Solids	mg/L	N/A	1	08/07/2019	<5	<5	<5
N/A	SW09	Conductivity	µS/cm	N/A	1	08/07/2019	4470	4470	4470
		pH	pH	N/A	1	08/07/2019	7.2	7.2	7.2
		Total Suspended Solids	mg/L	N/A	1	08/07/2019	10	10	10
4	SW10	Conductivity	µS/cm	Special Frequency 1	0	08/07/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	08/07/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	08/07/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	Special Frequency 1	0	08/07/2019	Dry	Dry	Dry
3	SW11	Conductivity	µS/cm	Special Frequency 1	0	08/07/2019	Dry	Dry	Dry
		Oil and Grease	mg/L	Special Frequency 1	0	08/07/2019	Dry	Dry	Dry
		pH	pH	Special Frequency 1	0	08/07/2019	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	08/07/2019	Dry	Dry	Dry
N/A	SW12	Conductivity	µS/cm	N/A	1	08/07/2019	673	673	673
		pH	pH	N/A	1	08/07/2019	7.64	7.64	7.64
		Total Suspended Solids	mg/L	N/A	1	08/07/2019	<5	<5	<5
N/A	SW15	Conductivity	µS/cm	N/A	0	08/07/2019	Dry	Dry	Dry
		pH	pH	N/A	0	08/07/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	Dry	Dry	Dry
N/A	SW16	Conductivity	µS/cm	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	No Flow	No Flow	No Flow
N/A	SW17	Conductivity	µS/cm	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	No Flow	No Flow	No Flow
N/A	SW18	Conductivity	µS/cm	N/A	0	08/07/2019	Dry	Dry	Dry
		pH	pH	N/A	0	08/07/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	Dry	Dry	Dry
N/A	SW19	Conductivity	µS/cm	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		pH	pH	N/A	0	08/07/2019	No Flow	No Flow	No Flow
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	No Flow	No Flow	No Flow
N/A	SW20	Conductivity	µS/cm	N/A	0	08/07/2019	Dry	Dry	Dry
		pH	pH	N/A	0	08/07/2019	Dry	Dry	Dry
		Total Suspended Solids	mg/L	N/A	0	08/07/2019	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	16	83.6	98.13	112.7	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.04	0.21	0.80	5mm/s (95% of Blasts) 10mm/s (100% of Blasts)
N/A	BM5 Ridge Rd	Blast Overpressure	dBL	Every Blast	16	78.4	95.66	109.3	115 (95% of Blasts) 120 (100% of Blasts)
		Ground Vibration	mm/s	Every Blast		0.04	0.19	0.37	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	02/07/2019 11:06	NA	IA	Daytime (07:00 – 18:00) L _{Aeq,15minute} : 43 dB	Cloud Cover: 2/8 Wind: 0.7 m/s Direction: 86 degrees Stability Class: E	Attended monitoring, nomination of noise sources: Local industrial continuum, including hammering, and road traffic noise primarily generated all measured levels. An aircraft contributed to the measured L _{A1} . Estimate of contribution of subject noise source: MCO was inaudible during the measurement. Attended monitoring, nomination of noise sources:	Nil
NA6	01/07/2019 22:00	38	33	Night time (22:00 – 07:00) L _{Aeq,15minute} : 37 dB L _{A1,1minute} : 45 dB	Cloud Cover: 3/8 Wind: 0.0 m/s Direction: NA Stability Class: F	Attended monitoring, nomination of noise sources: Road traffic tyre noise contributed to the measured L _{A1} , L _{A10} and L _{Aeq} . MCO continuum contributed to the measured L _{A1} , L _{A10} and L _{Aeq} , and generated the measured L _{A50} and L _{A90} . Estimate of contribution of subject noise source: A mine continuum from MCO was audible throughout the measurement generating the site-only L _{Aeq} of 33 dB. A surge in the continuum was responsible for the measured site-only L _{A1,1minute} of 38 dB. Track noise and reverse quackers were also noted.	Nil
NA12	01/07/2019 22:30	32	27	Night time (22:00 – 07:00) L _{Aeq,15minute} : 35 dB L _{A1,1minute} : 45 dB	Cloud Cover: 3/8 Wind: 0.8 m/s Direction: 314 degrees Stability Class: F	Attended monitoring, nomination of noise sources: Road traffic noise was responsible for the measured L _{A1} , and contributed to the measured L _{A10} and L _{Aeq} . MCO continuum contributed to the measured L _{A10} and L _{Aeq} , and was responsible for the measured L _{A50} and L _{A90} .	Nil

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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
						<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 27 dB. Surges in this continuum generated the site-only L_{A1,1minute} 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 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				

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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