



## Eraring Power Station - EPA Licence 1429

Rocky Point Rd, Morristown NSW 2264

## Coal Unloader - EPA Licence 4297

Eraring Coal Delivery Facility, Construction Rd, Dora Creek NSW 2264

## Environmental Monitoring Data

July 2016



## Unit 1 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 11 - Air emissions monitoring, Boiler 1 stack discharge to air*

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jul	156	180	135	11	16	10	199	205	190
2 - Jul	156	167	146	12	16	10	197	211	186
3 - Jul	155	172	130	13	19	9	191	225	145
4 - Jul	157	166	125	13	22	9	211	232	196
5 - Jul	151	177	121	13	24	9	205	234	127
6 - Jul	154	166	134	10	15	9	217	253	195
7 - Jul	163	178	139	13	20	9	202	218	174
8 - Jul	170	188	141	14	19	12	200	227	180
9 - Jul	159	175	138	12	17	10	206	226	182
10 - Jul	156	178	124	15	31	10	203	228	171
11 - Jul	156	173	125	11	19	8	211	236	169
12 - Jul	169	204	101	9	15	8	195	224	177
13 - Jul	156	170	117	12	16	9	239	258	186
14 - Jul	162	183	143	14	20	11	203	227	191
15 - Jul	156	178	134	14	22	11	215	239	183
16 - Jul	173	202	145	15	24	11	199	233	184
17 - Jul	151	184	128	16	28	10	203	241	177
18 - Jul	153	172	118	16	40	8	191	233	171
19 - Jul	130	148	106	11	19	7	230	248	201
20 - Jul	182	216	121	16	26	12	196	227	185
21 - Jul	183	198	128	12	19	9	194	208	167
22 - Jul	142	181	109	11	27	7	192	206	175
23 - Jul	150	194	114	10	16	8	197	216	174
24 - Jul	164	199	120	13	19	10	186	212	156
25 - Jul	200	257	128	12	18	9	171	183	154
26 - Jul	187	213	152	12	17	10	197	216	163
27 - Jul	182	233	126	12	18	9	191	218	172
28 - Jul	159	189	123	12	20	10	208	232	169
29 - Jul	172	202	130	13	21	11	214	232	195
30 - Jul	164	195	127	15	24	10	214	230	205
31 - Jul	168	204	136	15	30	8	219	238	207

## Unit 2 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 12 - Air emissions monitoring, Boiler 2 stack discharge to air*

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jul	144	177	110	18	21	17	179	199	130
2 - Jul	144	179	121	18	21	17	187	212	158
3 - Jul	130	159	103	20	26	17	164	179	137
4 - Jul	146	159	126	20	25	17	165	185	140
5 - Jul	162	205	107	20	25	17	199	227	149
6 - Jul	176	218	162	18	20	17	214	248	172
7 - Jul	165	188	142	19	22	17	201	228	168
8 - Jul	154	174	135	18	21	18	198	225	174
9 - Jul	161	176	142	18	21	16	206	236	185
10 - Jul	159	176	142	20	25	17	211	233	188
11 - Jul	168	189	142	18	23	15	213	245	177
12 - Jul	171	190	139	17	20	16	204	221	180
13 - Jul	161	173	143	18	21	17	231	253	201
14 - Jul	144	155	134	19	24	17	205	237	185
15 - Jul	151	164	133	20	24	17	218	238	203
16 - Jul	155	171	131	20	25	18	194	219	183
17 - Jul	151	177	119	20	24	17	207	231	175
18 - Jul	151	175	125	20	25	15	190	208	179
19 - Jul	141	159	116	19	23	16	218	239	198
20 - Jul	153	166	126	19	22	18	203	213	188
21 - Jul	153	172	139	18	20	16	189	202	172
22 - Jul	143	180	123	19	24	16	204	246	177
23 - Jul	157	172	139	18	21	16	183	206	169
24 - Jul	155	171	143	20	23	18	191	210	169
25 - Jul	155	162	138	19	22	16	187	219	165
26 - Jul	144	161	134	18	21	16	188	208	173
27 - Jul	139	149	128	18	23	16	203	231	185
28 - Jul	129	146	116	19	24	16	212	233	200
29 - Jul	169	180	148	20	25	17	187	202	168
30 - Jul	155	165	145	20	25	17	212	228	194
31 - Jul	167	185	154	20	26	16	211	237	191

## Unit 3 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 13 - Air emissions monitoring, Boiler 3 stack discharge to air*

- 4th to 11th unit out of service.

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jul	153	173	103	20	23	14	157	171	130
2 - Jul	151	158	143	21	24	14	156	165	151
3 - Jul	143	156	133	21	27	14	160	175	137
4 - Jul	0	0	0	0	0	0	0	0	0
5 - Jul	0	0	0	0	0	0	0	0	0
6 - Jul	0	0	0	0	0	0	0	0	0
7 - Jul	0	0	0	0	0	0	0	0	0
8 - Jul	0	0	0	0	0	0	0	0	0
9 - Jul	0	0	0	0	0	0	0	0	0
10 - Jul	0	0	0	0	0	0	0	0	0
11 - Jul	0	0	0	0	0	0	0	0	0
12 - Jul	135	144	127	20	22	17	175	206	124
13 - Jul	131	148	116	20	22	20	186	200	139
14 - Jul	155	178	124	22	26	11	187	203	144
15 - Jul	160	180	134	23	28	12	189	211	171
16 - Jul	155	168	134	21	27	10	179	209	164
17 - Jul	146	162	125	23	27	11	188	202	125
18 - Jul	174	192	132	21	27	10	162	167	156
19 - Jul	156	176	135	20	24	19	184	209	154
20 - Jul	147	167	113	24	27	20	177	198	137
21 - Jul	131	151	117	22	24	12	172	185	130
22 - Jul	140	158	116	19	22	11	171	185	141
23 - Jul	173	223	113	20	21	17	169	182	149
24 - Jul	181	229	129	23	26	20	166	180	147
25 - Jul	183	244	122	21	24	19	156	172	135
26 - Jul	183	223	137	21	25	12	175	197	134
27 - Jul	177	235	129	20	23	11	180	202	162
28 - Jul	147	180	121	22	25	11	184	201	161
29 - Jul	193	233	127	21	25	18	171	195	135
30 - Jul	164	197	139	21	26	18	177	194	127
31 - Jul	145	157	131	21	23	19	178	193	169

## Unit 4 Boiler Continuous Emission Monitoring Summary

*EPA Identification no. 14 - Air emissions monitoring, Boiler 4 stack discharge to air*

- 16th - 21st Unit out of service due to a tube leak.

	NOX			Particulates			SOX		
	ppm (7% O2)			mg/m3			ppm (7% O2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jul	165	201	148	17	20	15	204	232	176
2 - Jul	151	165	140	18	21	16	218	241	189
3 - Jul	161	175	145	18	21	17	199	235	176
4 - Jul	147	161	135	18	21	16	218	249	191
5 - Jul	141	166	135	18	21	16	223	240	206
6 - Jul	150	169	129	17	19	15	213	249	179
7 - Jul	160	180	149	18	20	17	197	217	174
8 - Jul	170	187	137	17	20	15	201	216	180
9 - Jul	172	188	159	16	19	15	201	226	180
10 - Jul	176	201	164	18	21	15	219	229	198
11 - Jul	154	181	127	16	18	15	212	254	166
12 - Jul	140	159	125	15	19	13	206	226	186
13 - Jul	156	170	119	17	23	15	235	268	199
14 - Jul	162	181	136	18	22	16	224	241	193
15 - Jul	161	218	129	17	21	14	219	239	191
16 - Jul	0	0	0	0	0	0	0	0	0
17 - Jul	0	0	0	0	0	0	0	0	0
18 - Jul	0	0	0	0	0	0	0	0	0
19 - Jul	0	0	0	0	0	0	0	0	0
20 - Jul	0	0	0	0	0	0	0	0	0
21 - Jul	0	0	0	0	0	0	0	0	0
22 - Jul	133	139	117	14	22	10	179	188	157
23 - Jul	162	186	138	15	18	13	183	200	161
24 - Jul	168	193	138	18	21	15	178	201	160
25 - Jul	159	199	125	17	20	14	165	184	149
26 - Jul	145	154	136	17	21	15	156	167	146
27 - Jul	138	157	115	16	19	14	150	165	132
28 - Jul	131	147	120	18	22	15	167	182	143
29 - Jul	138	152	116	18	22	15	172	197	156
30 - Jul	142	154	132	19	23	16	151	196	131
31 - Jul	152	171	136	18	21	15	128	135	120

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## Unit 1 Boiler Emission Test Results

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*EPA Identification no. 11 - Air emissions monitoring, Boiler 1 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.0019	mg/m3	0.20	07/02/2015
Carbon Dioxide (Wet)	8.0	%	-	07/02/2015
Carbon Monoxide	15.0	mg/m3	-	07/02/2015
Chlorine	1.00	mg/m3	300	07/02/2015
Copper	0.0019	mg/m3	-	07/02/2015
Dry Gas Density	1.4	kg/m3	-	07/02/2015
Fluoride As HF - Total	10.0	mg/m3	50	07/02/2015
Hazardous Substances (Metals) - Total	0.027	mg/m3	1.00	07/02/2015
Hydrogen Chloride	2.0	mg/m3	100.0	07/02/2015
Mercury	0.0013	mg/m3	0.200	07/02/2015
Moisture	6.0	%	-	07/02/2015
Particulates - Total	19.0	mg/m3	50	07/02/2015
Stack Gas Molecular Weight	30	kg/k-mole	-	07/02/2015
Temperature	114.3	degC	-	07/02/2015
Velocity	12.0	m/sec	-	07/02/2015
Volatile Organic Compounds (VOC) - Total	0.07	mg/m3	-	07/02/2015
Volumetric Flow Rate (Dry At STP)	301	m3/sec	-	07/02/2015



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## Unit 2 Boiler Emission Test Results

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*EPA Identification no. 12 - Air emissions monitoring, Boiler 2 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.06	mg/m3	0.20	30/01/2016
Carbon Dioxide (Wet)	12.0	%	-	30/01/2016
Carbon Monoxide	1.00	mg/m3	-	30/01/2016
Chlorine	0.06	mg/m3	300	30/01/2016
Copper	0.0007	mg/m3	-	30/01/2016
Dry Gas Density	1.4	kg/m3	-	30/01/2016
Fluoride As HF - Total	9.2	mg/m3	50	30/01/2016
Hazardous Substances (Metals) - Total	0.07	mg/m3	1.00	30/01/2016
Hydrogen Chloride	0.80	mg/m3	100.0	30/01/2016
Mercury	0.0003	mg/m3	0.200	30/01/2016
Moisture	7.1	%	-	30/01/2016
Particulates - Total	17.0	mg/m3	50	30/01/2016
Stack Gas Molecular Weight	30	kg/k-mole	-	30/01/2016
Temperature	112.5	degC	-	30/01/2016
Velocity	13.5	m/sec	-	30/01/2016
Volatile Organic Compounds (VOC) - Total	1.8	mg/m3	-	30/01/2016
Volumetric Flow Rate (Dry At STP)	305	m3/sec	-	30/01/2016

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## Unit 3 Boiler Emission Test Results

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*EPA Identification no. 13 - Air emissions monitoring, Boiler 3 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.05	mg/m3	0.20	22/08/2015
Carbon Dioxide (Wet)	11.8	%	-	22/08/2015
Carbon Monoxide	1.00	mg/m3	-	22/08/2015
Chlorine	0.76	mg/m3	200	22/08/2015
Copper	0.010	mg/m3	-	22/08/2015
Dry Gas Density	1.4	kg/m3	-	22/08/2015
Fluoride As HF - Total	11.8	mg/m3	50	22/08/2015
Hazardous Substances (Metals) - Total	0.07	mg/m3	1.00	22/08/2015
Hydrogen Chloride	0.53	mg/m3	100.0	22/08/2015
Mercury	0.0003	mg/m3	0.200	22/08/2015
Moisture	3.2	%	-	22/08/2015
Particulates - Total	2.1	mg/m3	50	22/08/2015
Stack Gas Molecular Weight	30	kg/k-mole	-	22/08/2015
Temperature	117.0	degC	-	22/08/2015
Velocity	10.3	m/sec	-	22/08/2015
Volatile Organic Compounds (VOC) - Total	0.76	mg/m3	-	22/08/2015
Volumetric Flow Rate (Dry At STP)	236	m3/sec	-	22/08/2015



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## Unit 4 Boiler Emission Test Results

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*EPA Identification no. 14 - Air emissions monitoring, Boiler 4 stack discharge to air*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.0006	mg/m3	0.20	31/10/2015
Carbon Dioxide (Wet)	10.2	%	-	31/10/2015
Carbon Monoxide	0.11	mg/m3	-	31/10/2015
Chlorine	0.86	mg/m3	200	31/10/2015
Copper	0.0004	mg/m3	-	31/10/2015
Dry Gas Density	1.3	kg/m3	-	31/10/2015
Fluoride As HF - Total	3.3	mg/m3	50	31/10/2015
Hazardous Substances (Metals) - Total	0.07	mg/m3	1.00	31/10/2015
Hydrogen Chloride	0.30	mg/m3	100.0	31/10/2015
Mercury	0.0011	mg/m3	0.200	31/10/2015
Moisture	5.4	%	-	31/10/2015
Particulates - Total	0.22	mg/m3	50	31/10/2015
Stack Gas Molecular Weight	30	kg/k-mole	-	31/10/2015
Temperature	112.5	degC	-	31/10/2015
Velocity	11.5	m/sec	-	31/10/2015
Volatile Organic Compounds (VOC) - Total	0.86	mg/m3	-	31/10/2015
Volumetric Flow Rate (Dry At STP)	258	m3/sec	-	31/10/2015

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## Eraring Coal Unloader Dust Gauges

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*EPA Identification no. 18 - Depositional dust monitoring within 1 km of the coal handling operations*

	Deposited Matter		
	g/m2/month		
	Ash	Combustible	Insolubles
<b>U1</b>	0.30	0.30	0.60
<b>U2</b>	0.30	0.20	0.50
<b>U3</b>	1.60	1.60	3.20
<b>U4</b>	0.20	0.30	0.50
<b>U5</b>	0.10	0.20	0.30
<b>U6</b>	0.20	0.10	0.30

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## Eraring Due Diligence Dust Gauges

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*EPA Identification no. 18 - Depositional dust monitoring within 1 km of the coal handling operations*

	Deposited Matter		
	g/m2/month		
	Ash	Combustible	Insolubles
<b>E1</b>	1.20	0.50	1.70
<b>E2</b>	0.40	0.40	0.80
<b>E3</b>	0.20	0.10	0.30
<b>E4</b>	0.70	0.20	0.90
<b>E5</b>	0.20	0.10	0.30
<b>E6</b>	3.30	1.30	4.60

## Water Quality - Lake Monitoring LM10

*EPA Identification no. 4 - The waters of Lake Macquarie located midway between cooling water inlet and Hungary Point*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	13.94					
010cm	13.71	8.66	35.40	85.60	6.90	2.45
050cm	13.59	8.68	35.50	90.00	7.26	
100cm	13.56	8.69	35.50	91.00	7.34	
150cm	13.52	8.70	35.50	94.10	7.56	
200cm	13.51	8.72	35.60	91.10	7.36	
Bottom	13.49	8.71	35.60	89.90	7.27	

## Water Quality - Lake Monitoring LM12

*EPA Identification no. 6 - The waters of Lake Macquarie located at the Eraring/Vales Point mixing zone off Fishery Point*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	13.32					
010cm	13.59	8.70	35.20	92.50	7.47	6.25
050cm	13.65	8.71	35.20	85.30	6.93	
100cm	13.58	8.71	35.20	86.80	7.06	
150cm	13.60	8.72	35.20	83.20	6.74	
200cm	13.58	8.73	35.20	90.00	7.32	
250cm	13.55	8.75	35.20	81.80	6.62	
300cm	13.53	8.75	35.20	91.60	7.41	
350cm	13.53	8.76	35.20	90.70	7.34	
400cm	13.52	8.77	35.20	87.60	6.99	
450cm	13.53	8.77	35.30	77.30	6.24	
500cm	13.53	8.78	35.30	75.80	6.14	
550cm	13.51	8.78	35.30	81.90	6.64	
600cm	13.60	8.78	35.50	73.20	5.80	
650cm	13.90	8.76	35.80	73.40	5.86	
700cm	13.91	8.76	35.80	74.50	5.95	
Bottom	13.93	8.77	35.80	70.80	5.55	

## Water Quality - Lake Monitoring LM4

*EPA Identification no. 7 - The northern waters of Lake Macquarie east off Lake Macquarie Yacht Club*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	11.80					
010cm	13.83	8.53	36.10	89.70	7.15	4.25
050cm	14.14	8.55	36.10	89.80	7.13	
100cm	14.19	8.58	36.00	90.10	7.02	
150cm	14.28	8.56	36.00	90.40	7.16	
200cm	14.27	8.57	36.10	93.30	7.42	
250cm	14.22	8.57	36.10	100.50	7.99	
300cm	14.19	8.57	36.10	90.70	7.06	
350cm	14.21	8.59	36.10	96.20	7.64	
400cm	14.47	8.60	36.30	99.50	7.86	
450cm	14.47	8.60	36.30	101.40	7.94	
500cm	14.41	8.61	36.30	96.50	7.62	
550cm	14.22	8.63	36.50	89.40	7.09	
600cm	14.07	8.63	36.30	87.40	6.94	
650cm	14.00	8.63	36.30	88.60	7.07	
700cm	13.96	8.63	36.30	92.80	7.41	
750cm	13.92	8.65	36.40	87.90	7.06	
800cm	13.88	8.66	36.40	78.60	6.70	
850cm	13.86	8.67	36.40	73.70	5.86	
900cm	13.55	8.68	36.40	80.10	6.40	
Bottom	13.83	8.68	36.40	71.90	5.72	

## Water Quality - Lake Monitoring LM7

*EPA Identification no. 5 - The waters of Lake Macquarie located off old Wangi power station inlet point in Myuna Bay*

	Temp	pH	Salinity	Dissolved Oxygen		Secchi
	degC		ppt	%	mg/L	m
Depth/Air	13.22					
010cm	17.19	8.63	35.60	105.50	7.93	3.25
050cm	17.11	8.64	35.60	104.20	7.83	
100cm	16.81	8.65	35.60	107.20	8.09	
150cm	16.70	8.65	35.60	110.40	8.38	
200cm	16.62	8.64	35.60	92.60	7.04	
250cm	16.48	8.65	35.60	87.90	6.66	
300cm	16.15	8.65	35.70	85.90	6.59	
350cm	15.74	8.66	35.80	71.30	5.52	
400cm	15.03	8.67	35.80	60.40	4.68	
450cm	14.74	8.67	35.90	64.20	5.06	
500cm	14.61	8.68	35.90	55.00	4.36	
550cm	14.56	8.68	36.00	50.20	3.94	
Bottom	14.57	8.69	36.00	49.20	3.86	

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## Eraring Ash Dam Effluent Quality Monitoring

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*EPA Identification no. 10 - Discharge point below siphon pond weir at Ash Dam*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.20	ug/L	-	07/07/2016
Copper	0.50	ug/L	-	07/07/2016
Iron	5.0	ug/L	-	07/07/2016
Lead	0.20	ug/L	-	07/07/2016
Manganese	27	ug/L	-	07/07/2016
Nitrite and Nitrate as N	987	ug/L	-	07/07/2016
Phosphorus Reactive as P - Total	186	ug/L	-	07/07/2016
Phosphorus as P - Total	229	ug/L	-	07/07/2016
Selenium	39	ug/L	-	07/07/2016
Suspended Solids (SS)	9,000	ug/L	-	07/07/2016
Zinc	5.0	ug/L	-	07/07/2016
pH	8.7	-	-	07/07/2016

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## Eraring Cooling Water Inlet Canal

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*EPA Identification no. 8 - Inlet canal of the cooling water intake from Lake Macquarie*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Copper	1.00	ug/L	-	07/07/2016
Iron	5.0	ug/L	-	07/07/2016
Selenium	1.00	ug/L	-	07/07/2016
Temperature - Average	14.1	deg C	-	Jul 2016
Temperature - Minimum	12.7	deg C	-	Jul 2016
Temperature - Maximum	16.1	deg C	-	Jul 2016

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## Eraring Cooling Water Outlet Canal

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*EPA Identification no. 1 - Cooling water outlet canal to Myuna Bay*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Copper	1.00	ug/L	5	07/07/2016
Iron	7.0	ug/L	300	07/07/2016
Selenium	1.00	ug/L	2	07/07/2016
Temperature - Average	22.4	deg C	35	Jul 2016
Temperature - Minimum	17.9	deg C	35	Jul 2016
Temperature - Maximum	26.3	deg C	35	Jul 2016
Maximum Daily Discharge from Ash Dam	24.8	ML	150	Jul 2016
Monthly Discharge from Ash Dam	301	ML	-	Jul 2016



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## Emergency Discharge - Toe Drain Pond

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*EPA Identification no. 17 - Emergency discharge to toe drain collection pond*

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Cadmium	0.20	ug/L	-	07/07/2016
Copper	0.50	ug/L	-	07/07/2016
Iron	1,450	ug/L	-	07/07/2016
Lead	0.20	ug/L	-	07/07/2016
Manganese	888	ug/L	-	07/07/2016
Nitrite and Nitrate as N	136	ug/L	-	07/07/2016
Phosphorus as P - Total	105	ug/L	-	07/07/2016
Selenium	1.00	ug/L	-	07/07/2016
Zinc	5.0	ug/L	-	07/07/2016
pH	6.9		-	07/07/2016