



## 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

January 2016



## Unit 1 Boiler Continuous Emission Monitoring Summary

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

- Sox unit out due to storm damage 23rd - 27th.

	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 - Jan	129	152	118	10	15	7	146	150	139
2 - Jan	139	152	124	11	16	8	164	196	139
3 - Jan	141	150	134	13	16	10	166	181	142
4 - Jan	138	148	131	15	33	10	185	205	155
5 - Jan	130	141	115	14	21	11	191	203	177
6 - Jan	138	158	120	14	24	11	193	213	155
7 - Jan	144	163	126	12	16	8	171	184	151
8 - Jan	150	164	136	12	16	9	145	158	120
9 - Jan	158	178	148	11	15	9	169	209	131
10 - Jan	146	161	133	12	16	8	193	216	169
11 - Jan	156	182	141	9	15	5	182	215	145
12 - Jan	156	170	130	9	14	5	186	204	169
13 - Jan	168	195	141	10	17	4	184	210	158
14 - Jan	160	171	139	9	15	5	173	187	160
15 - Jan	158	179	114	14	27	8	168	187	153
16 - Jan	157	179	141	11	16	8	192	219	155
17 - Jan	141	160	119	12	16	9	233	239	212
18 - Jan	151	163	126	10	15	7	220	243	199
19 - Jan	138	153	120	9	15	5	195	204	183
20 - Jan	157	187	128	9	13	7	197	215	183
21 - Jan	152	165	124	11	18	7	198	227	160
22 - Jan	151	173	117	12	18	9	188	212	161
23 - Jan	152	179	125	11	14	9	0	0	0
24 - Jan	131	149	110	11	14	9	0	0	0
25 - Jan	135	159	119	10	13	8	0	0	0
26 - Jan	128	147	104	12	14	10	0	0	0
27 - Jan	145	176	103	13	16	11	0	0	0
28 - Jan	133	157	103	11	14	8	191	229	176
29 - Jan	148	168	119	10	16	6	198	220	166
30 - Jan	149	163	140	11	14	7	198	224	138
31 - Jan	157	170	137	10	13	7	201	234	164

## Unit 2 Boiler Continuous Emission Monitoring Summary

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

- Unit out of service 22nd - 28th.

	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 - Jan	155	196	142	13	16	10	159	168	147
2 - Jan	133	180	117	14	17	12	176	212	146
3 - Jan	131	149	120	14	17	13	177	187	162
4 - Jan	133	174	115	16	19	13	195	215	164
5 - Jan	124	137	113	14	16	12	219	245	194
6 - Jan	141	161	113	14	16	12	199	215	168
7 - Jan	139	156	123	13	16	12	186	209	170
8 - Jan	140	155	117	13	16	11	160	190	143
9 - Jan	130	162	115	12	14	9	181	214	140
10 - Jan	119	130	107	13	17	10	209	227	199
11 - Jan	140	171	107	10	15	5	204	236	167
12 - Jan	145	161	119	9	13	6	201	222	187
13 - Jan	175	211	134	10	14	7	207	236	191
14 - Jan	165	187	114	9	13	6	183	202	166
15 - Jan	135	150	106	13	17	10	178	193	167
16 - Jan	128	161	100	12	16	9	202	221	179
17 - Jan	129	139	106	12	16	8	238	248	222
18 - Jan	139	162	111	10	16	7	230	266	209
19 - Jan	122	140	101	11	17	7	220	228	204
20 - Jan	111	118	101	12	15	9	231	246	197
21 - Jan	139	167	108	11	14	8	229	239	203
22 - Jan	0	0	0	0	0	0	0	0	0
23 - Jan	0	0	0	0	0	0	0	0	0
24 - Jan	0	0	0	0	0	0	0	0	0
25 - Jan	0	0	0	0	0	0	0	0	0
26 - Jan	0	0	0	0	0	0	0	0	0
27 - Jan	0	0	0	0	0	0	0	0	0
28 - Jan	0	0	0	0	0	0	0	0	0
29 - Jan	155	171	144	11	14	8	206	244	146
30 - Jan	151	178	122	14	16	11	203	243	154
31 - Jan	129	147	104	14	16	10	204	241	187

## Unit 3 Boiler Continuous Emission Monitoring Summary

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

- Unit out of service 11th - 17th

	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 - Jan	158	190	142	17	21	14	152	157	149
2 - Jan	145	166	124	17	21	15	168	190	140
3 - Jan	154	198	142	17	20	16	177	186	169
4 - Jan	156	190	146	20	24	17	180	189	167
5 - Jan	147	179	136	20	24	18	196	205	185
6 - Jan	153	173	136	20	26	18	197	220	177
7 - Jan	162	197	148	18	20	15	174	197	145
8 - Jan	168	210	141	18	21	15	152	183	127
9 - Jan	179	222	156	17	20	14	167	198	130
10 - Jan	178	221	134	17	21	14	177	188	158
11 - Jan	0	0	0	0	0	0	0	0	0
12 - Jan	0	0	0	0	0	0	0	0	0
13 - Jan	0	0	0	0	0	0	0	0	0
14 - Jan	0	0	0	0	0	0	0	0	0
15 - Jan	0	0	0	0	0	0	0	0	0
16 - Jan	0	0	0	0	0	0	0	0	0
17 - Jan	0	0	0	0	0	0	0	0	0
18 - Jan	166	177	157	20	24	16	149	159	134
19 - Jan	156	175	125	18	23	14	167	191	126
20 - Jan	178	194	152	17	21	15	184	209	169
21 - Jan	172	199	139	16	21	13	192	215	109
22 - Jan	156	176	125	17	22	13	168	180	158
23 - Jan	136	152	126	16	20	14	194	201	187
24 - Jan	152	165	129	17	20	14	203	231	176
25 - Jan	161	185	142	18	20	16	181	231	160
26 - Jan	137	150	123	18	20	16	193	215	166
27 - Jan	153	168	126	18	21	16	204	220	181
28 - Jan	137	154	128	17	21	14	198	224	170
29 - Jan	137	157	124	17	21	15	195	224	163
30 - Jan	144	179	135	17	20	15	195	228	160
31 - Jan	145	179	126	18	20	16	176	226	114

## Unit 4 Boiler Continuous Emission Monitoring Summary

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

- Unit out of service 12th - 17th

	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 - Jan	124	151	113	6	11	5	127	131	123
2 - Jan	127	140	115	6	10	4	125	141	109
3 - Jan	129	157	114	5	9	4	129	140	117
4 - Jan	114	124	102	5	8	4	136	151	114
5 - Jan	107	119	100	6	9	4	150	155	145
6 - Jan	112	126	100	6	10	4	152	158	134
7 - Jan	115	124	109	7	11	5	137	155	119
8 - Jan	119	133	106	8	13	6	137	166	102
9 - Jan	118	135	104	9	12	5	170	207	135
10 - Jan	142	157	114	10	17	7	181	198	165
11 - Jan	132	137	128	11	15	6	190	200	176
12 - Jan	0	0	0	0	0	0	0	0	0
13 - Jan	0	0	0	0	0	0	0	0	0
14 - Jan	0	0	0	0	0	0	0	0	0
15 - Jan	0	0	0	0	0	0	0	0	0
16 - Jan	0	0	0	0	0	0	0	0	0
17 - Jan	0	0	0	0	0	0	0	0	0
18 - Jan	133	140	118	24	24	24	156	174	115
19 - Jan	128	150	117	11	13	5	193	198	180
20 - Jan	126	141	108	11	15	7	195	224	174
21 - Jan	129	153	107	11	18	7	211	236	191
22 - Jan	129	157	108	10	15	7	186	203	162
23 - Jan	119	138	103	8	12	5	196	203	184
24 - Jan	111	120	100	9	16	4	198	232	181
25 - Jan	112	128	101	8	14	5	189	231	172
26 - Jan	119	134	108	8	15	5	203	223	189
27 - Jan	120	133	100	10	15	5	203	223	170
28 - Jan	133	153	109	11	15	5	198	230	157
29 - Jan	124	150	108	11	17	6	198	223	173
30 - Jan	110	119	102	9	18	5	191	229	146
31 - Jan	110	122	102	7	15	5	185	220	157

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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	0.00010	mg/m3	0.20	24/08/2014
Carbon Dioxide (Wet)	7.6	%	-	24/08/2014
Carbon Monoxide	128	mg/m3	-	24/08/2014
Chlorine	1.9	mg/m3	300	24/08/2014
Copper	0.0010	mg/m3	-	24/08/2014
Dry Gas Density	1.4	kg/m3	-	24/08/2014
Fluoride As HF - Total	7.5	mg/m3	50	24/08/2014
Hazardous Substances (Metals) - Total	0.015	mg/m3	1.00	24/08/2014
Hydrogen Chloride	1.9	mg/m3	100.0	24/08/2014
Mercury	0.00000	mg/m3	0.200	24/08/2014
Moisture	4.9	%	-	24/08/2014
Particulates - Total	14.0	mg/m3	50	24/08/2014
Stack Gas Molecular Weight	30	kg/k-mole	-	24/08/2014
Temperature	113.0	degC	-	24/08/2014
Velocity	10.5	m/sec	-	24/08/2014
Volatile Organic Compounds (VOC) - Total	0.07	mg/m3	-	24/08/2014
Volumetric Flow Rate (Dry At STP)	239	m3/sec	-	24/08/2014

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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	0.0005	mg/m3	0.20	03/05/2015
Carbon Dioxide (Wet)	7.8	%	-	03/05/2015
Carbon Monoxide	30	mg/m3	-	03/05/2015
Chlorine	0.036	mg/m3	200	03/05/2015
Copper	0.0012	mg/m3	-	03/05/2015
Dry Gas Density	1.4	kg/m3	-	03/05/2015
Fluoride As HF - Total	5.4	mg/m3	50	03/05/2015
Hazardous Substances (Metals) - Total	0.0020	mg/m3	1.00	03/05/2015
Hydrogen Chloride	3.9	mg/m3	100.0	03/05/2015
Mercury	0.0003	mg/m3	0.200	03/05/2015
Moisture	6.0	%	-	03/05/2015
Particulates - Total	18.0	mg/m3	50	03/05/2015
Stack Gas Molecular Weight	30	kg/k-mole	-	03/05/2015
Temperature	113.8	degC	-	03/05/2015
Velocity	11.0	m/sec	-	03/05/2015
Volatile Organic Compounds (VOC) - Total	0.65	mg/m3	-	03/05/2015
Volumetric Flow Rate (Dry At STP)	254	m3/sec	-	03/05/2015



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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	0.0015	mg/m3	0.20	01/11/2014
Carbon Dioxide (Wet)	12.3	%	-	01/11/2014
Carbon Monoxide	17.0	mg/m3	-	01/11/2014
Chlorine	1.00	mg/m3	200	01/11/2014
Copper	0.0001	mg/m3	-	01/11/2014
Dry Gas Density	1.4	kg/m3	-	01/11/2014
Fluoride As HF - Total	9.0	mg/m3	50	01/11/2014
Hazardous Substances (Metals) - Total	0.0040	mg/m3	1.00	01/11/2014
Hydrogen Chloride	1.3	mg/m3	100.0	01/11/2014
Mercury	0.0003	mg/m3	0.200	01/11/2014
Moisture	2.9	%	-	01/11/2014
Particulates - Total	17.0	mg/m3	50	01/11/2014
Stack Gas Molecular Weight	30	kg/k-mole	-	01/11/2014
Temperature	111.4	degC	-	01/11/2014
Velocity	14.0	m/sec	-	01/11/2014
Volatile Organic Compounds (VOC) - Total	0.24	mg/m3	-	01/11/2014
Volumetric Flow Rate (Dry At STP)	318	m3/sec	-	01/11/2014

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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	0.40	0.70
<b>U2</b>	0.10	0.20	0.30
<b>U3</b>	2.40	3.40	5.80
<b>U4</b>	0.40	0.90	1.30
<b>U5</b>	0.30	0.30	0.60
<b>U6</b>	3.00	0.30	3.30

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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>	0.30	0.40	0.70
<b>E2</b>	0.50	0.20	0.70
<b>E3</b>	0.40	0.50	0.90
<b>E4</b>	0.40	0.30	0.70
<b>E5</b>	0.80	2.40	3.20
<b>E6</b>	0.60	0.50	1.10

## 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	24.31					
010cm	23.81	8.40	33.90	104.50	7.08	2.25
050cm	34.81	8.38	35.60	106.80	7.04	
100cm	24.99	8.42	35.80	112.40	7.39	
150cm	25.00	8.44	35.90	119.80	7.86	
200cm	25.00	8.46	35.90	125.80	8.23	
250cm	25.00	8.49	35.90	131.50	8.64	
Bottom	25.00	8.49	36.10	131.40	8.65	

## 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	21.02					
010cm	24.65	8.38	34.30	104.20	6.89	2.25
050cm	24.87	8.38	34.20	102.30	6.88	
100cm	25.16	8.38	35.20	103.70	6.86	
150cm	25.31	8.39	35.40	103.20	6.71	
200cm	24.76	8.49	35.40	93.60	6.45	
250cm	24.76	8.52	35.80	99.90	6.44	
300cm	24.56	8.53	36.00	97.50	6.39	
350cm	24.54	8.54	36.10	96.80	6.32	
400cm	24.49	8.54	36.20	93.20	6.11	
450cm	24.20	8.54	36.20	85.30	5.30	
500cm	24.14	8.54	36.30	80.10	5.22	
550cm	24.09	8.54	36.30	82.30	5.48	
600cm	23.87	8.52	36.40	76.10	5.11	
650cm	23.71	8.52	36.40	78.70	5.22	
Bottom	23.67	8.52	36.40	66.80	4.31	

## 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	19.67					
010cm	22.61	8.24	35.10	117.80	8.06	2.25
050cm	22.71	8.23	35.30	121.40	8.26	
100cm	22.97	8.22	35.70	123.80	8.38	
150cm	23.12	8.23	35.80	129.70	8.78	
200cm	23.07	8.24	35.90	134.10	9.05	
250cm	23.03	8.25	35.90	140.10	9.50	
300cm	22.98	8.28	36.00	145.10	9.83	
350cm	22.98	8.31	36.00	149.20	10.11	
400cm	22.93	8.36	36.00	154.00	10.43	
450cm	22.96	8.36	36.10	156.40	10.58	
500cm	23.03	8.37	36.10	157.00	10.62	
550cm	23.02	8.41	36.20	160.90	10.87	
600cm	22.09	8.43	36.20	163.30	11.05	
650cm	22.94	8.44	36.20	165.70	11.22	
700cm	22.73	8.44	36.10	168.70	11.39	
750cm	22.73	8.43	36.10	168.30	11.44	
800cm	22.61	8.45	36.20	169.10	11.48	
850cm	22.48	8.43	36.20	168.70	11.46	
Bottom	22.50	8.43	36.20	167.80	11.42	

## 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	22.31					
010cm	26.62	8.33	34.20	96.90	6.26	1.75
050cm	27.21	8.32	34.70	107.10	6.85	
100cm	27.23	8.32	34.80	113.30	7.23	
150cm	27.14	8.33	34.90	118.20	7.56	
200cm	26.96	8.34	35.10	122.50	7.61	
250cm	26.83	8.43	35.10	122.00	7.80	
300cm	26.76	8.46	35.10	124.60	7.95	
350cm	26.75	8.47	35.20	125.50	8.03	
400cm	26.45	8.49	35.30	119.70	7.64	
450cm	26.34	8.51	35.40	113.20	7.28	
500cm	26.01	8.53	35.60	104.10	6.43	
Bottom	25.94	8.53	35.40	103.20	6.12	

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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	-	05/01/2016
Copper	1.00	ug/L	-	05/01/2016
Iron	6.0	ug/L	-	05/01/2016
Lead	0.20	ug/L	-	05/01/2016
Manganese	209	ug/L	-	05/01/2016
Nitrite and Nitrate as N	17.0	ug/L	-	05/01/2016
Phosphorus Reactive as P - Total	264	ug/L	-	05/01/2016
Phosphorus as P - Total	231	ug/L	-	05/01/2016
Selenium	23.0	ug/L	-	05/01/2016
Suspended Solids (SS)	5.0	mg/L	-	05/01/2016
Zinc	5.0	ug/L	-	05/01/2016
pH	9.5	-	-	05/01/2016

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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	-	05/01/2016
Iron	10.0	ug/L	-	05/01/2016
Selenium	1.00	ug/L	-	05/01/2016
Temperature - Average	25.6	deg C	-	Jan 2016
Temperature - Minimum	21.6	deg C	-	Jan 2016
Temperature - Maximum	28.2	deg C	-	Jan 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*

- The 98.5% limit specified for temperature in the outlet canal means during normal electricity supply conditions, cooling water may be discharged over 35 degC but up to a max temperature of 37.5 degC for up to 131 hrs over the reporting period.

<u>Name</u>	<u>Reading</u>	<u>Units</u>	<u>Licence Limit</u>	<u>Date</u>
Copper	1.00	ug/L	5	05/01/2016
Iron	30.0	ug/L	300	05/01/2016
Selenium	1.00	ug/L	2	05/01/2016
Temperature - Average	31.9	deg C	35	Jan 2016
Temperature - Minimum	26.5	deg C	35	Jan 2016
Temperature - Maximum	35.0	deg C	35	Jan 2016
Maximum Daily Discharge from Ash Dam	59.6	ML	150	Jan 2016
Monthly Discharge from Ash Dam	605	ML	-	Jan 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	-	05/01/2016
Copper	1.00	ug/L	-	05/01/2016
Iron	1,640	ug/L	-	05/01/2016
Lead	0.20	ug/L	-	05/01/2016
Manganese	1,020	ug/L	-	05/01/2016
Nitrite and Nitrate as N	153	ug/L	-	05/01/2016
Phosphorus as P - Total	37	ug/L	-	05/01/2016
Selenium	1.00	ug/L	-	05/01/2016
Zinc	11.0	ug/L	-	05/01/2016
pH	6.7		-	05/01/2016