



## Eraring Power Station - EPA Licence 1429

Rocky Point Rd, Morriset NSW 2264

## Coal Unloader - EPA Licence 4297

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

## Environmental Monitoring Data

January 2014



# 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 - Jan	194	219	176	11	15	9	208	233	196
2 - Jan	175	211	143	12	16	10	208	235	181
3 - Jan	196	233	165	14	19	11	221	235	206
4 - Jan	205	232	186	15	19	12	205	230	181
5 - Jan	183	215	156	13	18	10	177	212	155
6 - Jan	192	226	167	14	18	11	205	243	175
7 - Jan	186	203	160	14	18	12	237	309	178
8 - Jan	186	207	161	13	17	12	226	274	194
9 - Jan	195	236	169	18	24	14	188	234	162
10 - Jan	164	200	137	20	25	15	233	263	204
11 - Jan	170	193	152	16	23	13	205	236	182
12 - Jan	174	204	147	15	20	12	180	214	160
13 - Jan	178	207	142	20	30	13	191	226	132
14 - Jan	170	198	144	21	27	15	206	243	182
15 - Jan	161	195	133	21	26	18	188	206	161
16 - Jan	171	205	142	22	26	16	190	214	167
17 - Jan	160	186	133	19	28	13	210	230	196
18 - Jan	142	184	112	15	18	11	192	221	151
19 - Jan	125	137	118	12	16	10	191	225	152
20 - Jan	158	221	119	17	23	10	206	216	189
21 - Jan	151	187	131	16	21	12	190	232	175
22 - Jan	154	193	136	16	23	12	239	271	213
23 - Jan	175	199	134	19	28	13	238	262	213
24 - Jan	150	170	125	16	23	11	220	235	195
25 - Jan	177	186	160	13	17	11	222	261	198
26 - Jan	184	195	176	14	17	13	201	240	185
27 - Jan	180	195	147	17	30	10	203	225	187
28 - Jan	180	208	145	14	18	9	208	233	180
29 - Jan	174	209	140	14	20	9	217	243	177
30 - Jan	172	196	137	13	18	9	188	204	170
31 - Jan	189	220	146	14	20	10	212	228	192

## 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% O <sub>2</sub> )			mg/m <sup>3</sup>			ppm (7% O <sub>2</sub> )		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jan	115	126	106	17	27	13	164	184	150
2 - Jan	144	192	110	17	31	10	167	198	127
3 - Jan	165	209	124	18	28	13	174	196	148
4 - Jan	140	158	126	14	22	9	131	155	106
5 - Jan	147	179	124	19	33	12	158	192	130
6 - Jan	152	197	123	18	28	13	171	200	123
7 - Jan	131	144	122	16	30	10	205	263	127
8 - Jan	127	149	118	12	15	11	186	217	154
9 - Jan	150	208	122	10	15	6	160	192	138
10 - Jan	141	166	116	9	14	5	210	241	179
11 - Jan	119	131	100	9	13	5	180	237	138
12 - Jan	120	134	100	9	13	6	158	206	134
13 - Jan	155	207	111	9	14	4	159	184	143
14 - Jan	148	194	101	9	17	4	196	235	168
15 - Jan	161	197	103	8	16	4	167	218	138
16 - Jan	158	200	101	9	17	4	164	191	125
17 - Jan	161	192	117	11	18	4	176	218	133
18 - Jan	158	191	121	10	15	4	158	174	149
19 - Jan	125	137	119	9	14	6	168	203	137
20 - Jan	154	215	114	9	17	4	176	188	159
21 - Jan	137	161	119	10	15	5	161	190	146
22 - Jan	147	186	117	11	15	6	212	262	160
23 - Jan	172	202	116	13	20	7	246	268	230
24 - Jan	139	174	112	11	18	6	224	251	208
25 - Jan	156	165	143	13	16	11	239	253	221
26 - Jan	145	162	125	14	19	12	206	243	189
27 - Jan	143	224	124	13	22	6	233	273	201
28 - Jan	170	231	119	12	19	6	233	274	195
29 - Jan	177	228	118	12	19	6	257	286	227
30 - Jan	148	177	114	11	18	6	213	251	190
31 - Jan	160	249	113	11	18	6	216	247	197

## Unit 3 Boiler Continuous Emission Monitoring Summary

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

	NOX			Particulates			SOX		
	ppm (7% O <sub>2</sub> )			mg/m <sup>3</sup>			ppm (7% O <sub>2</sub> )		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jan	173	192	143	5	7	4	182	219	151
2 - Jan	196	251	138	5	8	3	171	212	110
3 - Jan	166	180	131	5	8	3	189	205	143
4 - Jan	168	190	139	6	9	5	150	196	118
5 - Jan	182	203	152	5	7	3	158	185	114
6 - Jan	178	203	134	6	9	3	190	219	110
7 - Jan	169	177	162	8	10	8	224	277	156
8 - Jan	163	181	137	7	10	5	193	271	172
9 - Jan	163	182	132	6	9	5	176	209	122
10 - Jan	153	180	120	6	9	3	213	235	148
11 - Jan	154	187	128	5	8	3	164	188	125
12 - Jan	159	192	133	5	8	3	151	214	105
13 - Jan	191	251	133	6	10	3	174	206	133
14 - Jan	191	257	126	5	8	3	186	200	124
15 - Jan	196	242	119	5	7	3	175	199	147
16 - Jan	187	227	115	5	8	3	168	197	113
17 - Jan	179	224	123	5	7	3	191	217	133
18 - Jan	152	195	113	5	7	4	169	186	126
19 - Jan	138	178	111	5	7	3	171	196	104
20 - Jan	191	240	132	5	7	4	191	217	122
21 - Jan	165	197	129	6	6	5	168	187	119
22 - Jan	163	189	126	6	8	6	203	233	141
23 - Jan	181	223	144	6	7	5	217	239	196
24 - Jan	157	170	148	4	7	3	190	205	173
25 - Jan	175	183	156	6	8	6	193	220	165
26 - Jan	177	194	157	8	9	7	169	189	149
27 - Jan	183	207	148	6	8	4	187	203	168
28 - Jan	168	223	131	4	7	2	197	221	173
29 - Jan	172	199	127	6	7	3	196	238	141
30 - Jan	160	188	125	6	7	4	185	225	137
31 - Jan	166	232	102	5	7	4	197	225	151

## Unit 4 Boiler Continuous Emission Monitoring Summary

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

- 19th to the 23rd, Unit out of service due to a boiler 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 - Jan	244	287	184	3	5	3	218	256	193
2 - Jan	222	305	180	3	2	1	204	261	177
3 - Jan	189	205	153	3	3	1	194	214	169
4 - Jan	148	188	126	3	3	1	174	193	162
5 - Jan	143	156	125	3	3	1	191	215	163
6 - Jan	165	204	133	3	3	3	199	227	186
7 - Jan	214	227	194	4	6	3	251	305	175
8 - Jan	228	246	208	3	5	3	205	272	178
9 - Jan	219	265	184	4	7	3	194	256	160
10 - Jan	193	237	133	5	9	3	238	274	204
11 - Jan	142	160	128	5	8	3	214	291	179
12 - Jan	141	151	131	5	9	3	203	282	161
13 - Jan	180	235	129	7	9	5	185	227	162
14 - Jan	176	231	139	5	9	2	234	259	196
15 - Jan	183	239	124	4	6	2	197	239	175
16 - Jan	181	239	144	4	7	2	201	243	179
17 - Jan	159	180	138	4	8	3	214	251	183
18 - Jan	154	195	148	4	8	3	183	204	161
19 - Jan	0	0	0	0	0	0	0	0	0
20 - Jan	0	0	0	0	0	0	0	0	0
21 - Jan	0	0	0	0	0	0	0	0	0
22 - Jan	0	0	0	0	0	0	0	0	0
23 - Jan	0	0	0	0	0	0	0	0	0
24 - Jan	198	212	169	5	3	2	182	197	137
25 - Jan	202	218	187	6	8	6	181	194	163
26 - Jan	221	234	196	4	9	3	163	178	143
27 - Jan	193	234	153	4	8	3	179	248	151
28 - Jan	183	205	165	4	8	3	200	232	174
29 - Jan	192	213	158	4	7	2	223	246	191
30 - Jan	193	228	145	4	8	2	178	200	166
31 - Jan	205	251	174	4	6	3	170	184	155

## Unit 1 Boiler Emission Test Results

*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	0.0033	mg/m3	0.20	12/11/2012
Carbon Dioxide (Wet)	11.0	%	-	12/11/2012
Carbon Monoxide	5.1	mg/m3	-	12/11/2012
Chlorine	0.53	mg/m3	300	12/11/2012
Copper	0.0017	mg/m3	-	12/11/2012
Dry Gas Density	0.93	kg/m3	-	12/11/2012
Fluoride As HF - Total	18.6	mg/m3	50	12/11/2012
Hazardous Substances (Metals) - Total	0.07	mg/m3	1.00	12/11/2012
Hydrogen Chloride	4.0	mg/m3	100.0	12/11/2012
Mercury	0.0013	mg/m3	0.200	12/11/2012
Moisture	8.0	%	-	12/11/2012
Particulates - Total	10.2	mg/m3	50	12/11/2012
Stack Gas Molecular Weight	29	kg/k-mole	-	12/11/2012
Temperature	109.0	degC	-	12/11/2012
Velocity	11.8	m/sec	-	12/11/2012
Volatile Organic Compounds (VOC) - Total	5.4	mg/m3	-	12/11/2012
Volumetric Flow Rate (Dry At STP)	280	m3/sec	-	12/11/2012



## Unit 2 Boiler Emission Test Results

*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	0.0011	mg/m3	0.20	06/05/2013
Carbon Dioxide (Wet)	10.4	%	-	06/05/2013
Carbon Monoxide	0.90	mg/m3	-	06/05/2013
Chlorine	0.28	mg/m3	300	06/05/2013
Copper	0.0011	mg/m3	-	06/05/2013
Dry Gas Density	0.93	kg/m3	-	06/05/2013
Fluoride As HF - Total	6.4	mg/m3	50	06/05/2013
Hazardous Substances (Metals) - Total	0.025	mg/m3	1.00	06/05/2013
Hydrogen Chloride	3.2	mg/m3	100.0	06/05/2013
Mercury	0.0022	mg/m3	0.200	06/05/2013
Moisture	7.5	%	-	06/05/2013
Particulates - Total	3.8	mg/m3	50	06/05/2013
Stack Gas Molecular Weight	29	kg/k-mole	-	06/05/2013
Temperature	108.0	degC	-	06/05/2013
Velocity	12.2	m/sec	-	06/05/2013
Volatile Organic Compounds (VOC) - Total	5.4	mg/m3	-	06/05/2013
Volumetric Flow Rate (Dry At STP)	293	m3/sec	-	06/05/2013

## Unit 3 Boiler Emission Test Results

*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	0.0011	mg/m3	0.20	05/08/2013
Carbon Dioxide (Wet)	10.3	%	-	05/08/2013
Carbon Monoxide	9.9	mg/m3	-	05/08/2013
Chlorine	0.30	mg/m3	200	05/08/2013
Copper	0.0011	mg/m3	-	05/08/2013
Dry Gas Density	0.94	kg/m3	-	05/08/2013
Fluoride As HF - Total	9.6	mg/m3	50	05/08/2013
Hazardous Substances (Metals) - Total	0.06	mg/m3	1.00	05/08/2013
Hydrogen Chloride	4.1	mg/m3	100.0	05/08/2013
Mercury	0.0007	mg/m3	0.200	05/08/2013
Moisture	6.7	%	-	05/08/2013
Particulates - Total	15.0	mg/m3	50	05/08/2013
Stack Gas Molecular Weight	29	kg/k-mole	-	05/08/2013
Temperature	103.0	degC	-	05/08/2013
Velocity	11.1	m/sec	-	05/08/2013
Volatile Organic Compounds (VOC) - Total	5.7	mg/m3	-	05/08/2013
Volumetric Flow Rate (Dry At STP)	270	m3/sec	-	05/08/2013



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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	0.0010	mg/m3	0.20	13/10/2013
Carbon Dioxide (Wet)	9.4	%	-	13/10/2013
Carbon Monoxide	9.3	mg/m3	-	13/10/2013
Chlorine	0.040	mg/m3	200	13/10/2013
Copper	0.0010	mg/m3	-	13/10/2013
Dry Gas Density	0.94	kg/m3	-	13/10/2013
Fluoride As HF - Total	7.5	mg/m3	50	13/10/2013
Hazardous Substances (Metals) - Total	0.027	mg/m3	1.00	13/10/2013
Hydrogen Chloride	2.8	mg/m3	100.0	13/10/2013
Mercury	0.0022	mg/m3	0.200	13/10/2013
Moisture	6.5	%	-	13/10/2013
Particulates - Total	7.9	mg/m3	50	13/10/2013
Stack Gas Molecular Weight	29	kg/k-mole	-	13/10/2013
Temperature	104.0	degC	-	13/10/2013
Velocity	15.4	m/sec	-	13/10/2013
Volatile Organic Compounds (VOC) - Total	4.7	mg/m3	-	13/10/2013
Volumetric Flow Rate (Dry At STP)	375	m3/sec	-	13/10/2013

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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>	1.20	0.70	1.90
<b>U2</b>	0.50	0.10	0.60
<b>U3</b>	0.60	0.30	0.90
<b>U4</b>	1.20	0.60	1.80
<b>U5</b>	0.50	0.20	0.70
<b>U6</b>	0.50	0.10	0.60

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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>	0.40	0.30	0.70
<b>E2</b>	0.50	0.20	0.70
<b>E3</b>	0.70	0.20	0.90
<b>E4</b>	0.50	0.40	0.90
<b>E5</b>	0.40	0.50	0.90
<b>E6</b>	0.40	0.50	0.90

## 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	26.50					
010cm	26.93	8.09	36.31	97.40	6.32	1.80
050cm	26.93	8.10	36.30	97.40	6.32	
100cm	26.91	8.09	36.30	97.40	6.33	
150cm	26.90	8.09	36.29	97.30	6.32	
200cm	26.88	8.09	36.30	97.20	6.31	
250cm	26.88	8.09	36.29	97.10	6.31	
300cm	26.87	8.08	36.26	96.80	6.29	
Bottom	26.87	8.07	36.29	96.40	6.26	

## 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	26.70					
010cm	26.48	8.15	36.17	101.20	6.63	3.70
050cm	26.47	8.15	36.17	101.30	6.63	
100cm	26.48	8.15	36.16	101.30	6.63	
150cm	26.48	8.15	36.16	101.30	6.63	
200cm	26.36	8.15	36.15	101.30	6.64	
250cm	26.22	8.15	36.16	101.30	6.66	
300cm	26.18	8.15	36.13	101.40	6.67	
350cm	26.17	8.15	36.17	101.20	6.65	
400cm	25.71	8.15	36.10	101.20	6.71	
450cm	25.67	8.15	36.11	100.50	6.67	
500cm	25.63	8.15	36.11	100.10	6.64	
550cm	25.54	8.15	36.12	99.70	6.63	
600cm	25.56	8.15	36.10	99.30	6.60	
650cm	25.38	8.14	36.00	98.90	6.60	
700cm	25.06	8.13	36.06	95.20	6.37	
750cm	24.86	8.11	36.11	89.80	6.04	
Bottom	24.85	8.10	36.17	86.60	5.82	

## 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	25.70					
010cm	24.72	8.15	36.44	103.30	6.95	5.00
050cm	24.71	8.16	36.45	103.20	6.95	
100cm	24.70	8.16	36.45	103.40	6.96	
150cm	24.70	8.16	36.45	103.30	6.95	
200cm	24.69	8.17	36.46	103.30	6.96	
250cm	24.69	8.17	36.46	103.30	6.95	
300cm	24.68	8.17	36.46	103.30	6.96	
350cm	24.67	8.17	36.46	103.40	6.96	
400cm	24.65	8.18	36.46	103.40	6.96	
450cm	24.65	8.18	36.46	103.60	6.98	
500cm	24.64	8.18	36.47	103.40	6.97	
550cm	24.63	8.19	36.47	102.40	6.90	
600cm	24.26	8.18	35.88	101.90	6.93	
650cm	22.97	8.14	36.54	88.90	6.16	
700cm	22.89	8.14	36.52	85.90	5.96	
750cm	22.84	8.15	36.53	86.30	5.99	
800cm	22.61	8.15	36.56	85.90	5.99	
850cm	22.32	8.15	36.57	85.00	5.96	
900cm	22.48	8.15	36.59	83.60	5.84	
950cm	21.60	8.11	36.63	70.90	5.03	
Bottom	21.45	8.11	36.65	71.80	5.11	

## 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	34.30					
010cm	31.18	8.08	36.41	122.90	7.45	2.30
050cm	31.14	8.08	36.38	123.40	7.48	
100cm	30.62	8.08	36.02	123.80	7.55	
150cm	29.66	8.09	36.40	122.20	7.58	
200cm	29.56	8.09	36.40	121.40	7.55	
250cm	29.47	8.09	36.41	121.30	7.55	
300cm	29.40	8.09	36.40	121.10	7.55	
350cm	29.43	8.09	36.40	120.90	7.53	
400cm	29.34	8.09	36.37	120.70	7.53	
450cm	29.29	8.09	36.36	120.60	7.53	
500cm	29.24	8.09	36.30	120.30	7.52	
550cm	28.99	8.09	36.11	119.90	7.53	
Bottom	28.89	7.99	35.99	114.90	7.23	

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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	-	14/01/2014
Copper	0.8	ug/L	-	14/01/2014
Iron	5.0	ug/L	-	14/01/2014
Lead	0.20	ug/L	-	14/01/2014
Manganese	19.8	ug/L	-	14/01/2014
Nitrite and Nitrate as N	9.0	ug/L	-	14/01/2014
Phosphorus Reactive as P - Total	252	ug/L	-	14/01/2014
Phosphorus as P - Total	269	ug/L	-	14/01/2014
Selenium	10.6	ug/L	-	14/01/2014
Suspended Solids (SS)	3.0	mg/L	-	14/01/2014
Zinc	5.0	ug/L	-	14/01/2014
pH	8.9	-	-	14/01/2014

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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	1.30	ug/L	-	14/01/2014
Iron	5.0	ug/L	-	14/01/2014
Selenium	1.00	ug/L	-	14/01/2014
Temperature - Average	26.5	deg C	-	Jan 2014
Temperature - Minimum	24.3	deg C	-	Jan 2014
Temperature - Maximum	29.1	deg C	-	Jan 2014

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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	1.90	ug/L	5	14/01/2014
Iron	7.0	ug/L	300	14/01/2014
Selenium	1.00	ug/L	2	14/01/2014
Temperature - Average	31.5	deg C	35	Jan 2014
Temperature - Minimum	28.1	deg C	35	Jan 2014
Temperature - Maximum	36.3	deg C	35	Jan 2014
Maximum Daily Discharge from Ash Dam	13.7	ML	150000	Jan 2014
Monthly Discharge from Ash Dam	157	ML	-	Jan 2014

- 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 131hrs over the reporting period.



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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	-	14/01/2014
Copper	0.50	ug/L	-	14/01/2014
Iron	5,270	ug/L	-	14/01/2014
Lead	0.20	ug/L	-	14/01/2014
Manganese	1,160	ug/L	-	14/01/2014
Nitrite and Nitrate as N	54	ug/L	-	14/01/2014
Phosphorus as P - Total	240	ug/L	-	14/01/2014
Selenium	1.00	ug/L	-	14/01/2014
Zinc	5.0	ug/L	-	14/01/2014
pH	7.1		-	14/01/2014