



## **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**

**September 2016**



## Unit 1 Boiler Continuous Emission Monitoring Summary

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

- 1st - 4th 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 - Sep	0	0	0	0	0	0	0	0	0
2 - Sep	0	0	0	0	0	0	0	0	0
3 - Sep	0	0	0	0	0	0	0	0	0
4 - Sep	0	0	0	0	0	0	0	0	0
5 - Sep	160	183	127	16	36	10	178	198	147
6 - Sep	178	192	137	14	30	9	197	215	179
7 - Sep	166	187	131	15	34	8	200	210	171
8 - Sep	155	182	117	14	26	9	204	211	187
9 - Sep	143	167	112	11	17	9	201	231	182
10 - Sep	156	180	109	11	17	9	181	193	165
11 - Sep	151	181	128	13	21	9	190	210	169
12 - Sep	173	194	144	13	23	8	171	191	151
13 - Sep	153	163	132	12	19	8	188	208	176
14 - Sep	163	197	118	12	26	7	204	228	185
15 - Sep	177	210	115	11	16	9	193	209	172
16 - Sep	190	212	150	11	15	9	185	200	171
17 - Sep	199	222	166	11	16	9	173	184	167
18 - Sep	211	248	140	16	27	12	161	170	146
19 - Sep	215	238	189	10	13	7	169	175	151
20 - Sep	208	243	152	13	18	10	168	193	150
21 - Sep	192	225	141	13	19	9	174	194	166
22 - Sep	218	246	172	11	15	9	169	177	164
23 - Sep	203	232	155	11	19	9	171	184	158
24 - Sep	169	199	120	12	19	7	173	184	164
25 - Sep	176	220	122	13	18	10	164	172	158
26 - Sep	186	218	111	9	20	4	185	222	163
27 - Sep	169	200	129	8	12	5	195	205	180
28 - Sep	168	194	124	8	15	6	187	217	166
29 - Sep	160	191	113	8	14	5	185	214	148
30 - Sep	156	176	118	7	11	5	209	239	188

## 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 - Sep	189	203	162	19	22	17	197	215	177
2 - Sep	189	215	148	21	24	17	194	225	172
3 - Sep	182	211	149	17	20	15	183	199	170
4 - Sep	189	212	159	19	22	17	177	191	170
5 - Sep	188	218	134	19	23	16	185	205	171
6 - Sep	155	181	113	19	24	15	210	239	189
7 - Sep	157	178	125	18	23	15	210	221	187
8 - Sep	147	171	123	18	23	14	226	248	210
9 - Sep	147	168	121	17	20	14	217	246	194
10 - Sep	154	185	110	17	20	16	193	199	175
11 - Sep	149	203	110	19	23	16	208	244	188
12 - Sep	178	196	157	18	23	15	179	202	163
13 - Sep	158	174	142	17	20	15	210	223	197
14 - Sep	154	178	110	17	21	13	212	230	187
15 - Sep	155	184	105	16	19	15	217	241	192
16 - Sep	167	188	133	16	19	14	189	201	181
17 - Sep	174	208	143	17	19	15	181	194	174
18 - Sep	181	209	121	18	21	16	172	178	158
19 - Sep	150	195	120	15	18	13	178	187	159
20 - Sep	186	270	126	17	21	15	177	194	156
21 - Sep	172	188	133	23	27	10	171	182	141
22 - Sep	194	214	167	16	19	14	179	188	174
23 - Sep	198	219	129	17	20	15	179	184	176
24 - Sep	194	227	119	15	19	13	184	190	179
25 - Sep	190	237	107	17	20	14	178	187	173
26 - Sep	203	239	111	16	21	14	199	224	181
27 - Sep	197	233	128	16	20	13	197	213	182
28 - Sep	187	220	130	16	21	14	203	234	178
29 - Sep	176	206	128	17	20	16	198	221	165
30 - Sep	183	200	134	17	19	16	205	222	176

## 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 - Sep	183	204	153	20	22	13	178	199	168
2 - Sep	158	183	108	22	28	13	186	208	166
3 - Sep	158	186	113	19	22	11	163	176	147
4 - Sep	157	187	125	20	24	8	159	166	139
5 - Sep	174	206	141	20	24	8	160	188	151
6 - Sep	158	195	114	20	25	9	189	201	143
7 - Sep	146	175	119	21	25	13	181	195	142
8 - Sep	149	182	123	21	24	14	198	213	153
9 - Sep	153	177	122	20	22	13	189	204	152
10 - Sep	166	188	115	20	22	10	175	182	142
11 - Sep	148	182	115	20	22	9	166	177	142
12 - Sep	179	200	142	20	24	8	172	205	160
13 - Sep	172	186	143	21	24	14	195	207	182
14 - Sep	166	190	112	22	27	14	198	206	182
15 - Sep	177	198	117	20	23	9	173	192	140
16 - Sep	175	192	149	21	25	14	175	185	139
17 - Sep	168	201	123	21	26	14	165	175	138
18 - Sep	174	208	142	22	25	14	155	166	141
19 - Sep	189	209	164	22	24	11	163	169	134
20 - Sep	195	227	132	23	26	11	160	170	142
21 - Sep	172	188	133	23	27	10	171	182	141
22 - Sep	160	215	130	20	25	14	155	163	132
23 - Sep	179	204	160	25	27	18	168	182	156
24 - Sep	133	162	120	23	28	11	170	182	164
25 - Sep	180	214	128	24	28	12	163	169	156
26 - Sep	189	214	114	26	29	14	171	186	139
27 - Sep	183	213	128	27	30	18	180	189	144
28 - Sep	179	198	141	25	33	16	184	212	143
29 - Sep	170	205	130	23	31	14	180	198	142
30 - Sep	166	174	143	23	29	11	184	207	151

## Unit 4 Boiler Continuous Emission Monitoring Summary

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

- 16th - 30th Unit out of service for maintenance.

	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 - Sep	138	177	107	15	18	12	144	170	131
2 - Sep	135	154	103	16	18	14	142	157	122
3 - Sep	135	155	108	15	18	13	132	147	113
4 - Sep	143	169	113	16	21	14	125	130	121
5 - Sep	142	153	115	17	20	15	131	157	123
6 - Sep	129	144	117	17	21	15	153	175	142
7 - Sep	147	180	121	17	20	15	156	167	142
8 - Sep	156	176	133	17	19	14	161	172	143
9 - Sep	164	192	125	15	18	14	153	170	142
10 - Sep	187	218	160	16	18	14	142	154	123
11 - Sep	189	214	156	16	21	13	146	165	134
12 - Sep	197	215	172	17	20	14	138	151	126
13 - Sep	191	201	174	16	19	15	153	171	141
14 - Sep	165	186	147	16	19	14	156	173	142
15 - Sep	147	177	122	15	17	13	151	173	109
16 - Sep	0	0	0	0	0	0	0	0	0
17 - Sep	0	0	0	0	0	0	0	0	0
18 - Sep	0	0	0	0	0	0	0	0	0
19 - Sep	0	0	0	0	0	0	0	0	0
20 - Sep	0	0	0	0	0	0	0	0	0
21 - Sep	0	0	0	0	0	0	0	0	0
22 - Sep	0	0	0	0	0	0	0	0	0
23 - Sep	0	0	0	0	0	0	0	0	0
24 - Sep	0	0	0	0	0	0	0	0	0
25 - Sep	0	0	0	0	0	0	0	0	0
26 - Sep	0	0	0	0	0	0	0	0	0
27 - Sep	0	0	0	0	0	0	0	0	0
28 - Sep	0	0	0	0	0	0	0	0	0
29 - Sep	0	0	0	0	0	0	0	0	0
30 - Sep	0	0	0	0	0	0	0	0	0

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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
U1	0.40	0.10	0.50
U2	0.30	0.10	0.40
U3	0.80	0.90	1.70
U4	0.40	0.10	0.50
U5	0.40	0.30	0.70
U6	0.50	0.70	1.20

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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
E1	0.70	0.50	1.20
E2	0.20	0.20	0.40
E3	0.30	0.10	0.40
E4	0.30	0.30	0.60
E5	0.50	0.10	0.60
E6	2.00	1.30	3.30

## 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
<b>Depth/Air</b>	18.73					
<b>010cm</b>	17.76	7.93	35.30	108.10	8.06	2.80
<b>050cm</b>	17.65	7.93	35.40	109.60	8.18	
<b>100cm</b>	17.62	7.95	35.40	110.90	8.28	
<b>150cm</b>	17.61	7.96	35.40	113.40	8.48	
<b>200cm</b>	17.59	7.97	35.40	114.80	8.58	
<b>250cm</b>	17.58	7.98	35.40	118.00	8.80	
<b>Bottom</b>	17.58	7.99	35.60	119.20	8.95	

## 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
<b>Depth/Air</b>	15.81					
<b>010cm</b>	19.58	7.97	35.00	91.90	6.69	3.25
<b>050cm</b>	19.55	7.98	35.00	96.50	7.01	
<b>100cm</b>	19.21	8.00	35.00	102.90	7.53	
<b>150cm</b>	18.63	8.01	34.90	108.10	7.99	
<b>200cm</b>	18.30	8.01	34.90	112.10	8.33	
<b>250cm</b>	18.07	8.02	34.90	116.50	8.66	
<b>300cm</b>	17.98	8.01	34.90	119.40	8.90	
<b>350cm</b>	17.94	8.02	34.80	122.40	9.14	
<b>400cm</b>	17.86	8.02	34.90	126.00	9.40	
<b>450cm</b>	17.78	8.02	35.10	130.30	9.74	
<b>500cm</b>	17.64	8.00	35.10	134.40	10.05	
<b>550cm</b>	17.58	8.02	35.90	151.50	11.07	
<b>600cm</b>	17.57	8.01	35.50	139.60	10.48	
<b>650cm</b>	17.56	8.01	35.30	145.30	10.87	
<b>700cm</b>	17.50	8.00	35.30	148.80	11.13	
<b>Bottom</b>	17.58	8.01	35.70	150.70	11.24	

## 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
<b>Depth/Air</b>	11.87					
<b>010cm</b>	15.65	7.88	36.10	89.80	6.85	4.25
<b>050cm</b>	16.48	7.79	36.10	94.30	7.18	
<b>100cm</b>	16.53	7.82	36.00	98.30	7.49	
<b>150cm</b>	16.54	7.80	36.10	102.40	7.78	
<b>200cm</b>	16.46	7.82	36.10	106.90	8.14	
<b>250cm</b>	16.54	7.82	36.00	111.70	8.48	
<b>300cm</b>	16.51	7.88	36.10	114.60	8.71	
<b>350cm</b>	16.56	7.85	36.10	118.90	9.04	
<b>400cm</b>	16.54	7.91	36.10	123.30	9.35	
<b>450cm</b>	16.55	7.86	36.10	126.50	9.59	
<b>500cm</b>	16.55	7.89	36.10	130.60	9.91	
<b>550cm</b>	16.60	7.89	36.10	133.80	10.14	
<b>600cm</b>	16.60	7.87	36.10	137.50	10.42	
<b>650cm</b>	16.65	7.88	36.10	141.10	10.66	
<b>700cm</b>	16.76	7.85	36.20	145.90	11.03	
<b>750cm</b>	16.69	7.85	36.20	148.10	11.18	
<b>800cm</b>	16.77	7.83	36.30	151.90	11.44	
<b>850cm</b>	16.88	7.81	36.40	154.60	11.61	
<b>900cm</b>	16.95	7.79	36.50	158.10	11.87	
<b>Bottom</b>	17.02	7.80	36.50	160.00	12.00	

## 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
<b>Depth/Air</b>	16.24					
<b>010cm</b>	20.96	7.88	35.10	94.10	6.60	3.75
<b>050cm</b>	21.54	7.94	35.00	97.40	6.79	
<b>100cm</b>	21.67	7.94	35.00	103.90	7.29	
<b>150cm</b>	21.19	7.94	35.00	110.10	7.75	
<b>200cm</b>	21.10	7.93	35.10	115.10	8.09	
<b>250cm</b>	21.08	7.92	35.30	118.90	8.38	
<b>300cm</b>	20.74	7.93	35.20	126.40	9.10	
<b>350cm</b>	19.48	7.91	35.20	131.10	9.49	
<b>400cm</b>	18.88	7.90	35.20	136.40	10.05	
<b>450cm</b>	18.24	7.93	35.20	139.10	10.27	
<b>500cm</b>	18.18	7.91	35.20	142.10	10.53	
<b>550cm</b>	18.02	7.90	35.30	145.10	10.79	
<b>Bottom</b>	17.95	7.91	31.80	145.30	11.05	

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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	-	01/09/2016
Copper	1.00	ug/L	-	01/09/2016
Iron	5.0	ug/L	-	01/09/2016
Lead	0.20	ug/L	-	01/09/2016
Manganese	8.4	ug/L	-	01/09/2016
Nitrite and Nitrate as N	970	ug/L	-	01/09/2016
Phosphorus Reactive as P - Total	45	ug/L	-	01/09/2016
Phosphorus as P - Total	111	ug/L	-	01/09/2016
Selenium	82	ug/L	-	01/09/2016
Suspended Solids (SS)	3,000	ug/L	-	01/09/2016
Zinc	5.0	ug/L	-	01/09/2016
pH	9.8	-	-	01/09/2016

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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	2.00	ug/L	-	01/09/2016
Iron	7.0	ug/L	-	01/09/2016
Selenium	1.00	ug/L	-	01/09/2016
Temperature - Average	18.8	deg C	-	Sep 2016
Temperature - Minimum	16.6	deg C	-	Sep 2016
Temperature - Maximum	20.2	deg C	-	Sep 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	01/09/2016
Iron	12.0	ug/L	300	01/09/2016
Selenium	1.00	ug/L	2	01/09/2016
Temperature - Average	26.9	deg C	35	Sep 2016
Temperature - Minimum	21.9	deg C	35	Sep 2016
Temperature - Maximum	30.9	deg C	35	Sep 2016
Maximum Daily Discharge from Ash Dam	23.4	ML	150	Sep 2016
Monthly Discharge from Ash Dam	374	ML	-	Sep 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>
Nitrite and Nitrate as N	190	ug/L	-	01/09/2016
Phosphorus as P - Total	68	ug/L	-	01/09/2016
pH	7.1	-	-	01/09/2016