



Eraring *energy*

Eraring Power Station - EPA Licence 1429

Rocky Point Rd, Morristet NSW 2264

Coal Unloader - EPA Licence 4297

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

Environmental Monitoring Data

June 2013



Unit 1 Boiler Continuous Emission Monitoring Summary

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

- 1st - 5th Particulate Monitor out of service for calibration and maintance.
- 17th - 26th SOx Monitor out of service due to instrument fault.
- 27th - * Unit 1 Out of service due to unit trip.

	NOX			Particulates			SOX		
	ppm (12% CO2)			mg/m3			ppm (12% CO2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jun	109	123	96	0	0	0	219	265	171
2 - Jun	121	177	92	0	0	0	217	252	198
3 - Jun	162	210	96	0	0	0	240	305	208
4 - Jun	162	192	133	0	0	0	243	281	183
5 - Jun	169	191	159	0	0	0	279	320	230
6 - Jun	190	225	162	6	7	0	287	319	246
7 - Jun	160	186	148	10	11	6	289	318	248
8 - Jun	163	190	148	10	12	10	271	305	228
9 - Jun	160	176	146	11	11	10	252	286	200
10 - Jun	174	232	150	11	11	10	242	287	192
11 - Jun	157	207	105	11	18	10	207	252	166
12 - Jun	118	180	95	11	13	10	194	211	176
13 - Jun	108	135	91	11	11	11	197	213	180
14 - Jun	115	147	92	11	11	10	209	235	188
15 - Jun	136	205	95	11	12	10	193	227	184
16 - Jun	145	209	95	11	12	10	196	208	187
17 - Jun	151	206	104	10	11	10	0	0	0
18 - Jun	183	351	136	9	9	9	0	0	0
19 - Jun	147	182	122	9	11	9	0	0	0
20 - Jun	159	196	122	9	10	9	0	0	0
21 - Jun	164	213	121	10	10	10	0	0	0
22 - Jun	173	196	122	10	10	10	0	0	0
23 - Jun	136	196	100	10	10	10	0	0	0
24 - Jun	191	246	128	10	10	10	0	0	0
25 - Jun	169	202	134	10	10	10	0	0	0
26 - Jun	163	219	91	10	10	10	0	0	0
27 - Jun	0	0	0	0	0	0	0	0	0
28 - Jun	0	0	0	0	0	0	0	0	0
29 - Jun	0	0	0	0	0	0	0	0	0
30 - Jun	0	0	0	0	0	0	0	0	0

Unit 2 Boiler Continuous Emission Monitoring Summary

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

- 27th - 30th SOx Monitor out of service due to instrument fault.

	NOX			Particulates			SOX		
	ppm (12% CO2)			mg/m3			ppm (12% CO2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jun	119	132	107	9	11	8	181	198	167
2 - Jun	133	213	105	10	17	8	190	208	177
3 - Jun	126	176	102	11	15	8	183	202	161
4 - Jun	141	177	109	11	16	8	197	218	181
5 - Jun	150	178	115	12	17	9	214	230	196
6 - Jun	154	170	134	11	14	10	213	231	196
7 - Jun	162	178	142	11	14	9	230	260	215
8 - Jun	156	183	131	10	13	9	220	237	199
9 - Jun	157	170	134	10	13	9	185	201	175
10 - Jun	172	199	159	10	14	8	176	195	163
11 - Jun	159	215	114	12	15	10	181	204	164
12 - Jun	157	239	116	13	19	10	174	194	157
13 - Jun	144	180	121	11	15	9	180	196	163
14 - Jun	144	169	118	12	16	9	193	211	173
15 - Jun	139	214	101	11	15	9	166	193	143
16 - Jun	132	214	98	11	17	8	165	189	153
17 - Jun	137	183	93	13	17	10	161	175	145
18 - Jun	154	214	89	13	17	10	186	226	154
19 - Jun	158	255	105	13	18	11	222	235	207
20 - Jun	175	234	106	14	16	10	220	228	209
21 - Jun	168	231	109	14	16	10	203	226	130
22 - Jun	184	230	104	15	18	12	211	232	201
23 - Jun	175	242	103	15	17	11	204	215	198
24 - Jun	246	291	159	18	26	14	197	206	181
25 - Jun	168	199	135	16	19	12	206	228	192
26 - Jun	163	234	128	14	17	11	229	240	213
27 - Jun	156	185	107	15	18	11	0	0	0
28 - Jun	182	222	140	18	20	13	0	0	0
29 - Jun	190	252	136	16	20	13	0	0	0
30 - Jun	97	204	59	16	21	12	0	0	0

Unit 3 Boiler Continuous Emission Monitoring Summary

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

	NOX			Particulates			SOX		
	ppm (12% CO2)			mg/m3			ppm (12% CO2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jun	181	191	155	14	19	13	187	206	167
2 - Jun	189	228	123	18	31	13	181	217	139
3 - Jun	154	227	127	12	17	11	186	220	177
4 - Jun	147	171	130	12	15	12	201	226	169
5 - Jun	159	227	129	14	17	12	208	226	186
6 - Jun	176	197	161	12	13	12	220	239	194
7 - Jun	185	200	172	12	12	12	221	244	200
8 - Jun	193	208	174	14	18	12	198	221	187
9 - Jun	187	205	155	14	16	13	186	212	168
10 - Jun	195	224	160	16	23	13	179	209	159
11 - Jun	156	202	139	14	16	12	196	224	171
12 - Jun	174	215	129	20	30	15	220	249	188
13 - Jun	144	177	125	16	24	12	219	239	201
14 - Jun	141	180	113	12	13	12	225	260	184
15 - Jun	188	333	116	12	12	12	208	235	197
16 - Jun	176	246	122	12	13	12	201	216	188
17 - Jun	191	262	118	12	13	11	207	224	190
18 - Jun	193	250	112	12	12	11	224	247	207
19 - Jun	171	245	122	16	25	12	216	239	196
20 - Jun	179	227	117	13	14	13	216	227	197
21 - Jun	183	244	122	14	15	13	208	233	191
22 - Jun	214	240	152	14	16	13	211	229	189
23 - Jun	198	242	148	22	29	14	201	215	180
24 - Jun	246	291	159	18	26	14	197	206	181
25 - Jun	191	227	153	16	17	15	207	229	177
26 - Jun	175	240	140	17	22	15	207	433	175
27 - Jun	187	221	148	21	29	17	180	191	159
28 - Jun	175	210	128	22	26	17	191	201	176
29 - Jun	214	311	169	24	31	18	176	190	155
30 - Jun	155	260	107	25	32	20	181	202	160

Unit 4 Boiler Continuous Emission Monitoring Summary

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

	NOX			Particulates			SOX		
	ppm (12% CO2)			mg/m3			ppm (12% CO2)		
	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly	Daily Ave	Max Hourly	Min Hourly
1 - Jun	182	202	162	18	19	18	176	191	158
2 - Jun	186	234	169	18	18	17	181	204	155
3 - Jun	180	227	146	18	19	17	179	195	163
4 - Jun	171	211	146	19	19	19	187	207	149
5 - Jun	172	207	147	19	20	19	207	227	178
6 - Jun	154	171	146	18	19	18	203	218	192
7 - Jun	159	177	144	18	19	18	205	225	185
8 - Jun	155	183	135	19	19	18	195	216	179
9 - Jun	176	189	167	18	18	18	181	225	152
10 - Jun	191	217	161	22	27	18	169	189	137
11 - Jun	175	230	148	20	21	19	196	233	161
12 - Jun	178	269	147	21	31	17	200	219	169
13 - Jun	160	198	133	21	39	13	217	234	200
14 - Jun	175	220	151	19	24	17	226	261	196
15 - Jun	209	297	159	19	20	17	196	240	182
16 - Jun	184	292	137	20	26	17	200	226	175
17 - Jun	237	304	170	21	27	19	196	225	165
18 - Jun	215	298	145	20	22	18	205	232	190
19 - Jun	182	237	149	24	35	19	214	242	194
20 - Jun	190	239	143	20	23	19	214	233	195
21 - Jun	188	244	139	22	23	20	207	219	181
22 - Jun	169	232	126	22	25	18	202	215	189
23 - Jun	181	228	138	29	35	21	197	215	185
24 - Jun	218	252	138	22	28	17	187	200	170
25 - Jun	186	236	143	23	30	20	202	231	173
26 - Jun	193	251	132	26	42	20	188	219	166
27 - Jun	202	260	151	30	45	24	168	179	148
28 - Jun	188	222	144	32	43	23	176	182	167
29 - Jun	192	255	134	37	51	23	166	180	145
30 - Jun	186	250	159	33	49	24	165	191	137

Dora Creek Ambient Air Monitoring Summary

EPA Identification no. 16 - Ambient air monitoring station at Dora Creek - alongside oval at Dora Creek

	Fluoride Gaseous	Fluoride Particulate	Fluoride Total	Nitrogen Dioxide (NO ₂)	Nitrogen Monoxide (NO)	Nitrogen Oxides (NO _x)	Sulphur Dioxide (SO ₂)
	ug/m3	ug/m3	ug/m3	pphm	pphm	pphm	pphm
Maximum	0.019	0.004	0.023	1.600	2.900	3.500	1.200
Average	0.006	0.003	0.009	0.770	0.747	1.500	0.047
Minimum	0.001	0.002	0.003	0.300	0.000	0.200	0.000
90th Percentile	0.019	0.004	0.023	1.300	2.200	2.850	0.050
Std Deviation	0.007	0.001	0.008	0.348	0.897	1.011	0.216

	Rainfall	Sigma Theta at 10m	Solar Radiation	Temperatu re at 10m	Temperatu re at 2m	Wind Direction at 10m	Wind Speed at 10m
	mm	deg	W/m2	degC	degC	deg	m/s
Maximum	26.16	37.21	122.33	17.32	17.03	313.63	2.15
Average	3.46	27.83	79.06	12.69	12.63	248.01	1.20
Minimum	0.00	19.82	21.80	9.43	9.13	146.40	0.64
90th Percentile	12.95	32.74	121.37	14.89	14.97	286.83	1.85
Std Deviation	6.49	4.32	29.69	1.70	1.78	33.12	0.43

Marks Point Ambient Air Monitoring Summary

EPA Identification no. 15 - Ambient air monitoring station at Marks Point primary school

	Nitrogen Dioxide (NO ₂)	Nitrogen Monoxide (NO)	Nitrogen Oxides (NO _x)	Sulphur Dioxide (SO ₂)
	pphm	pphm	pphm	pphm
Maximum	1.765	2.210	3.870	0.740
Average	0.805	0.197	0.986	0.092
Minimum	0.130	0.000	0.100	0.000
90th Percentile	1.680	0.520	1.973	0.260
Std Deviation	0.501	0.541	0.890	0.149

	Relative Humidity	Sigma Theta at 2m	Temperatu re at 2m	Wind Direction at 2m	Wind Speed at 2m
	%	deg	degC	deg	m/s
Maximum	96.62	33.77	18.42	305.67	3.28
Average	83.07	21.86	14.62	237.22	1.68
Minimum	62.51	14.19	12.06	115.37	0.82
90th Percentile	95.87	26.75	16.67	288.85	2.72
Std Deviation	8.75	4.04	1.55	38.75	0.65

Eraring Coal Unloader Dust Gauges

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

	Deposited Matter		
	g/m2/month		
	Ash	Combustible	Insolubles
U1	0.20	0.20	0.40
U2			
U3	0.30	0.20	0.50
U4	1.20	0.30	1.50
U5	0.50	0.30	0.80
U6	0.20	0.20	0.40

Eraring Due Diligence Dust Gauges

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

	Deposited Matter		
	g/m2/month		
	Ash	Combustible	Insolubles
E1	0.50	0.20	0.70
E2	2.30	0.90	3.20
E3	2.20	1.10	3.30
E4	0.70	0.40	1.10
E5	0.40	0.30	0.70
E6	0.30	0.40	0.70

- U2 - Dust gauge results missing due to stolen depositional gauge.

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	18.50					
010cm	17.25	8.02	37.55	96.50	7.32	3.00
050cm	17.35	8.02	37.52	96.90	7.34	
100cm	17.26	8.02	37.47	97.20	7.38	
150cm	17.12	8.02	37.55	96.70	7.35	
200cm	16.53	8.02	37.41	96.50	7.43	
250cm	16.47	8.02	37.41	96.70	7.45	
Bottom	16.46	8.02	37.42	97.10	7.49	

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	18.10					
010cm	18.60	8.00	36.70	101.90	7.57	3.50
050cm	18.65	8.01	36.68	101.80	7.56	
100cm	18.58	8.01	36.54	101.70	7.57	
150cm	17.49	8.03	36.97	101.80	7.72	
200cm	17.47	8.02	37.01	101.30	7.68	
250cm	17.42	8.03	37.09	101.00	7.65	
300cm	17.39	8.03	37.40	100.50	7.60	
350cm	17.42	8.04	37.41	99.60	7.54	
400cm	17.38	8.04	37.44	98.80	7.48	
450cm	17.36	8.05	37.45	98.60	7.47	
500cm	17.36	8.05	37.45	98.60	7.47	
550cm	17.35	8.06	37.46	98.50	7.46	
600cm	17.35	8.05	37.47	98.40	7.45	
650cm	17.35	8.05	37.46	98.40	7.45	
700cm	17.35	8.05	37.48	98.10	7.43	
750cm	17.36	8.04	37.45	98.00	7.42	
Bottom	17.37	8.04	37.47	97.40	7.37	

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	15.30					
010cm	16.99	7.89	38.12	100.00	7.60	4.00
050cm	16.99	7.90	38.13	100.00	7.59	
100cm	16.99	7.91	38.12	100.10	7.61	
150cm	16.98	7.92	38.12	99.90	7.59	
200cm	16.98	7.93	38.13	100.00	7.59	
250cm	16.99	7.93	38.13	99.90	7.59	
300cm	16.98	7.93	38.14	99.90	7.59	
350cm	16.99	7.93	38.14	100.00	7.60	
400cm	17.00	7.94	38.14	99.90	7.59	
450cm	17.00	7.94	38.15	99.80	7.58	
500cm	17.01	7.95	38.15	99.70	7.57	
550cm	17.02	7.96	38.14	99.60	7.56	
600cm	17.04	7.96	38.17	99.50	7.55	
650cm	17.05	7.97	38.15	99.50	7.54	
700cm	17.07	7.98	38.18	99.20	7.52	
750cm	17.07	7.99	38.17	99.10	7.51	
800cm	17.07	8.00	38.13	98.90	7.50	
850cm	17.01	8.01	38.15	98.40	7.47	
900cm	17.00	8.01	38.22	98.20	7.45	
950cm	18.34	8.02	39.37	96.40	7.09	
Bottom	18.41	8.01	39.39	95.30	6.99	

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	17.10					
010cm	19.19	7.99	37.21	117.80	8.63	3.50
050cm	19.32	7.99	37.35	118.00	8.62	
100cm	19.22	7.99	37.36	118.40	8.67	
150cm	19.27	7.99	37.33	119.10	8.71	
200cm	19.16	7.99	37.36	119.70	8.76	
250cm	19.22	7.98	37.41	119.80	8.77	
300cm	19.19	7.99	37.33	120.00	8.79	
350cm	19.06	7.99	37.37	119.70	8.79	
400cm	18.91	7.99	37.27	119.10	8.77	
450cm	18.62	8.00	37.40	115.10	8.51	
500cm	18.46	8.00	37.12	110.30	8.20	
550cm	17.51	8.00	37.57	98.60	7.44	
Bottom	17.50	7.99	37.56	94.60	7.14	

Eraring Ash Dam Effluent Quality Monitoring

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	0.07	ug/L	-	06/06/2013
Copper	3.8	ug/L	-	06/06/2013
Iron	3.0	ug/L	-	06/06/2013
Lead	0.10	ug/L	-	06/06/2013
Nitrite and Nitrate as N	278	ug/L	-	06/06/2013
Phosphorus Reactive as P - Total	484	ug/L	-	06/06/2013
Phosphorus as P - Total	356	ug/L	-	06/06/2013
Selenium	13.9	ug/L	-	06/06/2013
Suspended Solids (SS)	5.0	mg/L	50.0	06/06/2013
Zinc	11.0	ug/L	-	06/06/2013
pH	8.9		9.5	06/06/2013

Eraring Cooling Water Inlet Canal

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	-	06/06/2013
Iron	5.0	ug/L	-	06/06/2013
Selenium	1.00	ug/L	-	06/06/2013
Temperature - Monthly Ave	16.2	degC	35	June 2013
Temperature - Monthly Max	18.0	degC	35	June 2013
Temperature - Monthly Min	14.5	degC	35	June 2013

Eraring Cooling Water Outlet Canal

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>
Cooling Water Volumetric Flow - Monthly Max	7,484	ML/day	11,000	June 2013
Copper	2.0	ug/L	5.0	06/06/2013
Daily Discharge From Ash Dam - Monthly Max	16.0	ML/day	150	June 2013
Iron	27	ug/L	300.0	06/06/2013
Monthly Discharge From Ash Dam	395	ML	-	June 2013
Selenium	1.00	ug/L	2.00	06/06/2013
Temperature - Monthly Ave	22.6	degC	35	June 2013
Temperature - Monthly Max	27.3	degC	35	June 2013
Temperature - Monthly Min	18.3	degC	35	June 2013

Emergency Discharge - Toe Drain Pond

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	2.0	ug/L	-	06/06/2013
Phosphorus as P - Total	23.0	ug/L	-	06/06/2013
pH	7.2		-	06/06/2013

