



## 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

February 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 - Feb	173	197	156	12	17	9	186	204	175
2 - Feb	179	216	157	12	16	9	179	192	164
3 - Feb	181	208	120	13	17	8	178	190	154
4 - Feb	147	188	116	11	17	8	210	259	180
5 - Feb	125	133	117	10	14	8	227	260	206
6 - Feb	145	160	128	14	18	10	203	220	192
7 - Feb	147	170	117	15	22	12	228	257	192
8 - Feb	143	177	112	13	18	10	230	247	216
9 - Feb	144	167	120	12	17	9	230	255	211
10 - Feb	175	216	140	14	18	11	238	269	218
11 - Feb	172	198	145	14	19	9	252	274	221
12 - Feb	171	200	131	13	17	9	236	252	222
13 - Feb	173	209	128	13	17	9	233	249	219
14 - Feb	169	196	140	14	18	10	234	252	190
15 - Feb	183	206	162	12	18	8	212	231	186
16 - Feb	190	208	170	12	18	8	210	231	196
17 - Feb	191	213	170	14	18	10	233	259	217
18 - Feb	186	208	161	15	19	11	239	258	227
19 - Feb	187	237	147	14	18	11	258	292	222
20 - Feb	171	186	152	12	16	9	219	228	208
21 - Feb	155	182	137	13	18	10	231	241	220
22 - Feb	182	202	160	12	19	9	220	245	199
23 - Feb	179	196	168	14	20	9	233	263	205
24 - Feb	178	224	153	15	21	10	206	240	190
25 - Feb	163	194	141	13	19	9	236	256	223
26 - Feb	158	188	135	12	19	9	224	237	211
27 - Feb	160	188	141	13	19	9	224	241	207
28 - Feb	165	192	142	13	21	10	239	262	204

## 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 - Feb	142	210	110	12	18	6	220	240	200
2 - Feb	184	223	133	12	18	7	205	214	194
3 - Feb	179	220	134	12	18	6	201	219	185
4 - Feb	145	174	110	13	18	8	232	263	210
5 - Feb	140	153	119	13	18	10	247	267	223
6 - Feb	141	150	116	12	17	8	207	235	188
7 - Feb	151	185	102	13	20	8	260	305	223
8 - Feb	115	145	100	12	18	7	230	242	212
9 - Feb	124	159	101	11	18	6	223	243	202
10 - Feb	149	185	101	11	18	6	217	238	203
11 - Feb	143	175	109	12	19	7	231	251	214
12 - Feb	166	204	121	14	19	8	226	247	207
13 - Feb	163	223	114	14	20	9	233	242	217
14 - Feb	153	197	120	13	21	8	240	257	230
15 - Feb	145	173	118	10	16	6	227	245	205
16 - Feb	145	170	124	10	16	7	214	245	183
17 - Feb	123	152	111	11	17	7	219	238	198
18 - Feb	151	190	106	10	15	6	221	241	200
19 - Feb	180	239	113	11	17	6	235	267	211
20 - Feb	143	169	110	10	16	7	218	247	204
21 - Feb	149	180	112	12	17	7	226	243	208
22 - Feb	175	182	166	14	18	12	222	262	203
23 - Feb	185	201	171	14	20	9	266	318	211
24 - Feb	174	201	155	11	18	6	211	289	173
25 - Feb	165	220	133	8	19	2	248	294	219
26 - Feb	148	177	115	6	12	3	229	260	213
27 - Feb	160	200	115	6	11	3	234	255	212
28 - Feb	141	165	111	8	13	4	230	241	223

## Unit 3 Boiler Continuous Emission Monitoring Summary

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

- 22nd to the 25th, The SOX oxygen monitor failed. No results available.

	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 - Feb	144	184	126	5	6	4	188	206	153
2 - Feb	136	157	111	5	7	3	167	181	122
3 - Feb	170	202	126	4	5	2	169	192	103
4 - Feb	143	155	121	6	6	4	192	220	163
5 - Feb	130	142	106	5	7	5	201	229	182
6 - Feb	135	167	110	5	7	4	179	203	136
7 - Feb	145	168	110	5	7	3	221	252	138
8 - Feb	133	159	120	5	7	3	234	259	199
9 - Feb	136	151	121	5	7	2	221	253	200
10 - Feb	153	189	120	4	5	4	237	262	205
11 - Feb	170	190	148	3	3	3	245	268	220
12 - Feb	164	188	126	4	4	4	241	260	227
13 - Feb	152	190	109	5	8	4	218	249	221
14 - Feb	171	202	143	4	5	3	237	256	196
15 - Feb	162	176	144	4	4	4	220	250	203
16 - Feb	165	193	141	4	4	4	210	248	165
17 - Feb	166	196	145	4	4	4	235	254	222
18 - Feb	154	175	131	3	3	3	224	244	204
19 - Feb	177	212	153	4	4	3	242	266	193
20 - Feb	160	172	142	10	16	8	237	264	182
21 - Feb	162	188	142	10	13	8	266	289	246
22 - Feb	163	181	136	9	12	7	0	0	0
23 - Feb	180	206	144	9	10	8	0	0	0
24 - Feb	139	163	127	9	13	8	0	0	0
25 - Feb	190	228	138	10	14	8	0	0	0
26 - Feb	182	370	125	9	15	7	300	345	195
27 - Feb	150	170	133	9	12	7	297	318	276
28 - Feb	160	178	128	10	13	8	287	313	247

## Unit 4 Boiler Continuous Emission Monitoring Summary

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

- 16th and 17th had a power loss on the oxygen monitors causing no results for NOx and SOx

	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 - Feb	196	215	179	4	7	3	175	193	160
2 - Feb	211	239	187	4	8	2	161	172	149
3 - Feb	203	240	162	3	6	3	167	186	143
4 - Feb	202	238	169	4	7	3	173	191	150
5 - Feb	233	270	212	5	7	4	166	185	148
6 - Feb	214	259	169	5	8	3	170	199	153
7 - Feb	185	200	162	4	8	2	214	242	185
8 - Feb	172	211	148	4	8	3	193	213	178
9 - Feb	187	212	173	4	7	3	192	216	170
10 - Feb	197	264	172	4	7	3	162	229	173
11 - Feb	183	216	158	4	7	2	188	217	136
12 - Feb	184	232	149	3	5	3	191	219	165
13 - Feb	179	233	138	3	5	2	195	214	173
14 - Feb	175	230	140	5	6	4	196	216	178
15 - Feb	151	163	138	5	7	4	173	177	168
16 - Feb	0	0	0	5	6	4	0	0	0
17 - Feb	0	0	0	4	5	3	0	0	0
18 - Feb	168	183	144	4	6	4	195	208	108
19 - Feb	184	232	145	4	4	4	209	232	180
20 - Feb	154	166	133	4	6	3	207	231	178
21 - Feb	165	180	147	3	4	2	198	203	189
22 - Feb	166	182	156	4	6	4	201	225	181
23 - Feb	176	192	159	5	7	4	219	250	164
24 - Feb	179	196	168	4	5	3	181	239	153
25 - Feb	166	178	150	3	3	2	217	236	208
26 - Feb	153	172	135	4	4	3	199	212	192
27 - Feb	149	167	129	3	5	3	199	223	187
28 - Feb	174	195	158	5	7	4	160	174	147

## 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	0.0012	mg/m3	0.20	23/02/2014
Carbon Dioxide (Wet)	10.2	%	-	23/02/2014
Carbon Monoxide	2.9	mg/m3	-	23/02/2014
Chlorine	0.020	mg/m3	300	23/02/2014
Copper	0.0013	mg/m3	-	23/02/2014
Dry Gas Density	0.93	kg/m3	-	23/02/2014
Fluoride As HF - Total	6.4	mg/m3	50	23/02/2014
Hazardous Substances (Metals) - Total	0.07	mg/m3	1.00	23/02/2014
Hydrogen Chloride	3.1	mg/m3	100.0	23/02/2014
Mercury	0.0011	mg/m3	0.200	23/02/2014
Moisture	7.1	%	-	23/02/2014
Particulates - Total	7.3	mg/m3	50	23/02/2014
Stack Gas Molecular Weight	29	kg/k-mole	-	23/02/2014
Temperature	109.0	degC	-	23/02/2014
Velocity	11.8	m/sec	-	23/02/2014
Volatile Organic Compounds (VOC) - Total	4.7	mg/m3	-	23/02/2014
Volumetric Flow Rate (Dry At STP)	283	m3/sec	-	23/02/2014



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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	0.0011	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



## Unit 4 Boiler Emission Test Results

*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

## 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
<b>U1</b>	0.90	0.20	1.10
<b>U2</b>	0.60	0.20	0.80
<b>U3</b>	0.80	0.30	1.10
<b>U4</b>	0.40	0.10	0.50
<b>U5</b>	0.40	0.10	0.50
<b>U6</b>	0.50	0.10	0.60

## 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
<b>E1</b>	0.20	0.10	0.30
<b>E2</b>	0.60	0.10	0.70
<b>E3</b>	2.00	0.60	2.60
<b>E4</b>	0.50	0.20	0.70
<b>E5</b>	0.60	0.20	0.80
<b>E6</b>	0.50	0.20	0.70

## 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	23.10					
010cm	25.19	8.18	37.14	94.80	6.30	1.80
050cm	25.20	8.18	37.13	94.90	6.31	
100cm	25.19	8.18	37.13	95.00	6.31	
150cm	25.19	8.18	37.14	94.70	6.30	
200cm	25.19	8.18	37.15	95.10	6.32	
250cm	25.19	8.18	37.15	95.10	6.33	
300cm	25.20	8.18	37.15	95.00	6.32	
Bottom	25.19	8.18	37.14	95.10	6.33	

## 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	22.30					
010cm	25.58	8.21	37.14	98.60	6.51	2.00
050cm	25.59	8.21	37.14	98.60	6.52	
100cm	25.60	8.21	37.13	98.60	6.51	
150cm	25.59	8.21	37.14	98.60	6.51	
200cm	25.59	8.21	37.14	98.70	6.52	
250cm	25.59	8.21	37.15	98.80	6.52	
300cm	25.58	8.22	37.14	98.60	6.52	
350cm	25.58	8.20	37.14	98.20	6.49	
400cm	25.58	8.21	37.14	98.40	6.50	
450cm	25.59	8.21	37.14	98.20	6.49	
500cm	25.57	8.21	37.13	98.50	6.51	
550cm	25.58	8.21	37.11	98.30	6.50	
600cm	25.56	8.20	37.12	98.40	6.50	
650cm	25.53	8.20	37.11	97.90	6.47	
700cm	25.51	8.20	37.13	97.80	6.47	
750cm	25.50	8.18	36.59	96.90	6.43	
Bottom	25.53	8.16	36.92	95.50	6.32	

## 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	22.50					
010cm	23.79	8.17	37.04	98.80	6.74	2.50
050cm	23.81	8.17	37.03	99.00	6.74	
100cm	23.81	8.18	37.03	98.90	6.74	
150cm	23.81	8.19	37.04	98.90	6.74	
200cm	23.81	8.20	37.04	98.80	6.73	
250cm	23.82	8.19	37.04	98.80	6.73	
300cm	23.80	8.19	37.01	98.90	6.74	
350cm	23.78	8.20	37.02	98.60	6.72	
400cm	23.76	8.20	36.99	98.40	6.71	
450cm	23.69	8.20	36.99	98.10	6.70	
500cm	23.65	8.20	36.98	98.00	6.70	
550cm	23.54	8.20	36.92	97.60	6.68	
600cm	23.54	8.20	36.91	97.40	6.67	
650cm	23.37	8.20	36.97	97.40	6.69	
700cm	23.34	8.20	36.92	96.90	6.66	
750cm	23.29	8.20	36.93	96.80	6.66	
800cm	23.25	8.20	36.95	96.80	6.66	
850cm	23.22	8.21	36.92	97.00	6.68	
900cm	22.59	8.20	36.11	97.90	6.85	
950cm	21.26	8.21	38.09	91.90	6.51	
Bottom	21.14	8.15	36.77	74.00	5.30	

## 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	25.10					
010cm	27.03	8.18	37.27	108.90	7.02	1.50
050cm	27.03	8.18	37.29	109.00	7.02	
100cm	27.04	8.18	37.27	109.10	7.03	
150cm	27.04	8.18	37.28	109.20	7.03	
200cm	27.02	8.18	37.27	109.20	7.04	
250cm	27.00	8.18	37.28	109.20	7.04	
300cm	26.95	8.18	37.24	109.00	7.03	
350cm	26.94	8.18	37.26	108.90	7.03	
400cm	26.92	8.18	37.24	108.90	7.03	
450cm	26.78	8.18	37.24	108.80	7.04	
500cm	26.79	8.18	37.22	108.50	7.02	
550cm	26.69	8.15	36.97	107.90	7.01	
Bottom	26.68	7.95	36.93	98.50	6.40	

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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	-	04/02/2014
Iron	5.0	ug/L	-	04/02/2014
Lead	0.20	ug/L	-	04/02/2014
Manganese	12.8	ug/L	-	04/02/2014
Nitrite and Nitrate as N	27	ug/L	-	04/02/2014
Phosphorus Reactive as P - Total	256	ug/L	-	04/02/2014
Phosphorus as P - Total	284	ug/L	-	04/02/2014
Selenium	10.0	ug/L	-	04/02/2014
Suspended Solids (SS)	5.0	mg/L	-	04/02/2014
Zinc	5.0	ug/L	-	04/02/2014
pH	7.8	-	-	04/02/2014

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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	-	04/02/2014
Iron	5.0	ug/L	-	04/02/2014
Selenium	1.00	ug/L	-	04/02/2014
Temperature - Average	26.2	deg C	-	Feb 2014
Temperature - Minimum	24.1	deg C	-	Feb 2014
Temperature - Maximum	28.4	deg C	-	Feb 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	1.60	ug/L	5	04/02/2014
Iron	6.0	ug/L	300	04/02/2014
Selenium	1.00	ug/L	2	04/02/2014
Temperature - Average	32.0	deg C	35	Feb 2014
Temperature - Minimum	27.4	deg C	35	Feb 2014
Temperature - Maximum	35.8	deg C	35	Feb 2014
Maximum Daily Discharge from Ash Dam	20.5	ML	150000	Feb 2014
Monthly Discharge from Ash Dam	37	ML	-	Feb 2014

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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	75	ug/L	-	04/02/2014
Phosphorus as P - Total	387	ug/L	-	04/02/2014
pH	7.0	-	-	04/02/2014