



## Eraring Power Station - EPA Licence 1429

Rocky Point Rd, Morisset NSW 2264

## Coal Unloader - EPA Licence 4297

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

## Environmental Monitoring Data

December 2015



## 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 - Dec	142	174	106	8	16	4	164	170	154
2 - Dec	129	154	102	11	16	6	166	180	137
3 - Dec	126	135	112	12	17	10	175	185	158
4 - Dec	116	126	108	12	18	9	180	196	168
5 - Dec	123	135	102	12	16	9	178	195	162
6 - Dec	114	124	105	10	15	7	161	165	150
7 - Dec	118	129	110	10	14	8	160	177	151
8 - Dec	110	122	103	10	14	7	150	169	134
9 - Dec	145	166	128	9	14	5	148	168	132
10 - Dec	142	164	121	10	14	7	142	164	123
11 - Dec	138	164	105	8	15	4	158	169	142
12 - Dec	128	144	105	11	15	9	154	160	139
13 - Dec	147	173	128	11	16	9	145	163	126
14 - Dec	162	187	141	9	14	6	138	149	120
15 - Dec	151	182	129	9	14	5	170	205	113
16 - Dec	140	165	113	10	21	7	218	233	194
17 - Dec	144	163	119	9	13	7	207	230	193
18 - Dec	136	150	124	9	13	6	201	211	189
19 - Dec	136	152	107	9	14	5	179	201	156
20 - Dec	141	156	120	9	14	4	177	197	151
21 - Dec	148	175	133	9	14	6	200	232	161
22 - Dec	161	188	129	15	28	11	153	164	143
23 - Dec	157	199	126	12	15	8	159	171	149
24 - Dec	153	169	130	10	14	8	151	153	144
25 - Dec	125	133	116	12	15	10	151	154	142
26 - Dec	128	163	110	11	14	8	141	148	132
27 - Dec	134	148	125	12	16	10	145	151	131
28 - Dec	130	141	116	13	17	11	144	150	135
29 - Dec	133	144	120	12	16	10	139	147	125
30 - Dec	136	147	123	10	16	8	142	149	131
31 - Dec	141	152	129	10	14	7	147	153	140

## 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 - Dec	145	178	108	10	16	7	164	192	116
2 - Dec	138	162	123	13	15	11	175	204	120
3 - Dec	143	163	128	13	16	11	204	218	173
4 - Dec	140	170	122	13	17	11	228	238	207
5 - Dec	140	173	125	15	18	11	210	247	189
6 - Dec	142	163	123	13	17	11	212	239	177
7 - Dec	149	177	131	13	17	9	220	245	204
8 - Dec	160	200	131	12	16	8	206	236	191
9 - Dec	163	194	135	11	14	7	201	215	185
10 - Dec	145	171	108	11	14	8	199	215	178
11 - Dec	135	155	110	11	18	7	222	238	204
12 - Dec	139	165	107	13	15	11	214	232	189
13 - Dec	154	175	133	12	16	8	207	231	194
14 - Dec	154	184	123	10	14	6	213	225	197
15 - Dec	165	213	124	10	15	6	206	231	165
16 - Dec	164	189	133	10	14	8	196	242	161
17 - Dec	156	185	125	10	14	8	208	221	187
18 - Dec	142	159	116	11	14	8	204	230	181
19 - Dec	148	182	118	11	16	8	194	222	166
20 - Dec	146	182	114	11	15	7	182	200	156
21 - Dec	145	179	120	11	14	8	217	251	171
22 - Dec	139	184	108	14	19	10	161	185	139
23 - Dec	157	197	116	12	17	8	163	174	155
24 - Dec	145	161	120	13	16	12	160	170	153
25 - Dec	122	128	116	14	17	12	160	165	145
26 - Dec	127	148	116	13	16	11	152	166	144
27 - Dec	123	140	115	14	17	13	159	165	142
28 - Dec	126	151	117	15	18	14	160	166	150
29 - Dec	121	128	113	13	16	12	153	160	139
30 - Dec	144	178	109	13	17	10	151	157	136
31 - Dec	176	200	137	12	16	8	157	165	150

## Unit 3 Boiler Continuous Emission Monitoring Summary

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

- - Nox Probe failure 1st - 2nd,
- Sox instrument out of service 1st - 9th

	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 - Dec	0	0	0	24	30	19	0	0	0
2 - Dec	0	0	0	26	33	21	0	0	0
3 - Dec	161	191	140	24	33	20	0	0	0
4 - Dec	150	178	129	28	33	19	0	0	0
5 - Dec	133	144	118	25	29	22	0	0	0
6 - Dec	161	200	140	25	37	19	0	0	0
7 - Dec	149	159	137	17	26	9	0	0	0
8 - Dec	150	166	120	10	14	6	0	0	0
9 - Dec	147	167	129	9	13	6	0	0	0
10 - Dec	142	165	124	11	14	7	178	192	123
11 - Dec	142	159	124	9	14	6	200	217	121
12 - Dec	135	144	119	11	14	9	186	203	129
13 - Dec	134	152	118	10	14	7	181	194	104
14 - Dec	139	149	127	9	13	5	190	204	175
15 - Dec	140	156	121	9	13	6	183	199	167
16 - Dec	149	171	120	12	15	9	187	226	121
17 - Dec	158	177	124	10	15	6	199	225	111
18 - Dec	150	173	126	10	14	7	199	215	115
19 - Dec	153	175	124	11	16	8	174	207	103
20 - Dec	156	180	125	10	13	8	165	185	116
21 - Dec	158	181	127	10	13	6	193	217	112
22 - Dec	151	185	130	13	19	9	139	169	102
23 - Dec	165	190	144	11	15	8	110	115	104
24 - Dec	187	211	152	15	22	9	230	236	220
25 - Dec	162	191	133	17	20	16	197	235	127
26 - Dec	155	190	136	17	20	15	157	171	144
27 - Dec	160	176	153	17	20	16	171	181	162
28 - Dec	161	183	154	18	20	16	169	179	136
29 - Dec	163	181	154	18	21	16	157	179	150
30 - Dec	175	214	135	16	22	13	150	155	142
31 - Dec	172	200	143	15	19	12	146	159	113

## Unit 4 Boiler Continuous Emission Monitoring Summary

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

- Power failure on Nox and Sox instruments 1st - 2nd

Unit out of service 16th

	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 - Dec	0	0	0	7	12	5	0	0	0
2 - Dec	0	0	0	5	8	3	0	0	0
3 - Dec	108	115	103	6	10	4	175	193	134
4 - Dec	119	145	105	6	10	5	170	195	146
5 - Dec	127	140	114	6	8	5	167	186	149
6 - Dec	119	146	108	6	8	5	177	198	162
7 - Dec	111	119	102	6	10	5	188	198	171
8 - Dec	114	133	101	6	9	5	178	200	162
9 - Dec	120	140	104	6	9	5	167	191	147
10 - Dec	122	142	106	6	9	5	169	185	146
11 - Dec	119	142	100	6	9	4	185	201	167
12 - Dec	110	120	101	6	8	5	182	203	146
13 - Dec	125	153	101	6	9	5	178	187	168
14 - Dec	135	157	110	6	9	5	171	187	156
15 - Dec	114	137	104	6	9	5	177	188	164
16 - Dec	0	0	0	0	0	0	0	0	0
17 - Dec	130	155	118	6	10	5	162	176	139
18 - Dec	130	154	107	6	11	5	163	179	151
19 - Dec	122	135	108	7	10	4	147	169	104
20 - Dec	129	135	123	6	8	6	136	159	122
21 - Dec	136	165	121	6	8	5	158	177	128
22 - Dec	136	164	124	6	11	4	130	141	116
23 - Dec	150	173	121	6	8	5	136	141	131
24 - Dec	151	163	140	6	10	5	128	132	124
25 - Dec	130	142	112	6	11	5	125	128	123
26 - Dec	141	169	124	6	10	4	112	125	101
27 - Dec	140	144	135	5	8	4	121	127	115
28 - Dec	137	148	128	5	9	5	124	129	116
29 - Dec	131	144	121	6	10	5	120	126	113
30 - Dec	138	166	119	6	10	5	120	128	113
31 - Dec	134	158	111	7	11	5	127	130	123

---

## 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	0.0019	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



---

## 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	0.00010	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

---

### 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	0.0005	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



---

## 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	0.0015	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

---

---

## 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>	0.40	0.20	0.60
<b>U2</b>	0.50	0.10	0.60
<b>U3</b>	1.50	1.20	2.70
<b>U4</b>	0.30	1.10	1.40
<b>U5</b>	0.50	0.10	0.60
<b>U6</b>	1.10	1.10	2.20

---

---

## 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>	0.60	0.60	1.20
<b>E2</b>	0.70	0.10	0.80
<b>E3</b>	0.90	0.40	1.30
<b>E4</b>	0.80	0.40	1.20
<b>E5</b>	1.10	0.40	1.50
<b>E6</b>	0.40	0.10	0.50

## 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	27.62					
010cm	26.54	8.29	36.00	105.00	6.72	2.25
050cm	26.03	8.30	36.00	108.10	6.92	
100cm	25.75	8.30	36.00	111.10	7.21	
150cm	25.58	8.29	36.10	117.70	7.62	
200cm	25.53	8.29	36.10	126.40	8.22	
250cm	25.54	8.30	36.10	115.30	7.48	
Bottom	25.50	8.31	36.10	85.60	5.56	

## 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	27.63					
010cm	27.22	8.40	35.40	148.10	9.46	2.75
050cm	26.51	8.37	36.00	114.90	7.36	
100cm	25.77	8.36	36.00	103.90	6.78	
150cm	25.01	8.35	36.00	106.00	6.95	
200cm	24.70	8.35	36.10	98.40	6.45	
250cm	24.54	8.36	36.20	95.00	6.24	
300cm	24.43	8.36	36.20	93.00	6.17	
350cm	24.36	8.38	36.20	94.60	6.24	
400cm	24.28	8.39	36.20	94.50	6.17	
450cm	24.30	8.39	36.20	87.00	5.73	
500cm	24.13	8.40	36.30	89.00	5.94	
550cm	24.04	8.41	36.30	89.40	5.98	
600cm	23.96	8.41	36.30	90.60	6.02	
650cm	23.85	8.40	36.40	92.10	6.16	
700cm	23.86	8.39	36.30	79.20	5.27	
Bottom	23.86	8.39	36.30	81.20	5.44	

## 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	20.44					
010cm	22.51	8.35	35.80	112.00	7.64	2.75
050cm	22.62	8.35	36.10	119.70	8.15	
100cm	22.61	8.33	36.40	126.40	8.59	
150cm	22.63	8.35	36.30	128.00	8.70	
200cm	22.62	8.36	36.30	136.30	9.27	
250cm	22.63	8.36	36.30	127.30	8.45	
300cm	22.60	8.38	36.30	104.30	7.07	
350cm	22.60	8.39	36.50	106.30	7.22	
400cm	22.59	8.39	36.50	105.30	7.15	
450cm	22.53	8.39	36.50	104.00	7.08	
500cm	22.52	8.39	36.50	105.10	7.07	
550cm	22.37	8.41	36.50	107.90	7.35	
600cm	22.28	8.41	36.40	106.30	7.25	
650cm	22.12	8.41	36.40	106.90	7.32	
700cm	21.77	8.41	36.30	105.60	7.28	
750cm	21.32	8.40	36.30	102.50	7.12	
800cm	21.17	8.40	36.30	102.20	7.12	
850cm	20.70	8.40	36.50	98.10	6.90	
900cm	19.89	8.37	36.40	97.00	6.88	
Bottom	19.69	8.35	36.40	93.10	6.65	

## 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	23.37					
010cm	27.93	8.28	36.20	100.40	6.25	2.25
050cm	27.89	8.28	36.10	110.60	6.93	
100cm	27.60	8.30	36.00	119.90	7.56	
150cm	27.37	8.30	36.00	111.30	7.04	
200cm	27.06	8.30	36.00	109.10	6.60	
250cm	26.67	8.30	36.00	105.20	6.74	
300cm	26.46	8.30	36.00	102.10	6.64	
350cm	26.37	8.29	36.00	106.80	6.88	
400cm	26.30	8.29	36.00	98.40	6.48	
450cm	25.04	8.33	35.90	93.40	6.10	
500cm	24.60	8.33	35.90	92.10	5.95	
550cm	24.09	8.33	35.90	87.60	5.84	
Bottom	23.94	8.28	36.30	86.80	5.77	

---

---

## 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	0.20	ug/L	-	03/12/2015
Copper	2.0	ug/L	-	03/12/2015
Iron	14.0	ug/L	-	03/12/2015
Lead	0.20	ug/L	-	03/12/2015
Manganese	24.0	ug/L	-	03/12/2015
Nitrite and Nitrate as N	154	ug/L	-	03/12/2015
Phosphorus Reactive as P - Total	200	ug/L	-	03/12/2015
Phosphorus as P - Total	219	ug/L	-	03/12/2015
Selenium	23.0	ug/L	-	03/12/2015
Suspended Solids (SS)	7.0	mg/L	-	03/12/2015
Zinc	5.0	ug/L	-	03/12/2015
pH	9.3	-	-	03/12/2015

---

---

## 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	2.00	ug/L	-	03/12/2015
Iron	8.0	ug/L	-	03/12/2015
Selenium	1.00	ug/L	-	03/12/2015
Temperature - Average	26.0	deg C	-	Dec 2015
Temperature - Minimum	23.0	deg C	-	Dec 2015
Temperature - Maximum	29.1	deg C	-	Dec 2015

---

---

## Eraring Cooling Water Outlet Canal

---

*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	3.00	ug/L	5	03/12/2015
Iron	14.0	ug/L	300	03/12/2015
Selenium	1.00	ug/L	2	03/12/2015
Temperature - Average	32.8	deg C	35	Dec 2015
Temperature - Minimum	27.5	deg C	35	Dec 2015
Temperature - Maximum	35.9	deg C	35	Dec 2015
Maximum Daily Discharge from Ash Dam	17.8	ML	150	Dec 2015
Monthly Discharge from Ash Dam	226	ML	-	Dec 2015

---

---

## 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	181	ug/L	-	03/12/2015
Phosphorus as P - Total	39	ug/L	-	03/12/2015
pH	6.8	-	-	03/12/2015