

Monthly Data Summary

Environmental Protection Licence 2122

AGL Macquarie - Liddell Power Station

Monitoring Period

JUNE 2022



EPA Identification Number 3

Air emission monitoring - Combined air emissions from boiler 1 via Points 7 and 8 to Point 1

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample values	Highest sample value	100th percentile concentration limits
Nitrogen Oxides	mg/m ³	Continuous	99.86%	525.3	634.0	871.1	1500 mg/m ³
Sulfur Dioxide	mg/m ³	Continuous	99.86%	796.6	1037.0	1279.1	1700 mg/m ³

In addition to the 100th percentile concentration limits, 99th percentile concentration limits of 1100 mg/m³ and 1400 mg/m³ apply to Nitrogen oxides and Sulfur dioxide, respectively.

Pollutant	Unit of measure	No. of samples required by licence	Date of sample	Most recent result	100th percentile concentration limits
Cadmium	mg/m ³	Six monthly	24/03/2022	0.0001	0.2 mg/m ³
Chlorine	mg/m ³	Six monthly	24/03/2022	0.007	20 mg/m ³
Fluorine	mg/m ³	Six monthly	24/03/2022	10.0	20 mg/m ³
Hydrogen chloride	mg/m ³	Six monthly	24/03/2022	15.0	50 mg/m ³
Mercury	mg/m ³	Six monthly	24/03/2022	0.0002	0.05 mg/m ³
Solid Particles	mg/m ³	Quarterly	4/05/2022	7.6	50 mg/m ³
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m ³	Six monthly	24/03/2022	1.500	100 mg/m ³
Type 1 and Type 2 substances in aggregate	mg/m ³	Six monthly	24/03/2022	0.013	0.75 mg/m ³
Volatile organic compounds as n-propane equivalent	mg/m ³	Six monthly	24/03/2022	0.025	10 mg/m ³

Measured concentrations from the boiler's A and B ducts are used to calculate the concentrations from the boiler. Some of the duct concentrations for some substances may be reported as less than the relevant Limit of Detection, in which case the calculation uses 50% of the Limit of Detection value, in accordance with LBL Protocol rules.

The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

EPA Identification Number 4

Air emission monitoring - Combined air emissions from boiler 2 via Points 9 and 10 to Point 1

Pollutant	Unit of measure	No. of samples required by licence	Dat a capture %	Lowest sample value	Mean of sample	Highest sample value	100th percentile concentration limits
Nitrogen Oxides	mg/m ³	Continuous	100.00%	218.1	327.4	453.6	1500 mg/m ³
Suflur Dioxide	mg/m ³	Continuous	100.00%	676.9	883.2	1147.4	1700 mg/m ³

In addition to the 100th percentile concentration limits, 99th percentile concentration limits of 1100 mg/m³ and 1400 mg/m³ apply to Nitrogen oxides and Sulfur dioxide, respectively .

Pollutant	Unit of measure	No. of samples required by licence	Date of sample	Most recent result	100th percentile concentration limits
Cadmium	mg/m ³	Six monthly	3/02/2022	0.0002	0.2 mg/m ³
Chlorine	mg/m ³	Six monthly	3/02/2022	0.014	20 mg/m ³
Fluorine	mg/m ³	Six monthly	3/02/2022	12.0	20 mg/m ³
Hydrogen chloride	mg/m ³	Six monthly	3/02/2022	16.0	50 mg/m ³
Mercury	mg/m ³	Six monthly	3/02/2022	0.0023	0.05 mg/m ³
Solid Particles	mg/m ³	Quarterly	3/05/2022	29.3	50 mg/m ³
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m ³	Six monthly	3/02/2022	0.650	100 mg/m ³
Type 1 and Type 2 substances in aggregate	mg/m ³	Six monthly	3/02/2022	0.016	0.75 mg/m ³
Volatile organic compounds as n-propane equivalent	mg/m ³	Six monthly	3/02/2022	0.170	10 mg/m ³

Measured concentrations from the boiler's A and B ducts are used to calculate the concentrations from the boiler. Some of the duct concentrations for some substances may be reported as less than the relevant Limit of Detetction, in which case the calculation uses 50% of the Limit of Detection value, in accordance with LBL Protocol rules.

The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

EPA Identification Number 5

Air emission monitoring - Combined air emissions from boiler 3 via Points 11 and 12 to Point 2

Unit retired from service April 22

EPA Identification Number 6

Air emission monitoring - Combined air emissions from boiler 4 via Points 13 and 14 to Point 2

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value	100th percentile concentration limits
Nitrogen Oxides	mg/m ³	Continuous					1500 mg/m ³
Sulfur Dioxide	mg/m ³	Continuous					1700 mg/m ³

Unit out of service

Pollutant	Unit of measure	No. of samples required by licence	Date of sample	Most recent result	100th percentile concentration limits
Cadmium	mg/m ³	Six monthly	1/02/2022	0.0003	0.2 mg/m ³
Chlorine	mg/m ³	Six monthly	1/02/2022	0.009	20 mg/m ³
Fluorine	mg/m ³	Six monthly	1/02/2022	9.1	20 mg/m ³
Hydrogen chloride	mg/m ³	Six monthly	1/02/2022	13.0	50 mg/m ³
Mercury	mg/m ³	Six monthly	1/02/2022	0.0035	0.05 mg/m ³
Solid Particles	mg/m ³	Quarterly	3/05/2022	4.6	50 mg/m ³
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m ³	Six monthly	1/02/2022	1.100	100 mg/m ³
Type 1 and Type 2 substances in aggregate	mg/m ³	Six monthly	1/02/2022	0.015	0.75 mg/m ³
Volatile organic compounds as n-propane equivalent	mg/m ³	Six monthly	1/02/2022	0.860	10 mg/m ³

Measured concentrations from the boiler's A and B ducts are used to calculate the concentrations from the boiler. Some of the duct concentrations for some substances may be reported as less than the relevant Limit of Detection, in which case the calculation uses 50% of the Limit of Detection value, in accordance with LBL Protocol rules.

The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

EPA Identification Number 7

Air emission monitoring - Boiler number 1 exhaust - duct A

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value
Nitrogen Oxides	mg/m ³	Continuous	99.9%	525.3	634.0	871.1
Sulfur Dioxide	mg/m ³	Continuous	99.9%	796.6	1037.0	1279.1
Flow	cubic metres per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continuous				
Temperature	degrees Celsius	degrees Celsius				

Pollutant	Unit of measure	No. of samples required by licence	# No. of samples collected and analysed	Date of sample	Most recent result
Cadmium	mg/m ³	Six monthly	2	11/03/2021	<0.0003
Chlorine	mg/m ³	Six monthly	2	31/08/2021	0.049
Fluorine	mg/m ³	Six monthly	2	31/08/2021	9.4
Hydrogen chloride	mg/m ³	Six monthly	2	31/08/2021	14.0
Mercury	mg/m ³	Six monthly	2	31/08/2021	0.0006
Solid Particles	mg/m ³	Quarterly	4	4/05/2022	13.0
Sulfuric acid mist and sulfur trioxide (as SO ₃)	mg/m ³	Six monthly	2	19/10/2021	1.100
Type 1 and Type 2 substances in aggregate	mg/m ³	Six monthly	2	31/08/2021	<0.02
Volatile organic compounds as n-propane equivalent	mg/m ³	Six monthly	2	31/08/2021	<0.1
Carbon dioxide	percent	Six monthly	2	19/10/2021	5.7

A less than sign, "<", before a result in the table above indicates that the measured result was less than the relevant Limit of Detection for that test. The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

Number of samples from the duct in the year to date

EPA Identification Number 8

Air emission monitoring - Boiler number 1 exhaust - duct B

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value
Flow	cubic metres per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continuous				
Temperature	degrees Celsius	Continuous				

Pollutant	Unit of measure	No. of samples required by licence	# No. of samples collected and analysed	Date of sample	Most recent result
Cadmium	mg/m3	Six monthly	2	22/10/2019	<0.0002
Mercury	mg/m3	Six monthly	2	31/08/2021	0.0003
Solid Particles	mg/m3	Quarterly	4	4/05/2022	3.2
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2	31/08/2021	<0.014

A less than sign, "<", before a result in the table above indicates that the measured result was less than the relevant Limit of Detection for that test. The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

Number of samples from the duct in the year to date

EPA Identification Number 9

Air emission monitoring - Boiler number 2 exhaust - duct A

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value
Flow	cubic metres per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continuous				
Temperature	degrees Celsius	Continuous				

Pollutant	Unit of measure	No. of samples required by licence	# No. of samples collected and analysed	Date of sample	Most recent result
Cadmium	mg/m3	Six monthly	2	4/04/2019	<0.0002
Mercury	mg/m3	Six monthly	2	1/09/2021	0.0015
Solid Particles	mg/m3	Quarterly	4	15/09/2020	38.0
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2	1/09/2021	<0.017

A less than sign, "<", before a result in the table above indicates that the measured result was less than the relevant Limit of Detection for that test. The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

Number of samples from the duct in the year to date

EPA Identification Number 10

Air emission monitoring - Boiler number 2 exhaust - duct B

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value
Nitrogen Oxides	mg/m3	Continuous	100.0%	218.1	327.4	453.6
Sulfur Dioxide	mg/m3	Continuous	100.0%	676.9	779.3	1147.4
Flow	cubic metres per second	Continuous	-			
Moisture	percent	Continuous	-			
Oxygen	percent	Continuous	-			
Temperature	degrees Celsius	Continuous	-			

Pollutant	Unit of measure	No. of samples required by licence	# No. of samples collected and analysed	Date of sample	Most recent result
Cadmium	mg/m3	Six monthly	2	10/03/2020	<0.0002
Chlorine	mg/m3	Six monthly	2	1/09/2021	0.009
Fluorine	mg/m3	Six monthly	2	1/09/2021	9.7
Hydrogen chloride	mg/m3	Six monthly	2	1/09/2021	13.0
Mercury	mg/m3	Six monthly	2	1/09/2021	0.0004
Solid Particles	mg/m3	Quarterly	4	3/05/2022	19.0
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3	Six monthly	2	2/06/2021	2.300
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2	1/09/2021	<0.019
Volatile organic compounds as n-propane equivalent	mg/m3	Six monthly	2	1/09/2021	<0.09
Carbon dioxide	percent	Six monthly	2	1/09/2021	10.5

A less than sign, "<", before a result in the table above indicates that the measured result was less than the relevant Limit of Detection for that test. The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

Number of samples from the duct in the year to date

EPA Identification Number 11

Air emission monitoring - Boiler number 3 exhaust - duct A

Unit retired from service April 22

EPA Identification Number 12

Air emission monitoring - Boiler number 3 exhaust - duct B

Unit retired from service April 22

EPA Identification Number 13

Air emission monitoring - Boiler number 4 exhaust - duct A

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value
Flow	cubic metres per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continuous				
Temperature	degrees Celsius	Continuous				

Pollutant	Unit of measure	No. of samples required by licence	# No. of samples collected and analysed	Date of sample	Most recent result
Cadmium	mg/m3	Six monthly	2	24/09/2019	<0.0002
Mercury	mg/m3	Six monthly	2	2/09/2021	0.0026
Solid Particles	mg/m3	Quarterly	4	3/05/2022	7.4
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2	2/09/2021	<0.038

A less than sign, "<", before a result in the table above indicates that the measured result was less than the relevant Limit of Detection for that test. The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

Number of samples from the duct in the year to date

EPA Identification Number 14

Air emission monitoring - Boiler number 4 exhaust - duct B

Pollutant	Unit of measure	No. of samples required by licence	Data capture %	Lowest sample value	Mean of sample	Highest sample value
Nitrogen Oxides	mg/m3	Continuous		0.0		0.0
Sulfur Dioxide	mg/m3	Continuous		0.0		0.0
Flow	cubic metres per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continuous				
Temperature	degrees Celsius	Continuous				

Pollutant	Unit of measure	No. of samples required by licence	# No. of samples collected and analysed	Date of sample	Most recent result
Cadmium	mg/m3	Six monthly	2	9/03/2021	<0.0003
Chlorine	mg/m3	Six monthly	2	2/09/2021	0.012
Fluorine	mg/m3	Six monthly	2	11/10/2018	11.0
Hydrogen chloride	mg/m3	Six monthly	2	2/09/2021	15.0
Mercury	mg/m3	Six monthly	2	2/09/2021	0.0013
Solid Particles	mg/m3	Quarterly	4	3/05/2022	1.7
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3	Six monthly	2	1/06/2021	3.200
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2	2/09/2021	<0.032
Volatile organic compounds as n-propane equivalent	mg/m3	Six monthly	2	2/09/2021	<0.09
Carbon dioxide	percent	Six monthly	2	9/03/2021	11.0

A less than sign, "<", before a result in the table above indicates that the measured result was less than the relevant Limit of Detection for that test. The Station's Environment Protection Licence requires that Solid Particles are sampled from the A and B ducts 4 times per year each (once in each quarter). Other substances listed in the table are sampled twice per year. The table includes the most recent results available.

Number of samples from the duct in the year to date

EPA Identification Number 16

Discharge to waters - Discharge quality monitoring

Discharge of cooling water from the cooling water outlet canal to Lake Liddell

Pollutant	Unit of measure	No. of samples required by licence	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ammonia	mg/L	Fortnightly	2	0.02	0.03	0.03
Antimony	mg/L	Fortnightly	2	0.008	0.008	0.008
Arsenic	mg/L	Fortnightly	2	0.006	0.007	0.007
Barium	mg/L	Fortnightly	2	0.08	0.092	0.103
Beryllium	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Boron	mg/L	Fortnightly	2	1.06	1.15	1.24
Cadmium	mg/L	Fortnightly	2	<0.0001	0.0001	<0.0001
Chlorine	mg/L	Fortnightly	2	0.04	0.10	0.15
Chromium (trivalent)	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Chromium (VI) compounds	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Cobalt	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Conductivity	µS/cm	Fortnightly	2	2650	2670	2690
Copper	mg/L	Fortnightly	2	0.003	0.004	0.004
Fluoride	mg/L	Fortnightly	2	1.87	1.90	1.93
Lead	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Manganese	mg/L	Fortnightly	2	0.005	0.01	0.006
Mercury	mg/L	Fortnightly	2	<0.0001	0.0001	<0.0001
Methyl Blue Active Substances	mg/L	Fortnightly	2	<0.1	0.05	<0.1
Molybdenum	mg/L	Fortnightly	2	0.098	0.11	0.126
Nickel	mg/L	Fortnightly	2	0.004	0.00	0.004
Nitrogen	mg/L	Fortnightly	2	0.3	0.45	0.6
Oil and Grease	mg/L	Weekly during any discharge	4	<2	1	<2
pH		Daily during any discharge	31	8.2	8.4	8.5
Phosphorus	mg/L	Fortnightly	2	0.02	0.03	0.04
Selenium	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Sulfur	mg/L	Fortnightly	2	560	650	740
Temperature	°C	Fortnightly	2	18	18.25	18.5
Tin	mg/L	Fortnightly	2	<0.001	0.00	<0.001
Total dissolved solids	mg/L	Fortnightly	2	1840	1875	1910
Total organic carbon	mg/L	Fortnightly	2	8	8.00	8
Total suspended solids	mg/L	Fortnightly	2	<5	2.50	<5
Vanadium	mg/L	Fortnightly	2	0.01	0.01	0.01
Zinc	mg/L	Fortnightly	2	<0.005	0.003	<0.005

EPA Identification Number 17

Discharge to waters - Discharge quality monitoring

Discharge from oil and grit trap weir overflow to Lake Liddell

Pollutant	Unit of measure	No. of samples required by licence	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Ammonia	mg/L	Fortnightly	2	0.03	0.05	0.07
Antimony	mg/L	Fortnightly	2	0.007	0.008	0.008
Arsenic	mg/L	Fortnightly	2	0.005	0.006	0.006
Barium	mg/L	Fortnightly	2	0.077	0.085	0.093
Beryllium	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Boron	mg/L	Fortnightly	2	1.02	1.07	1.12
Cadmium	mg/L	Fortnightly	2	<0.0001	0.0001	<0.0001
Chlorine	mg/L	Fortnightly	2	0.04	0.17	0.3
Chromium (trivalent)	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Chromium (VI) compounds	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Cobalt	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Conductivity	µS/cm	Fortnightly	2	2430	2445	2460
Copper	mg/L	Fortnightly	2	0.004	0.005	0.006
Fluoride	mg/L	Fortnightly	2	1.69	1.73	1.76
Lead	mg/L	Fortnightly	2	<0.001	0.00	<0.001
Manganese	mg/L	Fortnightly	2	0.006	0.01	0.006
Mercury	mg/L	Fortnightly	2	<0.0001	0.00	<0.0001
Methyl Blue Active Substances	mg/L	Fortnightly	2	<0.1	0.05	<0.1
Molybdenum	mg/L	Fortnightly	2	0.093	0.10	0.111
Nickel	mg/L	Fortnightly	2	0.004	0.00	0.004
Nitrogen	mg/L	Fortnightly	2	0.3	0.45	0.6
Oil and Grease	mg/L	Weekly during any discharge	4	<2	1	<2
pH		Daily during any discharge	31	8.1	8.4	8.5
Phosphorus	mg/L	Fortnightly	2	0.04	0.05	0.05
Selenium	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Sulfur	mg/L	Fortnightly	2	500	575	650
Temperature	°C	Fortnightly	2	14.4	15.0	15.6
Tin	mg/L	Fortnightly	2	<0.001	0.00	<0.001
Total dissolved solids	mg/L	Fortnightly	2	1700	1715	1730
Total organic carbon	mg/L	Fortnightly	2	8	8.00	8
Total suspended solids	mg/L	Fortnightly	2	6	6.00	6
Vanadium	mg/L	Fortnightly	2	0.01	0.01	0.01
Zinc	mg/L	Fortnightly	2	0.007	0.008	0.008

EPA Identification Number 18

Discharge to waters - Discharge quality monitoring and Volume monitoring

Discharge from skimmer dam overflow spillway to Lake Liddell

Pollutant	Unit of measure	No. of samples required by licence	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Arsenic	mg/L	Weekly during any discharge	4	0.023	0.029	0.036
Boron	mg/L	Weekly during any discharge	4	1.3	1.49	1.63
Cadmium	mg/L	Weekly during any discharge	4	<0.0001	0.00005	<0.0001
Chromium (trivalent)	mg/L	Weekly during any discharge	4	<0.01	0.005	<0.01
Chromium (VI) compounds	mg/L	Weekly during any discharge	4	<0.01	0.005	<0.01
Copper	mg/L	Weekly during any discharge	4	<0.001	0.001	0.001
Electrical conductivity	µS/cm	Weekly during any discharge	4	2610	2700	2900
Fluoride	mg/L	Weekly during any discharge	4	1.9	1.975	2
Lead	mg/L	Weekly during any discharge	4	<0.001	0.0005	<0.001
Mercury	mg/L	Weekly during any discharge	4	<0.0001	0.00005	<0.0001
Oil and Grease	mg/L	Weekly during any discharge	4	<2	1.25	2
pH		Weekly during any discharge	4	8.2	8.2	8.3
Selenium	mg/L	Weekly during any discharge	4	0.01	0.01	0.02
Total suspended solids	mg/L	Weekly during any discharge	4	<5	6	12
Zinc	mg/L	Weekly during any discharge	4	<0.005	0.003	<0.005
Volume	kilolitres per day	Daily	30	72000	207833	490000

EPA Identification Number 19

Discharge utilisation area - Volume monitoring

Discharge of effluent from the final pond of the sewage treatment system adjacent to utilisation area.

Pollutant	Unit of measure	No. of samples required by licence	No. of samples collected and analysed	Lowest sample value	Mean of sample	Highest sample value
Volume	kilolitres per day	Daily	30	0.29	41.66	140.19

Details of Non-Compliance with Licence Conditions
Licence condition number not complied with
N/A
Summary of particulars of the non-compliance (NO MORE THAN 50 WORDS)
If required, further details on particulars of non-compliance
Date(s) when the non-compliance occurred, if applicable
If relevant, precise location where the non-compliance occurred (attach a map or diagram)
If applicable, registration numbers of any vehicles or the chassis number of any mobile plant involved in the non-compliance
Cause of non-compliance
Action taken or that will be taken to mitigate any adverse effects of the non-compliance
Action taken or that will be taken to prevent a recurrence of the non-compliance