Monthly Data Summary

Environmental Protection Licence 2122

AGL Macquarie - Liddell Power Station

Monitoring Period JULY 2022



EPA Indentifcation 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/m3	Continuous	99.65%	268.7	689.1	832.4	1500 mg/m ³
Suflur Dioxide	mg/m3	Continuous	99.65%	737.3	976.6	1122.9	1700 mg/m ³

In addtion 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/m3	Six monthly	31/08/2021	0.0001	0.2 mg/m ³
Chlorine	mg/m3	Six monthly	31/08/2021	0.049	20 mg/m ³
Fluorine	mg/m3	Six monthly	31/08/2021	9.4	20 mg/m ³
Hydrogen chloride	mg/m3	Six monthly	31/08/2021	14.0	50 mg/m ³
Mercury	mg/m3	Six monthly	31/08/2021	0.0004	0.05 mg/m ³
Solid Particles	mg/m3	Quarterly	31/08/2021	20.0	50 mg/m ³
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3	Six monthly	31/08/2021	1.100	100 mg/m ³
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	31/08/2021	0.009	0.75 mg/m ³
Volatile organic compounds as n-propane equivalent	mg/m3	Six monthly	31/08/2021	0.050	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.

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/m3	Continouus	99.55%	202.9	375.6	534.8	1500 mg/m ³
Suflur Dioxide	mg/m3	Continuous	100.00%	566.8	829.7	951.0	1700 mg/m ³

In addtion 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/m3	Six monthly	1/09/2021	0.0001	0.2 mg/m ³
Chlorine	mg/m3	Six monthly	1/09/2021	0.009	20 mg/m ³
Fluorine	mg/m3	Six monthly	1/09/2021	9.7	20 mg/m ³
Hydrogen chloride	mg/m3	Six monthly	1/09/2021	13.0	50 mg/m ³
Mercury	mg/m3	Six monthly	1/09/2021	0.0010	0.05 mg/m ³
Solid Particles	mg/m3	Quarterly	1/09/2021	19.2	50 mg/m ³
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3	Six monthly	1/09/2021	1.800	100 mg/m ³
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	1/09/2021	0.009	0.75 mg/m ³
Volatile organic compounds as n-propane equivalent	mg/m3	Six monthly	1/09/2021	0.045	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 Indentifcation 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

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	Dat a capture %	Lowest sample value	Mean of sample	Highest sample value	100th percentile concentration limits
Nitrogen Oxides	mg/m3	Continouus	98.3%	366.9	553.0	670.3	1500 mg/m ³
Suflur Dioxide	mg/m3	Continuous	98.3%	835.0	999.7	1162.9	1700 mg/m ³

In addtion 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/m3	Six monthly	2/09/2021	0.0001	0.2 mg/m ³
Chlorine	mg/m3	Six monthly	2/09/2021	0.012	20 mg/m ³
Fluorine	mg/m3	Six monthly	2/09/2021	11.0	20 mg/m ³
Hydrogen chloride	mg/m3	Six monthly	2/09/2021	15.0	50 mg/m ³
Mercury	mg/m3	Six monthly	2/09/2021	0.0020	0.05 mg/m ³
Solid Particles	mg/m3	Quarterly	2/09/2021	12.8	50 mg/m ³
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3	Six monthly	2/09/2021	1.100	100 mg/m ³
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2/09/2021	0.018	0.75 mg/m ³
Volatile organic compounds as n-propane equivalent	mg/m3	Six monthly	2/09/2021	0.045	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 Indentifcation 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/m3	Continouus	99.6%	268.7	689.1	832.4
Suflur Dioxide	mg/m3	Continuous	99.6%	737.3	976.6	1122.9
Flow	cubic metres per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continouus				
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/m3	Six monthly	2	11/03/2021	<0.0003
Chlorine	mg/m3	Six monthly	2	31/08/2021	0.049
Fluorine	mg/m3	Six monthly	2	31/08/2021	9.4
Hydrogen chloride	mg/m3	Six monthly	2	31/08/2021	14.0
Mercury	mg/m3	Six monthly	2	31/08/2021	0.0006
Solid Particles	mg/m3	Quarterly	4	4/05/2022	13.0
Sulfuric acid mist and sulfur trioxide (as SO3)	mg/m3	Six monthly	2	19/10/2021	1.100
Type 1 and Type 2 substances in aggregate	mg/m3	Six monthly	2	31/08/2021	<0.02
Volatile organic compounds as n-propane equivalent	mg/m3	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

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	Continuous				
Flow	per second	Continuous				
Moisture	percent	Continuous				
Oxygen	percent	Continouus				
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 Indentifcation 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	Continouus				
Moisture	percent	Continouus				
Oxygen	percent	Continouus				
Temperature	degrees Celsius	Continouus				

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

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	Continouus	99.6%	202.9	375.6	534.8
Suflur Dioxide	mg/m3	Continuous	100.0%	566.8	779.3	951.0
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	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

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Air emission monitoring - Boiler number 3 exhaust - duct A

Unit retired from service April 22

Air emission monitoring - Boiler number 3 exhaust - duct B

Unit retired from service April 22

EPA Indentifcation 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	Continouus				
FIOW	per second					
Moisture	percent	Continouus				
Oxygen	percent	Continouus				
Temperature	degrees Celsius	Continouus				

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

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	Continouus	98.3%	366.9	553.0	670.3
Suflur Dioxide	mg/m3	Continuous	98.3%	835.0	999.7	1162.9
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 Indentifcation 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	0.05	0.07
Antimony	mg/L	Fortnightly	2	0.009	0.010	0.01
Arsenic	mg/L	Fortnightly	2	0.006	0.006	0.006
Barium	mg/L	Fortnightly	2	0.094	0.096	0.098
Beryllium	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Boron	mg/L	Fortnightly	2	1.04	1.11	1.17
Cadmium	mg/L	Fortnightly	2	<0.0001	0.0001	<0.0001
Chlorine	mg/L	Fortnightly	2	0.02	0.04	0.06
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	2520	2605	2690
Copper	mg/L	Fortnightly	2	0.004	0.004	0.004
Fluoride	mg/L	Fortnightly	2	1.69	1.81	1.92
Lead	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Manganese	mg/L	Fortnightly	2	0.008	0.01	0.008
Mercury	mg/L	Fortnightly	2	<0.0001	0.0001	<0.0001
Methyl Blue Active Substances	mg/L	Fortnightly	2	<0.1	0.33	0.6
Molybdenum	mg/L	Fortnightly	2	0.116	0.12	0.121
Nickel	mg/L	Fortnightly	2	0.004	0.00	0.005
Nitrogen	mg/L	Fortnightly	2	0.4	0.45	0.5
Oil and Grease	mg/L	Weeklyduring any discarge	4	<2	2	5
рН		Daily during any discarge	31	8.3	8.4	8.5
Phosporus	mg/L	Fortnightly	2	0.03	0.04	0.04
Selenium	mg/L	Fortnightly	2	<0.01	0.01	<0.01
Sulfur	mg/L	Fortnightly	2	720	740	760
Temperature	°C	Fortnightly	2	15	16.6	18.2
Tin	mg/L	Fortnightly	2	<0.001	0.00	<0.001
Total dissolved solids	mg/L	Fortnightly	2	1670	1735	1800
Total organic carbon	mg/L	Fortnightly	2	8	8.00	8
Total suspended solids	mg/L	Fortnightly	2	6	6.50	7
Vanadium	mg/L	Fortnightly	2	0.01	0.01	0.01
Zinc	mg/L	Fortnightly	2	<0.005	0.003	<0.005

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	0.04	0.04
Antimony	mg/L	Fortnightly	2	0.008	0.010	0.011
Arsenic	mg/L	Fortnightly	2	0.006	0.006	0.006
Barium	mg/L	Fortnightly	2	0.09	0.091	0.091
Beryllium	mg/L	Fortnightly	2	<0.001	0.001	<0.001
Boron	mg/L	Fortnightly	2	0.01	0.05	0.08
Cadmium	mg/L	Fortnightly	2	<0.0001	0.0001	<0.0001
Chlorine	mg/L	Fortnightly	2	0.01	0.04	0.06
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	2320	2395	2470
Copper	mg/L	Fortnightly	2	0.007	0.008	0.008
Fluoride	mg/L	Fortnightly	2	1.55	1.65	1.75
Lead	mg/L	Fortnightly	2	< 0.001	0.00	<0.001
Manganese	mg/L	Fortnightly	2	0.008	0.01	0.01
Mercury	mg/L	Fortnightly	2	<0.0001	0.00	<0.0001
Methyl Blue Active Substances	mg/L	Fortnightly	2	<0.1	0.28	0.5
Molybdenum	mg/L	Fortnightly	2	0.112	0.11	0.112
Nickel	mg/L	Fortnightly	2	0.004	0.00	0.005
Nitrogen	mg/L	Fortnightly	2	0.4	0.40	0.4
Oil and Grease	mg/L	Weeklyduring any discarge	4	<2	1.75	4
рН		Daily during any discarge	31	8.2	8.4	8.5
Phosporus	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	600	640	680
Temperature	°C	Fortnightly	2	13.6	14.3	15
Tin	mg/L	Fortnightly	2	<0.001	0.00	<0.001
Total dissolved solids	mg/L	Fortnightly	2	1560	1615	1670
Total organic carbon	mg/L	Fortnightly	2	8	8.00	8
Total suspended solids	mg/L	Fortnightly	2	7	7.50	8
Vanadium	mg/L	Fortnightly	2	0.01	0.01	0.01
Zinc	mg/L	Fortnightly	2	0.007	0.008	0.009

EPA Indentifcation Number 18

Discharge to waters - Discharge quality monitoring and Volume monitoring

Discharge fromskimmer dam overflow spillwayto 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	0.022	0.029	0.034
Boron	mg/L	Weekly during any discharge	4	0.99	1.33	1.48
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	0.002	0.003
Electrical conductivity	μS/cm	Weekly during any discharge	4	1886	2332	2740
Fluoride	mg/L	Weekly during any discharge	4	1.4	1.575	1.7
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	<2
рН		Weekly during any discharge	4	7.9	8.1	8.3
Selenium	mg/L	Weekly during any discharge	4	<0.01	0.01	0.01
Total suspended solids	mg/L	Weekly during any discharge	4	<5	7	10
Zinc	mg/L	Weekly during any discharge	4	<0.005	0.004	0.007
Volume	kilolitres per day	Daily	31	31000	105161	323000

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	31	0.33	65.80	174.15

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