Annual Air Emission Monitoring Report 2025

Mt Piper Power Station

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This report was prepared in accordance with the scope of services set out in the contract between Environmental Resources Management Australia Pty Ltd ABN 12 002 773 248 (ERM) and the Client.

To the best of our knowledge, the proposal presented herein accurately reflects the Client's intentions when the report was printed. However, the application of conditions of approval or impacts of unanticipated future events could modify the outcomes described in this document.

In preparing the report, ERM used data, surveys, analyses, designs, plans and other information provided by the individuals and organisations referenced herein. While checks were undertaken to ensure that such materials were the correct and current versions of the materials provided, except as otherwise stated, ERM did not independently verify the accuracy or completeness of these information sources.

SIGNATURE PAGE

Annual Air Emission Monitoring Report 2025

Mt Piper Power Station

0745212

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CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

Acronyms	Description
AAEMR	Annual Air Emission Monitoring Report
AEMO	Australian Energy Market Operator
APC	Air Pollution Control
AQIA	Air quality impact assessment
AQMS	Air quality monitoring station
AWS	Automatic weather station
BCA	Brine Conditioned Ash
CEMS	Continuous emissions monitoring system
DPHI	Department of Planning, Housing and Infrastructure
DAF	Dry, ash free
EPA	Environment Protection Authority
EPL	Environment protection licence
ERM	Environmental Resources Management Australia Pty Ltd
GWh	Gigawatt hour
HDPE	High Density Polyethylene

Acronyms	Description
K	Degrees Kelvin
kPa	Kilopascals
LBL	(NSW) Load-based Licencing Scheme
LNAR	Lamberts North Ash Repository
mg/Nm³	Milligrams per normal cubic metre (i.e. at conditions of 273K and 101.3 kPa)
MPAR	Mt Piper Ash Repository
MPPS	Mount Piper Power Station
MW	Megawatt
MWh	Megawatt hour
NEPC	National Environment Protection Council
Nm³	Normal cubic metre (i.e. 1 cubic metre at conditions of 273 K and 101.3 kPa)
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
NPI	National Pollutant Inventory
NSW	New South Wales
LOR	Limit of reporting
O_2	Oxygen (molecular)
OEMP	Operational Environment Management Plan
PM_{10}	Particulate matter less than 10 microns in aerodynamic diameter
$PM_{2.5}$	Particulate matter less than 2.5 microns in aerodynamic diameter
ppb	Parts per billion (by volume)
pphm	Parts per hundred million (by volume)
QA/QC	Quality Assurance / Quality Control
RAA	Relative Accuracy Audit
RATA	Relative Accuracy Test Audit
RL	Reduced Level
SO_2	Sulfur dioxide
SO_3	Sulfur trioxide
SWTP	Springvale Water Treatment Plant
t	Tonne
µg/m³	Micrograms per cubic metre
WCA	Water Conditioned Ash

1. INTRODUCTION

EnergyAustralia operates the Mount Piper Power Station (MPPS), located at 350 Boulder Road, Portland, New South Wales. The MPPS is approved to operate 700 MW and 730 MW coal-fired steam turbine generators that have the capacity (> 4000 GWh) to meet the energy needs of approximately 1.18 million homes in New South Wales every year. MPPS is fuelled using black coal sourced from coal mines in the local area.

The MPPS operates under various licences and approvals including Environmental Protection Licence (EPL) 13007 issued by the NSW Environmental Protection Authority (EPA). This Annual Air Emissions Monitoring Report (AAEMR) has been prepared to satisfy Condition R1.9 of the EPL. The AAEMR is required to summarise and analyse air emission and ambient air quality monitoring data collected within each calendar year.

ERM was engaged by EnergyAustralia to prepare the AAEMR for the 2025 calendar year ('the reporting period') and summarise the methodology and findings in a technical report (this report).

1.1 EPL UPDATES

The EPL was revised twice in the reporting period. These variations are as follows:

Licence Variation: 26 March, 2025

This licence variation relates to management of Cooling Tower Fill Media (CTFM) and did not include updates specific to air quality management and reporting.

Licence Variation: 10 December, 2025

The 10 December EPL variation included the following updates as relevant to air quality management and reporting:

- Condition R1.9 – Addition of requirements 1.9(d) and 1.9(e) which require the AAEMR to include:
  - *d) an overview of any measures implemented during the reporting period to further reduce air emissions from the units, including / but not limited to:*

    i) the date any such measures were implemented;

    ii) an overview of the actual and / or expected impact on air emissions arising from the measures.
  - *e) an overview of any additional measures proposed to further reduce air emissions from the units.*

1.2 EPL REQUIREMENTS

Condition R1.9 – Annual Air Emission Monitoring Report outlines a number of requirements that are to be addressed in preparation of the AAEMR.

Table 1-1 lists these requirements with corresponding report sections that address each condition.

The monitoring requirements of *Condition M2.2 – Air Monitoring Requirements*, (as referenced in Condition R1.9) are shown in **Table 1-2**.

Condition – M9.1 Other Monitoring and Recording Conditions Coal Ash Monitoring outlines a number of monitoring requirements relating to the production and storage of ash. These requirements are listed in **Table 1-3**.

In addition to the requirements of Condition R1.9, this AAEMR also incorporates the reporting required under *Condition R4.4 Annual Coal Ash Monitoring Reporting*. **Table 1-4** shows this requirement which comprises reporting of monitoring data collected under condition M9.1.

TABLE 1-1 NSW EPA EPL13007 CONDITION – R1.9 ANNUAL AIR EMISSION MONITORING REPORT

R1.9	Annual Air Emission Monitoring Report	Refer to
The licensee must submit with the Annual Return an Annual Air Emission Monitoring Report. The Annual Emission Monitoring Report must analyse and summarise emission monitoring data from the reporting period including, but not limited to:		This report.
a)	*a comprehensive summary (tabulated and graphical) of all periodic and continuous monitoring data as required by condition M2.2 of this licence, including a comparison with the concentration limits specified in condition L3.2 and L3.4;*	Section 2 Table 2-1, Table 2-3, Table 2-5 Figure 2-1 to Figure 2-11
b)	*analysis of trends in emission performance for all pollutants monitored as required under condition M2.2. Trend analysis must include comparison of emission performance during the reporting period with emission performance from the previous 4 years;*	Section 3
c)	*details of any exceedances of air emission licence limits and details of plant operating conditions at the times the exceedances occurred;*	Section 2.4.1
d)	*an overview of any measures implemented during the reporting period to further reduce air emissions from the units, including / but not limited to:* *i) the date any such measures were implemented;* *ii) an overview of the actual and / or expected impact on air emissions arising from the measures.*	Section 2.4.2
e)	*an overview of any additional measures proposed to further reduce air emissions from the units.*	
f)	*details of plant operating conditions, including Boiler load (MW), during sampling for each Boiler;*	Table 2-1
g)	*demonstrated compliance with the CEMS Quality Assurance and Control Procedures prepared for the premises;*	Section 2.2.2 Table 2-5
h)	*summary of fuel usage, including:* *i. total coal and other permitted fuels consumed in each Boiler (including start-up);* *ii. a statement about the representativeness of fuel quality during periodic air emission sampling compared to non-sampling periods;* *iii. total fuel consumed by each Boiler during times when periodic air emission sampling was undertaken.*	Section 3.1 Table 3-1 Table 2-1
i)	*detailed calculations used to determine the aggregated pollutant emission rates for each boiler.*	Section 4

TABLE 1-2 NSW EPA EPL13007 CONDITION – M2.2 AIR MONITORING REQUIREMENTS

Pollutant	Units of Measure	Frequency	Sampling Method
Point 2,3			
Cadmium	milligrams per cubic metre	Every 6 months	TM-38
Chlorine	milligrams per cubic metre	Every 6 months	TM-38
Fluorine	milligrams per cubic metre	Every 6 months	TM-38
Hydrogen chloride	milligrams per cubic metre	Every 6 months	TM-38
Mercury	milligrams per cubic metre	Every 6 months	TM-38
Nitrogen oxides	milligrams per cubic metre	Continuous	TM-38
Solid particles	milligrams per cubic metre	Quarterly	TM-38
Sulfur dioxide	milligrams per cubic metre	Continuous	TM-38
Sulfuric acid mist and sulfur trioxide (as SO_3)	milligrams per cubic metre	Every 6 months	TM-38
Type 1 and Type 2 substances in aggregate	milligrams per cubic metre	Every 6 months	TM-38
Volatile organic compounds as n-propane equivalent	milligrams per cubic metre	Every 6 months	TM-38
Point 4,5,6,7			
Cadmium	milligrams per cubic metre	Every 6 months	TM-12
Flow rate	cubic metres per second	Continuous	CEM-6 and US EPA Procedure 1
Mercury	milligrams per cubic metre	Every 6 months	TM-14
Moisture	percent	Continuous	Special Method 1
Nitrogen oxides	milligrams per cubic metre	Continuous	CEM-2 and US EPA Procedure 1
Oxygen (O_2)	percent	Continuous	CEM-3 and US EPA Procedure 1
Solid particles	milligrams per cubic metre	Quarterly	TM-15
Sulfur dioxide	milligrams per cubic metre	Continuous	CEM-2 and US EPA Procedure 1
Temperature	degrees Celsius	Continuous	TM-2 and US EPA Procedure 1
Type 1 and Type 2 substance in aggregate	milligrams per cubic metre	Every 6 months	TM-12, TM-13 & TM-14
Point 4,6			
Carbon dioxide	percent	Every 6 months	TM-24
Chlorine	milligrams per cubic metre	Every 6 months	TM-7
Fluorine	milligrams per cubic metre	Every 6 months	TM-9
Hydrogen chloride	milligrams per cubic metre	Every 6 months	TM-8
Sulfuric acid mist and sulfur trioxide (as SO_3)	milligrams per cubic metre	Every 6 months	TM-3
Volatile organic compounds as n-propane equivalent	milligrams per cubic metre	Every 6 months	TM-34

Pollutant	Units of Measure	Frequency	Sampling Method
Point 8			
Fluoride	micrograms per cubic metre	Continuous	AM-8
Point 8,9			
Nitrogen dioxide	parts per hundred million	Continuous	AM-12
$PM_{2.5}$	micrograms per cubic metre	Continuous	Special Method 2
Sulfur dioxide	parts per hundred million	Continuous	AM-20
Point 10			
Nitrogen dioxide	parts per hundred million	Monthly	Special Method 3
Sulfur dioxide	parts per hundred million	Monthly	Special Method 3

TABLE 1-3 NSW EPA EPL13007 CONDITION – M9.1 OTHER MONITORING AND RECORDING CONDITIONS - COAL ASH MONITORING

M9.1	Other monitoring and recording conditions Coal Ash Monitoring (quantities to be reported in tonnes)	Refer to
	For each licence reporting period, the licensee must monitor and record the following details regarding generation, deposition, storage, transport and reuse of coal ash generated at the premises:	Section 5
a)	*Quantity of coal used for electricity generation at the premises;*	Table 5-1
b)	*Quantity of bottom ash; and quantity of fly ash, generated at the premises and the grade of fly ash produced (if the grade is known);*	Table 5-1
c)	*Quantity of bottom ash; and quantity of fly ash, deposited, and/or stored at the premises with a description of how it is stored and the processes for managing the storage;*	Section 5 Table 5-1
d)	*Quantity of bottom ash; and quantity of fly ash, transported from the premises together with identification of the destination; and*	Table 5-2
e)	*Management measures used for coal ash repositories on the premises to maintain the viability of ash reuse, including identification of any other materials being stored concurrently with newly deposited coal ash.*	Section 5

Note: The collection and reporting of information required by the above condition does not come into effect until three months after the issued date of this licence version to allow the licensee to put in place the relevant systems required to meet the condition.

TABLE 1-4 NSW EPA EPL13007 CONDITION – R4.4 OTHER REPORTING CONDITIONS

R4.4	Coal Ash Monitoring Reporting	Refer to
	The licensee must prepare an Annual Coal Ash Monitoring Report that details information required under condition M9.1 in respect of generation, deposition, storage, transport and reuse of coal ash generated at the premises for each Annual Return reporting period.	Section 5

The stack concentration limits as referenced in Condition R1.9, *Condition L3.2 – Air Concentration Limits*, are shown in **Table 1-5**.

Condition L3.4 states that in addition to the concentration limits specified in condition L3.2, the following 99th percentile concentration limits apply for points 2 and 3 utilising the same units of measure, reference conditions, oxygen correction and averaging period as above for each pollutant listed below:

a) nitrogen oxides: 1,100 mg/Nm³; and

b) sulfur dioxide: 1,400 mg/Nm³.

Condition L3.6 states that exceedances due to compliance with an Australian Energy Market Operator (AEMO) direction in accordance with Section 74 of the Protection of the Environment Operations (Clean Air) Regulation 2022 do not count towards the accumulated hours for the purpose of calculating compliance with condition L3.4.

It should be noted that the reference conditions (Dry, 273K, 101.3kPA), oxygen correction (7% O_2) and averaging period (1-hour) apply for each pollutant listed in **Table 1-5**.

TABLE 1-5 NSW EPA EPL13007 CONDITION – L3.2 AIR CONCENTRATION LIMITS

Pollutant	100th percentile concentration limit
Mercury	0.03 mg/m³
Chlorine	4 mg/m³
Type 1 and Type 2 substance in aggregate	0.60 mg/m³
Volatile organic compounds as n-propane equivalent	8 mg/m³
Hydrogen chloride	50 mg/m³
Solid Particles	50 mg/m³
Sulfuric acid mist and sulfur trioxide (as SO_3)	100 mg/m³
Nitrogen oxides	1,500 mg/m³
Fluorine (total fluoride as HF equivalent)	30 mg/m³
Cadmium	0.03 mg/m³
Sulfur dioxide	1,700 mg/m³

Note: During calibration and commissioning testing of the Particulate Continuous Emission Monitors (Particulate CEMS) undertaken in accordance with condition E5.2, the limit for solid particles does not apply, however the concentration must not exceed the limits listed in the *Protection of the Environment Operations (Clean Air) Regulation 2022*.

1.3 STUDY METHODOLOGY

The following steps were undertaken to complete this air emission monitoring report:

- Summarise data collected during 2025 from the monitoring required under EPL13007;
- Review historical monitoring data to analyse the trends in emission performance for all pollutants monitored under EPL13007;
- Consolidate and analyse monitoring data to understand if the data available is representative of normal operating conditions at MPPS; and
- Summarise compliance with Condition R1.9 under EPL13007.

2. AIR EMISSION MONITORING SUMMARY

The following sections summarise the air monitoring as relevant to the requirements of the *Condition R1.9 – Annual Air Emissions Monitoring Report*.

2.1 STACK TESTING

The stack test documents reviewed for 2025 monitoring include:

- Ektimo 2025a, Quarterly (Q1) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station. Report number R018380, 18 July 2025;
- Ektimo 2025b, Quarterly (Q2) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station. Report number R018685, 18 July 2025;
- Ektimo 2025c, Quarterly (Q3) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station. Report number R019174, 29 August 2025; and
- Ektimo 2025d, Quarterly (Q4) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station. Report number R019485, 21 November 2025

The individual 2025 stack testing results are summarised in **Table 2-1**. All the concentrations provided are at 'normal' reference conditions (0 °C, 101.325 kPa), dry basis, and at a reference oxygen content of 7% O_2 (dry basis). These are standardised reporting conditions required by the EPL.

The stack test frequencies met the stack, non-continuous sampling requirements as described in *Condition M2.2 – Air Monitoring Requirements* as outlined in **Table 1-2**. The results of the stack test indicate that there were no exceedances of the air concentration limits outlined in **Table 1-5**.

The corresponding stack test reports are included in **Appendix A**.

TABLE 2-1 SUMMARY OF STACK TESTING RESULTS AND POWER STATION OPERATING CONDITIONS

Sampling Date	Unit & Duct	Process Condition	Temperature (°C)	Oxygen (%)	Daily Coal Burn (t)	Fuel Oil Consumed (L)	Daily Generation (MWh)	Mass Rate (g/min)	Measured Concentration (mg/Nm³)*
Solid particles									
29/01/2025	1B	Load stable at 280 MW	107	10.5	7,568	10,349	16,064	49	5.4
29/01/2025	1A	Load stable at 350 MW	119	8.9	7,568	10,349	16,064	80	7
30/01/2025	2A	Load stable at 280 MW	112	10.4	7,556	11,109	18,065	22	2.4
31/01/2025	2B	Load stable at 280 MW	113	10	8,127	18,875	16,655	67	5.8
11/06/2025	1B	Load stable at 500 MW	121	9	10,333	6,776	23,437	40	3
11/06/2025	1A	Load stable at 280 MW	116	11	10,333	6,776	23,437	35	3.8
12/06/2025	2A	Load stable at 650 MW	113	8	11,663	6,988	28,211	150	6.1
12/06/2025	2B	Load stable at 450 MW	112	9.2	11,663	6,988	28,211	48	2.8
22/07/2025	1B	Load stable at 350 MW	122	9.7	7,669	9,320	17,452	<20	<2
22/07/2025	1A	Load stable at 220 MW	114	11.4	7,669	9,320	17,452	34	5.6
23/07/2025	2A	Load stable at 280 MW	101	11.7	8,467	6,014	19,638	29	2.7
23/07/2025	2B	Load stable at 280 MW	105	10.2	8,467	6,014	19,638	40	2.5
14/10/2025	1B	Load stable at 150 MW	114	14	6,885	13,162	17,196	<50	<6
14/10/2025	1A	Load stable at 150 MW	104	14	6,885	13,162	17,196	<40	<4
15/10/2025	2A	Load stable at 150 MW	113	12.8	9,572	12,378	20,507	36	3.9
15/10/2025	2B	Load stable at 150 MW	107	14.1	9,572	12,378	20,507	<40	<5
Sulfuric acid mist and sulfur trioxide (as SO_3)									
11/06/2025	1B	Load stable at 500 MW	121	9.0	10,333	6,776	23,437	65	4.8
12/06/2025	2A	Load stable at 650 MW	113	8.0	11,663	6,988	28,211	55	2.2
14/10/2025	1B	Load stable at 150 MW	114	14.0	6,885	13,162	17,196	92	11
15/10/2025	2A	Load stable at 150 MW	113	12.8	9,572	12,378	20,507	85	9.3
Volatile organic compounds (VOCs) as n-propane equivalent									
11/06/2025	1B	Load stable at 280 MW	111	10.8	10,333	6,776	23,437	1.6	0.18
12/06/2025	2A	Load stable at 450 MW	111	9	11,663	6,988	28,211	2.2	0.12
14/10/2025	1B	Load stable at 150 MW	114	14	6,885	13,162	17,196	<1	<0.1
15/10/2025	2A	Load stable at 150 MW	108	13.8	9,572	12,378	20,507	8.4	1.1
Chlorine									
11/06/2025	1B	Load stable at 280 MW	111	10.8	10,333	6,776	23,437	<0.3	<0.03
12/06/2025	2A	Load stable at 450 MW	111	9	11,663	6,988	28,211	<0.3	<0.02
14/10/2025	1B	Load stable at 150 MW	114	14	6,885	13,162	17,196	<0.4	<0.05
15/10/2025	2A	Load stable at 150 MW	108	13.8	9,572	12,378	20,507	<0.4	<0.06
Hydrogen chloride									
11/06/2025	1B	Load stable at 280 MW	111	10.8	10,333	6,776	23,437	26	2.7
12/06/2025	2A	Load stable at 450 MW	111	9	11,663	6,988	28,211	47	2.6
14/10/2025	1B	Load stable at 150 MW	114	14	6,885	13,162	17,196	13	1.7
15/10/2025	2A	Load stable at 150 MW	108	13.8	9,572	12,378	20,507	20	2.6

Sampling Date	Unit & Duct	Process Condition	Temperature (°C)	Oxygen (%)	Daily Coal Burn (t)	Fuel Oil Consumed (L)	Daily Generation (MWh)	Mass Rate (g/min)	Measured Concentration (mg/Nm³)*
Fluorine									
11/06/2025	1B	Load stable at 280 MW	111	10.8	10,333	6,776	23,437	97	10
12/06/2025	2A	Load stable at 450 MW	111	9	11,663	6,988	28,211	270	15
14/10/2025	1B	Load stable at 150 MW	114	14	6,885	13,162	17,196	27	3.5
15/10/2025	2A	Load stable at 150 MW	108	13.8	9,572	12,378	20,507	29	3.7
Cadmium									
29/01/2025	1B	Load stable at 280 MW	107	10.5	7,568	10,349	16,064	<0.002	<0.0002
29/01/2025	1A	Load stable at 350 MW	119	8.9	7,568	10,349	16,064	<0.002	<0.0001
30/01/2025	2A	Load stable at 280 MW	112	10.4	7,556	11,109	18,065	<0.002	<0.0002
31/01/2025	2B	Load stable at 280 MW	113	10	8,127	18,875	16,655	<0.002	<0.0002
22/07/2025	1B	Load stable at 350 MW	122	9.7	7,669	9,320	17,452	0.0014	0.00015
22/07/2025	1A	Load stable at 220 MW	114	11.4	7,669	9,320	17,452	0.0019	0.00031
23/07/2025	2A	Load stable at 280 MW	101	11.7	8,467	6,014	19,638	0.0017	0.00016
23/07/2025	2B	Load stable at 280 MW	105	10.2	8,467	6,014	19,638	0.0016	0.0001
Mercury									
29/01/2025	1B	Load stable at 280 MW	107	10.5	7,568	10,349	16,064	0.016	0.0017
29/01/2025	1A	Load stable at 350 MW	119	8.9	7,568	10,349	16,064	0.03	0.0026
30/01/2025	2A	Load stable at 280 MW	112	10.4	7,556	11,109	18,065	0.0076	0.00083
31/01/2025	2B	Load stable at 280 MW	113	10	8,127	18,875	16,655	0.0082	0.00072
22/07/2025	1B	Load stable at 350 MW	122	9.7	7,669	9,320	17,452	0.0013	0.00014
22/07/2025	1A	Load stable at 220 MW	114	11.4	7,669	9,320	17,452	0.0014	0.00024
23/07/2025	2A	Load stable at 280 MW	101	11.7	8,467	6,014	19,638	<0.002	<0.0002
23/07/2025	2B	Load stable at 280 MW	105	10.2	8,467	6,014	19,638	0.0054	0.00034
Type 1 and Type 2 substances in aggregate									
29/01/2025	1B	Load stable at 280 MW	107	10.5	7,568	10,349	16,064	<0.13	<0.014
29/01/2025	1A	Load stable at 350 MW	119	8.9	7,568	10,349	16,064	<0.32	<0.028
30/01/2025	2A	Load stable at 280 MW	112	10.4	7,556	11,109	18,065	<0.29	<0.031
31/01/2025	2B	Load stable at 280 MW	113	10	8,127	18,875	16,655	<0.3	<0.026
22/07/2025	1B	Load stable at 350 MW	122	9.7	7,669	9,320	17,452	<0.29	<0.03
22/07/2025	1A	Load stable at 220 MW	114	11.4	7,669	9,320	17,452	<0.22	<0.037
23/07/2025	2A	Load stable at 280 MW	101	11.7	8,467	6,014	19,638	<0.29	<0.027
23/07/2025	2B	Load stable at 280 MW	105	10.2	8,467	6,014	19,638	<0.36	<0.023

Notes: *Reported as dry, 0°C, 101.325 kPa and corrected to 7% O_2.

2.2 CEMS

Condition M2.2 – *Air Monitoring Requirements* requires the continuous monitoring of specific stack parameters. **Table 2-2** summarises the continuous emissions monitoring system (CEMS) data as required in Condition M2.2.

The following sections summarise the CEMS data and quality assurance program.

TABLE 2-2 LIST OF REQUIRED CEMS PARAMETERS

Pollutant	Monitoring Points	Unit & Duct
Nitrogen Oxides	Point 2, 3, 4, 5, 6, 7	Unit 1, Unit 2, Unit 1B, Unit 1A, Unit 2A, Unit 2B
Sulfur dioxide		
Flow rate	Point 4, 5, 6, 7	Unit 1B, Unit 1A, Unit 2A, Unit 2B
Moisture		
Oxygen (O_2)		
Temperature		

Moisture, temperature and oxygen are monitored as part of the existing CEMS at MPPS. EnergyAustralia submitted the *Development of Fan Curve Methodology for Calculating Flue Gas Flowrate for MPPS* report to the EPA on 20 December 2024 as required by EPL 13007.

2.2.1 CEMS RESULTS SUMMARY

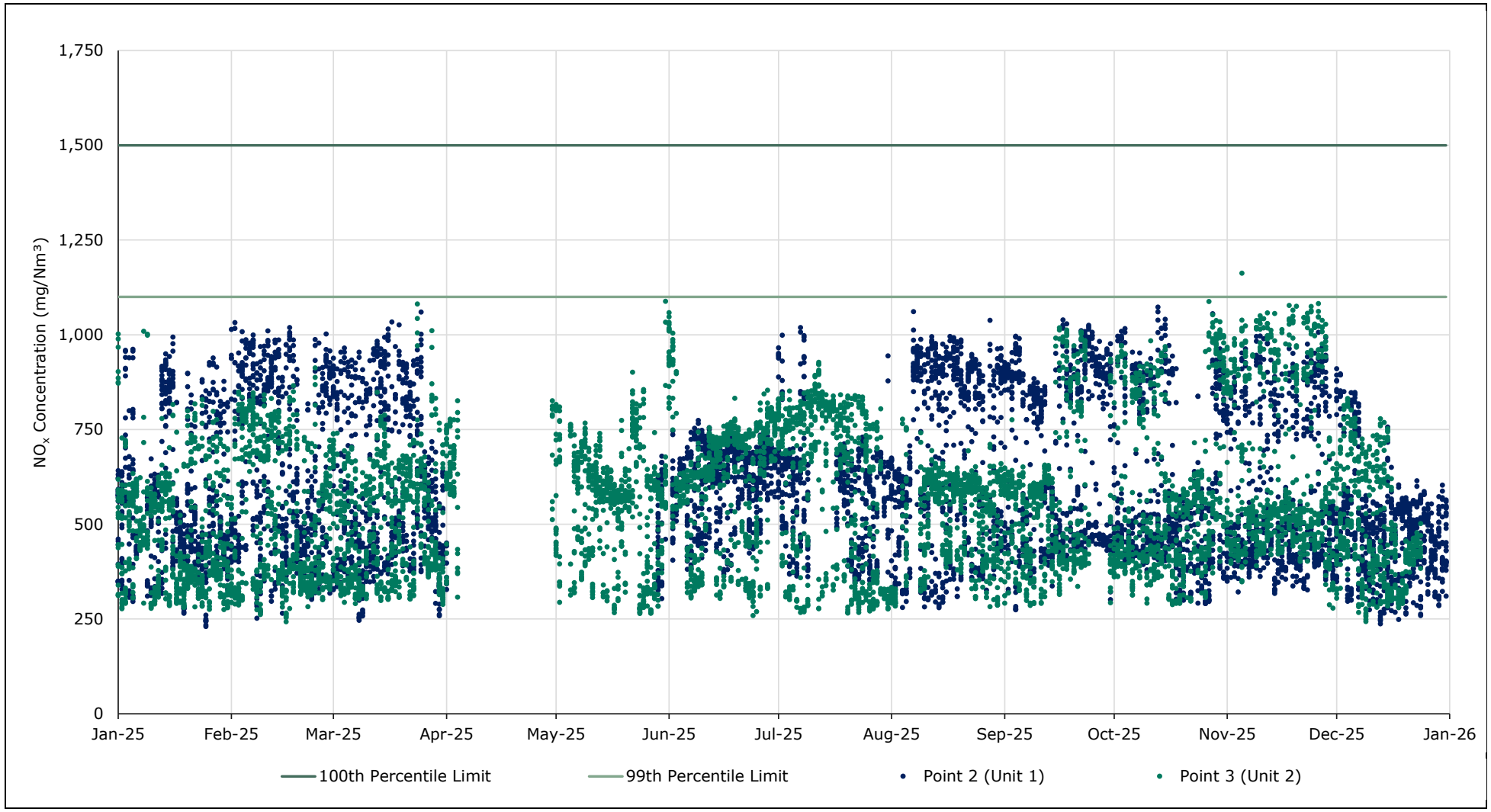
The 2025 CEMS monitoring results are summarised in **Figure 2-3** and presented in **Figure 2-1** to **Figure 2-7**. Data is not reported for times when the generators are not operational, which includes maintenance outages in April and May.

For NO_x and SO_2, compliance was achieved with the limits set for the 100^{th} and 99^{th} percentile concentration at the monitoring points. The NO_x concentrations are distributed broadly between 250 mg/Nm³ and 1,100 mg/Nm³, while the SO_2 concentrations are more concentrated between 800 mg/Nm³ and 1,300 mg/Nm³.

The moisture is generally between 4% and 9% for both boilers. The discharge oxygen range between approximately 7% and 14%.

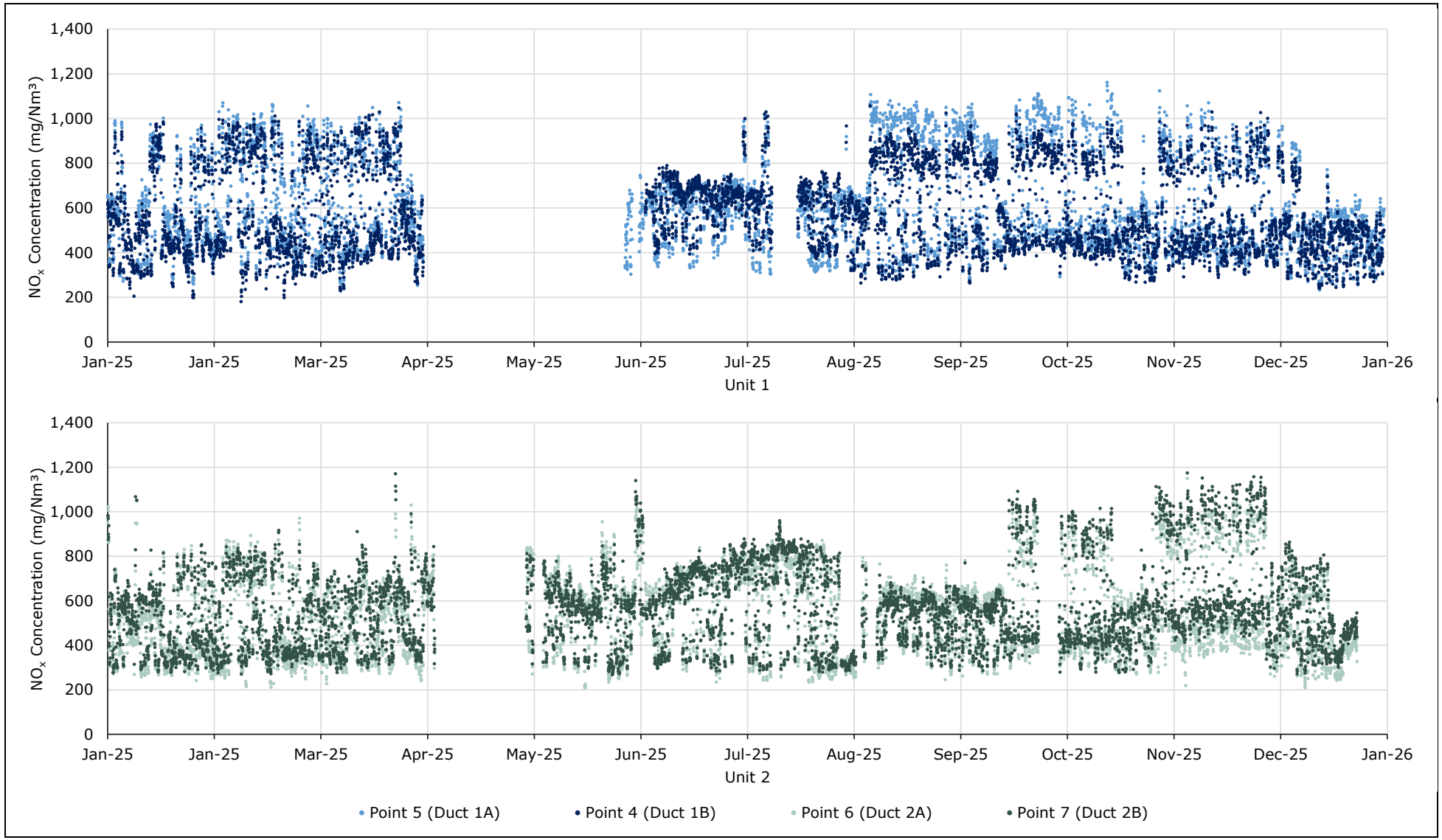
The discharge temperatures are mostly between 100 °C and 130 °C, with some lower temperatures of ~60 °C. With the exception of SO_2, these parameters vary with unit load, which is shown in Figure **2-8**.

FIGURE 2-1 CEMS RESULTS – NO_X (POINT 2 AND 3)



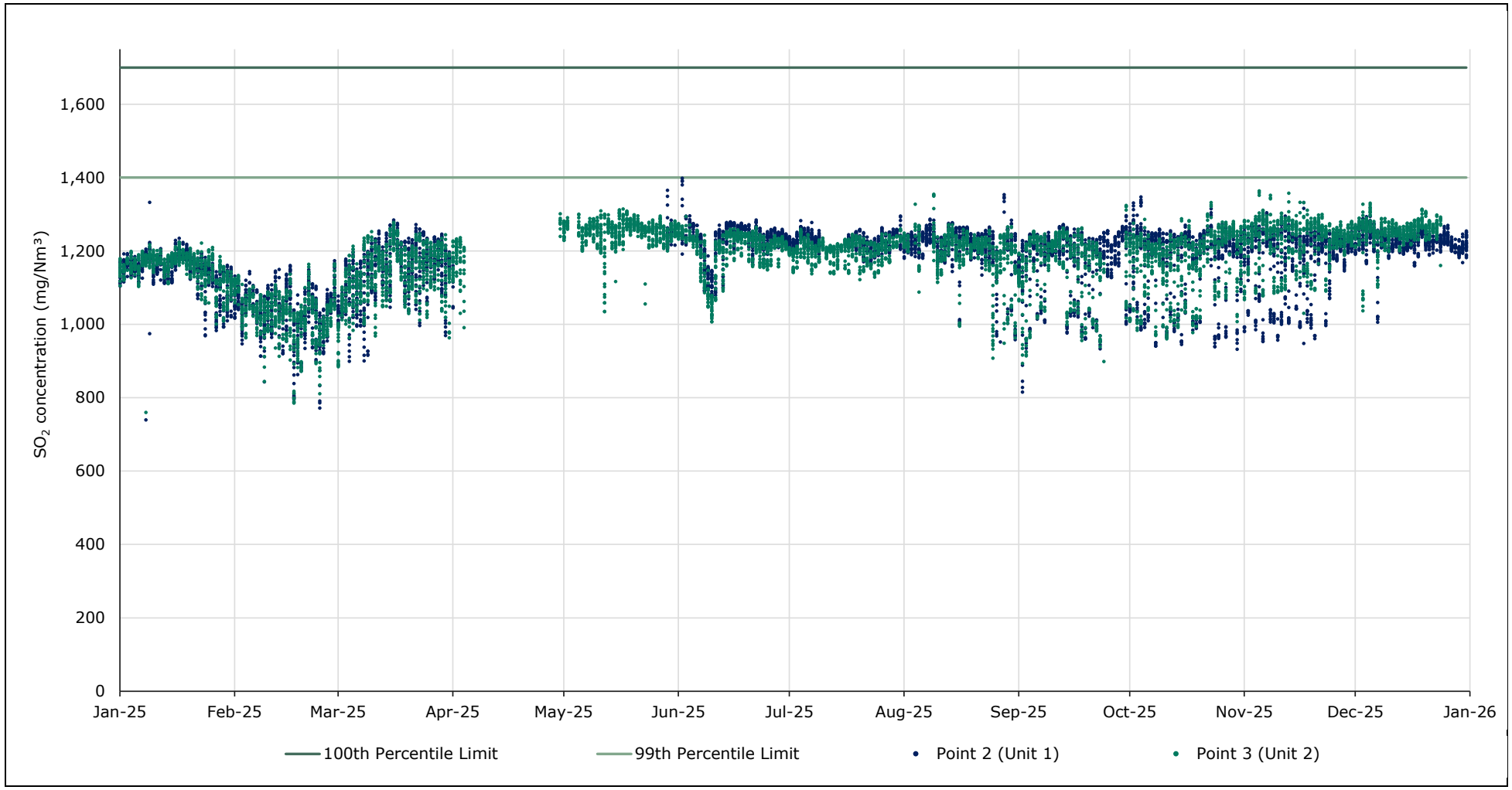
Note: All measurements shown at 7% O_2, dry.

FIGURE 2-2 CEMS RESULTS – NO_X (POINT 4, 5, 6 AND 7)



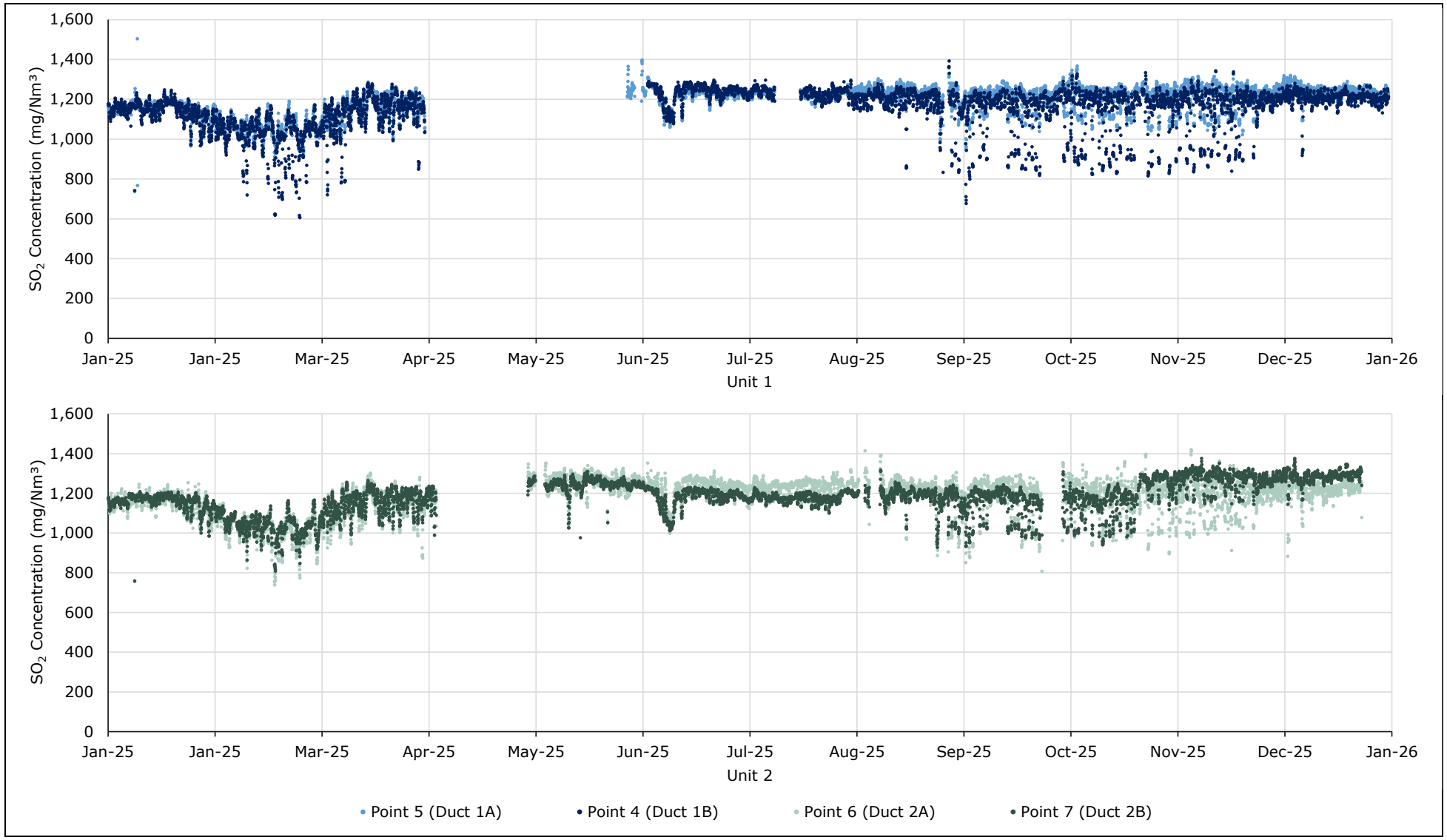
Note: All measurements shown at 7% O_2, dry.

FIGURE 2-3 CEMS RESULTS – SO_2 (POINT 2 AND 3)



Note: All measurements shown at 7% O_2, dry.

FIGURE 2-4 CEMS RESULTS – SO_2 (POINT 4, 5, 6 AND 7)



Note: All measurements shown at 7% O_2, dry.

FIGURE 2-5 CEMS RESULTS – MOISTURE (POINT 4, 5, 6 AND 7)

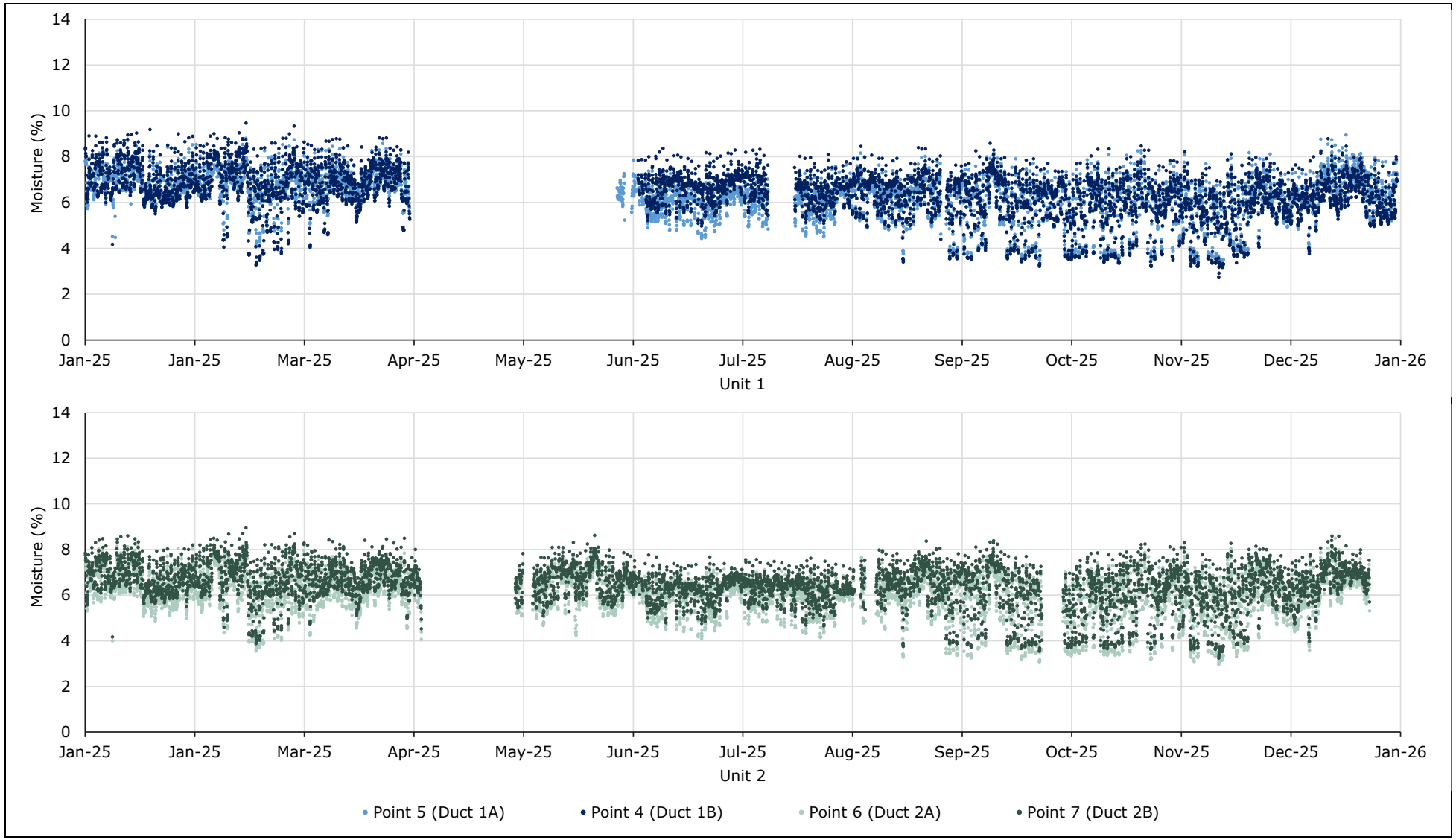


FIGURE 2-6 CEMS RESULTS – OXYGEN (POINT 4, 5, 6 AND 7)

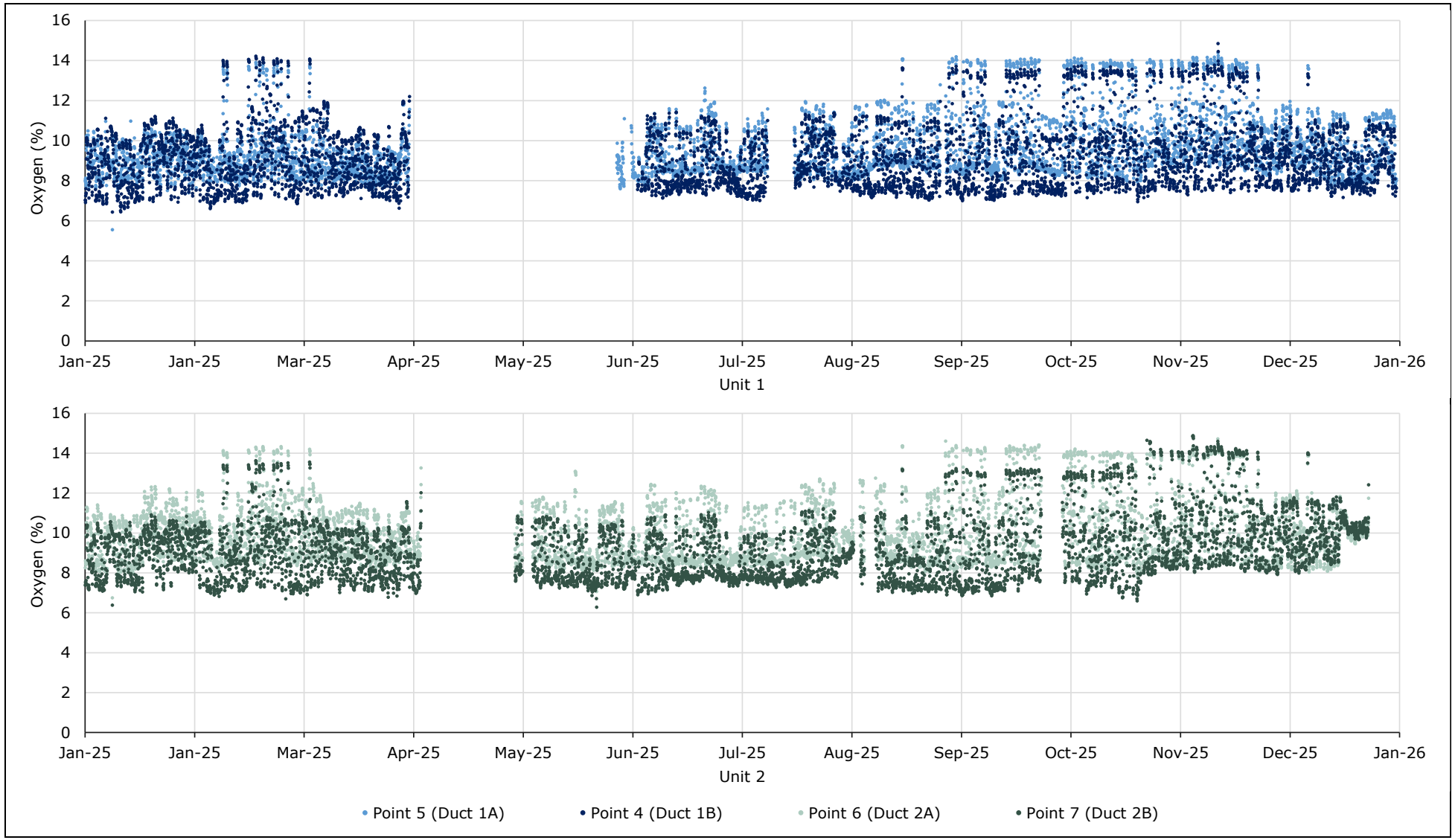


FIGURE 2-7 CEMS RESULTS – TEMPERATURE (POINT 4, 5, 6 AND 7)

FIGURE 2-8 CEMS RESULTS – LOAD (MW)

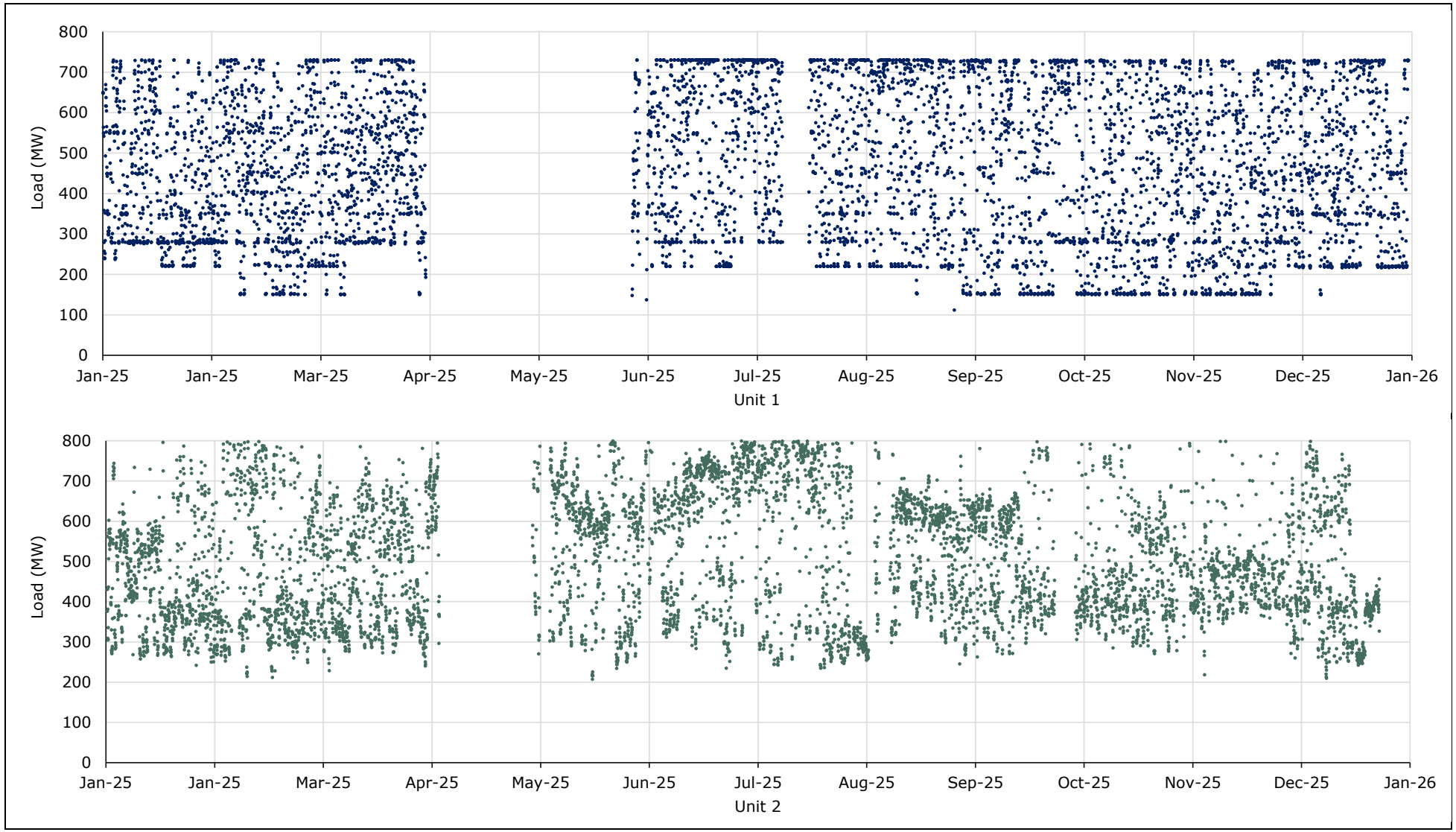


TABLE 2-3 SUMMARY OF 2025 CEMS RESULTS

Monitoring Point	Data Capture[a]	Statistic						Compliance	
		Minimum	Average	Maximum	50th Percentile	70th Percentile	99th Percentile	100th Percentile Concentration Limit	99th percentile Concentration Limit
NO_x (mg/Nm³) – 1-hour average									
Point 2 (Unit 1)	97.5%	230	597	1,073	546	690	995	✓	✓
Point 3 (Unit 2)	98.4%	242	548	1,162	536	632	1,017	✓	✓
Point 5 (Unit 1A)	97.5%	233	615	1,162	564	698	1,051	N/A	
Point 4 (Unit 1B)	97.4%	182	578	1,057	525	693	965		
Point 6 (Unit 2A)	98.4%	208	533	1,150	513	635	972		
Point 7 (Unit 2B)	98.4%	268	563	1,174	548	638	1,060		
SO_2 (mg/Nm³) – 1-hour average									
Point 2 (Unit 1)	98.5%	740	1,176	1,398	1,206	1,230	1,283	✓	✓
Point 3 (Unit 2)	98.4%	760	1,180	1,363	1,203	1,231	1,299	✓	✓
Point 5 (Unit 1A)	98.5%	737	1,194	1,504	1,220	1,241	1,302	N/A	
Point 4 (Unit 1B)	97.4%	607	1,157	1,393	1,189	1,217	1,279		
Point 6 (Unit 2A)	98.4%	739	1,178	1,420	1,203	1,238	1,313		
Point 7 (Unit 2B)	98.4%	758	1,182	1,376	1,188	1,224	1,323		
Moisture (%)									
Point 5 (Unit 1A)	98.5%	3.3	6.3	9.0	6.4	6.8	8.1	N/A	
Point 4 (Unit 1B)	97.4%	2.8	6.4	9.5	6.5	7.0	8.5		
Point 6 (Unit 2A)	98.4%	3.0	6.0	8.5	6.2	6.6	7.7		
Point 7 (Unit 2B)	98.4%	3.2	6.4	9.0	6.5	6.9	8.1		

Monitoring Point	Data Capture[a]	Statistic						Compliance	
		Minimum	Average	Maximum	50th Percentile	70th Percentile	99th Percentile	100th Percentile Concentration Limit	99th percentile Concentration Limit
O_2 (%)									
Point 5 (Unit 1A)	98.5%	5.6	9.7	14.4	9.2	10.1	14.0	N/A	
Point 4 (Unit 1B)	97.4%	6.4	9.2	14.8	8.9	9.9	13.6		
Point 6 (Unit 2A)	98.4%	6.8	10.0	14.9	9.6	10.6	14.2		
Point 7 (Unit 2B)	98.4%	6.3	9.2	14.9	8.9	9.9	14.0		
Temperature (°C)									
Point 5 (Unit 1A)	100.0%	78	117	132	118	122	130	N/A	
Point 4 (Unit 1B)	98.8%	58	118	132	120	124	130		
Point 6 (Unit 2A)	99.7%	50	109	132	109	112	123		
Point 7 (Unit 2B)	99.8%	71	114	136	114	118	132		

Notes:
- [a] Data capture calculation based on periods of operation at loads of greater than 150 MW. Periods when the boilers are out of service are excluded.
- [b] Peak Duct 1A reading of 1,504 mg/Nm³ removed due to apparent instrument error, with an hour-to-hour variance of ~750 mg/Nm³. Duct 1B reported 20 mg/Nm³ variance over the same two hours.
- N/A: Not Applicable.

2.2.2 CEMS QUALITY ASSURANCE AND CONTROL PROCEDURES

Condition E2 requires an implemented CEMS Quality Assurance and Quality Control Procedure. The document *ENERGYAUSTRALIA NSW Mt Piper Power Station – Continuous Emissions Monitoring Plan Quality Assurance and Control Procedures* (HRL, 2022) ('the Procedures') was compared with the requirements of Condition E3.1 in **Table 2-4**.

TABLE 2-4 NSW EPA EPL13007 CONDITION – E2 CONTINUOUS EMISSIONS MONITORING SYSTEMS QUALITY ASSURANCE AND CONTROL PROCEDURES

E2	Continuous Emissions Monitoring Systems Quality Assurance and Control Procedures	Review
E2.1	*The licensee must implement and maintain a CEMS quality assurance (QA) and quality control (QC) procedure which enables the evaluation of the quality of data produced by any CEMS monitoring required by conditions of this licence. As a minimum, the CEMS QA/QC procedure must describe in detail the following:*	EnergyAustralia has provided the Procedure for ERM to review.
	a) calibration and adjustment measures;	Detailed in section 8 of the Procedure.
	b) preventive maintenance measures (including spare parts inventory);	Detailed in section 9 of the Procedure.
	c) data handling, recording and calculation procedures;	Detailed in section 10.3 of the Procedure.
	d) processes for evaluating, verifying and reporting monitoring data;	Detailed in section 11.2 of the Procedure.
	e) accuracy audit measures including sampling and analysis methods;	Detailed in section 11.3 of the Procedure.
	f) fault identification and corrective action measures; and	Detailed in section 11.4 of the Procedure.
	g) process for ongoing review and evaluation of the effectiveness of the CEMS QA/QC procedures	Detailed in section 12 of the Procedure.

The CEMS quality assurance and quality control reporting has been reviewed and demonstrates compliance with the Procedures. The procedures require completion of the following audit measures:

- Quarterly cylinder gas audits.
- Quarterly Relative Accuracy Audit (RAA) / Relative Accuracy Test Audit (RATA) processes.

ERM has been provided with cylinder gas audit documentation and the following RAA/RATA test reporting:

- Ektimo 2025e, *Relative Accuracy Audit, Service Stream Limited, Report R018392, EnergyAustralia NSW Pty Ltd, Mt Piper Power Station*, Ektimo Pty Ltd, 3 April 2025;
- Ektimo 2025f, *Relative Accuracy Audit, Service Stream Limited, Report R018686, EnergyAustralia NSW Pty Ltd, Mt Piper Power Station*, Ektimo Pty Ltd, 15 July 2025;
- Ektimo 2025g, *Relative Accuracy Test Audit Annual Report, Service Stream Limited, Report R019176*, EnergyAustralia NSW Pty Ltd, Mt Piper Power Station, Ektimo Pty Ltd, 27 August 2025; and
- Ektimo 2025h, R*elative Accuracy Audit, Service Stream Limited, Report R019581, EnergyAustralia NSW Pty Ltd, Mt Piper Power Station*, Ektimo Pty Ltd, 11 December 2025.

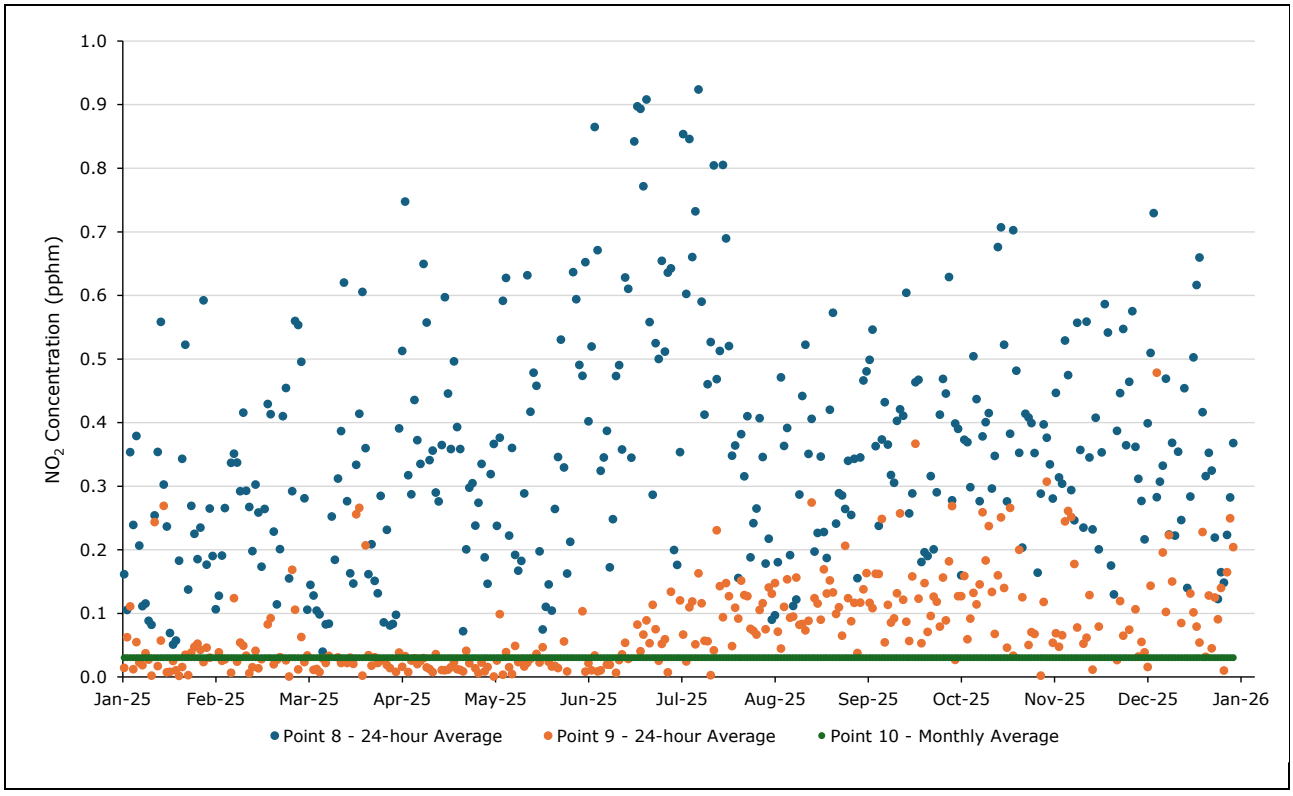
2.3 AMBIENT AIR MONITORING

As shown in **Table 1-2**, ambient air monitoring is required at three locations:

- Point 8 (Blackmans Flat);
- Point 9 (Wallerawang); and
- Point 10 (Newnes Plateau).

The ambient air monitoring results for 2025 are summarised in **Table 2-6** and presented in **Figure 2-9** to **Figure 2-11**.

FIGURE 2-9 AMBIENT MONITORING RESULTS – NO_2



Note: Point 10 results below the limit of reporting (LOR) have been shown at half of the LOR (all results < LOR).

FIGURE 2-10 AMBIENT MONITORING RESULTS – SO_2

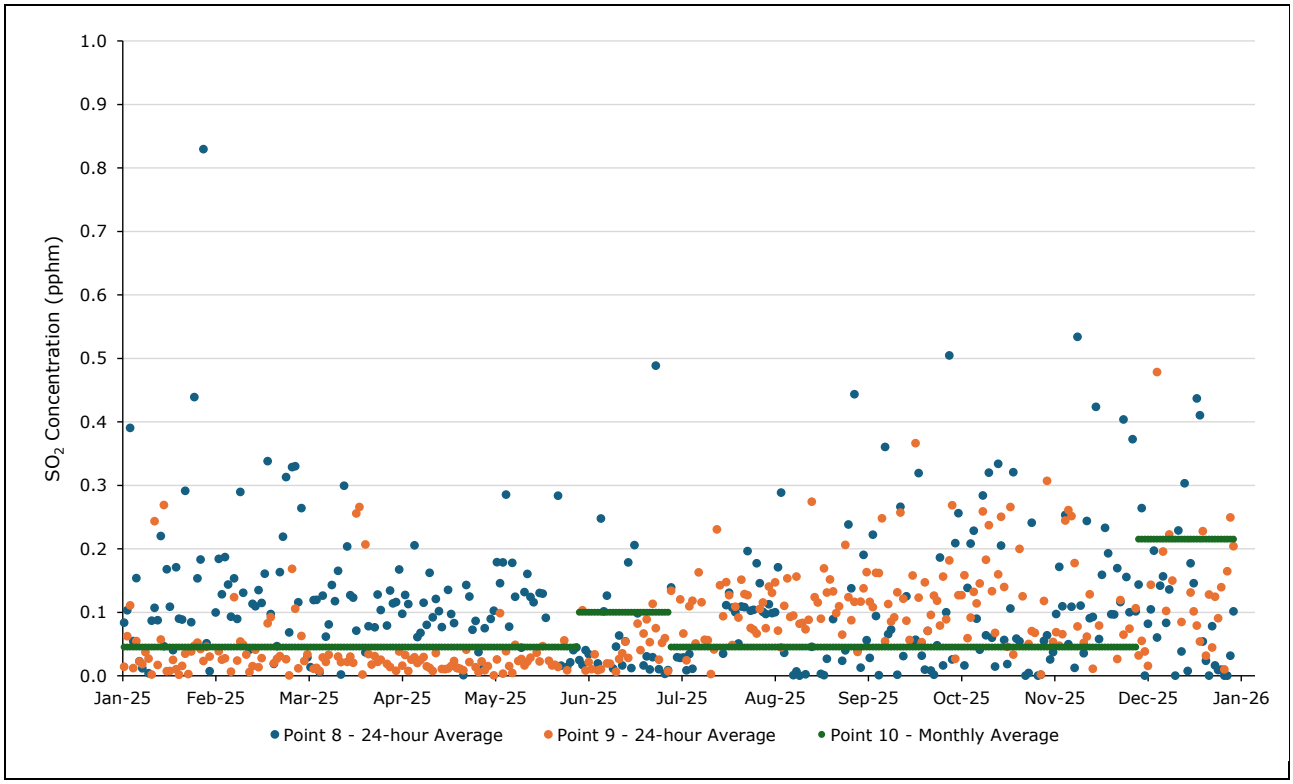


FIGURE 2-11 AMBIENT MONITORING RESULTS – $PM_{2.5}$

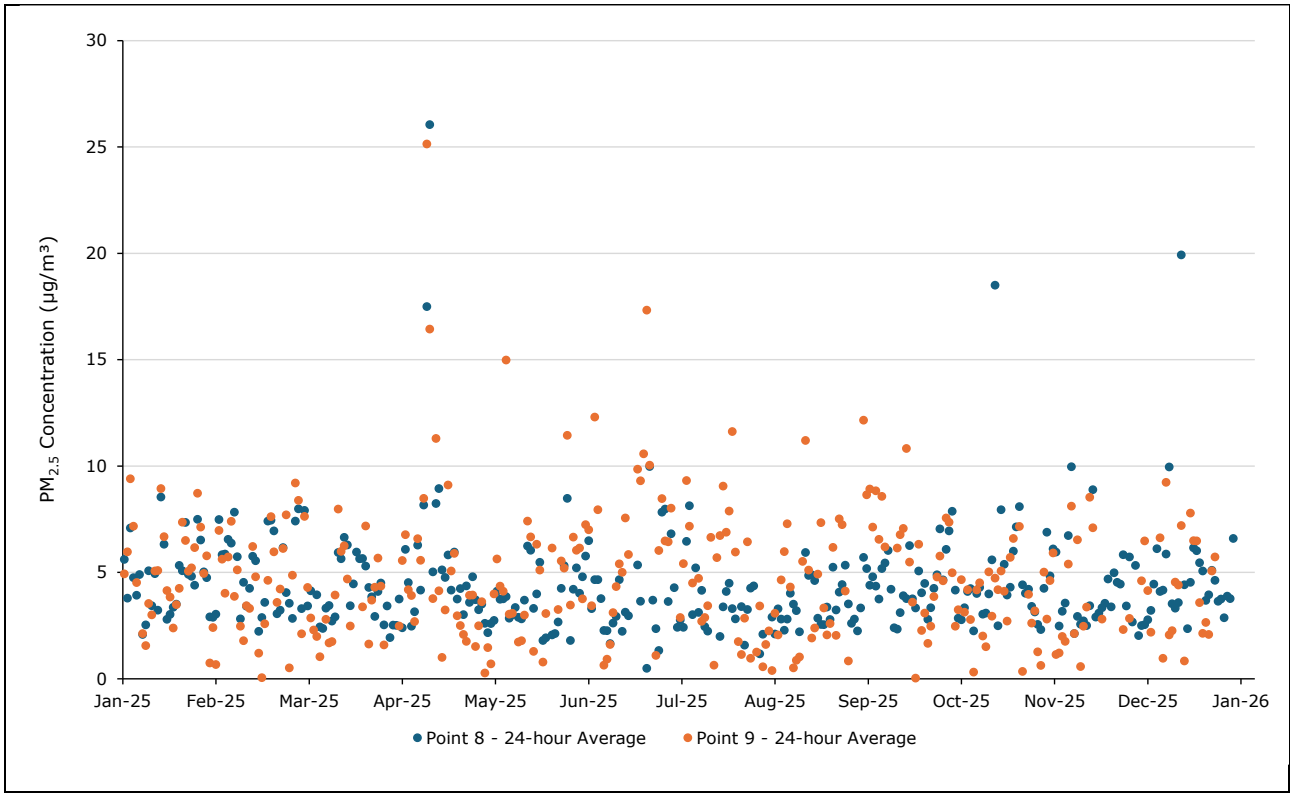


TABLE 2-5 SUMMARY OF 2025 AMBIENT MONITORING RESULTS

Pollutant	Average Period	Unit of Concentration	Data Capture	Concentration Statistic					
				Minimum	Average	Maximum	50th percentile	70th percentile	99th percentile
Point 8 (Blackmans Flat)									
Nitrogen dioxide	1-hour	pphm	95%	-0.01	0.35	2.86	0.25	0.41	1.4
	24-hour		100%	0.04	0.35	0.92	0.34	0.41	0.88
Sulfur dioxide	1-hour		92%	-0.01	0.35	2.9	0.04	0.10	1.40
	24-hour		98%	-0.38	0.10	0.83	0.08	0.13	0.46
$PM_{2.5}$	24-hour	µg/m³	96%	0.5	4.4	26	4.0	4.9	14
Fluoride	7 days		85%	0.000	0.009	0.028	0.008	0.013	0.025
	30 days		75%	0.001	0.009	0.016	0.010	0.012	0.015
	90 days		75%	0.002	0.007	0.012	0.008	0.010	0.012
Point 9 (Wallerawang)									
Nitrogen dioxide	1-hour	pphm	93%	-0.09	0.32	2.5	0.18	0.35	1.6
	24-hour		97%	0.03	0.32	1.0	0.29	0.41	0.87
Sulfur dioxide	1-hour		93%	-0.09	0.32	2.5	0.04	0.08	0.60
	24-hour		98%	-0.15	0.07	0.48	0.05	0.10	0.27
$PM_{2.5}$	24-hour	µg/m³	91%	-5.0	4.4	25	4.2	5.9	14
Point 10 (Newnes Plateau)									
Nitrogen dioxide	1 month	pphm	100%	0.030	0.030	0.030	0.030	0.030	0.030
Sulfur dioxide	1 month		100%	0.045	0.064	0.215	0.045	0.045	0.202

Notes: "<" – Less than LOR. Average and percentile values incorporate values less than the LOR at half of the LOR.

2.4 COMPLIANCE REVIEW

Compliance against monitoring requirements (EPL Condition M2.2) and air concentration limits (EPL Condition L3.2 and L3.3) has been reviewed and is summarised in Table 2-6.

TABLE 2-6 SUMMARY OF MONITORING REQUIREMENTS AND LIMIT COMPLIANCE REVIEW

Pollutant	Compliance			Comments
	Monitoring Frequency	Monitoring Method	Concentration Limit	
Point 2,3				
Cadmium	✓	✓	✓	-
Chlorine	✓	✓	✓	
Fluorine	✓	✓	✓	
Hydrogen chloride	✓	✓	✓	
Mercury	✓	✓	✓	
Nitrogen oxides	✓	✓	✓	
Solid particles	✓	✓	✓	
Sulfur dioxide	✓	✓	✓	
Sulfuric acid mist and sulfur trioxide (as SO_3)	✓	✓	✓	
Type 1 and Type 2 substances in aggregate	✓	✓	✓	
Volatile organic compounds as n-propane equivalent	✓	✓	✓	
Point 4,5,6,7				
Cadmium	✓	✓	N/A	-
Flow rate	N/A	N/A	N/A	
Mercury	✓	✓	N/A	
Moisture	✓	✓	N/A	
Nitrogen oxides	✓	✓	N/A	
Oxygen (O_2)	✓	✓	N/A	
Solid particles	✓	✓	N/A	
Sulfur dioxide	✓	✓	N/A	
Temperature	✓	✓	N/A	
Type 1 and Type 2 substance in aggregate	✓	✓	N/A	
Point 4,6				
Carbon dioxide	✓	✓	N/A	-
Chlorine	✓	✓	N/A	
Fluorine	✓	✓	N/A	
Hydrogen chloride	✓	✓	N/A	
Sulfuric acid mist and sulfur trioxide (as SO_3)	✓	✓	N/A	
Volatile organic compounds as n-propane equivalent	✓	✓	N/A	

Pollutant	Compliance			Comments
	Monitoring Frequency	Monitoring Method	Concentration Limit	
Point 8				
Fluoride	✓	✓	N/A	-
Point 8,9				
Nitrogen dioxide	✓	✓	N/A	-
$PM_{2.5}$	✓	✓	N/A	
Sulfur dioxide	✓	✓	N/A	
Point 10				
Nitrogen dioxide	✓	✓	N/A	-
Sulfur dioxide	✓	✓	N/A	

2.4.1 EXCEEDANCES OF AIR EMISSION LIMITS AND PLANT OPERATING CONDITIONS AT THE TIME

No exceedances of air emission limits were reported during the reporting period.

2.4.2 SUMMARY OF EMISSION REDUCTION MEASURES

MPPS continued to conduct boiler upgrades and tuning during reporting period, which is a continuous optimisation process.

Mt. Piper Unit 1 underwent a Major outage in April- June 2025 where extensive work was conducted on boiler combustion systems including:

- OEM type burner replacement;
- Air register refurbishment; and
- Ductwork and damper maintenance.

After this outage, boiler tuning optimisation was conducted with implementation of several adjustments. The outcome of this boiler tuning was to reduce the variability in emissions at specific boiler loads, thus reducing hourly average NO_x.

Mt. Piper Unit 2 had a minor outage in April 2025 when two burner air registers were replaced, enabling the boiler tune to be fully implemented on this Unit.

EnergyAustralia are also in the process of assessing additional measures to further reduce air emissions from the units. Several NO_x reduction studies were undertaken in 2025 to prepare options for consideration against the Group 5 and Group 6 emissions targets. These studies included:

- Computational Fluid Dynamics modelling of over-air ports (for potential future modifications);
- Flue Gas Recirculation Study;
- Selective Non-Catalytic Reduction of NO_x;
- Selective Catalytic Reduction of NO_x;
- Mill Classifier Optimisation computational modelling; and
- Upgrades to Burner systems.

EnergyAustralia is progressing a comprehensive options analysis and business case to address the requirements under the clean air regulations.

The timeline for the implementation of NO_x reduction measures are described under condition E11.1 of EPL 13007. Additional reduction measures and progress are developed in consultation with the EPA and updated in the License as necessary.

3. HISTORICAL AIR EMISSION MONITORING REVIEW

Condition R1.9(b) requires an analysis of the boilers' emissions performance for the past five years. The historical analysis was completed for the pollutants listed in Condition M2.2. The data used for the historical analysis were sourced from annual returns, stack testing, CEMS data and ambient air monitoring and have been reported at dry, 0°C, 101.325 kPa conditions, corrected to 7% O_2.

3.1 HISTORICAL FUEL USAGE

MPPS has combusted black coal as the primary fuel with supplementary firing using fuel oil during start-up operations for at least the past ten years.

Monthly amounts of coal burnt and average coal analysis for the reporting period are shown in **Table 3-1**. The stack tests for the reporting period were performed in January, June, July, October, as shown in **bold font** in **Table 3-1**. While there is variability in the coal quality, the quality of coal burnt during the stack testing did not favour any specific conditions and is considered to be representative of typical coal properties for coal used at MPPS.

The long-term trends of the coal consumption and coal quality are presented in **Figure 3-1** to **Figure 3-3**. The data show the monthly coal consumption variations over the past five years. Coal consumption typically peaks in the winter months (June, July and August). The coal quality has been generally stable over the past five years, especially for carbon, ash, sulfur, nitrogen and hydrogen percentages. The moisture and oxygen contents show more variation.

Based on the review of the coal composition during 2025 and the long-term trends of coal quality, the coal quality during stack testing is considered to be representative of typical conditions.

TABLE 3-1 MONTHLY COAL CONSUMED AND COAL ANALYSIS – 2025

Month	Coal Burnt	Average Coal Analysis							
		As Fired		Dry, Ash-Free (DAF)					
		Moisture	Ash	S	F	C	H	N	O
		%	%	%	ppm	%	%	%	%
Jan	**256,769**	**7.87**	**25.2**	**0.79**	**150**	**83.6**	**5.46**	**1.94**	**8.20**
Feb	232,002	7.72	23.8	0.70	130	83.1	5.44	1.96	8.80
Mar	256,770	6.94	22.3	0.79	125	82.1	5.34	1.94	9.80
Apr	31,739	7.15	22.2	0.81	135	83.3	5.66	1.90	8.30
May	170,541	7.78	25.0	0.84	140	83.2	5.50	1.93	8.50
Jun	**307,057**	**7.92**	**22.5**	**0.78**	**135**	**84.2**	**5.44**	**1.89**	**7.70**
Jul	**276,742**	**8.40**	**22.4**	**0.79**	**120**	**84.0**	**5.62**	**1.96**	**7.60**
Aug	275,496	8.63	23.2	0.83	115	83.8	5.55	1.92	7.90
Sep	245,010	7.57	23.2	0.77	115	83.4	5.55	1.94	8.30
Oct	**242,965**	**6.33**	**22.6**	**0.80**	**120**	**83.4**	**5.67**	**1.95**	**8.20**
Nov	234,196	6.97	24.4	0.87	145	83.8	5.72	1.95	7.70

Month	Coal Burnt	Average Coal Analysis							
		As Fired		Dry, Ash-Free (DAF)					
		Moisture	Ash	S	F	C	H	N	O
		%	%	%	ppm	%	%	%	%
Dec	216,409	7.38	23.3	0.82	125	82.5	5.62	1.96	9.10
Average	*228,808*	*7.56*	*23.3*	*0.80*	*130*	*83.4*	*5.55*	*1.94*	*8.3*
Total	2,745,695	-							

FIGURE 3-1 HISTORICAL MONTHLY COAL BURNT (TONNES)

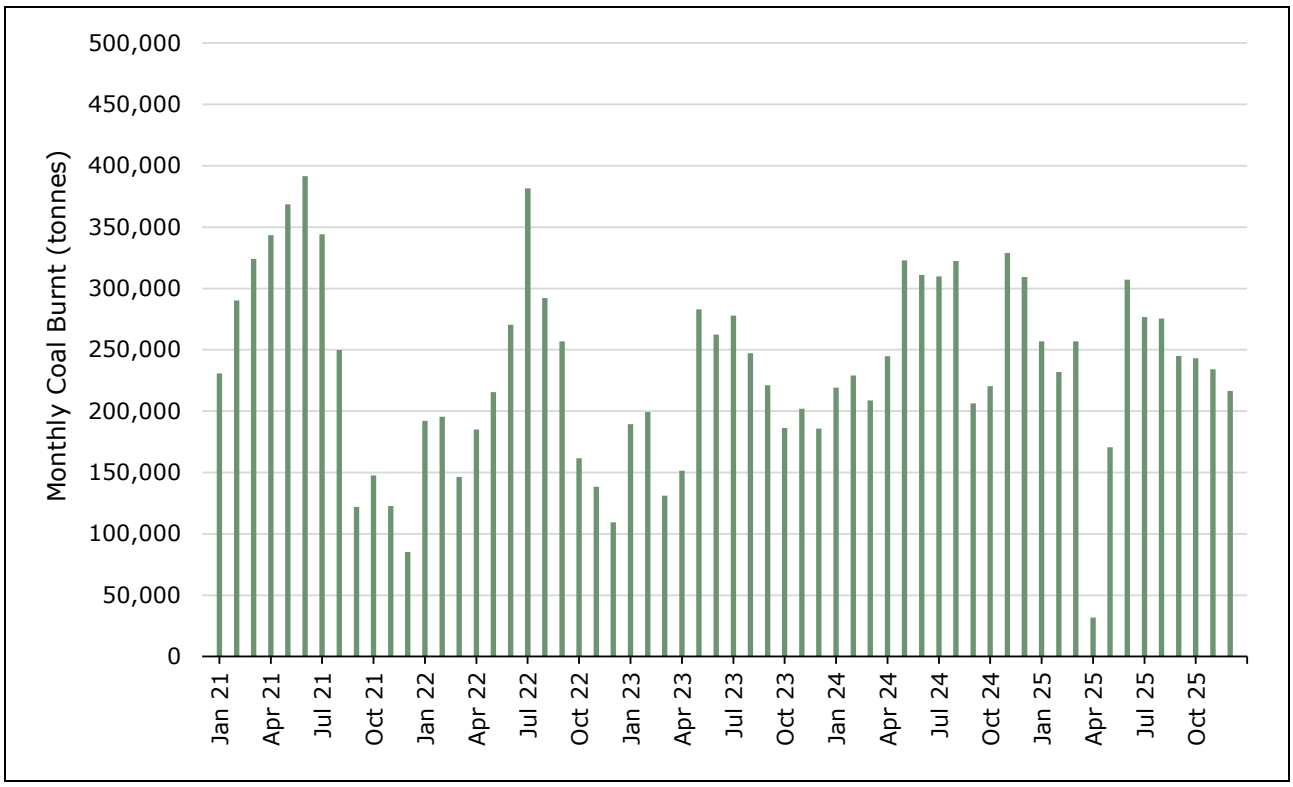


FIGURE 3-2 HISTORICAL COAL ANALYSIS – CARBON AND ASH (%)

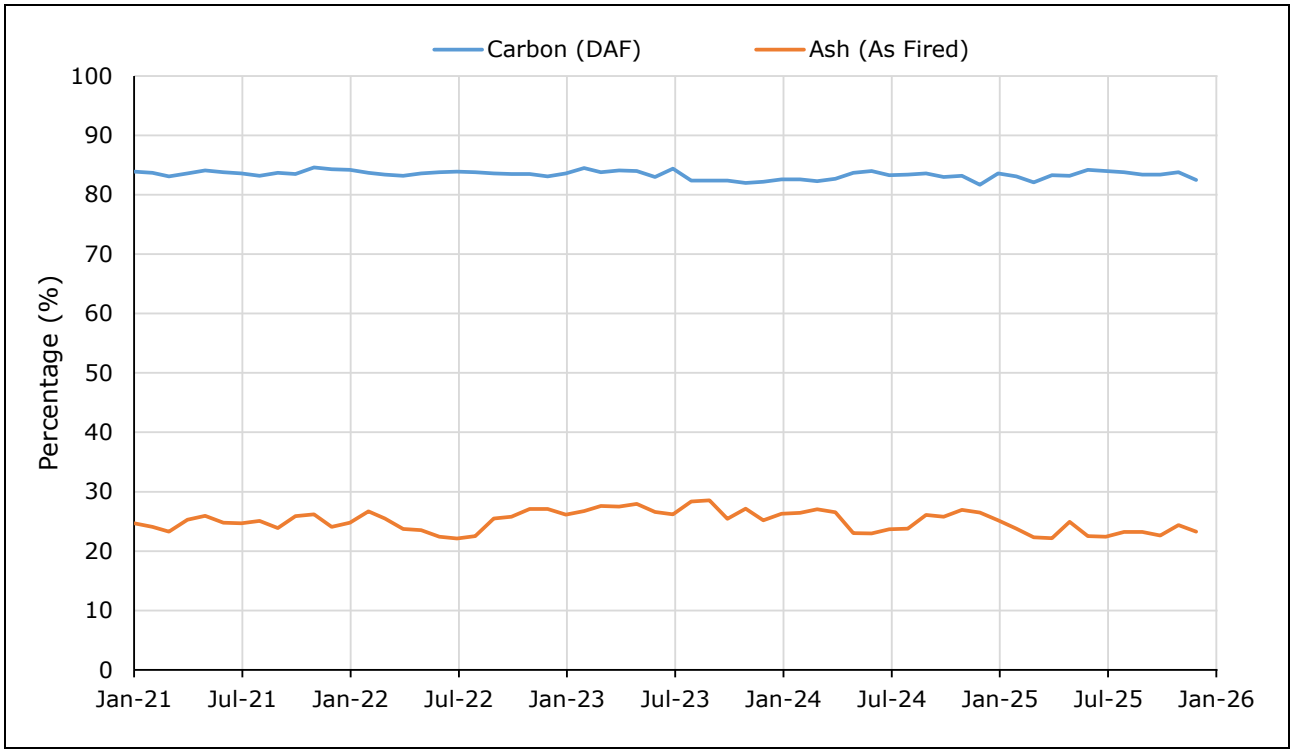
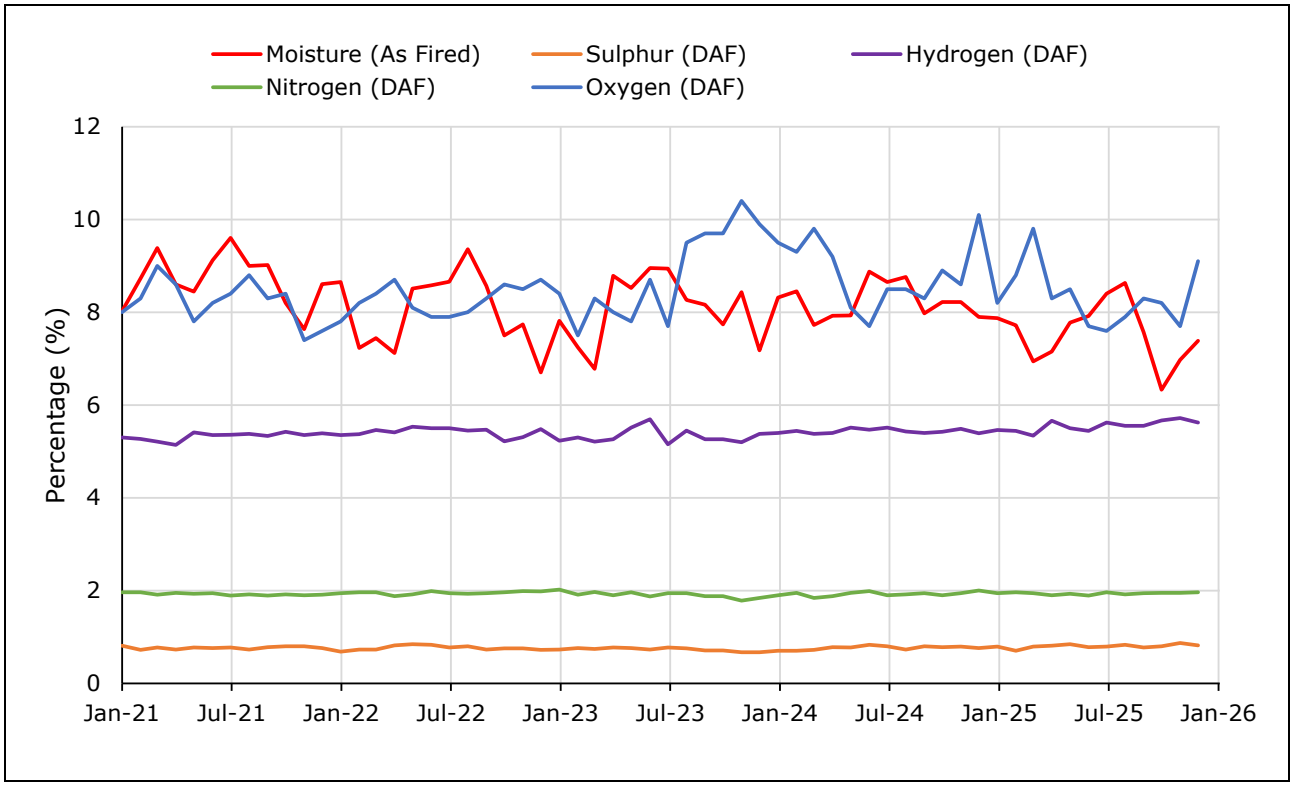


FIGURE 3-3 HISTORICAL COAL ANALYSIS – MOISTURE, SULFUR, HYDROGEN, NITROGEN AND OXYGEN (%)



3.2 COMPARISON WITH HISTORICAL STACK EMISSION MONITORING

The analysis of the historical stack emissions includes review of the fuel usage, stack concentrations (at dry, 0 °C, 101.325 kPa conditions, corrected to 7% O_2), as well as the analysis of correlations with default emission factors and potential coal quality influences. Samples below the LOR have been shown at half of the LOR.

The historical stack test documents reviewed include:

- Ektimo 2021, Quarterly (Q1) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R010363, 12 May 2021;
- Ektimo 2021, Quarterly (Q2) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R010887, 25 June 2021;
- Ektimo 2021, Quarterly (Q3) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R011365, 13 October 2021;
- Ektimo 2021, Quarterly (Q4) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R011676, 5 January 2022;
- Ektimo 2022, Quarterly (Q1) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R012309, 30 March 2022;
- Ektimo 2022, Quarterly (Q2) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R012769ar, 12 July 2022;
- Ektimo 2022, Quarterly (Q3) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R013250, 29 July 2022;
- Ektimo 2022, Quarterly (Q4) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R013593, 25 October 2022;
- Ektimo 2022, Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R013819, 9 November 2022;
- Ektimo 2022, Quarterly (Q4) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R013949, 16 December 2022;
- Ektimo 2023, Quarterly (Q1) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R014323, 5 April 2023;
- Ektimo 2023, Quarterly (Q1) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R014518, 26 April 2023;
- Ektimo 2023, Quarterly (Q3) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R015163, 14 August 2023;
- Ektimo 2023, Quarterly (Q4) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R015826, 30 November 2023; and
- Ektimo 2024, Quarterly (Q2) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R014882a, 15 January 2024.
- Ektimo 2024a, Quarterly (Q1) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R016420, 1 March 2024;
- Ektimo 2024b, Quarterly (Q2) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R016840, 6 June 2024;
- Ektimo 2024c, Quarterly (Q3) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R017264, 12 August 2024;

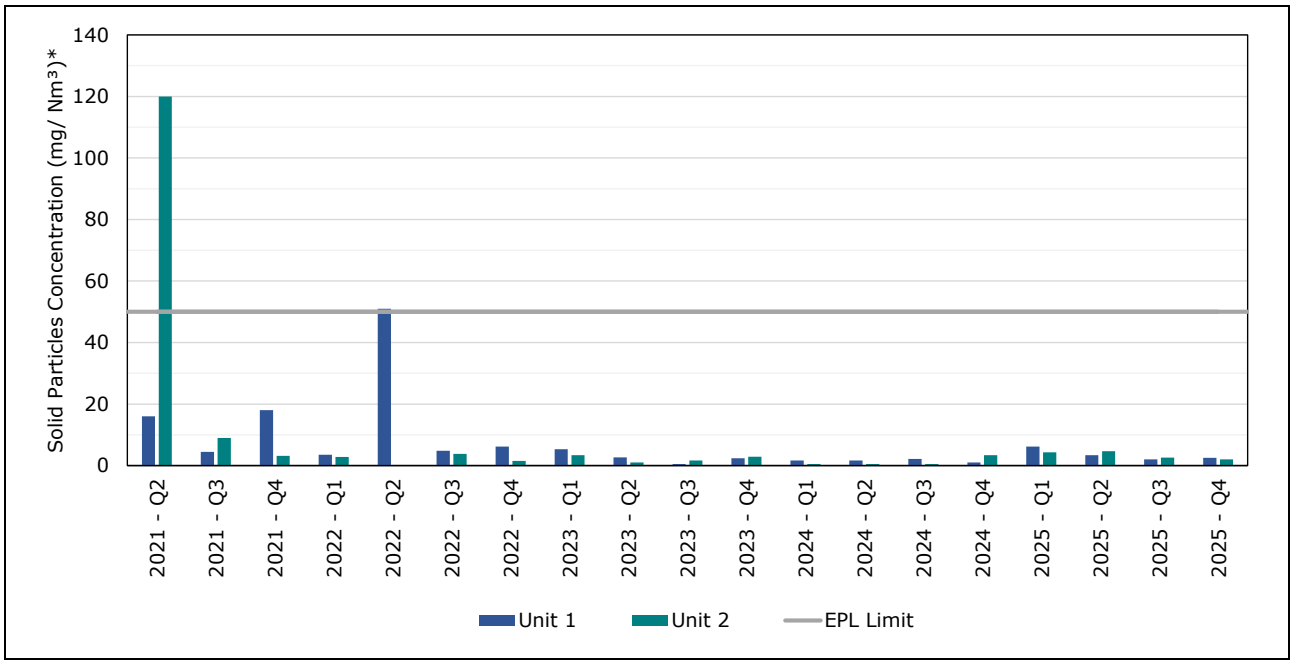
- Ektimo 2024d, Quarterly (Q4) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R017581, 5 December 2024; and
- Ektimo 2025, Quarterly (Q4) Emission Testing Report – EnergyAustralia NSW Pty Ltd – Mt Piper Power Station. Report number R017581-1a2r, 5 February 2025.

The 2025 stack test reports are listed in **Section 2.1** and included in full within **Appendix A**. Prior testing reports are provided within previous AAEMRs.

3.2.1 SOLID PARTICLES

Figure 3-4 shows the solid particles concentrations measured between 2021 and 2025. The solid particles limit is 50 mg/Nm³ in both the current and previous EPL, measured quarterly. All reported concentrations were below the EPL limit during the reporting period.

FIGURE 3-4 2021 – 2025 STACK TESTING RESULTS – SOLID PARTICLES

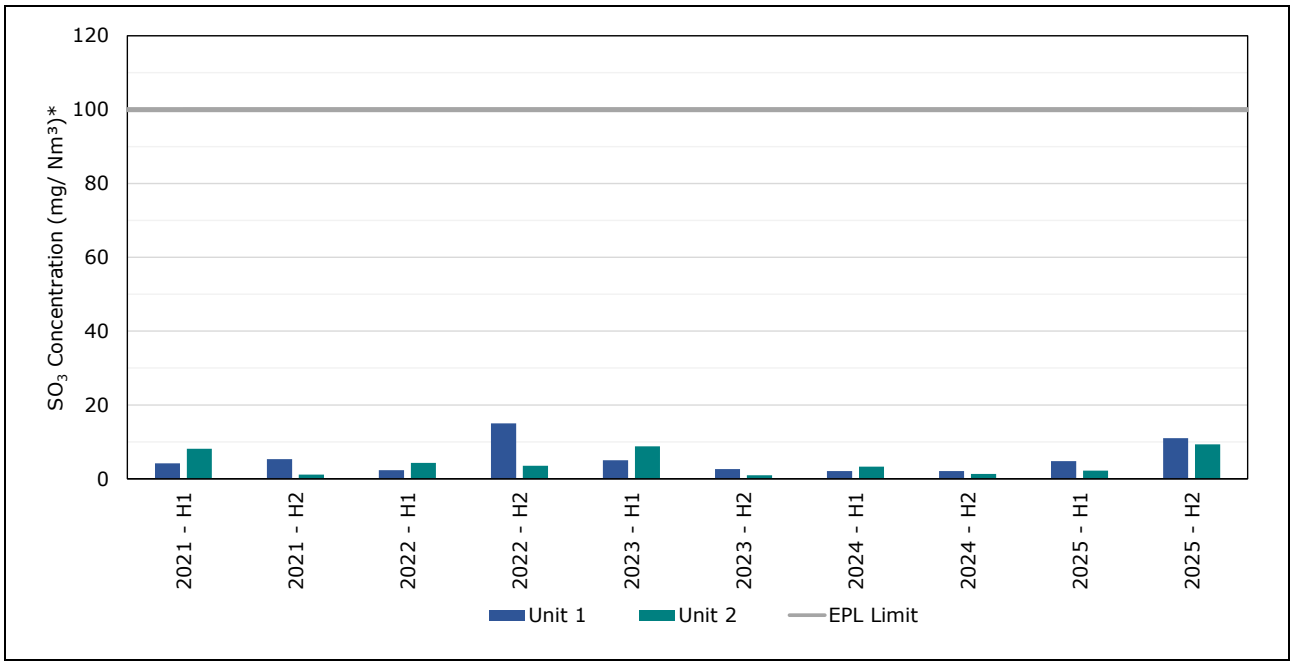


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.2 SULFUR TRIOXIDE/SULFURIC ACID (AS SO_3)

Figure 3-5 shows the sulfur trioxide/sulfuric acid (as SO_3) concentrations measured between 2021 and 2025. The sulfur trioxide/sulfuric acid (as SO_3) limit is 100 mg/Nm³ in both the current and previous EPL, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-5**.

FIGURE 3-5 2021 – 2025 STACK TESTING RESULTS – SULFUR TRIOXIDE AND/OR SULFURIC ACID (AS SO_3)



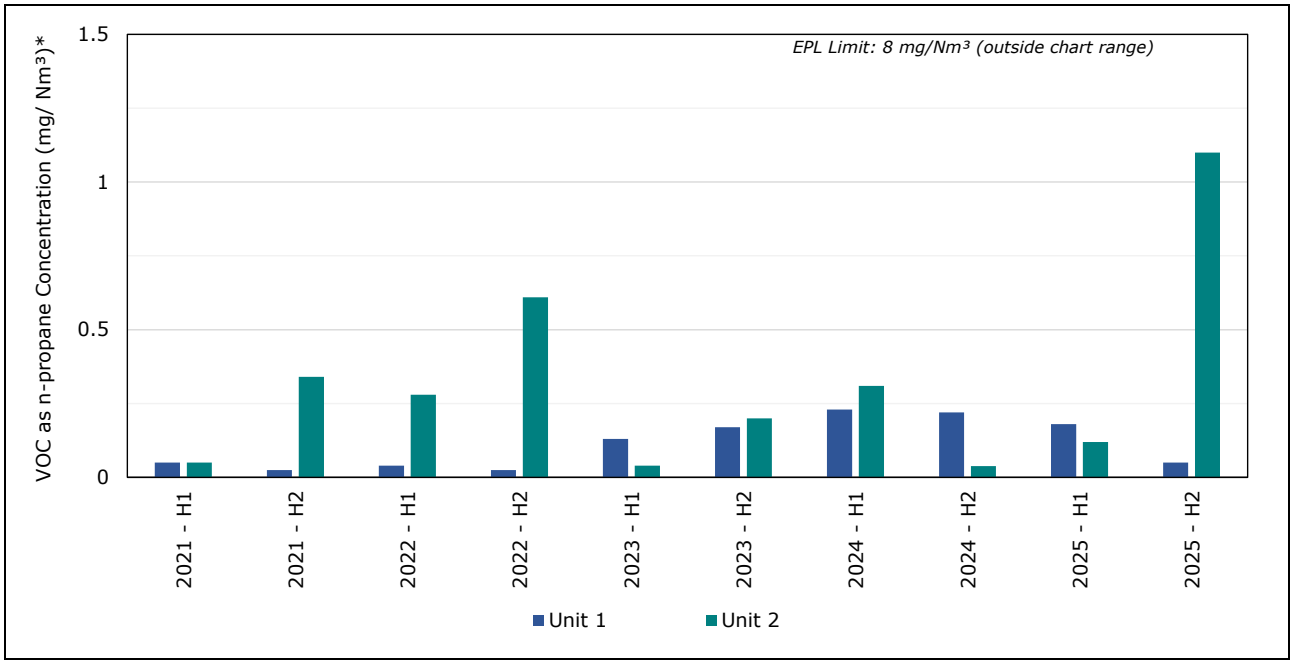
Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.3 VOC (AS N-PROPANE)

Figure 3-6 shows VOC concentrations measured between 2021 and 2025. The VOC limit reduced from 10 mg/Nm³ to 8 mg/Nm³ in 2024, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-6**. Reported concentrations are often below the LOR, which varies based on sampling and analysis conditions, and is commonly in the range of 0.05 – 0.10 mg/Nm³.

These results show variability between samples, with the 2025 Unit 2 H2 result being higher than the previous peak measurement which was observed on Unit 2 in the second half of 2022, and equal in magnitude to an earlier measurement that was collected in 2020.

FIGURE 3-6 2021 – 2025 STACK TESTING RESULTS – VOC (AS N-PROPANE)

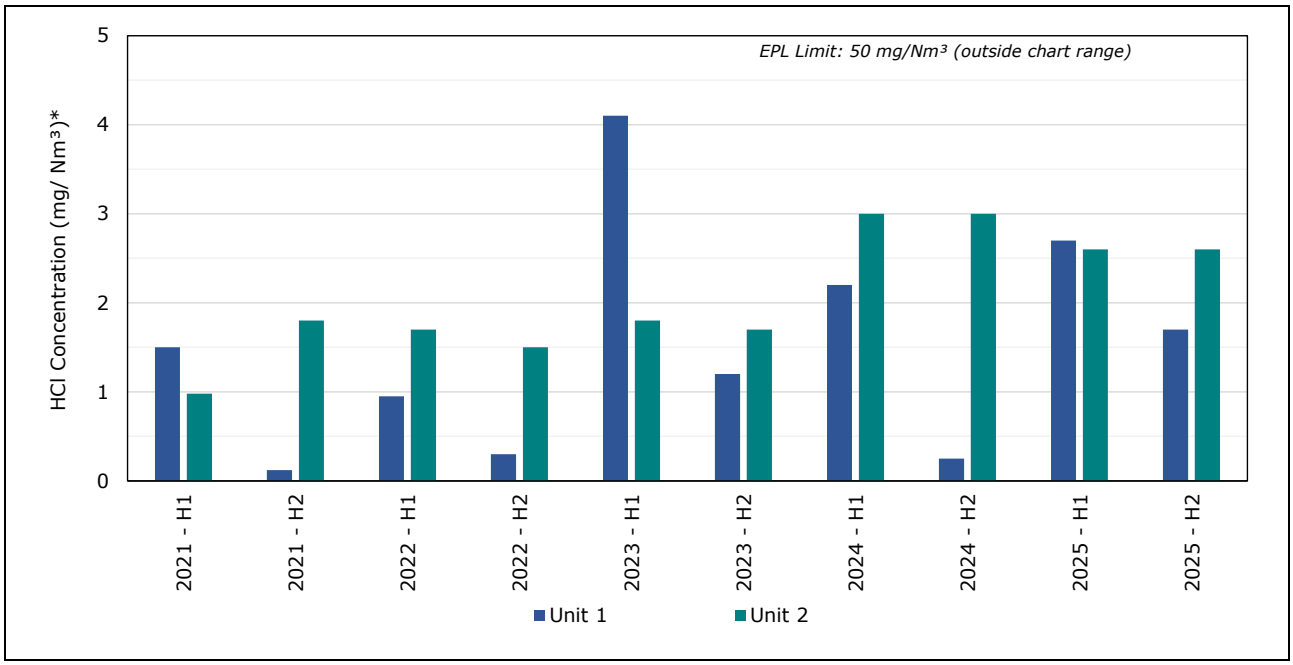


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.4 HYDROGEN CHLORIDE

Figure 3-7 shows hydrogen chloride concentrations measured between 2021 and 2025. The hydrogen chloride limit is 50 mg/Nm³ in both the current and previous EPL, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-7**.

FIGURE 3-7 2021 – 2025 STACK TESTING RESULTS – HYDROGEN CHLORIDE

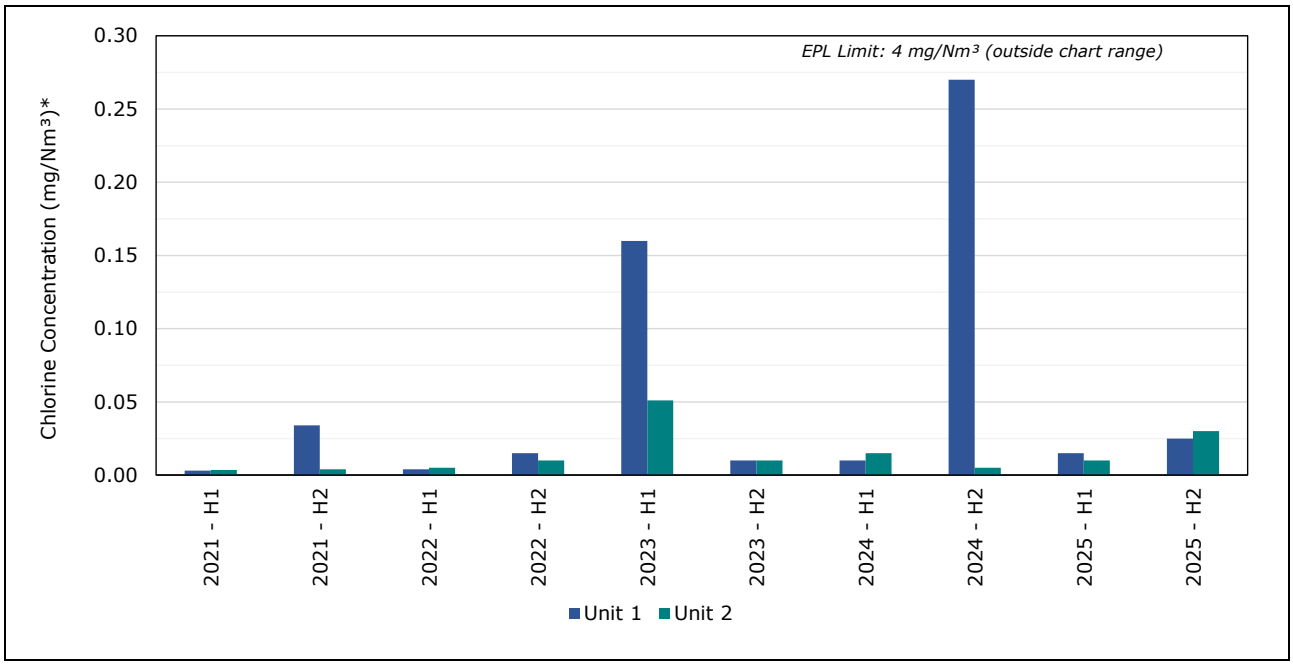


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.5 CHLORINE

Figure 3-8 shows chlorine concentrations measured between 2021 and 2025. The chlorine limit reduced from 20 mg/Nm³ to 4 mg/Nm³ in 2024, measured six-monthly. All reported concentrations were well below the EPL limit as shown in **Figure 3-8**. Reported concentrations were commonly below the LOR, which varied based on sampling and analysis conditions, and was commonly less than 0.03 mg/Nm³.

FIGURE 3-8 2021 – 2025 STACK TESTING RESULTS – CHLORINE

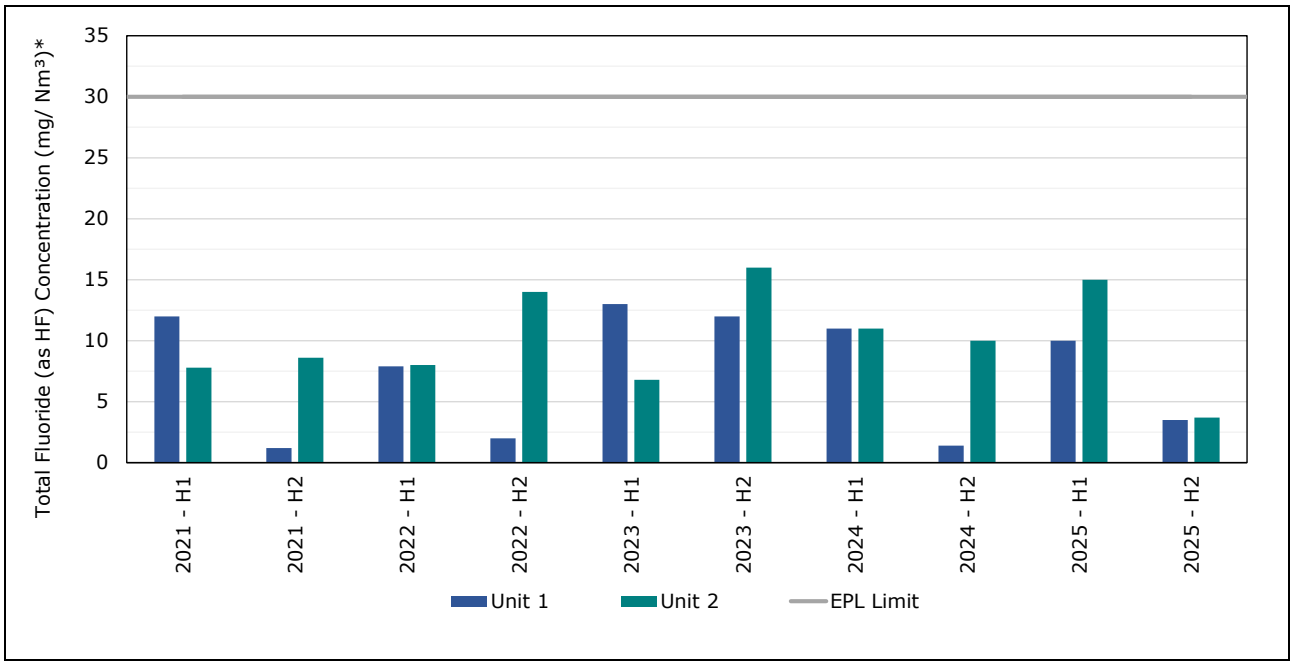


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.6 TOTAL FLUORIDE

Figure 3-9 shows total fluoride concentrations measured between 2021 and 2025. The total fluoride limit is 30 mg/Nm³ in both the current and previous EPL, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-9**.

FIGURE 3-9 2021 – 2025 STACK TESTING RESULTS – TOTAL FLUORIDE

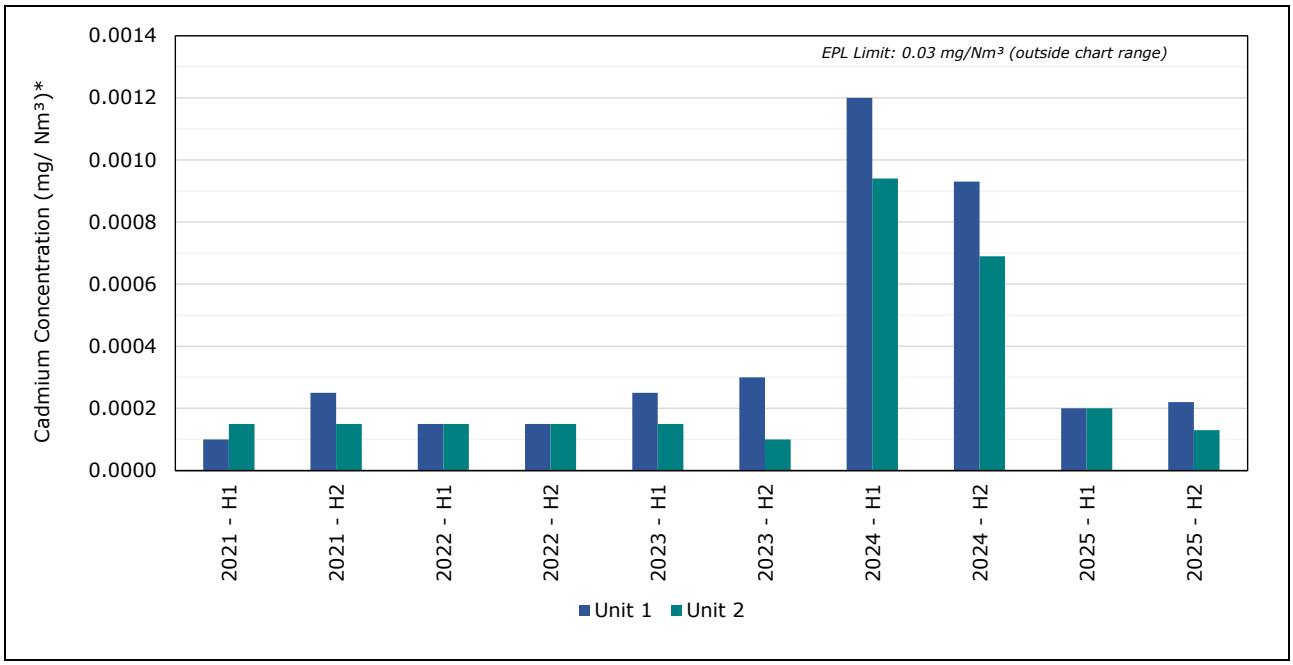


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.7 CADMIUM

Figure 3-10 shows cadmium concentrations measured between 2021 and 2025. The cadmium limit reduced from 0.2 mg/Nm³ to 0.03 mg/Nm³ in 2024, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-10**. Reported concentrations were commonly below the LOR, which varied based on sampling and analysis conditions, and is commonly less than 0.0006 mg/Nm³.

FIGURE 3-10 2021 – 2025 STACK TESTING RESULTS – CADMIUM

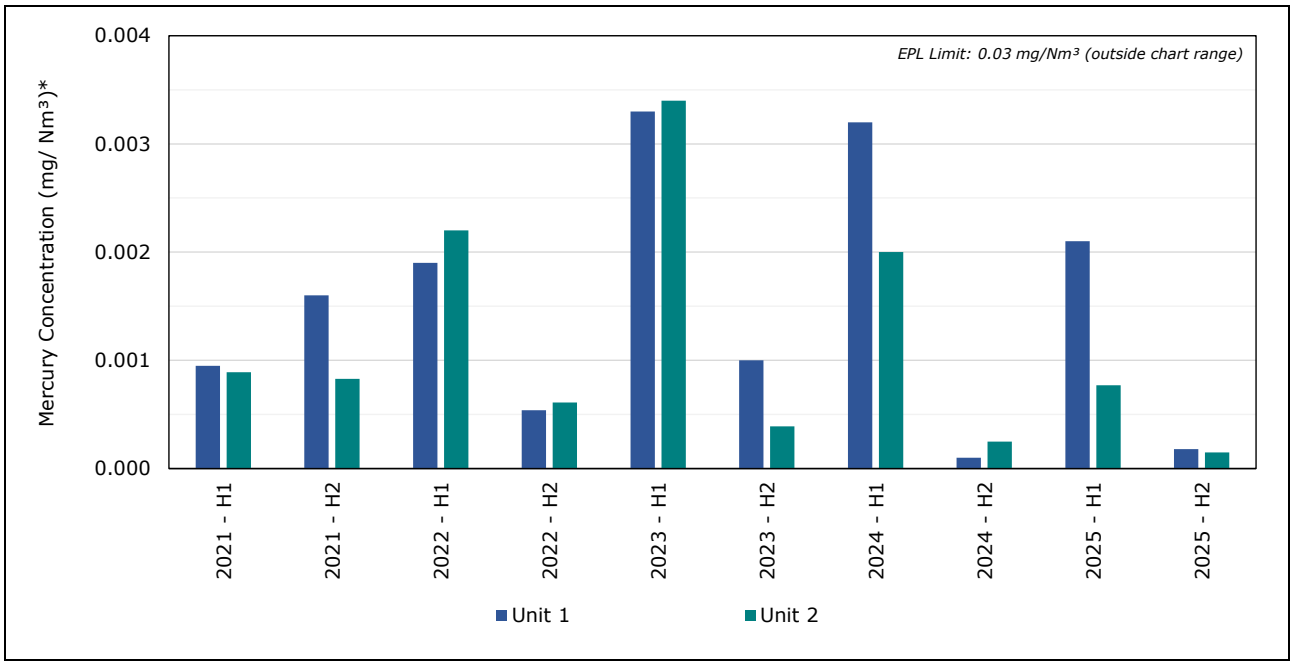


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.8 MERCURY

Figure 3-11 shows mercury concentrations measured between 2021 and 2025. The mercury limit reduced from 0.05 mg/Nm³ to 0.03 mg/Nm³ in 2024, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-11**.

FIGURE 3-11 2021 – 2025 STACK TESTING RESULTS – MERCURY

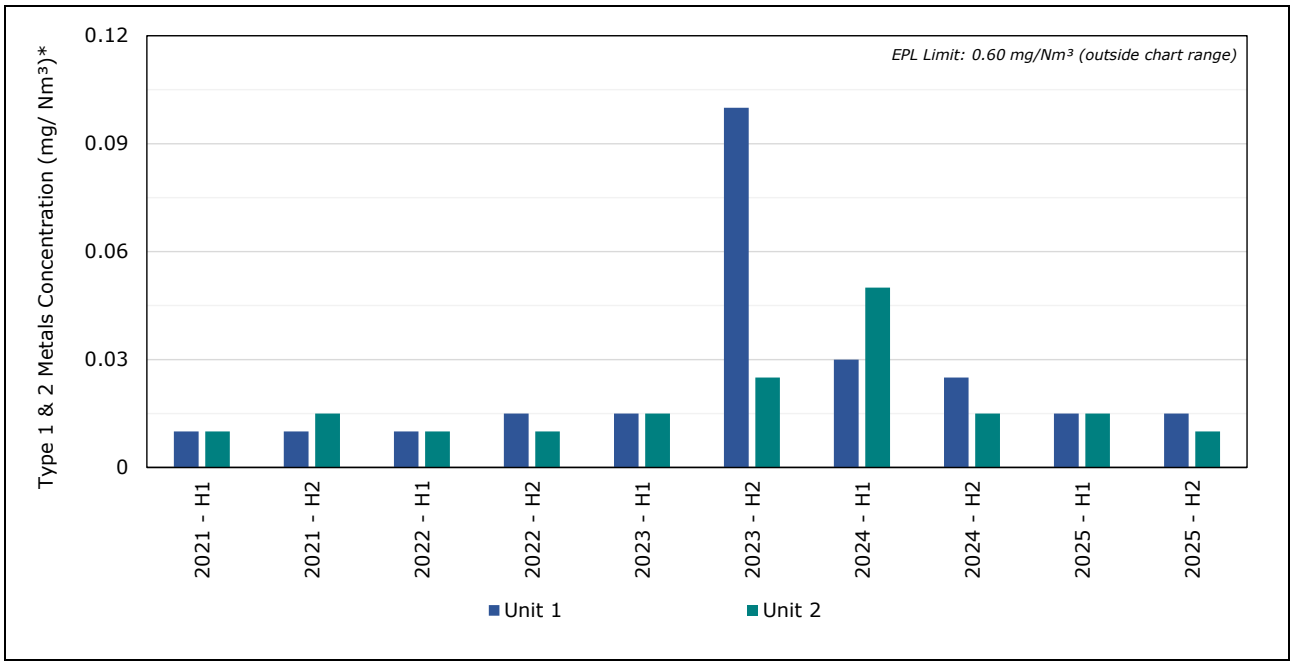


Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.9 TYPE 1 & 2 METALS

Figure 3-12 shows type 1 & 2 metals concentrations measured between 2021 and 2025. The type 1 & 2 metals limit reduced from 0.75 mg/Nm³ to 0.60 mg/Nm³ in 2024, measured six-monthly. All reported concentrations were below the EPL limit as shown in **Figure 3-12**.

FIGURE 3-12 2021 – 2025 STACK TESTING RESULTS – TYPE 1 & 2 METALS



Note: * Dry, 273K, 101.3 kPa, 7% O_2

3.2.10 NO_X AND SO_2 MONITORING REVIEW

NO_x and SO_2 (including SO_2 and sulfuric acid/sulfuric trioxide) are the assessable pollutants emitted in greatest quantity by the MPPS facility via the two boiler stacks. The licence has required SO_2 and NO_x to be monitored using CEMS since 2019.

Table 3-2 summarises the statistics of the CEMS monitoring results for the period of 2021 – 2025 (inclusive). **Figure 3-13** and **Figure 3-14** provide hourly monitoring data plots for this period for NO_x and SO_2, respectively. In addition to **Figure 3-15** and **Figure 3-16**, which present the quarterly average CEMS NO_x and SO_2 concentration to visually assess long term trends.

TABLE 3-2 STATISTICS OF 2021 TO 2025 CEMS MONITORING RESULTS

Unit	Year	Data Capture	Concentration (mg/Nm³)*		
			Minimum	Average	Maximum
NO_x (as NO_2)					
Unit 1 (Point 2)	2021	98%	230	627	1,072
	2022	99%	202	694	1,193
	2023	95%	182	695	1,187
	2024	99%	172	584	1,178
	2025	98%	230	597	1,073
Unit 2 (Point 3)	2021	100%	178	619	1,133
	2022	99%	224	624	1,260
	2023	99%	247	697	1,201
	2024	98%	207	559	1,193
	2025	98%	242	548	1,162
SO_2					
Unit 1 (Point 2)	2021	98%	1,006	1,185	1,381
	2022	99%	885	1,238	1,402
	2023	95%	644	1,115	1,378
	2024	99%	887	1,170	1,358
	2025	99%	740	1,176	1,398
Unit 2 (Point 3)	2021	100%	906	1,203	1,417
	2022	99%	1,002	1,229	1,399
	2023	97%	730	1,121	1,311
	2024	98%	830	1,148	1,320
	2025	98%	760	1,180	1,363

Note: *Reported as dry, 0°C, 101.325 kPa and corrected to 7% O_2.

FIGURE 3-13 2021 TO 2025 CEMS RESULTS – NO_X

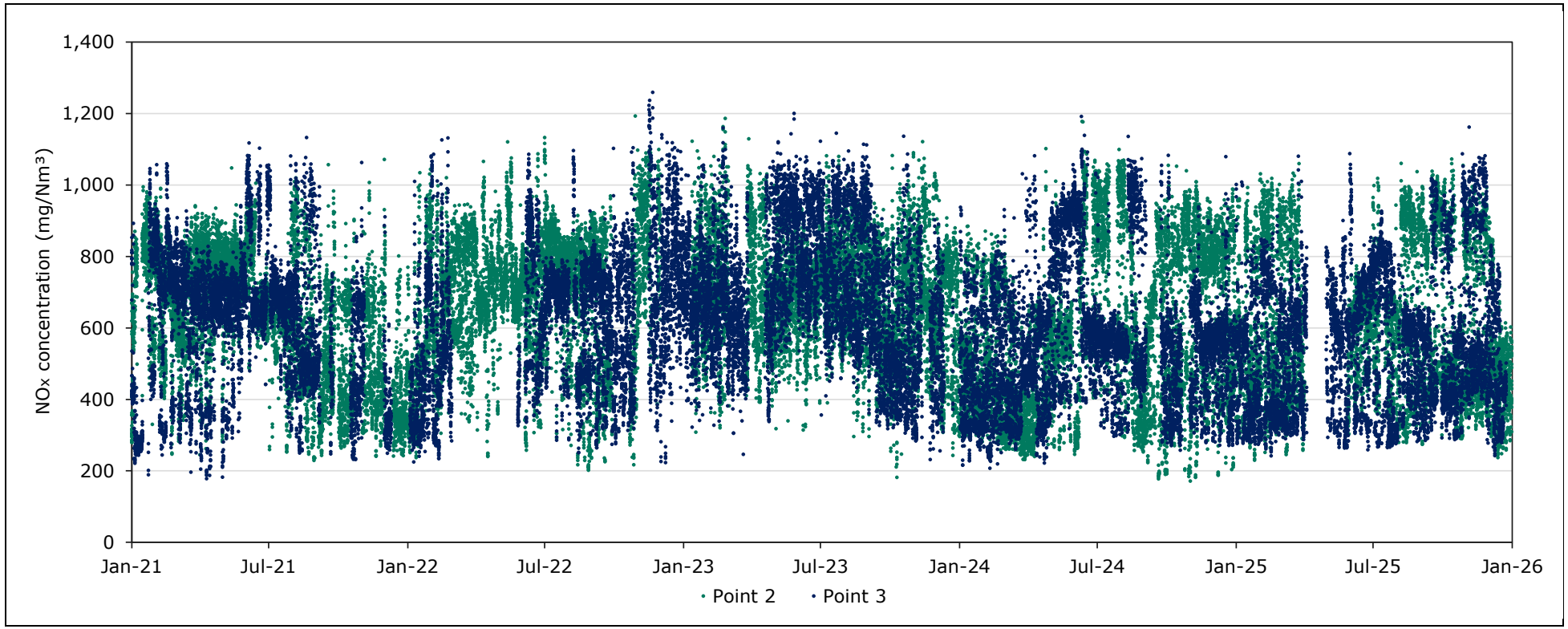


FIGURE 3-14 2021 TO 2025 CEMS RESULTS – SO_2

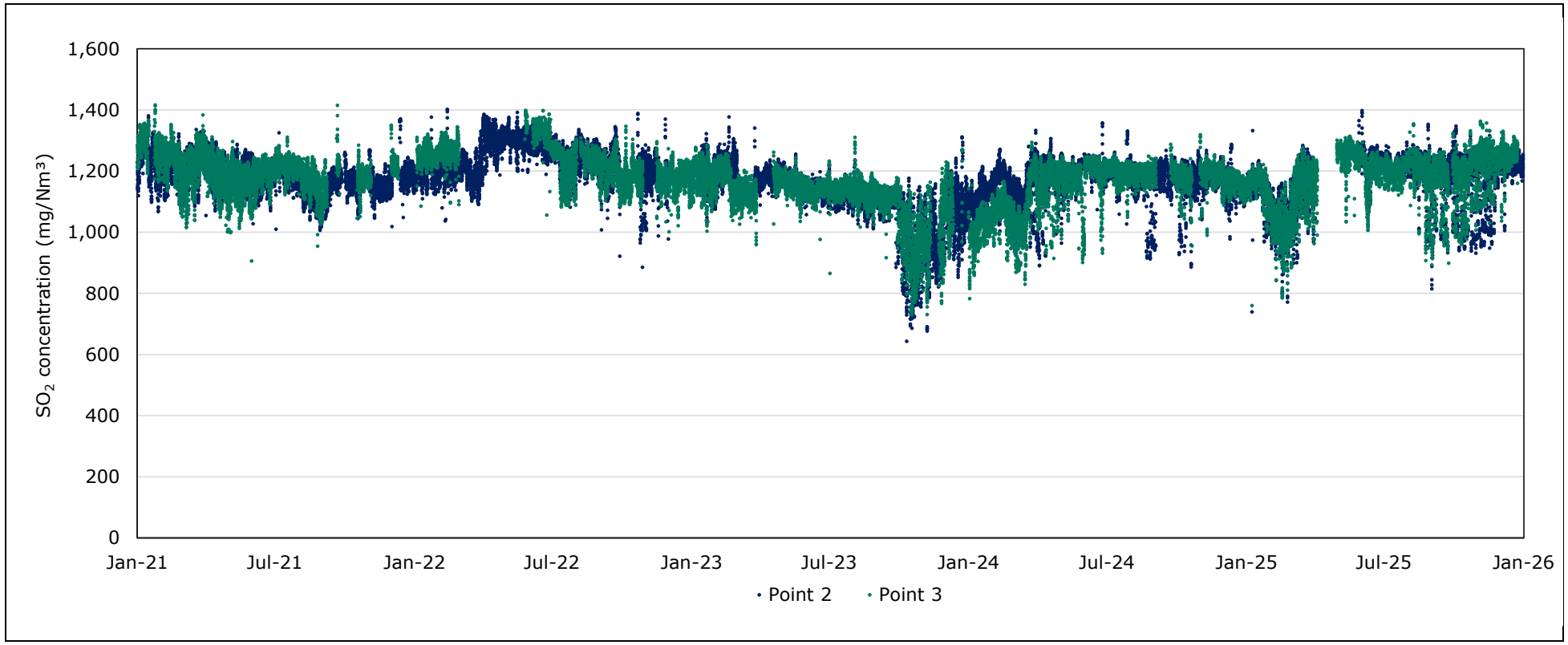


FIGURE 3-15 QUARTERLY AVERAGE CEMS MONITORING RESULTS – NO_X

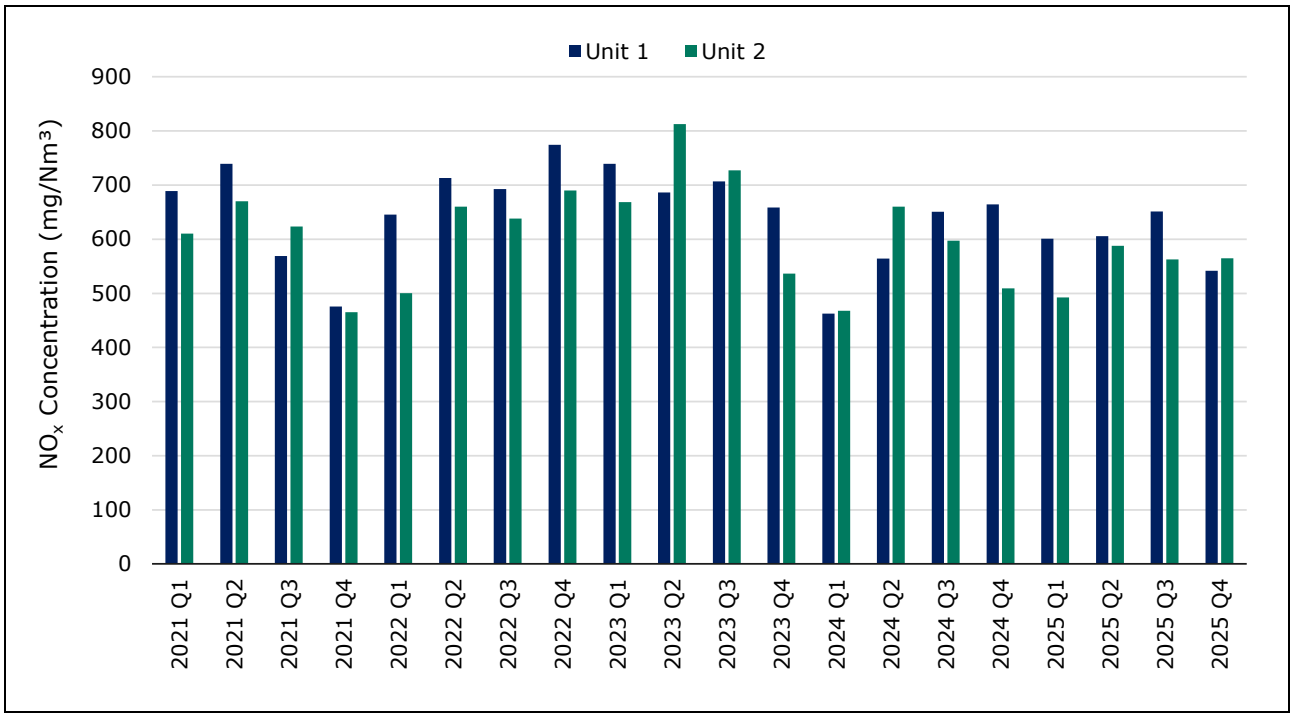
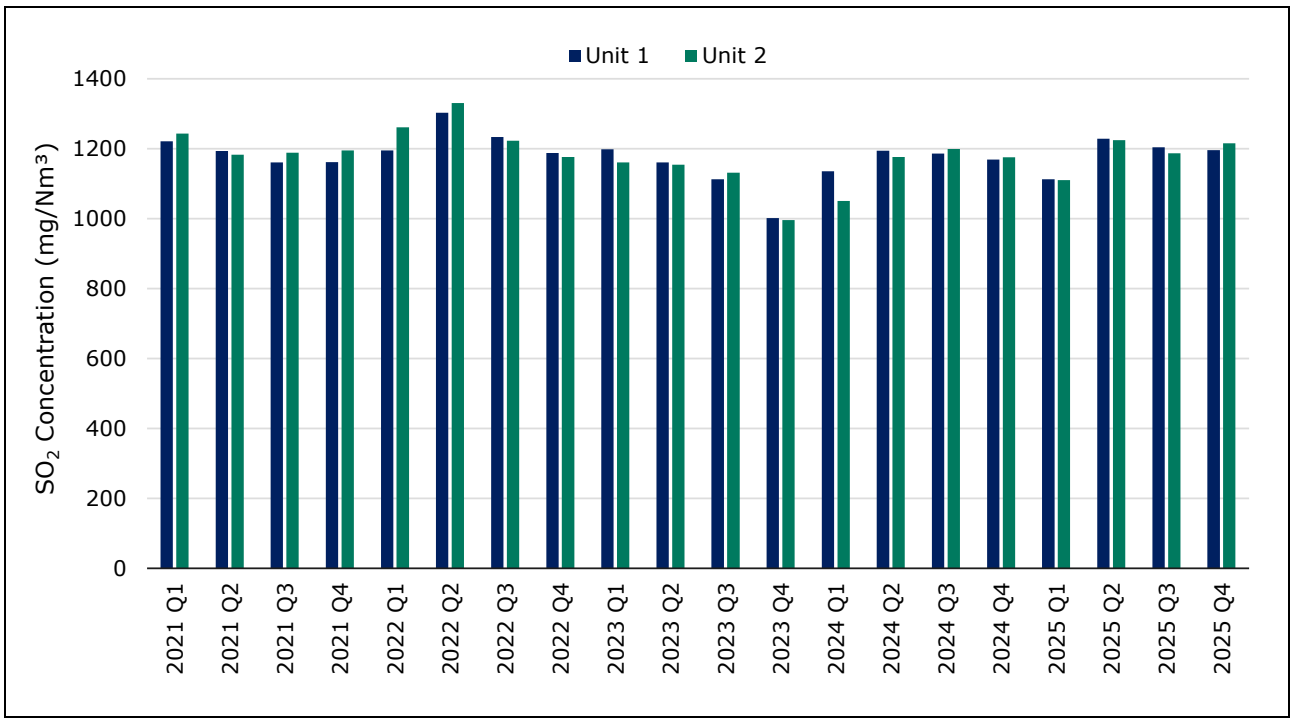


FIGURE 3-16 QUARTERLY AVERAGE CEMS MONITORING RESULTS – SO_2



3.3 AMBIENT AIR MONITORING REVIEW

EnergyAustralia monitors ambient air quality at three locations, Blackmans Flat (continuously), Wallerawang (continuously) and Newnes Plateau (monthly), (monitoring Points 8, 9 and 10, respectively in the EPL). To analyse the long-term trends of the ambient air monitoring, the available monitoring results for the current year (2025) and previous four years are reviewed and analysed in this section.

Statistics of the hourly ambient air monitoring results for Points 8 & 9 and monthly ambient air monitoring results for Point 10 are summarised in **Table 3-3**. The annual average concentrations are shown in **Figure 3-17** and **Figure 3-18** for NO_2 and SO_2, respectively. Blackmans Flat (Point 8) and Wallerawang (Point 9) have similar NO_2 concentrations over the past 5 years inclusive of 2025, fluctuating between 0.1 – 0.3 pphm. These trends are influenced by the prevalence of rainfall as well as progressive changes in the instrument noise floor.

Blackmans Flat (Point 8) and Wallerawang (Point 9) had higher SO_2 concentrations in 2025. These appear to be due to the instrumentation noise floor, which was elevated at Blackman's flat pre-June and Wallerawang post-June, as indicated in **Figure 3.19**.

When reviewing annual average trends and patterns in data at Point 10, it should be noted that samples that registered results below the LOR have been reported at half of the LOR (e.g. **Figure 3-21**).

The daily average concentrations for Point 8 and Point 9 are plotted in **Figure 3-19** and **Figure 3-20,** respectively. The monthly concentrations for Point 10 are provided in **Figure 3-21**.

TABLE 3-3 SUMMARY OF AMBIENT AIR MONITORING RESULTS BETWEEN 2021 AND 2025

Pollutant	Year	Data Capture	Concentration (pphm)					
			Min	Average	Max	50th percentile	70th percentile	99th percentile
Point 8 (Blackmans Flat) – 1-hour average								
NO_2	2021	96%	0.0	0.3	2.4	0.2	0.3	1.2
	2022	94%	0.0	0.2	2.5	0.2	0.3	1.1
	2023	95%	0.0	0.4	2.5	0.2	0.4	1.5
	2024	91%	-0.1	0.3	2.6	0.2	0.3	1.3
	2025	95%	0.0	0.4	2.9	0.3	0.4	1.4
SO_2	2021	95%	0.0	0.2	4.6	0.2	0.2	1.3
	2022	95%	0.0	0.2	3.8	0.2	0.2	1.2
	2023	95%	-0.1	0.2	3.5	0.1	0.2	1.1
	2024	92%	-0.2	0.2	4.0	0.1	0.2	1.2
	2025	92%	0.0	0.4	2.9	0.0	0.1	1.4

Pollutant	Year	Data Capture	Concentration (pphm)					
			Min	Average	Max	50th percentile	70th percentile	99th percentile
Point 9 (Wallerawang) – 1-hour average								
NO_2	2021	90%	0.0	0.3	3.8	0.2	0.4	1.4
	2022	87%	0.0	0.2	2.3	0.1	0.3	1.2
	2023	92%	-0.1	0.3	2.7	0.2	0.3	1.4
	2024	90%	0.0	0.3	2.8	0.2	0.4	1.5
	2025	93%	-0.1	0.3	2.5	0.2	0.3	1.6
SO_2	2021	90%	0.0	0.1	3.4	0.0	0.1	0.6
	2022	99%	0.0	0.1	2.6	0.0	0.0	0.5
	2023	92%	-0.1	0.0	2.1	0.0	0.0	0.3
	2024	89%	-0.1	0.0	2.8	0.0	0.0	0.6
	2025	93%	-0.1	0.3	2.5	0.0	0.1	0.6
Point 10 (Newnes Plateau) – Monthly averaged								
NO_2	2021	100%	0.030	0.030	0.030	0.030	0.030	0.030
	2022	100%	0.030	0.055	0.330	0.030	0.030	0.297
	2023	100%	0.030	0.034	0.075	0.030	0.030	0.070
	2024	100%	0.030	0.030	0.030	0.030	0.030	0.030
	2025	100%	0.030	0.030	0.030	0.030	0.030	0.030
SO_2	2021	100%	0.045	0.091	0.435	0.045	0.045	0.411
	2022	100%	0.045	0.065	0.185	0.045	0.045	0.181
	2023	100%	0.045	0.045	0.045	0.045	0.045	0.045
	2024	100%	0.045	0.061	0.213	0.045	0.045	0.197
	2025	100%	0.045	0.064	0.215	0.045	0.045	0.202

FIGURE 3-17 AMBIENT AIR MONITORING RESULTS – ANNUAL AVERAGE NO_2

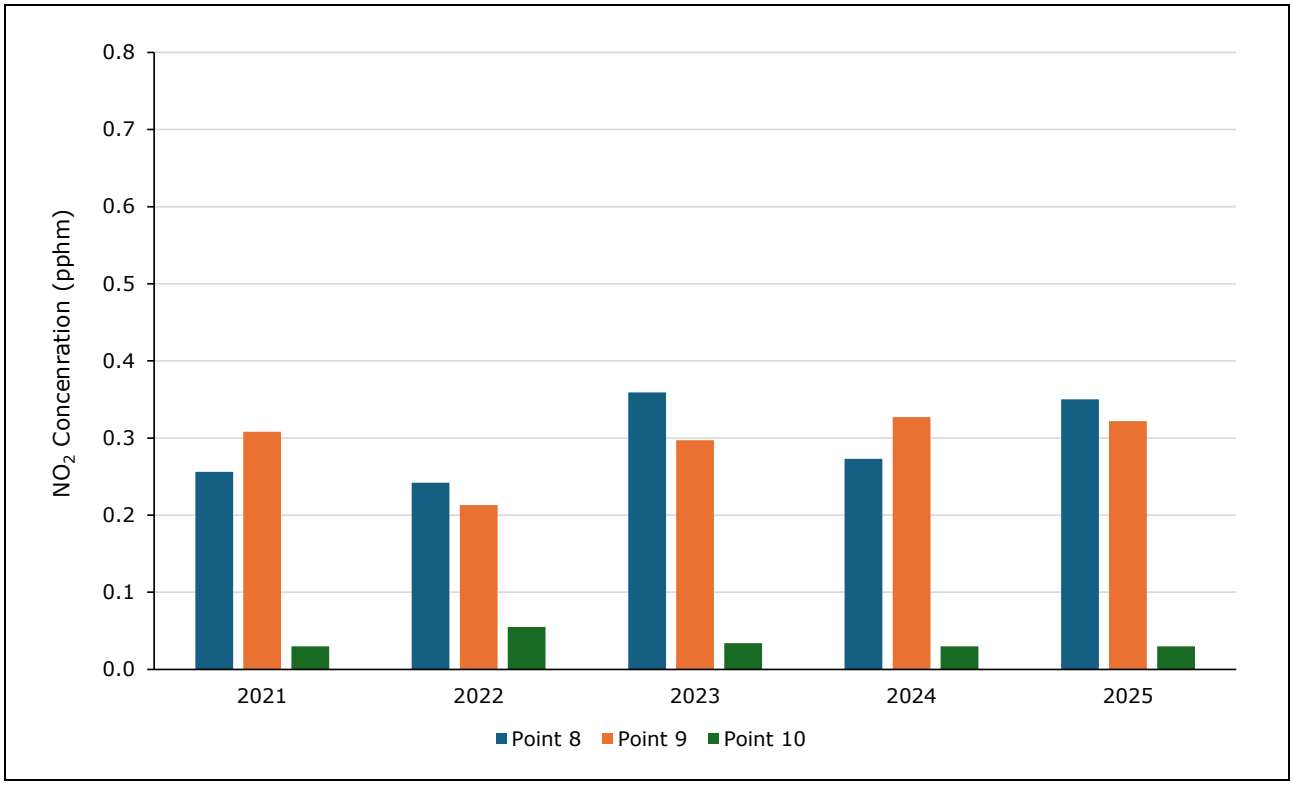


FIGURE 3-18 AMBIENT AIR MONITORING RESULTS – ANNUAL AVERAGE SO_2

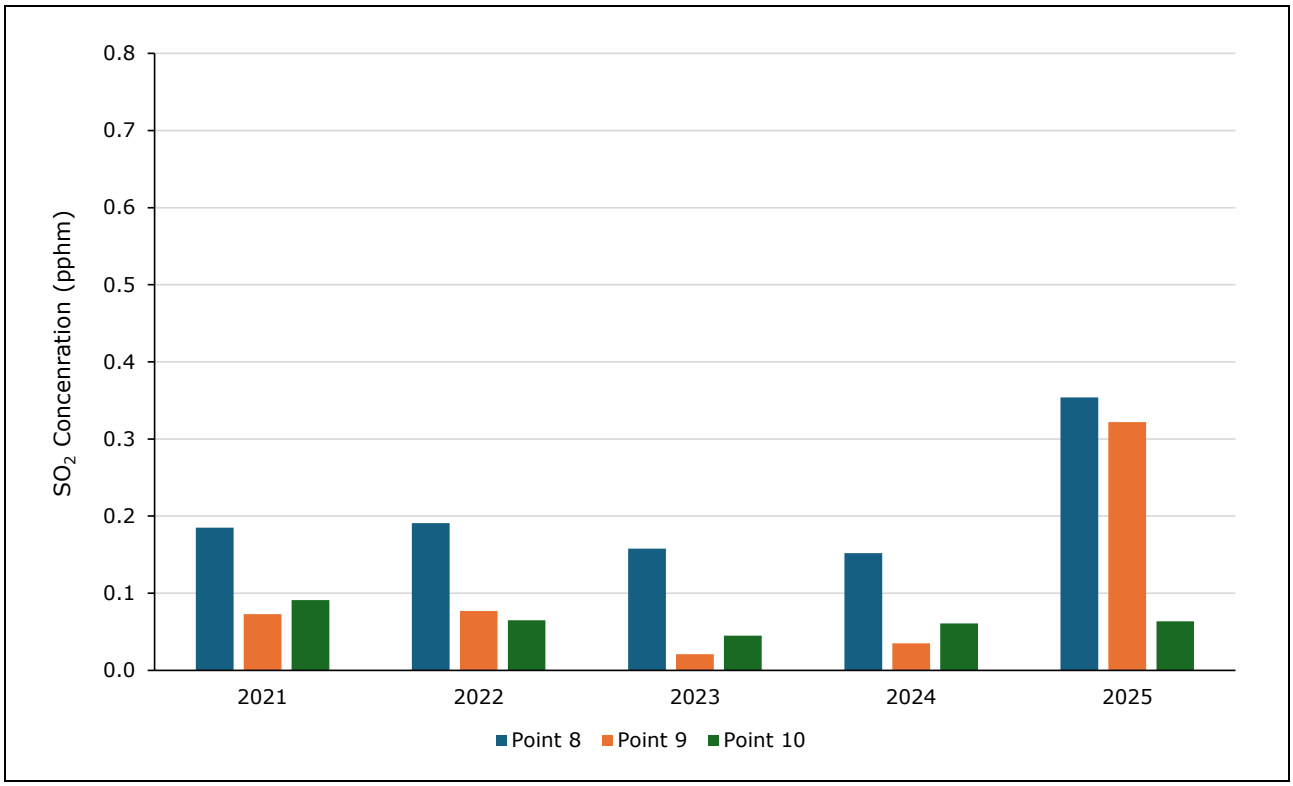


FIGURE 3-19 AMBIENT AIR MONITORING – POINT 8 (BLACKMANS FLAT)

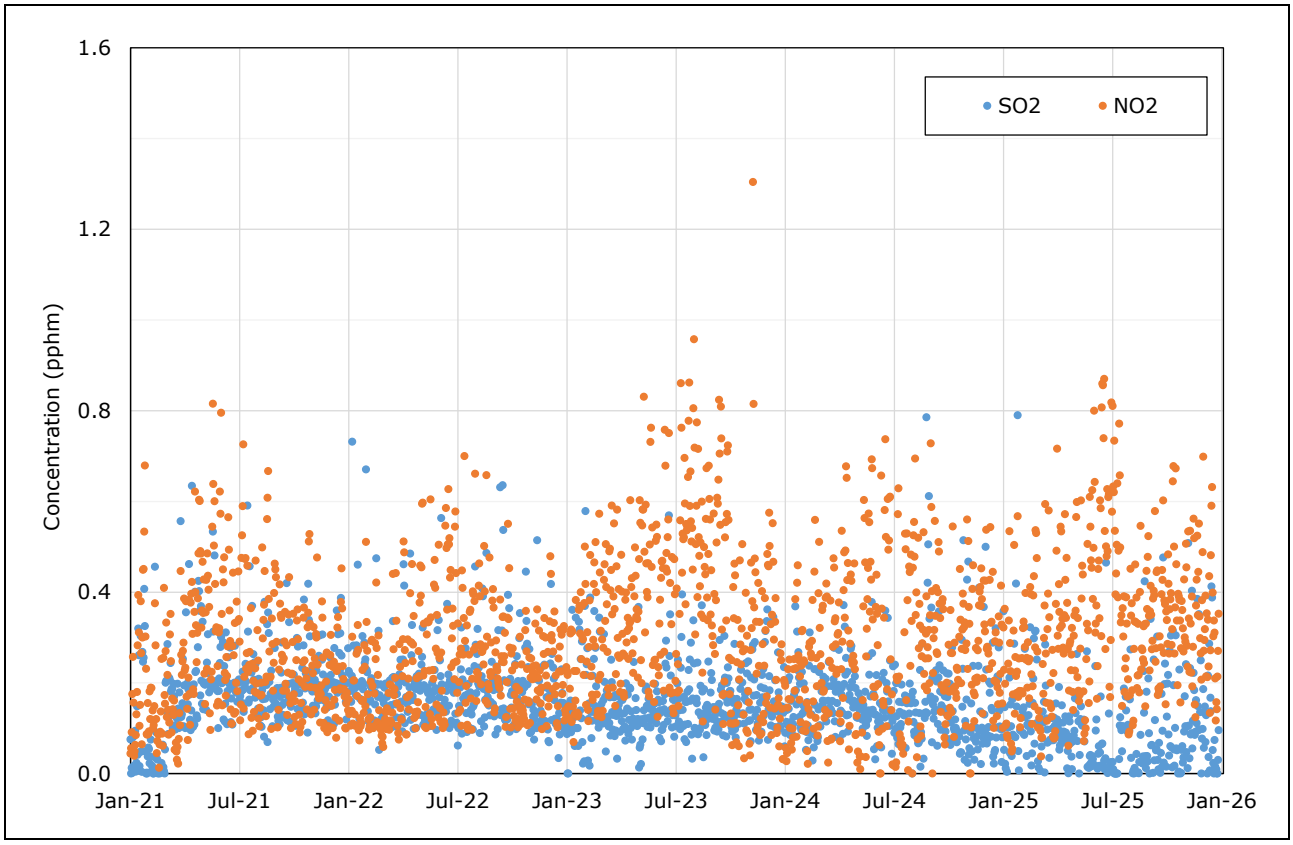


FIGURE 3-20 AMBIENT AIR MONITORING – POINT 9 (WALLERAWANG)

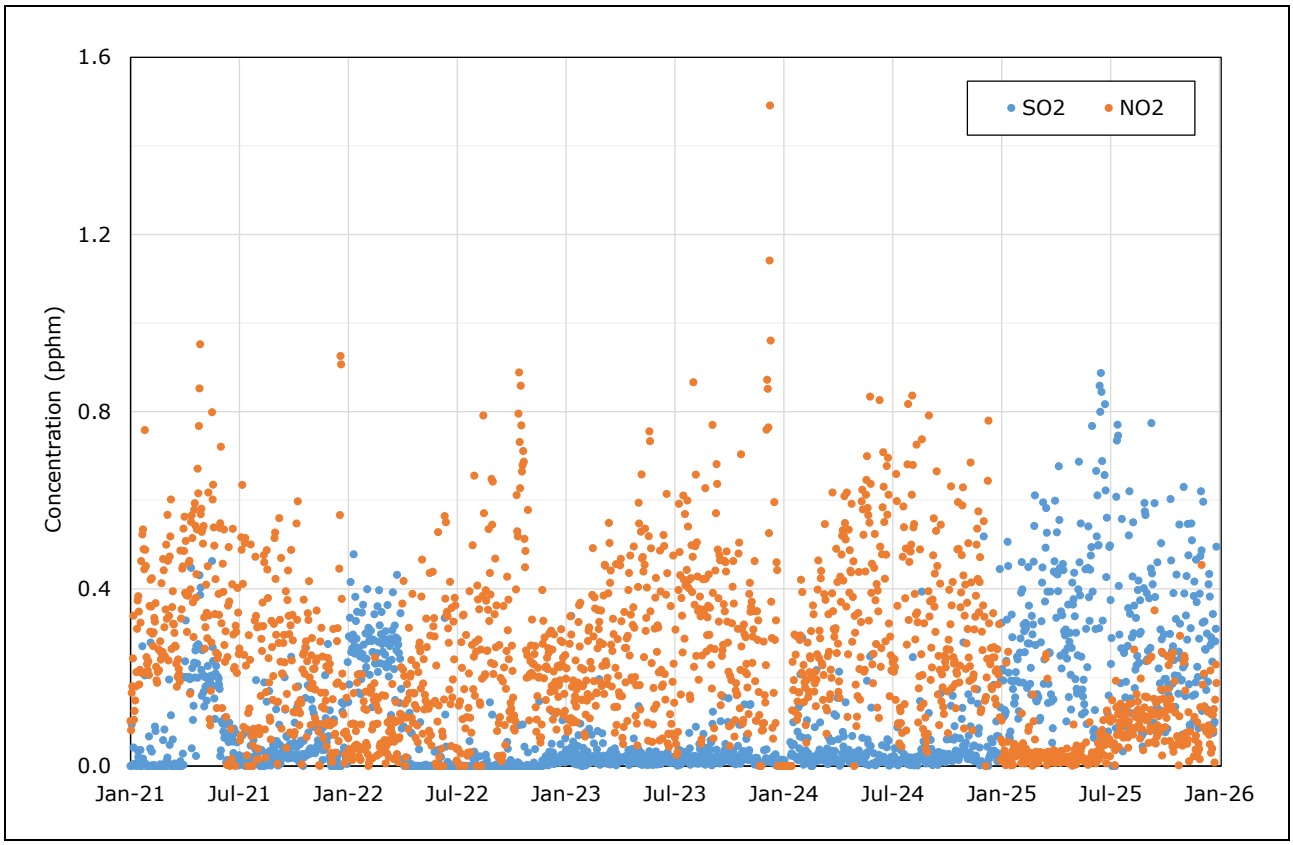
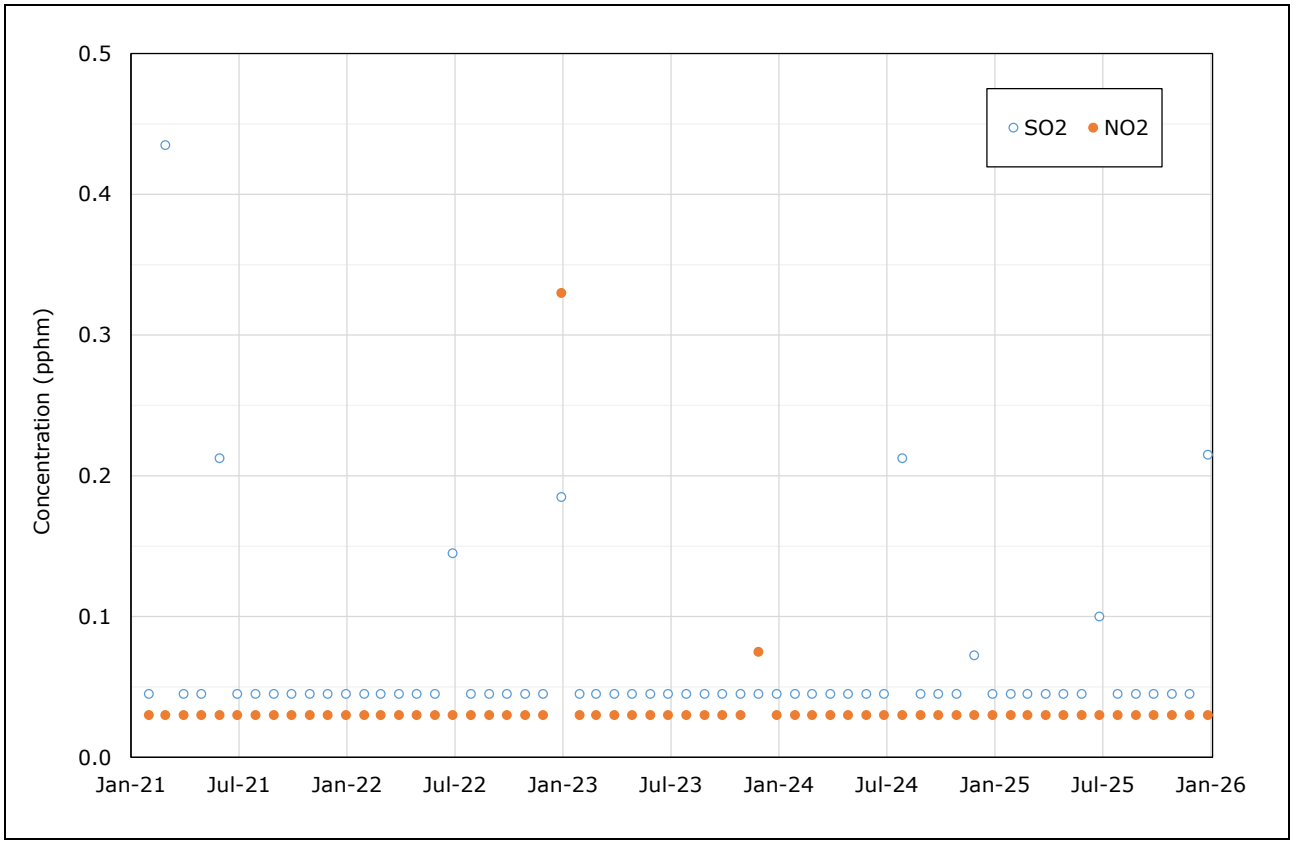


FIGURE 3-21 AMBIENT AIR MONITORING – POINT 10 (NEWNES PLATEAU)



4. DETAILED CALCULATIONS OF 2025 BOILER EMISSIONS

The annual emissions associated with the stack emission listed in R1.9 are detailed in this section. The annual emissions are either estimated from the CEMS data or the stack test results. The calculation method of annual emissions, based on data type, are detailed in the sections below.

4.1 NO_X AND SO_2 – CEMS

NO_x and SO_2 annual emission are determined using CEMS data. Monthly emissions are determined then summed for the annual reporting periods. The monthly emissions are calculated based on:

- Unit 1 and Unit 2's CEMS daily monitoring concentration were used to obtain monthly weighted average (based on MWh) stack concentrations in dry, STP, 7% O_2 part per millions (ppm);
- The monthly volume of flue gas emitted from the stacks is calculated by EnergyAustralia based on the combustion reaction stoichiometry, i.e. based on gases present in the combustion air, elements present in the coal and fuel oil, and combustion products and by-products. The volume is calculation at dry, STP and 7% O_2 conditions;
- The monthly emissions are calculated by multiplying the CEMS ppm and the calculated volume of flue gas, divided by the ideal gas molar density and converted to the units of kilograms; and
- The average CEMS value is determined from the average monthly values. The sums of the monthly values are reported as the annual emissions and the reported maximum and minimum are based on the hourly data.

4.2 OTHER POLLUTANTS – STACK TESTS

Stack test data and flue gas volumes were used by EnergyAustralia to estimate the 2025 annual pollutant loads for the majority of applicable pollutants. It is noted that in the annual returns, TVOCs are reported using the NPI EET Manual emission factor that estimates emissions due to fuel storage only. The estimated PAH emissions were based on a site-specific emission factor (i.e. 5.90 x 10^{-08} kg/tonne of coal as received), which has been used since 2007.

Metal emissions are estimated as the product of measured flue gas concentrations and corresponding flue gas volumes. For each boiler, the flue gas volume is estimated as an output-weighted (MWh) proportion of the combined MPPS flue gas volume. The in-stack concentration for each 6-month period is assumed equal to the average of the two (A and B) duct measurements.

5. COAL ASH MONITORING

This section has been prepared to satisfy conditions M9.1 and R4.4 under EPL13007. Coal ash from the Mt Piper Power Station is disposed of in the Mt Piper Ash Repository (MPAR) and the Lamberts North Ash Repository (LNAR) which are both dry ash repositories.

The MPAR is approved under Development Consent DA80/10060. Water conditioned ash (WCA) was placed at MPAR up to RL 946 m, brine condition ash (BCA) has been placed above RL 946 m up to the maximum approved height of RL 980 m. MPAR has reached its maximum approved ash storage capacity and is in the process of being decommissioned. The eastern batter has been capped with mine overburden and seeded to stabilize the landform. The top of MPAR is now capped with a liner which is approved under Modification 9 to the MPAR Development consent.

The LNAR operates under Project Approval 09_0186 and LNAR is managed in accordance with its approved Operational Environment Management Plan (OEMP). The OEMP provides the framework to manage the environmental aspects associated with the operation of the LNAR. The OEMP can be found on the EnergyAustralia website (Lamberts North Ash Repository | EnergyAustralia). LNAR has been lined with a leachate barrier management system. WCA was placed below the liner and BCA is placed above the liner on LNAR.

Solid salt and mixed lime salts from the Springvale Water Treatment Plant (SWTP) are approved to be co-disposed at the MPAR and LNAR. Both MPAR and LNAR will be capped with a HDPE liner or equivalent that will allow for future access and beneficial reuse of the stored coal ash.

Table 5-1 and **Table 5-2** provide a summary of coal ash quantities for the 2025 reporting period.

TABLE 5-1 SUMMARY OF COAL ASH QUANTITIES

Item	Coal Ash	Tonnes
1	Coal consumed for electricity generation at the premises	2,745,695
2	Fly ash generated at the premises	595,252
3	Fly ash deposited and/or stored at the premises	482,144*
4	Bottom ash generated at the premises	66,139
5	Bottom ash deposited and/or stored at the premises	66,139

Note: * Grade of fly ash is unknown.

TABLE 5-2 TRANSPORTED COAL ASH

Item	Transported from the premises	Tonnes	Destination
6	Fly ash	110,281	Fly Ash Australia Pty Ltd
7	Water Conditioned fly ash	0	Holcim Australia Pty Ltd
8	Water Conditioned fly ash	2,825	Regional Quarries Australia Pty Ltd
9	Bottom ash	0	-

Note: N/A – Not Applicable.

It is noted that the sum of transported, stored and deposited fly ash does not directly add to the amount generated. Transported fly ash can include reclaimed fly ash that has been generated and stored in years prior to the current reporting period.

6. SUMMARY OF COMPLIANCE WITH REPORTING CONDITIONS

This report has been completed to comply with EPL13007 Conditions R1.9, M9.1 and R4.4. The study has reviewed stack test reports, CEMS monitoring results and ambient monitoring results from 2021 to 2025.

Table 6-1 summarises the study's findings in relation to the EPL13007 Conditions R1.9, M9.1 and R4.4 requirements and where additional detail can be found in this report.

TABLE 6-1 EPL13007 CONDITIONS AND STUDY SUMMARY

Conditions		Review Comment	Compliant
R1.9			
a)	*a comprehensive summary (tabulated and graphical) of all periodic and continuous monitoring data as required by condition M2.2 of this licence, including a comparison with the concentration limits specified in condition L3.2 and L3.3;*	All monitoring results were reviewed and summarised in tables and graphs.	Yes
b)	*analysis of trends in emission performance for all pollutants monitored as required under condition M2.2. Trend analysis must include comparison of emission performance during the reporting period with emission performance from the previous 4 years;*	Historical monitoring data and coal quality from the most recent five years (2021 to 2025) were reviewed and analysed. No significant changes were identified in emission performance over this time period. Coal quality in 2025 is generally consistent with the previous four years. The observed variability in the stack monitoring data for 2025 is within the range of variability observed over the previous four years.	Yes
c)	*details of any exceedances of air emission licence limits and details of plant operating conditions at the times the exceedances occurred;*	There were no exceedances of air emission licence limits during the reporting period.	Yes
d)	*details of plant operating conditions, including Boiler load (MW), during sampling for each Boiler;*	The operation condition, including boiler load, during sampling for each boiler is presented in **Table 2-1**.	Yes
e)	*demonstrated compliance with the CEMS Quality Assurance and Control Procedures prepared for the premises;*	The procedure was reviewed no non-compliances were found.	Yes

Conditions		Review Comment	Compliant
f)	*summary of fuel usage, including:* *i) total coal and other permitted fuels consumed in each Boiler (including start-up);* *ii) a statement about the representativeness of fuel quality during periodic air emission sampling compared to non-sampling periods;* *ii) total fuel consumed by each Boiler during times when periodic air emission sampling was undertaken;* *and*	The total coal consumption and coal quality during the reporting period is summarised in **Table 3-1**. The daily fuel consumption during stack sampling is shown in **Table 2-1**. Based on the review of the coal composition during 2025 and the long-term trends of coal quality, the coal quality during stack testing is representative of typical operating conditions.	Yes
g)	*detailed calculations used to determine the aggregated pollutant emission rates for each boiler.*	The detailed methodology to determine the pollutant emission rates for each boiler has been presented in this report. Methods used to determine annual emission for reporting to the annual returns have also been provided.	Yes
M9.1			
a)	*Quantity of coal used for electricity generation at the premises;*	Quantities provided in **Table 5-1**.	Yes
b)	*Quantity of bottom ash; and quantity of fly ash, generated at the premises and the grade of fly ash produced (if the grade is known);*		
c)	*Quantity of bottom ash; and quantity of fly ash, deposited, and/or stored at the premises with a description of how it is stored and the processes for managing the storage;*		
d)	*Quantity of bottom ash; and quantity of fly ash, transported from the premises together with identification of the destination; and*	Quantities provided in **Table 5-2**.	Yes
e)	*Management measures used for coal ash repositories on the premises to maintain the viability of ash reuse, including identification of any other materials being stored concurrently with newly deposited coal ash.*	Description of management measures provided in **Section 5**.	Yes
R4.4			
The licensee must prepare an Annual Coal Ash Monitoring Report that details information required under condition M9.1 in respect of generation, deposition, storage, transport and reuse of coal ash generated at the premises for each Annual Return reporting period.		Provided in **Section 5**.	Yes

7. STATEMENT OF LIMITATIONS

1. This report is based solely on the scope of work described in our proposal P0659049 dated 30 May 2025 (Scope of Work) and performed by Environmental Resources Management Australia Pty Ltd (ERM) for EnergyAustralia NSW Pty Ltd (the Client). The Scope of Work was governed by a contract between ERM and the Client (Contract).
2. No limitation, qualification or caveat set out below is intended to derogate from the rights and obligations of ERM and the Client under the Contract.
3. The findings of this report are solely based on, and the information provided in this report is strictly limited to that required by, the Scope of Work. Except to the extent stated otherwise, in preparing this report ERM has not considered any question, nor provides any information, beyond that required by the Scope of Work.
4. This report was prepared between December 2025 and February 2026 and is based on conditions encountered and information reviewed at the time of preparation. The report does not, and cannot, take into account changes in law, factual circumstances, applicable regulatory instruments or any other future matter. ERM does not, and will not, provide any on-going advice on the impact of any future matters unless it has agreed with the Client to amend the Scope of Work or has entered into a new engagement to provide a further report.
1. This report is based on analyses described in the report, and information provided by the Client or third parties (including regulatory agencies). All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved. Whilst normal checking of data accuracy was undertaken, except to the extent expressly set out in this report ERM:
    a. did not, nor was able to, make further enquiries to assess the reliability of the information or independently verify information provided by;
    b. assumes no responsibility or liability for errors in data obtained from,
    c. the Client, any third parties or external sources (including regulatory agencies).
5. Although the data that has been used in compiling this report is generally based on actual circumstances, if the report refers to hypothetical examples those examples may, or may not, represent actual existing circumstances.
6. Only the environmental conditions and or potential contaminants specifically referred to in this report have been considered. To the extent permitted by law and except as is specifically stated in this report, ERM makes no warranty or representation about:
    d. the suitability of the site(s) for any purpose or the permissibility of any use;
    e. the presence, absence or otherwise of any environmental conditions or contaminants at the site(s) or elsewhere; or
    f. the presence, absence or otherwise of asbestos, asbestos containing materials or any hazardous materials on the site(s).
7. This report should be read in full and no excerpts are to be taken as representative of the whole report. To ensure its contextual integrity, the report is not to be copied, distributed or referred to in part only. No responsibility or liability is accepted by ERM for use of any part of this report in any other context.

2. Except to the extent that ERM has agreed otherwise with the Client in the Scope of Work or the Contract, this report:
   a. has been prepared and is intended only for the exclusive use of the Client;
   b. must not to be relied upon or used by any other party;
   c. has not been prepared nor is intended for the purpose of advertising, sales, promoting or endorsing any Client interests including raising investment capital, recommending investment decisions, or other publicity purposes;
   d. does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in or in relation to the site(s); and
   e. does not purport to provide, nor should be construed as, legal advice.

8. REFERENCES

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Ektimo 2021a, Annual Emission Testing Report Energy Australia - Mt Piper Power Station, Report Number R009826, Ektimo.

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Ektimo 2023b, Quarterly (Q1) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station, Report number R014518, Ektimo.

Ektimo 2023c, Quarterly (Q3) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station, Report number R015163, Ektimo.

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Ektimo 2025b, Quarterly (Q2) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station. Report number R018685, 18 July 2025.

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Ektimo 2025d, Quarterly (Q4) Emission Testing Report – Energy Australia NSW Pty Ltd – Mt Piper Power Station. Report number R019485, 21 November 2025.

APPENDIX A 2025 EMISSION TESTING REPORTS

Ektimo

Experts in air quality, odour and emission monitoring.

Emission Testing Report

Report: R018380

EnergyAustralia NSW Pty Ltd, Mt Piper Power Station

ilac-MRA NATA

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration, and inspection reports.

Document Information

Client Name:	EnergyAustralia NSW Pty Ltd (Mt Piper)
Report Number:	R018380
Date of Issue:	18 July 2025
Attention:	Jarvis Lulham
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation

Ahmad Ramiz
Air Monitoring Consultant

NATA Accredited Laboratory
No. 14601

Adnan Latif
Ektimo Signatory

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo terms of NATA accreditation as described in the Test Methods table. This does not include calculations that use data supplied by third-parties, comments, conclusions, or recommendations based upon the results. Refer to Test Methods section for full details of testing covered by NATA accreditation.

Table of Contents

1 Executive Summary

1.1 Background

Ektimo was engaged by EnergyAustralia NSW Pty Ltd (Mt Piper) to perform emission testing at Mt Piper Power Station, Portland, NSW. Testing was carried out in accordance with Environment Protection Licence 13007.

1.2 Project Objective & Overview

The objective of the project was to conduct a monitoring programme to quantify emissions from four (4) discharge points to determine compliance with Energy Australia NSW Pty Ltd (Mt Piper)'s Environmental Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 4 – Unit 1, Duct B	29 January 2025	Solid particles (total) Coarse particulates Metals type 1 and 2 substances, copper, zinc Particulate matter < 10µm (PM_{10})
EPA 5 – Unit 1, Duct A	29-30 January 2025	Solid particles (total) Coarse particulates Metals type 1 and 2 substances, copper, zinc Particulate matter < 10µm (PM_{10})
EPA 6 – Unit 2, Duct A	30 January 2025	Solid particles (total) Coarse particulates Metals type 1 and 2 substances, copper, zinc Particulate matter < 10µm (PM_{10})
EPA 7 – Unit 2, Duct B	31 January 2025	Solid particles (total) Coarse particulates Metals type 1 and 2 substances, copper, zinc Particulate matter < 10µm (PM10)

* Flow rate, velocity, temperature, and moisture were also determined.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in this report.

1.3 Results Summary

All analytes are within the licence limit set by the NSW EPA as per licence 13007 (last amended on 3 July 2024).

Report Number			R018380	R018380	
Test Date			29/01/25	29/01/25	
EPA			5	4	
Unit			Unit 1 Duct A	Unit 1 Duct B	
					EPA 2
	LIMIT	**UNITS**	*Measured Results*		*Combined Ducts*
Type 1 and Type 2 substances in aggregate	**0.6**	**mg/m³**	<0.028	<0.037	**<0.03**
Antimony		mg/m³	<0.005	<0.007	<0.006
Arsenic (LBL)		mg/m³	<0.002	<0.003	<0.003
Beryllium		mg/m³	<0.0007	<0.0009	<0.0008
Cadmium	**0.03**	mg/m³	<0.0001	<0.0002	**<0.0002**
Chromium		mg/m³	<0.001	0.0023	<0.002
Cobalt		mg/m³	<0.0009	<0.001	<0.001
Copper		mg/m³	0.0035	0.047	0.026
Lead (LBL)		mg/m³	<0.002	0.0027	<0.002
Manganese		mg/m³	<0.002	0.0042	<0.003
Mercury	**0.03**	mg/m³	0.0026	0.0017	**0.0021**
Nickel		mg/m³	<0.002	0.0027	<0.002
Selenium		mg/m³	<0.006	<0.007	<0.007
Tin		mg/m³	<0.002	<0.003	<0.003
Vanadium		mg/m³	<0.001	<0.002	<0.002
Zinc		mg/m³	0.0047	0.019	0.012
Solid particles	**50**	**mg/m³**	**7**	**5.4**	**6.2**
PM10		mg/m³	<3	2.8	-
Coarse particulates		mg/m³	7.4	2.5	-

*Combined air emissions from **boiler 1** via points 4 & 5 (except for PM_{10} and Coarse Particulates)*

All results corrected to 7% oxygen correction.

Report Number			R018380	R018380	
Test Date			30/01/25	31/01/25	
EPA			6	7	
Unit			Unit 2 Duct A	Unit 2 Duct B	
					EPA 3
	LIMIT	**UNITS**	*Measured Results*		*Combined Ducts*
Type 1 and Type 2 substances in aggregate	**0.6**	**mg/m³**	<0.031	<0.026	**<0.03**
Antimony		mg/m³	<0.007	<0.005	<0.006
Arsenic (LBL)		mg/m³	<0.003	<0.002	<0.002
Beryllium		mg/m³	<0.0008	<0.0007	<0.0007
Cadmium	**0.03**	mg/m³	<0.0002	<0.0002	**<0.0002**
Chromium		mg/m³	<0.001	<0.001	<0.001
Cobalt		mg/m³	<0.001	<0.0009	<0.0009
Copper		mg/m³	0.005	0.0016	0.0031
Lead (LBL)		mg/m³	<0.002	<0.001	<0.001
Manganese		mg/m³	0.003	<0.002	<0.002
Mercury	**0.03**	mg/m³	0.00083	0.00072	**0.00077**
Nickel		mg/m³	<0.002	<0.002	<0.002
Selenium		mg/m³	<0.007	<0.006	<0.006
Tin		mg/m³	<0.003	<0.002	<0.002
Vanadium		mg/m³	<0.002	<0.001	<0.001
Zinc		mg/m³	0.0066	0.0066	0.0066
Solid particles	**50**	**mg/m³**	**2.4**	**5.8**	**4.3**
PM10		mg/m³	<2	4.7	-
Coarse Particulates		mg/m³	2.3	<6	-

*Combined air emissions from **boiler 2** via points 6 & 7 (except for PM_{10} and Coarse Particulates)*

All results corrected to 7% oxygen correction.

Please note that the measurement uncertainty associated with the test results was not considered when determining whether the results were compliant or non-compliant.

2 Results

2.1 EPA 4 – Unit 1, Duct B

Date	29/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 280 MW		250121

Stack Parameters		
Moisture content, %v/v	4.9	
Gas molecular weight, g/g mole	29.4 (wet)	30.0 (dry)
Gas density at STP, kg/m³	1.31 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.84	
% Oxygen correction & Factor	7 %	1.33
Gas Flow Parameters		
Temperature, °C	107	
Temperature, K	380	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	9.2	
Volumetric flow rate, actual, m³/s	330	
Volumetric flow rate (wet STP), m³/s	210	
Volumetric flow rate (dry STP), m³/s	200	
Mass flow rate (wet basis), kg/h	1000000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0820 - 0954	0820 - 0954	0820 - 0954
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	9.3	9	9.7
Oxygen	10.5	10.2	10.7

Isokinetic Results	Results		
Sampling time	0820-0954		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	4	5.4	49
Antimony	<0.005	<0.007	<0.06
Arsenic	<0.002	<0.003	<0.03
Beryllium	<0.0007	<0.0009	<0.008
Cadmium	<0.0002	<0.0002	<0.002
Chromium	**0.0017**	**0.0023**	**0.021**
Cobalt	<0.0008	<0.001	<0.01
Copper	**0.035**	**0.047**	**0.43**
Lead	**0.002**	**0.0027**	**0.024**
Manganese	**0.0031**	**0.0042**	**0.038**
Mercury	**0.0013**	**0.0017**	**0.016**
Nickel	**0.0021**	**0.0027**	**0.025**
Selenium	<0.005	<0.007	<0.06
Tin	<0.002	<0.003	<0.03
Vanadium	<0.001	<0.002	<0.02
Zinc	**0.014**	**0.019**	**0.17**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.011	≤0.014	≤0.13
Total Type 2 Substances	≤0.017	≤0.023	≤0.21
Total Type 1 & 2 Substances	≤0.028	≤0.037	≤0.33
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		100	
Gravimetric analysis date (total particulate)		07-02-2025	

Date	29/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 280 MW		250121

Stack Parameters		
Moisture content, %v/v	4.9	
Gas molecular weight, g/g mole	29.5 (wet)	30.1 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.84	
% Oxygen correction & Factor	7 %	1.32
Gas Flow Parameters		
Temperature, °C	108	
Temperature, K	381	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	9.4	
Volumetric flow rate, actual, m³/s	340	
Volumetric flow rate (wet STP), m³/s	220	
Volumetric flow rate (dry STP), m³/s	210	
Mass flow rate (wet basis), kg/h	1000000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1024 - 1241	1024 - 1241	1024 - 1241
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10	9.6	10.5
Oxygen	10.4	9.9	10.7

Isokinetic Results	Results		
Sampling time	1024-1241 (PM10)		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Fine particulates (PM10)	2.1	2.8	26
Coarse Particulates*	1.9	2.5	**
D50 cut size, 10µm		9.6	
Isokinetic Sampling Parameters			
Sampling time, min		126	
Isokinetic rate, %		92	
Gravimetric analysis date (PM_{10})		03-02-2025	

** Due to the inability for two x 6m sampling probes to be used simultaneously at the sampling plane, monitoring for Fine Particulates (PM_{10}) was not conducted simultaneously with monitoring for Solid Particles (Total). Accordingly, Coarse Particulate reported concentration is indicative only.*

*** Due to differing volumetric gas flowrates measured during monitoring for Solid Particles (Total) and Fine Particulates (PM_{10}) mass rate of Coarse Particulates has not been reported.*

2.2 EPA 5 – Unit 1, Duct A

Date	29/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 5 Unit 1 Duct A (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 350 MW		*250121*

Stack Parameters		
Moisture content, %v/v	5.2	
Gas molecular weight, g/g mole	29.8 (wet)	30.4 (dry)
Gas density at STP, kg/m³	1.33 (wet)	1.36 (dry)
Gas density at discharge conditions, kg/m³	0.82	
% Oxygen correction & Factor	7 %	1.15
Gas Flow Parameters		
Temperature, °C	119	
Temperature, K	392	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	10	
Volumetric flow rate, actual, m³/s	370	
Volumetric flow rate (wet STP), m³/s	230	
Volumetric flow rate (dry STP), m³/s	220	
Mass flow rate (wet basis), kg/h	1100000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1349 - 1522	1349 - 1522	1349 - 1522
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	12.1	11.8	12.4
Oxygen	8.9	8.5	9.1

Isokinetic Results	Results		
Sampling time	1349-1522		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	6.1	7	80
Antimony	<0.005	<0.005	<0.06
Arsenic	<0.002	<0.002	<0.03
Beryllium	<0.0006	<0.0007	<0.008
Cadmium	<0.0001	<0.0001	<0.002
Chromium	<0.001	<0.001	<0.01
Cobalt	<0.0007	<0.0009	<0.01
Copper	**0.003**	**0.0035**	**0.04**
Lead	<0.001	<0.002	<0.02
Manganese	<0.002	<0.002	<0.03
Mercury	**0.0023**	**0.0026**	**0.03**
Nickel	<0.001	<0.002	<0.02
Selenium	<0.005	<0.006	<0.07
Tin	<0.002	<0.002	<0.03
Vanadium	<0.001	<0.001	<0.02
Zinc	**0.004**	**0.0047**	**0.053**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.01	≤0.012	≤0.13
Total Type 2 Substances	<0.01	<0.02	<0.2
Total Type 1 & 2 Substances	≤0.024	≤0.028	≤0.32
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		07-02-2025	

Date	30/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 5 Unit 1 Duct A (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 280 MW		250121

Stack Parameters		
Moisture content, %v/v	5	
Gas molecular weight, g/g mole	29.6 (wet)	30.2 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.82	
% Oxygen correction & Factor	7 %	1.21
Gas Flow Parameters		
Temperature, °C	117	
Temperature, K	390	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	8.9	
Volumetric flow rate, actual, m³/s	320	
Volumetric flow rate (wet STP), m³/s	200	
Volumetric flow rate (dry STP), m³/s	190	
Mass flow rate (wet basis), kg/h	950000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0800 - 1015	0800 - 1015	0800 - 1015
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.6	10	11.1
Oxygen	9.4	9.1	9.8

Isokinetic Results	Results		
Sampling time	0800-1015 (PM10)		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Fine particulates (PM10)	<2	<3	<20
Coarse Particulates*	6.1	7.4	**
D50 cut size, 10µm		9.4	
Isokinetic Sampling Parameters			
Sampling time, min		127	
Isokinetic rate, %		102	
Gravimetric analysis date (PM_{10})		03-02-2025	

** Due to the inability for two x 6m sampling probes to be used simultaneously at the sampling plane, monitoring for Fine Particulates (PM_{10}) was not conducted simultaneously with monitoring for Solid Particles (Total). Accordingly, Coarse Particulate reported concentration is indicative only.*

*** Due to differing volumetric gas flowrates measured during monitoring for Solid Particles (Total) and Fine Particulates (PM_{10}) mass rate of Coarse Particulates has not been reported.*

2.3 EPA 6 – Unit 2, Duct A

Date	30/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 280 MW		250121

Stack Parameters		
Moisture content, %v/v	5.5	
Gas molecular weight, g/g mole	29.4 (wet)	30.1 (dry)
Gas density at STP, kg/m³	1.31 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.32
Gas Flow Parameters		
Temperature, °C	112	
Temperature, K	385	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	9.4	
Volumetric flow rate, actual, m³/s	340	
Volumetric flow rate (wet STP), m³/s	210	
Volumetric flow rate (dry STP), m³/s	200	
Mass flow rate (wet basis), kg/h	1000000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1100 - 1233	1100 - 1233	1100 - 1233
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	9.7	9.2	10.2
Oxygen	10.4	9.8	10.8

Isokinetic Results	Results		
Sampling time	1100-1233		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Solid Particles	1.8	2.4	22
Antimony	<0.005	<0.007	<0.06
Arsenic	<0.002	<0.003	<0.03
Beryllium	<0.0006	<0.0008	<0.008
Cadmium	<0.0002	<0.0002	<0.002
Chromium	<0.001	<0.001	<0.01
Cobalt	<0.0008	<0.001	<0.01
Copper	**0.0038**	**0.005**	**0.046**
Lead	<0.001	<0.002	<0.02
Manganese	**0.0023**	**0.003**	**0.027**
Mercury	**0.00063**	**0.00083**	**0.0076**
Nickel	<0.002	<0.002	<0.02
Selenium	<0.005	<0.007	<0.06
Tin	<0.002	<0.003	<0.03
Vanadium	<0.001	<0.002	<0.02
Zinc	**0.005**	**0.0066**	**0.06**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.0092	≤0.012	≤0.11
Total Type 2 Substances	≤0.015	≤0.019	≤0.18
Total Type 1 & 2 Substances	≤0.024	≤0.031	≤0.29
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		07-02-2025	

Date	30/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 350 MW		250121

Stack Parameters		
Moisture content, %v/v	5.3	
Gas molecular weight, g/g mole	29.5 (wet)	30.1 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.84	
% Oxygen correction & Factor	7 %	1.27
Gas Flow Parameters		
Temperature, °C	108	
Temperature, K	381	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	13	
Volumetric flow rate, actual, m³/s	450	
Volumetric flow rate (wet STP), m³/s	290	
Volumetric flow rate (dry STP), m³/s	270	
Mass flow rate (wet basis), kg/h	1400000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1353 - 1607	1353 - 1607	1353 - 1607
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.2	9.7	10.9
Oxygen	10	9.2	10.5

Isokinetic Results	Results		
Sampling time	1353-1607 (PM10)		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Fine particulates (PM10)	<2	<2	<30
Coarse Particulates*	1.8	2.3	30
D50 cut size, 10µm		10.2	
Isokinetic Sampling Parameters			
Sampling time, min		126	
Isokinetic rate, %		110	
Gravimetric analysis date (PM_{10})		03-02-2025	

** Due to the inability for two x 6m sampling probes to be used simultaneously at the sampling plane, monitoring for Fine Particulates (PM_{10}) was not conducted simultaneously with monitoring for Solid Particles (Total). Accordingly, Coarse Particulate reported concentration is indicative only.*

*** Due to differing volumetric gas flowrates measured during monitoring for Solid Particles (Total) and Fine Particulates (PM_{10}) mass rate of Coarse Particulates has not been reported.*

2.4 EPA 7 – Unit 2, Duct B

Date	31/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 7 Unit 2 Duct B(Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 280 MW		250121

Stack Parameters		
Moisture content, %v/v	5.5	
Gas molecular weight, g/g mole	29.5 (wet)	30.2 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.27
Gas Flow Parameters		
Temperature, °C	113	
Temperature, K	386	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	11	
Volumetric flow rate, actual, m³/s	410	
Volumetric flow rate (wet STP), m³/s	260	
Volumetric flow rate (dry STP), m³/s	240	
Mass flow rate (wet basis), kg/h	1200000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0817 - 0949	0817 - 0949	0817 - 0949
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.2	9.7	10.5
Oxygen	10	9.5	10.5

Isokinetic Results	Results		
Sampling time	0817-0949		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	4.6	5.8	67
Antimony	<0.004	<0.005	<0.06
Arsenic	<0.002	<0.002	<0.03
Beryllium	<0.0005	<0.0007	<0.008
Cadmium	<0.0001	<0.0002	<0.002
Chromium	<0.0009	<0.001	<0.01
Cobalt	<0.0007	<0.0009	<0.01
Copper	**0.0013**	**0.0016**	**0.018**
Lead	<0.001	<0.001	<0.02
Manganese	<0.002	<0.002	<0.03
Mercury	**0.00056**	**0.00072**	**0.0082**
Nickel	<0.001	<0.002	<0.02
Selenium	<0.005	<0.006	<0.07
Tin	<0.002	<0.002	<0.03
Vanadium	<0.001	<0.001	<0.02
Zinc	**0.0052**	**0.0066**	**0.076**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.0077	≤0.0098	≤0.11
Total Type 2 Substances	<0.01	<0.02	<0.2
Total Type 1 & 2 Substances	≤0.02	≤0.026	≤0.3
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		07-02-2025	

Date	31/01/2025	**Client**	EnergyAustralia
Report	R018380	**Stack ID**	Mt Piper Power Station - EPA 7 Unit 2 Duct B (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Sahad Musthafa	**State**	NSW
Process Conditions	Load Stable at 280 MW		250121

Stack Parameters		
Moisture content, %v/v	5.3	
Gas molecular weight, g/g mole	29.5 (wet)	30.2 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.30
Gas Flow Parameters		
Temperature, °C	111	
Temperature, K	384	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/s	430	
Volumetric flow rate (wet STP), m³/s	270	
Volumetric flow rate (dry STP), m³/s	260	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0955 - 1210	0955 - 1210	0955 - 1210
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.4	9.8	11
Oxygen	10.2	9.7	10.8

Isokinetic Results	Results		
Sampling time	0955-1210 (PM10)		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Fine particulates (PM10)	3.6	4.7	56
Coarse Particulates*	<5	<6	**
D50 cut size, 10µm		10.1	
Isokinetic Sampling Parameters			
Sampling time, min		126	
Isokinetic rate, %		110	
Gravimetric analysis date (PM_{10})		03-02-2025	

** Due to the inability for two x 6m sampling probes to be used simultaneously at the sampling plane, monitoring for Fine Particulates (PM_{10}) was not conducted simultaneously with monitoring for Solid Particles (Total). Accordingly, Coarse Particulate reported concentration is indicative only.*

*** Due to differing volumetric gas flowrates measured during monitoring for Solid Particles (Total) and Fine Particulates (PM_{10}) mass rate of Coarse Particulates has not been reported.*

3 Sample Plane Compliance

3.1 EPA 4 – Unit 1, Duct B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.2 EPA 5 – Unit 1, Duct A

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.3 EPA 6 – Unit 2, Duct A

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.4 EPA 7 – Unit 2, Duct B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

4 Plant Operating Conditions

See EnergyAustralia NSW Pty Ltd (Mt Piper) records for complete process conditions.

Based on information received from EnergyAustralia NSW Pty Ltd (Mt Piper) personnel, it is our understanding that samples were collected during typical plant operations.

5 Test Methods

All sampling and analysis were performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Uncertainty*	NATA accredited	
				Sampling	Analysis
Sampling points - Selection	NSW EPA TM-1 (USEPA Method 1)	NA	NA	✓	NA
Flow rate, temperature & velocity	NSW EPA TM-2 (USEPA Method 2)	NSW EPA TM-2 (USEPA Method 2)	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22 (USEPA Method 4)	NSW EPA TM-22 (USEPA Method 4)	8%	✓	✓
Molecular weight	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Dry gas density	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24 (USEPA Method 3A)	NSW EPA TM-24 (USEPA Method 3A)	13%	✓	✓
Oxygen	NSW EPA TM-25 (USEPA Method 3A)	NSW EPA TM-25 (USEPA Method 3A)	13%	✓	✓
Particulate matter (PM_{10} & $PM_{2.5}$)	NSW EPA OM-5 (USEPA Method 201A)	NSW EPA OM-5 (USEPA Method 201A)	6%	✓	✓††
Coarse particulates	NSW EPA OM-9	NSW EPA OM-9	not specified	✓	✓††
Solid particles (total)	NSW EPA TM-15 (USEPA Method 17)	NSW EPA TM-15 (USEPA Method 17)	3%	✓	✓††
Type 1 substances (As, Cd, Hg, Pb, Sb)	NSW EPA TM-12 (USEPA Method 29)	Envirolab in-house methods Metals-020/021/022	15%	✓	✓‡
Type 2 substances (Be, Cr, Co, Mn, Ni, Se, Sn, V)	NSW EPA TM-13 (USEPA Method 29)	Envirolab in-house methods Metals-020/021/022	15%	✓	✓‡

111224

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).
†† Gravimetric analysis conducted at the Ektimo NSW laboratory.

‡ Analysis performed by Envirolab, NATA accreditation number 2901. Results were reported to Ektimo on 18 February 2025 in report 372632.

6 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

Unless specifically noted, all samples were collected and handled in accordance with Ektimo's QA/QC standards.

7 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry basis
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
AS	Australian Standard
BSP	British standard pipe
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D_{50}	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D_{50} method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D_{50} of that cyclone and less than the D_{50} of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
EPA	Environment Protection Authority
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
I-TEQ	International toxic equivalents
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
PM_{10}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (µm).
$PM_{2.5}$	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (µm).
PSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range

8 Appendices

Appendix A: Chain(s) of Custody

Ektimo

Checked at Ektimo Dispatch by: Sign/Date 10/2/25

Samples received in good order: Sign/Date 11/02/25 11:15

	Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
1	N 22546	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	Blank Solution	
2	N 22547	r018380	Metals on filter (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu +Zn	ug/sample	Envirolab	W015542	Ahmad Ramiz	Blank Filter	
3	N 22548	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	Blank Solution	
4	N 22549	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A +B	
5	N 22550	r018380	Metals on filter (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu +Zn	ug/sample	Envirolab	W015542	Ahmad Ramiz	Filter A	
6	N 22551	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	Metal Rinse	
7	N 22552	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A +B	
8	N 22553	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	Hg Rinse	
9	N 22554	r018380	Metals on filter (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu +Zn	ug/sample	Envirolab	W015542	Ahmad Ramiz	Filter A	
10	N 22555	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A +B	
11	N 22556	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	Metals Rinse	
12	N 22557	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A +B	
13	N 22558	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	Hg Rinse	
14	N 22559	r018380	Metals on filter (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu +Zn	ug/sample	Envirolab	W015542	Ahmad Ramiz	Filter A	
15	N 22560	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A +B	
16	N 22561	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	Rinse	
17	N 22618	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A + B	
18	N 22619	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	Rinse (HCl)	
19	N 22620	r018380	Metals on Filter (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/sample	Envirolab	W015542	Ahmad Ramiz	Filter	
20	N 22621	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A + B	
21	N 22622	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	Rinse Metals	
22	N 22623	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	IMP A + B	
23	N 22624	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	Hg Rinse (HCl)	
24	N 22625	r018380	Metals in Solution (Envirolab) (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Cu+Zn	ug/litre	Envirolab	W015542	Ahmad Ramiz	Blank Metal Rinse	
25	N 22626	r018380	Hg	ug/litre	Envirolab	W015542	Ahmad Ramiz	Blank Hg Rinse	

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 372632
Date Received: 11/02/25
Time Received: 1115
Received By: BLM
Temp: Cool/Ambient
Cooling: Ice/Icepack 24°C
Security: Intact/Broken/None

Appendix B: Laboratory Results

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 372632

Client Details	
Client	Ektimo (Unanderra)
Attention	Administration Email
Address	1/251 Princes Hwy, Unanderra, NSW, 2526

Sample Details	
Your Reference	R018380
Number of Samples	20 Liquid, 5 Filter
Date samples received	11/02/2025
Date completed instructions received	11/02/2025

Analysis Details
Please refer to the following pages for results, methodology summary and quality control data.
Samples were analysed as received from the client. Results relate specifically to the samples as received.
Results are reported on a dry weight basis for solids and on an as received basis for other matrices.
Please refer to the last page of this report for any comments relating to the results.

Report Details	
Date results requested by	18/02/2025
Date of Issue	18/02/2025
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***	

Results Approved By
Giovanni Agosti, Group Technical Manager

Authorised By
Nancy Zhang, Laboratory Manager

Client Reference: R018380

Metals on filters						
Our Reference	UNITS	372632-2	372632-5	372632-9	372632-14	372632-19
Your Reference		N22547	N22550	N22554	N22559	N22620
Type of sample		Filter	Filter	Filter	Filter	Filter
Date prepared	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Date analysed	-	14/02/2025	14/02/2025	14/02/2025	14/02/2025	14/02/2025
Antimony	µg/filter	<5	<5	<5	<5	<5
Arsenic	µg/filter	<2	<2	<2	<2	<2
Beryllium	µg/filter	<0.5	<0.5	<0.5	<0.5	<0.5
Cadmium	µg/filter	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	µg/filter	<0.5	1	<0.5	<0.5	<0.5
Cobalt	µg/filter	<0.5	<0.5	<0.5	<0.5	<0.5
Lead	µg/filter	<1	<1	<1	<1	<1
Manganese	µg/filter	<0.5	<0.5	<0.5	<0.5	<0.5
Mercury	µg/filter	<0.2	<0.2	<0.2	<0.2	<0.2
Nickel	µg/filter	<1	<1	<1	<1	<1
Selenium	µg/filter	<5	<5	<5	<5	<5
Tin	µg/filter	<2	<2	<2	<2	<2
Vanadium	µg/filter	<1	<1	<1	<1	<1
Copper	µg/filter	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc	µg/filter	<1	<1	<1	<1	1

Metals in water - mass units						
Our Reference		372632-1	372632-3	372632-4	372632-6	372632-7
Your Reference	UNITS	N22546	N22548	N22549	N22551	N22552
Type of sample		Liquid	Liquid	Liquid	Liquid	Liquid
Volume	mL	178	182	267	152	220
Antimony	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Arsenic	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Beryllium	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Cadmium	µg	<0.05	[NA]	0.06	<0.05	[NA]
Chromium	µg	0.9	[NA]	2	<0.5	[NA]
Cobalt	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Lead	µg	<0.5	[NA]	2	<0.5	[NA]
Manganese	µg	<3	[NA]	<3	<3	[NA]
Mercury	µg	<10	<1	<10	<10	<1
Nickel	µg	<0.5	[NA]	2	<0.5	[NA]
Selenium	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Tin	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Vanadium	µg	<0.5	[NA]	<0.5	<0.5	[NA]
Copper	µg	<0.5	[NA]	34	4	[NA]
Zinc	µg	0.5	[NA]	10	5.5	[NA]
Date prepared	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Date analysed	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Antimony-Dissolved	µg/L	<1	[NA]	<1	<1	[NA]
Arsenic-Dissolved	µg/L	<1	[NA]	<1	<1	[NA]
Beryllium-Dissolved	µg/L	<0.5	[NA]	<0.5	<0.5	[NA]
Cadmium-Dissolved	µg/L	<0.1	[NA]	0.2	0.1	[NA]
Chromium-Dissolved	µg/L	5	[NA]	6	1	[NA]
Cobalt-Dissolved	µg/L	<1	[NA]	<1	<1	[NA]
Lead-Dissolved	µg/L	<1	[NA]	7	2	[NA]
Manganese-Dissolved	µg/L	<5	[NA]	7	10	[NA]
Mercury-Dissolved	µg/L	<1	<0.1	4.9	<1	0.4
Nickel-Dissolved	µg/L	2	[NA]	8	3	[NA]
Selenium-Dissolved	µg/L	<1	[NA]	<1	<1	[NA]
Tin-Dissolved	µg/L	<1	[NA]	<1	<1	[NA]
Vanadium-Dissolved	µg/L	<1	[NA]	<1	<1	[NA]
Copper-Dissolved	µg/L	<1	[NA]	130	23	[NA]
Zinc-Dissolved	µg/L	3	[NA]	39	36	[NA]

Metals in water - mass units						
Our Reference	UNITS	372632-8	372632-10	372632-11	372632-12	372632-13
Your Reference		N22553	N22555	N22556	N22557	N22558
Type of sample		Liquid	Liquid	Liquid	Liquid	Liquid
Volume	mL	182	261	110	211	209
Antimony	µg	[NA]	<0.5	<0.5	[NA]	[NA]
Arsenic	µg	[NA]	<0.5	<0.5	[NA]	[NA]
Beryllium	µg	[NA]	<0.5	<0.5	[NA]	[NA]
Cadmium	µg	[NA]	<0.05	<0.05	[NA]	[NA]
Chromium	µg	[NA]	1	<0.5	[NA]	[NA]
Cobalt	µg	[NA]	<0.5	<0.5	[NA]	[NA]
Lead	µg	[NA]	0.6	<0.5	[NA]	[NA]
Manganese	µg	[NA]	<3	<3	[NA]	[NA]
Mercury	µg	<10	<10	<10	<1	<0.5
Nickel	µg	[NA]	0.8	<0.5	[NA]	[NA]
Selenium	µg	[NA]	0.8	<0.5	[NA]	[NA]
Tin	µg	[NA]	<0.5	<0.5	[NA]	[NA]
Vanadium	µg	[NA]	<0.5	<0.5	[NA]	[NA]
Copper	µg	[NA]	3	<0.5	[NA]	[NA]
Zinc	µg	[NA]	4	2	[NA]	[NA]
Date prepared	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Date analysed	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Antimony-Dissolved	µg/L	[NA]	<1	<1	[NA]	[NA]
Arsenic-Dissolved	µg/L	[NA]	<1	<1	[NA]	[NA]
Beryllium-Dissolved	µg/L	[NA]	<0.5	<0.5	[NA]	[NA]
Cadmium-Dissolved	µg/L	[NA]	0.1	0.1	[NA]	[NA]
Chromium-Dissolved	µg/L	[NA]	6	1	[NA]	[NA]
Cobalt-Dissolved	µg/L	[NA]	<1	<1	[NA]	[NA]
Lead-Dissolved	µg/L	[NA]	2	<1	[NA]	[NA]
Manganese-Dissolved	µg/L	[NA]	<5	<5	[NA]	[NA]
Mercury-Dissolved	µg/L	<1	9.3	<1	0.4	0.84
Nickel-Dissolved	µg/L	[NA]	3	1	[NA]	[NA]
Selenium-Dissolved	µg/L	[NA]	3	<1	[NA]	[NA]
Tin-Dissolved	µg/L	[NA]	<1	<1	[NA]	[NA]
Vanadium-Dissolved	µg/L	[NA]	<1	<1	[NA]	[NA]
Copper-Dissolved	µg/L	[NA]	12	4	[NA]	[NA]
Zinc-Dissolved	µg/L	[NA]	14	15	[NA]	[NA]

Client Reference: R018380

Metals in water - mass units						
Our Reference		372632-15	372632-16	372632-17	372632-18	372632-20
Your Reference	UNITS	N22560	N22561	N22618	N22619	N22621
Type of sample		Liquid	Liquid	Liquid	Liquid	Liquid
Volume	mL	264	101	210	196	292
Antimony	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Arsenic	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Beryllium	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Cadmium	µg	0.05	<0.05	[NA]	[NA]	<0.05
Chromium	µg	1	<0.5	[NA]	[NA]	1
Cobalt	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Lead	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Manganese	µg	<3	<3	[NA]	[NA]	<3
Mercury	µg	<10	<10	<1	<0.5	<10
Nickel	µg	0.8	<0.5	[NA]	[NA]	1
Selenium	µg	<0.5	<0.5	[NA]	[NA]	0.8
Tin	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Vanadium	µg	<0.5	<0.5	[NA]	[NA]	<0.5
Copper	µg	4	<0.5	[NA]	[NA]	1
Zinc	µg	4	3	[NA]	[NA]	5
Date prepared	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Date analysed	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Antimony-Dissolved	µg/L	<1	<1	[NA]	[NA]	<1
Arsenic-Dissolved	µg/L	<1	<1	[NA]	[NA]	<1
Beryllium-Dissolved	µg/L	<0.5	<0.5	[NA]	[NA]	<0.5
Cadmium-Dissolved	µg/L	0.2	0.1	[NA]	[NA]	0.1
Chromium-Dissolved	µg/L	5	1	[NA]	[NA]	5
Cobalt-Dissolved	µg/L	<1	<1	[NA]	[NA]	<1
Lead-Dissolved	µg/L	1	<1	[NA]	[NA]	1
Manganese-Dissolved	µg/L	7	6	[NA]	[NA]	5
Mercury-Dissolved	µg/L	2.5	<1	0.1	<0.05	2.4
Nickel-Dissolved	µg/L	3	3	[NA]	[NA]	3
Selenium-Dissolved	µg/L	1	<1	[NA]	[NA]	3
Tin-Dissolved	µg/L	<1	<1	[NA]	[NA]	<1
Vanadium-Dissolved	µg/L	<1	<1	[NA]	[NA]	<1
Copper-Dissolved	µg/L	14	4	[NA]	[NA]	5
Zinc-Dissolved	µg/L	13	25	[NA]	[NA]	16

Client Reference: R018380

Metals in water - mass units						
Our Reference	UNITS	372632-21	372632-22	372632-23	372632-24	372632-25
Your Reference		N22622	N22623	N22624	N22625	N22626
Type of sample		Liquid	Liquid	Liquid	Liquid	Liquid
Volume	mL	100	208	188	153	233
Antimony	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Arsenic	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Beryllium	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Cadmium	µg	<0.05	[NA]	[NA]	<0.05	[NA]
Chromium	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Cobalt	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Lead	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Manganese	µg	<3	[NA]	[NA]	<3	[NA]
Mercury	µg	<10	<1	<0.5	<10	<0.5
Nickel	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Selenium	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Tin	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Vanadium	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Copper	µg	<0.5	[NA]	[NA]	<0.5	[NA]
Zinc	µg	2	[NA]	[NA]	<0.5	[NA]
Date prepared	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Date analysed	-	17/02/2025	17/02/2025	17/02/2025	17/02/2025	17/02/2025
Antimony-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Arsenic-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Beryllium-Dissolved	µg/L	<0.5	[NA]	[NA]	<0.5	[NA]
Cadmium-Dissolved	µg/L	0.3	[NA]	[NA]	<0.1	[NA]
Chromium-Dissolved	µg/L	1	[NA]	[NA]	<1	[NA]
Cobalt-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Lead-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Manganese-Dissolved	µg/L	5	[NA]	[NA]	<5	[NA]
Mercury-Dissolved	µg/L	<1	0.1	0.1	<1	<0.05
Nickel-Dissolved	µg/L	2	[NA]	[NA]	<1	[NA]
Selenium-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Tin-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Vanadium-Dissolved	µg/L	<1	[NA]	[NA]	<1	[NA]
Copper-Dissolved	µg/L	2	[NA]	[NA]	<1	[NA]
Zinc-Dissolved	µg/L	17	[NA]	[NA]	<1	[NA]

Method ID	Methodology Summary
Metals-020/021/022	Determination of various metals on filters by ICP-AES/MS and or CV/AAS. Note - air volume measurements are not covered by Envirolab's NATA accreditation.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS. Please note for Bromine and Iodine, any forms of these elements that are present are included together in the one result reported for each of these two elements. Salt forms (e.g. FeO, PbO, ZnO) are determined stoichiometrically from the base metal concentration.

QUALITY CONTROL: Metals on filters						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			14/02/2025	[NT]	[NT]	[NT]	[NT]	14/02/2025	[NT]
Date analysed	-			14/02/2025	[NT]	[NT]	[NT]	[NT]	14/02/2025	[NT]
Antimony	µg/filter	5	Metals-020/021/022	<5	[NT]	[NT]	[NT]	[NT]	91	[NT]
Arsenic	µg/filter	2	Metals-020/021/022	<2	[NT]	[NT]	[NT]	[NT]	90	[NT]
Beryllium	µg/filter	0.5	Metals-020/021/022	<0.5	[NT]	[NT]	[NT]	[NT]	99	[NT]
Cadmium	µg/filter	0.1	Metals-020/021/022	<0.1	[NT]	[NT]	[NT]	[NT]	90	[NT]
Chromium	µg/filter	0.5	Metals-020/021/022	<0.5	[NT]	[NT]	[NT]	[NT]	98	[NT]
Cobalt	µg/filter	0.5	Metals-020/021/022	<0.5	[NT]	[NT]	[NT]	[NT]	96	[NT]
Lead	µg/filter	1	Metals-020/021/022	<1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Manganese	µg/filter	0.5	Metals-020/021/022	<0.5	[NT]	[NT]	[NT]	[NT]	97	[NT]
Mercury	µg/filter	0.2	Metals-020/021/022	<0.2	[NT]	[NT]	[NT]	[NT]	97	[NT]
Nickel	µg/filter	1	Metals-020/021/022	<1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Selenium	µg/filter	5	Metals-020/021/022	<5	[NT]	[NT]	[NT]	[NT]	91	[NT]
Tin	µg/filter	2	Metals-020/021/022	<2	[NT]	[NT]	[NT]	[NT]	95	[NT]
Vanadium	µg/filter	1	Metals-020/021/022	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Copper	µg/filter	0.5	Metals-020/021/022	<0.5	[NT]	[NT]	[NT]	[NT]	93	[NT]
Zinc	µg/filter	1	Metals-020/021/022	<1	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: Metals in water - mass units						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W8	372632-6
Antimony	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Arsenic	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Beryllium	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Cadmium	µg	0.05	Metals-022	<0.05	4	0.06	0.05	18	[NT]	[NT]
Chromium	µg	0.5	Metals-022	<0.5	4	2	2	0	[NT]	[NT]
Cobalt	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Lead	µg	0.5	Metals-022	<0.5	4	2	2	0	[NT]	[NT]
Manganese	µg	3	Metals-022	<3	4	<3	<3	0	[NT]	[NT]
Mercury	µg	0.5	Metals-021	<0.5	4	<10	<10	0	[NT]	[NT]
Nickel	µg	0.5	Metals-022	<0.5	4	2	2	0	[NT]	[NT]
Selenium	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Tin	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Vanadium	µg	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	[NT]	[NT]
Copper	µg	0.5	Metals-022	<0.5	4	34	33	3	[NT]	[NT]
Zinc	µg	0.5	Metals-022	<0.5	4	10	10	0	[NT]	[NT]
Date prepared	-			17/02/2025	4	17/02/2025	17/02/2025		17/02/2025	17/02/2025
Date analysed	-			17/02/2025	4	17/02/2025	17/02/2025		17/02/2025	17/02/2025
Antimony-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	83	86
Arsenic-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	84	85
Beryllium-Dissolved	µg/L	0.5	Metals-022	<0.5	4	<0.5	<0.5	0	92	89
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	4	0.2	0.2	0	86	88
Chromium-Dissolved	µg/L	1	Metals-022	<1	4	6	6	0	93	94
Cobalt-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	94	94
Lead-Dissolved	µg/L	1	Metals-022	<1	4	7	6	15	87	82
Manganese-Dissolved	µg/L	5	Metals-022	<5	4	7	5	33	92	90
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	4	4.9	4.7	4	94	100
Nickel-Dissolved	µg/L	1	Metals-022	<1	4	8	8	0	92	91
Selenium-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	84	83
Tin-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	91	93
Vanadium-Dissolved	µg/L	1	Metals-022	<1	4	<1	<1	0	96	95
Copper-Dissolved	µg/L	1	Metals-022	<1	4	130	120	8	90	91
Zinc-Dissolved	µg/L	1	Metals-022	<1	4	39	38	3	100	89

QUALITY CONTROL: Metals in water - mass units						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Antimony	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Arsenic	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Beryllium	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Cadmium	µg	0.05	Metals-022	[NT]	16	<0.05	[NT]		[NT]	[NT]
Chromium	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Cobalt	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Lead	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Manganese	µg	3	Metals-022	[NT]	16	<3	[NT]		[NT]	[NT]
Mercury	µg	0.5	Metals-021	[NT]	16	<10	<10	0	[NT]	[NT]
Nickel	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Selenium	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Tin	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Vanadium	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Copper	µg	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Zinc	µg	0.5	Metals-022	[NT]	16	3	[NT]		[NT]	[NT]
Date prepared	-			[NT]	16	17/02/2025	17/02/2025		[NT]	[NT]
Date analysed	-			[NT]	16	17/02/2025	17/02/2025		[NT]	[NT]
Antimony-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Beryllium-Dissolved	µg/L	0.5	Metals-022	[NT]	16	<0.5	[NT]		[NT]	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	[NT]	16	0.1	[NT]		[NT]	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	[NT]	16	1	[NT]		[NT]	[NT]
Cobalt-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Lead-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Manganese-Dissolved	µg/L	5	Metals-022	[NT]	16	6	[NT]		[NT]	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	[NT]	16	<1	<1	0	[NT]	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	[NT]	16	3	[NT]		[NT]	[NT]
Selenium-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Tin-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Vanadium-Dissolved	µg/L	1	Metals-022	[NT]	16	<1	[NT]		[NT]	[NT]
Copper-Dissolved	µg/L	1	Metals-022	[NT]	16	4	[NT]		[NT]	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	[NT]	16	25	[NT]		[NT]	[NT]

Result Definitions	
NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

The recommended maximums for analytes in urine are taken from “2018 TLVs and BEIs”, as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.

Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Where matrix spike recoveries fall below the lower limit of the acceptance criteria (e.g. for non-labile or standard Organics <60%), positive result(s) in the parent sample will subsequently have a higher than typical estimated uncertainty (MU estimates supplied on request) and in these circumstances the sample result is likely biased significantly low.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments
Metals in water - mass units - The PQL for Hg has been raised due to the sample matrix requiring dilution.

Ektimo

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Ektimo

Experts in air quality, odour and emission monitoring.

Emission Testing Report

Report: R018685

EnergyAustralia NSW Pty Ltd, Mt Piper Power Station

ilac-MRA NATA

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration, and inspection reports.

Document Information

Client Name:	EnergyAustralia NSW Pty Ltd (Mt Piper)
Report Number:	R018685
Date of Issue:	18 July 2025
Attention:	Jarvis Lulham
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation

Ahmad Ramiz
Air Monitoring Consultant

NATA Accredited Laboratory
No. 14601

Adnan Latif
Ektimo Signatory

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo terms of NATA accreditation as described in the Test Methods table. This does not include calculations that use data supplied by third-parties, comments, conclusions, or recommendations based upon the results. Refer to Test Methods section for full details of testing covered by NATA accreditation.

Table of Contents

1 Executive Summary

1.1 Background

Ektimo was engaged by EnergyAustralia NSW Pty Ltd (Mt Piper) to perform emission testing at Mt Piper Power Station, Portland, NSW. Testing was carried out in accordance with Environment Protection Licence 13007.

1.2 Project Objective & Overview

The objective of the project was to conduct a monitoring programme to quantify emissions from four (4) discharge points to determine compliance with EnergyAustralia NSW Pty Ltd (Mt Piper)'s Environmental Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 4 Unit 1B (Lower)	11 June 2025	Solid Particles (Total) Sulfur trioxide (as SO_3) Oxygen (O_2), Carbon dioxide (CO_2)
		Fluorine and fluorine compounds as (as total fluoride) Hydrogen chloride (HCl) Chlorine and chlorine compounds (as Cl_2) Volatile organic compounds (VOCs) Oxygen (O_2), Carbon dioxide (CO_2) Nitrogen oxides (as NO_2) Sulfur dioxide (SO_2)
EPA 5 Unit 1A (Upper)	11June 2025	Solid Particles (Total) Oxygen (O_2), Carbon dioxide (CO_2)
EPA 6 Unit 2A (Lower)	12 June 2025	Solid Particles (Total) Sulfur trioxide (as SO_3) Oxygen (O_2), Carbon dioxide (CO_2)
		Fluorine and fluorine compounds as (as total fluoride) Hydrogen chloride (HCl) Chlorine and chlorine compounds (as Cl_2) Volatile organic compounds (VOCs) Oxygen (O_2), Carbon dioxide (CO_2) Nitrogen oxides (as NO_2) Sulfur dioxide (SO_2)
EPA 7 Unit 2B (Upper)	12 June 2025	Solid Particles (Total) Oxygen (O_2), Carbon dioxide (CO_2)

* Flow rate, velocity, temperature, and moisture were also determined.

All volume-based concentrations are reported on a dry basis at STP.

Plant operating conditions have been noted in this report.

1.3 Results Summary

The following licence comparison table shows that all analytes are within the licence limit set by the NSW EPA as per licence 13007 (last amended on 26 March 2025).

Report Number			R018685	R018685	
Test Date			11/06/25	11/06/25	
EPA			5	4	
Unit			Unit 1 Duct A	Unit 1 Duct B	
					EPA 2
	LIMIT	**UNITS**	*Measured Results*		*Combined Ducts*
Volatile organic compounds as n-propane equivalent	**10**	**mg/m³**	-	0.18	**-**
Fluorine	**30**	**mg/m³**	-	10	**-**
Hydrogen chloride	**50**	**mg/m³**	-	2.7	**-**
Chlorine	**20**	**mg/m³**	-	<0.03	**-**
Sulfuric acid mist and sulfur trioxide (as SO_3)	**100**	**mg/m³**	-	4.8	**-**
Solid particles	**50**	**mg/m³**	**3.8**	**3.0**	**3.4**

*Combined air emissions from **boiler 1** via points 4 & 5.*

All results corrected to 7% oxygen correction.

Report Number			R018685	R018685	
Test Date			12/06/25	12/06/25	
EPA			6	7	
Unit			Unit 2 Duct A	Unit 2 Duct B	
					EPA 3
	LIMIT	**UNITS**	*Measured Results*		*Combined Ducts*
Volatile organic compounds as n-propane equivalent	**10**	**mg/m³**	0.12	-	**-**
Fluorine	**30**	**mg/m³**	15	-	**-**
Hydrogen chloride	**50**	**mg/m³**	2.6	-	**-**
Chlorine	**20**	**mg/m³**	<0.02	-	**-**
Sulfuric acid mist and sulfur trioxide (as SO_3)	**100**	**mg/m³**	2.2	-	**-**
Solid particles	**50**	**mg/m³**	**6.1**	**2.8**	**4.7**

*Combined air emissions from **boiler 2** via points 6 & 7.*

All results corrected to 7% oxygen correction.

*Please note that the measurement uncertainty associated with the test results **was not** considered when determining whether the results were compliant or non-compliant.*

Refer to the Test Methods table for the measurement uncertainties.

2 Results

2.1 EPA 4 - Unit 1, Duct B

Date	11/06/2025	**Client**	EnergyAustralia
Report	R018685	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load Stabled at 500 MW		250527

Stack Parameters		
Moisture content, %v/v	5.2	
Gas molecular weight, g/g mole	29.5 (wet)	30.1 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.81	
% Oxygen correction & Factor	7 %	1.17
Gas Flow Parameters		
Temperature, °C	121	
Temperature, K	394	
Ambient pressure, kPa	90	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/s	450	
Volumetric flow rate (wet STP), m³/s	270	
Volumetric flow rate (dry STP), m³/s	260	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0854 - 1029	0854 - 1029	0854 - 1029
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.2	9.2	11.2
Oxygen	9	7.9	10.3

Isokinetic Results	Results		
Sampling time	0854-1029		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	2.6	3	40
Sulfur trioxide and/or Sulfuric acid (as SO3)	4.1	4.8	65
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		102	
Gravimetric analysis date (total particulate)		16-06-2025	

Date	11/06/2025	**Client**	EnergyAustralia
Report	R018685	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load Stabled at 280 MW		250527

Stack Parameters		
Moisture content, %v/v	5.1	
Gas molecular weight, g/g mole	29.4 (wet)	30.0 (dry)
Gas density at STP, kg/m³	1.31 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.38
Gas Flow Parameters		
Temperature, °C	111	
Temperature, K	384	
Ambient pressure, kPa	90	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	10	
Volumetric flow rate, actual, m³/s	360	
Volumetric flow rate (wet STP), m³/s	230	
Volumetric flow rate (dry STP), m³/s	220	
Mass flow rate (wet basis), kg/h	1100000	

Gas Analyser Results	Average			Minimum			Maximum		
Sampling time	1100 - 1234			1100 - 1234			1100 - 1234		
		Corrected to			Corrected to			Corrected to	
	Concentration	7% O2	Mass Rate	Concentration	7% O2	Mass Rate	Concentration	7% O2	Mass Rate
	mg/m³	mg/m³	g/min	mg/m³	mg/m³	g/min	mg/m³	mg/m³	g/min
Combustion Gases									
Nitrogen oxides (as NO_2)	310	420	4000	300	410	3900	320	440	4100
Sulfur dioxide	490	680	6400	430	590	5500	640	880	8200
		Concentration			Concentration			Concentration	
		% v/v			% v/v			% v/v	
Carbon dioxide		8.9			8.8			9.1	
Oxygen		10.8			10.7			11	

Isokinetic Results	Results		
Sampling time	1100-1234		
		Corrected to	
	Concentration	7% O2	Mass Rate
	mg/m³	mg/m³	g/min
Chlorine	<0.02	<0.03	<0.3
Total fluoride (as HF)	7.5	10	97
Hydrogen chloride	2	2.7	26
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	

Total VOCs (as n-Propane)	Results		
Sampling time	1110-1211		
		Corrected to	
	Concentration	7% O2	Mass Rate
	mg/m³	mg/m³	g/min
Total	0.13	0.18	1.6

VOC (speciated)	Results		
Sampling time	1110-1211		
		Corrected to	
( )	Concentration	7% O2	Mass Rate
	mg/m³	mg/m³	g/min
Detection limit [1]	<0.06	<0.09	<0.8
Acetone	0.17	0.23	2.2

(1) Unless otherwise reported, the following target compounds were found to be below detection:
Ethanol, Isopropanol, Pentane, 1,1-Dichloroethene,Acrylonitrile, Dichloromethane, trans-1,2-Dichloroethene, Methyl ethyl ketone, n-Hexane, cis-1,2-Dichloroethene, Ethyl acetate, Chloroform, 1,1,1-Trichloroethane,1,2-Dichloroethane, Cyclohexane, Benzene, Carbon tetrachloride, Butanol, Isopropyl acetate, 2-Methylhexane, 2,3-Dimethylpentane, 1-Methoxy-2-propanol, 3-Methylhexane, Heptane, Trichloroethylene, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, Toluene, 1,1,2-Trichloroethane,2-Hexanone, Octane, Tetrachloroethene, Butyl acetate, Chlorobenzene, Ethylbenzene, m + p-Xylene, 1-Methoxy-2-propyl acetate, Styrene, o-Xylene, Butyl acrylate, Nonane, 2-Butoxyethanol, Cellosolve acetate, 1,1,2,2-Tetrachloroethane,Isopropylbenzene, alpha-Pinene, Propylbenzene, 1,3,5-Trimethylbenzene,beta-Pinene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, Decane, 3-Carene, 1,2,3-Trimethylbenzene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane, Residuals as Toluene

2.2 EPA 5 - Unit 1, Duct A

Date	11/06/2025	**Client**	EnergyAustralia
Report	R018685	**Stack ID**	Mt Piper Power Station - EPA 5 Unit 1 Duct A (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load Stabled at 280MW		250527

Stack Parameters		
Moisture content, %v/v	5.1	
Gas molecular weight, g/g mole	29.4 (wet)	30.0 (dry)
Gas density at STP, kg/m³	1.31 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.81	
% Oxygen correction & Factor	7 %	1.40
Gas Flow Parameters		
Temperature, °C	116	
Temperature, K	389	
Ambient pressure, kPa	90	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	10	
Volumetric flow rate, actual, m³/s	370	
Volumetric flow rate (wet STP), m³/s	230	
Volumetric flow rate (dry STP), m³/s	220	
Mass flow rate (wet basis), kg/h	1100000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1326 - 1458	1326 - 1458	1326 - 1458
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	8.8	8.4	9
Oxygen	11	10.7	11.4

Isokinetic Results	Results		
Sampling time	1326-1458		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	2.7	3.8	35
Isokinetic Sampling Parameters			
Sampling time, min	84		
Isokinetic rate, %	101		
Gravimetric analysis date (total particulate)	16-06-2025		

2.3 EPA 6 - Unit 2, Duct A

Date	12/06/2025	**Client**	EnergyAustralia
Report	R018685	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	load stabled at 650MW		250527

Stack Parameters		
Moisture content, %v/v	5.3	
Gas molecular weight, g/g mole	29.7 (wet)	30.3 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.07
Gas Flow Parameters		
Temperature, °C	113	
Temperature, K	386	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	21	
Volumetric flow rate, actual, m³/s	740	
Volumetric flow rate (wet STP), m³/s	470	
Volumetric flow rate (dry STP), m³/s	440	
Mass flow rate (wet basis), kg/h	2200000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0822 - 1001	0822 - 1001	0822 - 1001
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	11.9	11.5	12.5
Oxygen	8	7.5	8.4

Isokinetic Results	Results		
Sampling time	0822-1001		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	5.7	6.1	150
Sulfur trioxide and/or Sulfuric acid (as SO3)	2.1	2.2	55
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		16-06-2025	

Date	12/06/2025	**Client**	EnergyAustralia
Report	R018685	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load Stabled At 450MW		250527

Stack Parameters		
Moisture content, %v/v	5.8	
Gas molecular weight, g/g mole	29.7 (wet)	30.4 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.36 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.17
Gas Flow Parameters		
Temperature, °C	111	
Temperature, K	384	
Ambient pressure, kPa	90	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	17	
Volumetric flow rate, actual, m³/s	600	
Volumetric flow rate (wet STP), m³/s	370	
Volumetric flow rate (dry STP), m³/s	350	
Mass flow rate (wet basis), kg/h	1800000	

Gas Analyser Results	Average			Minimum			Maximum		
Sampling time	1130 - 1303			1130 - 1303			1130 - 1303		
		Corrected to			Corrected to			Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Combustion Gases									
Nitrogen oxides (as NO_2)	530	620	11000	500	590	11000	560	650	12000
Sulfur dioxide	1100	1200	23000	1000	1200	22000	1100	1300	23000
		Concentration % v/v			Concentration % v/v			Concentration % v/v	
Carbon dioxide		12			11.7			12.3	
Oxygen		9			8.8			9.3	

Isokinetic Results	Results		
Sampling time	1130-1302		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Chlorine	<0.02	<0.02	<0.3
Total fluoride (as HF)	13	15	270
Hydrogen chloride	2.2	2.6	47
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		102	

Total VOCs (as n-Propane)	Results		
Sampling time	1141-1241		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Total	0.1	0.12	2.2

VOC (speciated)	Results		
Sampling time	1141-1241		
		Corrected to	
( )	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Detection limit [1]	<0.06	<0.07	<1
Acetone	0.14	0.16	2.9

(1) Unless otherwise reported, the following target compounds were found to be below detection:

Ethanol, Isopropanol, Pentane, 1,1-Dichloroethene,Acrylonitrile, Dichloromethane, trans-1,2-Dichloroethene, Methyl ethyl ketone, n-Hexane, cis-1,2-Dichloroethene, Ethyl acetate, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Cyclohexane, Benzene, Carbon tetrachloride, Butanol, Isopropyl acetate, 2-Methylhexane, 2,3-Dimethylpentane, 1-Methoxy-2-propanol, 3-Methylhexane, Heptane, Trichloroethylene, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, Toluene, 1,1,2-Trichloroethane,2-Hexanone, Octane, Tetrachloroethene, Butyl acetate, Chlorobenzene, Ethylbenzene,m + p-Xylene, 1-Methoxy-2-propyl acetate, Styrene, o-Xylene, Butyl acrylate, Nonane, 2-Butoxyethanol, Cellosolve acetate, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, alpha-Pinene, Propylbenzene, 1,3,5-Trimethylbenzene, beta-Pinene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, Decane, 3-Carene, 1,2,3-Trimethylbenzene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane, Residuals as Toluene

2.4 EPA 7 - Unit 2, Duct B

Date	12/06/2025	**Client**	EnergyAustralia
Report	R018685	**Stack ID**	Mt Piper Power Station - EPA 7 Unit 2 Duct B (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load Stabled at 450MW		250527

Stack Parameters		
Moisture content, %v/v	5.1	
Gas molecular weight, g/g mole	29.7 (wet)	30.4 (dry)
Gas density at STP, kg/m³	1.33 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.19
Gas Flow Parameters		
Temperature, °C	112	
Temperature, K	386	
Ambient pressure, kPa	90	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	16	
Volumetric flow rate, actual, m³/s	570	
Volumetric flow rate (wet STP), m³/s	360	
Volumetric flow rate (dry STP), m³/s	340	
Mass flow rate (wet basis), kg/h	1700000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1345 - 1518	1345 - 1518	1345 - 1518
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	11.7	11.3	12.1
Oxygen	9.2	8.8	9.6

Isokinetic Results	Results		
Sampling time	1345-1518		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	2.3	2.8	48
Isokinetic Sampling Parameters			
Sampling time, min	84		
Isokinetic rate, %	100		
Gravimetric analysis date (total particulate)	16-06-2025		

3 Sample Plane Compliance

3.1 EPA 4 & 5 - Unit 1, Duct A & B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.2 EPA 6 & 7 - Unit 2, Duct A & B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

4 Plant Operating Conditions

See EnergyAustralia NSW Pty Ltd (Mt Piper) records for complete process conditions.

Based on information received from EnergyAustralia NSW Pty Ltd (Mt Piper) personnel, it is our understanding that samples were collected during typical plant operations.

5 Test Methods

All sampling and analysis were performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Uncertainty*	NATA accredited Sampling	NATA accredited Analysis
Sampling points - Selection	NSW EPA TM-1 (USEPA Method 1)	NA	NA	✓	NA
Flow rate, temperature & velocity	NSW EPA TM-2 (USEPA Method 2)	NSW EPA TM-2 (USEPA Method 2)	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22 (USEPA Method 4)	NSW EPA TM-22 (USEPA Method 4)	8%	✓	✓
Molecular weight	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Dry gas density	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Combination of air impurities from two or more sources	NA	NSW EPA TM-38	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24 (USEPA Method 3A)	NSW EPA TM-24 (USEPA Method 3A)	13%	✓	✓
Nitrogen oxides	NSW EPA TM-11 (USEPA Method 7E)	NSW EPA TM-11 (USEPA Method 7E)	12%	✓	✓
Oxygen	NSW EPA TM-25 (USEPA Method 3A)	NSW EPA TM-25 (USEPA Method 3A)	13%	✓	✓
Sulfur dioxide	NSW EPA TM-4 (USEPA Method 6C)	NSW EPA TM-4 (USEPA Method 6C)	12%	✓	✓
Hydrogen halides & halogens∞	USEPA Method 26A	Ektimo 235	14%	✓	✓†
Hydrogen halides (including soluble fluoride)[2]	NSW EPA TM-8 (USEPA Method 26A)	Ektimo 235	not specified	✓	✓†i
Speciated volatile organic compounds (VOCs)	NSW EPA TM-34[d] (USEPA Method 18)	Ektimo 344	19%	✓	✓†
Solid particles (total)	NSW EPA TM-15 (USEPA Method 17)	NSW EPA TM-15 (USEPA Method 17)	3%	✓	✓††
Hydrogen chloride	NSW EPA TM-8 (USEPA Method 26A)	Ektimo 235	14%	✓	✓†i
Chlorine	NSW EPA TM-7 (USEPA Method 26A)	Ektimo 235	14%	✓	✓†i
Sulfuric acid mist and/or sulfur trioxide	NSW EPA TM-3 (USEPA Method 8)	Ektimo 235	16%	✓	✓†m

260625

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

† Analysis performed by Ektimo. Results were reported to Ektimo on:
- 26 June 2025 in report LV-007410.
- 27 June 2025 in report LV-007416.
- 1 July 2025 in report LV-007437.
- 3 July 2025 in report LV-007448.

†† Gravimetric analysis conducted at the Ektimo NSW laboratory.

[2] Sampling follows USEPA Method 26A and analysis follows Ektimo 235 (ion chromatography) which uses the same principle as USEPA Method 26A. Includes sampling & analysis of soluble fluoride.

∞ Sampling follows USEPA Method 26A and analysis follows Ektimo 235 (ion chromatography) which uses the same principle as USEPA Method 26A and USEPA SW-846 Method 9056A (which is the NSW EPA approved alternative analysis method to USEPA Method 13B). Includes sampling & analysis of particulate fluoride.

[d] Excludes recovery study as specified in section 8.4.3 of USEPA Test Method 18.

[i] Includes analysis of chlorine/chloride by Ektimo 235 which uses the same principle as USEPA Method 26/26A.

[m] Includes analysis of SO_3/H_2SO_4 by Ektimo 235 which uses the same principle as USEPA SW-846 Method 9056A which is an approved alternative to the analytical procedure of USEPA Method 8.

6 Deviations to Test Methods

TM-9 FLUORINE

Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (NSW EPA) (2022) specifies TM-9 (USEPA 13B) for measurement of total fluoride emissions.

As per site-specific agreement between EnergyAustralia NSW and NSW EPA, Ektimo conducts sampling for particulate fluoride according to USEPA Method 26A (hydrogen halides and halogens) and analysis according to Ektimo Method 235 (ion chromatography). Ektimo Method 235 uses the same principle as USEPA SW-846 Method 9056A (which is the NSW EPA approved alternative analysis method to USEPA Method 13B).

Ektimo conducts sampling for soluble fluoride according to USEPA Method 26A (hydrogen halides and halogens) and analysis according to Ektimo Method 235 (ion chromatography) which uses the same principle as USEPA Method 26A.

NSW EPA TM-34 (USEPA 18)

Ektimo notes that the sampling and analysis of Volatile Organic Compounds (VOCs), per USEPA 18 has excluded the recovery study as specified in Section 8.4.3. Performing the recovery study described in Section 8.4.3 of USEPA Method 18 for analytes present at low levels is problematic. Given this, Ektimo applies a threshold of 50µg as a lower-bound mass, below which the 'spiking' of specific volatile organic compounds is not performed. For the purposes of this round of monitoring, no VOCs were detected above 50µg. Therefore, recovery studies were not deemed necessary for this sampling round.

7 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

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NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

Unless specifically noted, all samples were collected and handled in accordance with Ektimo's QA/QC standards.

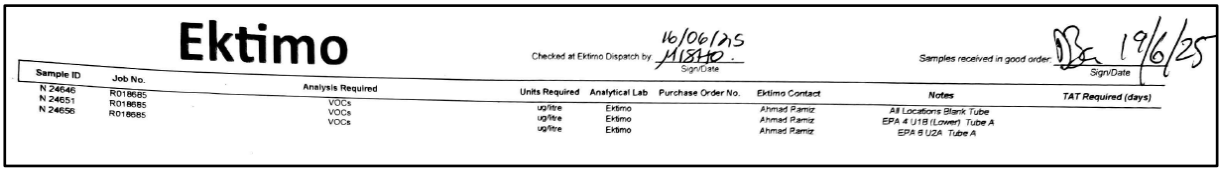
8 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry basis (except moisture)
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
AS	Australian Standard
BaP-TEQ	Benzo(a)pyrene toxic equivalents
BSP	British standard pipe
CEM/CEMS	Continuous emission monitoring/Continuous emission monitoring system
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D_{50}	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D_{50} method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D_{50} of that cyclone and less than the D_{50} of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier transform infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
I-TEQ	International toxic equivalents
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	Odour unit. One OU is that concentration of odorant(s) at standard conditions that elicits a physiological response from a panel equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions.
PM_{10}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (µm).
$PM_{2.5}$	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (µm).
PSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
RATA	Relative accuracy test audit
Semi-quantified VOCs	Unknown VOCs (those for which an analytical standard is not available), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration is determined by matching the area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
TOC	Total organic carbon. This is the sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
WHO05-TEQ	World Health Organisation toxic equivalents
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range

9 Appendices

Appendix A: Chains of Custody

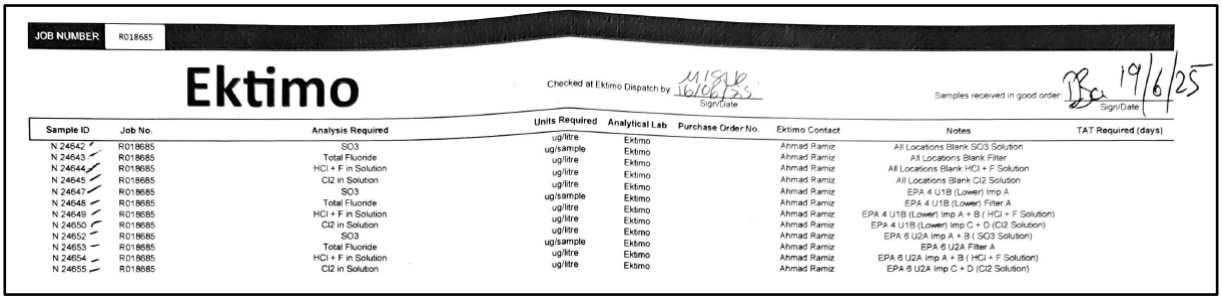


Ektimo

Checked at Ektimo Dispatch by 16/06/25 Sign/Date

Samples received in good order 19/6/25 Sign/Date

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 24646	R018685	VOCs	ug/litre	Ektimo		Ahmad Ramiz	All Locations Blank Tube	
N 24651	R018685	VOCs	ug/litre	Ektimo		Ahmad Ramiz	EPA 4 U1B (Lower) Tube A	
N 24656	R018685	VOCs	ug/litre	Ektimo		Ahmad Ramiz	EPA 6 U2A Tube A	



JOB NUMBER R018685

Ektimo

Checked at Ektimo Dispatch by 16/06/25 Sign/Date

Samples received in good order 19/6/25 Sign/Date

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 24642	R018685	SO3	ug/litre	Ektimo		Ahmad Ramiz	All Locations Blank SO3 Solution	
N 24643	R018685	Total Fluoride	ug/sample	Ektimo		Ahmad Ramiz	All Locations Blank Filter	
N 24644	R018685	HCl + F in Solution	ug/litre	Ektimo		Ahmad Ramiz	All Locations Blank HCl + F Solution	
N 24645	R018685	Cl2 in Solution	ug/litre	Ektimo		Ahmad Ramiz	All Locations Blank Cl2 Solution	
N 24647	R018685	SO3	ug/litre	Ektimo		Ahmad Ramiz	EPA 4 U1B (Lower) Imp A	
N 24648	R018685	Total Fluoride	ug/sample	Ektimo		Ahmad Ramiz	EPA 4 U1B (Lower) Filter A	
N 24649	R018685	HCl + F in Solution	ug/litre	Ektimo		Ahmad Ramiz	EPA 4 U1B (Lower) Imp A + B (HCl + F Solution)	
N 24650	R018685	Cl2 in Solution	ug/litre	Ektimo		Ahmad Ramiz	EPA 4 U1B (Lower) Imp C + D (Cl2 Solution)	
N 24652	R018685	SO3	ug/litre	Ektimo		Ahmad Ramiz	EPA 6 U2A Imp A + B (SO3 Solution)	
N 24653	R018685	Total Fluoride	ug/sample	Ektimo		Ahmad Ramiz	EPA 6 U2A Filter A	
N 24654	R018685	HCl + F in Solution	ug/litre	Ektimo		Ahmad Ramiz	EPA 6 U2A Imp A + B (HCl + F Solution)	
N 24655	R018685	Cl2 in Solution	ug/litre	Ektimo		Ahmad Ramiz	EPA 6 U2A Imp C + D (Cl2 Solution)	

Appendix B: Laboratory Results

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CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-007448
Job Number:	R018685
Date of Issue:	3/07/2025
Attention:	Energy Australia NSW Pty Ltd (Mt. Piper)
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	19/06/2025
Number of samples received:	3
Date samples analysed:	1/07/2025
No of samples analysed:	3
Test method(s) used:	Ektimo 235

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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NATA is a member of APAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised world -wide.

A formal Quality Control program is in place at Ektimo to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

REPORT AUTHORISATION

Version: 060525

Annie Kolokithas
Laboratory Technician

Cappi Tuffery
Laboratory Chemist

NATA Accredited Laboratory 14601

Accredited for compliance with ISO/IEC 17025. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

Ektimo

Ektimo Analytical Results

Report No. LV-007448
Job No. R018685
Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24642 R018685	N 24647 R018685	N 24652 R018685
Volume	1	mL	225	132	118
Sulfur trioxide (SO) as SO ²	0.2	mg/L	0.22	34	32

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-007437
Job Number:	R018685
Date of Issue:	1/07/2025
Attention:	Energy Australia Mt Piper
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	19/06/2025
Number of samples received:	3
Date samples analysed:	27/06/2025
No of samples analysed:	3
Test method(s) used:	Ektimo 344

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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REPORT AUTHORISATION

Version: 060525

Daniel Balaam
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Cappi Tuffery
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NATA Accredited Laboratory 14601

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Ektimo

Ektimo Analytical Results

Report No. LV-007437
Job No. R018685
Client Name: Energy Australia Mt Piper

Parameter	Units	N24646 R018685	N24651 R018685	N24656 R018685
	PQL	1	1	1
Ethanol	µg	<1	<1	<1
Acetone	µg	<1	2.7	2.3
Isopropanol	µg	<1	<1	<1
Pentane	µg	<1	<1	<1
1,1-Dichloroethene	µg	<1	<1	<1
Acrylonitrile	µg	<1	<1	<1
Dichloromethane	µg	<1	<1	<1
trans-1,2-Dichloroethene	µg	<1	<1	<1
Methyl ethyl ketone	µg	<1	<1	<1
n-Hexane	µg	<1	<1	<1
cis-1,2-Dichloroethene	µg	<1	<1	<1
Ethyl acetate	µg	<1	<1	<1
Chloroform	µg	<1	<1	<1
1,1,1-Trichloroethane	µg	<1	<1	<1
1,2-Dichloroethane	µg	<1	<1	<1
Cyclohexane	µg	<1	<1	<1
Benzene	µg	<1	<1	<1
Carbon tetrachloride	µg	<1	<1	<1
Butanol	µg	<1	<1	<1
Isopropyl acetate	µg	<1	<1	<1
2-Methylhexane	µg	<1	<1	<1
2,3-Dimethylpentane	µg	<1	<1	<1
1-Methoxy-2-propanol	µg	<1	<1	<1
3-Methylhexane	µg	<1	<1	<1
Heptane	µg	<1	<1	<1
Trichloroethylene	µg	<1	<1	<1
Ethyl acrylate	µg	<1	<1	<1
Methyl methacrylate	µg	<1	<1	<1
Propyl acetate	µg	<1	<1	<1
Methylcyclohexane	µg	<1	<1	<1
Methyl Isobutyl Ketone	µg	<1	<1	<1
Toluene	µg	<1	<1	<1
1,1,2-Trichloroethane	µg	<1	<1	<1
2-Hexanone	µg	<1	<1	<1
Octane	µg	<1	<1	<1
Tetrachloroethene	µg	<1	<1	<1
Butyl acetate	µg	<1	<1	<1
Chlorobenzene	µg	<1	<1	<1
Ethylbenzene	µg	<1	<1	<1
m + p-Xylene	µg	<1	<1	<1
1-Methoxy-2-propyl acetate	µg	<1	<1	<1
Styrene	µg	<1	<1	<1
o-Xylene	µg	<1	<1	<1
Butyl acrylate	µg	<1	<1	<1
Nonane	µg	<1	<1	<1

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Ektimo

Ektimo Analytical Results

Report No. LV-007437
Job No. R018685
Client Name: Energy Australia Mt Piper

Parameter	Units	N24646 R018685	N24651 R018685	N24656 R018685
	PQL	1	1	1
2-Butoxyethanol	µg	<1	<1	<1
Cellosolve acetate	µg	<1	<1	<1
1,1,2,2-Tetrachloroethane	µg	<1	<1	<1
Isopropylbenzene	µg	<1	<1	<1
alpha-Pinene	µg	<1	<1	<1
Propylbenzene	µg	<1	<1	<1
1,3,5-Trimethylbenzene	µg	<1	<1	<1
beta-Pinene	µg	<1	<1	<1
tert-Butylbenzene	µg	<1	<1	<1
1,2,4-Trimethylbenzene	µg	<1	<1	<1
Decane	µg	<1	<1	<1
3-Carene	µg	<1	<1	<1
1,2,3-Trimethylbenzene	µg	<1	<1	<1
D-Limonene	µg	<1	<1	<1
Undecane	µg	<1	<1	<1
Dodecane	µg	<1	<1	<1
Tridecane	µg	<1	<1	<1
Tetradecane	µg	<1	<1	<1
Residuals as Toluene	µg	<1	<1	<1

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-007416
Job Number:	R018685
Date of Issue:	27/06/2025
Attention:	Energy Australia NSW Pty Ltd (Mt. Piper)
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	19/06/2025
Number of samples received:	9
Date samples analysed:	24/06/2025
No of samples analysed:	9
Test method(s) used:	Ektimo 235

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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REPORT AUTHORISATION

Version: 060525

Annie Kolokithas
Laboratory Technician

Cappi Tuffery
Laboratory Chemist

NATA Accredited Laboratory 14601

Accredited for compliance with ISO/IEC 17025. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

Ektimo

Ektimo Analytical Results

Report No. LV-007416
Job No. R018685
Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24643 R018685	N 24644 R018685	N 24645 R018685	N 24648 R018685
Volume	1	mL		234	165	
Chlorine (Cl) as Cl	0.1	mg/L			0.14	
Hydrogen fluoride (HF) as F	0.1	mg/L				
Chlorine (Cl) as Cl (Total)	0.1	µg				
Hydrogen fluoride (HF) as F (Total)	4	µg	<0.4			67

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Ektimo

Ektimo Analytical Results

Report No. LV-007416

Job No. R018685

Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24649 R018685	N 24650 R018685	N 24653 R018685	N 24654 R018685
Volume	1	mL	226	180		250
Chlorine (Cl) as Cl	0.1	mg/L		0.16		
Hydrogen fluoride (HF) as F	0.1	mg/L				
Chlorine (Cl) as Cl (Total)	0.1	µg				
Hydrogen fluoride (HF) as F (Total)	4	µg			580	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Ektimo

Ektimo Analytical Results

Report No. LV-007416

Job No. R018685

Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24655 R018685
Volume	1	mL	184
Chlorine (Cl) as Cl	0.1	mg/L	0.21
Hydrogen fluoride (HF) as F	0.1	mg/L	
Chlorine (Cl) as Cl (Total)	0.1	µg	
Hydrogen fluoride (HF) as F (Total)	4	µg	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Results page 4 of 4

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CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-007410
Job Number:	R018685
Date of Issue:	26/06/2025
Attention:	Energy Australia NSW Pty Ltd (Mt. Piper)
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	19/06/2025
Number of samples received:	9
Date samples analysed:	24/06/2025
No of samples analysed:	9
Test method(s) used:	Ektimo 235

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

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REPORT AUTHORISATION

Version: 060525

Cappi Tuffery
Laboratory Chemist

Daniel Balaam
Senior Laboratory Chemist

NATA Accredited Laboratory 14601

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Ektimo

Ektimo Analytical Results

Report No. LV-007410
Job No. R018685
Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24643 R018685	N 24644 R018685	N 24645 R018685	N 24648 R018685
Volume	1	mL		234	165	
Hydrogen chloride (HCl) as Cl	0.1	mg/L		0.52		
Chlorine (Cl) as Cl	0.1	mg/L			0.14	
Hydrogen fluoride (HF) as F	0.1	mg/L		0.18		
Hydrogen chloride (HCl) as Cl (Total)	4	µg				
Chlorine (Cl) as Cl (Total)	0.1	µg				
Hydrogen fluoride (HF) as F (Total)	4	µg	<0.4			67

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Ektimo

Ektimo Analytical Results

Report No. LV-007410

Job No. R018685

Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24649 R018685	N 24650 R018685	N 24653 R018685	N 24654 R018685
Volume	1	mL	226	180		250
Hydrogen chloride (HCl) as Cl	0.1	mg/L	6.8			11
Chlorine (Cl) as Cl	0.1	mg/L		0.16		
Hydrogen fluoride (HF) as F	0.1	mg/L	23			56
Hydrogen chloride (HCl) as Cl (Total)	4	µg				
Chlorine (Cl) as Cl (Total)	0.1	µg				
Hydrogen fluoride (HF) as F (Total)	4	µg			580	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Ektimo

Ektimo Analytical Results

Report No. LV-007410

Job No. R018685

Client Name: Energy Australia NSW Pty Ltd (Mt. Piper)

Parameter	PQL	Units	N 24655 R018685
Volume	1	mL	184
Hydrogen chloride (HCl) as Cl	0.1	mg/L	
Chlorine (Cl) as Cl	0.1	mg/L	0.21
Hydrogen fluoride (HF) as F	0.1	mg/L	
Hydrogen chloride (HCl) as Cl (Total)	4	µg	
Chlorine (Cl) as Cl (Total)	0.1	µg	
Hydrogen fluoride (HF) as F (Total)	4	µg	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Results page 4 of 4

Ektimo

Experts in air quality, odour and emission monitoring.

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Ektimo

Experts in air quality, odour and emission monitoring.

Emission Testing Report

Report: R019174

EnergyAustralia NSW Pty Ltd, Mt Piper Power Station

ilac-MRA NATA

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Document Information

Client Name:	EnergyAustralia NSW Pty Ltd (Mt Piper)
Report Number:	R019174
Date of Issue:	29 August 2025
Attention:	Jarvis Lulham
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation

Rick Peralta
Air Monitoring Consultant

NATA Accredited Laboratory
No. 14601

Aaron Davis
Ektimo Signatory

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo terms of NATA accreditation as described in the Test Methods table. This does not include calculations that use data supplied by third-parties, comments, conclusions, or recommendations based upon the results. Refer to Test Methods section for full details of testing covered by NATA accreditation.

Table of Contents

1 Executive Summary

1.1 Background

Ektimo was engaged by EnergyAustralia NSW Pty Ltd (Mt Piper) to perform emission testing at Mt Piper Power Station, Portland, NSW. Testing was carried out in accordance with Environment Protection Licence 13007.

1.2 Project Objective & Overview

The objective of the project was to conduct a monitoring programme to quantify emissions from four (4) discharge points to determine compliance with Energy Australia NSW Pty Ltd (Mt Piper)'s Environmental Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 4 – Unit 1, Duct B	22 July 2025	Solid particles (total) Metals type 1 and 2 substances, copper, zinc
EPA 5 – Unit 1, Duct A	22 July 2025	Solid particles (total) Metals type 1 and 2 substances, copper, zinc
EPA 6 – Unit 2, Duct A	23 July 2025	Solid particles (total) Metals type 1 and 2 substances, copper, zinc
EPA 7 – Unit 2, Duct B	23 July 2025	Solid particles (total) Metals type 1 and 2 substances, copper, zinc

* Flow rate, velocity, temperature, and moisture were also determined.

All volume-based concentrations are reported on a dry basis at STP.

Plant operating conditions have been noted in this report.

1.3 Results Summary

All analytes are within the licence limit set by the NSW EPA as per licence 13007 (last amended on 26 March 2025).

Report Number			R019174	R019174	
Test Date			22/07/25	22/07/25	
EPA			5	4	
Unit			**Unit 1 Duct A**	**Unit 1 Duct B**	
	Limit	**Units**	*Measured Results*		**EPA 2** *Combined Ducts*
Type 1 and Type 2 substances in aggregate	**0.6**	**mg/m³**	**<0.037**	**≤0.03**	**≤0.03**
Antimony		mg/m³	<0.001	<0.0006	<0.0008
Arsenic (LBL)		mg/m³	0.00016	0.00014	0.00015
Beryllium		mg/m³	<0.0001	<0.00006	<0.00008
Cadmium	**0.03**	**mg/m³**	**0.00031**	**0.00015**	**0.00022**
Chromium		mg/m³	0.0074	0.0053	0.00620
Cobalt		mg/m³	0.000078	0.00011	0.00010
Copper		mg/m³	0.0077	0.0071	0.0074
Lead (LBL)		mg/m³	0.014	0.0083	0.0110
Manganese		mg/m³	0.003	0.0058	0.0046
Mercury	**0.03**	**mg/m³**	**0.00024**	**0.00014**	**0.00018**
Nickel		mg/m³	0.0056	0.0044	0.00490
Selenium		mg/m³	0.0038	0.0042	0.00400
Tin		mg/m³	<0.001	<0.0006	<0.0008
Vanadium		mg/m³	0.0002	0.00018	0.00019
Zinc		mg/m³	0.031	0.037	0.0340
Solid particles	**50**	**mg/m³**	**5.6**	**<2**	**<4**

*Combined air emissions from **boiler 1** via points 4 & 5.*
All results corrected to 7% oxygen correction.

Report Number			R019174	R019174	
Test Date			23/07/25	23/07/25	
EPA			6	7	
Unit			**Unit 2 Duct A**	**Unit 2 Duct B**	
	LIMIT	**UNITS**	*Measured Results*		**EPA 3** *Combined Ducts*
Type 1 and Type 2 substances in aggregate	**0.6**	**mg/m³**	**<0.027**	**≤0.023**	**≤0.02**
Antimony		mg/m³	<0.0008	<0.0005	<0.0006
Arsenic (LBL)		mg/m3	0.000088	0.000081	0.00008
Beryllium		mg/m3	<0.00008	<0.00005	<0.00006
Cadmium	**0.03**	**mg/m3**	**0.00016**	**0.0001**	**0.00013**
Chromium		mg/m3	0.0029	0.0019	0.00230
Cobalt		mg/m3	0.000057	0.000043	0.00005
Copper		mg/m3	0.0031	0.0023	0.0027
Lead (LBL)		mg/m3	0.0067	0.005	0.0057
Manganese		mg/m3	0.01	0.0077	0.0087
Mercury	**0.03**	**mg/m3**	**<0.0002**	**0.00034**	**<0.0003**
Nickel		mg/m3	0.0031	0.0019	0.00240
Selenium		mg/m3	0.0019	0.0047	0.00350
Tin		mg/m3	<0.0008	<0.0005	<0.0006
Vanadium		mg/m3	0.00012	0.00011	0.00011
Zinc		mg/m3	0.019	0.014	0.0160
Solid particles	**50**	**mg/m³**	**2.7**	**2.5**	**2.6**

*Combined air emissions from **boiler 2** via points 6 & 7.*
All results corrected to 7% oxygen correction.

*Please note that the measurement uncertainty associated with the test results **was not** considered when determining whether the results were compliant or non-compliant.*

Refer to the Test Methods table for the measurement uncertainties.

2 Results

2.1 EPA 4 – Unit 1, Duct B

Date	22/07/2025	**Client**	EnergyAustralia
Report	R019174	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Rick Peralta, Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 350MW		250717

Stack Parameters		
Moisture content, %v/v	4.8	
Gas molecular weight, g/g mole	29.6 (wet)	30.2 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.91	
% Oxygen correction & Factor	7 %	1.24
Gas Flow Parameters		
Temperature, °C	122	
Temperature, K	395	
Velocity at sampling plane, m/s	8.4	
Volumetric flow rate, actual, m³/s	300	
Volumetric flow rate (wet STP), m³/s	210	
Volumetric flow rate (dry STP), m³/s	200	
Mass flow rate (wet basis), kg/h	1000000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0929 - 1100	0929 - 1100	0929 - 1100
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.4	9.8	10.5
Oxygen	9.7	9.6	10.3

Isokinetic Results	Results		
Sampling time	0929-1100		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	<2	<2	<20
Antimony	<0.0005	<0.0006	<0.006
Arsenic	**0.00011**	**0.00014**	**0.0013**
Beryllium	<0.00005	<0.00006	<0.0006
Cadmium	**0.00012**	**0.00015**	**0.0014**
Chromium	**0.0042**	**0.0053**	**0.051**
Cobalt	**0.000085**	**0.00011**	**0.001**
Copper	**0.0057**	**0.0071**	**0.068**
Lead	**0.0066**	**0.0083**	**0.08**
Manganese	**0.0047**	**0.0058**	**0.056**
Mercury	**0.00011**	**0.00014**	**0.0013**
Nickel	**0.0035**	**0.0044**	**0.042**
Selenium	**0.0034**	**0.0042**	**0.04**
Tin	<0.0005	<0.0006	<0.006
Vanadium	**0.00015**	**0.00018**	**0.0018**
Zinc	**0.029**	**0.037**	**0.35**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.0075	≤0.0093	≤0.09
Total Type 2 Substances	≤0.017	≤0.021	≤0.2
Total Type 1 & 2 Substances	≤0.024	≤0.03	≤0.29
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		29-07-2025	

2.2 EPA 5 – Unit 1, Duct A

Date	22/07/2025	**Client**	EnergyAustralia
Report	R019174	**Stack ID**	Mt Piper Power Station - EPA 5 Unit 1 Duct A (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Rick Peralta, Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 220MW		250717

Stack Parameters		
Moisture content, %v/v	4.1	
Gas molecular weight, g/g mole	29.5 (wet)	30.0 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.93	
% Oxygen correction & Factor	7 %	1.46
Gas Flow Parameters		
Temperature, °C	114	
Temperature, K	387	
Velocity at sampling plane, m/s	6	
Volumetric flow rate, actual, m³/s	220	
Volumetric flow rate (wet STP), m³/s	150	
Volumetric flow rate (dry STP), m³/s	150	
Mass flow rate (wet basis), kg/h	730000	

Gas Analyser Results	Average Concentration % v/v	Minimum Concentration % v/v	Maximum Concentration % v/v
Carbon dioxide	9	8.8	9.2
Oxygen	11.4	11.2	11.6

Isokinetic Results	Results		
Sampling time	1247-1419		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	3.8	5.6	34
Antimony	<0.0007	<0.001	<0.006
Arsenic	**0.00011**	**0.00016**	**0.00096**
Beryllium	<0.00007	<0.0001	<0.0006
Cadmium	**0.00021**	**0.00031**	**0.0019**
Chromium	**0.005**	**0.0074**	**0.044**
Cobalt	**0.000053**	**0.000078**	**0.00047**
Copper	**0.0053**	**0.0077**	**0.046**
Lead	**0.0095**	**0.014**	**0.083**
Manganese	**0.0021**	**0.003**	**0.018**
Mercury	**0.00016**	**0.00024**	**0.0014**
Nickel	**0.0038**	**0.0056**	**0.034**
Selenium	**0.0026**	**0.0038**	**0.023**
Tin	<0.0007	<0.001	<0.006
Vanadium	**0.00013**	**0.0002**	**0.0012**
Zinc	**0.021**	**0.031**	**0.19**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.011	≤0.016	≤0.094
Total Type 2 Substances	≤0.014	≤0.021	≤0.13
Total Type 1 & 2 Substances	≤0.025	≤0.037	≤0.22
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		100	
Gravimetric analysis date (total particulate)		29-07-2025	

2.3 EPA 6 – Unit 2, Duct A

Date	23/07/2025	**Client**	EnergyAustralia
Report	R019174	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Rick Peralta, Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 280MW		250717

Stack Parameters		
Moisture content, %v/v	4.6	
Gas molecular weight, g/g mole	29.5 (wet)	30.0 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.34 (dry)
Gas density at discharge conditions, kg/m³	0.96	
% Oxygen correction & Factor	7 %	1.51
Gas Flow Parameters		
Temperature, °C	101	
Temperature, K	374	
Velocity at sampling plane, m/s	11	
Volumetric flow rate, actual, m³/s	390	
Volumetric flow rate (wet STP), m³/s	280	
Volumetric flow rate (dry STP), m³/s	270	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0859 - 1027	0859 - 1027	0859 - 1027
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	9	8.7	9.2
Oxygen	11.7	11.4	12

Isokinetic Results	Results		
Sampling time	0859-1027		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	1.8	2.7	29
Antimony	<0.0005	<0.0008	<0.008
Arsenic	**0.000058**	**0.000088**	**0.00095**
Beryllium	<0.00005	<0.00008	<0.0008
Cadmium	**0.00011**	**0.00016**	**0.0017**
Chromium	**0.0019**	**0.0029**	**0.031**
Cobalt	**0.000038**	**0.000057**	**0.00062**
Copper	**0.002**	**0.0031**	**0.033**
Lead	**0.0045**	**0.0067**	**0.072**
Manganese	**0.0068**	**0.01**	**0.11**
Mercury	<0.0001	<0.0002	<0.002
Nickel	**0.002**	**0.0031**	**0.033**
Selenium	**0.0012**	**0.0019**	**0.02**
Tin	<0.0005	<0.0008	<0.008
Vanadium	**0.000081**	**0.00012**	**0.0013**
Zinc	**0.013**	**0.019**	**0.2**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.0053	≤0.0079	≤0.085
Total Type 2 Substances	≤0.013	≤0.019	≤0.2
Total Type 1 & 2 Substances	≤0.018	≤0.027	≤0.29
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		100	
Gravimetric analysis date (total particulate)		29-07-2025	

2.4 EPA 7 – Unit 2, Duct B

Date	23/07/2025	**Client**	EnergyAustralia
Report	R019174	**Stack ID**	Mt Piper Power Station - EPA 7 Unit 2 Duct B (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Rick Peralta, Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 280MW		250717

Stack Parameters		
Moisture content, %v/v	4.1	
Gas molecular weight, g/g mole	29.7 (wet)	30.2 (dry)
Gas density at STP, kg/m³	1.32 (wet)	1.35 (dry)
Gas density at discharge conditions, kg/m³	0.95	
% Oxygen correction & Factor	7 %	1.30
Gas Flow Parameters		
Temperature, °C	105	
Temperature, K	379	
Velocity at sampling plane, m/s	14	
Volumetric flow rate, actual, m³/s	500	
Volumetric flow rate (wet STP), m³/s	360	
Volumetric flow rate (dry STP), m³/s	340	
Mass flow rate (wet basis), kg/h	1700000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1333 - 1505	1333 - 1505	1333 - 1505
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	10.3	10.1	10.6
Oxygen	10.2	10	10.5

Isokinetic Results	Results		
Sampling time	1333-1506		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	2	2.5	40
Antimony	<0.0004	<0.0005	<0.008
Arsenic	**0.000062**	**0.000081**	**0.0013**
Beryllium	<0.00004	<0.00005	<0.0008
Cadmium	**0.00008**	**0.0001**	**0.0016**
Chromium	**0.0014**	**0.0019**	**0.029**
Cobalt	**0.000033**	**0.000043**	**0.00068**
Copper	**0.0018**	**0.0023**	**0.036**
Lead	**0.0038**	**0.005**	**0.079**
Manganese	**0.0059**	**0.0077**	**0.12**
Mercury	**0.00026**	**0.00034**	**0.0054**
Nickel	**0.0015**	**0.0019**	**0.03**
Selenium	**0.0036**	**0.0047**	**0.073**
Tin	<0.0004	<0.0005	<0.008
Vanadium	**0.000081**	**0.00011**	**0.0017**
Zinc	**0.011**	**0.014**	**0.22**
Type 1 & 2 Substances			
Upper Bound			
Total Type 1 Substances	≤0.0047	≤0.0061	≤0.096
Total Type 2 Substances	≤0.013	≤0.017	≤0.27
Total Type 1 & 2 Substances	≤0.018	≤0.023	≤0.36
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		100	
Gravimetric analysis date (total particulate)		29-07-2025	

3 Sample Plane Compliance

3.1 EPA 4 – Unit 1, Duct B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.2 EPA 5 – Unit 1, Duct A

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.3 EPA 6 – Unit 2, Duct A

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.4 EPA 7 – Unit 2, Duct B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

4 Plant Operating Conditions

See Energy Australia Pty Ltd (Mt Piper) records for complete process conditions.

Based on information received from Energy Australia Pty Ltd (Mt Piper) personnel, it is our understanding that samples were collected during typical plant operations.

5 Test Methods

All sampling and analysis were performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Method detection limit	Uncertainty*	NATA accredited Sampling	NATA accredited Analysis
Sampling points - Selection	NSW EPA TM-1 (USEPA Method 1)	NA	NA	NA	✓	NA
Flow rate, temperature & velocity	NSW EPA TM-2 (USEPA Method 2)	NSW EPA TM-2 (USEPA Method 2)	location specific	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22 (USEPA Method 4)	NSW EPA TM-22 (USEPA Method 4)	0.1%	8%	✓	✓
Molecular weight	NA	NSW EPA TM-23 (USEPA Method 3)	NA	not specified	NA	✓
Dry gas density	NA	NSW EPA TM-23 (USEPA Method 3)	NA	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24 (USEPA Method 3A)	NSW EPA TM-24 (USEPA Method 3A)	0.1%	13%	✓	✓
Oxygen	NSW EPA TM-25 (USEPA Method 3A)	NSW EPA TM-25 (USEPA Method 3A)	0.1%	13%	✓	✓
Solid particles (total)	NSW EPA TM-15 (USEPA Method 17)	NSW EPA TM-15 (USEPA Method 17)	0.001 g/m³	3%	✓	✓††
Total (gaseous & particulate) metals & metallic compounds	NSW EPA TM-12, NSW EPA TM-13, NSW EPA TM-14 (USEPA Method 29)	Ektimo 666	analyte specific	not specified	✓	✓†
Type 1 substances (As, Cd, Hg, Pb, Sb)	NSW EPA TM-12 (USEPA Method 29)	Ektimo 666	not specified	not specified	✓	✓†
Type 2 substances (Be, Cr, Co, Mn, Ni, Se, Sn, V)	NSW EPA TM-13 (USEPA Method 29)	Ektimo 666	not specified	not specified	✓	✓†
Metals (Zn)	USEPA Method 29	Ektimo 666	not specified	not specified	✓	✓†

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* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

† Analysis performed by Ektimo. Results were reported to Ektimo on 13 August 205 in report LV-007621.

†† Gravimetric analysis conducted at the Ektimo NSW laboratory.

6 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

Unless specifically noted, all samples were collected and handled in accordance with Ektimo's QA/QC standards.

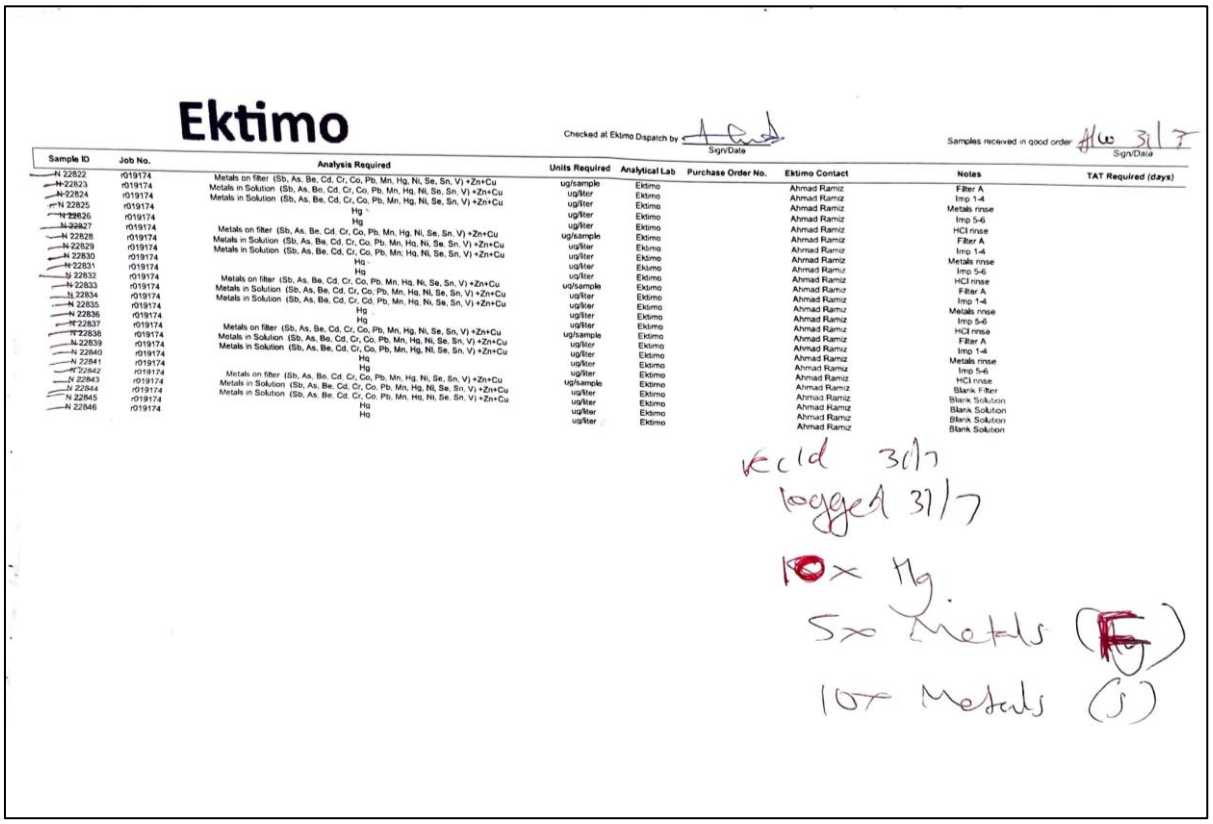
7 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
APHA	American Public Health Association, Standard Methods for the Examination of Water and Waste Water
AS	Australian Standard
CEM/CEMS	Continuous emission monitoring/Continuous emission monitoring system
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D_{50}	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D_{50} method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D_{50} of that cyclone and less than the D_{50} of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
EPA	Environment Protection Authority
FTIR	Fourier transform infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
RATA	Relative accuracy test audit
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range.

8 Appendices

Appendix B: Chain of Custody



Ektimo

Checked at Ektimo Dispatch by _____ Sign/Date

Samples received in good order _____ Sign/Date 31/7

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 22822	r019174	Metals on filter (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/sample	Ektimo		Ahmad Ramiz	Filter A	
N 22823	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Imp 1-4	
N 22824	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Metals rinse	
N 22825	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	Imp 5-6	
N 22826	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	HCl rinse	
N 22827	r019174	Metals on filter (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/sample	Ektimo		Ahmad Ramiz	Filter A	
N 22828	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Imp 1-4	
N 22829	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Metals rinse	
N 22830	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	Imp 5-6	
N 22831	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	HCl rinse	
N 22832	r019174	Metals on filter (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/sample	Ektimo		Ahmad Ramiz	Filter A	
N 22833	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Imp 1-4	
N 22834	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Metals rinse	
N 22835	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	Imp 5-6	
N 22836	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	HCl rinse	
N 22837	r019174	Metals on filter (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/sample	Ektimo		Ahmad Ramiz	Filter A	
N 22838	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Imp 1-4	
N 22839	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Metals rinse	
N 22840	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	Imp 5-6	
N 22841	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	HCl rinse	
N 22842	r019174	Metals on filter (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Blank Filter	
N 22843	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/sample	Ektimo		Ahmad Ramiz	Blank Solution	
N 22844	r019174	Metals in Solution (Sb, As, Be, Cd, Cr, Co, Pb, Mn, Hg, Ni, Se, Sn, V) +Zn+Cu	ug/liter	Ektimo		Ahmad Ramiz	Blank Solution	
N 22845	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	Blank Solution	
N 22846	r019174	Hg	ug/liter	Ektimo		Ahmad Ramiz	Blank Solution	

Rec'd 31/7

Logged 31/7

10x Hg

5x Metals (F)

10x Metals (S)

Appendix C: Laboratory Results

Ektimo

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ABN 86 600 381 413

CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-007621
Job Number:	R019174
Date of Issue:	13/08/2025
Attention:	EnergyAustralia NSW Pty Ltd
Address:	Mt Piper Power Station Locked Mail Bag 1 Portland NSW 2847
Date samples received:	31/07/2025
Number of samples received:	25
Date samples analysed:	11/08/2025
No of samples analysed:	25
Test method(s) used:	Ektimo 666

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 70% - 130%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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NATA is a member of APAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised world -wide.

A formal Quality Control program is in place at Ektimo to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

REPORT AUTHORISATION

Version: 040825

Cappi Tuffery
Laboratory Chemist

Daniel Balaam
Senior Laboratory Chemist

NATA Accredited Laboratory 14601

Accredited for compliance with ISO/IEC 17025. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

Ektimo

Ektimo Analytical Results

Report No. LV-007621
Job No. R019174
Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22822 R019174	N 22823 R019174	N 22824 R019174	N 22825 R019174
Volume	1	mL		205	130	248
Antimony	1	µg/L		<1	<1	
Arsenic	0.1	µg/L		0.22	0.22	
Beryllium	0.1	µg/L		<0.1	<0.1	
Cadmium	0.1	µg/L		0.12	0.34	
Chromium	1	µg/L		8.6	<1	
Cobalt	0.1	µg/L		<0.1	<0.1	
Copper	1	µg/L		7.8	32	
Lead	1	µg/L		5.8	16	
Manganese	1	µg/L		<1	1.8	
Mercury	0.1	µg/L		0.69	<0.1	<0.1
Nickel	1	µg/L		8.2	5.9	
Selenium	0.1	µg/L		1.4	0.28	
Tin	1	µg/L		<1	<1	
Vanadium	0.1	µg/L		0.1	0.15	
Zinc	1	µg/L		16	53	
Antimony (Total)	0.031	µg	<0.31			
Arsenic (Total)	0.0031	µg	0.092			
Beryllium (Total)	0.0031	µg	<0.031			
Cadmium (Total)	0.0031	µg	0.086			
Chromium (Total)	0.031	µg	5.6			
Cobalt (Total)	0.0031	µg	0.11			
Copper (Total)	0.031	µg	2.4			
Lead (Total)	0.031	µg	5.3			
Manganese (Total)	0.031	µg	5.8			
Mercury (Total)	0.0031	µg	<0.031			
Nickel (Total)	0.031	µg	2.9			
Selenium (Total)	0.0031	µg	4			
Tin (Total)	0.031	µg	<0.31			
Vanadium (Total)	0.0031	µg	0.17			
Zinc (Total)	0.031	µg	29			

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Ektimo Analytical Results

Report No. LV-007621
Job No. R019174
Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22826 R019174	N 22827 R019174	N 22828 R019174	N 22829 R019174
Volume	1	mL	245		208	129
Antimony	1	µg/L			<1	<1
Arsenic	0.1	µg/L			0.21	0.21
Beryllium	0.1	µg/L			<0.1	<0.1
Cadmium	0.1	µg/L			0.28	0.7
Chromium	1	µg/L			6.3	<1
Cobalt	0.1	µg/L			<0.1	<0.1
Copper	1	µg/L			13	15
Lead	1	µg/L			9.9	14
Manganese	1	µg/L			<1	15
Mercury	0.1	µg/L	<0.1		0.64	<0.1
Nickel	1	µg/L			7.1	7
Selenium	0.1	µg/L			2.5	0.23
Tin	1	µg/L			<1	<1
Vanadium	0.1	µg/L			0.16	0.15
Zinc	1	µg/L			30	62
Antimony (Total)	0.031	µg		<0.31		
Arsenic (Total)	0.0031	µg		0.055		
Beryllium (Total)	0.0031	µg		<0.031		
Cadmium (Total)	0.0031	µg		0.049		
Chromium (Total)	0.031	µg		5.3		
Cobalt (Total)	0.0031	µg		0.05		
Copper (Total)	0.031	µg		1.1		
Lead (Total)	0.031	µg		5		
Manganese (Total)	0.031	µg		<0.31		
Mercury (Total)	0.0031	µg		<0.031		
Nickel (Total)	0.031	µg		2		
Selenium (Total)	0.0031	µg		1.9		
Tin (Total)	0.031	µg		<0.31		
Vanadium (Total)	0.0031	µg		0.093		
Zinc (Total)	0.031	µg		6.9		

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Results page 3 of 8

Ektimo

Ektimo Analytical Results

Report No. LV-007621
Job No. R019174
Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22830 R019174	N 22831 R019174	N 22832 R019174	N 22833 R019174
Volume	1	mL	175	232		205
Antimony	1	µg/L				<1
Arsenic	0.1	µg/L				0.18
Beryllium	0.1	µg/L				<0.1
Cadmium	0.1	µg/L				0.34
Chromium	1	µg/L				4.5
Cobalt	0.1	µg/L				<0.1
Copper	1	µg/L				8.2
Lead	1	µg/L				7.8
Manganese	1	µg/L				10
Mercury	0.1	µg/L	0.1	<0.1		0.46
Nickel	1	µg/L				4.8
Selenium	0.1	µg/L				3
Tin	1	µg/L				<1
Vanadium	0.1	µg/L				0.1
Zinc	1	µg/L				32
Antimony (Total)	0.031	µg			<0.31	
Arsenic (Total)	0.0031	µg			0.034	
Beryllium (Total)	0.0031	µg			<0.031	
Cadmium (Total)	0.0031	µg			<0.031	
Chromium (Total)	0.031	µg			3.7	
Cobalt (Total)	0.0031	µg			0.054	
Copper (Total)	0.031	µg			0.35	
Lead (Total)	0.031	µg			2	
Manganese (Total)	0.031	µg			<0.31	
Mercury (Total)	0.0031	µg			<0.031	
Nickel (Total)	0.031	µg			2.1	
Selenium (Total)	0.0031	µg			1.1	
Tin (Total)	0.031	µg			<0.31	
Vanadium (Total)	0.0031	µg			0.094	
Zinc (Total)	0.031	µg			3.4	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Ektimo

Ektimo Analytical Results

Report No. LV-007621
Job No. R019174
Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22834 R019174	N 22835 R019174	N 22836 R019174	N 22837 R019174
Volume	1	mL	210	170	236	
Antimony	1	µg/L	<1			
Arsenic	0.1	µg/L	0.17			
Beryllium	0.1	µg/L	<0.1			
Cadmium	0.1	µg/L	0.38			
Chromium	1	µg/L	<1			
Cobalt	0.1	µg/L	<0.1			
Copper	1	µg/L	8			
Lead	1	µg/L	13			
Manganese	1	µg/L	36			
Mercury	0.1	µg/L	<0.1	<0.1	<0.1	
Nickel	1	µg/L	2.9			
Selenium	0.1	µg/L	0.16			
Tin	1	µg/L	<1			
Vanadium	0.1	µg/L	0.13			
Zinc	1	µg/L	43			
Antimony (Total)	0.031	µg				<0.31
Arsenic (Total)	0.0031	µg				0.049
Beryllium (Total)	0.0031	µg				<0.031
Cadmium (Total)	0.0031	µg				0.032
Chromium (Total)	0.031	µg				3.3
Cobalt (Total)	0.0031	µg				0.059
Copper (Total)	0.031	µg				0.43
Lead (Total)	0.031	µg				2.1
Manganese (Total)	0.031	µg				<0.31
Mercury (Total)	0.0031	µg				<0.031
Nickel (Total)	0.031	µg				2.1
Selenium (Total)	0.0031	µg				3.1
Tin (Total)	0.031	µg				<0.31
Vanadium (Total)	0.0031	µg				0.12
Zinc (Total)	0.031	µg				4.9

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Results page 5 of 8

Ektimo

Ektimo Analytical Results

Report No. LV-007621

Job No. R019174

Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22838 R019174	N 22839 R019174	N 22840 R019174	N 22841 R019174
Volume	1	mL	250	180	184	184
Antimony	1	µg/L	<1	<1		
Arsenic	0.1	µg/L	0.21	0.19		
Beryllium	0.1	µg/L	<0.1	<0.1		
Cadmium	0.1	µg/L	0.23	0.3		
Chromium	1	µg/L	3.8	1.2		
Cobalt	0.1	µg/L	<0.1	<0.1		
Copper	1	µg/L	6.2	11		
Lead	1	µg/L	8.4	15		
Manganese	1	µg/L	18	34		
Mercury	0.1	µg/L	1.7	<0.1	0.24	<0.1
Nickel	1	µg/L	3.4	2.6		
Selenium	0.1	µg/L	13	0.33		
Tin	1	µg/L	<1	<1		
Vanadium	0.1	µg/L	0.1	0.14		
Zinc	1	µg/L	25	50		
Antimony (Total)	0.031	µg				
Arsenic (Total)	0.0031	µg				
Beryllium (Total)	0.0031	µg				
Cadmium (Total)	0.0031	µg				
Chromium (Total)	0.031	µg				
Cobalt (Total)	0.0031	µg				
Copper (Total)	0.031	µg				
Lead (Total)	0.031	µg				
Manganese (Total)	0.031	µg				
Mercury (Total)	0.0031	µg				
Nickel (Total)	0.031	µg				
Selenium (Total)	0.0031	µg				
Tin (Total)	0.031	µg				
Vanadium (Total)	0.0031	µg				
Zinc (Total)	0.031	µg				

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Ektimo

Ektimo Analytical Results

Report No. LV-007621
Job No. R019174
Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22842 R019174	N 22843 R019174	N 22844 R019174	N 22845 R019174
Volume	1	mL		92	114	92
Antimony	1	µg/L		<1	<1	
Arsenic	0.1	µg/L		0.11	0.12	
Beryllium	0.1	µg/L		<0.1	<0.1	
Cadmium	0.1	µg/L		<0.1	<0.1	
Chromium	1	µg/L		2.1	<1	
Cobalt	0.1	µg/L		<0.1	<0.1	
Copper	1	µg/L		2.9	4.8	
Lead	1	µg/L		<1	<1	
Manganese	1	µg/L		<1	<1	
Mercury	0.1	µg/L		<0.1	<0.1	<0.1
Nickel	1	µg/L		<1	<1	
Selenium	0.1	µg/L		<0.1	<0.1	
Tin	1	µg/L		<1	<1	
Vanadium	0.1	µg/L		<0.1	0.14	
Zinc	1	µg/L		2.7	4.2	
Antimony (Total)	0.031	µg	<0.31			
Arsenic (Total)	0.0031	µg	<0.031			
Beryllium (Total)	0.0031	µg	<0.031			
Cadmium (Total)	0.0031	µg	<0.031			
Chromium (Total)	0.031	µg	1.7			
Cobalt (Total)	0.0031	µg	<0.031			
Copper (Total)	0.031	µg	<0.31			
Lead (Total)	0.031	µg	<0.31			
Manganese (Total)	0.031	µg	<0.31			
Mercury (Total)	0.0031	µg	<0.031			
Nickel (Total)	0.031	µg	0.8			
Selenium (Total)	0.0031	µg	<0.031			
Tin (Total)	0.031	µg	<0.31			
Vanadium (Total)	0.0031	µg	<0.031			
Zinc (Total)	0.031	µg	0.49			

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Results page 7 of 8

Ektimo

Ektimo Analytical Results

Report No. LV-007621

Job No. R019174

Client Name: EnergyAustralia Mt Piper

Parameter	PQL	Units	N 22846 R019174
Volume	1	mL	94
Antimony	1	µg/L	
Arsenic	0.1	µg/L	
Beryllium	0.1	µg/L	
Cadmium	0.1	µg/L	
Chromium	1	µg/L	
Cobalt	0.1	µg/L	
Copper	1	µg/L	
Lead	1	µg/L	
Manganese	1	µg/L	
Mercury	0.1	µg/L	<0.1
Nickel	1	µg/L	
Selenium	0.1	µg/L	
Tin	1	µg/L	
Vanadium	0.1	µg/L	
Zinc	1	µg/L	
Antimony (Total)	0.031	µg	
Arsenic (Total)	0.0031	µg	
Beryllium (Total)	0.0031	µg	
Cadmium (Total)	0.0031	µg	
Chromium (Total)	0.031	µg	
Cobalt (Total)	0.0031	µg	
Copper (Total)	0.031	µg	
Lead (Total)	0.031	µg	
Manganese (Total)	0.031	µg	
Mercury (Total)	0.0031	µg	
Nickel (Total)	0.031	µg	
Selenium (Total)	0.0031	µg	
Tin (Total)	0.031	µg	
Vanadium (Total)	0.0031	µg	
Zinc (Total)	0.031	µg	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Results page 8 of 8

Ektimo

Experts in air quality, odour and emission monitoring.

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26 Redland Dr
Mitcham, VIC 3132

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NSW 2526

Brisbane
3/109 Riverside Pl
Morningside
QLD 4170

Perth
52 Cooper Rd
Cockburn Central
WA 6164

1300 364 005

ektimo.com.au

Ektimo

Experts in air quality, odour and emission monitoring.

Emission Testing Report

Report: R019485

EnergyAustralia NSW Pty Ltd, Mt Piper Power Station

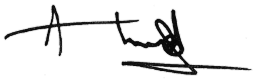
ilac-MRA NATA

Accredited for compliance with ISO/IEC 17025 - Testing. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration, and inspection reports.

Document Information

Client Name:	EnergyAustralia NSW Pty Ltd
Report Number:	R019485
Date of Issue:	21 November 2025
Attention:	Jarvis Lulham
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Testing Laboratory:	Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



Ahmad Ramiz
Air Monitoring Consultant

NATA Accredited Laboratory
No. 14601

Aaron Davis
Ektimo Signatory

Please note that only numerical results pertaining to measurements conducted directly by Ektimo are covered by Ektimo terms of NATA accreditation as described in the Test Methods table. This does not include calculations that use data supplied by third-parties, comments, conclusions, or recommendations based upon the results. Refer to Test Methods section for full details of testing covered by NATA accreditation.

Table of Contents

1 Executive Summary

1.1 Background

Ektimo was engaged by EnergyAustralia NSW Pty Ltd to perform emission testing at Mt Piper Power Station, Portland, NSW. Testing was carried out in accordance with Environment Protection Licence 13007.

1.2 Project Objective & Overview

The objective of the project was to conduct a monitoring programme to quantify emissions from four (4) discharge points to determine compliance with EnergyAustralia NSW Pty Ltd's Environmental Licence.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*
EPA 4 - Unit 1, Duct B (Lower)	14 October 2025	Solid particles (total) Sulfuric acid mist and sulfur trioxide (as SO_3) Oxygen (O_2), carbon dioxide (CO_2)
		Fluorine and fluorine compounds as (as total fluoride) Hydrogen chloride (HCl) Chlorine and chlorine compounds (as Cl_2) Volatile organic compounds (VOCs) Oxygen (O_2), carbon dioxide (CO_2), nitrogen oxides (as NO_2), sulfur dioxide (SO_2)
EPA 5 - Unit 1, Duct A (Upper)	14 October 2025	Solid particles (total) Oxygen (O_2), carbon dioxide (CO_2)
EPA 6 - Unit 2, Duct A (Lower)	15 October 2025	Solid particles (total) Sulfuric acid mist and sulfur trioxide (as SO_3) Oxygen (O_2), carbon dioxide (CO_2)
		Fluorine and fluorine compounds as (as total fluoride) Hydrogen chloride (HCl) Chlorine and chlorine compounds (as Cl_2) Volatile organic compounds (VOCs) Oxygen (O_2), carbon dioxide (CO_2), nitrogen oxides (as NO_2), sulfur dioxide (SO_2)
EPA 7 - Unit 2, Duct B (Upper)	15 October 2025	Solid particles (total) Oxygen (O_2), carbon dioxide (CO_2)

* Flow rate, velocity, temperature, and moisture were also determined.

All volume-based concentrations are reported on a dry basis at STP.

Plant operating conditions have been noted in this report.

1.3 Results Summary

The following licence comparison table shows that all analytes are within the licence limit set by the NSW EPA as per licence 13007 (last amended on 26 March 2025).

Report Number			R019485	R019485	
Test Date			14/10/25	14/10/25	
EPA			5	4	
Unit			**Unit 1 Duct A**	**Unit 1 Duct B**	
	LIMIT	**UNITS**	*Measured Results*		**EPA 2** *Combined Ducts*
Volatile organic compounds as n-propane equivalent	**10**	**mg/m³**	**-**	**<0.1**	**-**
Fluorine	**30**	**mg/m³**	**-**	**3.5**	**-**
Hydrogen chloride	**50**	**mg/m³**	**-**	**1.7**	**-**
Chlorine	**20**	**mg/m³**	**-**	**<0.05**	**-**
Sulfuric acid mist and sulfur trioxide (as SO_3)	**100**	**mg/m³**	**-**	**11**	**-**
Solid particles	**50**	**mg/m³**	**<4**	**<6**	**<5**

*Combined air emissions from **boiler 1** via points 4 & 5.*

All results corrected to 7% oxygen correction.

Report Number			R019485	R019485	
Test Date			15/10/25	15/10/25	
EPA			6	7	
Unit			**Unit 2 Duct A**	**Unit 2 Duct B**	
	LIMIT	**UNITS**	*Measured Results*		**EPA 3** *Combined Ducts*
Volatile organic compounds as n-propane equivalent	**10**	**mg/m³**	**1.1**	**-**	**-**
Fluorine	**30**	**mg/m³**	**3.7**	**-**	**-**
Hydrogen chloride	**50**	**mg/m³**	**2.6**	**-**	**-**
Chlorine	**20**	**mg/m³**	**<0.06**	**-**	**-**
Sulfuric acid mist and sulfur trioxide (as SO_3)	**100**	**mg/m³**	**9.3**	**-**	**-**
Solid particles	**50**	**mg/m³**	**3.9**	**<5**	**<4**

*Combined air emissions from **boiler 2** via points 6 & 7.*

All results corrected to 7% oxygen correction.

*Please note that the measurement uncertainty associated with the test results **was not** considered when determining whether the results were compliant or non-compliant.*

Refer to the Test Methods table for the measurement uncertainties.

2 Results

2.1 EPA 4 - Unit 1, Duct B

Date	14/10/2025	**Client**	EnergyAustralia
Report	R019485	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 150 MW		251002

Stack Parameters		
Moisture content, %v/v	4.4	
Gas molecular weight, g/g mole	29.2 (wet)	29.7 (dry)
Gas density at STP, kg/m³	1.30 (wet)	1.33 (dry)
Gas density at discharge conditions, kg/m³	0.82	
% Oxygen correction & Factor	7 %	2.01
Gas Flow Parameters		
Temperature, °C	114	
Temperature, K	387	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	13	
Volumetric flow rate, actual, m³/s	480	
Volumetric flow rate (wet STP), m³/s	300	
Volumetric flow rate (dry STP), m³/s	290	
Mass flow rate (wet basis), kg/h	1400000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0922 - 1053	0922 - 1053	0922 - 1053
	Concentration % v/v	Concentration % v/v	Concentration % v/v
Carbon dioxide	6.5	6.2	6.6
Oxygen	14	13.7	14.4

Isokinetic Results	Results		
Sampling time	0922-1053		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	<3	<6	<50
Sulfur trioxide and/or Sulfuric acid (as SO3)	5.3	11	92
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		21-10-2025	

Date	14/10/2025	**Client**	EnergyAustralia
Report	R019485	**Stack ID**	Mt Piper Power Station - EPA 4 Unit 1 Duct B (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 150 MW		251002

Stack Parameters		
Moisture content, %v/v	4.1	
Gas molecular weight, g/g mole	29.2 (wet)	29.7 (dry)
Gas density at STP, kg/m³	1.30 (wet)	1.33 (dry)
Gas density at discharge conditions, kg/m³	0.82	
% Oxygen correction & Factor	7 %	2.01
Gas Flow Parameters		
Temperature, °C	114	
Temperature, K	387	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/s	430	
Volumetric flow rate (wet STP), m³/s	270	
Volumetric flow rate (dry STP), m³/s	260	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average			Minimum			Maximum		
Sampling time	1116 - 1247			1116 - 1247			1116 - 1247		
		Corrected to			Corrected to			Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Combustion Gases									
Nitrogen oxides (as NO_2)	360	720	5600	340	680	5300	370	740	5800
Sulfur dioxide	620	1300	9800	550	1100	8700	650	1300	10000
	Concentration %v/v			Concentration %v/v			Concentration %v/v		
Carbon dioxide	6.4			6.1			6.6		
Oxygen	14			13.7			14.4		

Isokinetic Results	Results		
Sampling time	1116-1247		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Chlorine	<0.03	<0.05	<0.4
Total fluoride (as HF)	1.7	3.5	27
Hydrogen chloride	0.85	1.7	13
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	

Total VOCs (as n-Propane)	Results		
Sampling time	1140-1240		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Total	<0.06	<0.1	<1

VOC (speciated)	Results		
Sampling time	1140-1240		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Detection limit(1)	<0.06	<0.1	<1

(1) Unless otherwise reported, the following target compounds were found to be below detection:
Ethanol, Acetone, Isopropanol, Pentane, 1,1-Dichloroethene, Acrylonitrile, Dichloromethane, trans-1,2-Dichloroethene, Methyl ethyl ketone, n-Hexane, cis-1,2-Dichloroethene, Ethyl acetate, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Cyclohexane, Benzene, Carbon tetrachloride, Butanol, Isopropyl acetate, 2-Methylhexane, 2,3-Dimethylpentane, 1-Methoxy-2-propanol, 3-Methylhexane, Heptane, Trichloroethylene, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, Toluene, 1,1,2-Trichloroethane, 2-Hexanone, Octane, Tetrachloroethene, Butyl acetate, Chlorobenzene, Ethylbenzene, m + p-Xylene, 1-Methoxy-2-propyl acetate, Styrene, o-Xylene, Butyl acrylate, Nonane, 2-Butoxyethanol, Cellosolve acetate, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, alpha-Pinene, Propylbenzene, 1,3,5-Trimethylbenzene, beta-Pinene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, Decane, 3-Carene, 1,2,3-Trimethylbenzene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane, Residuals as Toluene

2.2 EPA 5 - Unit 1, Duct A

Date	14/10/2025	**Client**	EnergyAustralia
Report	R019485	**Stack ID**	Mt Piper Power Station - EPA 5 Unit 1 Duct A (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 150 MW		251002

Stack Parameters		
Moisture content, %v/v	4.3	
Gas molecular weight, g/g mole	29.2 (wet)	29.7 (dry)
Gas density at STP, kg/m³	1.30 (wet)	1.33 (dry)
Gas density at discharge conditions, kg/m³	0.84	
% Oxygen correction & Factor	7 %	2.01
Gas Flow Parameters		
Temperature, °C	104	
Temperature, K	377	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/s	430	
Volumetric flow rate (wet STP), m³/s	280	
Volumetric flow rate (dry STP), m³/s	260	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1327 - 1457	1327 - 1457	1327 - 1457
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	6.4	6.2	6.6
Oxygen	14	13.8	14.2

Isokinetic Results	Results		
Sampling time	1327-1457		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	<2	<4	<40
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		21-10-2025	

2.3 EPA 6 - Unit 2, Duct A

Date	15/10/2025	**Client**	EnergyAustralia
Report	R019485	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 150 MW		*251002*

Stack Parameters		
Moisture content, %v/v	4.4	
Gas molecular weight, g/g mole	29.2 (wet)	29.7 (dry)
Gas density at STP, kg/m³	1.30 (wet)	1.33 (dry)
Gas density at discharge conditions, kg/m³	0.82	
% Oxygen correction & Factor	7 %	1.71
Gas Flow Parameters		
Temperature, °C	113	
Temperature, K	386	
Ambient pressure, kPa	91	
Stack pressure, kPa	91	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/s	430	
Volumetric flow rate (wet STP), m³/s	270	
Volumetric flow rate (dry STP), m³/s	260	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	0811 - 0943	0811 - 0943	0811 - 0943
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	6.9	5.4	8.6
Oxygen	12.8	11	14.4

Isokinetic Results	Results		
Sampling time	0811-0943		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	2.3	3.9	36
Sulfur trioxide and/or Sulfuric acid (as SO3)	5.5	9.3	85
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		100	
Gravimetric analysis date (total particulate)		21-10-2025	

Date	15/10/2025	**Client**	EnergyAustralia
Report	R0194385	**Stack ID**	Mt Piper Power Station - EPA 6 Unit 2 Duct A (Lower)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load stable at 150 MW		251002

Stack Parameters		
Moisture content, %v/v	4.3	
Gas molecular weight, g/g mole	29.2 (wet)	29.7 (dry)
Gas density at STP, kg/m³	1.30 (wet)	1.32 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	1.95
Gas Flow Parameters		
Temperature, °C	108	
Temperature, K	381	
Ambient pressure, kPa	91	
Stack pressure, kPa	91	
Velocity at sampling plane, m/s	11	
Volumetric flow rate, actual, m³/s	410	
Volumetric flow rate (wet STP), m³/s	260	
Volumetric flow rate (dry STP), m³/s	250	
Mass flow rate (wet basis), kg/h	1200000	

Gas Analyser Results	Average			Minimum			Maximum		
Sampling time	1016 - 1147			1016 - 1147			1016 - 1147		
		Corrected to			Corrected to			Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Combustion Gases									
Nitrogen oxides (as NO_2)	340	670	5200	310	610	4700	370	710	5500
Sulfur dioxide	600	1200	9000	520	1000	7800	670	1300	10000
	Concentration %v/v			Concentration %v/v			Concentration %v/v		
Carbon dioxide	6.2			5.3			6.8		
Oxygen	13.8			13.2			14.8		

Isokinetic Results	Results		
Sampling time	1016-1147		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Chlorine	<0.03	<0.06	<0.4
Total fluoride (as HF)	1.9	3.7	29
Hydrogen chloride	1.3	2.6	20
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		100	

Total VOCs (as n-Propane)	Results		
Sampling time	1024-1124		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Total	0.56	1.1	8.4

VOC (speciated)	Results		
Sampling time	1024-1124		
		Corrected to	
	Concentration mg/m³	7% O2 mg/m³	Mass Rate g/min
Detection limit(1)	<0.06	<0.1	<0.9
Acetone	0.14	0.27	2
n-Hexane	0.42	0.82	6.3

(1) Unless otherwise reported, the following target compounds were found to be below detection:
Ethanol, Isopropanol, Pentane, 1,1-Dichloroethene, Acrylonitrile, Dichloromethane, trans-1,2-Dichloroethene, Methyl ethyl ketone, cis-1,2-Dichloroethene, Ethyl acetate, Chloroform, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Cyclohexane, Benzene, Carbon tetrachloride, Butanol, Isopropyl acetate, 2-Methylhexane, 2,3-Dimethylpentane, 1-Methoxy-2-propanol, 3-Methylhexane, Heptane, Trichloroethylene, Ethyl acrylate, Methyl methacrylate, Propyl acetate, Methylcyclohexane, Methyl Isobutyl Ketone, Toluene, 1,1,2-Trichloroethane, 2-Hexanone, Octane, Tetrachloroethene, Butyl acetate, Chlorobenzene, Ethylbenzene, m + p-Xylene, 1-Methoxy-2-propyl acetate, Styrene, o-Xylene, Butyl acrylate, Nonane, 2-Butoxyethanol, Cellosolve acetate, 1,1,2,2-Tetrachloroethane, Isopropylbenzene, alpha-Pinene, Propylbenzene, 1,3,5-Trimethylbenzene, beta-Pinene, tert-Butylbenzene, 1,2,4-Trimethylbenzene, Decane, 3-Carene, 1,2,3-Trimethylbenzene, D-Limonene, Undecane, Dodecane, Tridecane, Tetradecane, Residuals as Toluene

2.4 EPA 7 - Unit 2, Duct B

Date	15/10/2025	**Client**	EnergyAustralia
Report	R019485	**Stack ID**	Mt Piper Power Station - EPA 7 Unit 2 Duct B (Upper)
Licence No.	13007	**Location**	Portland
Ektimo Staff	Ahmad Ramiz/ Bhargav Joshi	**State**	NSW
Process Conditions	Load stabled at 150 MW		251002

Stack Parameters		
Moisture content, %v/v	4.3	
Gas molecular weight, g/g mole	29.2 (wet)	29.7 (dry)
Gas density at STP, kg/m³	1.30 (wet)	1.33 (dry)
Gas density at discharge conditions, kg/m³	0.83	
% Oxygen correction & Factor	7 %	2.03
Gas Flow Parameters		
Temperature, °C	107	
Temperature, K	381	
Ambient pressure, kPa	91	
Stack pressure, kPa	90	
Velocity at sampling plane, m/s	12	
Volumetric flow rate, actual, m³/s	430	
Volumetric flow rate (wet STP), m³/s	280	
Volumetric flow rate (dry STP), m³/s	260	
Mass flow rate (wet basis), kg/h	1300000	

Gas Analyser Results	Average	Minimum	Maximum
Sampling time	1231 - 1400	1231 - 1400	1231 - 1400
	Concentration %v/v	Concentration %v/v	Concentration %v/v
Carbon dioxide	6.4	6.1	6.8
Oxygen	14.1	13.7	14.3

Isokinetic Results	Results		
Sampling time	1231-1400		
	Concentration mg/m³	Corrected to 7% O2 mg/m³	Mass Rate g/min
Solid Particles	<2	<5	<40
Isokinetic Sampling Parameters			
Sampling time, min		84	
Isokinetic rate, %		101	
Gravimetric analysis date (total particulate)		21-10-2025	

3 Sample Plane Compliance

3.1 EPA 4 & 5 - Unit 1, Duct A & B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

3.2 EPA 6 & 7 - Unit 2, Duct A & B

Sampling Plane Details	
Source tested	Power plant - coal-fired
Pollution control equipment	Filter baghouse
Sampling plane dimensions	5460 x 6600 mm
Sampling plane area	36 m²
Sampling port size, number	6" Flange (x6)
Duct orientation & shape	Horizontal Rectangular
Downstream disturbance	Junction 0.5 D
Upstream disturbance	Damper 0.6 D
No. traverses & points sampled	6 42
Sample plane conformance to USEPA Method 1	Conforming (alternative procedure)

4 Plant Operating Conditions

The below plant operating conditions have been supplied by EnergyAustralia NSW Pty Ltd personnel.

Based on information received from EnergyAustralia NSW Pty Ltd personnel, it is our understanding that samples were collected during typical plant operations.

Location	Test Date	Boiler Load
EPA 4 - Unit 1, Duct B (Lower)	14 October 2025	Stable at 150 MW
EPA 5 - Unit 1, Duct A (Upper)		
EPA 6 - Unit 2, Duct A (Lower)	15 October 2025	
EPA 7 - Unit 2, Duct B (Upper)		

5 Test Methods

All sampling and analysis were performed by Ektimo unless otherwise specified. Specific details of the methods are available upon request.

Parameter	Sampling method	Analysis method	Uncertainty*	NATA accredited Sampling	NATA accredited Analysis
Sampling points - Selection	NSW EPA TM-1 (USEPA Method 1)	NA	NA	✓	NA
Flow rate, temperature & velocity	NSW EPA TM-2 (USEPA Method 2)	NSW EPA TM-2 (USEPA Method 2)	8%, 2%, 7%	NA	✓
Moisture content	NSW EPA TM-22 (USEPA Method 4)	NSW EPA TM-22 (USEPA Method 4)	8%	✓	✓
Molecular weight	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Dry gas density	NA	NSW EPA TM-23 (USEPA Method 3)	not specified	NA	✓
Combination of air impurities from two or more sources	NA	NSW EPA TM-38	not specified	NA	✓
Carbon dioxide	NSW EPA TM-24 (USEPA Method 3A)	NSW EPA TM-24 (USEPA Method 3A)	13%	✓	✓
Nitrogen oxides	NSW EPA TM-11 (USEPA Method 7E)	NSW EPA TM-11 (USEPA Method 7E)	12%	✓	✓
Oxygen	NSW EPA TM-25 (USEPA Method 3A)	NSW EPA TM-25 (USEPA Method 3A)	13%	✓	✓
Sulfur dioxide	NSW EPA TM-4 (USEPA Method 6C)	NSW EPA TM-4 (USEPA Method 6C)	12%	✓	✓
Hydrogen halides & halogens∞	USEPA Method 26A	Ektimo 235	14%	✓	✓†
Hydrogen halides (including soluble fluoride)[2]	NSW EPA TM-8 (USEPA Method 26A)	Ektimo 235	not specified	✓	✓†i
Speciated volatile organic compounds (VOCs)	NSW EPA TM-34[d] (USEPA Method 18)	Ektimo 344	19%	✓	✓†
Solid particles (total)	NSW EPA TM-15 (USEPA Method 17)	NSW EPA TM-15 (USEPA Method 17)	3%	✓	✓††
Hydrogen chloride	NSW EPA TM-8 (USEPA Method 26A)	Ektimo 235	14%	✓	✓†i
Chlorine	NSW EPA TM-7 (USEPA Method 26A)	Ektimo 235	14%	✓	✓†i
Sulfuric acid mist and/or sulfur trioxide	NSW EPA TM-3 (USEPA Method 8)	Ektimo 235	16%	✓	✓†m

250925

* Uncertainties cited in this table are estimated using typical values and are calculated at the 95% confidence level (coverage factor = 2).

† Analysis performed by Ektimo. Results were reported to Ektimo on:

- 12 November 2025 in report LV-008044.
- 12 November 2025 in report LV-008052.
- 13 November 2025 in report LV-008070.

†† Gravimetric analysis conducted at the Ektimo NSW laboratory.

2 Sampling follows USEPA Method 26A and analysis follows Ektimo 235 (ion chromatography) which uses the same principle as USEPA Method 26A. Includes sampling & analysis of soluble fluoride.

∞ Sampling follows USEPA Method 26A and analysis follows Ektimo 235 (ion chromatography) which uses the same principle as USEPA Method 26A and USEPA SW-846 Method 9056A (which is the NSW EPA approved alternative analysis method to USEPA Method 13B). Includes sampling & analysis of particulate fluoride.

d Excludes recovery study as specified in section 8.4.3 of USEPA Test Method 18.

i Includes analysis of chlorine/chloride by Ektimo 235 which uses the same principle as USEPA Method 26/26A.

m Includes analysis of SO_3/H_2SO_4 by Ektimo 235 which uses the same principle as USEPA SW-846 Method 9056A which is an approved alternative to the analytical procedure of USEPA Method 8.

6 Deviations to Test Methods

NSW EPA TM-9 FLUORINE

Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (NSW EPA) (2022) specifies TM-9 (USEPA 13B) for measurement of total fluoride emissions.

As per site-specific agreement between EnergyAustralia NSW and NSW EPA, Ektimo conducts sampling for particulate fluoride according to USEPA Method 26A (hydrogen halides and halogens) and analysis according to Ektimo Method 235 (ion chromatography). Ektimo Method 235 uses the same principle as USEPA SW-846 Method 9056A (which is the NSW EPA approved alternative analysis method to USEPA Method 13B).

Ektimo conducts sampling for soluble fluoride according to USEPA Method 26A (hydrogen halides and halogens) and analysis according to Ektimo Method 235 (ion chromatography) which uses the same principle as USEPA Method 26A.

NSW EPA TM-34 (USEPA 18)

Ektimo notes that the sampling and analysis of Volatile Organic Compounds (VOCs), per USEPA 18 has excluded the recovery study as specified in Section 8.4.3. Performing the recovery study described in Section 8.4.3 of USEPA Method 18 for analytes present at low levels is problematic. Given this, Ektimo applies a threshold of 50µg as a lower-bound mass, below which the 'spiking' of specific volatile organic compounds is not performed. For the purposes of this round of monitoring, no VOCs were detected above 50µg. Therefore, recovery studies were not deemed necessary for this sampling round.

7 Quality Assurance/Quality Control Information

Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at NATA's website www.nata.com.au.

Ektimo is accredited by NATA to ISO/IEC 17025 - Testing. ISO/IEC 17025 - Testing requires that a laboratory have adequate equipment to perform the testing, as well as laboratory personnel with the competence to perform the testing. This quality assurance system is administered and maintained by the Quality Director.

NATA is a member of APAC (Asia Pacific Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through mutual recognition arrangements with these organisations, NATA accreditation is recognised worldwide.

Unless specifically noted, all samples were collected and handled in accordance with Ektimo's QA/QC standards.

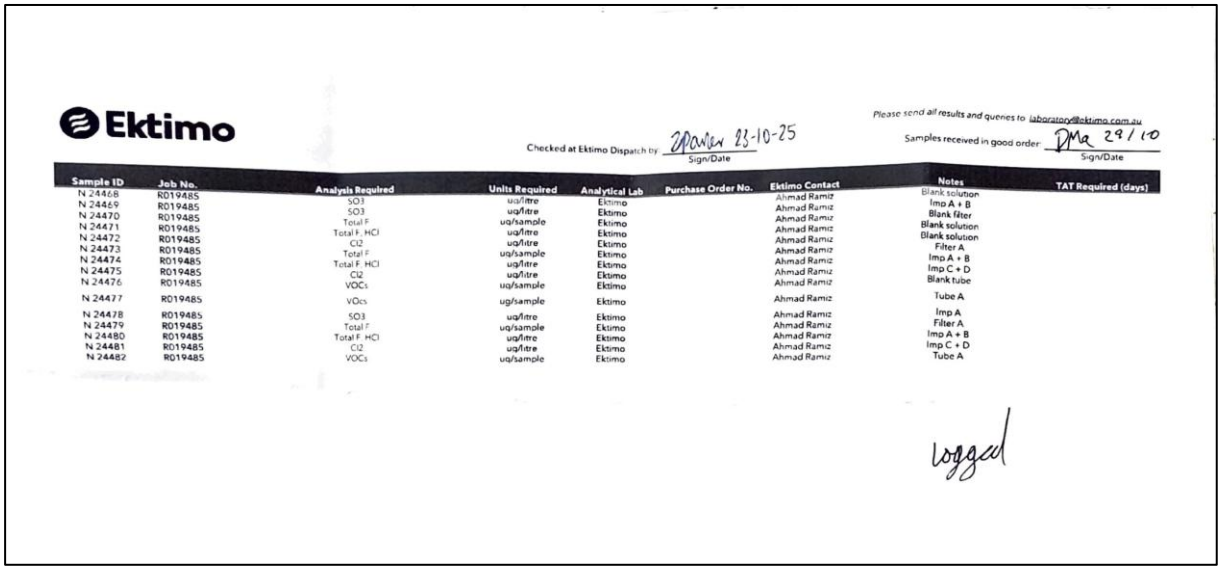
8 Definitions

The following symbols and abbreviations may be used in this test report:

% v/v	Volume to volume ratio, dry basis (except moisture)
~	Approximately
<	Less than
>	Greater than
≥	Greater than or equal to
AS	Australian Standard
BaP-TEQ	Benzo(a)pyrene toxic equivalents
BSP	British standard pipe
CEM/CEMS	Continuous emission monitoring/Continuous emission monitoring system
CTM	Conditional test method
D	Duct diameter or equivalent duct diameter for rectangular ducts
D_{50}	'Cut size' of a cyclone is defined as the particle diameter at which the cyclone achieves a 50% collection efficiency i.e. half of the particles are retained by the cyclone and half pass through it. The D_{50} method simplifies the capture efficiency distribution by assuming that a given cyclone stage captures all of the particles with a diameter equal to or greater than the D_{50} of that cyclone and less than the D_{50} of the preceding cyclone.
DECC	Department of Environment & Climate Change (NSW)
Disturbance	A flow obstruction or instability in the direction of the flow which may impede accurate flow determination. This includes centrifugal fans, axial fans, partially closed or closed dampers, louvres, bends, connections, junctions, direction changes or changes in pipe diameter.
DWER	Department of Water and Environmental Regulation (WA)
DEHP	Department of Environment and Heritage Protection (QLD)
EPA	Environment Protection Authority
FTIR	Fourier transform infra-red
ISC	Intersociety Committee, Methods of Air Sampling and Analysis
ISO	International Organisation for Standardisation
ITE	Individual threshold estimate
I-TEQ	International toxic equivalents
Lower bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero.
Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to half of the detection limit.
NA	Not applicable
NATA	National Association of Testing Authorities
NIOSH	National Institute of Occupational Safety and Health
NT	Not tested or results not required
OM	Other approved method
OU	Odour unit. One OU is that concentration of odorant(s) at standard conditions that elicits a physiological response from a panel equivalent to that elicited by one Reference Odour Mass (ROM), evaporated in one cubic metre of neutral gas at standard conditions.
PM_{10}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (µm).
$PM_{2.5}$	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (µm).
PSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
RATA	Relative accuracy test audit
Semi-quantified VOCs	Unknown VOCs (those for which an analytical standard is not available), are identified by matching the mass spectrum of the chromatographic peak to the NIST Standard Reference Database (version 14.0), with a match quality exceeding 70%. An estimated concentration is determined by matching the area of the peak with the nearest suitable compound in the analytical calibration standard mixture.
STP	Standard temperature and pressure. Gas volumes and concentrations are expressed on a dry basis at 0 °C, at discharge oxygen concentration and an absolute pressure of 101.325 kPa.
TM	Test method
TOC	Total organic carbon. This is the sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus methane and its derivatives.
USEPA	United States Environmental Protection Agency
VDI	Verein Deutscher Ingenieure (Association of German Engineers)
Velocity difference	The percentage difference between the average of initial flows and after flows.
Vic EPA	Victorian Environment Protection Authority
VOC	Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or having a corresponding volatility under the given conditions of use. VOCs may contain oxygen, nitrogen and other elements. VOCs do not include carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonate salts.
WHO05-TEQ	World Health Organisation toxic equivalents
XRD	X-ray diffractometry
Upper bound	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit.
95% confidence interval	Range of values that contains the true result with 95% certainty. This means there is a 5% risk that the true result is outside this range

9 Appendices

Appendix A: Chains of Custody



Ektimo

Please send all results and queries to laboratory@ektimo.com.au

Checked at Ektimo Dispatch by: [signature] 23-10-25 (Sign/Date)

Samples received in good order: [signature] 29/10 (Sign/Date)

Sample ID	Job No.	Analysis Required	Units Required	Analytical Lab	Purchase Order No.	Ektimo Contact	Notes	TAT Required (days)
N 24468	R019485	SO3	ug/litre	Ektimo		Ahmad Ramiz	Blank solution	
N 24469	R019485	SO3	ug/litre	Ektimo		Ahmad Ramiz	Imp A + B	
N 24470	R019485	Total F	ug/sample	Ektimo		Ahmad Ramiz	Blank filter	
N 24471	R019485	Total F, HCl	ug/litre	Ektimo		Ahmad Ramiz	Blank solution	
N 24472	R019485	Cl2	ug/litre	Ektimo		Ahmad Ramiz	Blank solution	
N 24473	R019485	Total F	ug/sample	Ektimo		Ahmad Ramiz	Filter A	
N 24474	R019485	Total F, HCl	ug/litre	Ektimo		Ahmad Ramiz	Imp A + B	
N 24475	R019485	Cl2	ug/litre	Ektimo		Ahmad Ramiz	Imp C + D	
N 24476	R019485	VOCs	ug/sample	Ektimo		Ahmad Ramiz	Blank tube	
N 24477	R019485	VOCs	ug/sample	Ektimo		Ahmad Ramiz	Tube A	
N 24478	R019485	SO3	ug/litre	Ektimo		Ahmad Ramiz	Imp A	
N 24479	R019485	Total F	ug/sample	Ektimo		Ahmad Ramiz	Filter A	
N 24480	R019485	Total F, HCl	ug/litre	Ektimo		Ahmad Ramiz	Imp A + B	
N 24481	R019485	Cl2	ug/litre	Ektimo		Ahmad Ramiz	Imp C + D	
N 24482	R019485	VOCs	ug/sample	Ektimo		Ahmad Ramiz	Tube A	

logged

Appendix B: Laboratory Results

Ektimo

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ABN 86 600 381 413

CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-008070
Job Number:	R019485
Date of Issue:	13/11/2025
Attention:	Energy Australia Mt Piper
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	29/10/2025
Number of samples received:	3
Date samples analysed:	12/11/2025
No of samples analysed:	3
Test method(s) used:	Ektimo 235

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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NATA is a member of APAC (Asia Pacific Laboratory Accreditation Co-operation) and of ILAC (International Laboratory Accreditation Co-operation). Through the mutual recognition arrangements with both of these organisations, NATA accreditation is recognised world -wide.

A formal Quality Control program is in place at Ektimo to monitor analyses performed in the laboratory and sampling conducted in the field. The program is designed to check where appropriate; the sampling reproducibility, analytical method, accuracy, precision and the performance of the analyst. The Laboratory Manager is responsible for the administration and maintenance of this program.

REPORT AUTHORISATION

Version: 291025

Annie Kolokithas
Laboratory Technician

Cappi Tuffery
Laboratory Chemist

NATA Accredited Laboratory 14601

Accredited for compliance with ISO/IEC 17025. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

Ektimo

Analytical Results

Report No. LV-008070
Job No. R019485
Client Name: Energy Australia Mt Piper

Parameter	PQL	Units	N 24468 R019485	N 24469 R019485	N 24478 R019485
Volume	1	mL	248	96	98
Sulfur trioxide (SO) as SO ²	0.2	mg/L	<0.2	65	58

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

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CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-008044
Job Number:	R019485
Date of Issue:	12/11/2025
Attention:	Energy Australia Mt Piper
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	29/10/2025
Number of samples received:	9
Date samples analysed:	7/11/2025
No of samples analysed:	9
Test method(s) used:	Ektimo 235

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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REPORT AUTHORISATION

Version: 291025

Annie Kolokithas
Laboratory Technician

Daniel Balaam
Senior Laboratory Chemist

NATA Accredited Laboratory 14601

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Ektimo

Analytical Results

Report No. LV-008044
Job No. R019485
Client Name: Energy Australia Mt Piper

Parameter	PQL	Units	N 24470 R019485	N 24471 R019485	N 24472 R019485	N 24473 R019485
Volume	1	mL		224	218	
Hydrogen chloride (HCl) as Cl	0.1	mg/L		0.1		
Chlorine (Cl) as Cl	0.1	mg/L			0.75	
Hydrogen fluoride (HF) as F	0.1	mg/L		<0.1		
Hydrogen fluoride (HF) as F (Total)	4	µg	<4			89

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Ektimo

Analytical Results

Report No. LV-008044
Job No. R019485
Client Name: Energy Australia Mt Piper

Parameter	PQL	Units	N 24474 R019485	N 24475 R019485	N 24479 R019485	N 24480 R019485
Volume	1	mL	245	242		244
Hydrogen chloride (HCl) as Cl	0.1	mg/L	3.1			4.6
Chlorine (Cl) as Cl	0.1	mg/L		0.49		
Hydrogen fluoride (HF) as F	0.1	mg/L	5.7			5.8
Hydrogen fluoride (HF) as F (Total)	4	µg			110	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

NATA Accredited Laboratory 14601

Ektimo

Analytical Results

Report No. LV-008044
Job No. R019485
Client Name: Energy Australia Mt Piper

Parameter	PQL	Units	N 24481 R019485
Volume	1	mL	245
Hydrogen chloride (HCl) as Cl	0.1	mg/L	
Chlorine (Cl) as Cl	0.1	mg/L	0.41
Hydrogen fluoride (HF) as F	0.1	mg/L	
Hydrogen fluoride (HF) as F (Total)	4	µg	

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

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Results page 4 of 4

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CERTIFICATE OF ANALYSIS

Testing Laboratory:	Ektimo 26 Redland Drive Mitcham, VIC 3132
Report Number:	LV-008052
Job Number:	R019485
Date of Issue:	12/11/2025
Attention:	Energy Australia Mt Piper
Address:	Mt Piper Power Station, Locked Mail Bag 1 Portland NSW 2847
Date samples received:	29/10/2025
Number of samples received:	3
Date samples analysed:	7/11/2025
No of samples analysed:	3
Test method(s) used:	Ektimo 344

Comments

QC Acceptance Criteria:

Parameter	Criteria	Pass/Fail
Standard Curve	$R^2 > 0.99$	Pass
Range	All samples <110% of highest standard	Pass
Repeat samples	Between 80% - 120%	Pass
Method Blanks	All method blanks < PQL	Pass
QC sample	2 standard deviations of theoretical	Pass
Chemical Expiry	All chemicals within expiry date	Pass

This report supersedes any previous report(s) with this reference. Sample(s) have been analysed as received.

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REPORT AUTHORISATION

Version: 291025

Matthew Cook
Laboratory Manager

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Senior Laboratory Chemist

NATA Accredited Laboratory 14601

Accredited for compliance with ISO/IEC 17025. NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, calibration and inspection reports.

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Analytical Results

Report No. LV-008052
Job No. R019485
Client Name: Energy Australia Mt Piper

Parameter	Units	N24476 R019485	N24477 R019485	N24482 R019485
	PQL	1	1	1
Ethanol	µg	<1	<1	<1
Acetone	µg	<1	<1	2.2
Isopropanol	µg	<1	<1	<1
Pentane	µg	<1	<1	<1
1,1-Dichloroethene	µg	<1	<1	<1
Acrylonitrile	µg	<1	<1	<1
Dichloromethane	µg	<1	<1	<1
trans-1,2-Dichloroethene	µg	<1	<1	<1
Methyl ethyl ketone	µg	<1	<1	<1
n-Hexane	µg	<1	<1	6.8
cis-1,2-Dichloroethene	µg	<1	<1	<1
Ethyl acetate	µg	<1	<1	<1
Chloroform	µg	<1	<1	<1
1,1,1-Trichloroethane	µg	<1	<1	<1
1,2-Dichloroethane	µg	<1	<1	<1
Cyclohexane	µg	<1	<1	<1
Benzene	µg	<1	<1	<1
Carbon tetrachloride	µg	<1	<1	<1
Butanol	µg	<1	<1	<1
Isopropyl acetate	µg	<1	<1	<1
2-Methylhexane	µg	<1	<1	<1
2,3-Dimethylpentane	µg	<1	<1	<1
1-Methoxy-2-propanol	µg	<1	<1	<1
3-Methylhexane	µg	<1	<1	<1
Heptane	µg	<1	<1	<1
Trichloroethylene	µg	<1	<1	<1
Ethyl acrylate	µg	<1	<1	<1
Methyl methacrylate	µg	<1	<1	<1
Propyl acetate	µg	<1	<1	<1
Methylcyclohexane	µg	<1	<1	<1
Methyl Isobutyl Ketone	µg	<1	<1	<1
Toluene	µg	<1	<1	<1
1,1,2-Trichloroethane	µg	<1	<1	<1
2-Hexanone	µg	<1	<1	<1
Octane	µg	<1	<1	<1
Tetrachloroethene	µg	<1	<1	<1
Butyl acetate	µg	<1	<1	<1
Chlorobenzene	µg	<1	<1	<1
Ethylbenzene	µg	<1	<1	<1
m + p-Xylene	µg	<1	<1	<1
1-Methoxy-2-propyl acetate	µg	<1	<1	<1
Styrene	µg	<1	<1	<1
o-Xylene	µg	<1	<1	<1
Butyl acrylate	µg	<1	<1	<1
Nonane	µg	<1	<1	<1

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

ilac-MRA NATA

NATA Accredited Laboratory 14601

Ektimo

Analytical Results

Report No. LV-008052
Job No. R019485
Client Name: Energy Australia Mt Piper

Parameter	Units	N24476 R019485	N24477 R019485	N24482 R019485
	PQL	1	1	1
2-Butoxyethanol	µg	<1	<1	<1
Cellosolve acetate	µg	<1	<1	<1
1,1,2,2-Tetrachloroethane	µg	<1	<1	<1
Isopropylbenzene	µg	<1	<1	<1
alpha-Pinene	µg	<1	<1	<1
Propylbenzene	µg	<1	<1	<1
1,3,5-Trimethylbenzene	µg	<1	<1	<1
beta-Pinene	µg	<1	<1	<1
tert-Butylbenzene	µg	<1	<1	<1
1,2,4-Trimethylbenzene	µg	<1	<1	<1
Decane	µg	<1	<1	<1
3-Carene	µg	<1	<1	<1
1,2,3-Trimethylbenzene	µg	<1	<1	<1
D-Limonene	µg	<1	<1	<1
Undecane	µg	<1	<1	<1
Dodecane	µg	<1	<1	<1
Tridecane	µg	<1	<1	<1
Tetradecane	µg	<1	<1	<1
Residuals as Toluene	µg	<1	<1	<1

* Results marked with an asterisk are outside the acceptable calibration range of the instrument.

ilac-MRA NATA

NATA Accredited Laboratory 14601

Ektimo

Experts in air quality, odour and emission monitoring.

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