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Emission Testing Report

December 2024

Report: R016539-5

Tianqi Lithium Kwinana Pty Ltd, Kwinana Beach



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Document Information

Client Name:	Tianqi Lithium Kwinana Pty Ltd
Report Number:	R016539-5
Date of Issue:	24 January 2025

Address:

Testing Laboratory:

61 Donaldson Road Kwinana Beach WA 6167 Ektimo Pty Ltd, ABN 86 600 381 413

Report Authorisation



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1 Executive Summary

1.1 Background

Ektimo was engaged by Tianqi Lithium Kwinana Pty Ltd to perform emission testing at their Kwinana Beach plant. Testing was carried out in accordance with Works Approval W5977/2016/1.

1.2 Project Objective & Overview

The objective of the project was to quantify emissions from five (5) discharge points to determine compliance with Tianqi Lithium Kwinana Pty Ltd's Works Approval.

Monitoring was performed as follows:

Location	Test Date	Test Parameters*				
Calciner Fan Stack 1200-SK-001		Total particulate matter, PM10 Oxygen (O2), carbon dioxide (CO2), oxides of nitrogen (as NO2)				
Calciner Refeed (feed) 1210-BH-001	11 December 2024	Total particulate matter & PM10				
Calciner Refeed (discharge) 1210-BH-002						
Acid Roast Scrubber 1340-SK-001	12 December 2024 Total particulate matter, PM10 Sulfur dioxide & sulfur trioxide/ sulfuric acid					
Sodium Sulfate Heater 1710-VL-017	13 December 2024	Total particulate matter, PM10 Oxygen (O2), carbon dioxide (CO2), oxides of nitrogen (as NO2)				

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

All results are reported on a dry basis at STP.



1.3 Licence Comparison

The following licence comparison table shows any analytes highlighted in orange are outside the licence limit set by the WA Department of Water and Environmental Regulation (DWER) as per licence Works Approval W5977/2016/1.

Location Description	Pollutant	Units	Licence Limit	Detected Values
	Nitrogen oxides	mg/m ³ at STP dry	350	63
Calciner Fan Stack 1200-SK-001	Mitrogen oxides	mg/m 3 at 15% O $_2$ STP dry	350	83
	Total particulate matter	mg/m ³ at STP dry	50	<3
Sodium Sulfate Heater 1710-VL-017		mg/m ³ at STP dry	350	<4
	Nitrogen oxides	mg/m ³ at 15% O ₂ STP dry	350	<200
	Total particulate matter	mg/m ³ at STP dry	50	<2
Acid Roast Scrubber	SO ₃	mg/m ³ at STP dry	100	0.65
1340-SK-001	Total particulate matter	mg/m ³ at STP dry	50	41
Calciner Refeed (feed) 1210-BH-001	Total particulate matter	mg/m ³ at STP dry	50	330
Calciner Refeed (Discharge End) 1200-BH-002	Total particulate matter	mg/m ³ at STP dry	50	2.4

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 Calciner Fan Stack 1200-SK-001



Gas Analyser Results	Average						
Sampling time	1226 - 1327						
Combustion Gases Nitrogen oxides (as NO ₂)	Corrected Concentration to 15% O2 Mass Rate mg/m³ mg/m³ g/s 63 83 1.1						
	Concentration %v/v						
Carbon dioxide	2.6						
Oxygen	16.4						

Isokinetic Results			Average			Test 1			Test 2	
Sa	mpling time					1220-1321			1335-1436	
			Corrected			Corrected			Corrected	
		Concentration mg/m³	to 15% O2 mg/m ³	Mass Rate g/s	Concentration mg/m³	to 15% O2 mg/m ³	Mass Rate g/s	Concentration mg/m³	to 15% O2 mg/m ³	Mass Rate g/s
Total particulate matter		<3	<3	< 0.05	<2	<3	< 0.04	<3	<4	< 0.05
PM10	(PSA)	<3	<3	<0.05	<2	<3	<0.04	<3	<4	<0.05
Isokinetic Sampling Parameters										
Sampling time, min						60			60	
Isokinetic rate, %						100			100	
Gravimetric analysis date (total pa	rticulate)				1	6-12-2024		1	6-12-2024	

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM_{10} results have been reported as per the limit of detection of the total particulate matter test.



2.2 Calciner Refeed (feed) 1210-BH-001

Isokinetic Results		Average		Tes	t 1	Test 2	
Samı	pling time			0940-1041		1050-1151	
		Concentration mg/m³	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s
Total particulate matter		330	0.17	350	0.18	300	0.16
PM10	(PSA)	220	0.12	240	0.12	210	0.11
Isokinetic Sampling Parameters							
Sampling time, min				60		60	
Isokinetic rate, %				100		99	
Gravimetric analysis date (total particulate)				16-12-	2024	16-12-2024	



2.3 Calciner Refeed (discharge) 1210-BH-002

Isokinetic Results	Aver	Average		Test 1		t 2
Sampling time			1220-1321		1335-1436	
	Concentration mg/m³	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s
Total particulate matter	2.4	0.00047	1.5	0.00028	3.3	0.00065
PM10 (PSA)	2.4	0.00047	1.5	0.00028	3.3	0.00065
Isokinetic Sampling Parameters						
Sampling time, min			60		60	
Isokinetic rate, %			109		101	
Gravimetric analysis date (total particulate)			16-12-	2024	16-12-2024	

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM_{10} results have been reported as per the total particulate matter test as a worse-case scenario.



2.4 Acid Roast Scrubber 1340-SK-001

Isokinetic Results	Average		Test 1		Test 2	
Sampling time			0920-1021		1035-1136	
	Concentration mg/m³	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s
Total particulate matter	41	0.0064	25	0.004	57	0.0088
PM10 (PSA)	21	0.0032	14	0.0021	28	0.0043
Sulfur dioxide	3200	0.49	2800	0.44	3500	0.54
Sulfur trioxide and/or Sulfuric acid (as SO3)	0.65	0.0001	0.71	0.00011	0.59	0.00009
Isokinetic Sampling Parameters						
Sampling time, min			60		60	
Isokinetic rate, %			93		106	
Gravimetric analysis date (total particulate)			16-12-	2024	16-12-2024	



2.5 Sodium Sulfate Heater 1710-VL-017

Gas Analyser Results		Average									
Sa	ampling time					0900 - 1000					
Combustion Gases					Concentration mg/m ³	Corrected to 15% O2 mg/m ³	Mass Rate g/s				
Nitrogen oxides (as NO ₂)					<4	<200	<0.01				
					Concentration %v/v	n					
Carbon dioxide					<0.4						
Oxygen					20.7						
Isokinetic Results			Average			Test 1			Test 2		
Sa	ampling time					0900-1001			1010-1111		
		Concentration mg/m³	Corrected to 15% O2 mg/m ³	Mass Rate g/s	Concentration mg/m³	Corrected to 15% O2 mg/m ³	Mass Rate g/s	Concentratior mg/m³	Corrected to 15% O2 mg/m ³	Mass Rate g/s	
Total particulate matter		<2	<80	<0.007	<2	<90	<0.008	<2	<70	<0.006	
PM10	(PSA)	<2	<80	<0.007	<2	<90	<0.008	<2	<70	<0.006	
Isokinetic Sampling Parameters											
Sampling time, min						60			60		
Isokinetic rate, %						94			97		

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM_{10} results have been reported as per the limit of detection of the total particulate matter test.

17-12-2024

Gravimetric analysis date (total particulate)

17-12-2024



3 Sample Plane Compliance

3.1 Calciner Fan Stack 1200-SK-001

Sampling Plane Details		
Sampling plane dimensions	1100 mm	
Sampling plane area	0.95 m²	
Sampling port size, number & depth	4" BSP (x2), 242 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Exit 3 D	
Upstream disturbance	Axial fan 9 D	
No. traverses & points sampled	2 12	
Sample plane conformance to AS 4323.1	Ideal sampling plane	

3.2 Calciner Refeed (feed) 1210-BH-001

Sampling Plane Deta	ils
---------------------	-----

Sampling plane dimensions
Sampling plane area
Sampling port size, number & depth
Duct orientation & shape
Downstream disturbance
Upstream disturbance
No. traverses & points sampled
Sample plane conformance to AS 4323.1

200 mm 0.0314 m² 3" Flange (x1), 260 mm Horizontal Circular Bend 1 D Bend 3 D 1 4

Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

3.3 Calciner Refeed (discharge) 1210-BH-002

Sampling Plane Details	
Sampling plane dimensions	200 mm
Sampling plane area	0.0314 m²
Sampling port size, number & depth	3" Flange (x1), 250 mm
Duct orientation & shape	Vertical Circular
Downstream disturbance	Bend 1 D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	1 2
Sample plane conformance to AS 4323.1	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons:

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

3.4 Acid Roast Scrubber 1340-SK-001

Sampling Plane Details		
Sampling plane dimensions	150 mm	
Sampling plane area	0.0177 m ²	
Sampling port size, number & depth	4" Flange (x2), 50 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Change in diameter >2 D	
Upstream disturbance	Axial fan >8 D	
No. traverses & points sampled	2 4	
Sample plane conformance to AS 4323.1	Ideal sampling plane	



3.5 Sodium Sulfate Heater 1710-VL-017

Sampling Plane Details
Sampling plane dimensions
Sampling plane area
Sampling port size, number & depth
Duct orientation & shape
Downstream disturbance
Upstream disturbance
No. traverses & points sampled
Sample plane conformance to AS 4323.1

500 mm 0.196 m² 4" Flange (x2), 110 mm Vertical Circular Change in diameter >2 D Axial fan >8 D 1 4 Non-conforming

Comments

The number of traverses sampled is less than the requirement The number of points sampled is less than the requirement

The sampling plane is deemed to be non-conforming due to the following reasons: The stack or duct does not have the required number of access holes (ports)

4 Plant Operating Conditions

See Tianqi Lithium Kwinana Pty Ltd records for complete process conditions.



5 Test Methods

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

				NATA accredited		
Parameter	Sampling method	Analysis method	Uncertainty*	Sampling	Analysis	
Sampling points - Selection	AS 4323.1	NA	NA	\checkmark	NA	
Flow rate, temperature & velocity	USEPA Method 2	USEPA Method 2	8%, 2%, 7%	NA	✓	
Moisture	USEPA Method 4	USEPA Method 4	8%	✓	✓	
Carbon dioxide & oxygen	USEPA Method 3A	USEPA Method 3A	13%	✓	✓	
Carbon monoxide	USEPA Method 10	USEPA Method 10	12%	✓	✓	
Nitrogen oxides	USEPA Method 7E	USEPA Method 7E	12%	✓	✓	
Total particulate matter	USEPA Method 17	USEPA Method 17	7%	✓	$\checkmark^{\dagger\dagger}$	
Particulate matter ($PM_{10} \& PM_{2.5}$) by particle size analysis	USEPA Method 17	Ektimo 410 in-house method using Malvern Mastersizer 3000	not specified	×	× [†]	
Sulfuric acid mist and/or sulfur oxides	USEPA Method 8	Ektimo 235	16%	\checkmark	\checkmark^{\dagger}	
					111224	

* 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:

- 6 January 2025 in report LV-006669.
- 7 January 2025 in report LV-006681.
- ⁺⁺ Gravimetric analysis conducted at the Ektimo WA 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, dry basis
~	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
СТМ	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
2 30	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	
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
D.1.(50	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
00	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 derodynamic diameter less than or equal to 70 microns (µm).
PSA	
FSA	Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser diffraction.
DATA	
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.
ТМ	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
, 570 connuence interval	range of values that contains the true result with 75% certainty. This means there is a 5% risk that the true result is outside this range



Experts in air quality, odour and emission monitoring.

Melbourne

(Head Office) 26 Redland Dr Mitcham, VIC 3132

Perth

52 Cooper Rd Cockburn Central WA 6164

Wollongong

1/10 Doyle Ave Unanderra NSW 2526

Brisbane

3/109 Riverside Pl Morningside QLD 4170

1300 364 005

ektimo.com.au

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Tianqi Lithium Kwinana Pty Ltd, Kwinana Beach

Work Approval Sampling Campaign

Round 2 - July 2024

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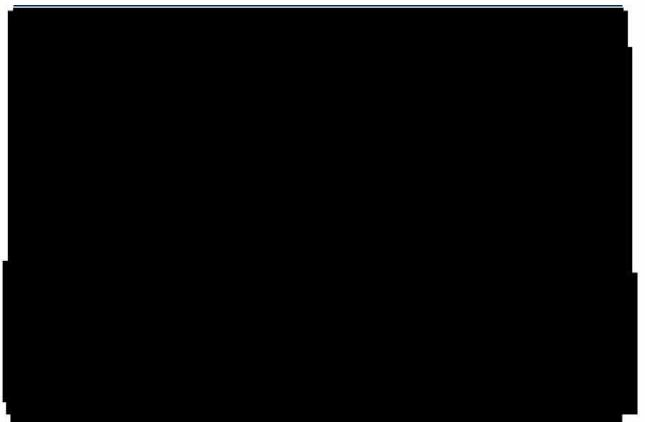


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1	Executive Summary		
1.1	Background		
Loc	cation	Test Date	Test Parameters*
t			
	30-SK-001	4 July 2024	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	d Roast Scrubber 40-SK-001	4 July 2024	Total particulate matter, PM ₁₀ Oxygen (O ₂), carbon dioxide (CO ₂), oxides of nitrogen (as NO ₂) Sulfur dioxide & sulfuric acid mist
10000	dium Sulfate Heater 10-VL-017	3 July 2024	Total particulate matter, PM ₁₀ Oxygen (O ₂), carbon dioxide (CO ₂), oxides of nitrogen (as NO ₂)

* 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.

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1.3 Licence Comparison

Location Description	Pollutant	Units	Licence Limit	Detected Values
	Nitrogon ovides	mg/m ³ at STP dry	350	82
	Nitrogen oxides	mg/m ³ at 3% O ₂ STP dry	350	350
	Total particulate matter	mg/m ³ at STP dry	50	<2
		mg/m ³ at STP dry	350	<4
	Nitrogen oxides	mg/m ³ at 3% O ₂ STP dry	350	<300
	Total particulate matter	mg/m ³ at STP dry	50	≤ 2 .9
	SO3	mg/m ³ at STP dry	100	1.2
	Total particulate matter	mg/m ³ at STP dry	50	<2
	Total particulate matter	mg/m ³ at STP dry	50	600
1200-BH-002	Total particulate matter	mg/m ³ at STP dry	50	63

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

Isokinetic rate, %

Gravimetric analysis date (total particulate)

Gas Analyser Results	Samplingtime				1	Average 1042-1141 Corrected				
Combustion Gases Nitrogen oxides (as NO ₂) Carbon dioxide Oxygen					Concentration mp/m ³ 82 Concentration %v/v 2.4 16.7	to 3% 02 mg/m³ 350	Mass Rate g/s 1.4			
lsokinetic Results	Samplingtime		Average Corrected to 3% O2 rrg/m ³	Mass Rate g/s	a comunicación de la comunicación d	Test 1 1040-1145 Corrected to 3% O2 mg/m ³	Mass Rate	Concentration	Test 2 1155-1300 Corrected to 3% O2 mg/m*	Mass Rate o's
Total particulate matter PM10 Isokinetic Sampling Parameters	(PSA)	<2	<8 <8	<0.03 <0.03	<2 <2	<8 <8	<0.03 ≪0.03	4	<8 <8	<0.03 <0.03
Sampling time, min						60			60	

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

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04-07-2024

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04-07-2024

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2.2 Calciner Refeed (feed) 1210-BH-001

sokinetic Results Average Test 1 Test 2 Sampling time 1120-1220 1230-1330	17 11 11 11 11 11 11 11 11 11 11 11 11 1			
	La cara de la	141	1 19 Jan	T
Sampling time 1120-1220 1230-1330		Average	lest 1	lest 2
	Sampling time		1120-1220	1230-1330

Samplingtim	e			1120-1220		1330
	Concentration mg/m ^a	Mass Rate g/s	Concentration mg/m³	Mass Rate g/s	Concentration mg/m ²	Mass Rate g/s
Total particulate matter	600	0.33	670	0.38	530	0.28
PM10 (PSA) 410	0.23	460	0.26	360	0.19
Isokinetic Sampling Parameters						
Sampling time, min			60	0	60	D
isokinetic rate, %			10	0	10	3
Gravimetric analysis date (total particulate)			04-07-	2024	04-07-	2024

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2.3 Calciner Refeed (discharge) 1210-BH-002

Isokinetic Results	Aver	Average		Test 1		t 2
Samplingtime			1400-	1500	1500-	1600
	Concentration mg/m ²	Mass Rate g/s	Concentration mg/m²	Mass Rate g/s	Concentration mg/m ²	Mass Rate g/s
Total particulate matter	63	0.028	52	0.023	74	0.032
PM10 (PSA)	43	0.019	35	0.015	51	0.022
Isokinetic Sampling Parameters						
Sampling time, min			60)	60	D
Isokinetic rate, %			99)	99	9
Gravimetric analysis date (total particulate)			04-07-	2024	04-07-	2024

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2.4 Spodumene Mill 1230-SK-001

						1	
kinetic Results		Aver	age	Tes		Tes	
kinetic Results	Sampling time		age	Tes: 0950-:		Tes 1100-1	
kinetic Results	Sampling time		age Mass Rate g/s				
okinetic Results otal particulate matter	Sampling time	Concentration	Mass Rate	0950-3 Concentration	Mass Rate	1100-	1205 Mass Rate

Isokinetic Sampling Parameters Sampling time, min Isokinetic rate, % Gravimetric analysis date (total particulate) Control Con

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₂₀ results have been reported as per the limit of detection of the total particulate matter test.

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2.5 Acid Roast Scrubber 1340-SK-001

sokinetic Results	Resu	ilts	
Isokinetic Results Sampling time	Res 1 1240-1		
Isokinetic Results Sampling time	1240-:	1345	
9/6/10/00/2009-000-001/201/201/201/201/201/201/201/201/201/	1240-1 Concentration	Mass Rate	
Sampling time	1240-: Concentration mg/m [*]	1345 Mass Rate g/s	
Sampling time Total particulate matter	1240-: Concentration mg/m* <2	1345 Mass Rate q/s <0.0004	
Sampling time Total particulate matter	1240-: Concentration mg/m³	1345 Mass Rate g/s	
Sampling time Total particulate matter PM10 (PSA)	1240-: Concentration mg/m* <2	1345 Mass Rate q/s <0.0004 <0.0004	
Sampling time Total particulate matter PM10 (PSA) Sulfur dioxide	1240-: Concentration mg/m³ <2 <2 <2	1345 Mass Rate q/s <0.0004	
Samplingtime Total particulate matter PM10 (PSA) Sulfur dioxide Sulfur trioxide	1240-: Concentration mg/m² <2 <2 760	1345 Mass Rate q/s <0.0004 <0.0004 0.11	
Sampling time Total particulate matter PM10 (PSA) Sulfur dioxide Sulfur trioxide Isokinetic Sampling Parameters	1240-: Concentration mg/m* <2 <2 760 1.2	1345 Mass Rate q/s <0.0004 <0.0004 0.11 0.00018	
Sampling time Total particulate matter	1240-: Concentration mg/m² <2 <2 760	1345 Mass Rate q/s <0.0004 <0.0004 0.11 0.00018	

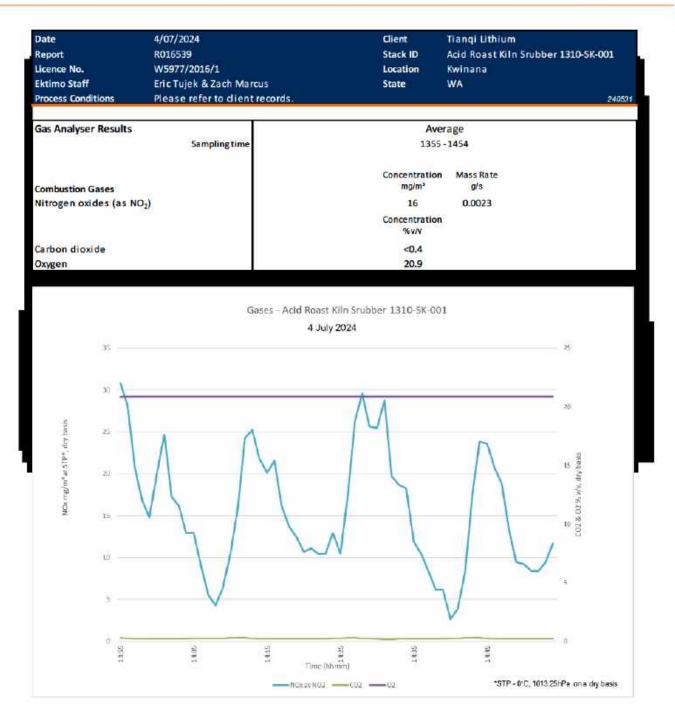
Note:

1. Test 2 has not been reported due to compromised sample integrity.

There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this
instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

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2.6 Sodium Sulfate Heater1710-VL-017

as Analyser Results	Samplingtime					Average 1036 - 1135				
	Control and a con-					Corrected				
					Concentration		Mass Rate			
Contraction of the state of the					mg/m²	m@/m²	0i.e			
					mg/m² <4	mp/m² <300				
					mg/m²		0i.e			
itrogen oxides (as NO ₂)					mg/m² <4 Concentration		0i.e			
itrogen oxides (as NO ₂) arbon dioxide					mg/m³ <4 Concentration %v/v		0i.e			
trogen oxides (as NO ₂) arbon dioxide sygen			Average		mg/m² <4 Concentration S6.v/v <0.4	<300	0i.e		Test 3	
itrogen oxides (as NO ₁) arbon dioxide xygen	Samplingtime		Average		mg/m ² <4 Concentration %v/v <0.4 20.7		0i.e		Test 2	
itrogen oxides (as NO ₂) arbon dioxide xygen	Samplingtime		Average		mg/m ² <4 Concentration %v/v <0.4 20.7	<300 Test 1	0i.e		140-1240	
trogen oxides (as NO ₂) arbon dioxide sygen	Sampling time	Concentration	Corrected to 3% O2	Mass Rate	reg/m ² c4 Concentration 56/v/u c0.4 20.7 Concentration	<300 Test 1 1035-1135 Corrected to 3% 02	gis <0.01 Mass Rate	Concentration	140-1240 Corrected to 3% 02	
itrogen oxides (as NO ₂) arbon dioxide xygen okinetic Results	Sampling time	Concentration mg/m ³	Corrected to 3% O2 mg/m ³	g/s	e4 Concentration %v/v <0,4 20.7 Concentration mg/m ³	<300 Test 1 1035-1135 Corrected to 3% 02 mg/m ³	gis c0.01 Mass Rate gis	Concentration mg/m ³	Corrected to 3% O2 mg/m ³	Mass Rate g/s
itrogen oxides (as NO ₂) arbon dioxide oxygen okinetic Results	Sampling time (PSA)	Concentration mg/m³ 52.9	Corrected to 3% O2		reg/m ² c4 Concentration 56/v/u c0.4 20.7 Concentration	<300 Test 1 1035-1135 Corrected to 3% 02	gis <0.01 Mass Rate	Concentration	140-1240 Corrected to 3% 02	
itrogen oxides (as NO ₂) arbon dioxide xygen okinetic Results otal particulate matter M10	(PSA)	Concentration mg/m ³ 52.9	Corrected to 3% O2 mg/m ³ ≤210	9′s ≤0.01	reg/m ² c4 Concentration 56/07 c0.4 20.7 Concentration mg/m ³ 3.9	<300 Test 1 1035-1135 Corrected to 3% 02 mg/m ³ 290	gic <0.01 Mass Rate gic 0.014	Concentration mg/m³ <2	140-1240 Corrected to 3% 02 mg/m ³ <100	9/s <0.007
litrogen oxides (as NO ₁) arbon dioxide bygen sokinetic Results otal particulate matter M10 sokinetic Sampling Parameters	(PSA)	Concentration mg/m ³ 52.9	Corrected to 3% O2 mg/m ³ ≤210	9′s ≤0.01	reg/m ² c4 Concentration 56/07 c0.4 20.7 Concentration mg/m ³ 3.9	<300 Test 1 1035-1135 Corrected to 3% 02 mg/m ³ 290	gic <0.01 Mass Rate gic 0.014	Concentration mg/m³ <2	140-1240 Corrected to 3% 02 mg/m ³ <100	9/s <0.007
Combustion Gases Nitrogen oxides (as NO ₂) Carbon dioxide Dxygen sokinetic Results Fotal particulate matter PM10 sokinetic Sampling Parameters Sampling time, min sokinetic rate, %	(PSA)	Concentration mg/m ³ 52.9	Corrected to 3% O2 mg/m ³ ≤210	9′s ≤0.01	reg/m ² c4 Concentration 56/07 c0.4 20.7 Concentration mg/m ³ 3.9	<300 Test 1 1035-1135 Corrected to 3% 02 mg/m ³ 290 290	gic <0.01 Mass Rate gic 0.014	Concentration mg/m³ <2	140-1240 Corrected to 3% 02 mg/m ³ <100 <100	9/s <0.007

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

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3 Sample Plane Compliance

3.1 Calciner Fan Stack 1200-SK-001

Sampling Plane	Details
Source tested	

Source tested	Calciner		
Pollution control equipment	Filter baghouse		
Sampling plane dimensions	1100 mm		
Sampling plane area	0.95 m ²		
Sampling port size, number & depth	4" BSP (x2), 242 mm		
Duct orientation & shape	Vertical Circular		
Downstream disturbance	Exit 3 D		
Upstream disturbance	Axial fan 9D		
No. traverses & points sampled	2 12		
Sample plane conformance to AS 4323.1	Ideal sampling plane		

3.2 Calciner Refeed (feed) 1210-BH-001

Sampling Plane Details	
Source tested	Calciner
Pollution control equipment	Filter baghouse
Sampling plane dimensions	200 mm
Sampling plane area	0.0314 m ²
Sampling port size, number & depth	3" Flange (x1), 260 mm
Duct orientation & shape	Horizontal Circular
Downstream disturbance	Bend 1D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	1 2
Sample plane conformance to AS 4323.1	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons: The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

3.3 Calciner Refeed (discharge) 1210-BH-002

Sampling Plane Details		
Source tested	Calciner	
Pollution control equipment	Filterbaghouse	
Sampling plane dimensions	200 mm	
Sampling plane area	0.0314 m²	
Sampling port size, number & depth	3" Flange (x1), 250 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Bend 1D	
Upstream disturbance	Bend 3 D	
No. traverses & points sampled	12	
Sample plane conformance to AS 4323.1	Conforming but non-ideal	
The sampling plane is deemed to be non-ideal due to t	he following reasons:	
	and the second	

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D Prepared for: Tiangi Lithium Kwinana Pty Ltd Report No.: R016539 - 1 Date: 31/07/2024 Page: 14 of 17

3.4 Spodumene Mill 1230-SK-001

Sampling Plane Details

- Source tested Pollution control equipment Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1
- Calciner Filter baghouse 1180 mm 1.09 m² 4" Flange (x2), 160 mm Vertical Grcular Change in diameter >2 D Axial fan >8 D 2 12 Non-conforming

The sampling plane is deemed to be non-conforming due to the following reasons: The differential pressure at one or more sampling points is less than 5 Pa

3.5 Acid Roast Scrubber 1340-SK-001

Sampling Plane Details		
Source tested	Calciner	
Pollution control equipment	Filter baghouse	
Sampling plane dimensions	150 mm	
Sampling plane area	0.0177 m ²	
Sampling port size, number & depth	4" Flange (x2), 50 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Change in diameter >2 D	
Upstream disturbance	Axial fan >8 D	
No. traverses & points sampled	2 4	
Sample plane conformance to AS 4323.1	Ideal sampling plane	

3.6 Sodium Sulfate Heater 1710-VL-017

Sampling Plane Details	
Source tested	Calciner
Pollution control equipment	Filter baghouse
Sampling plane dimensions	500 mm
Sampling plane area	0.196 m ²
Sampling port size, number & depth	4" Flange (x2), 110 mm
Duct orientation & shape	Vertical Circular
Downstream disturbance	Change in diameter >2 D
Upstream disturbance	Axial fan >8 D
No. traverses & points sampled	14
Sample plane conformance to AS 4323.1	Non-conforming
Comments	
The number of traverses sampled is less than	the requirement
The number of points sampled is less than the	requirement

the second s

The sampling plane is deemed to be non-conforming due to the following reasons: The stack or duct does not have the required number of access holes (ports)

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4 Plant Operating Conditions

				NATA ac	
Parameter	Sampling method	Analysis method	Uncertainty*	Sampling	Analysis
Sampling points - Selection	AS 4323.1	NA	NA	1	NA
Flow rate, temperature & velocity	USEPA Method 2	USEPA Method 2	8%, 2%, 7%	NA	1
Moisture	USEPA Method 4	USEPA Method 4	8%	×	1
Carbon dioxide & oxygen	USEPA Method 3A	USEPA Method 3A	13%	×	*
Nitrogen oxides	USEPA Method 7E	USEPA Method 7E	12%	-	~
Total particulate matter	USEPA Method 17	USEPA Method 17	7%	-	v**
Particulate matter (PM_{10} & $PM_{2,s}$) by particle size analysis	USEPA Method 17	Ektimo 410 In-house method using Malvern Mastersizer 3000	not specified	×	*'
Sulfuric acid mist and/or sulfur oxides	USEPA Method 8	Ektimo 235	16%	1	1

6 Quality Assurance/Quality Control Information

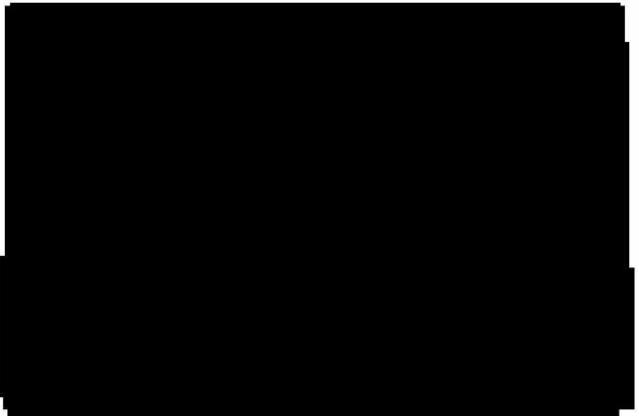
Ektimo is accredited by the National Association of Testing Authorities (NATA) for the sampling and analysis of air pollutants from industrial sources. Unless otherwise stated test methods used are accredited with the National Association of Testing Authorities. For full details, search for Ektimo at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



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 (μ m).
PM _{2.5}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (μ m).
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
тос	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 95% confidence interval	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit. 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.

Ektimo

Ektimo

ektimo.com.au 1300 364 005

MELBOURNE (Head Office) 26 Redland Drive Mitcham VIC 3132 AUSTRALIA

SYDNEY 6/78 Reserve Road Artarmon NSW 2064 AUSTRALIA

WOLLONGONG 1/251 Princes Highway Unanderra NSW 2526 AUSTRALIA

PERTH 52 Cooper Road Cockburn Central WA 6164 AUSTRALIA

BRISBANE 3/109 Riverside Place Morningside QLD 4170 AUSTRALIA

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Tianqi Lithium Kwinana Pty Ltd, Kwinana Beach

Work Approval Sampling Campaign

March 2024

Report R016539

ektimo.com.au



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. Prepared for: Tianqi Lithium Kwinana Pty Ltd Report No.: R016539 Date: 14/05/2024 Page: 2 of 14

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Document Information

	<u> </u>	
Report Authorisation		
8		

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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.

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1	Executiv	e Summary
---	----------	-----------

1.1 Background		
1.2 Project Objective &		
Location	Test Date	Test Parameters*
Location	Test Date	Test Parameters*
Location	Test Date	Test Parameters*
Location Spotamente trun 1230-SK-001	Test Date 26 March 2024	Test Parameters*

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

* The Acid Roast Scrubber 1340-SK-001 went offline during the sampling campaign and therefore has not been reported.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in this report.

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1.3 Licence Comparison

ollutant ogen oxides ticulate matter ogen oxides	Units mg/m ³ at STP dry mg/m ³ at 3% O ₂ STP dry mg/m ³ at STP dry mg/m ³ at STP dry	Licence Limit 350 350 50	Values 70 330 <2
ticulate matter	mg/m ³ at 3% O ₂ STP dry mg/m ³ at STP dry	350 50	330
ticulate matter	mg/m ³ at STP dry	50	1000
			<2
ven ovides	mg/m ³ at STP dry		
	ingritt stort sij	350	<4
Belloxides	mg/m ³ at 3% O ₂ STP dry	350	<400
ticulate matter	mg/m ³ at STP dry	50	3.8
ticulate matter	mg/m ³ at STP dry	50	140
ticulate matter	mg/m ³ at STP dry	50	98
	ticulate matter ticulate matter ticulate matter	ticulate matter mg/m ³ at STP dry ticulate matter mg/m ³ at STP dry	ticulate matter mg/m ³ at STP dry 50

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

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2 Results

Isokinetic rate, %

Gravimetric analysis date (total particulate)

		5-								
as Analyser Results						Average				
	Samplingtime	K				1044 - 1146				
					Concentration	Corrected to 3% 02	Mass Rate			
Combustion Gases					mg/m³	mg/m ⁵	g/:			
litrogen oxides (as NO ₂)					70 Concentration	330	14			
					% w/v					
Carbon dioxide					2.2					
ix ygen					17.1	500 - 11 C.S.		a - 1		
sokinetic Results			Average	- í		Test 1			Test 2	
	Sampling time	5				1035-1140		1	1145-1250	
		Concentration	Corrected to 3% DZ	Mass Rate	Concentration	Corrected to 3% OZ	Mass Rate	Concentration	Corrected to 3% O2	Macs Rate
		mg/m*	mg/m*	g/1	mg/m*	mg/m*	E/s	mg/m*	mg/m*	E/S
otal particulate matter		<2	<9	<0.04	<2	<9	⊲0.04	<2	<10	<0.04
M10	(PSA)	<2	<9	<0.04	<2	<9	<0.04	<2	<10	<0.04
					1946					
sokinetic Sampling Parameters					19.000					

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM10 results have been reported as per the limit of detection of the total particulate matter test.

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02-04-2024

101

02-04-2024

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2.2 Calciner Refeed (feed) 1210-BH-001

	1000 - 1000 - 100	Company of the States
Average	Test 1	Test 2
	Average	Average Test 1

Isokinetic Results		Aver	age	Tes	t1	Tes	t Z
Sam	pling time			1125-1225		1230-1330	
		Concentration mg/m ²	Mass Rate g/s	Concentration mg/m ³	Mass Ra <mark>t</mark> e g/s	Concentration mg/m ^a	Mass Rate g/s
Total particulate matter	243303.774	140	0.065	120	0.06	170	0.07
PM10	(PSA)	77	0.035	62	0.032	93	0.038
Isokinetic Sampling Parameters							
Sampling time, min				60		60	
Isokinetic rate, %				104		96	
Gravimetric analysis date (total particulate))	14		02-04-	2024	02-04	2024

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2.3 Calciner Refeed (discharge) 1210-BH-002

okinetic Results	Average	Test 1	Test 2
	Average		
Sam	pling time	1345-1435	1440-1540

ISOKITE CIC RESULTS		Aver	age	Tes	. 7	165	12
Sampl				1345-1435		1440-1540	
		Concentration mg/m ²	Mass Rate g/s	Concentration mg/m ³	Mass Rate g/s	Concentration mg/m ^a	Mass Rate g/s
Total particulate matter	100.000.001	98	0.019	87	0.017	110	0.021
PM10	(PSA)	85	0.017	75	0.015	96	0.019
Isokinetic Sampling Parameters							
Sampling time, min				60		60	
Isokinetic rate, %				99		98	
Gravimetric analysis date (total particula	te)			02-04	2024	02-04	2024

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2.4 Spodumene Mill 1230-SK-001

isokinetic Results	Aver	390	Test	1	Test	2
Sampling time	7 ACM 7-50	Average Test 1 1025-1130			1135-1240	
	C241		CE 1 121-26			
	Concentration mo/m ³	Mass Rate	Concentration	Mass Rate g/s	Concentration	Mass Rate g/s
Total particulate matter	Concentration mg/m³ <3	Mass Rate g/s <0.005	Concentration mg/m [*] <3	Mass Rate g/s <0.005	Concentration mg/m* <3	Mass Rate g/s <0.005
	mg/m* <3	g/s	mg/m*	g/s	mg/m*	g/s
PM10 (PSA)	mg/m* <3	g/s <0.005	mg/m* <3	g/s <0.005	<mark>mg/m</mark> * <3	9/s <0.005
PM10 (PSA) Isokinetic Sampling Parameters	mg/m* <3	g/s <0.005	mg/m* <3	g/s <0.005	<mark>mg/m</mark> * <3	g/s <0.005
Total particulate matter PM10 (PSA) Isokinetic Sampling Parameters Sampling time, min Isokinetic rate, % Gravimetric analysis date (total particulate)	mg/m* <3	g/s <0.005	mg/m* <3 <3	g/s <0.005	mg/m* <3 <3	g/s <0.005

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

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2.5 Sodium Sulfate Heater 1710-VL-017

						5.01 h				
as Analyser Results	80.08000.000 80.08000.000					Average				
	Sampling time					1024 - 1124				
	1415/4640 7 44002									
	120174080744880				Concentration	Corrected to 3% O2	Mass Rate			
mbustion Gases	1.2 X. P 080 - 7 Anne				Concentration mg/m ^a		Mass Rate E/s			
	1221.74207 7 2760					3% 02				
	1227, 1 626, 1 626, 1997				mg/m* <4 Concentration	3% 02 mg/m*	æ/s			
trogen oxides (as NO ₂)	1422. 1 666. 1 699.9				mg/m* <4 Concentration % v/v	3% 02 mg/m*	æ/s			
itrogen oxides (as NO ₂) arbon dioxide	242.4680 4 99970				mg/m ⁴ <4 Concentration % v/v <0.4	3% 02 mg/m*	æ/s			
trogen oxides (as NO ₂) rbon dioxide	2422,4640,4640,0				mg/m* <4 Concentration % v/v	3% 02 mg/m*	æ/s			
trogen oxides (as NO ₂) Irbon dioxide tygen			Average		mg/m ⁴ <4 Concentration % v/v <0.4	3% 02 mg/m*	æ/s		Test 2	
itrogen oxides (as NO ₂) arbon dioxide xygen	Sampling time		Average		mg/m ⁴ <4 Concentration % v/v <0.4	3% 02 mg/m* <400	æ/s		Test 2 1125-1225	
itrogen oxides (as NO ₂) arbon dioxide xygen			Average Corrected to		mg/m ⁴ <4 Concentration % v/v <0.4	3% 02 mg/m* <400 Test 1	æ/s			
trogen oxides (as NO ₂) rbon dioxide sygen		Concentration	Corrected to 3% O2	Mass Rate	mg/m³ <4 Concentration N v/v <0.4 20.7	3% 02 mg/m ⁴ <400 Test 1 1020-1120 Corrected to 3% 02	e/s <0.02 Mass Rate	Concentration	1125-1225 Corrected to 3% O2	Mass Rote
trogen oxides (as NO ₂) orbon dioxide sygen okinetic Results		mg/m ^a	Corrected to 3% O2 mg/m ²	8/1	mg/m³ <4 Concentration N: v/v <0.4 20.7 Concentration mg/m³	3% 02 mg/m ⁴ <400 Test 1 1020-1120 Corrected to 3% 02 mg/m ³	g/s <0.02 Mass Rete g/s	Concentration mg/m³	1125-1225 Corrected to 3% 02 mg/m ³	8/4
itrogen oxides (as NO ₂) orbon dioxide xygen okinetic Results	Sampling time	mg/m³ 3.8	Corrected to 3% O2 mg/m ^a 380	8/1 0.014	mg/m [*] <4 Concentration N: v/v <0.4 20.7 Concentration mg/m [*] 4.5	3% 02 mg/m ³ <400 Test 1 1020-1120 Corrected to 3% 02 mg/m ³ 450	g/s <0.02 Mass Rate g/t 0.016	Concentration mg/m ⁹ 3.1	1125-1225 Corrected to 3% 02 mg/m ⁹ 310	8/4 0.011
trogen oxides (as NO ₂) orbon dioxide cygen okinetic Results otal particulate matter		mg/m ^a	Corrected to 3% O2 mg/m ²	8/1	mg/m³ <4 Concentration N: v/v <0.4 20.7 Concentration mg/m³	3% 02 mg/m ⁴ <400 Test 1 1020-1120 Corrected to 3% 02 mg/m ³	g/s <0.02 Mass Rete g/s	Concentration mg/m³	1125-1225 Corrected to 3% 02 mg/m ³	8/4
trogen oxides (as NO ₂) rbon dioxide tygen okinetic Results tal particulate matter /10	Sampling time	mg/m³ 3.8	Corrected to 3% O2 mg/m ^a 380	8/1 0.014	mg/m [*] <4 Concentration N: v/v <0.4 20.7 Concentration mg/m [*] 4.5	3% 02 mg/m ³ <400 Test 1 1020-1120 Corrected to 3% 02 mg/m ³ 450	g/s <0.02 Mass Rate g/t 0.016	Concentration mg/m ⁹ 3.1	1125-1225 Corrected to 3% 02 mg/m ⁹ 310	8/4 0.011
itrogen oxides (as NO ₂) arbon dioxide xygen okinetic Results okinetic Results otal particulate matter MIO okinetic Sampling Parameters	Sampling time	mg/m³ 3.8	Corrected to 3% O2 mg/m ^a 380	8/1 0.014	mg/m [*] <4 Concentration N: v/v <0.4 20.7 Concentration mg/m [*] 4.5	3% 02 mg/m ³ <400 Test 1 1020-1120 Corrected to 3% 02 mg/m ³ 450	g/s <0.02 Mass Rate g/t 0.016	Concentration mg/m ⁹ 3.1	1125-1225 Corrected to 3% 02 mg/m ⁹ 310	8/4 0.011
ombustion Gases itrogen oxides (as NO ₂) arbon dioxide xygen sokinetic Results otal particulate matter M10 okinetic Sampling Parameters ampling time, min okinetic rate, %	Sampling time	mg/m³ 3.8	Corrected to 3% O2 mg/m ^a 380	8/1 0.014	mg/m ² <4 Concentration N v/v d0.4 20.7 Concentration mg/m ³ 4.5 2.9	3% 02 mg/m ³ <400 Test 1 1020-1120 Corrected to 3% 02 mg/m ³ 450	g/s <0.02 Mass Rate g/t 0.016	Concentration mg/m ^a 3.1 1.8	1125-1225 Corrected to 3% 02 mg/m ⁹ 310	8/4 0.011

3 Sample Plane Compliance

3.1 Calciner Fan 1200-SK-001

Sampling Plane Details	
Source tested	
Pollution control equipment	
Sampling plane dimensions	
Sampling plane area	
Sampling port size, number & depth	

Sampling prate area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1

Filter baghouse 1100 mm 0.95 m² 4" BSP (x2), 242 mm Vertical Circular Exit 3 D Axial fan 9 D 2 12 Ideal sampling plane

Calciner Filter baghouse 200 mm 0.0314 m² 3" Flange (x1), 260 mm Vertical Circular Bend 1 D Bend 3 D 1 2 Conforming but non-ideal

Calciner

3.2 Calciner Refeed (feed) 1210-BH-001

Sampling Plane Details	
Source tested	
Pollution control equipment	
Sampling plane dimensions	
Sampling plane area	
Sampling port size, number & depth	
Duct orientation & shape	
Downstream disturbance	
Upstream disturbance	
No. traverses & points sampled	
Sample plane conformance to AS 4323.1	

The sampling plane is deemed to be non-ideal due to the following reasons: The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

3.3 Calciner Refeed (discharge) 1210-BH-002

Sampling Plane Details		
Source tested	Calciner	
Pollution control equipment	Filter baghouse	
Sampling plane dimensions	200 mm	
Sampling plane area	0.0314 m ²	
Sampling port size, number & depth	2" Flange (x1), 250 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Bend 1D	
Upstream disturbance	Bend 3 D	
No. traverses & points sampled	1 2	
Sample plane conformance to AS 4323.1	Conforming but non-ideal	

The sampling plane is deemed to be non-ideal due to the following reasons: The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D Prepared for: Tianqi Lithium Kwinana Pty Ltd Report No.: R016539 Date: 14/05/2024 Page: 12 of 14

3.4 Spodumene Mill 1230-SK-001

Sampling Plane Details

Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1 1180 mm 1.09 m² 4" Flange (x2), 160 mm Vertical Circular Change in diameter >2 D Axial fan >8 D 2 12 Non-conforming

The sampling plane is deemed to be non-conforming due to the following reasons: The differential pressure at one or more sampling points is less than 5 Pa

3.5 Sodium Sulfate Heater 1710-VL-017

Sampling Plane Details Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1

500 mm 0.196 m² 4" Flange (x1), 110 mm Horizontal Circular Bend 2 D Axial fan 7 D 1 4 Non-conforming

Comments

The number of traverses sampled is less than the requirement The number of points sampled is less than the requirement

The sampling plane is deemed to be non-conforming due to the following reasons: The stack or duct does not have the required number of access holes (ports) The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

4 Plant Operating Conditions

See Tiangi Lithium Kwinana Pty Ltd records for complete process conditions.

Ektimo

5 Test Methods

Parameter				NATA accredited		
	Sampling method	Analysis method	Uncertainty*	Sampling	Analysis	
Sampling points - Selection	AS 4323.1	NA	NA	1	NA	
Flow rate, temperature & velocity	USEPA Method 2	USEPA Method 2	8%, 2%, 7%	NA	*	
Moisture	USEPA Method 4	USEPA Method 4	8%	*	1	
Carbon dioxide & oxygen	USEPA Method 3A	USEPA Method 3A	13%	1	1	
Nitrogen oxides	USEPA Method 7E	USEPA Method 7E	12%	1	1	
Total particulate matter	USEPA Method 17	USEPA Method 17	7%	×	v**	
Particulate matter (PM ₁₀ & PM _{2.5}) by particle size analysis	USEPA Method 17	Ektimo 410 in-house method using Malvern Mastersizer 3000	not specified	×	*'	

6 Quality Assurance/Quality Control Information

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	
2	
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 NATA	Not applicable 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.
PM10	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (μ m).
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
тос	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 VOC	Victorian Environment Protection Authority Volatile organic compound. A carbon-based chemical compound with a vapour pressure of at least 0.010 kPa at 25°C or
VUC	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 Upper bound	X-ray diffractometry When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit
Upper bound 95% confidence interval	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit. 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.

ektimo.com.au 1300 364 005

MELBOURNE (Head Office) 26 Redland Drive Mitcham VIC 3132 AUSTRALIA

SYDNEY 6/78 Reserve Road Artarmon NSW 2064 AUSTRALIA

WOLLONGONG 1/251 Princes Highway Unanderra NSW 2526 AUSTRALIA

PERTH 52 Cooper Road Cockburn Central WA 6164 AUSTRALIA

BRISBANE 3/109 Riverside Place Morningside QLD 4170 AUSTRALIA

Tianqi Lithium Kwinana Pty Ltd, Kwinana Beach

Work Approval Sampling Campaign

January 2024

Report R016002 - 1

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Document Information

Report Authorisation		

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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.

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1	Execut	ive	Summary	ć.
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1.1 Background		
Location	Test Date	Test Parameters*
	Test Date	Test Parameters*
spoudmente min		
1230-SK-001	9 January 2024	
Sodium sulfate heater 1710-VL-017	9 January 2024	Total particulate matter, PM ₁₀ Oxygen (O ₂), carbon dioxide (CO ₂), oxides of nitrogen (as NO ₂)

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

* The Acid roast scrubber 1340-SK-001 was not operating during the sampling campaign and was therefore not tested.

All results are reported on a dry basis at STP.

Plant operating conditions have been noted in this report.

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1.3 Licence Comparison

Location Description	Pollutant	Units	Licence Limit	Detected Values
Location Description	Nite and the	mg/m ³ at STP dry	350	71
	Nitrogen oxides	mg/m ³ at 3% O ₂ STP dry	350	320
	Total particulate matter	mg/m ³ at STP dry	50	<2
		mg/m ³ at STP dry	350	<4
	Nitrogen oxides	mg/m ³ at 3% O ₂ STP dry	350	<600
	Total particulate matter	mg/m ³ at STP dry	50	≤ 1 .9
	Total particulate matter	mg/m ³ at STP dry	50	58
	Total particulate matter	mg/m ³ at STP dry	50	<2
1230-SK-001	Total particulate matter	mg/m ³ at STP dry	50	<2

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

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2 Results

Isokinetic Sampling Parameters

Sas Analyser Results						Average				
	Samplingtime					1333 - 1492				
					Concentration	Corrected	Mass Rate			
Combustion Gases					mg/m³	mg/m ²	g/s			
litrogen oxides (as NO ₂)					71	320	1.3			
					Concentration %v/v					
Carbon dioxide					2.8					
Dxygen					16.9					
sokinetic Results			Average		í	Test 1	- i	r	Test 2	
	_				1					
	Samplingtime				3	1120-1225		<u>j</u> 2	1240-1345	
	Samplingtime	Concentration		Mass Rate	Concentration	Corrected to 3% O2		Concentration	Corrected to 3% O2	Mass Rate
Total particulate matter	Samplingtime	Concentration mg/m³ <2		Mass Rate g/s <0.03	annon an l	Corrected	Mass Rate g/s <0.03		Corrected	Mass Rate 9/5 <0.03

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 Sampling time, min
 60
 60

 Isokinetic rate, %
 102
 100

 Gravimetric analysis date (total particulate)
 11-01-2024
 11-01-2024

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM10 results have been reported as per the limit of detection of the total particulate matter test.

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2.2 Calciner Refeed (feed) 1210-BH-001

Gravimetric analysis date (total particulate)

		1. (1904)	literer:	8220-0		4300	
okinetic Results		Aver	age	Tes: 1300-:		Tes 1410-:	
	Sampling time			1500	1400	1410-	1910
		Concentration mg/m [*]	Mass Rate g/s	Concentration mg/m*	Mass Rate g/s	Concentration mg/m*	Mass Rate g/s
otal particulate matter		58	0.027	56	0.027	60	0.027
M10	(PSA)	39	0.018	41	0.02	38	0.017
okinetic Sampling Parameters							
ampling time, min				60		60	
sokinetic rate, %				106		100	

11-01-2024

11-01-2024

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Ektimo

19 R	V255 45						
sokinetic Results		Aver	age	Tes	1	Tes	2
sokinetic Results	Sampling time		age	Tes 1040-:		Tes 1150-1	
sokinetic Results	Samplingtime		age Mass Rate	404 × 513		10000000	
sokinetic Results	Sampling time			1040-:	1140	1150-1	1250
	Sampling time	Concentration	Mass Rate	1040-: Concentration	Mass Rate	1150-3	Mass Rate
otal particulate matter	Sampling time (PSA)	Concentration mg/m* <2	Mass Rate g/s	1040-: Concentration mg/m*	Mass Rate g/s	1150-3 Concentration mg/m*	Mass Rate g/s
fotal particulate matter M10		Concentration mg/m* <2	Mass Rate g/s <0.0004	1040-: Concentration mg/m* <2	1140 Mass Rate g/s <0.0004	1150-1 Concentration mg/m" <2	Mass Rate g/s <0.0003
Fotal particulate matter PM10 sokinetic Sampling Parameters		Concentration mg/m* <2	Mass Rate g/s <0.0004	1040-: Concentration mg/m* <2	1140 Mass Rate g/s <0.0004	1150-1 Concentration mg/m" <2	Mass Rate g/s <0.0003
Isokinetic Results Total particulate matter PM10 Isokinetic Sampling Parameters Sampling time, min Isokinetic rate, %		Concentration mg/m* <2	Mass Rate g/s <0.0004	1040-: Concentration mg/m* <2 <2 <2	1140 Mass Rate g/s <0.0004	1150-: Concentration mg/m* <2 <2 <2	Mass Rate g/s <0.0003

2.3 Calciner Refeed (discharge) 1210-BH-002

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

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2.4 Spodumene Mill 1230-SK-001

isokinetic Results	Aver	age	Tes	t1	Tes	t2
Isokinetic Results Sampling time	50000000	age	Tes 1250-		Tes 1355-1	2017 C
Sampling time	Concentration	Mass Rate	1250-	Mass Rate	1355-: Concentration	1500 Mass Rate
Sampling time	Concentration mg/m*	Mass Rate g/s	1250- Concentration mg/m*	Mass Rate g/s	1355-: Concentration mg/m*	1500 Mass Rate g/s
Sampling time Total particulate matter	Concentration	Mass Rate	1250-	Mass Rate	1355-: Concentration	1500 Mass Rate
Sampling time Total particulate matter PM10 (PSA)	Concentration mg/m* <2	Mass Rate g/s <0.005	1250- Concentration mg/m* <2	Mass Rate g/s <0.005	1355-J Concentration mg/m* <2	1500 Mass Rate g/s <0.004
Sampling time Total particulate matter PM10 (PSA) Isokinetic Sampling Parameters	Concentration mg/m* <2	Mass Rate g/s <0.005	1250- Concentration mg/m* <2 <2 <2	Mass Rate g/s <0.005	1355-: Concentration mg/m* <2 <2 <2	1500 Mass Rate g/s <0.004
Sampling time Total particulate matter PM10 (PSA)	Concentration mg/m* <2	Mass Rate g/s <0.005	1250- Concentration mg/m* <2	Mass Rate g/s <0.005	1355-J Concentration mg/m* <2	1500 Mass Rate g/s <0.004

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

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2.5 Sodium Sulfate Heater 1710-VL-017

лё:	
is Analyser Results	Average
Sampling time	1014 - 1113 Corrected

	Samplingtime				2	1014 - 1113				
					Concentration mg/m²	Corrected to 3% O2 mp/m ²	Mass Rate Ø/s			
Combustion Gases					82	2.2				
Nitrogen oxides (as NO ₂)					<4	<500	<0.02			
					Concentration %v/v					
Carbon dioxide					<0.4					
Oxygen					20.8					
Isokinetic Results	-		Average		1	Test 1	7	6	Test 2	
availate ne suita	Samplingtime		Are age		à	1010-1110		3	120-1220	
	12027128702084		Corrected			Corrected			Corrected	
		Concentration mg/m*	to 3% O2 mg/m³	Mass Rate 9'5	Concentration mg/m*	te 3% 02 mg/m*	Mass Rate g/s	Concentration mg/m*	to 3% O2 mg/m*	Mass Rate 9/5
Total particulate matter		s1.9	≤260	≤0.0074	<2	<300	<0.007	1.9	260	0.0075
PM10	(PSA)	≤1.9	≤260	≤0.0074	<2	<300	<0.007	1.9	260	0.0075
Isokinetic Sampling Parameters										
Sampling time, min					60			60		
Isokinetic rate, %	-				101			100		
Gravimetric analysis date (tota	particulate)				1	1-01-2024		1	1-01-2024	

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₂₀ results have been reported as per the limit of detection of the total particulate matter test.

Sample Plane Compliance 3

Sampling Plane Details	
Source tested	Calciner
Pollution control equipment	Filter baghouse
Sampling plane dimensions	1100 mm
Sampling plane area	0.95 m ²
Sampling port size, number & depth	4" BSP (x2), 242 mm
Duct orientation & shape	Vertical Circular
Downstream disturbance	Exit 3 D
Upstream disturbance	Axial fan 9D
No. traverses & points sampled	2 12
Sample plane conformance to AS 4323.1	Ideal sampling plane

Sampling Plane Details	
Pollution control equipment	Filterbaghouse
Sampling plane dimensions	200 mm
Sampling plane area	0.0314 m ²
Sampling port size, number & depth	3" Flange (x1), 260 mm
Duct orientation & shape	Vertical Circular
Downstream disturbance	Bend 1D
Upstream disturbance	Bend 3 D
No. traverses & points sampled	1 2
Sample plane conformance to AS 4323.1	Conforming but non-ideal

The sampling plane is deemed to be non-ideal due to the following reasons: The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

3.3 Calciner Refeed (discharge) 1210-BH-002

Sampling Plane Details		
Pollution control equipment	Filter baghouse	
Sampling plane dimensions	200 mm	
Sampling plane area	0.0314 m ²	
Sampling port size, number & depth	2" Flange (x1), 250 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Bend 1D	
Upstream disturbance	Bend 3 D	
No. traverses & points sampled	1 2	
Sample plane conformance to AS 4323.1	Conforming but non-ideal	

The sampling plane is deemed to be non-ideal due to the following reasons: The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

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3.4 Spodumene Mill 1230-SK-001

Sampling Plane Details

- Pollution control equipment Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1
- Filter baghouse 1180 mm 1.09 m² 4" Flange (x2), 160 mm Vertical Circular Change in diameter >2 D Axial fan >8 D 2 12 Non-conforming

The sampling plane is deemed to be non-conforming due to the following reasons: The differential pressure at one or more sampling points is less than 5 Pa

3.5 Sodium Sulfate Heater 1710-VL-017

Sampling Plane Details	
Sampling plane dimensions	
Sampling plane area	
Sampling port size, number & depth	
Duct orientation & shape	
Downstream disturbance	
Upstream disturbance	
No. traverses & points sampled	
Sample plane conformance to AS 4323.1	

500 mm 0.196 m² 4" Flange (x1), 110 mm Horizontal Circular Bend 2 D Axial fan 7 D 1 4 Conforming (alternative procedure)

Comments

The number of traverses sampled is less than the requirement The number of points sampled is less than the requirement

The sampling plane is deemed to be non-ideal due to the following reasons: The stack or duct does not have the required number of access holes (ports) The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

4 Plant Operating Conditions

See Tiangi Lithium Kwinana Pty Ltd records for complete process conditions.

5 Test Methods

				NATA ac	credited
Parameter	Sampling method	Analysis method	Uncertainty*	Sampling	Analysis
Sampling points - Selection	AS 4323.1	NA	NA	4	NA
Flow rate, temperature & velocity	USEPA Method 2	USEPA Method 2	8%, 2%, 7%	NA	~
Molsture	USEPA Method 4	USEPA Method 4	8%	1	1
Carbon dioxide & oxygen	USEPA Method 3A	USEPA Method 3A	13%	~	~
Nitrogen oxides	USEPA Method 7E	USEPA Method 7E	12%	1	1
Total particulate matter	USEPA Method 17	USEPA Method 17	7%	~	V**
Particulate matter (PM ₃₀ & PM _{2.5}) by particle size analysis	USEPA Method 17	Ektimo in-house method using Malvern Mastersizer 3000	not specified	*	*

6 Quality Assurance/Quality Control Information

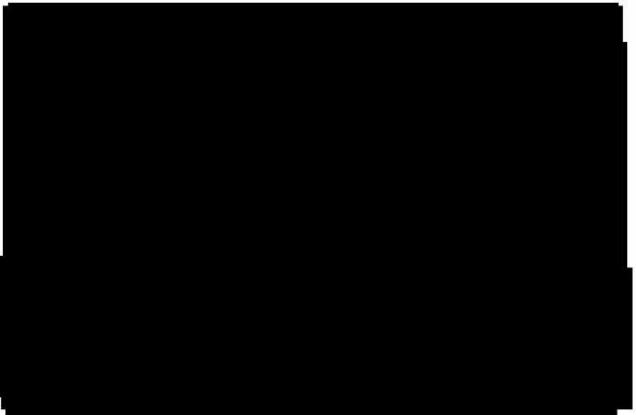
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Unless specifically noted, all samples were collected and handled in accordance with Ektimo's QA/QC standards.

7 Definitions



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.
PM10	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (μ m).
PM _{2.5}	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (μ m).
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.
ТМ	Test method
ТОС	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 95% confidence interval	When an analyte is not present above the detection limit, the result is assumed to be equal to the detection limit. 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.

Ektimo

ektimo.com.au 1300 364 005

MELBOURNE (Head Office) 26 Redland Drive Mitcham VIC 3132 AUSTRALIA

SYDNEY 6/78 Reserve Road Artarmon NSW 2064 AUSTRALIA

WOLLONGONG 1/251 Princes Highway Unanderra NSW 2526 AUSTRALIA

PERTH 52 Cooper Road Cockburn Central WA 6164 AUSTRALIA

BRISBANE 3/109 Riverside Place Morningside QLD 4170 AUSTRALIA

Tianqi Lithium Kwinana Pty Ltd, Kwinana Beach

Work Approval Sampling Campaign December 2023

Report R016002

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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. Prepared for: Tianqi Lithium Kwinana Pty Ltd Report No.: R016002 Date: 12/01/2024 Page: 2 of 17

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Document Information

Report Authorisation		

This document is confidential and is prepared for the exclusive use of Tianqi Lithium Kwinana Pty Ltd and those granted permission by Tianqi Lithium Kwinana Pty Ltd. The report shall not be reproduced except in full.

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.

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1 Executive Summa	rγ	
1.1 Background		
Location	Test Date	Test Parameters*
Spodumene mill 1230-SK-001	23 November 2023	
Acid roast scrubber 1340-SK-001	24 November 2023	Total particulate matter, PM10 sulfur dioxide, sulfur trioxide and sulfuric acid mist
Sodium sulfate heater 1710-VL-017	23 November 2023	Total particulate matter, 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.

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1.3 Licence Comparison

Location Description	Pollutant	Units	Licence Limit	Detecte Values
	Nitrogen oxides	mg/m ³ at STP dry	350	71
	Nitrogen oxides	mg/m ³ at 3% O ₂ STP dry	350	320
	Total particulate matter	mg/m ³ at STP dry	50	<2
		mg/m ³ at STP dry	350	<4
	Nitrogen oxides	mg/m ³ at 3% O ₂ STP dry	350	<700
	Total particulate matter	mg/m ³ at STP dry	50	16
	SO3	mg/m ³ at STP dry	100	2.4
	Total particulate matter	mg/m ³ at STP dry	50	10
	Total particulate matter	mg/m ³ at STP dry	50	40
	Total particulate matter	mg/m ³ at STP dry	50	46

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

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2 Results

Sampling time, min

Gravimetric analysis date (total particulate)

Isokinetic rate, %

as Analyser Results						Average				
os panagaci nesonas	Samplingtime					1304 - 1404				
						Corrected				
ombustion Gases					Concentration mg/m ³	to 3% O2 mg/m ²	Mass Rate gis			
litrogen oxides (as NO ₂)					71	320	1.2			
					Concentration %v/v					
arbon dioxide					Concentration %v/v 2.3					
					% v/v					
xygen			Average		%v/v 2.3	Test 1			Test 2	
xygen	Samplingtime		Average		%v/v 2.3 16.9	Test 1 1300-1401		10	Test 2 1410-1510	
xygen	Sampling time		Corrected		%v/v 2.3 16.9	1300-1401 Corrected			Corrected	10000
xygen	Samplingtime	Concentration mg/m ³	Corrected	Mass Rate a's	%v/v 2.3 16.9	1300-1401 Corrected	Mass Pate g/s	Concentration mg/m ³	Corrected	Mass Rate
oxygen kokinetic Results	Sampling time	Concentration	Corrected to 3% O2		Kv/v 2.3 16.9	1300-1401 Corrected to 3% 02		Concentration	1410-1510 Corrected to 3% O2	Mass Rate ولام <0.03
Carbon dioxide Dxygen sokinetic Results Total particulate matter M10	Sampling time (PSA)	Concentration mg/m ³ <2	Corrected to 3% O2 mg/m ³	9'5	%v/v 2.3 16.9 Concentration mg/m ³	1300-1401 Corrected to 3% O2 mg/m ³	gis	Concentration mg/m³	Corrected to 3% O2 mg/m ³	g/s

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₁₀ results have been reported as per the limit of detection of the total particulate matter test.

60

108

24-11-2023

60

105

24-11-2023

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2.2 Calciner Refeed (feed) 1210-BH-001

AN A TABLE A CONTRACT AND A CONTRACT	Aver	age	Tes		Tes	
okinetic Results Sampling time	1. A A A A A A A A A A A A A A A A A A A	age	Tes 1230-		Tes 1335-:	
AN A TABLE A CONTRACT AND A CONTRACT	1. A A A A A A A A A A A A A A A A A A A	age Mass Rate			2.5M	
and a standard and a	-0.120		1230-	1330	1335-1	1435
Sampling time	Concentration	Mass Rate	1230-	1330 Mass Rate	1335-1 Concentration	1435 Mass Rate
Sampling time otal particulate matter	Concentration mg/m* 40	Mass Rate g/s	1230- Concentration mg/m*	1330 Mass Rate g/s	1335-1 Concentration mg/m*	1435 Mass Rate g/s
Sampling time otal particulate matter M10 (PSA)	Concentration mg/m* 40	Mass Rate g/s 0.02	1230- Concentration mg/m* 22	1330 Mass Rate g/s 0.011	1335-1 Concentration mg/m* 59	1435 Mass Rate g/s 0.028
Sampling time otal particulate matter M10 (PSA) sokinetic Sampling Parameters	Concentration mg/m* 40	Mass Rate g/s 0.02	1230- Concentration mg/m* 22	1330 Mass Rate g/s 0.011	1335-1 Concentration mg/m* 59	1435 Mass Rate g/s 0.028
fotal particulate matter	Concentration mg/m* 40	Mass Rate g/s 0.02	1230- Concentration mg/m* 22 12	1330 Mass Rate g/s 0.011	1335-: Concentration mg/m* 59 32	1435 Mass Rate g/s 0.028

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2.3 Calciner Refeed (discharge) 1210-BH-002

okinetic Results		Average	Test 1	Test 2
	Sampling time		1300-1400	1410-1510
		Concentration Mass Rate	Concentration Mass Rate	Concentration Mass Rate

	Concentration mg/m [*]	Mass Rate g/s	Concentration mg/m*	Mass Rate g/s	Concentration mg/m [*]	Mass Rate g/s
Total particulate matter	46	0.02	24	0.011	67	0.028
PM10 (PSA)	11	0.005	6.9	0.0032	16	0.0067
sokinetic Sampling Parameters						
Sampling time, min			60		60	
sokinetic rate, %			97		99	
Gravimetric analysis date (total particulate)			24-11	2023	24-11	-2023

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2.4 Spodumene Mill 1230-SK-001

Isokinetic Results Sampling time		Results 1043-1144			
Sampl	ingtime	1043-1	1144		
		Concentration	Mass Rate		
		mg/m*	g/s		
Total particulate matter		<2	<0.007		
PM10	(PSA)	<2	<0.007		
and a second s		2027	1999, A. (1997, Y. Y.)		
sokinetic Sampling Parameters					
Sampling time, min		60			
isokinetic rate, %		93			
Gravimetric analysis date (total partic	ulate)	24-11-	2023		

Note: There was insufficient particulate matter collected on the filter to perform accurate particle size analysis. In this instance, the PM₂₀ results have been reported as per the limit of detection of the total particulate matter test.

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2.5 Acid Roast Scrubber 1340-SK-001

sokinetic Results	Sampling time	Average	Test 1 1000-1101	Test 2 1025-1126

Contraction B. Sales				22/222	1.000 C	67675 X
	Concentration mg/m²	Mass Rate g/s	Concentration mg/m*	Mass Rate g/s	Concentration mg/m [*]	Mass Rate g/s
Total particulate matter	10	0.0014	4.7	0.00065	16	0.0022
PM10 (PSA)	5.4	0.00076	2.5	0.00035	8.2	0.0012
Sulfur dioxide	350	0.049	290	0.04	410	0.058
Sulfur trioxide	2.4	0.00034	2.6	0.00035	2.3	0.00032
Isokinetic Sampling Parameters						
Sampling time, min			60		60	
isokinetic rate, %			9 <mark>5</mark>		100	
Gravimetric analysis date (total particulate)			28-11-	2023	28-11-	2023

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100

05-12-2023

2.6 Sodium Sulfate Heater 1710-VL-017

Isokinetic rate, % Gravimetric analysis date (total particulate)

Parallel and a feature term										
Gas Analyser Results	Samplingtime					Average 1026 - 1125				
	Saniping one					Corrected				
Combustion Gases					Concentration mg/m²	to 3% 02 mg/m²	Mass Rate g/s			
Nitrogen oxides (as NO ₂)					<4	<700	<0.01			
					Concentration Sev/v					
Carbon dioxide					<0.4					
Oxygen					20.8					
sokinetic Results			Average		i i	Test 1		[Test 2	
	Samplingtime					1017-1117		1	1135-1235	
			Corrected		Charles I.	Corrected		Concentration	Corrected	
		Concentration mp/m ²	to 3% O2 mg/m²	Mass Rate 9/s	Concentration mg/m²	to 3% O2 mg/m²	Mass Rate g/s	Concentration mg/m ²	to 3% O2 mg/m²	Mass Rate 9%
fotal particulate matter	0220243	16	2500	0.053	19	3000	0.059	13	2000	0.047
PM10	(PSA)	7.1	1100	0.024	8	1300	0.025	6.2	980	0.023
Isokinetic Sampling Parameters										
Sampling time, min					60			60		

100

28-11-2023

3 Sample Plane Compliance

3.1 Calciner Fan 1200-SK-001

Sampling Plane Details		
Source tested	Calciner	
Pollution control equipment	Filter baghouse	
Sampling plane dimensions	1100 mm	
Sampling plane area	0.95 m ²	
Sampling port size, number & depth	4" BSP (x2), 242 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Exit 3 D	
Upstream disturbance	Axial fan 9D	
No. traverses & points sampled	2 12	
Sample plane conformance to AS 4323.1	Ideal sampling plane	

3.2 Calciner Refeed (feed) 1210-BH-001

Sampling Plane Details		
Source tested	Calciner	
Pollution control equipment	Filter baghouse	
Sampling plane dimensions	200 mm	
Sampling plane area	0.0314 m ²	
Sampling port size, number & depth	3" Flange (x1), 260 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Bend 1D	
Upstream disturbance	Bend 3 D	
No. traverses & points sampled	1 2	
Sample plane conformance to AS 4323.1	Conforming but non-ideal	

The sampling plane is deemed to be non-ideal due to the following reasons: The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

3.3 Calciner Refeed (discharge) 1210-BH-002

Sampling Plane Details		
Source tested	Calciner	
Pollution control equipment	Filter baghouse	
Sampling plane dimensions	200 mm	
Sampling plane area	0.0314 m ²	
Sampling port size, number & depth	2" Flange (x1), 250 mm	
Duct orientation & shape	Vertical Circular	
Downstream disturbance	Bend 1D	
Upstream disturbance	Bend 3 D	
No. traverses & points sampled	12	
Sample plane conformance to AS 4323.1	Conforming but non-ideal	
The sampling plane is deemed to be non-ideal due to t	he following reasons:	
The sampling plane is too near to the downstream	m disturbance but is greater than or equal to 1D	

The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

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3.4 Spodumene Mill 1230-SK-001

Sampling Plane Details

Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1 1180 mm 1.09 m² 4" Flange (x2), 160 mm Vertical Circular Change in diameter >2 D Axial fan >8 D 2 12 Ideal sampling plane Ektimo

3.5 Acid Roast Scrubber 1340-SK-001

Sampling Plane Details Source tested Pollution control equipment Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1

Kiln Wet scrubber 150 mm 0.0177 m³ 3" Flange (x1), 50 mm Vertical Circular Bend >2 D Axial fan >8 D 1 2 Ideal sampling plane

3.6 Sodium Sulfate Heater 1710-VL-017

Sampling Plane Details

Sampling plane dimensions Sampling plane area Sampling port size, number & depth Duct orientation & shape Downstream disturbance Upstream disturbance No. traverses & points sampled Sample plane conformance to AS 4323.1 500 mm 0.196 m² 4" Flange (x1), 110 mm Horizontal Circular Bend 2 D Axial fan 7 D 1 4 Non-conforming

Comments

The number of traverses sampled is less than the requirement The number of points sampled is less than the requirement

The sampling plane is deemed to be non-conforming due to the following reasons:

The stack or duct does not have the required number of access holes (ports)

The sampling plane is too near to the downstream disturbance but is greater than or equal to 1D The sampling plane is too near to the upstream disturbance but is greater than or equal to 2D

4 Plant Operating Conditions



				NATA accredited	
Parameter	Sampling method	Analysis method	Uncertainty*	Sampling	Analysis
Sampling points - Selection	AS 4323.1	NA	NA	~	NA
Flow rate, temperature & velocity	USEPA Method 2	USEPA Method 2	8%, 2%, 7%	NA	~
Moisture	USEPA Method 4	USEPA Method 4	8%	~	*
Carbon dioxide & oxygen	USEPA Method 3A	USEPA Method 3A	13%	*	1
Nitrogen oxides	USEPA Method 7E	USEPA Method 7E	12%	1	1
Total particulate matter	USEPA Method 17	USEPA Method 17	7%	1	¥**
Particulate matter (PM ₃₀ & PM _{2.3}) by particle size analysis	USEPA Method 17	Ektimo in-house method using Malvern Mastersizer 3000	not specified	*	*
Sulfuric acid mist and/or sulfur oxides	USEPA Method 8	Ektimo 235	16%	~	1

15 December 2023 in report LV-005253.

10 January 2024 in report LV-005320.

" Gravimetric analysis conducted at the Ektimo WA 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	
Lower bound Medium bound	When an analyte is not present above the detection limit, the result is assumed to be equal to zero. 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 NT	National Institute of Occupational Safety and Health 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.
PM10	Particulate matter having an equivalent aerodynamic diameter less than or equal to 10 microns (μ m).
PM _{2.5} PSA	Particulate matter having an equivalent aerodynamic diameter less than or equal to 2.5 microns (μm). Particle size analysis. PSA provides a distribution of geometric diameters, for a given sample, determined using laser
r SA	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.
ТМ	Test method
тос	Total organic carbon. This is the sum of all compounds of carbon which contain at least one carbon-to-carbon bond, plus
USEPA	methane and its derivatives. 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 VOC	Victorian Environment Protection Authority 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 XRD	World Health Organisation toxic equivalents 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.

ektimo.com.au 1300 364 005

MELBOURNE (Head Office) 26 Redland Drive Mitcham VIC 3132 AUSTRALIA

SYDNEY 6/78 Reserve Road Artarmon NSW 2064 AUSTRALIA

WOLLONGONG 1/251 Princes Highway Unanderra NSW 2526 AUSTRALIA

PERTH 52 Cooper Road Cockburn Central WA 6164 AUSTRALIA

BRISBANE 3/109 Riverside Place Morningside QLD 4170 AUSTRALIA