DATE OF REPORT: 30TH JANUARY 2025

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TEST REPORT NO. NOV24154.1

AIR EMISSIONS MONITORING OF CEMENT MILL 1, 2 & 3 EXHAUST STACKS AT MORGAN CEMENT INTERNATIONAL IN PORT KEMBLA

DATE OF TESTING: 14TH & 15TH NOVEMBER 2024

ACCREDITATION:

This laboratory is accredited by the National Association of Testing Authorities (NATA).
NATA Accredited Laboratory No. 15463.
Accredited for compliance with ISO/IEC 17025 – Testing.

AUTHORISATION:

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QUALITY MANAGER

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LABORATORY MANAGER

EXECUTIVE SUMMARY

Airlabs Environmental Pty Ltd was commissioned by Morgan Cement International Pty Ltd to monitor air emissions from the Cement Mill 1, 2 & 3 Exhaust Stacks at the Port Kembla plant to ensure compliance with the site's operating licence. All sampling was conducted by Airlabs Environmental on the 14th and 15th of November 2024.

Analysis was undertaken by Airlabs Environmental and the National Measurement Institute (NMI) in accordance with our scope of NATA accreditation. Unless otherwise indicated, the methods cited in this report have been performed without deviation.

The following results comparison table shows that the concentrations of all analytes were below the limits set by the NSW EPA (refer to Environment Protection License No. 12643, issued on 6th September 2016).

Table 1: Results Summary – Cement Mill 1, 2 & 3 Exhaust Stacks

Parameter	Concentration (mg/m^3)	NSW EPA Limit (mg/m^3)	Emission Rate (g/min)	Complies with EPA Release Limit? (Yes/No)
Cement Mill 1 Exhaust Stack				
Total particulate matter	1.0	**20**	0.39	**Yes**
PM_{10} particulate	0.89	**N/A**	0.35	**Yes**
Type 1 & 2 substances [a]	0.0029	**1.0**	0.0011	**Yes**
Cement Mill 2 Exhaust Stack				
Total particulate matter	4.0	**20**	1.5	**Yes**
PM_{10} particulate	3.6	**N/A**	1.3	**Yes**
Type 1 & 2 substances [a]	0.0070	**1.0**	0.0026	**Yes**
Cement Mill 3 Exhaust Stack				
Total particulate matter	< 0.03	**20**	< 0.05	**Yes**
PM_{10} particulate	< 0.03	**N/A**	< 0.05	**Yes**
Type 1 & 2 substances [a]	0.0013	**1.0**	0.0020	**Yes**

It must be noted that these results are accurate for the air emissions at the time of testing and may not reflect long term trends. Variations in factors such as raw material composition, plant processes, operating conditions and maintenance of plant may influence future test results.

[a] Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds.

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INTRODUCTION

Airlabs Environmental Pty Ltd was commissioned by Morgan Cement International Pty Ltd to conduct air emissions testing of the Cement Mill 1, 2 & 3 Exhaust Stacks at the Port Kembla plant. Sampling was conducted on the 14th and 15th of November 2024 for the following parameters:

- Gas velocity and volume flow rate
- Temperature
- Concentration of water vapour (moisture content)
- Concentration of oxygen & carbon dioxide
- Dry molecular weight and dry gas density
- Concentration and mass emission rate of:
  - Total particulate matter;
  - PM_{10} (Particulate matter with a nominal aerodynamic diameter ≤ 10 µm);
  - Type 1 & 2 substances[b]

QUALITY STATEMENT

Airlabs Environmental is committed to providing the highest quality data to all our clients, as reflected in our ISO 17025 (NATA) accreditation. This requires strict adherence to, and continuous improvement of, all our processes and test work. Our goal is to exceed the QA/QC requirements as set by our clients and appropriate governmental entities and to ensure that all data generated is scientifically valid and defensible.

Airlabs Environmental is NATA accredited for all sampling undertaken for this project. Analysis was undertaken by the National Measurement Institute (NATA Accreditation No. 198) and Airlabs Environmental in accordance with our scope of accreditation.

[b] Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds.

DEFINITIONS

Table 2: Terms and definitions

NSW EPA	New South Wales Environment Protection Authority.
US EPA	United States Environmental Protection Agency.
NMI	National Measurement Institute (Australian Government), North Ryde, NSW.
AS	Australian Standard
PM_{10}	Particulate matter with a nominal aerodynamic diameter ≤ 10 µm.
STP	Standard temperature and pressure (0°C and 101.3 kPa).
°C	temperature in degrees Celsius.
K	Absolute temperature in Kelvin (°C + 273).
µm	Unit of length in microns (10^{-6} metres).
Pa	Air pressure in pascals.
m	Distance in metres.
m/s	Gas velocity in metres per second.
mB	Pressure in millibars.
% vol	Concentration as a percentage of total volume.
g/g-mole	Molecular weight in grams per mole.
kg/m^3	Gas density in kilograms per cubic metre of gas at STP.
m^3/min	Gas flow rate in cubic metres per minute at stack conditions.
Nm^3/min	Gas flow rate in dry cubic metres per minute at STP.
mg/Nm^3	Milligrams (10^{-3} grams) of substance per dry cubic metre of gas at STP.
g/min	Grams of substance emitted per minute.
>	Greater than.
<	Less than. The value stated is the limit of detection.
N/A	Not applicable

OPERATING CONDITIONS

The plant operating conditions at the time of testing are included in Table 3 below.

Table 3: Plant operating conditions.

Cement Mill	**1**	**2**	**3**
Date & Time	15/11/2024 12:15 – 14:49	15/11/2024 08:43 – 11:33	14/11/2024 09:14 – 12:47
Clinker (tonnes/hour)	10	12.5	58.5 (total feed setpoint)
Gypsum (%)	60% controller setpoint	62% controller setpoint	5% of total feed
Power (kW)	59 amps @ 6.6kV	63amps @ 6.6kV	2047kW

All information regarding operating conditions was supplied by staff at Morgan Cement and therefore cannot be verified by Airlabs Environmental.

TEST METHODS

All sampling was undertaken by Airlabs Environmental. Airlabs Environmental is NATA accredited for all sampling undertaken for this project (NATA Accredited Laboratory No. 15463). Analysis was undertaken by Airlabs Environmental and the National Measurement Institute (NMI, NATA Accreditation No. 198) in accordance with our scope of accreditation. Specific details of the test methods used are available upon request.

Table 4: Summary of test methods

Test Parameter	Test Method	Method Detection Limit	Estimated Measurement Uncertainty	NATA Accredited	
				Sampling	Analysis
Sample plane criteria	NSW EPA TM-1 (AS 4323.1)	N/A	N/A	✓	N/A
Gas velocity	NSW EPA TM-2 (US EPA 2)	3 m/s	± 13%	N/A	✓
Temperature	NSW EPA TM-2 (US EPA 2)	273K (0°C)	± 2.6%	N/A	✓
Moisture content	NSW EPA TM-22 (US EPA 4)	0.2%	± 12%	✓	✓
Oxygen & carbon dioxide	NSW EPA TM-24 & TM-25 (US EPA 3A)	0.1%	± 6.0%	✓	✓
Dry molecular weight & gas density	NSW EPA TM-23 (US EPA 3)	N/A	± 13%	✓	✓
Total particulate matter	NSW EPA TM-15 (AS 4323.2)	0.1 mg/Nm^3	± 7.0%	✓	✓
PM_{10}	NSW EPA OM-5 (US EPA 201A)	0.1 mg/Nm^3	± 12%	✓	✓
Type 1 & 2 substances and their compounds	NSW EPA TM-12, 13 & 14 (US EPA 29)	0.05 mg/Nm^3 (total metals)	± 29%	✓	✓[1]

[1]. Analysis of Type 1 & 2 substances and their compounds was performed on the various sample components by NMI, with results included in their Report No. RN1449574.

DEVIATIONS & INFLUENCING FACTORS

There were no deviations from the test methods and no significant influencing factors were recorded.

It must be noted that these results are accurate for the air emissions at the time of testing and may not reflect long term trends. Variations in factors such as raw material composition, plant processes, operating conditions and maintenance of plant may influence future test results.

SAMPLING LOCATIONS

Figure 1: Cement Mill 1, 2 & 3 Exhaust Stack locations at Gate 7 Foreshore Rd, Port Kembla, NSW

SUITABILITY OF SAMPLING PLANE

Section 4.2 of AS 4323.1:2021 'Stationary source emissions. Selection of sampling positions and measurement of velocity in stacks' states that, in the absence of cyclonic flow activity, ideal sampling plane conditions are found to exist at the positions given in Table 5 below.

Table 5: Criteria for the Selection of Sampling Planes

Type of flow disturbance	Minimum distance upstream from disturbance, diameters, (*D*)	Minimum distance downstream from disturbance, diameters, (*D*)
Bend, connection, junction, direction change, stack silencer, flow straightener, stack exit	>2D	>6D
Louvre, butterfly damper (partially closed or closed)	>3D	>6D
Axial fan	>3D	>8D (see Note)
Centrifugal fan	>3D	>6D
NOTE: The plane should be selected as far as practicable from an axial fan. Flow straighteners may still be required to ensure that the selected position still meets the criteria listed in Items (a) to (e) below.		

Section 4.2.2 of AS 4323.1:2021 states that an ideal sampling plane shall meet criteria contained in items (a) to (e) as follows:

(a) The gas flow shall be in the same direction at all points along each sampling traverse.

(b) The gas flow profile at the sampling plane shall be steady, evenly distributed and not have a cyclonic or swirl component which exceeds an angle of 15° to the duct axis, when measured near the periphery of a circular sampling plane.

(c) The temperature difference between adjacent points of the survey along each sampling traverse shall be less than 10% of the absolute temperature in kelvin, with the temperature at any point differing by less than 10% from the mean.

(d) The ratio of the highest to lowest pitot tube differential pressure across the sampling plane shall not exceed 9:1. The ratio of highest to lowest gas velocities shall not exceed 3:1. For isokinetic testing with the use of impingers, the gas velocity ratio across the sampling plane should not exceed 1.6:1.

(e) The differential pressure at all sampling points shall be greater than or equal to 5 Pa. Sampling planes with differential pressures less than 5 Pa do not conform with this document.

In addition, the gas temperature at the sampling plane should be above the dewpoint.

The sampling plane locations for the Cement Mill 1, 2 & 3 Exhaust Stacks did not satisfy the requirements of AS 4323.1:2021 Section 4.2 due to insufficient distance between the sampling plane and the upstream and/or downstream disturbances, and as such the sampling locations for the stacks are considered non-ideal. The gas characteristics for the Cement Mill 1, 2 & 3 Exhaust Stacks satisfied the requirements of AS 4323.1:2021 Section 4.2.2 (a)-(e). The sampling plane details and required number of sampling points are given in the tables below.

SUITABILITY OF SAMPLING PLANE Continued

Table 6: Sampling Plane Details for the Cement Mill 1 Exhaust Stack

Parameter	
Stack shape	Circular
Stack diameter (m) at sampling plane	0.85
Direction of discharge to air	Vertical
Type of flow disturbance	Bend
Sampling plane distance downstream from disturbance	**4D (<6D)**
Type of flow disturbance	Butterfly Damper
Sampling plane distance upstream from disturbance	**1D (<2D)**
Compliance with AS 4232.1 Section 4.2 Criteria for Selection of Sampling Planes	**No**
Required no. and orientation of access holes	2 at 90°
Available no. and orientation of access holes	2 at 90°
Compliance with AS 4232.1 Section 6 Sampling Access Holes	Yes
Standard no. of sampling points per traverse	6
Number of traverses	2
Correction factor	1.21
Corrected no. of sampling points per traverse	8
Total no. of sampling points	16
Gas flow direction is consistent at all points	Yes
Stratified gas flow	No
Cyclonic or swirling gas flow	No (<15°)
Absolute temperature difference between adjacent sampling points (K)	1 (<10%)
Ratio of the highest to lowest pitot differential pressure across sampling plane	1.7:1 (<9:1)
Ratio of the highest to lowest gas velocity across sampling plane (isokinetic)	1.3:1 (<1.6:1)
Minimum differential pressure at any sample point ≥ 5 Pa	110
Gas temperature above dewpoint	Yes
Sampling location compliant with AS 4323.1 Section 4.2.2 (a)-(e)	Yes

Figure 2: Cement Mill 1 Exhaust Stack sampling plane location.

SUITABILITY OF SAMPLING PLANE Continued

Table 7: Sampling Plane Details for the Cement Mill 2 Exhaust Stack

Parameter	
Stack Shape	Circular
Stack Diameter (m) at Sampling Plane	0.850
Direction of Discharge to Air	Vertical
Type of Flow Disturbance	Bend
Sampling Plane Distance Downstream from Disturbance	**4D (<6D)**
Type of Flow Disturbance	Butterfly Damper
Sampling Plane Distance Upstream from Disturbance	**1D (<2D)**
Compliance with AS 4232.1 Section 4.1 Criteria for Selection of Sampling Planes	**No**
Required No. and Orientation of Access Holes	2 at 90°
Available No. and Orientation of Access Holes	2 at 90°
Compliance with AS 4232.1 Section 6 Sampling Access Holes	Yes
Standard No. of Sampling Points per Traverse	6
Number of Traverses	2
Correction Factor	1.21
Corrected No. of Sampling Points per Traverse	8
Total No. of Sampling Points	16
Gas flow direction is consistent at all points	Yes
Stratified gas flow	No
Cyclonic or swirling gas flow	No (<15°)
Absolute temperature difference between adjacent sampling points (K)	1 (<10%)
Ratio of the highest to lowest pitot differential pressure across sampling plane	1.4:1 (<9:1)
Ratio of the highest to lowest gas velocity across sampling plane (isokinetic)	1.2:1 (<1.6:1)
Minimum differential pressure at any sample point ≥ 5 Pa	112
Gas temperature above dewpoint	Yes
Sampling location compliant with AS 4323.1 Section 4.2.2 (a)-(e)	Yes

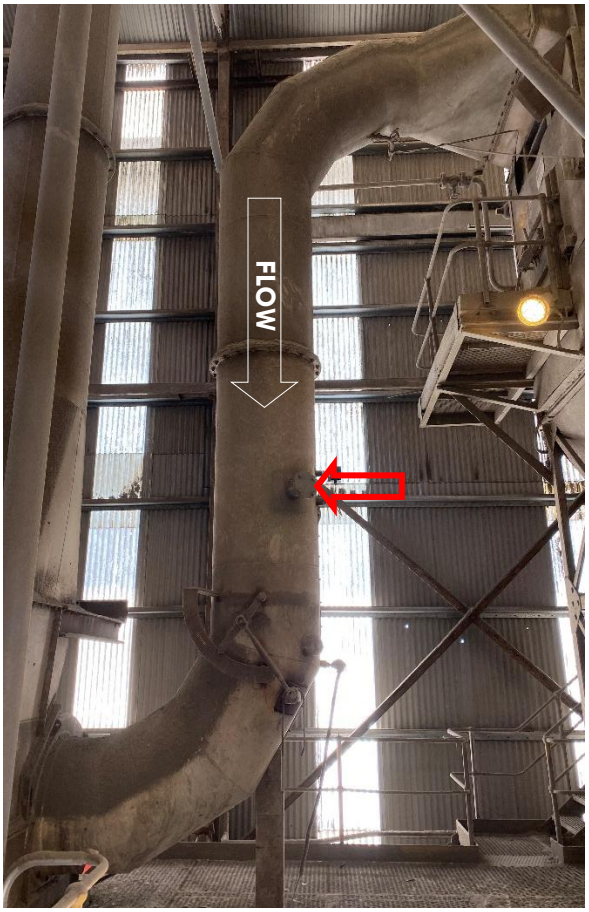

Figure 3: Cement Mill 2 Exhaust Stack sampling plane location

SUITABILITY OF SAMPLING PLANE Continued

Table 8: Sampling Plane Details for the Cement Mill 3 Exhaust Stack

Parameter	
Stack Shape	Rectangular
Stack Dimensions (m) at Sampling Plane	1.77 x 0.800
Direction of Discharge to Air	Horizontal
Type of Flow Disturbance	Centrifugal Fan
Sampling Plane Distance Downstream from Disturbance	**3.4D (<6D)**
Type of Flow Disturbance	Stack Exit
Sampling Plane Distance Upstream from Disturbance	4.9D (>2D)
Compliance with AS 4232.1 Section 4.1 Criteria for Selection of Sampling Planes	**No**
Required No. and Orientation of Access Holes	4 (long side)
Available No. and Orientation of Access Holes	**3 (long side)**
Compliance with AS 4232.1 Section 6 Sampling Access Holes	**No**
Standard No. of Sampling Points per Traverse	2
Number of Traverses	4
Correction Factor	1.15
Corrected No. of Sampling Points per Traverse	3
Total No. of Sampling Points	12
Gas flow direction is consistent at all points	Yes
Stratified gas flow	No
Cyclonic or swirling gas flow	No (<15°)
Absolute temperature difference between adjacent sampling points (K)	2 (<10%)
Ratio of the highest to lowest pitot differential pressure across sampling plane	1.4:1 (<9:1)
Ratio of the highest to lowest gas velocity across sampling plane (isokinetic)	1.2:1 (<1.6:1)
Minimum differential pressure at any sample point ≥ 5 Pa	298
Gas temperature above dewpoint	Yes
Sampling location compliant with AS 4323.1 Section 4.2.2 (a)-(e)	Yes

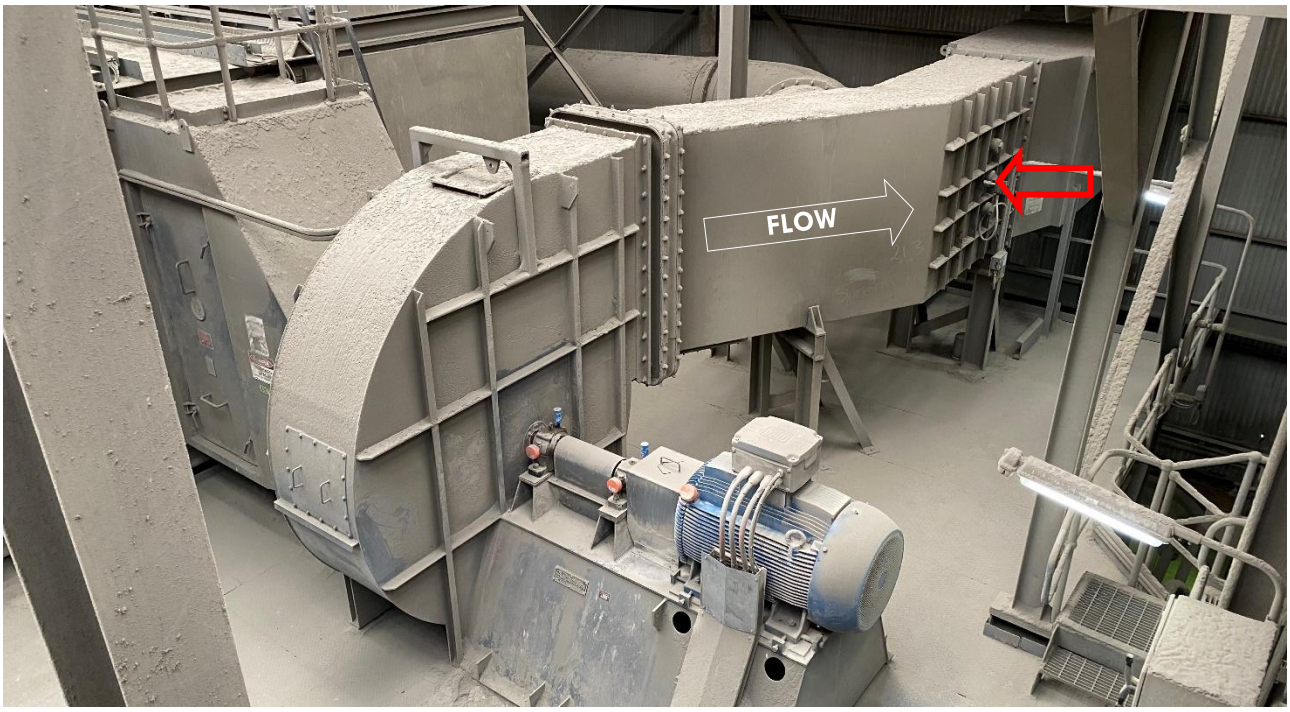

Figure 4: Cement Mill 3 Exhaust Stack sampling plane location

RESULTS – Cement Mill 1 Exhaust Stack

Company Morgan Cement International Pty Ltd

Site Foreshore Rd, Port Kembla

Source Tested Cement Mill 1 Exhaust Stack

Operating Conditions Normal

Date of Tests 15th November 2024

Sampling Period 12:15 – 14:49 (120 minutes per test)

Testing Officers P. Collins

Sampling Position Two 110 mm flanges in a circular metal duct

Table 9: Cement Mill 1 Exhaust Stack - Gas flow conditions

Sampling Conditions	
Stack diameter at sampling plane (m)	0.85
Average stack gas temperature (K)	335 (62°C)
Average barometric pressure (mB)	1021.3
Average static pressure (mB)	-24.9
Average stack pressure (mB)	996.4
Average moisture content (%v/v)	0.45
Average oxygen concentration, dry basis (%v/v)	20.6
Average carbon dioxide concentration, dry basis (%v/v)	0.17
Dry molecular weight of stack gas (g/g mole)	28.85
Wet molecular weight of stack gas (g/g mole)	28.80
Dry gas density of stack gas (kg/m^3)	1.288
Wet gas density of stack gas (kg/m^3)	1.286
Average velocity at sampling plane (m/s)	14.5
Actual gas flow rate (m^3/min)	493
Gas flow rate at STP, dry (Nm^3/min)	394

RESULTS – Cement Mill 1 Exhaust Stack continued

Table 10: Cement Mill 1 Exhaust Stack - Summary of test results

Parameter	Sampling Period	Concentration (mg/m^3)	NSW EPA Limit (mg/m^3)	Emission Rate (g/min)
Total particulate matter	12:15 – 14:15	1.0	**20**	0.39
PM_{10} particulate	13:29 – 14:49	0.89	**N/A**	0.35
Type 1 & 2 substances[c]	12:15 – 14:15	0.0029	**1.0**	0.0011

Table 11: Cement Mill 1 Exhaust Stack – Type 1 & 2 substances and their compounds

Metal	Concentration (mg/Nm^3)	Emission Rate (g/min)
Type 1 substances and their compounds		
Antinomy (Sb) & its compounds	< 0.0002	< 0.00008
Arsenic (As) & its compounds	< 0.0002	< 0.00008
Cadmium (Cd) & its compounds	< 0.0002	< 0.00008
Lead (Pb) & its compounds	0.000079	0.000031
Mercury (Hg) & its compounds	< 0.0002	< 0.00008
Type 2 substances and their compounds		
Beryllium (Be) & its compounds	< 0.0002	< 0.00008
Chromium (Cr) & its compounds	0.00017	0.000067
Cobalt (Co) & its compounds	< 0.0002	< 0.00008
Manganese (Mn) & its compounds	0.0018	0.00071
Nickel (Ni) & its compounds	0.000043	0.000017
Selenium (Se) & its compounds	< 0.0002	< 0.00008
Tin (Sn) & its compounds	< 0.0002	< 0.00008
Vanadium (V) & its compounds	0.00012	0.000047
Total of Type 1 & 2 substances and their compounds[d]	**0.0029**	**0.0011**

[c] Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds.
[d] Total includes half the limits of detection.

RESULTS – Cement Mill 2 Exhaust Stack

Company Morgan Cement International Pty Ltd

Site Foreshore Rd, Port Kembla

Source Tested Cement Mill 2 Exhaust Stack

Operating Conditions Normal

Date of Tests 15th November 2024

Sampling Period 08:43 – 11:33 (120 minutes per test)

Testing Officers P. Collins

Sampling Position Two 110 mm flanges in a circular metal duct

Table 12: Cement Mill 2 Exhaust Stack - Gas flow conditions

Sampling Conditions	
Stack diameter at sampling plane (m)	0.85
Average stack gas temperature (K)	342 (69°C)
Average barometric pressure (mB)	1022.3
Average static pressure (mB)	-21.4
Average stack pressure (mB)	1000.9
Average moisture content (%v/v)	0.33
Average oxygen concentration, dry basis (%v/v)	20.5
Average carbon dioxide concentration, dry basis (%v/v)	0.11
Dry molecular weight of stack gas (g/g mole)	28.84
Wet molecular weight of stack gas (g/g mole)	28.80
Dry gas density of stack gas (kg/m^3)	1.287
Wet gas density of stack gas (kg/m^3)	1.286
Average velocity at sampling plane (m/s)	13.8
Actual gas flow rate (m^3/min)	470
Gas flow rate at STP, dry (Nm^3/min)	369

RESULTS – Cement Mill 2 Exhaust Stack continued

Table 13: Cement Mill 2 Exhaust Stack - Summary of test results

Parameter	Sampling Period	Concentration (mg/m^3)	NSW EPA Limit (mg/m^3)	Emission Rate (g/min)
Total particulate matter	08:43 – 10:43	4.0	**20**	1.5
PM_{10} particulate	10:13 – 11:33	3.6	**N/A**	1.3
Type 1 & 2 substances[e]	08:43 – 10:43	0.0070	**1.0**	0.0026

Table 14: Cement Mill 2 Exhaust Stack – Type 1 & 2 substances and their compounds

Metal	Concentration (mg/Nm^3)	Emission Rate (g/min)
Type 1 substances and their compounds		
Antinomy (Sb) & its compounds	0.000020	0.0000074
Arsenic (As) & its compounds	< 0.0002	< 0.00007
Cadmium (Cd) & its compounds	< 0.0002	< 0.00007
Lead (Pb) & its compounds	0.00024	0.000089
Mercury (Hg) & its compounds	< 0.0002	< 0.00007
Type 2 substances and their compounds		
Beryllium (Be) & its compounds	< 0.0002	< 0.00007
Chromium (Cr) & its compounds	0.00069	0.00025
Cobalt (Co) & its compounds	0.000043	0.000016
Manganese (Mn) & its compounds	0.0050	0.0018
Nickel (Ni) & its compounds	0.00015	0.000055
Selenium (Se) & its compounds	< 0.0002	< 0.00007
Tin (Sn) & its compounds	0.000036	0.000013
Vanadium (V) & its compounds	0.00046	0.00017
TOTAL TYPE 1 & 2 SUBSTANCES AND THEIR COMPOUNDS[f]	**0.0070**	**0.0026**

[e] Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds.
[f] Total includes half the limits of detection.

RESULTS – Cement Mill 3 Exhaust Stack

Company Morgan Cement International Pty Ltd

Site Foreshore Rd, Port Kembla

Source Tested Cement Mill 3 Exhaust Stack

Operating Conditions Normal

Date of Tests 14th November 2024

Sampling Period 09:14 – 12:47 (120 minutes per test)

Testing Officers P. Collins

Sampling Position Three 4" sockets in a rectangular metal duct

Table 15: Cement Mill 3 Exhaust Stack - Gas flow conditions

Sampling Conditions	
Stack dimensions at sampling plane (m)	1.77 x 0.800
Average stack gas temperature (K)	344 (71°C)
Average barometric pressure (mB)	1017.0
Average static pressure (mB)	-2.82
Average stack pressure (mB)	1014.2
Average moisture content (%v/v)	0.45
Average oxygen concentration, dry basis (%v/v)	20.4
Average carbon dioxide concentration, dry basis (%v/v)	0.11
Dry molecular weight of stack gas (g/g mole)	28.83
Wet molecular weight of stack gas (g/g mole)	28.78
Dry gas density of stack gas (kg/m^3)	1.287
Wet gas density of stack gas (kg/m^3)	1.285
Average velocity at sampling plane (m/s)	22.5
Actual gas flow rate (m^3/min)	1,912
Gas flow rate at STP, dry (Nm^3/min)	1,509

RESULTS – Cement Mill 3 Exhaust Stack continued

Table 16: Cement Mill 3 Exhaust Stack - Summary of test results

Parameter	Sampling Period	Concentration (mg/m^3)	NSW EPA Limit (mg/m^3)	Emission Rate (g/min)
Total particulate matter	09:14 – 11:14	< 0.03	**20**	< 0.05
PM_{10} Particles	11:47 – 12:47	< 0.03	**N/A**	< 0.05
Type 1 & 2 substances[g]	09:14 – 11:14	0.0013	**1.0**	0.0020

Table 17: Cement Mill 3 Exhaust Stack – Type 1 & 2 substances and their compounds

Metal	Concentration (mg/Nm^3)	Emission Rate (g/min)
Type 1 substances and their compounds		
Antinomy (Sb) & its compounds	< 0.0002	< 0.0003
Arsenic (As) & its compounds	< 0.0002	< 0.0003
Cadmium (Cd) & its compounds	< 0.0002	< 0.0003
Lead (Pb) & its compounds	0.000059	0.000089
Mercury (Hg) & its compounds	< 0.0002	< 0.0003
Type 2 substances and their compounds		
Beryllium (Be) & its compounds	< 0.0002	< 0.0003
Chromium (Cr) & its compounds	0.000046	0.000069
Cobalt (Co) & its compounds	< 0.0002	< 0.0003
Manganese (Mn) & its compounds	0.00039	0.00059
Nickel (Ni) & its compounds	0.000019	0.000029
Selenium (Se) & its compounds	< 0.0002	< 0.0003
Tin (Sn) & its compounds	< 0.0002	< 0.0003
Vanadium (V) & its compounds	< 0.0002	< 0.0003
TOTAL TYPE 1 & 2 SUBSTANCES AND THEIR COMPOUNDS[h]	**0.0013**	**0.0020**

END OF REPORT

[g] Type 1 & 2 substances include As, Be, Cd, Cr, Co, Hg, Mn, Ni, Pb, Sb, Se, Sn, V & their compounds.
[h] Total includes half the limits of detection.