



**Adelaide Brighton Cement Ltd**

an **ADBRI** company

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## QUARTERLY STACK PARTICULATE REPORT FOR BIRKENHEAD WORKS

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**COMPLIANCE DATE: 31/10/24 – Quarter 3, 2024**

**EPA Licence 1126: Stack Particulate Management Plan (U - 1556)**

**Licensed site: Adelaide Brighton Cement, Birkenhead Works**

**62 Elder Road, Birkenhead, SA 5015**

**Date of Submission: 31 October 2024**

**Version Number: 1**



Report Submitted by: Business Partner - Environment

## Glossary

<b>Term</b>	<b>Definition</b>
$\mu\text{g}/\text{m}^3$	micrograms per cubic metre
$\text{mg}/\text{m}^3$	milligrams per cubic metre
m	metre
$\text{m}^3$	cubic metres
$\text{m}^3/\text{s}$	cubic metres per second
$\text{Nm}^3$	Gas volume in dry cubic metres at STP dry basis
<b>Abbreviations</b>	<b>Definition</b>
Air EPP	Environment Protection (Air Quality) Policy 2016
ESP	Electrostatic Precipitator
SA EPA	South Australian Environment Protection Authority
STP dry basis	Standard Temperature and Pressure (zero degrees Celsius and 101.3 kilo Pascals absolute)
TSP	Total Suspended Particulates
SPMP	Stack Particulate Management Plan

<b>Monitoring Objective</b>	<p>All stack particulate emissions events for the reporting quarter, where levels have exceeded the reporting thresholds:</p> <p>In line with the EPA licence issued on the 1/11/2022, the 1-hr reporting thresholds for stack particulate emission events was reduced as follows:</p> <ul style="list-style-type: none"> <li>• from 100 to 80 mg/Nm<sup>3</sup> (1 hour averaging period) on Kiln Stack 4A</li> <li>• from 60 to 50 mg/Nm<sup>3</sup> (1 hour averaging period) on Pre calciner Stack 4B</li> </ul> <p>Particulate Emissions will be reported in a table format providing the following details:</p> <ul style="list-style-type: none"> <li>• date, time and duration</li> <li>• the measured particulate concentration mg/Nm<sup>3</sup> (STP-dry)</li> <li>• immediate actions taken to reduce particulate emissions</li> <li>• cause and corrective actions taken to prevent future reoccurrence</li> </ul>
<b>Monitoring Plan</b>	<p>This monitoring report has been prepared in compliance with <b>Stack Particulate Management Plan (SPMP)</b>, approved 13 September 2023, by SA EPA.</p> <p>The Plan is available on the ABC Birkenhead Community Website:  <a href="https://adelaidebrightoncommunity.com.au/">https://adelaidebrightoncommunity.com.au/</a></p>

## One Hour Stack Particulate Reporting Events

**4A Stack**  
**1 hr > 80**  
**mg/Nm<sup>3</sup>**  
**Rolling**  
**1hr**  
**average**

There was No 1-hr Reporting event during the reporting period.

**4B Stack**  
**1 hr >**  
**50mg/Nm<sup>3</sup>**  
**Rolling**  
**1hr**  
**average**

There was one 1-hr Reporting event during the reporting period.

Date	Time start	Time finish	Duration (min)	Magnitude mg/Nm <sup>3</sup>	Cause	Immediate Actions Taken	Improve alarming for 4B ESP field performance issues
17/07/2024	3:44	4:13	29	62	4B ESP performance deteriorated, with increase in emissions.	Shutdown of 4B process stream, including 4B Raw Mill, 4B fans were stopped and dampers reduced. Emissions then reduced rapidly.	<p>The usual plant-operating conditions likely to cause a change in ESP performance were checked including:</p> <ul style="list-style-type: none"> <li>• ESP fields and controls</li> <li>• Conditioning towers and water sprays</li> <li>• Flow rates and Temperatures</li> <li>• Temperatures and combustion process were not affected.</li> </ul> <p>Investigations so far have not identified a cause for the reduction in ESP performance.</p> <p>Actions to improve response to this type of issue:            Improve alarming for 4B ESP field performance issues            Improve internal work instructions for handling ESP field performance issues.            Review Shift Supervisor and Control Room Operator training of TARP procedures and correct course of action.</p>

**Other stack**  
**emission**  
**events**

**7 July 2024**

All SAPN (SA Power Network) power to the site was lost. ABC has two independent power supplies to the site. The loss of power occurred when a vehicle incident contacted a 66kV line (external to the site). The secondary power feed to the Birkenhead site was isolated for maintenance at the time of this incident, which resulted in a total loss of power to site.

Upon loss of power, all process fans and fuel inputs stopped. All PLC systems shutdown. Process dampers remained in their last position. Electrostatic precipitator fields stopped and therefore were not cleaning stack gasses. This resulted in significant emissions from both 4A and 4B stacks.

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**9 September 2024**

At 12:42pm on the 9/9/2024 a fatal error occurred in the Kiln's Programable Logic Controller (PLC), which caused a loss of process control communications to the Kiln and Calciner PLC's, resulting in stoppage of all process fans, fuel inputs, process dampers and power loss to electrostatic precipitator fields, in essence similar to a total power failure.

This resulted in significant short-term emissions from both 4A and 4 B stacks, and fugitive dust emissions from pressurisation of the kiln and calciner preheater towers, when dampers were closed manually to reduce emissions. Dust emissions from the pressurisation triggered fire alarm sensors in a switch room which resulted in call out of the MFS. The emissions were resolved in about 20 mins and did not trigger a 1-hr reporting event.

The failure of the PLC was caused by simultaneous program changes being made by Engineering and Electrical Maintenance. Corrective action planned to prevent such occurrences include the implementation of PLC online access restrictions, and to purchase and install version control software to manage these changes.