ADBRI
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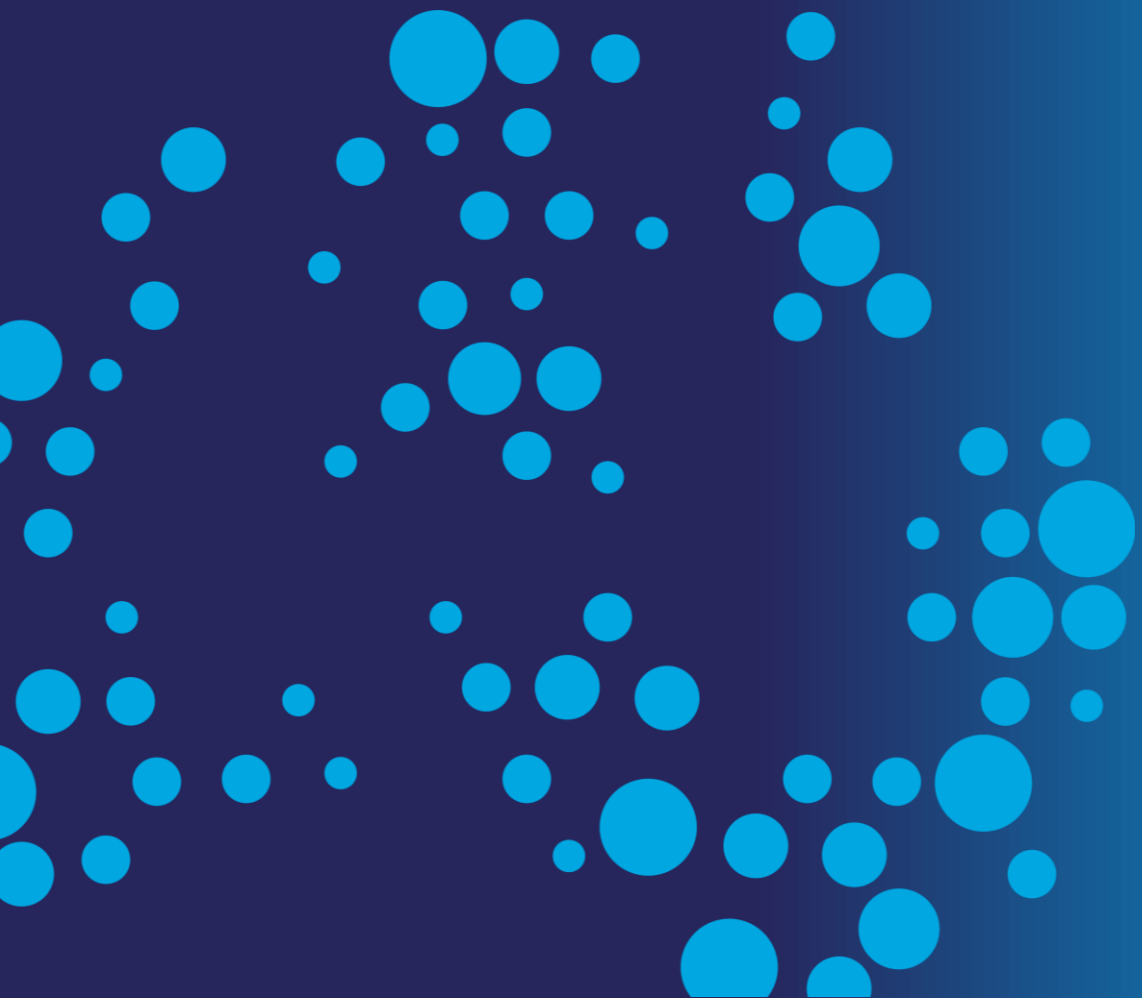
Environment Improvement Programme

Quarterly Progress Report 1st of January – 31st of March 2025

Version 1

May 2025



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Licence details

Document Number	**1126 EIP**
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Licensee	Adelaide Brighton Cement Ltd (ABC)
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Licence Issued	1 Nov 2022
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Premises Name	Birkenhead (the Site)
Version	0
Version History	

Internal Approvals

Approved by:
Peter Baker

Glossary

Term	Definition
µg/m^3	micrograms per cubic metre
µm	micrometre
°C	degrees Celsius
km	kilometre
m	metre
m/s	metres per second
m^2	square metres
m^3	cubic metres
m^3/s	cubic metres per second
dB(A)	A unit of measurement, decibels(A), of sound pressure level with frequency filtered to closely match frequency response of the human ear
Nomenclature	**Definition**
TSP	Total suspended particulates
PM_{10}	particulate matter with a diameter less than 10 micrometres
$PM_{2.5}$	particulate matter with a diameter less than 2.5 micrometres
Abbreviations	Definition
ABC	Adelaide Brighton Cement Ltd
Air EPP	Environment Protection (Air Quality) Policy 2016
Noise EPP	Environment Protection (Commercial and Industrial Noise) Policy 2023
CFD	Computational Fluid Dynamics
CKD	Clinker Kiln Dust
CLG	Community Liaison Group
CM 1, 6, 7	Cement mill 1, cement mill 6, cement mill 7
CS#, CR#, CE#	Clinker Supply, Clinker Reclaim, Clinker Export, conveying system transfer points
BAM	Beta Attenuated Method
EET	Emission Estimation Technique
EIP	Environment Improvement Programme
EP Act	Environment Protection Act 1993
EF	Emission factor
EPA	Environment Protection Authority
ESP	Electrostatic Precipitator
MM	Raw Materials Management System
NPI	National Pollutant Inventory database
RDF/AF	Refuse Derived Fuel is an engineered Alternate Fuel pioneered by Adbri in 2003. It is produced to an approved specification by a third party from industrial waste

Term	Definition
	products and used to reduce the amount of fossil fuels burnt in the cement making process. Its use also diverts this waste from landfill.
SA EPA	South Australian Environment Protection Authority
TARP	Trigger Action Response Plan

List of Figures

1 Purpose

The Environment Improvement Program (EIP) report has been developed for the purpose of informing the regulator and key stakeholders of Adelaide Brighton Cement Pty Ltd (ABC) intentions for delivering improvement to the environment and community.

This quarterly progress report provides an update on the progress and completion of EIP actions, as well as the ongoing commitment to compliance. It also involves the release of quarterly reports on the publicly accessible Adelaide Brighton community webpage.

Compliance actions relevant for this report cover work completed in Quarter 1 2025, summarised below and highlighted by the orange box below shown in Figure 1. Adbri believes the site has met all expectations of the compliance actions as required by the EIP.

Theme	EIP Projects for this Reporting Period
Communication	1, 2
Dust management – clinker and cement	4, 7*, 8, 12, 13, 16
Dust monitoring	
Amenity	

*Actioned early

###	Source	Project	Compliance Actions numbers represent actions and X denotes project or phase completion, specific dates in Section 5 green shading represents project work in preparation compliance	2024 Q4	2025 Q1	Q2	Q3	Q4	2026 Q1	Q2	Q3	Q4	2027 Q1	Q2	Q3	Q4
	COMMUNICATION															
1	**Communication**	In addition to existing process of website updates, provide further communication via email or phone alert to community about operational or environmental matters which may have an impact on the community.		1.1		1.2 X										
2	**Communication**	Provide additional information about Refuse Derived Fuel (RDF) quality controls at a dedicated CLG meeting and upload information to the website.		2.1	2.2 X											
	CLINKER SHED, DUST COLLECTORS AND HANDLING															
3	**Clinker Shed**	Develop an approved action plan to implement dust emission mitigation actions from clinker shed.		3.1 ongoing in 2025, 3.		3.3		3.4	3.5 Implementation of changes determined from 3.4 according to approved plan							
4	**Dust collectors**	Develop an approved action plan to implement dust emission mitigation actions from specified dust collectors.		4.1	4.2	4.3		4.4	4.5 Implementation of changes determined from 4.3 according to approved plan							
5		Install bag leak detection systems on specified dust collectors and develop and approve action plan to implement dust emission mitigation actions on the remaining dust collectors.				5.2		5.3	5.1 X	5.4 Implementation of changes determined from 5.3 according to approved plan						
6	**Clinker handling**	Complete upgrade to key clinker dust collector infrastructure to enable return of dust to process.							6.1 X							
7		Complete upgrade of cooler bag filter dust pumping system to transfer dust to cement mill 6.							7.1 X							
8		Complete modification to cooling sprays to minimise dust lift off from CS2 conveyor.		8.1	8.2				8.3 X							
9		Complete installation of self-closing doors on critical seal doors.		9.1				9.2 X								
10		Complete installation of dribble chute and belt cleaners for clinker handling and transfer points.					10.1		10.2 X							
11		Complete implementation of program to better seal clinker transfer galleries and cement mill 6 building.				11.1		11.2					11.3 X			
12	**Heat exchanger**	Complete repairs to heat exchanger inlet ducting.			12.1 X											
	STACKS 4A & 4B															
13	**Stack 4A:**	Complete installation of short-term improvements to stack 4A and ensure action plan to implement dust emission mitigation actions from the stack 4A is approved. Apply learnings to stack 4B where applicable.		13.1	13.2	13.3		13.4	13.5 Implementation of changes determined from 13.4 according to approved plan							
	MATERIALS HANDLING AND OTHER BUILDINGS															
14	**Dry Mix Plant (Cement)**	Complete dust collection improvements in dry mix plant.				14.1	14.2		14.3 X							
15	**Dried slag transfer tower**	Complete slag drier transfer tower dust emission improvements.				15.1			15.2 X							
16	**Materials Management System**	Reduce fugitive dust from additive materials management receival hopper.			16.1						16.2		16.3 X			
17	**Limestone Stockpile**	Complete installation of 6m high by 20 m long wind curtains on east side of limestone stockpile.				17.1		17.2 X								
	MONITORING															
18	**Monitoring - CCTV**	Complete installation of additional CCTV cameras to provide visual of key emission sources.		18.1		18.2 X										
19	**Air quality monitoring network**	Complete improvements to air particulate monitoring network to measure larger particles across community and improve small particle monitoring and reporting.		19.1		19.2, 19.3	19.4	19.5	19.6	19.7 Implementation of changes determined from 19.6 according to approved plan						
20		Complete revision of dust dashboard and update action responses, including predictive weather.		20.1		20.2				20.3 Implementation of changes determined from 19.6 according to approved plan						
	NOISE															
21	**Kiln Shell Cooling System**	Complete implementation of noise reduction options for kiln shell cooling fan.				21.1		21.2	21.3 X							
	ODOUR															
22	**Site Odour**	Develop an approved action plan to implement odour emission mitigation actions.				22.1				22.2		22.3 X	22.4 Implementation of changes determined from 22.3 according to plan			
	AMENITY															
23	**Tree planting**	Plant additional trees to provide noise, dust and amenity benefit to commuity		23.1		23.2 X										

Figure 1: Summary of intent

2 Scope

A quarterly EIP progress report detailing progress and completion of the EIP actions during the quarter is required by Licence condition U-1554.

A quarterly report includes:

- Details of steps taken to progress compliance actions
- Details of proposed next steps to be taken in the following quarter

3 Background

In order to reduce its environmental impact, Adelaide Brighton Cement Ltd, has developed an EIP that contains projects to reduce noise and fugitive particulate emissions. These projects were identified from the following inputs:

Theme	EIP Project
Communication	1, 2
Dust management – clinker and cement	3 - 14
Dust management – raw materials	15 - 17
Dust monitoring	18, 19, 20
Noise and Odour	21, 22
Amenity	23

- Environment improvement Plan version 1 (November 2024) is available on the ABC Birkenhead Community Website: Environmental improvement plan - Adelaide Brighton Community

4 EIP Compliance Actions

PROJECT:	**1** In addition to existing process of website updates, provide further communication via email or phone alert to community about operational or environmental matters which may have an impact on the community.
ACTION:	**1.1** Letter box drop asking people to register for notifications. Offer option for "general news" and / or "operational alerts" by text or email as preferred by the resident.

Compliance Action detail:

Letter box drop asking people to register for notifications. Offer option for "general news" and / or "operational alerts" by text or email as preferred by the resident.

Compliance Action Due Date:

31st December 2024

Achievement:

Thirty residents/CLG signed up for alerts for operational/environmental issues. 'Adbri uses a combination of Outlook, and a telecommunications program called SMS Central to distribute notifications to community regarding events which occur on site. SMS Central is a service which allows you to send direct, personalised messages to a list of contacts at any given time. This enables Adbri to keep people informed and up to date in a quick and convenient way. Based on preference, neighbours will either receive an email via Outlook, or an SMS text notification via SMS central (or both) as soon as possible after an event occurs, or when deemed necessary regarding on site activities.'

Proposed next steps to be taken

Action closed.

PROJECT:	**2** Provide additional information about Refuse Derived Fuel (RDF) quality controls at a dedicated CLG meeting and upload information to the website.
ACTION:	**2.2** Prepare slides and information for RDF CLG meeting in March. Upload information to website following CLG meeting

Compliance Action detail:

2.2 Use Dec CLG to confirm questions from community that need to be addressed and prepare slides and information for RDF CLG meeting in March. Upload information to website following CLG meeting

Achievement

A presentation was provided to the March CLG on Refuse Derived Fuel in cement making. It endeavoured to address all the main themes from the December CLG community feedback.

The information was then uploaded to Calciner RDF - Adelaide Brighton Community

FAQ's from Adbri Presentation at Birkenhead Community Liaison Group Meeting – 3rd March 2025

- **Question – How do we know what's emitted is safe? How do we monitor this?** +
- **Question – How and why is lime used in the RDF process?** +
- **Question – How is filtration processes utilised in RDF at Birkenhead?** +
- **Question – What's the difference between burning plastics in a domestic environment and your industrial process?** +

Compliance Action Due Date:

31/3/2025

Proposed next steps to be taken

Action closed.

PROJECT:	**4** Develop an approved action plan to implement dust emission mitigation actions from specified dust collectors
ACTION:	**4.2** Remove build up around dust collectors (e) and ensure dust collectors measured above 10mg/Nm3 are assessed by maintenance team (f).

Compliance Action detail:

Achievement:

Silo FP4 dust collector - Silo FP4 Dust Collector has had a new motor and exhaust fitted. The system has not been running and thus has not been re-tested. More testing is scheduled for May.

Raw materials Silo 1, 2, 9 dust collector - Works have included removal of excessive dust build up on all silos. Silo 2 high level calibration is complete. Silo 9 has had its DC controller card relaced. All high-level probes have been installed and calibration is needed prior to retesting of dust collectors.

Central Tower CS1/CS2 dust collector #3 – Removal of buildup around dust collectors was completed as part of the re-bagging process. An issue has been noted that the lips of the bags are too thick and thus the clips wear out, causing holes. This is being investigated. Independent performance testing on CS1/CS2 dust collector was conducted by Airlabs, following the filter media change with TSP test results of 15 mg/Nm^3. This is a marked improvement from results in the Katestone dust collectors' assessment (110mg/Nm^3).

CR2/CR3 dust collector – Removal of buildup around dust collectors was completed as part of the re-bagging process. It has been noted that the pulsator isn't working effectively. This will be addressed as part of the overall review. Independent performance testing on CR2/CR3 dust collector was conducted by Airlabs, following the filter media change with TSP test results of 14 mg/Nm^3. This is a marked improvement from results in the Katestone dust collectors' assessment (3400mg/Nm^3), which was noted as an invalid test as the sample was contaminated with dust that was dislodged from the dust collector's noise attenuator during testing.

Proposed next steps to be taken

Retesting dry mix silos if applicable in mid-May.

4.3 Complete engineering scope for development of options to reduce emissions from (a) to (d). Noting that b) is addressed by project 14.

Develop and submit a report with recommendations from the engineering scope to the EPA for assessment of the options available for improving emissions, prioritised

according to expected improvement, best available technology economically achievable principles and feasibility in a risk-based framework.

PROJECT:	7 Project 7: Upgrade cooler bag filter dust pumping system to CM6
ACTION:	7.1 Installation of upgrades in major shut

Compliance Action detail:

We have manufactured a trail T-piece to see if it will help prevent pressurized air from blowing back into the rotary valve.

The trouser leg refers, to a Y-shaped duct used in pneumatic conveying systems to split material flow, which has been refurbished and returned from the contractor. Installation work started mid-March and has been completed. The system has been handed back to production.

We have observed that pressurized air mixed with clinker dust wears down the rotary valve blades quickly. This leads to air and dust escaping through the rotary valve, which contributes to blockages and maintenance issues in the clinker dust transfer equipment (hoppers, valves, chutes) feeding the pneumatic transfer system.

Clinker dust will be pumped directly to CM6 Silo instead of being conveyed through the CS1 conveyor as it is currently.

Compliance Action Due Date:

31/3/2026

Proposed next steps to be taken

Monitor effectiveness.

PROJECT:	**8** Complete modifications to cooling sprays to minimise dust lift off from CS2 conveyor.
ACTION:	**8.1** Complete engineering scope related to modification to cooling sprays **8.2** If minor modification, install during major shutdown

Compliance Action detail:

8.2 If minor modification, install during major shutdown

Achievement:

1. Adjust water activation temperatures to significantly reduce runtime (target <20%).
   Completed as far as practical while still managing operational needs. Approx 50% reduction.

2. Re-instate CS2 clinker material rake as a trial to migrate dust below surface and avoiding contact with water/steam
   ADBRI will reintroduce the CS2 clinker material rake on the CS2 conveyor to move and bury loose dust beneath the clinker surface. Keeping the dust away from water or steam may reduce clumping, steam plumes, and airborne particles. The goal of this trial is to improve dust emissions control and enhance overall hot clinker handling.

3. Investigate water runout of system. If creating an impact, modify pipework design to reduce/eliminate.
   Modify PLC logic such that when CS2 sprays are inactive (valve set point position of 0% is set), close the shut-off valve to the sprays to give a positive shut-off of water.
   This is to prevent the sprays constantly leaking.

Compliance Action Due Date:

31st March 2025

Proposed next steps to be taken

The following tasks can be competed without a shutdown. Item 2 cans be addressed during a kiln stop, while item 3 can be implemented by the automation team.

PROJECT:	**12** Project 12: Complete repairs to heat exchanger inlet ducting
ACTION:	**12.1** Install improvement solution

Compliance Action detail:

Install improvements solutions to Redecam RF air-to air heat exchanger inlet ducting.

Compliance Action Due Date:

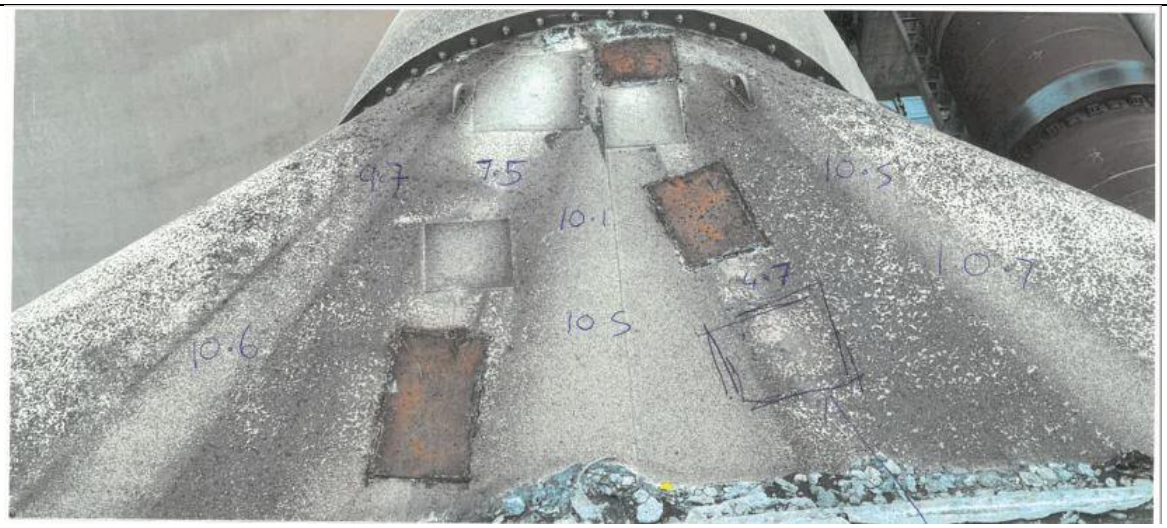
Cement production involves high-temperature processes, especially in the kiln where raw materials are heated to around 1,450°C.

Within kiln 4, the raw materials are heated, and the exhaust gases generated during the heating process are hot. The RF heat exchanger decreases the temperature of the system by increased stability of the pressure at the clinker cooler. Within the Birkenhead system the heat exchanger captures some of this exhaust heat, decreases the temperature before transferring it back to the 4A stack via the cooler bag filter and fans.

The completed work involved replacing both expansion joints on the inlet duct to the heat exchanger, patching the duct in the connection section to the support, and repairing and patching the top of the inlet duct before the expansion joint. Additionally, sleeves were inserted onto the heat exchanger tubes.

Insert tubes for heat exchanger tubes

Heat exchanger inlet expansion joint replacement



Cooler heat exchanger inlet thickness test and repair

Compliance Action Due Date:

31/03/2025

Proposed next steps to be taken

Complete.

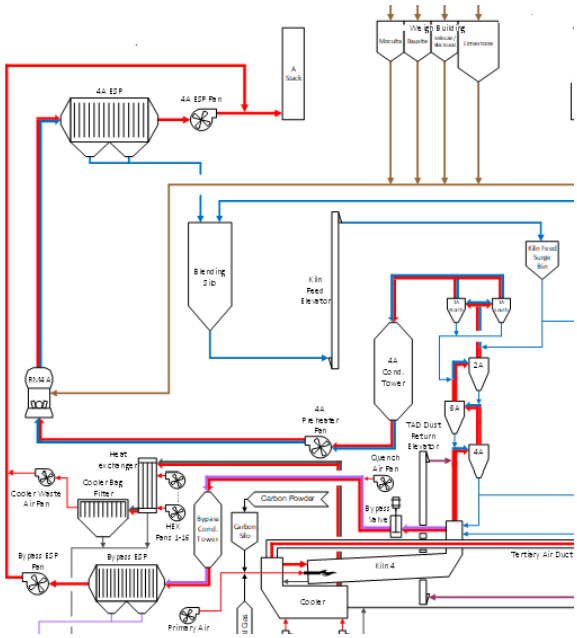
PROJECT:	**13** Complete installation of short-term improvements to stack 4A and ensure action plan to implement dust emission mitigation actions from the stack 4A is approved. Apply learnings to stack 4B where applicable.
ACTION:	**13.1** – Complete internal assessment including stack tests and confirm preferred short-term improvements. • Stack test of different process stream inputs into 4A stack (completed) • Review data from stack 4A and 4B to understand opportunities for improvement (completed by external consultant as part of options assessment) • New rappers for 4A Electrostatic Precipitator (ESP) (devices to clean dust off the ESP fields) • Ensure inspections for studies in 13.3 are scoped and planned with expert oversight

Compliance Action detail:

13.2 Install short term improvements over 2025.

- Install new rappers for 4A ESP – complete in major shutdown
- Inspections to support long term studies - complete in the major shutdown

Installation of new rappers for 4A



BHK4 Process Flows

Kiln is an upgraded preheater kiln with a separate line calciner. Both towers have own ESPs

4A stack is feed from 4A process stream, cooler bag filter and bypass ESP

How the Electrostatic Precipitators (ESPs) works:

1. ESPs capture fine particulate matter (like dust) from industrial exhaust gases using electrostatic forces.

2. Over time, these particles accumulate on the collecting plates and discharge electrodes, reducing efficiency.

3. Currently the rapper system involves compressed air for vibration (Pneumatic). This will be replaced in field two with Electromagnetic (Electric) Rappers which use an electric coil to generate a magnetic force that strikes the plates, dislodging the dust, which then falls into hoppers for removal. The system is programmed to operate at intervals to keep the ESP clean.

Field #2 within the ESP was selected (Field 2 of 6 in 4A ESP)

- Mechanical installation of this field is expected to take 1 day.
- Electrical infrastructure has been designed to enable 1x complete EP field to be converted without an outage.
- Mechanical assemblies will take place on-site. The PLC programming and cable installation has been completed.
- Electrical completion 2-3 weeks from receival of parts (allowing for construction of switchboards, installation, and commissioning).
- Installation to be completed by early April.
- Duration of trial is expected to be between 3-6 months.

13.2 Initiate in 2024 and complete a study to assess alternate technology options and other equipment modifications for improving stack particulate emissions and assess for economically viable options.

Cooler Bag Filter

- Engage technology services for Redecam (manufacturer) bag filter installations
- Consult Redecam for improvement to bag installation and sealing methods to reduce bag leakage.
- Bring Redecam installation engineer for Q1 2025 Bag Change

- Develop improvement scope to resolve leakage issues

Redecam (manufacturer) bag filter have been engaged to investigate clinker cooler over pressure control to minimise potential disturbance to cooler bag filter sock seating/sealing arrangement and potential for particulate leakage. Feedback from Redecam (cooler bag filter design /manufacturer), has indicated that pressure variations may disturb cooler filter bag seating arrangements potentially resulting in small amounts of particulate leakage into waste air stream to 4A stack

Discussions with Redecam (cooler bag filter design /manufacturer) have been held. Redecam requested the following data

- Actualized Operation data
- Two bags damaged to analyse with our team
- A new bag to compare with damaged ones
- Pictures of last bags change and tube sheet
- Pictures of central hoppers inside status (dust deposit or new deflectors as we understood have been installed in last years)
- the cooler waste air fan efficiency curves,

All of which has been provided and ADBRI are waiting for further advice.

One of the focus areas is to understand why we have sealing issues in chamber 3 and 4 (central ones).

During the January 2025 shutdown, improvements were made to the condition of the tube plate and enhancements were implemented in the bag installation process to reduce sealing issues. Although some initial sealing faults were identified with the new bags, all were resolved within three weeks. Once the system settled, emission levels across all bag zones stabilized at just over 3 to 4 mg/Nm³. No further sealing issues have been reported since February 2025.

4A ESP and Bypass

- Review performance improvement opportunities with global experts and precipitator specialists to review and consider but not limited to; rapping, temperatures, flow distribution, interruptions, voltages and control.
- Prepare recommendations for improvements
- Conduct computational fluid dynamics (CFD) if recommended
- Develop improvement scopes from investigations

Develop and submit a report with recommendations from the studies to the EPA for assessment of the options available for improving emissions, prioritised according to

expected improvement, best available technology economically achievable principles and feasibility in a risk-based framework. Assess application to stack 4B where relevant, explaining relevance and decisions in the report.

4A ESP and Bypass

1. Changes to operating philosophy of Bypass, 4A & 4B CT sprays during plant upsets (bypass shutdown/start-up, raw mill stop/start). Automated damper shutdown sequences.

1.1 Bypass CT spray changes

Currently, the bypass CT sprays turn off whenever the CT outlet temperature drops below 110°C to avoid water condensing at the bottom of the tower. During bypass starts and stops, this causes the spray system to cycle on and off, leading to instability in ESP performance.

Proposed Changes:

- Add a **bypass start/stop CT sprays override** button for operators.
    - When pressed, it keeps the CT sprays at a minimum flow for 60 seconds, regardless of the CT outlet temperature.
    - This gives operators enough time to adjust the bypass fans while the sprays remain active.
- Once the bypass CT outlet temperature rises above the operating set point, the sprays return to automatic temperature control.
- The override is interlocked with the bypass being set to “dump.”

2.1 4A & 4B CT spray changes

When the kiln or calciner trips, the CT sprays currently shut off to prevent flooding. The proposed trial changes are:

a) Enable the CT sprays on 4A and 4B at the “mill off” temperature set point for a fixed period (e.g., 3 minutes) when the kiln or calciner trips. This gives operators time to adjust dampers and control airflow.

b) Trigger an alarm to notify operators that the sprays are running and will shut off after 3 minutes. A countdown timer can be displayed on the SCADA screen.

c) Disable the sprays after 3 minutes or when the process dampers are reduced below a minimum open position.

3.1 Automated damper shutdown sequences

When the plant trips, operators currently must manually adjust process dampers to minimize emissions, which can delay response times. The proposed improvement is:

- **Automatic Damper Adjustment:** If the 4A or 4B ESP fields trip while the kiln or calciner is running, automatically move the preheater and ESP dampers to a predefined “safe” position.
- **Maintain Negative Pressure:** Reduce the preheater damper first in larger steps, and then reduce the ESP damper in smaller increments, as long as the preheater fan exit draft stays below -0.85 kPa.
- **Stop Condition:** If the draft exceeds -0.85 kPa, stop the sequence and leave the ESP damper in its current position.
- **Limitation:** This logic will not help during total plant power failures.

Conduct Computational Fluid Dynamics (CFD)

ADBRI contractors are currently creating a model of ductwork and precipitator inlet for the purposes of running a CFD simulation to discover an improved arrangement of flow baffles to improve flow distribution into the precipitator and to reduce wear on the baffles.

We will use a wear model available in the CFD code that allows us to estimate relative wear of the baffles and ductwork so as to guide the new baffle design process. These models have proved effective.

The first of the models would use the existing arrangement to establish a base line. Then the contractor will run up to 3 further models with alternative baffle arrangements using ANSYS CFX software which is one of the best tools for industrial process CFD.

Inclusions:
- 3 x CFD Runs to determine optimal baffles/vane positions for Inlet Ducting into 4A ESP
- CFD will analyse the Gas Streams to find and reduce/eliminate dead spots where material could accumulate
- 3D Model of Inlet Duct and Inlet Evase from Kiln to ESP
- Report detailing findings and recommendations
- Design of new Vanes/Baffles for Ducting and Inlet Evase

Compliance Action Due Date:

31/03/2025

Achievement:

Proposed next steps to be taken

Electromagnetic (Electric) Rappers field #2 – expect completion in early April.

CFD modelling and output expected by the end of June.

Redecam report due end of April.

Changes to operating philosophy of Bypass, 4A & 4B CT sprays due by May.

PROJECT:	**Project 16:** Reduce fugitive dust from additive materials management receival hopper
ACTION:	**16.1** Complete repairs to existing structure recently damaged by vehicle collision

Achievement:

Compliance Action detail:

Repairs to existing structure recently damaged by vehicle collision have been completed. However, it has subsequently been re-damaged. Replacing the existing door has a 16-week lead time. The door has been ordered.

Compliance Action Due Date:

31/03/2025

Proposed next steps to be taken

16.2 Develop scope to reduce emissions from the materials Management receival hopper

5 Public Access

A copy of the current version of this EIP, as approved by the EPA, will be made available on the Adelaide Brighton Community website within 14 days of receiving approval.

6 References

- *Katestone Environmental Response letter, October 2024, re EPA's approval of the "Assessment of Options Report Birkenhead site – September 2024"*
- *Adelaide Brighton Cement Limited Report, September 2024, 'Assessment of Options Report'*
- *Katestone Environmental Report, September 2024 "Revised Abatement Options Analysis"*
- *Katestone Environmental Report, September 2024 'Dust Collector Report"*
- *Adelaide Brighton Cement Limited Report, April 2024, 'Assessment of Options Report'*
- *Katestone Environmental Report, April 2024 "Abatement Options Assessment Report"*
- *Katestone Environmental Report 2023 "Birkenhead Cement Plant Air Emissions inventory and Dispersion Modelling"*
- *Vipac Engineers and Scientists Report, July 2023 "Site Noise Mitigation assessment"*
- *Adelaide Brighton Cement Limited Report, July 2023, 'Assessment of Noise Mitigations Options Report'*
- *Resonate Report, May 2024 "Noise model Update and Abatement Options Assessment"*