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Ground Level Particulate Monitoring and Reporting Plan

Adelaide Brighton Cement Limited

Licence number: 1126

**Premises Address: Victoria & Elder Roads, Peterhead
(Birkenhead Site)**

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Glossary

Term	Definition
$\mu\text{g}/\text{m}^3$	micrograms per cubic metre
μm	micrometre
$^{\circ}\text{C}$	degrees Celsius
m	metre
m^3	cubic metres
m^3/s	cubic metres per second
Nomenclature	Definition
PM10	Particulate matter with a diameter less than 10 micrometres
PM2.5	Particulate matter with a diameter less than 2.5 micrometres
24 hour period	Calendar day
24 hour real time	Previous 24 hour data available at start of next 24 hour period
TSP	Total Suspended Particulates
Abbreviations	Definition
ABC	Adelaide Brighton Cement
Air EPP	South Australian Environment Protection (Air Quality) Policy 2016
DMP	ABC's Dust Management Plan
GLPMRP	ABC's Ground Level Particulate Monitoring and Reporting Plan
EPA	Environment Protection Authority
TARP	Trigger Action Response Plan

Ground Level Particulate Monitoring and Reporting Plan

1.0 Purpose

To provide the framework for the measurement, monitoring and reporting of ground level particulate concentrations (TSP, PM₁₀ and PM_{2.5}), from a network of monitors located within and external to the site premises, to assist with managing and reducing fugitive particulate emissions from activities on the site.

2.0 Scope

The plan addresses

- Objectives of the monitoring
- Monitoring of particulate emissions at locations within and outside the site boundary
- Sampling and testing procedures
- Calibration and maintenance of particulate monitors
- Reporting methodology
- Public access to monitoring of particulate emissions measured by offsite monitors

3.0 Introduction

ABC has a network of onsite and offsite, ground level particulate monitors that continuously measure particulate size fractions (PM₁₀, PM_{2.5} and TSP), wind speed and direction.

These monitors provide data that assist with developing strategies to reduce fugitive particulate emissions from activities on the site.

4.0 Monitoring plan objectives

The objectives of this plan are to:

- Measure, monitor and report ground level particulate concentrations as TSP, PM₁₀ and PM_{2.5} at four locations within the site boundary (Block 9, Northern Grounds, Eastern Grounds and Southern Grounds) and at two locations outside the site boundary (Community Park and Gunn Street).
- Provide public access to monitoring of PM₁₀ and PM_{2.5} data from monitoring stations located outside the site boundary at Community Park and Gunn Street.
- Provide public access, within 48 hours, to an explanation for particulate measurements from monitoring stations located outside the site boundary at the Community Park and Gunn Street, when the measured particulate concentrations exceed the following criteria;

- PM₁₀ concentration of 50 micrograms per cubic metre over a 24-hour averaging period
- PM_{2.5} concentration of 25 micrograms per cubic metre over a 24-hour averaging period
- Provide data input to the ABC Dust Management Plan to facilitate ongoing implementation of dust control measures to minimise offsite dust from the Facility.

5.0 Licence requirements and applicable legislation

South Australian Environment Protection Act 1993

South Australian Environment Protection Regulations 2009

South Australian Environment Protection (Air Quality) Policy 2016 (Air EPP)

The air quality criteria that are relevant to dust emissions from the Facility are reproduced in Table 1.

Table 1 Relevant criteria from the Air EPP Schedule 2 (unless noted otherwise)

Pollutant	Classification	Averaging time	Maximum concentration (µg/m³)
Particles as PM ₁₀	Toxicity	24 hours	50
Particles as PM _{2.5}	Toxicity	24 hours	25
		12 months	8

Adelaide Brighton Cement's EPA Licence No1126, 1/11/2017, condition 4.2

4.2 Ground level particulate monitoring and reporting plan (U-729)

The Licensee must:

- 4.2.1 develop and submit to the satisfaction of the EPA by the date listed below a Ground Level Particulate Monitoring and Reporting Plan;
- 4.2.2 ensure that the Ground Level Particulate Monitoring and Reporting Plan includes, but is not limited to:
 - a) measurement and monitoring of ground level particulate concentrations (as TSP, PM₁₀ and PM_{2.5}) at various locations within the Premises and outside the Premises;
 - b) a methodology and framework for the provision of public access to real-time monitoring data of PM₁₀ and PM_{2.5} from monitoring stations located outside the Premises;
 - c) a methodology for providing public access to an explanation within 48 hours of why the following particulate limits are exceeded at monitoring locations outside the Premises;
 - i a PM₁₀ concentration of 50 micrograms per cubic metre over a 24 hour averaging period; and
 - ii a PM_{2.5} concentration of 25 micrograms per cubic metre over a 24 hour averaging period;
 - d) a methodology and framework for reporting to the EPA, including submission dates of quarterly and annual reports;

- e) *a methodology and framework for providing public access to the Ground Level Particulate Monitoring and Reporting Plan (or any revised plan approved by the EPA) and to quarterly and annual reporting;*
- 4.2.3 *implement the Ground Level Particulate Monitoring and Reporting Plan approved in writing by the EPA (or any revised plan approved in writing by the EPA).*

Adelaide Brighton Cement's EPA Licence No1126, 1/11/2017, condition 1.3

1.3 Ground level particulate notification (U-765)

The Licensee must:

- 1.3.1 *provide notification to the EPA, within 48 hours, when the following particulate limits are exceeded at any of its monitoring locations outside the Premises:*
- a) *a PM₁₀ concentration of 50 micrograms per cubic metre over a 24 hour averaging period; or*
 - b) *a PM_{2.5} concentration of 25 micrograms per cubic metre over a 24 hour averaging period;*
- 1.3.2 *ensure any notification provided under sub paragraph 1 of this condition includes but is not limited to:*
- a) *the date;*
 - b) *the cause;*
 - c) *the measured particulate concentration over the 24 hour averaging period; and*
 - d) *remedial actions taken to reduce particulate emissions from the Premises.*

6.0 Responsibilities

The following general responsibilities apply in relation to this management plan

Plant Maintenance Manager (Electrical)	Responsibility and authority to ensure <ul style="list-style-type: none"> • Maintenance of ambient monitoring equipment • Calibration of ambient monitoring equipment • Maintenance of calibration and service records • Maintenance staff have relevant skills/training to maintain monitoring equipment
Plant Manager	Responsible for: <ul style="list-style-type: none"> • Implementation of this Ground Level Particulate Monitoring and Reporting plan
Compliance Manager	Responsible for: <ul style="list-style-type: none"> • Annual, quarterly and exceedance reporting requirements of this plan • Maintenance of website
Operations Manager	<ul style="list-style-type: none"> • Responsible for ensuring compliance with this Ground Level Particulate Monitoring and Reporting Plan • Ensuring employees are aware of the site EPA licence conditions, and reporting requirements relating to this plan • Provision of resources to reasonably and practically implement the intent of this plan

7.0 Background information

7.1 Activities conducted on site

- Cement Works
- Activities producing listed waste
- Bulk shipping facility
- Crushing, grinding or milling; rock, ores or minerals
- Fuel burning

7.2 Sources of particulate dust on the Birkenhead site

Fugitive particulate dust is generated on site by the following activities

- Exposed and unsealed areas
- External material stockpiles
- Vehicle movements
- Material conveyor and transfer systems
- Dust collector units associated with processing and storage facilities

7.3 Details of the receiving environment and sampling locations

- Plant is located adjacent to the Port River, Northern side of the Birkenhead Bridge
- Plant is adjacent to a residential area
- Proximity of sensitive receptors to the site is shown in figure 1

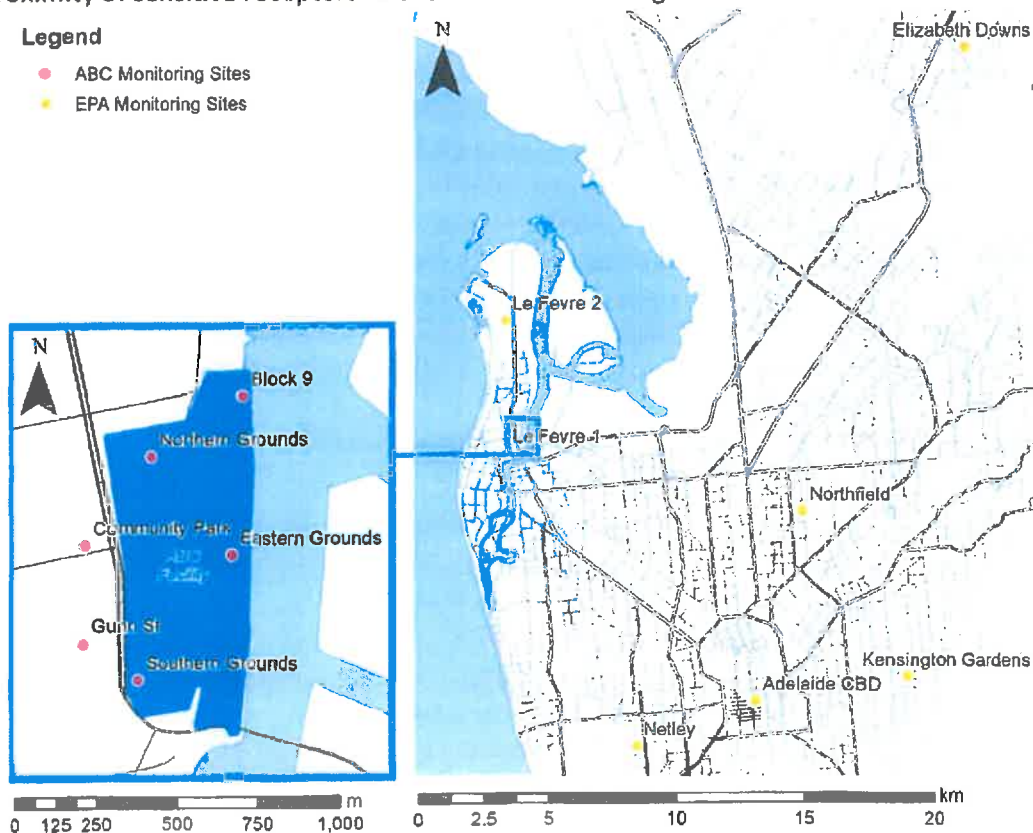


Figure 1:

- Sampling locations are indicated by colour coded points on the aerial photograph below



8.0 Sampling and testing procedures

Particulate sampling details are as follows;

- Six DustTrak DRX Aerosol Monitors (model 8533), which continuously measure $PM_{2.5}$, PM_{10} and TSP.
- Off-site monitors are located at the Community Park and Gunn St.
- On site monitors are located on the Northern, Southern and Eastern Grounds and Block 9.
- Wind speed and direction at each particulate monitor is measured continuously by a Vaisala Windcap Ultrasonic Wind Sensor WMT52.
- To provide continuity of monitoring during periods of calibration or outages for maintenance, a spare calibrated DustTrak DRX Aerosol Monitor (model 8533) is held.
- Current data capture relies on transfer of data by WiFi communication links. An upgrade to GSM modem and /or ethernet connectivity will improve reliability of data transfer to meet 90% availability of data. This upgrade is expected to be completed by 1 September 2018.

8.1 Maintenance and calibration of particulate monitors

Calibration

- Particulate monitors are calibrated on an annual basis, by the supplier who are NATA accredited for the calibration. Calibration certificates are issued confirming the instrument accuracy against the relevant reference standards.

Service

- A yearly service in line with manufacturer's recommendations is performed by the supplier on an annual basis at the time of calibration.
- Routine maintenance and inspection checks are undertaken on a three monthly basis.

Maintenance and calibration records are kept onsite.

9.0 Reporting methodology

To meet its reporting requirements, ABC will develop and maintain

- A cloud based data collection and storage system
- A website for display of offsite monitoring data
- Particulate exceedance reporting for off-site monitors
- Reporting of monitoring data

9.1 Data collection and storage system

The data collection and storage system (Data System) will consist of the following elements:

- A cloud based FTP server for receiving monitoring data from ABC's monitoring network
- Automated validation of all data, with alerts generated on missing or erroneous data
- Additional data streams such as EPA monitoring and meteorological forecasts
- Database for storage of all data
- Automated backup of all data.
- Automated alerts for loss of data availability

9.2 Web site

A website will be developed to provide public access to real time 24-hour average concentrations of PM₁₀ and PM_{2.5} measured at the two ABC offsite monitors (Community Park and Gunn Street).

The website will have the following elements updated in real time:

- A time series graph showing the most recent week of 24-hour average data with the air quality standard clearly marked for the two ABC offsite monitors and the EPA Le Fevre 1 monitor
- Map of monitoring locations
- Summary of meteorological conditions in the form of a wind rose
- Estimate of the contribution of different wind directions to the ambient concentration in the form of a dust rose
- Incident report section, for providing public access to an explanation of an exceedance
- Information page that includes instructions on how to read a wind rose, how to read a dust rose, definitions of PM₁₀ and PM_{2.5} and other dust metrics.

The web site to be developed and implemented by a third party will be completed by the 15 September 2018.

9.3 Exceedance reporting

An automatic reporting system for particulate exceedances at off site monitors (Community Park and Gunn Street) where particulate levels exceed the following levels;

PM₁₀ 50 micrograms per cubic metre (24 hour average)

PM_{2.5} 25 micrograms per cubic metre (24 hour average)

The report will include the following elements:

- Date
- Measured Particulate concentration over the 24 hr period
- Wind roses
- Dust roses
- Remedial actions taken to reduce particulate emissions from the site
- Explanation/interpretation of the monitoring data exceedance

- A public report will be published on the website within 48 hours

9.4 Quarterly and annual reporting to the EPA

All reports will clearly identify the EPA licence number, name and address where the licence activity is conducted, name and contact details of the person submitting the report.

9.4.1 Quarterly reports

Quarterly reports to include the following:

- Monitoring data for each monitor (on site and off site) as follows
 - Monthly wind rose showing the distribution of wind directions
 - Monthly dust rose showing the distribution of PM₁₀ concentration
 - Monthly dust rose showing the distribution of PM_{2.5} concentration
- Particulate monitoring data for each ABC monitor (on site and off site) including EPA monitor (LeFevre 1) for comparison as follows;
 - Monthly time series graph of 24-hour average PM₁₀ concentration reported against the Air EPP for PM₁₀ of 50 micrograms per cubic metre (24 hour average).
 - Monthly time series graph of 24-hour average PM_{2.5} concentration reported against the Air EPP for PM_{2.5} of 25 micrograms per cubic metre (24 hour average).

Quarterly reports will be submitted to the EPA, within 30 days of the end of the calendar quarter; i.e. reports due end of January, May, August, November.

9.4.2 Annual report

Annual report to include the following:

- Monitoring data for each monitor (on site and off site) including EPA monitor (LeFevre 1) for comparison as follows
 - Yearly time series graph of 24-hour average PM₁₀ concentrations reported against the AirEPP for PM₁₀ of 50 micrograms per cubic metre (24 hour average).
 - Yearly time series graph of 24-hour average PM_{2.5} concentrations reported against the Air EPP for PM_{2.5} of 25 micrograms per cubic metre (24 hour average).

Annual reports will be submitted to the EPA by 31 January each year.

9.4.3 Public access to reports and Ground Level Particulate Monitoring and Reporting Plan

- Following acceptance of the quarterly and annual reports by the EPA, they will be made available on the ABC Community Web Site.
- A copy of the current version of this Plan, as approved by the EPA, will be made available on the ABC Community Web Site.

10.0 Plan review

This monitoring and reporting plan provides data input into the ABC Dust Management Plan (DMP) to facilitate the ongoing implementation of dust control measures, development of trigger action response plans and strategies to reduce fugitive particulate emissions from activities on the site. The DMP review includes:

- a review of all trigger values
- a review of the effectiveness of all action and response strategies
- a trend analysis of data collected

- a review and analysis of community complaints with the exceedance of trigger values and 24 hour exceedance of PM₁₀ and PM_{2.5} Air (EPP) criteria
- opportunities for improvement in dust management

At the end of each year, this plan will be reviewed in conjunction with the Dust Management Plan and will include a review of:

- monitoring data
- data availability
- equipment reliability

If amendments to this plan are required, a revised plan is to be provided to the EPA for review and approval before implementation.