Port Melbourne Slag Grinding Mill
Development Licence Application
22 December 2021

REV	BY	DATE	REVISION	Project Engineer	Engineering Manager	Group Projects Manager
A	WJP	15/11/21	First Draft		WJP	
B	AL	22/12/21	Second Draft (EPA Edits)		WJP	
C	WJP	23/12/21	Review – minor edits		WJP	
DOCUMENT OWNER:			Wayne Pecar			

Development Licence Application

Supporting Information

GLOSSARY OF TERMS, ABBREVIATIONS AND UNITS

AISC	Australian Institute of Steel Construction
BDP	Best Demonstrated Practice
BOD	Biological Oxygen Demand
CCTV	Closed Circuit Television
CA	Cement Australia
DL	Development Licence
EAS	Environmental Assessment Statement
EPA	Environmental Protection Authority
FEL	Front End Loader
GA	General Arrangement
GBFS	Granulated Blast Furnace Slag
GGBFS	Ground Granulated Blast Furnace Slag
GVM	Gross Vehicle Mass
HGG	Hot Gas Generator
kWh/t	Kilowatt Hour per tonne
ktpa	Kilotonne per annum
Mtpa	million tonnes per annum
NAASRA	National Association of Australia State Road Authorities
OEE	Overall Equipment Effectiveness
PCS	Process Control System
PFD	Process Flow Diagram
PKM	Port Kembla Milling
PLC	Programmable Logic Controller
P&ID	Process and Instrumentation Diagram
SCADA	Supervisory Control and Data Acquisition
tph	tonnes per hour
URS	User Requirement Specification
VSD	Variable speed drive
VRM	Vertical Roller Mill

1 APPLICANT DETAILS

Applicant Type	Registered Company
Primary Applicant	Cement Australia Holdings Pty Ltd
ABN	99001085561
ACN	001085561
Billing email address	accounts.payable@cemaust.com.au
Registered Office Address	
Street	18 Station Avenue
City	Darra
State	Queensland
Postcode	4076
Country	Australia
Mailing Address	
Street	PO Box 802
City	Mt Ommaney
State	Queensland
Postcode	4074
Country	Australia
Application Details	
Status	Draft
Application Type	New
Permission Type	Development Licence
Estimated Project Cost	[redacted]

2 KEY PERSONNEL

CEO (or equivalent) Details	
First Name	Rob
Last Name	Davies
Email	Rob.Davies@cemaust.com.au
Contact Number	07 3335 3095

Signatory Details	
First Name	Rob
Last Name	Davies
Email	Rob.Davies@cemaust.com.au
Contact Number	07 3335 3095

Key Contact Person Details / Primary Applicant	
First Name	Wayne
Last Name	Pecar
Email	Wayne.Pecar@cemaust.com.au
Contact Number	0428595003

3 SUITABILITY TO HOLD A PERMISSION

Prohibited Person	Refer (**Appendix A**)
Fit and Proper Person	Refer (**Appendix B**)
Credit Score	Refer (**Appendix C**)

4 PRESCRIBED DEVELOPMENT

Activity Category	H: Non-metallic minerals
Scheduled Category	H01 (Cement)
Description of Activity	
Cement Australia proposes to build and operate a Granulated Blast Furnace Slag (GBFS) grinding facility at 465 Lorimer Street, Port Melbourne, Victoria, Australia. The plant will be designed to produce up to 400ktpa of Ground Granulated Blast Furnace Slag (GGBFS). The facility will consist of: • Wharf facilities to receive Granulated Blast Furnace Slag (GBFS) delivered to hoppers by ship grabs. (Handy Size class ships approximately 33,000 DWT) • A 37,000 tonne GBFS Storage Shed complete with automated materials handling equipment • Reclaim system for the GBFS with associated mill feed infrastructure • A Vertical Roller Mill for grinding GBFS to the required quantity and quality • A finished product storage facility suitable to store and dispatch GGBFS • Electrical Infrastructure and Substations • Plant Rooms • Office and Amenities, and • Truck and Vehicle Parking	
Research, Development or Demonstration Activity	The proposed activity is not a research, development or demonstration activity associated with a Pilot project.

5 SITE DESCRIPTION

5.1 Activity Location

The Port Melbourne Slag Grinding Facility activity is at a fixed location, 465 Lorimer St Port Melbourne (32/33/34 South Wharf) as shown in the below **Figure 5.1**.

Figure 5.1 Site Location

The location has several important features:

- Proximity of the site to deep water berthing facilities to enable the import of GBFS
- Cement Australia is the holder of an existing lease on 33 South Wharf (a portion of the new combined lease 32,33 & 34 South Wharf)
- Cement Australia had previously used the site to import Flyash from Queensland
- Cement Australia is currently operating a blending and dispatching terminal from the site
- The site's zoning contemplates as-of-right industrial use and it is noted that an adjacent lease area has previously been used as a slag grinding facility
- The site has good access to road infrastructure; and
- The site is well separated from sensitive land uses.

6 ZONING

6.1 Port of Melbourne Planning Scheme

The below **Figure 6.1** shows the location of the site within the Port Zone (PZ) under the Port of Melbourne Planning Scheme 2021. Immediate neighboring properties are in an Industrial 1 Zone (IN1Z). More remote properties are located within the Commercial 2 Zone (C2Z).

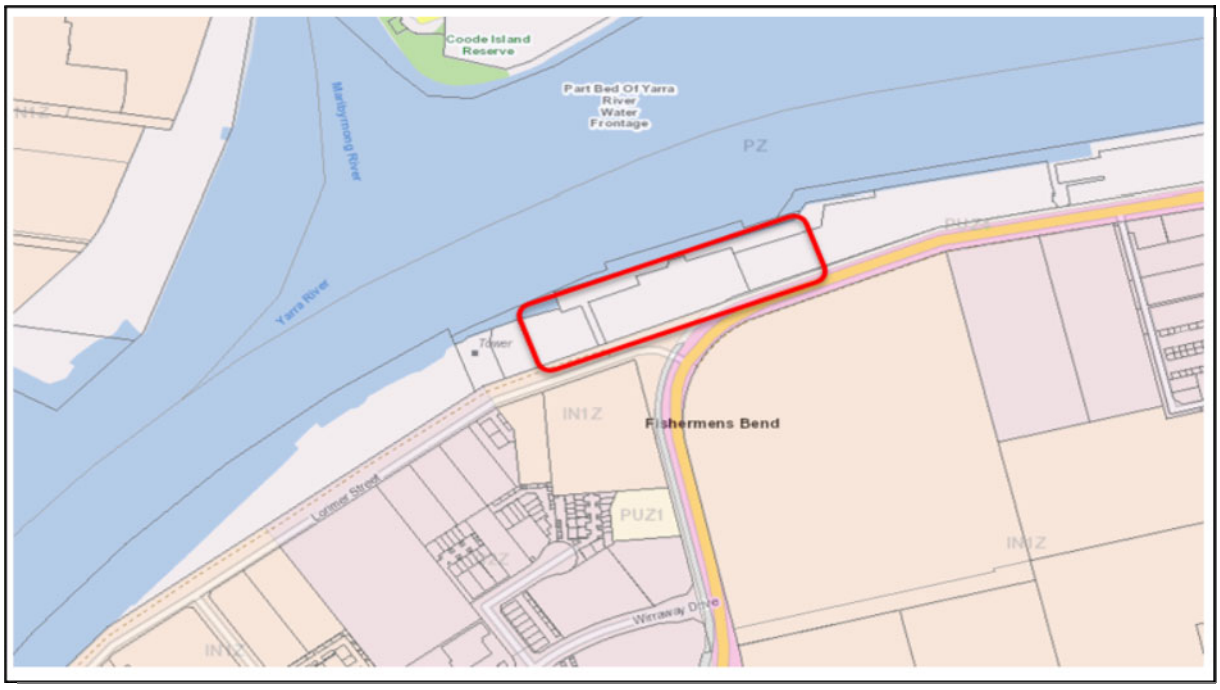

Figure 6.1 Cement Australia Lease within Port Zone (PZ)

6.2 Property Lease Conditions

The proposed property is made up on three lease parcels refer to **Figure 6.2**:

- Lease 1 (Part 34 South Wharf) is a newly acquired Lease comprising vacant land. This Lease abuts the “Port Education Centre”, which is a ‘Place of assembly’ authorised by the attached Planning Permit (refer **Appendix D**). Also refer Stuart Morris QC advice (**Appendix E),** DELWP confirmation of QC advice **(Appendix F)** and letter from the Port of Melbourne regarding its use (**Appendix G**).
- Lease 2 (33 South Wharf) is an existing Lease of Cement Australia’s which dates back to March 1994 and has been used for the import (by ship), storage and dispatch of Flyash, storage and dispatch of various different cement types and truck parking.
- Lease 3 (Part 32 South Wharf) is a newly acquired Lease which was formerly part of Steel Cement’s Slag Grinding Facility. In more recent times, this parcel of land was used by Hytec for batching and dispatch of concrete.

Figure 6.2 Proposed Project Area

6.3 Neighboring Industrial/Commercial Users

The following **Table 6.1** summarizes the immediate Industrial and Commercial neighbors to the proposed site

Table 6.1 Industrial & Commercial Users

Direction	Land Use of Activity
Current Site	Cement Australia • Receival, Storage and Dispatch of Cementitious Products • Truck Parking
North	Port of Melbourne • Container Terminal • Coode Island Petroleum Storage
East	Hytec Concrete • Concrete Batching Facility
South	DST Group – Department of Defense • Industrial Estate
West	Port of Melbourne • Port Education Centre – Place of Assembly • Victorian Channel Authority Control Tower • Independent Cement & Lime / Steel Cement • GBFS Slag Grinding Facility

6.4 Neighboring Sensitive Receptors

The following **Table 6.2** summarizes the nearest identified Sensitive Receptors to the proposed site.

Table 6.2 Nearby Sensitive Receptors

Sensitive Receptor	Information
Residential	• 232 Williamstown Road, Port Melbourne Single storey dwelling approximately 1,650m south of the site • 282 Williamstown Road, Port Melbourne Single storey dwelling 1,700m south-east of the site • 10 Francis Street, Yarraville Single storey dwelling 1,000m west of the site • 6 Frederick Street, Yarraville Single storey dwelling 1,100m north-west of the site • 81 South Wharf Drive, Docklands Multi storey residential development approximately 2,000m east of the site
Commercial	• 343-383 Lorimer Street, Port Melbourne Port of Melbourne "Education" Centre – Place of Assembly, west of site boundary • 506 Lorimer Street, Port Melbourne Defence Science and Technology 30m south of site boundary • 344 Lorimer Street Port Melbourne Commercial Industrial Estate, 50m south of site boundary
Water Courses	• Yarra River Site is in the Port Zone and shares a boundary adjacent the Yarra River • Storm Water will be discharged into the river

7 BACKGROUND ENVIRONMENTAL CONDITION

Senversa Pty Ltd was engaged by Port of Melbourne Operations Pty Ltd (PoM) to undertake a Baseline Due Diligence Environmental Site Assessment for Part 32, 33 and Part 34 South Wharf, Lorimer Street, Port Melbourne (the site). Refer to **Appendix H.**

At the time of the assessment, Part of 32 and 33 South Wharf were being used for the bulk storage and transport of cement products. Part 34 appeared to be vacant and unused, except for a small portion in the east serving as wharf access and car parking. The site is largely sealed except for a small, grassed area of Part 34.

The objective of the works was to document the baseline conditions of soil and groundwater at the site prior to commencement of a new lease.

Soil investigation works undertaken across the site identified fill soils up to 2.0 m thick, underlain by natural Port Melbourne Sand. The shallow fill soils were impacted by low-level metal, total recoverable hydrocarbon and polycyclic aromatic hydrocarbon concentrations; with widespread

nickel, zinc and isolated copper and benzo(a)pyrene concentrations above the adopted maintenance of ecosystems criteria.

All analysed samples contained chemical concentrations below the human health objectives for commercial land use. Groundwater investigation works from existing monitoring wells showed that groundwater was present approximately 1.5 to 2.5 m below ground level, with an inferred flow direction towards the Yarra River.

The groundwater contained elevated levels of ammonia, sulphate, metals and total recoverable hydrocarbon exceeding the adopted beneficial uses. These concentrations are consistent with regional groundwater quality in the port region.

Based on the results of the due diligence environmental site assessment, the site is considered suitable for ongoing use in a commercial/ industrial, port-related setting.

8 PROCESSES DESCRIPTION

8.1 Summary

The facility will receive Granulated Blast Furnace Slag (GBFS) from ships docked at Berth 33. The GBFS will be transferred from the ship to hoppers and then transferred via a series of covered conveyor belts to a GBFS storage shed. The GBFS will be reclaimed from the shed, ground through a vertical roller mill producing Ground Granulated Blast Furnace Slag (GGBFS) and then stored in silo(s) ready to be dispatched into either single or B-Double tankers over two weighbridges.

The Facility will be designed to produce up to 400ktpa of GGBFS and consist of:

- Wharf facilities to receive Granulated Blast Furnace Slag (GBFS) delivered to hoppers by ship grabs. (Handymax Size class ships around 30,000 DWT)
- A 37,000 tonne GBFS Storage Shed complete with automated materials handling
- Reclaim system for the GBFS with associated mill feed infrastructure
- A Vertical Roller Mill for grinding GBFS to the required quantity and quality
- A finished product storage facility suitable to store and dispatch GGBFS
- Electrical Infrastructure and Substations
- Plant Rooms
- Office and Amenities, and
- Truck and Vehicle Parking.

Refer **Appendix I** for the Process Flow Diagram and **Appendix J** for plant layouts and levels.

8.2 Product Receiving

Standard Open-hold ships will be berthed at Berth 33SW and will unload Granulated Blast Furnace Slag (GBFS) into three separate fixed hoppers located on the berth utilizing the ships cranes and stevedore supplied grabs.

The ships grabs shall be operator controlled (radio) for opening/closing actuation. Dust collection/mitigation systems are not intended for the hoppers as the moisture content of the GBFS is between 6 and 12%.

The hoppers shall distribute material to a belt conveyor system that will transfer the GBFS to the storage shed.

8.3 Storage Shed

A storage shed capable of storing 37,000T (37kT) of GBFS shall be constructed on the site. The shed will be fully enclosed and fitted with internal gantry cranes that reclaim and redistribute the GBFS within the shed. Reclaimed GBFS from the shed is deposited into a reclaim hopper which transports the GBFS to the milling circuit.

The shed will be non-habitable, with no operator interaction required beyond infrequent maintenance activities.

8.4 Milling Circuit

The milling circuit, comprises the following:

- **Crusher:** To reduce lump sizes, a crusher will ensure that the GBFS is suitably sized for milling. The crusher is complemented by a vibrating screen that will return any oversized materials back to the crushing circuit. Appropriately sized GBFS will then be transferred to the Vertical Roller Mill.
- **Vertical Roller Mill (VRM):** When the product reaches the mill, it falls onto a rotating steel table. The centrifugal force of this rotation shifts the product to the grinding rollers where it is ground to an appropriate fineness (blaine).
- **Hot Gas Generator:** Fired by natural gas, the Hot Gas Generator is required to dry the GBFS which contains between 6 – 12% moisture on arrival.
- **Process Fan:** A large Process Fan is integrated into the mill circuit which maintains a negative pressure within the Vertical Roller Mill, provides air circulation for drying and the energy required to convey the ground product to the Separator and into the Main Process Bag Filter for collection.
- **Separator:** A Separator separates the product leaving the mill circuit directing oversize product back to the grinding table for further processing with the balance (being the finished product) going to the Process Bag filter.
- **Process Bag Filter:** The Process Bag Filter separates the product from the process air. The cleaned process air is partially recirculated back to the mill and the remainder exhausted through the exhaust stack. The product clinging to the bags on the Process Bag Filter is released by “pulse jets” of air and the finished product is captured at the bottom of the baghouse for transfer to the silo(s).

8.5 Finished Product Transfer and Storage

The finished product is transferred via sealed conveyors and bucket elevators from the Mill Circuit Process Bag Filter to two 3,500T steel silos. The silos and the transfer systems are fitted with dust collection systems to mitigate fugitive dust emissions.

It should be noted, only one of the 3,500T silos is proposed to be built initially where it is envisaged that the second silo will be built within a five-to-ten-year period.

8.6 Product Dispatch

Product dispatch will be via the loading of pneumatic road tankers from the storage silos. The driver of the vehicle attaches a “load spout” to the vehicle to allow the product to be deposited into the vehicle.

Weighbridges are located beneath the silo to gauge the weight of the product being dispatched to ensure that the vehicle does not exceed its Gross Vehicle Mass (GVM) and to determine the supply to the customer. The loading of the trucks is via an automated control system which requires the driver to be engaged in the process throughout the filling of the vehicle. The data which is entered provides a record of the product that is loaded, the quantity obtained and identity of the purchaser.

Air displaced from the pneumatic trucks during the loading of the tankers is ducted back through the truck loading spout and collected by its corresponding dedusting system to ensure there are no fugitive dust emissions.

Should trucks be inadvertently filled beyond their GVM, provision will be made on site to “pump” back the excess product. This is uncommon as the control system is programmed with each truck’s GVM to prevent overloading.

8.7 Electrical Substations

Electrical substations shall be constructed as required throughout the facility to provide power and controls to the Grinding Facility. It is envisaged that power will be brought to the site at 11kV and stepped down to various voltages dependent on vendor equipment selection – nominally, 3.3kV, 690V and 400V systems.

8.8 Plant Rooms

A plant room will be constructed adjacent to the mill and will incorporate:

- Hydraulic Tensioning Systems for grinding
- Lubrication Systems for the Mill, and
- Compressed Air Systems for process.

8.9 Office, Laboratory, Workshop and Amenities

At this stage it is envisaged that the existing Office and Workshop complex will remain. Notwithstanding that, the following additional works are envisaged:

- Modifications to existing Office Complex
- Installation of Ablutions/Amenities connected to the main sewer, and
- Construction of a small laboratory for final product testing.

8.10 Truck and Vehicle Parking

Existing sealed areas are currently used by Cement Australia for the parking of cement tankers (when not in use) and for employee parking associated with the previous 33 South Wharf Lease.

In conjunction with the Grinding Facility construction, the site will be re-configured to provide truck and employee vehicle parking.

9 KEY INPUTS

9.1 Raw Materials

Granulated Blast Furnace Slag (GBFS) is the only raw material required to produce Ground Granulated Blast Furnace Slag (GGBFS). Raw Material Feed is expected to be around 72 tph.

9.2 Heat

A Hot Gas Generator (HGG) is installed to dry the GBFS which typically will be supplied at around 6 to 12 % moisture. The HGG will be sized nominally at 42 GJ/h and typically run at around 30 GJ/h at 12% moisture.

9.3 Water

Water Injection

Water is applied to the VRM grinding circuit to provide stability to the mill in the event of the raw materials being dry. Provision of water injection will be provided but it is unlikely that it will be needed given the expected range of moisture of the GBFS. The water injection will be sized at around 4,500 litres/h. The net water consumption is expected to be zero.

Cooling Tower

A cooling tower will be installed to cool oil associated with the main drive gearboxes and the hydraulic tensioning system.

Water evaporation from the cooling tower is expected to be in the order of 200 litres/h.

10 KEY OUTPUTS

10.1 Finished Product

The VRM is anticipated to produce around 63 tph of GGBFS.

10.2 Gas Emissions

The combustion of natural gas used in the process of drying the GBFS will result in the release of approximately 505 kg/annum of NO_x (calculated as NO_2), 135 kg/annum of SO_x and 9,790 tonnes of $CO_{2\text{-}e}$ based on the total plant capacity of 400,000 tonnes.

Expected $CO_{2\text{-}e}$ emissions associated with consumption of electrical energy is 17,650 tonnes.

Emissions on startup are expected to be approximately half of the rates above.

Refer to **Appendix K** showing the associated calculations.

10.3 Fugitive Dust Emissions

There are four potential sources of fugitive dust emissions for the site:

- Mill Process Filter Stack (used to collect the product exit the VRM),
- Silo Filter
- Truck Loading Spout Filters, and
- Conveyor transfer points.

Calculations have been made for the above (workings shown in **Appendix K** based on the total plant capacity of 400,000 tonnes), the results are shown below:

- Mill Process Stack <15.4 kg/day
- Silo Filter < 0.28 kg/day
- Loading Spouts < 0.062 kg/day, and
- Transfer Points < 0.35 kg/day.

10.4 Process Controls

A process control system will be implemented to control the facility.

The process control system will be configured so that the facility can run unattended and be monitored remotely when necessary.

11 EXPERIENCE AND COMPETENCY

Whilst this will be a new activity for the proposed site, Cement Australia has numerous sites throughout Australia where cement manufacture and grinding takes place - these are listed in the below Table 11.1.

Table 11.1 Cement Australia Licensed Facilities (Australia)

Licence No.	Issued	Facility Address	Scheduled Categories
545/2	16/08/2012	Railton Cement Works Cement Works Road Railton Tasmania 7305	Cement Works • Vertical roller mill for raw material grinding, • 2 Ball mills for grinding cement.
20101	07/07/2021	Port Kembla Milling Lot 2002 Christy Drive Port Kembla NSW 2505	Cement or Lime Works Shipping in Bulk • Vertical roller mill for grinding clinker and slag.
6092	14/07/2021	Port Kembla - Ecocem Tom Thumb Road Port Kembla NSW 2505	Cement or Lime Works. (The Ecocem facility is licensed under the Bluescope Steel Pty Ltd Environmental Protection License) • Ball mill for grinding slag.
EPPR00520813	21/10/2013	Bulwer Island Plant 77 Pamela Street Pinkenba QLD 4008	ERA 16 Extractive & Screening ERA 33 Crushing, milling, grinding or screening ERA 50 Bulk materials handling ERA 55 Regulated waste recycling or reprocessing • 2 Ball mills for grinding Clinker and Slag

Licence No.	Issued	Facility Address	Scheduled Categories
EPPR00846713	24/03/2021	Fisherman's Landing Plant 429 Forest Road Yarwun QLD 4694	ERA 7 - Chemical Manufacturing ERA 8 – Chemical Storage ERA 15 – Fuel Burning ERA 33 – Crushing, Milling, Grinding or Screening ERA 41 Cement manufacturing ERA 50 – Mineral and Bulk Material Handling ERA 55 – Other Waste Reprocessing or Treatment ERA 60 – Waste Disposal ERA 61 – Thermal Waste Reprocessing and Treatment ERA 62 – Resource Recovery and Transfer Facility Operation ERA 63 – Sewage Treatment • Vertical roller mill for raw material grinding, • 2 Ball mills for grinding cement.

Further to the above, Cement Australia operates quarries for extraction of raw materials to produce clinker, as well as numerous terminals and packaging facilities which are involved in the distribution of cementitious products throughout Australia, which include, but are not limited to:

- Shipping Terminal at Devonport Tasmania
- Shipping Receival Terminal at Melbourne Cement Facilities in Port Melbourne
- Packaging Facilities at North Geelong and West Footscray
- Shipping Receival Terminal at Osborne Adelaide
- Receival Terminals at Clyde, Glebe Island and Newcastle in NSW
- Packaging Facility at Clyde NSW
- Shipping Receival Terminal at Townsville

12 ENVIRONMENTAL DUTIES

12.1 General Environmental Duty

Under the Environment Protection Act 2017, S25(*4)* the General Environmental Duty promotes a prevention-based approach to the management of an operation, ensuring that companies proactively identify and manage environmental and health risk.

In planning its proposed new operations at Port of Melbourne, Cement Australia has, so far as reasonably practicable, ensured its compliance with the five (5) key General Environmental Duties via the following actions:

Duty 1 - Use and maintain plant, equipment, processes, and systems in a manner that minimise risks of harm to human health and the environment from pollution and waste.

The Port Melbourne Slag Grinding Facility will be captured within Cement Australia's externally certified ISO14001, ISO4801 and ISO9001 Management Systems which ensures the management and maintenance of plant and equipment is captured within site specific Standard Operating Procedures.

The site had previously been operating a fly ash and cement storage and dispatch facility and the new operations will be captured within the existing certified systems.

Duty 2 - Use and maintain systems for identification, assessment, and control of risks of harm to human health and the environment from pollution and waste that may arise in connection with the activity, and for the evaluation of the effectiveness of controls.

A full project Safety, Health and Environmental Risk Assessment, in line with Cement Australia's CAS-PR-5.1 Risk Management has been undertaken for the Construction and Operational phases of the plant with key controls identified.

Duty 3 - Use and maintain adequate systems to ensure that if a risk of harm to human health or the environment from pollution or waste were to eventuate, its harmful effects would be minimised.

Site specific Operational Environmental Management Plan has been drafted for the site to ensure the safe storage, handling and disposal of materials used and generated on site. The Construction and Operational Risk Assessments have identified potential sources of pollution and waste on site and controls have been implemented during the design phase to minimise, including:

- The design of enclosed material transfer and handling facilities to minimise spillage to land and water,
- The use of a curtain system to further minimise spillage and aid recovery of slag during the ship unloading activity,

- Operational controls to be implemented include the cleanup of spillage quickly to prevent the slag drying out and contributing to fugitive dust levels,
- Stormwater management to be outlined within OEMP and will prevent the discharge of contaminants to water.

Duty 4 - Ensure that all substances are handled, stored, used or transported in a manner that minimises risks of harm to human health and the environment from pollution and waste.

The Construction and Operational Risk Assessments have identified potential for only small-scale chemical and hydrocarbon storage on site and controls have been implemented during the design phase for appropriate chemical storage and handling facilities bunding and interceptor traps on site.

Duty 5 - Provide information, instruction, supervision, and training to any person engaging in the activity to enable those persons to comply with the duty under subsection (1).

In line with Cement Australia's externally Certified Management Systems, each Site implements a system of site-specific new starter and contractor Inductions, environment and safety training sessions and tool box sessions specific to the needs identified in Cement Australia's Learning Management System.

12.2 Incident Management Duties

Under Sect 32 of the Environmental Protection Act, there are relevant applicable duties covering the management of Incidents on site which require compliance to, these include:

- ***Duty to take action to respond to harm caused by pollution incident***
- ***Duty to notify Authority of notifiable incident***

All staff at Cement Australia Port Melbourne Slag Grinding Facility are responsible for promptly controlling and reporting environmental incidents as and when they occur.

Following an environmental incident, staff in the immediate vicinity will take all reasonable and practicable action to prevent any further harm to the environment. Details of the incident can be recorded in an Incident and Hazard Notification form (CAS-SF-15.1A) and uploaded to Cement Australia's current online incident database by the site SHE Manager/site Safety and Sustainability Specialist Support within 24 hours. The notification of additional parties and any follow-up actions will then be carried out as necessary by the site Safety and Sustainability Specialist.

Refer to CAS-PR-15.1 *Incident Management – Notification, Recording, Investigation and Analysis* for further details regarding the use of the current online incident database.

Port Melbourne Slag Grinding Facility is required to report (including written reports and investigations) certain incidents, complaints and non-compliances to relevant authorities. Where any incident that, because of action taken by the Facility or associated with the Facility, leads to

actual or potential environmental harm, the Site Team Leader shall immediately inform the Operations Manager.

When reporting an incident all relevant details of the release should be able to be provided including, but not limited to the following:

- what material was spilt
- when did it occur
- how did it occur
- what measures have been put in place to avoid a repeat
- how much material was released to air/land
- clean-up measures taken

In addition, following confirmation with the Operations Manager (and if necessary, the Group Environment team) the following agencies shall also be informed immediately, in the following order:

Table 3. Notification of Pollution Incident or Environmental Harm

Authority	Contact Details
Port of Melbourne	1300 857 662
Department of Environment	136 186

The General Manager Operations and the Group Environment & Sustainability Manager shall be informed as soon as practicable of all incidents.

12.3 Contaminated Land Management Duties

Under Sect 39 and 40 of the Environmental Protection Act, there are relevant applicable duties covering the management of Contaminated Land on site which require compliance to, these include:

- **Duty to take action to respond to harm caused by pollution incident**
- **Duty to notify Authority of notifiable incident**
- **Duty to manage contaminated land**
- **Duty to notify of contaminated land**

Senversa Pty Ltd was engaged by Port of Melbourne Operations Pty Ltd to undertake an end of lease due diligence environmental site assessment (ESA).

Soil investigation works undertaken across the site identified only low level concentrations of metals, polycyclic aromatic hydrocarbons (PAH) and total recoverable hydrocarbons (TRH) in fill soils that were below human health objectives for commercial use, these concentrations are not considered to preclude the site users and the environment.

Onsite operations will be managed in line with CAS-PR-10.4.1 Land Contamination Management to minimise the potential for land contamination through bunding and paving of operational areas and good housekeeping practices. In the event of an incident which had the potential for land

contamination, Cement Australia Incident Management System would ensure appropriate notification to the Department of Environment

12.4 Waste Management Duties

Under Sect 133 to 143 of the Environmental Protection Act, there are relevant applicable duties covering the management of waste on site which require compliance to, these include:

- **Duties of persons depositing industrial waste**
- **Duties of persons receiving industrial waste**
- **Duty of persons involved in transporting industrial waste**
- **Duties of persons managing priority waste**
- **Duty to investigate alternatives to waste disposal**
- **Duty of persons transporting reportable priority waste**
- **Duty to notify of transaction in reportable priority waste**

Most of the Waste Management Duties will not be relevant to the operation of the grinding facility, as it will not receive, deposit, or transport priority wastes at the Port Melbourne Facility. The site is not applying for a waste-related permissions.

Cement Australia Procedure CAS-PR-10.5 Waste Management, however, outlines the systems in place to identify and correctly dispose of waste generated via the onsite activities.

13 PRINCIPLES OF ENVIRONMENT PROTECTION (POEP)

The Port Melbourne Slag Grinding Facility has been designed to operate in accordance with the eleven (11) Principles of Environment Protection (the principles). The principles are part of the environmental management and policy framework of the Environment Protection Act 1970 (the Act).

The design process and Cement Australia's Integrated Safety, Health, Environment and Quality (SHEQ) Management System have captured the principals in accordance with the following **Table 13.1.**

Table 13.1 The Principles of Environment Protection

The Principle	Cement Australia Response
The principle of integration of economic, social and environmental considerations (1) Sound environmental practices and procedures should be adopted as a basis for ecologically sustainable development for the benefit of all human beings and the environment. (2) This requires the effective integration of	• Ground Granulated Blast Furnace Slag is a supplementary cementitious material which, similar to other slags and fly ash, reduces the embodied carbon in concrete, thus helping the construction industry reduce it's carbon footprint in the construction of roads and buildings. • The Port Melbourne Slag Grinding Facility has been designed to cater to the most

The Principle	Cement Australia Response
economic, social and environmental considerations in decision- making processes with the need to improve community wellbeing and the benefit of future generations. (3) The measures adopted should be cost-effective and in proportion to the significance of the environmental problems being addressed.	cost effective and efficient operation, while ensuring the potential environmental aspects and impacts have been identified and addressed.
The precautionary principle (1) If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. (2) Decision-making should be guided by: (a) a careful evaluation to avoid serious or irreversible damage to the environment wherever practicable (b) an assessment of the risk-weighted consequences of various options.	• During the planning and design phase of the Facility, full investigations into potential Air, Noise and Vibration Impacts have been undertaken by external specialists to fully understand the issues and ensure the facility has appropriate mitigation measures in place. • Environment, Health and Safety Risk Assessments have been conducted and identified the key actual and potential risk factors and controls used within the early design stages of the project. • Consideration of the Facility location within the POM was based on the use of a pre-disturbed site to avoid the disturbance of a greenfield site. The Facility will be within an existing industrial zoned area and will be consistent with surrounding land users.
The principle of intergenerational equity The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	• The promotion and use of GGBFS within the Cement industry demonstrates a commitment to the reduction of greenhouse gas and ensures Cement Australia is working to ensure current and future generations have access to robust and tested building materials which provide a low carbon alternative.

The Principle	Cement Australia Response
The principle of conservation of biological diversity and ecological integrity The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.	• The proposed site is within an existing industrial area on a parcel of land which has had prior commercial uses. There will therefore be no loss of biodiversity or ecological integrity because of the new facility.
The principle of improved valuation, pricing and incentive mechanisms (1) Environmental factors should be included in the valuation of assets and services. (2) Persons who generate pollution and waste should bear the cost of containment, avoidance and abatement. (3) Users of goods and services should pay prices based on the full life cycle costs of providing the goods and services, including costs relating to the use of natural resources and the ultimate disposal of wastes. (4) Established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, which enable persons best placed to maximise benefits or minimise costs to develop solutions and responses to environmental problems.	• Ground Granulated Blast Furnace Slag is a supplementary cementitious material which, similarly to other slags and fly ash, reduces the embodied carbon in concrete, thus helping the construction industry reduce it's carbon footprint in the construction of roads and buildings. • The Port Melbourne Facility will be managed consistently with all Cement Australia facilities to actively minimise harm and prevent environmental incidents. • CA would be financially responsible for restitution and rehabilitation if an incident occurred.
The principle of shared responsibility (1) Protection of the environment is a responsibility shared by all levels of Government, industry, business, communities and the people of Victoria. (2) Producers of goods and services should produce competitively priced goods and services that satisfy human needs and improve quality of life, while progressively reducing ecological degradation and resource intensity throughout the full life cycle of the goods and services, to a level	• Cement Australia has an externally certified Integrated Management System which commits the organisation to an Environmental Policy, designed to ensure the management of the environment through all levels within the organisation. • The use of foundry slags within the cement industry directly offsets the volume of clinker, resulting in a direct reduction in the volume of CO_2 emissions.

The Principle	Cement Australia Response
consistent with the sustainability of biodiversity and ecological systems.	
The principle of product stewardship Producers and users of goods and services have a shared responsibility with the Government to manage the environmental impacts throughout the life cycle of the goods and services, including the ultimate disposal of any wastes.	• The use of GGBFS is a key example whereby the use of an otherwise unusable Steel Mill product, results in an improvement in the life cycle of a construction material with an increased structural durability than that of traditional concrete construction materials.
The principle of the waste hierarchy Wastes should be managed in accordance with the following order of preference: (a) avoidance (b) reuse (c) recycling (d) recovery of energy (e) treatment (f) containment (g) disposal.	• Cement Australia Maintains Waste Management Procedures which ensure the identification and management of waste on site. • Waste Management practices are in line with the Waste Hierarchy and have been implemented within the design of the POM Facility, through the following controls: ○ Avoidance using sealed transfer systems and conveyors and drop sheets to capture and reclaim spillage during unloading of ship. ○ Reuse / Recycling of materials using sweeper trucks and air bag filter collection systems to recover spillage or dusts and return them to the stockpile or silo. ○ Recovery of energy where 55% of the heated air stream is recirculated back into the mill to dry the slag, reducing energy consumption. ○ Containment using a sealed grinding facility and transfers to minimise discharges to the environment and waste generation. • Disposal will be undertaken in line with site procedures to ensure compliance with the Victorian EPA handling and tracking requirements.

The Principle	Cement Australia Response
The principle of integrated environmental management If approaches to managing environmental impacts on one segment of the environment have potential impacts on another segment, the best practicable environmental outcome should be sought.	• Cement Australia maintains an Integrated Management System called the Cement Australia's Safety, Health, Environment and Quality Management System (SHEQMS). • The system is compliant to ISO9001 (Quality), ISO14001 (Environment) and ISO45001 (Occupational Health and Safety). • Within the SHEQMS, consideration of Environment, Safety, Health and Quality issues are undertaken to manage compliance obligations, risks and opportunities and are clearly documented, communicated and monitored.

The principle of enforcement
 	
Enforcement of environmental requirements should be undertaken for the purposes of:
 	
(a) better protecting the environment and its economic and social uses
 	
(b) ensuring that no commercial advantage is obtained by any person who fails to comply with environmental requirements
 	
(c) influencing the attitude and behaviour of persons whose actions may have adverse environmental impacts, or who develop, invest in, purchase, or use goods and services which may have adverse environmental impacts.
	• A number of governance and compliance structures and processes exist within Cement Australia to ensure the SHEQMS is monitored, maintained and continuously improved.
	• The Cement Australia Board of Directors considers SHE an integral component in the conduct of Cement Australia's business. The Board is responsible for establishing the policies and processes for compliance to all SHE obligations; providing oversight; general direction; and due diligence.
	• Cement Australia promotes and maintains compliance to the SHEQMS, including legal requirements through a variety of activities including:
	  ○ Audits
	  ○ Incident investigations, reports and analysis
	  ○ Legislative reviews and registers
	  ○ Short- and Long-Term Incentive Schemes
	  ○ SHE performance reviews
	  ○ Committees

The Principle	Cement Australia Response

The principle of accountability
 	
(1) The aspirations of the people of Victoria for environmental quality should drive environmental improvement.
 	
(2) Members of the public should therefore be given:
 	
(a) access to reliable and relevant information in appropriate forms to facilitate a good understanding of
 	
environmental issues
 	
(b) opportunities to participate in policy and program development.
	• Cement Australia maintains and implements, across all its facilities, a system for Community Engagement which details the key requirements to identify and manage community engagement issues, risks and opportunities that may impact upon Cement Australia's social Licence to operate.
	• These requirements are:
	  ○ Community related issues, risks and opportunities shall be systematically identified and where relevant, included within the site / business risk register/s.
	  ○ Community engagement strategies, objectives and targets shall be periodically reviewed and actions taken where targets are not met.
	  ○ The social impact of a new project or operation shall be assessed so that early action may be taken to engage and interact with relevant communities and manage identified issues throughout a project's life cycle.

14 BEST AVAILABLE TECHNOLOGIES

The design of the proposed facility is based on current world best practices and technologies which will lead to reduced energy consumption and the minimization of pollution and waste associated with its operation. Salient features of the design which will derive these benefits include:

- Selection of VRM technology over Ball Mill technology
- Tight specifications imposed on both Nuisance and Process Filters (suppliers to guarantee emissions of < 10mg/Nm^3)
- Conveying of all processed product will be via fully enclosed conveyance systems
- Burner for drying the GGBFS is specified as a low NO_x burner
- GBFS from the ship will be stored inside a fully enclosed shed to avoid drying and wind-swept dust emissions
- Reclaim and stacking of GBFS in the storage shed will be conducted by two fully automated overhead cranes eliminating operator exposure
- Truck loading of GGBFS conducted within an enclosed building utilizing dust free loading systems
- Installation of process monitoring equipment to monitor process conditions/emissions interlocked to shut down the process in the event of abnormal conditions
- Focus on minimization on waste
- Design of conveying systems to avoid spillage
- Installation of equipment from reputable suppliers having long life expectancies
- Use of sealed for life bearings

14.1 Vertical Roller Mill (VRM)

The VRM has been chosen as the desired process/technology as it provides significant benefits with respect to energy savings, reduction in noise and overall reduction in equipment and hence footprint.

Worldwide, Vertical Roller Mills (VRM's) have increased in popularity for cementitious grinding applications over ball mills due to their lower greenhouse footprint. Notable advantages of the VRM include:

- Lower power consumption of the total grinding circuit (circa 70% of ball mill),
- Around 50% of the air stream is returned to the mill (heat recuperation),
- Allows for product drying to occur in the mill without the need for a rotary dryer as would be the case for a ball mill,
- Generates less noise than ball mill, around 20 to 25 dBA lower, and
- Occupies a smaller footprint.

14.2 Hot Gas Generator (HGG)

The proposed HGG will be fired using Natural Gas and be equipped with a low NO_x burner.

14.3 Enclosed GBFS Shed

The raw material (GBFS) will be stored within a totally enclosed shed preventing the potential for windswept airborne (fugitive) dust associated with open stockpiles.

The GBFS is inert in nature and chemically stable. It is slightly soluble in water and produces an alkaline solution with a pH between 10 to 12. Unlike in an open stockpile, the GBFS will be contained within the shed and hence run off of high pH water from rain events will be avoided.

15 RISK ASSESSMENT

A full risk assessment was conducted between operational, health and safety professionals and engineering personnel on the proposed facility utilizing Cement Australia's Risk Management Process. This risk assessment assessed potential impacts on human health and the environment with respect to the operation of the proposed facility. Where practicable, risks were eliminated through design and where residual risks remained appropriate measures have been nominated to control those risks to within acceptable limits.

Copies of the Operational Aspects and Impacts Register Risk contained in **Appendix L** and the Construction Aspects and Impacts Register is contained in **Appendix M.**

15.1 Summary of Risk Assessment

Cement Australia has conducted a risk assessment on the proposed facility utilizing it's in house risk assessment tools, which for all intents and purpose, is compliant with the EPA guidance publication 1695 – "Assessing and controlling risk: A guide for business".

The risk assessment was broken down into plant areas and followed the process flow from receival of GBFS at the wharf through to storage of GBFS, milling and then dispatch of the final product GGBFS.

The risk assessment, along with other potential hazards, covered all of the nominated hazards as listed in Table 2 of EPA publication 1695.

It is Cement Australia's belief that all the identified risks can be controlled to within acceptable community standards and as such should not impact on the decision to build and operate the proposed facility.

In line with the Hierarchy of Controls, Cement Australia's focus with the design is to eliminate, as far as reasonably practicable, all identified risks. Examples of this are as follows:

- Elimination of product spillage into the marine environment during ship unloading will be controlled by modifying the existing wharf so that it is fully closed in and then using drop sheets from the ship to close the gap between the wharf and the ship
- Elimination of airborne dust from GBFS stockpile by storing the GBFS in a fully enclosed shed preventing the product from drying out and also protecting it from the wind

- Elimination of dust excursions to atmosphere from process filters by providing broken bag detectors interlocked with the process
- Specification of equipment with tight noise limits
- Requiring that all nuisance dust and process filters have very tight emission limits

Where risks cannot be eliminated by design, and the risks are seen as acceptable, the risk mitigation strategies proposed in the risk assessment will be addressed within both Cement Australia's Operational Environmental Management Plan ((OEMP), draft copy can be found in **Appendix N**) and the sites Standard Operating Procedures (SOP's).

16 ENVIRONMENTAL MANAGEMENT AND CONTROLS

Based on the Operational Risk Assessment **(Appendix L)**, a Draft Operational Environmental Management Plan (OEMP) has been compiled for the operation **(Appendix N).**

The purpose of the OEMP, when finalised, will be to set out the management practices employed by the operations of the facility and to ensure the site complies with all environment-related legal and other requirements.

The OEMP seeks to protect the environment and ensure effective processes are in place for the:

- Identification and compliance with all legal and other requirements
- Identification and assessment of all environmental aspects and impacts
- Implementation of controls to prevent environmental harm
- Development of objectives and targets to promote continual improvement in environmental management and sustainability, and
- Critical evaluation and review of environmental and sustainability performance and the environment management system.

A full Construction Environmental Management Plan (CEMP) will be required to be developed and submitted to the CA Group Sustainability Manager for approval as part of the construction project contract award.

17 AIR QUALITY

17.1 Summary of Emissions to Air

The proposed Grinding Mill is located within a designated Industrial Zone and largely surrounded by commercial operations.

Calculations have been undertaken to estimate the potential point source and fugitive emissions from the proposed new facility once the facility reaches its maximum output of 400,000 tpa, refer **Appendix K** for the calculations. **Table 17.1 and 17.2** are a summary of the predicted emissions:

Table 17.1. Point sources emissions estimations

Emission	Quantum	Unit	Notes
NO_x	505	kg/annum	Calculated as NO_2
SO_x	134	kg/annum	
CO_2	9,790	t $CO_{2\text{-}e}$/annum	
Dust	4.07	t/annum	

Table 17.2 Fugitive dust emissions estimations

Source	Quantum	Unit	Notes
Silo Filter	102	kg/annum	Product Transfer to Silo
Truck Loading	22.5	kg/annum	Loading of Trucks on Weighbridges
Product Transfer	127	kg/annum	Through Milling Circuit

Based on the data presented in **Appendix K,** a full Air Quality Assessment was undertaken by VIPAC in October 2021, refer to **Appendix O**.

Background data was derived from measured data from 2016 reported for the monitoring stations at Footscray for NO_2, PM_{10} and $PM_{2.5}$ and Altona for SO_2 (which is not measured at Footscray) in EPA Victoria publication 1551.

Modelling was carried out and assessed against a number of sensitive receptors identified in **Figure 17.1** and **Table 17.3** as follows:

Figure 17.1

Table 17.3. Sensitive Receptor Locations

Receptor ID	Name	Location (UTM)	
		Easting (m)	Northing (m)
R1	PoM Training Centre	315962	5811789
R2	Yarraville 1	314788	5811832
R3	Yarraville 2	314827	5812132
R4	Yarraville 3	314865	5814231
R5	Yarraville 4	314893	5812703
R6	Garden City 1	316659	5810240
R7	Garden City 2	317159	5810369

The Air Impact Assessment has been carried out for the assessment of the proposed grinding station emissions as follows:

- An emissions inventory of PM_{10}, $PM_{2.5}$, NO_2 and SO_2 for the proposed Project was compiled using manufacturer specification data including a range of pollution control measures for the operation of the Project. A Mill Stack height of 52m was assessed in the modelling.
- The emissions data was used as input for air dispersion modelling. The modelling techniques were based on a combination of measured meteorological data from the closest BoM Station, The Air Pollution Model (TAPM) prognostic meteorological model (developed by CSIRO), and the AERMOD dispersion model with reference to the requirements of the EPA Publication 1551 – Guidance notes for using the regulatory air pollution model AERMOD in Victoria.
- The atmospheric dispersion modelling results were assessed by comparison with the assessment criteria described in Guideline for Assessing and Minimising Air Pollution in Victoria and the National Environment Protection Measure.

Table 17.4 provides the maximum model predictions at the most affected sensitive receptor for the grinding station emissions in isolation and including a conservative estimation of background (i.e. cumulative) at 52m and compares them with the assessment criteria. While a conservative approach has been adopted for the assessment, the modelled concentrations at all sensitive receptors are predicted to be well below the criteria.

Table 17.4 Maximum Predicted Concentrations for a 52m Mill Stack Height

Pollutant	Averaging Period	Criteria (µg/m³)	Maximum Prediction at Any Receptor -In Isolation (µg/m³)	Cumulative Maximum Prediction at Any Receptor – Cumulative (µg/m³)	Compliant
PM_{10}	24-hour	50	0.52	20.72	✓
	Annual	25	0.06	14.16	✓
$PM_{2.5}$	24-hour	25	0.52	8.92	✓
	Annual	8	0.06	6.96	✓
NO_2	1 Hour	160	18.88	72.27	✓
	Annual	30	0.31	20.85	✓
SO_2	1 Hour	290	5.01	32.69	✓
	24 Hour	57	0.72	7.64	✓

Based on the above modelling, Vipac concluded that the emissions from the operation of the proposed Project are not predicted to adversely impact on the sensitive receptors.

17.2 Management Best Practices to Prevent/Minimise Impacts

The design of the facility has taken into consideration industry best practice for the selection of process equipment to prevent/minimize the impacts from air emissions. To that end, the following will be implemented:

- A closed circuit VRM mill is being proposed where up to 55% of the process air stream is returned to the mill for efficiency purposes (has direct energy and dust reduction impact),
- VRM technology has been chosen over a conventional ball mill which typically uses only 70% of the power consumed by a ball mill resulting in a reduction of 7,800 tonnes of CO_2/annum,
- Low NO_x burners for heat generation,
- The use of air filter technology operating at or below 10mg/Nm^3 emissions – typically in the past, filters have been specified to 20mg/Nm^3 and hence this will have the impact of reducing particulate discharge by half,
- Raw material storage and conveying systems will typically be undercover eliminating the potential for generation of fugitive dust, and
- The entire facility will be paved thus reducing the potential for wind borne dust generation from unsealed pavements.

In addition to the above, further design parameters pertaining to air quality management have been employed and are summarized in **Table 17.5** below:

Table 17.5 Air Quality Management Measures through Design

Area	Potential Source	Equipment	Mitigation Strategies
Ship Receival of GBFS	Conveying & Transfer Points	▪ Ship hopper grabs ▪ Transfer from Hopper to conveyors ▪ Transfer of material to shed via conveyors	▪ Natural mitigation – product moisture expected to be between 8 and 12% ▪ Conveyors will be covered
GBFS Storage	Stockpile	▪ Storage Shed	▪ The stockpile is contained within a sealed shed preventing evaporation and potential for wind generated dust. ▪ Sealed & covered stockpile contains potential water run off during rain events
Mill Feed	Conveying & Transfer Points	▪ Transfer from Shed to Mill Feed Hopper via conveyors ▪ Transfer of feed from hopper to mill	▪ Natural mitigation – product moisture expected to be between 8 and 12% ▪ Conveyors will be covered and/or enclosed
Mill Product Stream	Mill Grinding Circuit Exhaust Stack Conveying & Transfer Points	▪ Vertical Roller Mill (VRM) ▪ Main Process Filter to collect product ▪ Conveying systems from process filter to Product Silo	▪ Grinding to take place in a closed circuit VRM operated under negative pressure preventing fugitive dust emissions ▪ Product is captured in process filters which extract the product releasing clean gases to atmosphere via the stack. Broken bag detectors will also be employed on this filter. ▪ Fully enclosed airslides, screws and bucket elevators will be used to transfer product to the product storage silo ▪ A nuisance air filter will be used to dedust the product transport equipment to silo and equipped with broken bag detector. ▪ A penthouse will be built above the main process filter to contain fugitive dust during bag replacement.
Dispatch of GGBFS	Conveying & Transfer Points	▪ Airsides ▪ Truck Loading Spouts	▪ Conveying of GGBFS to trucks is via fully enclosed air slides and truck loading spouts

Area	Potential Source	Equipment	Mitigation Strategies
			▪ Air filters used to capture air and manage nuisance dust release. Broken bag detectors are also fitted to the filters. ▪ Truck Loading facility is fully enclosed with roller doors to contain spillage/release to atmosphere of dust in the event of malfunction – last line of defense
Roadways			▪ All roadways will be fully sealed – a combination of both bitumen and concrete roadways.

18 NOISE AND VIBRATION

18.1 Summary of Activity's Noise Emissions

The nature of a grinding facility is such that very large machines and trucks are employed throughout the process. Therefore, the Aspects and Impacts Register identified the potential for high energy noise emitters and Marshall Day Acoustics Pty Ltd (MDA) were engaged to provide a Noise Impact Assessment in July 2021 suitable for submission to the Victorian EPA to assist in obtaining a Works Approval for the project, refer to **Appendix P.**

To predict noise levels at nearby neighboring residences, the following factors have been considered:

- The amount of noise being generated within the subject site
- The distance between the sources and receivers
- The presence of obstacles such as buildings or screens that obstruct the noise path
- The ground between the source and receiver
- The presence of hard reflective surfaces that may enable additional noise paths.

MDA created 3-dimensional digital model of the proposal and surrounding built environment using SoundPLAN proprietary modelling software (version 8.2). This model has been used to predict noise from the site to the nearest noise sensitive receivers.

The MDA report provided details of relevant environmental noise limits and benchmark targets, an assessment of noise against the relevant criteria and recommended noise control measures to enable the relevant noise limits and targets to be achieved.

The report also provided a high-level discussion of potential vibration impacts associated with the proposal, based on measured existing vibration levels in the area and measured vibration levels at a comparable operational GBFS grinding facility.

The Assessment identified the following Noise Sensitive receivers surrounding the proposed facility, refer to **Figure 18.1**.

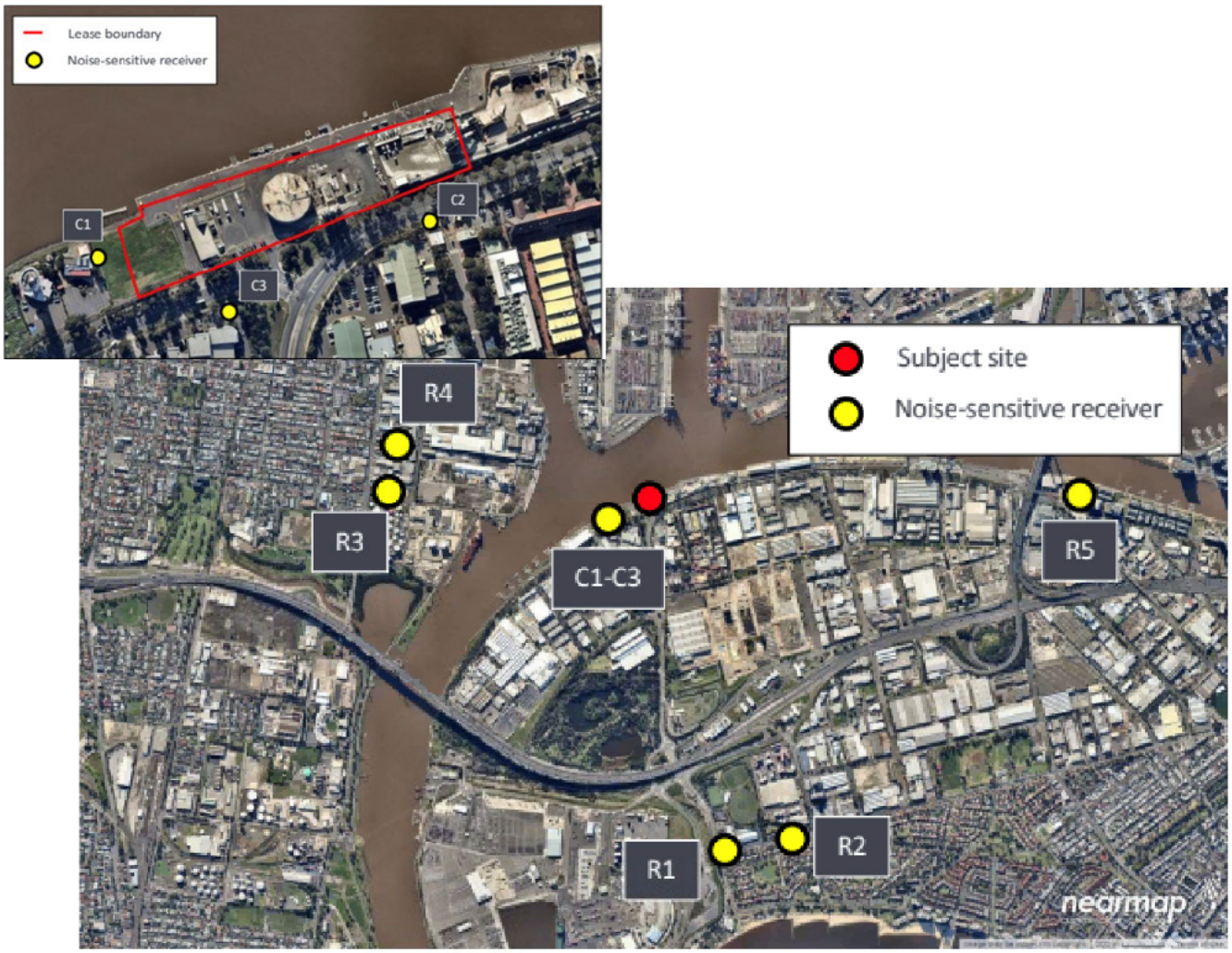

Figure 18.1 Near and Far field sensitive receivers

Noise levels used in the Assessment were obtained through:

- Manufacturers' data, where available
- Attended noise measurements of an existing comparable Cement Australia facility at Port Kembla
- Measured noise levels of similar equipment from the MDA noise measurement database
- Empirical estimation methods based on equipment type and duty (where manufacturers' data, attended noise measurement data or appropriate database noise levels were not available).

The assessment has been based on the proposed equipment at the site identified by Cement Australia, and the current proposed site layouts, the noise levels (measured at the source) are as follows:

Grinding Equipment Noise Levels:

- Receival hoppers Leq 82 dBA
- Roller mill separator motor Leq 97 dBA

- Roller Mill Motor Leq 102 dBA
- Roller mill fan casing Leq 103 dBA
- Roller mill fan outlet Leq 109 dBA
- Roller mill fan motor Leq 104 dBA
- Bag filter fan Leq 95 dBA
- Hot gas fan motor Leq 88 dBA
- Hot gas fan exhaust Leq 92 dBA
- Conveyors Leq 72 dBA
- Storage Shed (internal noise)Leq 75 dBA

Grabber / Crane and Vessel Noise Levels:

- Vessel idling 108 dBA
- Grabber /Crane Noise Level 104 dBA

Truck Movement Noise Levels:

- Semi trailer/ Articulated Vehicle AV moving through site Leq 106 dBA
- Truck filling enclosure, internal noise level Leq 75 dBA

At this stage of the project planning, much of this relevant detail is yet to be finalised in relation to truck movements and therefore the variables had been provided as inputs to the preliminary model to present worst-case expected noise levels.

The MDA assessment has determined noise limits in accordance with the Noise Protocol accounting for background noise conditions in the area.

The report considers cumulative noise impact. The assessment has been based on noise limits set at a value 10 dB lower than the Noise Protocol. Predicted noise levels based on the assessment input data demonstrate that this reduced noise limit is achievable.

MDA concluded:

“Noise levels should be reviewed and verified during the detailed design phase of the project. However, based on the noise levels, operational parameters and the noise limits and targets presented, the proposed GBFS grinding station can be designed to operate for the proposed 24-hours, 7 days per week while meeting the required noise levels at the identified noise-sensitive receivers”.

18.2 Management Best Practices to Prevent/Minimise Impacts from Noise/Vibration

The design of the facility has taken into consideration industry best practice for the selection of process equipment noting the adoption of the following:

- Selection of VRM technology over Ball Mill technology which is known to be 20 to 25 dBA quieter than its counterpart
- Equipment to be supplied by reputable suppliers who regularly supply equipment into noise sensitive environments
- Noise limits on equipment to satisfy that “All items of equipment shall be attenuated such that noise is no greater than 85 dBA at the source, and less than 75 dBA when measured at a distance of 1m from the source in a horizontal plane.” , and

- Main process fan will be supplied with acoustic insulation to ensure the above noise limits are obtained.

In addition to the above measures, additional noise modelling will be undertaken during the final design phase of the facility to ensure that the anticipated noise levels are within the required limits. If found otherwise, further noise mitigation techniques will be employed to ensure that the relevant limits are achieved.

19 WATER QUALITY

19.1 Summary of Emissions to Water

The plant design philosophy has been to establish standards and design criteria to minimise the discharge of contaminants to ground or to the Port of Melbourne. The project Aspects and Impact Register has identified the following potential factors which will be managed to minimise the discharge of contaminants to the Port.

Key issues relating to water management are discussed below:

- Spillage of Slag during the unloading of the ship
- Spillage from Conveyers
- Washdown waters from Wharf and Roads
- Lubrication spills to ground

The grinding process is a dry activity and hence the site is not a high user of process water, with a key process step within the operation of the VRM being to drive off present moisture in the Slag during the grinding process. Therefore, the key potential water impacts from the site will be on Stormwater Discharges and Groundwater Contamination.

19.2 Management Best Practices to Prevent/Minimise the Contamination of Stormwater

Potential for rain/stormwater coming into contact with either raw materials (GBFS) or the product (GGBFS) has been minimised via the following measures:

- Covered wharf conveyors,
- Wharf surface is fully decked to capture spillage,
- Drop sheets to be used to minimise gap between ships and wharf deck,
- use of surface sweepers to collect spillage prior to hosing of roads and wharf deck,
- Storage of the GBFS within a fully enclosed shed,
- Covered conveyors transferring product to the VRM,
- Grinding process is fully enclosed,
- Transfer of product from the VRM is via fully enclosed conveying systems,
- Loading of the finished product GGBFS into trucks is performed in a fully enclosed facility,
- The site will be fully paved with Stormwater to be directed via pavement slopes and gutters to triple interceptor pits,
- Triple interceptor pits will be installed where appropriate to intercept all stormwater flow prior to discharge into stormwater systems,
- Spill kits at strategic locations on site to clean up chemical or lubricant,

- All storages of fuels /lubricants and chemicals on within locked bunds.

Based on the nature of the site operations and the identified controls to be implemented to manage potential stormwater and groundwater contamination, it is not expected the site will require specific discharge criteria within its Licence conditions.

20 WASTE MANAGEMENT

The proposed Grinding Mill will not produce Priority or Reportable Waste on site as part of the proposed activity, with only small quantities of Industrial Wastes produced as a consequence of operating and maintaining industrial machinery and mobile equipment.

Waste produced on site will be produced, stored and disposed of in line with the site's General Environmental Duty.

20.1 Summary of Wastes

The facilities Aspect and Impact Register has identified the following wastes as being potentially generated at the site and will be managed as described in **Table 20.1** below:

Table 20.1 Waste Management

Waste Stream	Management
Sinks, showers, and toilets	Discharges from these areas will be directed to the sewer.
Office Waste	Office waste will be separated, recycled and disposed of in accordance with local municipality regulations
Stormwater	Will be captured and managed as discussed in section 10 above.
Process Water Effluent	Process water effluent arising from water sampling and chemical dosing systems will be directed to the sewer and comply with all applicable regulation for such discharges
Metal in GBFS	Metal inherent in the GBFS will be screened, collected and recycled as scrap metal to licensed scrap metal merchants.
Lubrication Oils	Spent lubrication oils will be collected and disposed of via accredited recycling/collection agencies.
Worn process equipment	Worn Process Equipment can take on many forms such as: • Grinding Tools • Process & Nuisance Air Filter Bags • Conveyor Belts • Idlers, chutes associated with conveying systems • Motors/Gearboxes Where possible worn equipment will be recycled otherwise will be disposed of at licensed disposal facilities.

20.2 Management Best Practices to Prevent/Minimise Waste Generation

Onsite systems and Site-specific controls have been identified to manage waste generated on site in line with the Waste Hierarchy which include:

- Enclosed processing and transfer systems to minimise spillage of raw materials and products to minimise waste generation.
- Housekeeping practices (sweeper trucks) to allow spillages to be returned to raw material stockpiles rather than allowing cross contamination or waste creation.
- Designated general, steel and recyclable skips will be made available on site
- Waste is sorted and stored in bunded areas in line with site specific waste management procedures.
- Timely waste collection services to be implemented to minimise accumulation of large volumes of waste.
- Chemicals appropriately bunded (AS1940) on site to minimise uncontrolled spillage and the need for cleanup,
- All staff trained in the use of spill kit application to minimise waste generation from cleanup activities,
- Waste Management Procedures to be developed for site activities
- Waste tracking complete from engaged and licensed waste removal contractor, and
- OEMP & SOPs developed to manage potential issues.

21 HUMAN HEALTH

21.1 Summary of Activity's Potential Human Health Impacts

Critical to the planning and development of the Port Melbourne Slag Grinding Facility, Cement Australia have engaged numerous independent specialist consultants to assess and quantify the actual and potential human health and environmental impacts on the wider community. The assessments have included:

Air Quality Assessment (Appendix O) which assessed the risk of harm from air pollution to human health and the environment and includes a broad risk-based assessment framework, site-specific risk assessment methods, and risk-based air quality assessment criteria (AQACs). The report provided mitigation strategies and concluded that the emissions from the operation of the proposed Project are not predicted to adversely impact upon the sensitive receptors.

Noise and Vibration Assessment (**Appendix P**) which provided assessment of predicted and modeled noise and vibration levels within in the surrounding community with assessment against health-based noise protocols including the impact on Sleep, domestic and recreational activities, child learning and development.

21.2 Management Best Practices to Prevent/Minimise Impacts to Human Health

Controls identified by the project design team and via the specialist consultants to further minimise the potential human health risk of the aspects identified above, include:

- Ensure GBFS will be received with a high moisture content and transferred by covered belt conveyor to a fully enclosed storage shed for subsequent distribution to the milling circuit.
- Bag filters are proposed for collection of dust from the discharge points. The dust emissions are derived from the estimated maximum dust concentrations released into the atmosphere following capture by these filters.
- Ensuring the site implements the Cement Australia purchasing procedures which limits equipment noise specifications.

22 ENERGY AND GREENHOUSE GAS EMISSIONS

The use of supplementary cementitious materials (SCMs) in concrete blends is widely promoted as a way to reduce the environmental impacts of concrete. SCMs can include fly ash, silica fume, steel slag and ground-granulated blast furnace slag (GGBFS).

The design and construction of the Port Melbourne Slag Grinding Facility has considered Sect 17 of the Climate Change Act 2017 and will provide the State with direct, short and long-term reductions in greenhouse gas emissions using the best available technologies and the use of GGBFS within the construction industry to supplement cement.

The Proposed Cement Australia facility will be producing GGBFS which will directly replace the use of cement within the construction industry, tonne for tonne.

The production of cement inherently produces an additional 0.77 tonne of CO_2 for every tonne produced when compared to the use of Slag which will reduce the states CO_2 production by 308,000 tonne per annum[1].

22.1 Energy use and Greenhouse Gas Emissions

The electrical consumption for the facility will be around 16,340 MWhrs/annum and the Natural Gas Consumption will be around 190 TJ/annum.

The emissions associated with the above energy use can be summarized as follows:

Emissions due to Combustion of Natural Gas

- 505 kg/annum of NO_x (calculated as NO_2)
- 134 kg/annum of SO_x, and
- 9,790 tonnes of $CO_{2\text{-}e}$ /annum

Emissions due to Generation of the Consumed Electricity

- 17,650 tonnes of $CO_{2\text{-}e}$/annum

It should be noted that the above figures are based on the total plant capacity of 400,000 tonnes and that the emissions on startup are expected to be half of this. Refer to **Appendix K**. showing the associated calculations.

[1] One tonne of cement produced in a cement kiln produces ~ 0.77 tonne of CO_2.
The CO_2 is produced directly in two ways:
- Conversion of $CaCO_3$ (Limestone) to CaO (quicklime) where CO_2 is l berated whilst being converted into clinker, and
- The burning of fossil fuels within the kiln during Clinker production.

CO_2 is also indirectly emitted through the use of electricity during manufacture.

22.2 Management Best Practices to Prevent/Minimise Greenhouse Gas Emissions

GGBFS is considered a green alternative to cement.

The GGBFS manufactured in this new facility will displace 'tonne for tonne' the use of cement in concrete. During the manufacture of cement, 770kg of CO_2 is liberated for every tonne of cement produced. This facility will inherently be responsible for the reduction of 308,000 tonnes of CO_2 per annum.

Further, as discussed in previous sections, the VRM is inherently the most energy efficient comminution process presently available. The VRM is reported to consume around 70% of the power compared with a Ball Mill. Further, it is possible to dry the GBFS (which is shipped with a relatively high moisture content, in the VRM negating the need for a separate Rotary Dryer (a requirement of a Ball Mill circuit) eliminating the power associated with running a Rotary Dryer.

The selection of a VRM over Ball Mill technology will result in the following benefits:

Energy Savings

- 6,570 MWhrs/annum due to efficiency of the VRM over the Ball Mill, and
- 610 MWhrs/annum due to not having to run a Rotary Dryer

Emission Reductions due to reduced Electrical Energy Consumption:

- 7,800 tonnes of $CO_{2\text{-}e}$/annum

It should be noted that the above figures are based on the total plant capacity of 400,000 tonnes and that the emissions on startup are expected to be half of this.

Refer to **Appendix K** showing the associated calculations.

The mill control system will incorporate an expert control system which typically is able to reduce the electrical energy consumption of the mill by around 2 to 3%.

Conservatively, using a figure of 2%, implementation of expert control on the mill will further reduce CO_2 emissions by:

- 281 tonnes of $CO_{2\text{-}e}$/annum

22.3 Potential Long Term Site Impacts from Climate Change

The proposed site will be subject to flooding due to sea-level rise by the year 2100.

Current flood level for Port Phillip Bay is 1.6m AHD which includes an allowance of 0.2m for wave action. Sea level rise for Port Phillip Bay is forecast to be 0.8m, that is, 2.4m AHD which includes an allowance of 0.2m for wave action.

The current site has an average level of between 2.2 and 2.5m AHD.

The Design Working Life of the facility will be 50 years.

Given that the structures will generally be built above 2.4m AHD, and the design working life of the facility will be 50 years, it is not anticipated that flooding due to climate change will unduly affect the proposed facility.

23 CULTURAL HERITAGE

A Historical and Cultural Heritage Assessment was undertaken by Archaeology At Tardis (March 2021) to investigate the historic heritage values and statutory obligations for the site to develop a broader understanding of the activity area, and identify known historic sites, as well as locations that have historic archaeological potential.

The report concluded that: “There are no identified historic heritage places, or places of archaeological potential, within the activity area. Therefore, no statutory authorisations, under the Planning and Environment Act 1987, or Consents or Permits under the Heritage Act 2017, will be required, regarding heritage matters, before the activity is undertaken.”

In line with the report’s recommendations, CA will ensure the construction activities are managed to ensure that if, during construction, unexpected archaeological relics or deposits are located, the following procedure must be adopted:

- All works within 10m must cease and temporary fencing or para-webbing be erected to protect the site from harm. This must become a no-go-zone.
- Work outside this 10m buffer zone may continue.
- The discovery must be examined by a qualified archaeologist, who will assess the discovery and provide the relevant details to Heritage Victoria.
- The Executive Director of Heritage Victoria will determine if the site is of low archaeological value, or above low archaeological value.
- If the find is determined to be of low archaeological value, works may continue, and fencing removed.
- If the discovery is confirmed to be above low archaeological value, then the site must be listed on the Heritage Inventory and a Consent to Disturb application made.

A copy of their report is found in **Appendix Q.**

24 SITE INFRASTRUCTURE AND SERVICES

Verve Projects Pty Ltd were engaged to review both existing asset capability and planned future service infrastructure required for the proposed development at 465 Lorimer St, Port Melbourne.

The investigation concluded:

“Based on our preliminary investigations, the provision of required services to the subject site can be made available via existing service extension/augmentation from locations within reasonable distance to the development site boundaries.

At the time of this report, there are no known constraints on service delivery that would otherwise prevent progression of the development site.”

A copy of their report is found in **Appendix R.**

25 TRAFFIC MANAGEMENT

GTA Consultants were engaged to undertake a Transport Impact Assessment of the site and the supporting road network. From their study, the following conclusions were made:

- The development will provide 68 parking bays on-site to accommodate staff, visitors and site operational vehicles.
- A truck parking area is proposed which can accommodate up to 16 trucks 19.0m long semitrailers, noting more can be accommodated in a managed truck parking arrangement. These vehicles can park clear of the access points and circulation aisles within the site. The truck parking area will be regulated by an on-site operations manager to ensure its safe and efficient access and use.
- The development proposal could generate up to 8 trucks arriving and departing the site per hour. During truck driver shift changes, up to 30 cars could arrive and depart the site per hour. These are negligible in traffic engineering terms and will not compromise the safe and efficient operation of the existing road network.
- A design review of the internal layout and external vehicle movement requirements has been undertaken using a B-Double design vehicle. This has resulted in proposed modifications to site access points along Lorimer Street. The swept path assessment shows the internal site layout is suitable for the proposed design vehicles.
- Accordingly, the transport characteristics of the proposed development are acceptable.

A copy of their report is found in **Appendix S**.

26 COMMUNITY ENGAGEMENT

26.1 Stakeholders and Communications Methods

Cement Australia commenced a community and stakeholder engagement process in October, 2019. The process identified the key stakeholders and methods of communication for the project. A number of communication methods were implemented and are summarized in the below **Table 26.1.**

Table 26.1: Identified Key Stakeholders and Communications Methods

Key Stakeholder	Interest	Method
Port of Melbourne	Landlord	Regular Project Meetings, Letter & Flyer, and Presentations
INVEST Victoria Department of Treasury and Finance Victoria	Victorian Government, Local Investment	Direct contact and Presentation
Department of Environment, Land Water and Planning (DELWP)	Victorian Government, Development	Direct contact and Presentation
Environment Protection Authority	Environment, Approval Process	Direct contact and Presentation
VIC Department of Economic Development, Jobs, Transport and Resources (DEDJTR)	Port Lessor	Letter and Flyer
Department of Jobs, Precincts and Regions	Fisherman's Bend Taskforce	Letter and Flyer
Melbourne City Council	Local Government	Letter and Flyer
Department of Ports & Freight	Victorian Government, Development	Letter and Flyer
Victorian Ports Corporation	Victorian Government, Shipping Activity	Letter and Flyer
Freight Victoria	Adjacent Rail Infrastructure	Letter and Flyer
Local Members	Local Government Constituents Employment	Letter and Flyer
CitiPower	Electrical Infrastructure	Engagement via Consultant
Multinet Gas	Gas Infrastructure	Engagement via Consultant
Owners and occupiers of properties within approximately 300m Radius	Amenity	Flyer Letter Box Drop & Mailout and Information Webinar
Owners, occupiers of properties beyond 300m radius and other interested parties	Amenity	CA Website Article and Information Webinar (referenced in Flyer)

26.2 Communications with Stakeholders

Table 26.2 summarizes the communications already undertaken by Cement Australia with various Stakeholders via meetings, workshops, letters, information Flyer delivery and Webinar. Copy of the Flyer is in **Appendix T**.

Table 26.2: Communications with Stakeholders

Date	Audience/Recipient	Method
21/10/2019	Port of Melbourne	Ongoing Regular Meetings
29/11/2019	Citipower	Via Insight Engineering
10/06/2020	Contour – Town Planner	Regular Meetings – provide advice on engagement with stakeholders
24/06/2020	Multinet Gas	Via Jinburra Pty Ltd
15/07/2020	Invest Victoria	Google Meet/Power Point Presentation to introduce project which included Cement Australia's specialist consultants providing planning support.
15/07/2020	DELWP	
15/07/2020	EPA	
15/07/2020	Port of Melbourne	
10/03/2021	General Public	Cement Australia Project Website
12/03/2021	Neighbours	Mailbox Drop of Flyers
15/03/2021	Director Fisherman's Bend Taskforce	Letter and copy of Flyer sent by email
15/03/2021	Minister Ports and Freight	
15/03/2021	CEO Victorian Ports Corporation	
15/03/2021	Commercial Manager Port Lessor Department of Economic Development, Jobs, Transport and Resources	
15/03/2021	Executive Director Freight Victoria	
15/03/2021	CEO Port of Melbourne	
15/03/2021	Member Parliament for Albert Park	
19/03/2021	Nearby Property Owners and Occupiers	Sent copy of Flyer to individual owners
29/03/2021	CEO City of Melbourne	Letter and copy of Flyer sent by email
31/03/2021	General Public	Public Webinar
17/05/2021	Department of Defense	Response/Invitation to meet following receipt of correspondence

The following link to the project website: https://www.cementaustralia.com.au/MelbourneSGF includes:

- Project Description
- Copy of the Webinar Presentation
- Recording of the Webinar Presentation, and
- Questions and Answers raised during the Webinar

26.3 Stakeholder Concerns Raised/Cement Australia Response

Webinar

All identified stakeholders were invited to attend an information and Q&A webinar to discuss key aspects of the project. Questions raised during the Webinar are contained in **Appendix U**.

Concerns relating to potential for increased noise, dust and toxins were raised at the webinar. These matters have been addressed as part of specialist noise and air quality investigations. The reports arising from these investigations are included in this submission.

Correspondence Received

Cement Australia has also received the following correspondence as part of the stakeholder engagement process:

Australian Government Department of Defence

Letter dated 12th March 2021, which concluded: "In summary, Defence seeks to ensure the viability and operations of its facilities are not compromised by encroaching incompatible development. Excessive noise, vibration, dust generation and increased heavy vehicle traffic have the potential to significantly affect the conduct of research being undertaken at DSTG FMB. As such, Defence seeks to ensure that appropriate measures are incorporated into the proposed development including, but not limited to: dust capture and storage to prevent discharge from the site, acoustic engineering to reduce excessive noise and vibration, and appropriate traffic management to prevent conflict with Defence movement to and from DSTG FMB."

Cement Australia replied on 17th May 2021 offering to meet with Defence to discuss its concerns.

Cement Australia has reviewed potential noise, air quality and traffic impacts to ensure issues raised by the Department of Defence are adequately addressed.

Victoria Ports Corporation Melbourne

Letter dated 19th March 2021, acknowledging receipt of correspondence and its interest in the project in relation to the proximity of the proposed works to the Vessel Traffic Services building and infrastructure. The letter stated:

"VPCM will review your full works approval application once it is made available by EPA as part of the statutory public consultation phase."

27 CONSTRUCTION MANAGEMENT

A Draft Construction Environmental Management Plan (CEMP) will be developed for the project based on the risks identified within the Construction Risk Assessment. (**Appendix M**). The primary purpose of the Risk Assessment and subsequent CEMP is to document the process of implementing controls to ensure that the construction project environmental commitments are being identified, implemented, monitored/analysed, audited and reviewed as part of the continual improvement cycle.

The key performance objectives for this CEMP are:

- Ensuring compliance with relevant environmental legislation and regulations,
- Prevent and minimise pollution, waste generation and environmental impacts associated with construction; and
- Provide a minimum acceptance criteria and governance for Principal Contractor CEMPs to ensure best practice for Environmental performance measures and provide a framework against which Principal Contractor activities will be audited.

28 POST CLOSURE PLANNING

Cement Australia, as part of their lease with the PoM, are required to abide by make good provisions as determined by the PoM at the expiration of the lease. These provisions may or may not require the removal of structures and hence the extent of remedial works will not be known until that time. Notwithstanding that, Cement Australia will:

- Remove all structures as required by the landlord;
- Remediate the site as required by the landlord taking into consideration any relevant remediation, restoration and mitigation actions in respect of Contamination, Pollution or Environmental Harm;
- Comply with any Government Legal Requirement in relation to Contamination, Pollution or Environmental Harm, including preparing and carrying out a remedial plan of action (including a performance agreement, compliance plan or environmental audit program) required by any Government Agency, or complying with any court order.

29 APPENDIX LIST

Appendix A	Prohibited Person Questionnaire
Appendix B	Fit & Proper Person Questionnaire
Appendix C	Credit Score
Appendix D	Planning Permit PoM Education Facility
Appendix E	Advice Regarding Need for Planning Permit
Appendix F	Confirmation from DELWP re Planning Approval
Appendix G	Letter from PoM regarding use of Port Education Centre
Appendix H	Baseline Due Diligence Environmental Site Assessment
Appendix I	Process Flow Diagram
Appendix J	Plant Layouts and Levels
Appendix K	Emissions & Energy Calculation Sheets
Appendix L	Risk Assessments of Operational Facility
Appendix M	Risk Assessments of Construction Facility
Appendix N	Operational Environmental Management Plan OEMP
Appendix O	Air Quality Assessment Report
Appendix P	Noise & Vibration Assessment Report
Appendix Q	Historic Cultural Heritage Assessment
Appendix R	Engineering Servicing Report
Appendix S	Transport Impact Assessment
Appendix T	Flyer
Appendix U	Webinar Q&A's