

# STATEMENT OF ENVIRONMENTAL EFFECTS

## CEMENT AUSTRALIA - PORT KEMBLA MILLING

Port Kembla Outer Harbour – Lot 2002 DP1176582

Section 4.55 (1A) Modification of Project Approval 10\_0102 – Increased Throughput

2 May 2022



## Document Control

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4	02/05/2022	Sam Coles (Development Planner)	Shaun Smith (Principal Environmental Planner)	Final for lodgement to DPE

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## Approval for Issue

NAME	SIGNATURE	DATE
Shaun Smith		02/05/2022

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## Glossary

ABBREVIATION	TERM / REFERENCE
AHIMS	Aboriginal Heritage Information System
AHIP	Aboriginal Heritage Impact Permit
AQIA	Air Quality Impact Assessment
BC Act	<i>Biodiversity Conservation Act 2016</i>
Blue Book	<i>Managing Urban Stormwater – Soils and Construction (Landcom 2004)</i>
BoM	Australian Bureau of Meteorology
CA	Cement Australia
CIA	Cumulative Impact Assessment
CLM Act	<i>Contaminated Land Management Act 1997</i>
DA	Development Application
DAWE	Commonwealth Department of Agriculture, Water and the Environment
dB	Decibel
dB(A)	A Weighted decibels
DP	Deposited Plan
DPI	Department of Primary Industries (including Agriculture and Fisheries)
DPE	NSW Department of Planning and Environment
EPA	NSW Environment Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EP&A Regulation 2021	<i>Environmental Planning and Assessment Regulation 2021</i>

ABBREVIATION	TERM / REFERENCE
GMF	<i>Grinding Mill Facility</i>
ha	Hectare
Heritage Act	<i>Heritage Act 1977</i>
km	Kilometres
L	Litre
LALC	Local Aboriginal Land Council
L <sub>eq</sub>	Equivalent continuous sound level
LEP	Local Environmental Plan
LGA	Local Government Area
m	Metre
m <sup>2</sup>	Square metres.
ML	Megalitre
MNES	Matters of National Environmental Significance
NPfi	<i>NSW EPA Noise Policy for Industry</i>
NPfi Guide	<i>A guide to the Noise Policy for Industry</i>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PKM	Port Kembla Milling
RBL	Rating background level
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
Space Urban	Space Urban Pty Ltd
SR	Scoping Report
SSD	State Significant Development
TfNSW	Transport for NSW
TIA	Traffic Impact Assessment
tpa	Tonnes per annum

## 1 Introduction

### 1.1 Overview

Space Urban Pty Ltd (Space Urban) has prepared this Statement of Environmental Effects (SEE), on behalf of Cement Australia (CA), to support an application to the NSW Department of Planning and Environment (DPE), for a modification to the Port Kembla Milling (PKM) facility ('the facility'), as consented by Project Approval 10\_0102.

The purpose of this modification is to enable an increase in production throughput from the current 1.1Mtpa to up to 1.4 Mtpa of cementitious material.

Approval was granted on 8 September 2011 by the Planning Assessment Commission to construct a Grinding Mill Facility (GMF) at the Outer Harbour of Port Kembla. The GMF approval included:

- A processing plant including transfer hoppers, storage bins, grinding mill and storage silos for dispatch of product,
- A materials transfer system which incorporates extensive covered and enclosed conveyor systems, transfer chutes and dust suppression system and bag house for air quality control,
- Clinker storage shed,
- Truck and ship loading and unloading facilities,
- Associated office and amenities, workshop, substation, transformer yard and car parking,
- Temporary covered external stockpile for raw product (excluding clinker),
- Construction of a conveyor to transport clinker from ships to the clinker storage shed, and
- An annual total volume of production of 1.1 million tonnes per annum.

The modification is proposed to be undertaken pursuant to section 4.55(1A) of the Environmental Planning & Assessment Act 1979 (NSW) (EP&A Act). Section 4.55(1A) of the EP&A Act allows for a modification of a development where the consent authority is '*satisfied that minimal environmental impact and is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all)*'

### 1.2 Background

PKM facility is located on 4.5ha of reclaimed land within the Wollongong Local Government Area in the Outer Harbour of Port Kembla. The existing facility is located on Lot 2002 DP 1176582 and is shown in **Figure 1**. The land is leased from the NSW Ports and is accessible from Arawata Drive.

PKM produces Portland Cement and Ground Granulated Blast Furnace Slag (GGBFS) Cement using a vertical roller mill and the site operates 24 hours, 7 days a week. The facility consists of a processing plant with vertical roller mill, transfer hoppers, storage bins and silos for product storage, a materials transfer system, transfer chutes and dust suppression systems, a clinker storage shed, truck and ship unloading facilities, truck loading facilities, workshop, substation, transformer yard, associated office and amenities and car parking.

The Facility is in the Outer Harbour while to the north of the site is the Inner Harbour. The Inner Harbour services BlueScope Steel, a Grain Terminal, a Coal Terminal and Australian Amalgamated Terminals. The PKM site itself is surrounded by other industrial developments.

The nearest residences to the site are located on Wentworth Road, 800m to the south of the site. Between the Site and the nearest residences are numerous industrial sites including a container distribution yard; a rail locomotive maintenance workshop; motor mechanical workshops; and various light industrial activities.

The land is zoned SP1 Special Activities under Chapter 5 of *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

The Outer Harbour of Port Kembla is operated by NSW Ports and is subject to requirements of Concept Approval 08\_0249 originally issued on 3 March 2011. A subsequent modification to the Concept Approval (MOD1) was approved on 8 September 2011 for the concept development of the Cement Australia Port Kembla Mill.

Port Kembla Milling operates under a separate Project Approval 10\_0102 administered by DPIE. This approval was issued in 2011 as a Part 3A approval and includes 3 Schedules containing numerous conditions for the construction and subsequent operation of PKM.

On 22 June 2012 the Project Approval was modified to account for a change in design and to amend condition 5. The approval now allows for: "*Total production of finished product (cement or granulated ground blast furnace slag) shall be limited to 1.1 million tonnes per annum*".

PKM also holds an Environmental Protection License, EPL No. 20101 which is administered by the NSW EPA.



						PROJECT MODIFICATION OF DA 10_0102 STATEMENT OF ENVIRONMENTAL EFFECTS PORT KEMBLA NSW		DRAWING LOCATION PLAN		
						LOCATION ARAWATA DR PORT KEMBLA		SCALE 1:20,000 @ A4	STAGE .....	
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Figure 1: Existing Site Location

### 1.3 Proposal

CA is proposing to submit a modification to its existing Development Consent, to enable an increase in production throughput from 1.1Mtpa to up to 1.4 Mtpa of cementitious material. The existing mill can produce more product than the amount assumed in the original development approval (1.1mtpa) and continued growth in the NSW market will mean that CA will need to use this latent capacity. The increase in throughput will be achieved through increased utilisation of the plant. At current annual throughput of 1.1mtpa, the plant maintains approximately 5672 run hours (out of a maximum available run hours of 7446). The increased capacity throughput of 300ktpa, will be achieved by an increase in run hours by 1442 hours above the current operations.

Although an increase above 1.1mtpa is possible without any changes to the mill plant, a fourth (4<sup>th</sup>) weighbridge with existing development approval under PA10\_0102 may be installed to assist in maintaining customer service levels and transport efficiencies. This weighbridge is approved to be constructed and operated within the existing enclosed truck loading area of the facility, therefore there is no impact to either stormwater, visual amenity, or landscaping. Accordingly, no additional approval is required for the installation of the 4<sup>th</sup> weighbridge. Existing approved site plans, including those for the 4<sup>th</sup> weighbridge, are attached as **Appendix A**.

Associated activities with the increase include:

- Up to 1.1 million tpa of clinker will be shipped into Port Kembla via the existing wharf terminal facilities. This will see approximately 7 additional ships per year at the site. There will be no changes to the wharf terminal facilities as part of this modification.
- The additional 300ktpa of cementitious material produced, will be transported via truck to Sydney and other markets via Mt Ousley road to the Hume / Princess highway. This will equate to approximately 70 additional finished product (dispatch) truck movements (in / out) per day. Peak daily truck movements are not expected to exceed approval limits of 744 truck (in/out) movements (i.e. 464 dispatch and 280 raw material truck movements respectively).

Alternatively, some transport may be by intermodal road / rail transfers on local Port Roads to the existing Darcy Road site. Noting that the ability to move cement by rail is largely out of the control of Cement Australia. The Darcy Road railhead site is located approximately 1.5 – 2 km via internal port roads. At the railhead location, the ISO tank containers will be transferred from the trucks onto the trains and railed to Cement Australia's Clyde terminal in Sydney or other Greater Sydney locations.

There will be no changes to the existing approved infrastructure on site as a part of this modification.

### 1.4 Proponent

Cement Australia is Australia's largest manufacturer and supplier of cement and cement related products and services. Cement Australia's parent companies are Holcim of Switzerland and the Heidelberg Group of Germany.

The Heidelberg Group is one of the largest manufacturers in the world of building materials. They are the leader globally in aggregates and have significant interest in cement, concrete and other downstream activities. The company operates in more than 40 countries and employs approximately 53,000 people.

Holcim is also a global leader in the supply of cement, aggregates (crushed stone, gravel and sand). They provide ready mix concrete and asphalt. The company operates in approximately 70 countries and employs a workforce of 80,000 staff.

Cement Australia has several sites around Australia including Glebe Island, Clyde and Newcastle along with Port Kembla in NSW.

### 1.5 Approval Pathway

The EP&A Act allows for the modification of an approved development under Section 4.55. Under this section there are four categories of modification depending on the level of change and environmental impact. These include:

- modification involving minor error, misdescription or miscalculation – Section 4.55(1) of the Act,
- modification involving minimal environmental impact – Section 4.55(1A),
- other modifications – Section 4.55(2), and
- modifications of consents granted by the Court – Section 4.56.

It is proposed to modify PA10\_0102 under the provisions of Section 4.55(1A) – Modifications involving minimal environmental impact. Section 4.55(1A) provides for the following:

*"A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if—*

*(a) it is satisfied that the proposed modification is of minimal environmental impact, and*

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(b) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all), and

(c) it has notified the application in accordance with—

(i) the regulations, if the regulations so require, or

(ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and

(d) it has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be.

Subsections (1), (2) and (5) do not apply to such a modification.”

## 1.6 Changes to Consent Required

To facilitate the modification, Condition 5 in Schedule 2 of the consent will need to be changed to reflect the increased throughput. The current Condition 5 reads:

*5. Total production of finished product (cement or granulated ground blast furnace slag) shall be limited to 1.1 million tonnes per annum.*

It is proposed to change Condition 5 to;

*5. Total production of finished product (cement or granulated ground blast furnace slag) shall be limited to 1.4 million tonnes per annum.*

## 1.7 Consultation

Initial consultation was undertaken with DPE on the 16<sup>th</sup> of December 2021 to discuss the proposed modification and clarify the required approval pathways. A Scoping report was lodged to the Major Projects planning portal on the 28<sup>th</sup> of January 2022 outlining the proposal and providing a preliminary assessment of the expected impacts of the modification. DPE provided feedback to the lodged scoping report on the 4<sup>th</sup> February 2022 in the form of an email, outlining that SEARS were not required to be issued for the project and agreeing with the characterisation of the modification as S4.55 (1A). DPE also provided the following comments;

*“As a result of the review, it is agreed that the main environmental impacts as a result of the modification would be in respect to Traffic impact, Air Quality Impacts, Noise and Vibration, Stormwater management and any cumulative impacts.*

*I did notice a couple of items that require further clarification, these are as follows:*

- The proposal states the increased production will create 60 additional movements (in/out) per day, however Table 1. (p8) states “60 new truck movements (in/out) and up to 6 new raw material truck movements a day respectively”. As a result clarification in the truck movements numbers is required.*
- Further explanation on how the increase in production does not effect the staff rates of the operation, particularly as there is increased transport movements as a result of the operation.”*

These comments are addressed in this SEE.

Preliminary consultation was also undertaken with NSW Ports, as they are the landowner of the PKM site and the EPA as the site operates under an EPL. Comments provided by NSW Ports included:

- Land Owner’s consent is required to be issued by Port Kembla Lessor for the proposed modification, and will be sought by NSW Ports on behalf of Cement Australia. NSW Ports will provide Permission to Lodge and Land Owners Consent which will be sought concurrently to assessment and granted prior to project determination.*
- Need to assure that the proposed modification is in compliance with the Concept Approval for the Port Kembla Outer Harbour, in particular the conditions of consent in relation to allowable truck movements.*

The EPA provided the following comments to be considered for the modification:

- EPA considers that the 27% increase in tonnage will result in a 27% increase in impacts from the site including air, noise, stormwater and dust drag out.*
- Water quality impacts need to be considered.*

All of the above comments are addressed in this SEE.



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Consultation was also undertaken with businesses and landowners within the Outer Harbour area. Letters outlining the proposal were sent to notify them of the proposed increase in production, and invited comments or questions to be made, if any. No feedback to the proposal was received.

## 2 Site Details

### 2.1 Site Location and Context

The project site is located within the Wollongong Local Government Area in the Outer Harbour of the port of Port Kembla.

The land on which the facility is located is land that was reclaimed by the Port Kembla Port Corporation. The main site is currently described as Lot 2002 DP 1176582 with the operations also utilising Lot 1 DP 1236743 which provides access to the number 6 Jetty located on Lot 41 DP 1158340. The address of the site is Arawata Drive, Port Kembla.

**Figure 1** (above) and **Figure 2** (below) show the regional and local context and the extent of the facility, ship unloading infrastructure, and adjacent industrial operations.

The overall character of the surrounding vicinity is predominantly industrial. In the immediate area there are large sheds, storage tanks, stacks, and conveyer lines. Surrounding industries include BlueScope Steel, the Port Kembla Grain Terminal, the Port Kembla Coal Terminal, and vehicle import Terminal. The area of the project site is well serviced by road, rail, and sea transport which service the existing, and proposed, industrial activities located in Port Kembla.

The CA rail siding is located approximately 1.5km from the Arawata Road site, at Darcy Road, Lot 11 DP 1006859.

The site is currently owned by the Port Kembla Port Corporation as a part of NSW Ports, and is leased by CA.

### 2.2 Existing Approvals

The Outer Harbour of Port Kembla is operated by NSW Ports and is subject to requirements of Concept Approval 08\_0249, originally issued on 3 March 2011. A subsequent modification to the Concept Approval (MOD1) was approved on 8 September 2011 for the concept development of the Cement Australia Port Kembla Mill. It is important to note that the Outer Harbour approval is not required to be modified as a result of this subject modification.

CA operates under a separate Project Approval 10\_0102 administered by DPE. This approval was issued in 2011 as a Part 3A approval and includes 3 Schedules containing numerous conditions for the construction and subsequent operation of the facility.

On 22 June 2012 the Project Approval was modified to account for a change in design and to amend condition 5. The approval now allows for: *"Total production of finished product cement or granulated ground blast furnace slag) shall be limited to 1.1 million tonnes per annum"*.

CA also holds an Environmental Protection License, EPL No. 20101 which is administered by the NSW EPA. The EPL allows for a throughput capacity of up to 2,000,000 tonnes per year.

### 2.3 Outer Harbour Approval

The facility is located within the Port Kembla Outer Harbour area, which is governed by the Outer Harbour Concept Approval which was approved under DA 08\_0249 in 2011. The Outer Harbour approval set limits on the overall use of the port with regard to traffic generation and overall tonnages received/dispatched from the user's sites. The proposed modification to the facility is consistent with the Outer Harbour approval and will not trigger a modification to the concept approval.



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## 2.4 Land Ownership

The site is under the ownership on the NSW Ports Corporation. Cement Australia currently leases the land from the Port Corporation. Owners Consent will be provided prior to the determination of this application.

## 2.5 Land Zoning

The subject land is zoned SP1 Special Activities under Chapter 5 of *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

Under the SEPP, the objectives of the Special Activities Zone are outlined as follows:

### Zone SP1 Special Activities

#### 1 Objectives of zone

- To provide for special land uses that are not provided for in other zones.
- To provide for sites with special natural characteristics that are not provided for in other zones.
- To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.
- To maximise the use of waterfront areas to accommodate port facilities and industrial, maritime industrial, freight and bulk storage premises that benefit from being located close to port facilities.
- To enable the efficient movement and operation of commercial shipping and to provide for the efficient handling and distribution of freight from port areas through the provision of transport infrastructure.
- To provide for port related facilities and development that support the operations of Port Botany, Port Kembla and the Port of Newcastle.

The existing development is characterised as “*cement works, concrete or bitumen pre-mix industries*” which is a permissible use in the SP1 Zone under the SEPP. The proposed modification does not change the land use.

## 2.6 Surrounding Land Uses

The port of Port Kembla is the closest specialist industrial port to Sydney, Australia's largest urban market. It also services the needs of regional New South Wales (NSW). Traditionally it has been a bulk goods port handling commodities such as iron ore, coal and grain.

The immediate area surrounding PKM consist of other heavy industrial user who utilise the port area. These users include Bluescope Steel, Australia Steel Mill Services, Graincorp, Incitec Pivot and Koch Fertilisers. Other users within the port area include Pacific National Rail, Shell Fuels, Ampol Fuels, IXOM operations, Coates Hire and a number of other transport and service industries.

Port Kembla business and residential areas are located to the south of the site, with the nearest sensitive receptor over 800m from the facility.

### 3 Proposed Development

#### 3.1 Project Description

CA is proposing to lodge a Section 4.55 (1A) modification to its existing approval to enable an increase in production throughput from 1.1 Mtpa to up to 1.4 Mtpa of cementitious material.

The existing facility was designed to produce more product than the current approved amount of 1.1 Mtpa. With continued growth in the NSW construction market CA can now utilise this latent mill capacity to provide more product to the market. The increase in throughput will be achieved through increased utilisation of the plant. At the current annual throughput of 1.1mtpa, the plant maintains approximately 5672 run hours (out of a maximum available run hours of 7446). An increased capacity throughput of 300ktpa, equates to an increase in run hours by 1442 hours above the current operations. The modification will result in a 27.2% increase in materials coming to site, the majority of which will come into the plant via ship and belt conveyor across #6 jetty.

Although an increase above 1.1mtpa is possible without any changes to the mill plant, a fourth (4<sup>th</sup>) weighbridge with existing development approval under PA10\_0102 may be installed to assist in maintaining customer service levels and transport efficiencies. This weighbridge is approved to be constructed and operated within the existing enclosed truck loading area of the facility, therefore there is no impact to either stormwater, visual amenity, or landscaping. Accordingly, no additional approval is required for the installation of the 4<sup>th</sup> weighbridge. Existing approved site plans, including those for the 4<sup>th</sup> weighbridge, area attached as **Appendix A**.

Associated activities with the increase include:

- Up to 1.1 million tpa of clinker will be shipped into Port Kembla via the existing wharf terminal facilities. This will see approximately 7 additional ships per year at the site. There will be no changes to the wharf terminal facilities as part of this modification,
- The additional 300ktpa of cementitious material produced, will be transported by either intermodal road / rail transfers on local Port Roads to the existing Darcy Road site, or by truck to Sydney and other markets via Mt Ousley road to the Hume / Princess highway. The Darcy Road railhead site is located approximately 1.5 – 2 km via internal port roads. At the railhead location, the bulk ISOs will be transferred from trucks onto train wagons and railed to Cement Australia’s Clyde terminal in Sydney or other Greater Sydney locations, and
- The additional traffic will equate to approximately 70 additional dispatch truck movements (in/out) per day. Peak daily truck movements are not expected to exceed approval limits of 744 truck (in/out) movements (i.e., 464 dispatch and 280 raw material truck movements respectively). The proposed modification does not exceed any traffic limits outlined in Outer Harbour concept approval.

**Table 1** below provides a summary of the existing and proposed activities to clearly identify the proposed modification.

**Table 1: Summary of Existing and Proposed Activities**

PROJECT ASPECT	APPROVED DEVELOPMENT	PROPOSED MODIFICATION
<b>Operating Throughput</b>	1.1 million tonnes per annum (tpa)	1.4 million tpa - 300,000 tonne increase
<b>Site</b>	Cement grinding mill	No physical works proposed- increase achieved through increasing utilization of mill
<b>Capital Investment Value</b>	\$175,000,000	\$0
<b>Operating Hours</b>	24 hours / 7 days a week	No change
<b>Workforce</b>	10 full time	No change
<b>Transport</b>	744 truck movements a day (in / out)	70 new dispatch truck movements (in/out) and up to 12 new raw material truck movements (in/out) a day respectively – which equates to a minor insignificant impact, less than 5% of approved movements. There will be no change to approved peak daily truck movements (744)  The finished product (dispatch) will be transported via road through F6/Mt Ousley route, or alternatively the output may be split between rail and road, with potentially less than 60 trucks on roads external to port area  7 additional clinker ships to port per year
<b>Air Quality</b>	Assessed as minimum impact with mitigation measures	No change. Mill can facilitate increase easily with minimal impact
<b>Noise</b>	Assessed as minimum impact with mitigation measures  Road traffic noise assessed as acceptable for the capacity of roads	No change. Mill can facilitate increase with minimal impact  Negligible increase to truck movements, negligible impact on road traffic noise.
<b>Visual</b>	Consistent with aims of the Port	No change
<b>Employment</b>	Plant currently operates with 10 staff	No change

To facilitate the modification, Condition 5 in Schedule 2 of the consent will require updating to reflect the increased throughput. Condition 5 currently reads:

*5. Total production of finished product (cement or granulated ground blast furnace slag) shall be limited to 1.1 million tonnes per annum.*

It is proposed to change Condition 5 to:

*5. Total production of finished product (cement or granulated ground blast furnace slag) shall be limited to 1.4 million tonnes per annum*

No further conditions are required to be changed as a result of this modification as traffic volumes do not exceed the limits set in Condition 19 of the consent, nor do the volumes trigger a modification to the Outer Harbour concept approval.

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The approved site plans are provided as **Appendix A**. As there are no infrastructure or layout changes proposed for the modified development, the existing approved site plan still applies to this application.

### 3.2 Traffic Generation

CA currently have approval for 744 truck movements as per Condition 19 of the original Part 3A project approval. Monthly truck movement data has been assessed where the current truck movements demonstrate a 'maximum' monthly average daily movement of 256 trucks per day for production dispatch and 44 trucks per day for import (raw) material.

CA are proposing to increase their Port Kembla mill operations from 1.1 Mtpa to 1.4 Mtpa for both imported material and production material, resulting in an increase of 27.2%. An increase in operations would then expect an increase in dispatch and raw materials truck movements to and from the site of a similar magnitude.

The traffic assessment has shown that this increase in production will increase the average maximum daily truck raw materials rate from 44 trucks per day to 56 trucks per day which is well within the allowable limit of 280 trucks per day. This will also increase the average maximum daily truck dispatch rate from 256 trucks per day to 326 trucks per day which is also well within the allowable limit of 464 trucks per day.

### 3.3 Workforce

The modified development will not see any change to the predicted workforce on-site as assessed for the existing approved development. The current facility operates with 10 staff on-site at any one time.

The Port Kembla Milling facility was designed to accommodate the proposed increased capacity, while maintaining existing personnel numbers to operate the plant. The plant is equipped with best available technology, and real time remote full access to the Plant Control System (HMI), which ensures a safe, stable and self-correcting process.

Additional fleet and driver requirements to accommodate the increase in production rates at the Port Kembla Milling facility, will be sourced from the existing Cement Australia fleet and drivers in NSW. Any increase (or decrease) in fleet and driver numbers, is in line with demand across NSW and end customer destination for the volume and is not specific to a particular project.

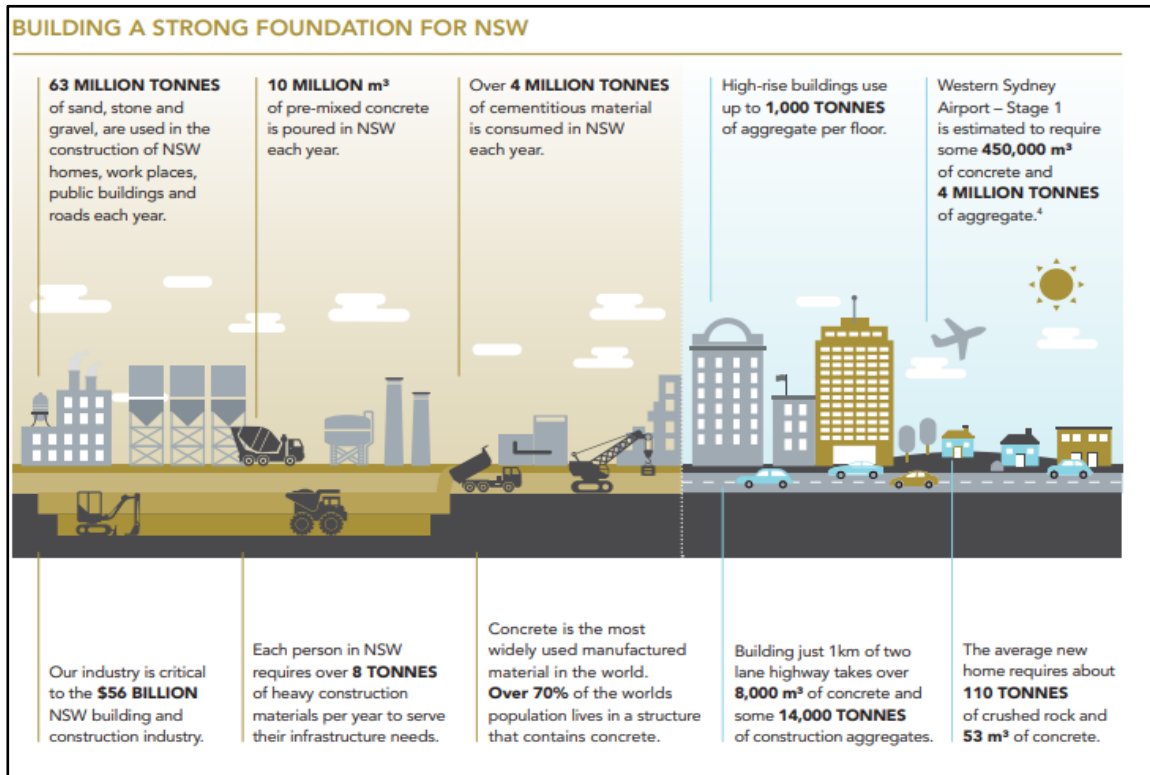
### 3.4 Project Justification

The construction industry is reliant on cement and cementitious products to deliver concrete for the majority of structures in our built environment. The strength, versatility, and durability of cement, GGBFS, and the final product concrete make them a basic and necessary component in the construction industry. Applications for these products range from footings for single dwellings, to substantial construction elements within large scale projects to the provision of infrastructure such as bridges and roads. Consequently, there is an on-going need for the provision of cement and cementitious products.

Demand for heavy construction materials in NSW is at an all-time high and Cement Concrete and Aggregates Australia forecasts that this demand will persist due to a buoyant building and construction market, stimulated by population growth and infrastructure investment. The population of NSW is set to grow by 28 per cent to almost 10 million people by 2036 with roughly 65 per cent of the population residing in the Greater Sydney region. An additional 750,000 new dwellings will also be required to support this growth. In addition, the NSW Government is investing heavily in infrastructure to support a growing NSW and in 2017/18 was ranked the number one State for infrastructure investment, dedicating 17.7 per cent of total government expenditure to infrastructure. **Figure 3** below shows the importance of cement and other aggregates in the construction industry.

This level of activity has resulted in the demand for cement products in NSW to grow, meaning that the supply must be sustained to assure that projects are able to be constructed, and infrastructure is able to be delivered. Without the increase in throughput there is potential for the construction industry to stall among cement shortages. The proposed modification is critical to the continued growth of NSW, and the delivery of important infrastructure projects including:

- Western Sydney Airport,
- Sydney Airport Rail line,
- Sydney Metro West,
- M12 Connector,
- F6 Princess Highway Upgrade, and
- Western Harbour Tunnel.



Source: CCAA – Building a Strong Foundation for NSW – Policy Priorities for NSW

**Figure 3: Importance of Cement in the Construction Industry**

The GMF is ideally located to supply cement and GGBFS to the construction industry to support this anticipated growth both in terms of housing construction and the provision of infrastructure such as roads, schools, commercial centres. Again, the project site is ideally located to obtain raw product by utilising readily available GBFS and accessing clinker by ship for its processing and production into cement or GGBFS. This proposal facilitates the development of these growth centres and consequently helps underpin the strategic planning for the State. The provision of this housing also aids in the growth of the State economy by supporting the building industry.

The proximity of the site to shipping infrastructure allows the plant to operate more efficiently and economically. Furthermore, the location of the GMF close to the supply of GBFS and the transport opportunities provided by the port, allows the product to be produced more sustainably.

## 4 Planning and Legislative Requirements

### 4.1 Overview

This section identifies the legislative requirements and planning controls relevant to the Project and outlines the key policy and statutory considerations.

All associated environmental and planning approvals will be obtained as required for a State Significant Development (SSD) under Part 4 of the EP&A Act, including but not limited to:

- Commonwealth and State Government planning approvals,
- Local government development approvals,
- Operational approvals (such as an Environment Protection Licence), and
- Other potential approvals required under relevant environmental and planning legislation and regulations.

### 4.2 Commonwealth Legislative Requirements

#### 4.2.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Commonwealth Department of Agriculture, Water, and the Environment (DAWE) and provides a legal framework to protect and manage places defined as Matters of National Environmental Significance (MNES). The EPBC Act lists the following places as MNES:

- World Heritage properties
- National heritage places
- Wetlands of International Significance (including Ramsar wetlands)
- Listed threatened species and ecological communities
- Listed Migratory Species protected under international agreements (CAMBA and JAMBA)
- Commonwealth marine areas
- The Great Barrier Reef Marine Park
- Water resources (relating to coal seam gas development and large coal mining development)
- Protection of the Environment from Nuclear Actions

Under Part 9 of the EPBC Act, actions that may have a significant impact on a MNES are deemed 'controlled actions' and require approval from the Commonwealth Minister for the Environment.

The assessment of the significance of the impact is based on the criteria listed in the EPBC *Significant Impact Guidelines 1.1* (Department of Environment 2003). Should the Environment Minister decide the action will be taken in a manner that will ensure it will be likely to not have an adverse impact on the MNES, approval will be granted.

The proposal will not have an impact on MNES due to the following:

- The entirety of the Project footprint is not increasing or changing,
- No new works or disturbance is proposed, and
- The proposed Project does not require the removal of any threatened vegetation, vegetation community or potential threatened fauna habitat.

#### 4.2.2 National Greenhouse and Energy Reporting Act 2007

The *National Greenhouse and Energy Reporting Act 2007* (NGER Act) came into effect in September 2007 and introduced a single national reporting framework for the reporting and dissemination of information about greenhouse gas emissions, greenhouse gas projects and energy use and production by corporations. The NGER Act makes registration and reporting mandatory for corporations whose energy production, energy use or greenhouse gas emissions meet specified thresholds.

CA will continue to report emissions from the plant operations.

### 4.3 NSW Legislative Requirements

#### 4.3.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) provide the framework for environmental planning in NSW and include provisions to ensure that

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proposals that have the potential to impact on the environment are subject to detailed assessment and provide opportunity for public involvement.

In NSW, development that is of State significance is assessed under the State significant assessment system which provides separate assessment pathways for State Significant Development (SSD) and State significant infrastructure (SSI). Development may be declared to be SSD under Part 4 Section 4.36 of the EP&A Act and Chapter 2 of the *State Environmental Planning Policy (Planning Systems) 2021* (SEPP Planning Systems).

This application is modifying a previous Part 3A approval issued in 2011. Since this time, Part 3A has been removed from the EP & A Act and now operates subject to Chapter 2 of the *State Environmental Planning Policy (Planning Systems) 2021*.

#### **Section 4.55 of the EP&A Act 1979**

Section 4.55 of the EP&A Act relates to modifications of development consents by a consent authority.

Section 4.55 (1) and (1A) deal with the power of a consent authority to modify a development consent to correct a minor error, misdescription or miscalculation, or in circumstances where the proposed modification is of minimal environmental impact. Section 4.55 (2) deals with other modifications.

For a development to be modified under S4.55 (1A) the consent authority must be satisfied that the development is of “minimal environmental impact and is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all)”: S4.55 (1A).

The development is also considered to be substantially the same development as activities on the site are not changing, with the increase in throughput facilitated through increased utilisation of existing plant. The use will continue to be a cement/GGBFS grinding mill, as approved in the original consent, the traffic will remain under the required cap and environmental impact will be substantially the same.

Given that no physical works are proposed to be undertaken on the site, and the increase in throughput will have minimal environmental impact, with the existing environmental controls and mitigation devices installed on the plant able to handle the proposed increase, the modification is to be assessed under S4.55 (1A). This was also confirmed by DPE on 4.3.2022 following the submission of a project Scoping Document.

#### **4.3.2 Protection of the Environment Operations Act 1979**

Under the *Protection of the Environment Operations Act 1997* (POEO Act), it is an offence to cause water, air or noise pollution without authorisation for such under an Environment Protection Licence (EPL).

Additionally, Schedule 1 of the POEO Act identifies “scheduled activities” which are required to be licensed by the EPA. The scheduled activity for which the site is authorised for is “Cement or Lime works” with a scale of >500,000 – 2,000,000 tonnes per year.

The site currently operates under an EPL which will not need to be amended as the proposed increased throughput of up to 1.4mtpa is accommodated within the current EPL limits.

#### **4.3.3 Heritage Act 1977**

The *Heritage Act 1977* (Heritage Act) aims to ensure that the heritage of NSW is adequately identified and conserved. The Heritage Act provides protection to items such as places, buildings, works, relics, moveable objects, precincts, or land that have been identified, assessed, and listed on the State Heritage Register.

A search of the National, Commonwealth, and State heritage registers has identified listed items within proximity to the site, however no listed items occur within the site.

#### **4.3.4 National Parks and Wildlife Act 1974**

The *National Parks and Wildlife Act 1974* (NPW Act) aims to conserve nature, objects, places or features (including biological diversity) of cultural value within the landscape. The NPW Act also aims to foster public appreciation, understanding and enjoyment of nature and cultural heritage, and provides for the preservation and management of national parks, historic sites and certain other areas identified under the NPW Act. The NPW Act is administered by Heritage NSW.

Places or objects of Aboriginal cultural heritage on or in the vicinity of a site are required to be managed in accordance with the NPW Act. Clause 86 of the NPW Act states that “a person must not harm or desecrate an object that the person knows is an Aboriginal object.”

Potential impacts on Aboriginal heritage objects or places are unlikely due to the current highly disturbed nature of the site. There will be no change to the extent of the project area and no additional risk of impacting Aboriginal heritage items.

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#### 4.3.5 Water Management Act 2000

The *Water Management Act 2000* provides the legislative basis for water use, management, and planning. It is gradually replacing the planning and management frameworks in the Water Act 1912.

The Act provides for a range of water transactions known as access licence dealings or dealings and the Act also stipulates that a controlled activity approval may be required under the Water Management Act 2000 if works are to be undertaken within 40 metres of a water body/ watercourse.

No changes are proposed to current footprint or existing infrastructure. The proposal is consistent with the provisions of the Act.

#### 4.3.6 Contaminated Land Management Act 1997

The *Contaminated Land Management Act 1997* (CLM Act) establishes a process for investigating and (where appropriate) remediating land that is contaminated. Section 59(2) of the CLM Act requires notification of contaminated sites. Section 60 of the CLM Act requires landowners to report any contamination that represents a significant risk of harm to human health or the environment to the NSW EPA.

As there is proposed to be no additional ground disturbance, excavation, or construction at the site it is considered that there is no risk to encountering contaminated lands.

### 4.4 State Environmental Planning Policies

#### 4.4.1 State Environmental Planning Policy (Planning Systems) 2021

The *State Environmental Planning Policy (Planning Systems) 2021* incorporates provisions from the SEPPs consolidated as follows: Chapter 2 - State and Regional Development, Chapter 3 – Aboriginal Lands, and Chapter 4 – Concurrences and Consents.

Chapter 2 of the Planning Systems SEPP aims to identify development that is State Significant Development (SSD) and State Significant Infrastructure (SSI).

Projects which are declared in either of these categories are assessed by the DPE and may be referred to the Planning and Assessment Commission (PAC) if contentious, if 1 objection is received from a Council, or if over 25 objections are received from the public.

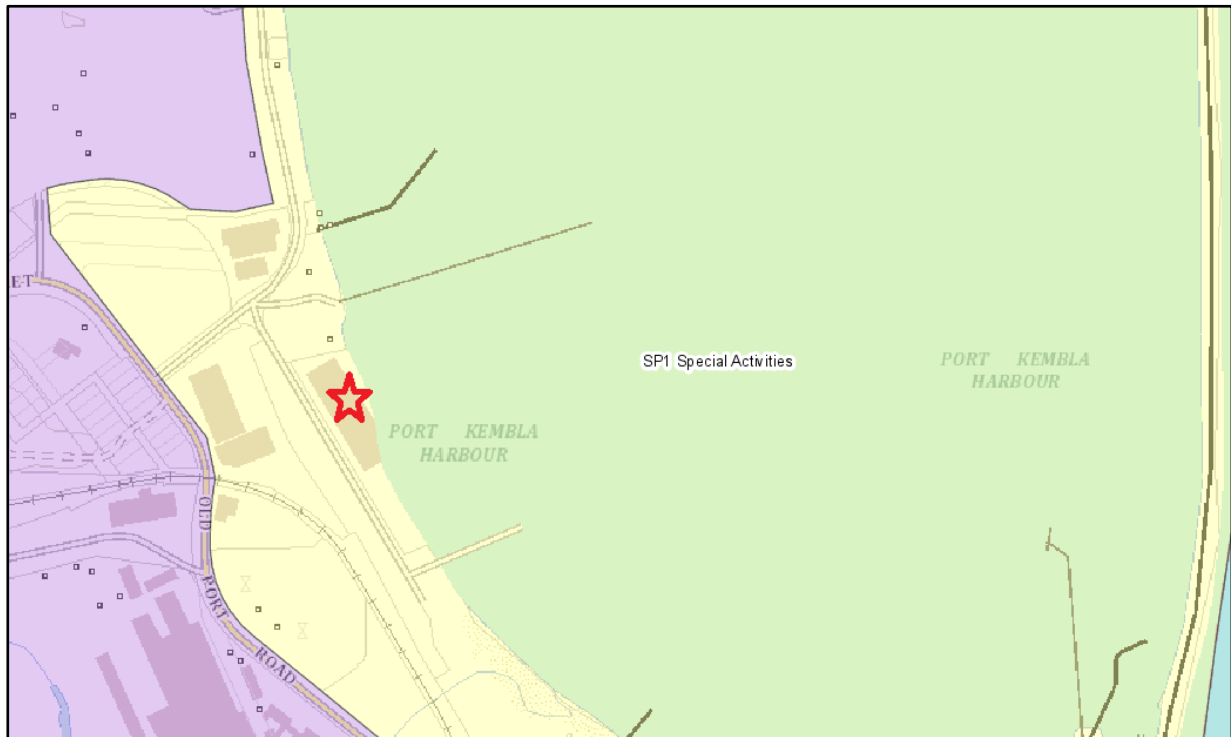
The proposed development is a modification of a Part 3A approval (since removed). The proposal is identified as a modification to a SSD as per the requirements of Chapter 5, Part 5.4, Clause 5.27 of the SEPP Transport and Infrastructure 2021. Modifications to SSD projects are assessed under the provisions of Section 4.55 of the EP&A Act.

#### 4.4.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The *State Environmental Planning Policy (Transport and Infrastructure) 2021* incorporates provisions from the SEPPs consolidated as follows: Chapter 2 - Infrastructure, Chapter 3 – Educational Establishments and Childcare Facilities, Chapter 4 – Major Infrastructure Corridors, and Chapter 5 – Three Ports – Port Botany, Port Kembla and Newcastle.

Chapter 5 of the Transport and Infrastructure SEPP aims to guide the land-use planning and assessment framework from the previous Three Ports SEPP for appropriate development at Port Kembla, Port Botany and Port of Newcastle.

The site is identified as being subject to assessment under Chapter 5 of the SEPP Transport and Infrastructure. Under Chapter 5, Part 5.2, Clause 5.11 of the SEPP, the site is identified as being located within the SP1 Special Activities Zone, as demonstrated in **Figure 4** below.



Source: DPE ePlanning Spatial Viewer, 2022

**Figure 4: Zone Map Extract**

Under Chapter 5, Part 5.2, Clause 5.12 of the Transport and Infrastructure SEPP, the objectives of the Special Activities Zone are outlined as follows:

#### **Zone SP1 Special Activities**

##### *1 Objectives of zone*

- To provide for special land uses that are not provided for in other zones.
- To provide for sites with special natural characteristics that are not provided for in other zones.
- To facilitate development that is in keeping with the special characteristics of the site or its existing or intended special use, and that minimises any adverse impacts on surrounding land.
- To maximise the use of waterfront areas to accommodate port facilities and industrial, maritime industrial, freight and bulk storage premises that benefit from being located close to port facilities.
- To enable the efficient movement and operation of commercial shipping and to provide for the efficient handling and distribution of freight from port areas through the provision of transport infrastructure.
- To provide for port related facilities and development that support the operations of Port Botany, Port Kembla and the Port of Newcastle.
- To facilitate development that by its nature or scale requires separation from residential areas and other sensitive land uses.
- To encourage employment opportunities

#### **Land use**

The existing development is characterised as “*cement works, concrete or bitumen pre-mix industries*” which is a permissible use in the SP1 Zone under the Transport and Infrastructure SEPP. The proposed modification does not change the land use.

#### **State Significant Development**

Part 5.4 of Chapter 5 of the Transport and Infrastructure SEPP relates to State Significant Development and State Significant Infrastructure. Specifically, Clause 5.27 outlines the criteria for development to be classified as state significant development, for which is outlined to be as follows:

*(1) Development is declared to be State significant development for the purposes of the Act if—*

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- (a) it is carried out on land within the Lease Area or on unzoned land under this Policy,
- (b) it is, by operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and
- (c) it has a capital investment value of more than \$100 million or it is designated development (other than development specified in clause 28 (c) or 30 (shipping facilities) of Schedule 3 to the Environmental Planning and Assessment Regulation 2000).

In accordance with above, the proposal is identified as a modification to an existing permitted use within the lease area.

#### 4.4.3 State Environmental Planning Policy (Resilience and Hazard) 2021

##### Chapter 2 - Coastal Management

State Environmental Planning Policy (Hazard and Resilience) 2021 applies to land identified within the coastal zone. The project site is located within the coastal zone.

The aims of this SEPP are to manage and protect the development of land, to manage and protect the natural, cultural, recreational, and economic qualities of the coastal zone and to ensure that development is compatible with its natural attributes.

Whilst the site is in a coastal zone, it is also located within a heavy industrial area on a site created for the proposed use. There is no ground disturbance, excavation, or construction required for this modified development. The proposed development is considered to comply with the requirements of the SEPP.

##### Chapter 4 - Remediation of Land

Under the provisions of Clause 4.6(1) of SEPP (Resilience and Hazard), a consent authority must not consent to the carrying out of any development on land unless:

- a) it has considered whether the land is contaminated,
- b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
- c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

No physical works to the site are proposed. There will be no soil or land disturbed as part of this modification.

#### 4.5 Local Environmental Planning Policies

##### 4.5.1 Wollongong Local Environment Plan 2009

The project site is located on land identified as State significant under Chapter 5 of the Transport and Infrastructure SEPP. Accordingly, the provisions of Wollongong Local Environment Plan 2009 do not apply to this site. Therefore, the site takes on the zoning prescribed under the Transport and Infrastructure SEPP. The site is zoned SP1 Special Activities under the SEPP.

##### 4.5.2 Wollongong Development Control Plan 2009

As the project site is located within an area which is nominated as State Significant under Chapter 5 of the Transport and Infrastructure SEPP, the provisions of the DCP do not apply to this site. However, where possible relevant provisions of the DCP will be considered.

## 5 Environmental Assessment

### 5.1 Traffic and Transport

#### 5.1.1 Introduction

An assessment of traffic impacts of the proposed modified development has been undertaken by Bitzios Consulting. The purpose of this report was to determine the potential traffic impacts resulting from the increase in throughput and to assess the impact on the external road network. The **Traffic Impact Assessment** is attached as **Appendix B**.

#### 5.1.2 Existing Environment

The subject site is predominately surrounded by industrial operations including BlueScope Steel, the Port Kembla Coal Terminal, the Port Kembla Grain Terminal and the vehicle import Terminal. The subject site is also well serviced by road, rail, and sea transport for both the existing and proposed industrial activities in Port Kembla. CA's rail siding is located on Darcy Road (Lot 11 DP 1006859), approximately 1.5km from the Aromata Road site. It is understood that the Port Kembla Port Corporation currently owns the site as a part of NSW ports and is leased by CA.

#### Daily Traffic Volumes and Speed

Existing daily traffic volumes and speeds on Old Port Road between Darcy Road and Foreshore Road (Location 1) and between Foreshore Road and Christy Drive (Location 2) were sourced by CA through an external traffic survey company. **Figure 5** illustrates the location of the existing count data for Scenario 1. **Table 2** illustrates this data as per below.

**Table 2: Existing Daily Traffic Volumes and Percentile Speeds**

SPEED LIMIT (60 KM/HR)	COUNT DATA LOCATION 1: BETWEEN DARCY ROAD & FORESHORE ROAD			COUNT DATA LOCATION 2: BETWEEN DARCY ROAD & CHRISTY DRIVE		
	NORTH	SOUTH	COMBINED	NORTH	SOUTH	COMBINED
Weekly 50 <sup>th</sup> Percentile Speed	41	44	42	56	58	57
Weekly 85 <sup>th</sup> Percentile Speed	48	53	50	66	68	67
Five Day AADT	1394	1431	<b>2825</b>	1305	1341	<b>2646</b>
Seven Day AADT	1255	1299	<b>2555</b>	1143	1188	<b>2331</b>

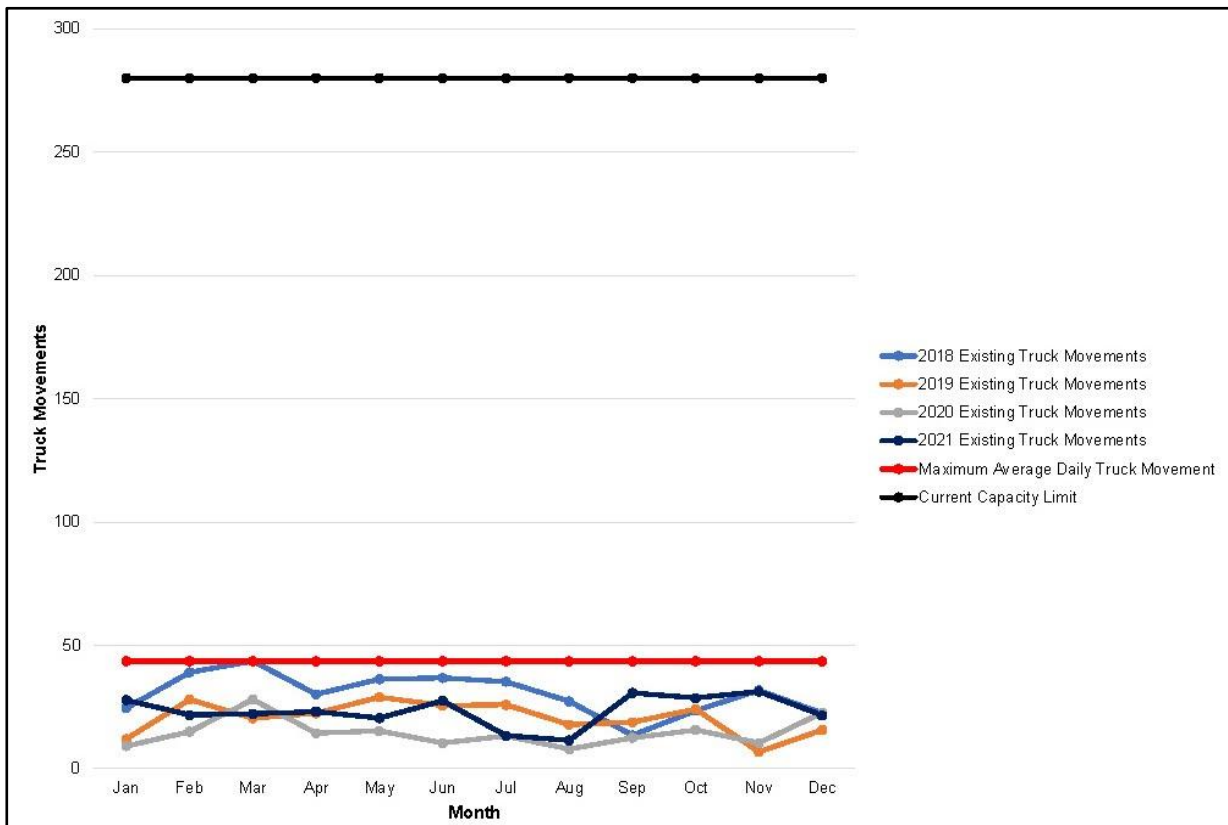


Source: Nearmap 2022

**Figure 5: Existing Count Data Locations on Old Port Road for Scenario 1**

**Existing Raw Material Truck Movement**

Daily raw materials truck movements were sourced from PKM where the maximum average daily truck movements for both existing and projected were anticipated to operate within the current truck movement capacity limit. The raw materials collected by the trucks include slag, limestone, and gypsum. The existing truck movements for raw materials from January 2018 to December 2021 is illustrated in **Figure 6** below.

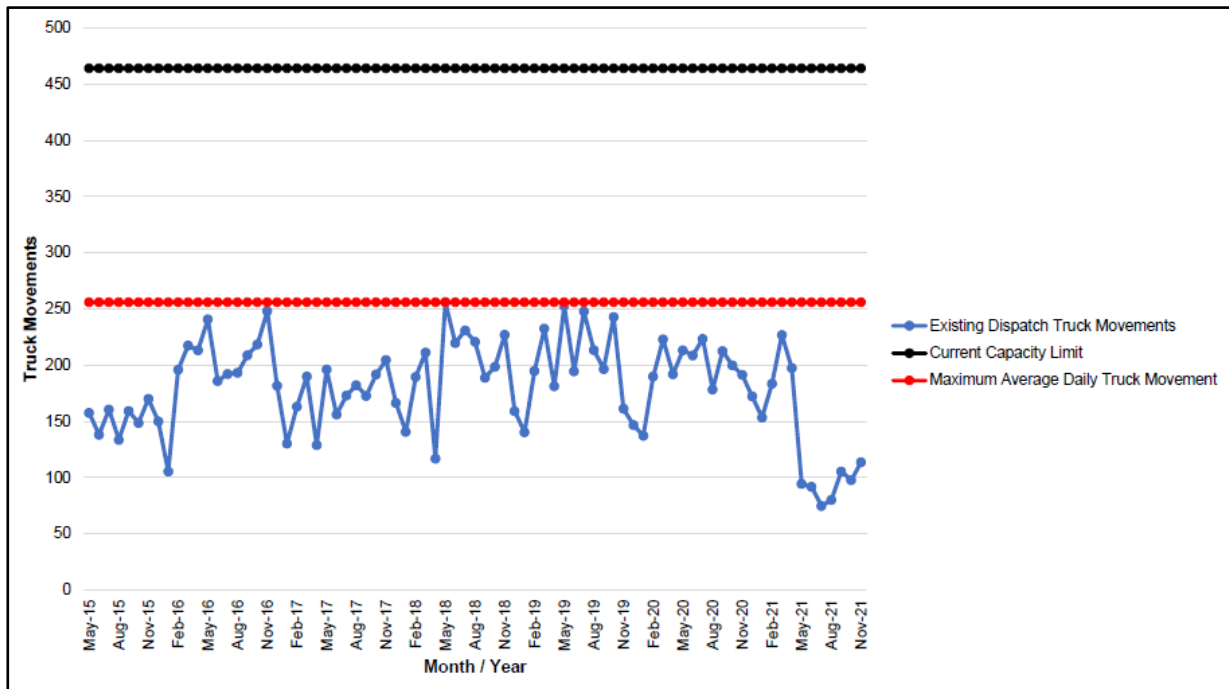


**Figure 6: Existing Raw Material Truck Movements – Maximum Average Daily**

Based on the figure above, the total peak number of existing truck movements (44) is well within the truck movement capacity limit (280).

### Existing Raw Material Truck Movements

The existing dispatch of truck movements from May 2015 to November 2021 are illustrated in **Figure 7** below.



**Figure 7: Existing Daily Dispatch Truck Movements – Maximum Average**

Based on the figure above, the peak number of existing truck movements (256) is well within the truck movement capacity limit (464).

### 5.1.3 Existing Approval

CA currently have approval for 744 truck movements as per Condition 19 of the original Part 3A project approval (**Figure 8** below). The Applicant has been submitting monthly truck movement data to the department as required under current approvals. The current truck movements have demonstrated a ‘maximum’ monthly average daily movement of 256 trucks per day for production dispatch, and up to 117 trucks per day for import (raw) material. Noting that this level of raw material truck movements do not occur daily but generally 2 – 3 days in a week period while at other days it is less.

Traffic Movements		
19. The Proponent shall ensure that operational truck movements comply with the restrictions in Table 1.		
<i>Table 1: Operational Traffic Generation</i>		
Vehicle Type	Daily	Peak Hour
Raw Material Trucks (5am – 6pm)	280	22
Dispatch Trucks (24 hour)	464	20
<b>Total</b>	<b>744</b>	<b>42</b>

**Figure 8: Condition 19 of Project Approval 10\_0102 Limiting Daily Truck Movements**

### 5.1.4 Proposed Development

CA propose to increase their current cement production rate of 1.1Mtpa to up to 1.4Mtpa given that their existing mill can produce more product than the current approved amount (1.1Mtpa). As such, CA also propose to submit a modification to its existing Development Consent where increasing their production throughput will be achieved by increased utilisation of the plant.

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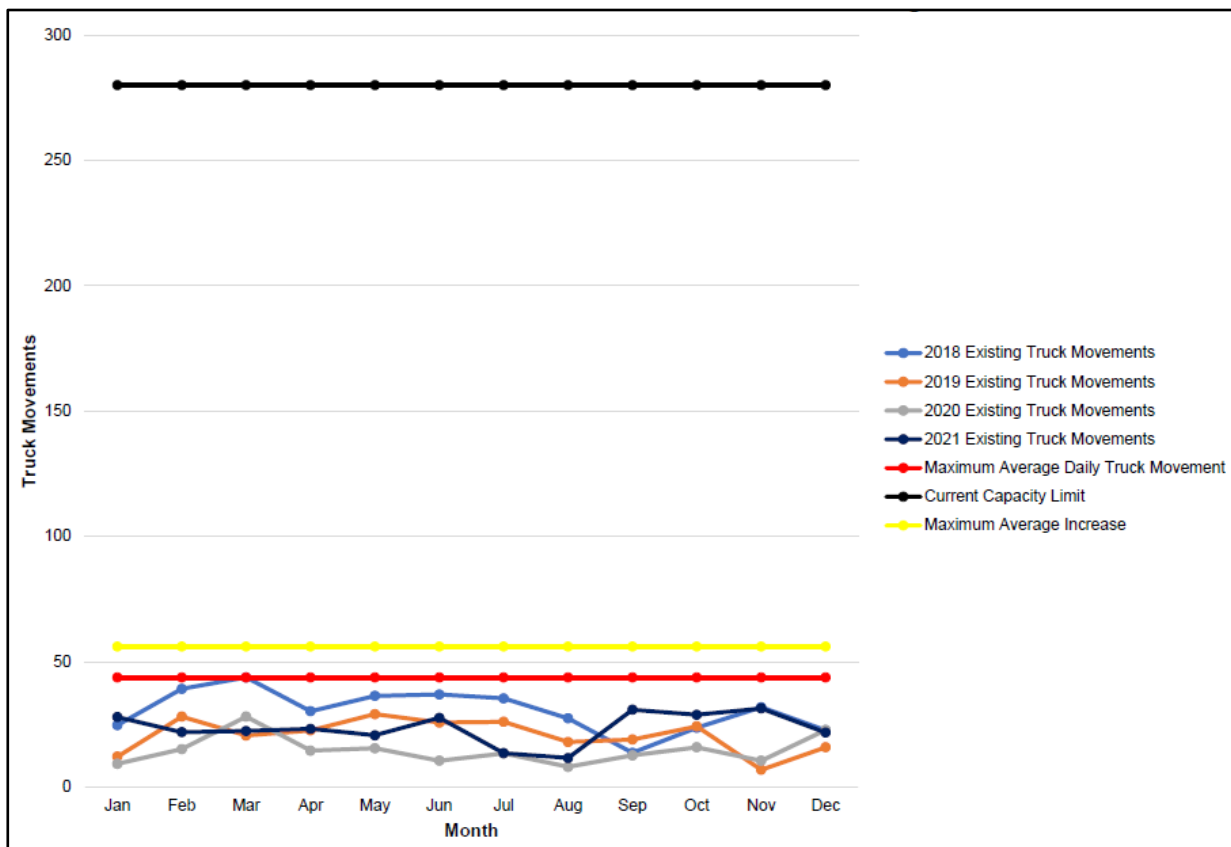
Although an increase in production throughput does not require any changes to the plant, a fourth (4th) weighbridge at the loading facility may be installed to assist in maintaining customer service levels and transport efficiencies. It should be noted that no additional approval is required for installing the 4th weighbridge given that it was included in the original development consent, and if constructed will be installed within the existing facility.

The material will be dispatched via truck external to the site where additional truck movements will occur from PKM to Cement Australia to Sydney i.e. external / main roads including Mt Ousley Road to the Hume / Princess Highway.

### 5.1.5 Impact Assessment

#### Forecast Raw Material Truck Movements

With a production throughput being increased from 1.1Mtpa to 1.4Mtpa, existing raw material truck movements are also increased by 27.2%. As such, the maximum average daily truck movement is increased to 56 vpd (vehicles per day) and is illustrated in **Figure 9** below.



**Figure 9: Forecast Daily Raw Material Trucks**

Under the proposed scenario, the additional forecast 12 truck movements per day is expected to have a negligible impact on the local road network, with traffic volumes on these roads expected to remain below 3,000 vehicles per day. Subsequently, no further assessment is considered necessary under this scenario.

#### Forecast Dispatch Truck Movements

With a production throughput being increased from 1.1Mtpa to 1.4Mtpa, existing dispatch truck movements are also increased by 27.2%. As such, the maximum average daily truck movement is increased to 326 vpd and is illustrated in **Figure 10** below.

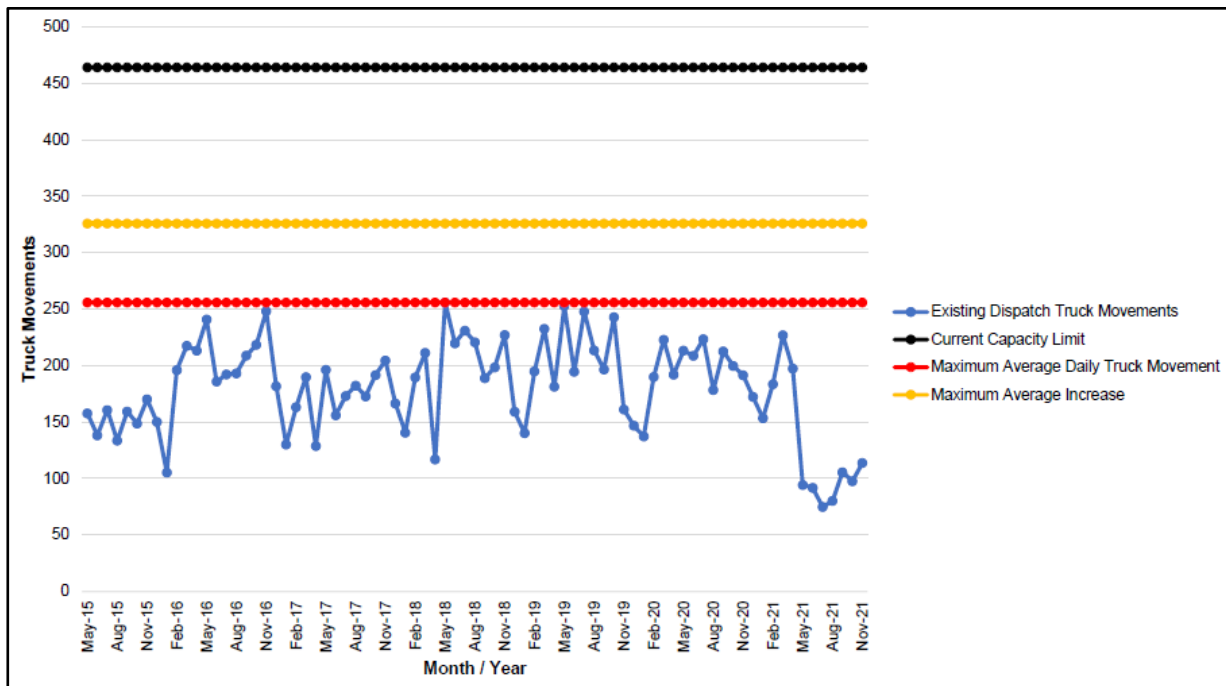


Figure 10: Forecast Dispatch Truck Movements

With a 27.2% increase from the maximum average daily truck movement (256), the maximum average daily increase (326) is still well within the current truck movement capacity limit (464).

Similar to the forecast raw material trucks, the additional forecast 70 (in/out) truck movements per day is expected to have a negligible impact on the local road network, with traffic volumes on these roads expected to remain below 3,000 vehicles per day. Subsequently, no further assessment is considered necessary.

### 5.1.6 Conclusions

The traffic assessment has shown that the proposed increase in production will increase the average maximum daily truck raw materials rate from 44 trucks per day to 56 trucks per day which is well within the allowable limit of 280 trucks per day. This will also increase the average maximum daily truck dispatch rate from 256 trucks per day to 326 trucks per day which is also well within the allowable limit of 464 trucks per day.

Considering the contents of the traffic assessment, the proposal to increase the sites production is not expected to increase traffic impacts to the external road network, in addition to what has already been approved. The proposed increase in production will not lead to CA exceeding the allowable allocated truck movements under both the original approval and Outer Harbour Concept approval.

## 5.2 Air Quality

### 5.2.1 Introduction

An **Air Quality Impact Assessment** for the proposed modified development has been undertaken by Advitech Pty Ltd (Advitech). The purpose of this study was to determine the potential dust generating sources from the modified development, undertake modelling of the worst-case scenarios likely at the site, determine the likely impacts, and propose suitable mitigation measures and strategies. The report provides assessment of air quality impacts of the DA modification to allow for throughput increase against the NSW EPA criteria. The **Air Quality Impact Assessment** report is attached as **Appendix C**.

### 5.2.2 Existing Environment

The nearest potentially affected residences to the site are located on Wentworth Road, 750 m to the south of the site. Between the site and the nearest residences are other numerous industrial sites including a container distribution yard, a rail locomotive maintenance workshop, motor mechanical workshops and other various light industrial activities. **Table 3** below lists the potential sensitive receivers along Wentworth Road.

**Table 3: Sensitive Receivers**

RECEIVER ID	ADDRESS	EASTING	NORTHING	RECEIVER TYPE
R1	Port Kembla Train Station	307328	6182924	Public Place
R2	Port Kembla North Train Station	306065	6183400	Public Place
R3	Cringila Train Station	305130	6184017	Public Place
R4	7 Military Road Port Kembla	307149	6182786	Private Residence
R5	3 Wentworth Street Port Kembla	306968	6182775	Private Residence
R6	2 Holman Street Port Kembla	306322	6182554	Private Residence
R7	2 First Avenue North Port Kembla	305918	6182646	Private Residence
R8	48 Flagstaff Road Warrawong	305629	6182835	Private Residence
R9	2 Birmingham Street Cringila	304842	6183919	Private Residence

### 5.2.3 Methodology

#### Air Quality Guidelines

The NSW Environment Protection Authority (EPA) specify the impact assessment criteria in the publication *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW, 2016*. The relevant sections from this publication are reproduced below in **Table 4** which presents the ground level concentration (GLC) criteria for each applicable air pollutant.

**Table 4: NSW EPA Impact Assessment Criteria**

POLLUTANT	NSW EPA DESIGN CRITERIA	UNITS	AVERAGING TIME
TSP	90	µg/m <sup>3</sup>	Annual
PM <sub>10</sub>	50	µg/m <sup>3</sup>	24 hours
	25	µg/m <sup>3</sup>	Annual
PM <sub>2.5</sub>	25	µg/m <sup>3</sup>	24 hours
	8	µg/m <sup>3</sup>	Annual
Deposited Dust	2	g/m <sup>2</sup> /month	Annual
	4		

#### Background Air Quality

For the purpose of the air quality assessment, the Scouts Hall air quality station was primarily used for the ambient PM<sub>10</sub> concentrations as it is 2 km west from the Port Kembla Milling site. Where data was unavailable, the average concentrations of the North Gate, Wollongong and Kembla Grange stations were applied. The average of the Wollongong and Kembla Grange stations were applied for PM<sub>2.5</sub> ambient concentration (North Gate and Scouts Hall does not measure PM<sub>2.5</sub>).

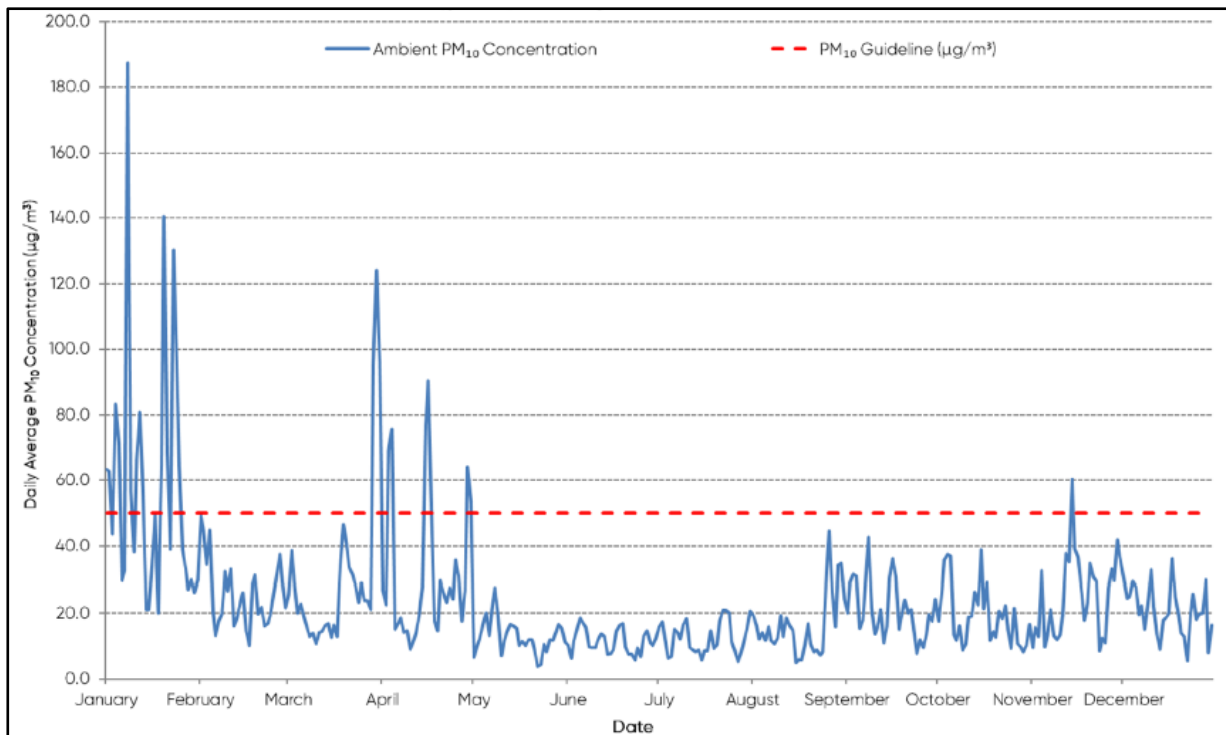
A Level 1 assessment of particulate background concentrations has been prepared for the pollutants listed in **Table 5** for the 2020 monitoring year to correspond with the meteorological data. The Level 1 assessment has assumed a worst-case background concentration by using the maximum reported value.

**Table 5: Background Air Quality**

POLLUTANT	NSW EPA DESIGN CRITERIA	UNITS	AVERAGING TIME
TSP	47.8 <sup>a</sup>	µg/m <sup>3</sup>	Annual
PM <sub>10</sub>	Varies	µg/m <sup>3</sup>	24 hours
	23.9	µg/m <sup>3</sup>	Annual
PM <sub>2.5</sub>	Varies	µg/m <sup>3</sup>	24 hours
	7.3	µg/m <sup>3</sup>	Annual

<sup>a</sup> Assumed from annual average PM<sub>10</sub> background concentration (TSP = 2 x PM<sub>10</sub>)

The maximum reported 24-hour average PM<sub>10</sub> background concentration for the 2020 monitoring period was 187 µg/m<sup>3</sup>, which is above the NSW EPA impact assessment criteria. As such, a Level 2 contemporaneous assessment of the PM<sub>10</sub> background concentration is required to understand the cumulative impact of the proposed development. **Figure 11** displays the PM<sub>10</sub> 24-hour average background concentrations for 2020 and indicates an exceedance of the NSW EPA impact assessment criteria. It should be noted that elevated background concentrations during January and February are likely a result of the prolonged bushfire season during the summer of 2019-2020.



**Figure 11: Daily Particulate Matter PM<sub>10</sub> Concentrations for Port Kembla 2020**

### Emission Sources

The activities associated with the Port Kembla Milling operations with the potential to generate dust are:

- Unloading clinker material from ships into receiver bins,
- Conveying raw materials to/from storage silos and bins to the milling operations,
- Milling of raw materials (clinker, blast furnace slag, limestone, gypsum) and producing cement products,
- Dust collection in conveyors and storage shed/silos, and
- Unloading of cement products into trucks at the weighbridge area.

Details of each emission source, emission factors, and rates are provided in Table 6 of the **Air Quality Impact Assessment** attached as **Appendix C**.

## 5.2.4 Impact Assessment

### Annual Average PM<sub>10</sub>, PM<sub>2.5</sub>, and TSP

The predicted concentrations at selected sensitive receivers of the annual average PM<sub>10</sub>, PM<sub>2.5</sub> and TSP for the PKM facility are presented in **Table 6**.

**Table 6: Predicted Annual Average PM<sub>10</sub>, PM<sub>2.5</sub>, and TSP and Sensitive Receivers**

RECEIVER	PREDICTED ANNUAL AVERAGE PM <sub>10</sub> INCREMENT + BACKGROUND (µG/M <sup>3</sup> )	PREDICTED ANNUAL AVERAGE PM <sub>2.5</sub> INCREMENT + BACKGROUND (µG/M <sup>3</sup> )	PREDICTED ANNUAL AVERAGE TSP INCREMENT + BACKGROUND (µG/M <sup>3</sup> )
BACKGROUND CONCENTRATION (µG/M <sup>3</sup> )	23.9	7.3	47.8
R1	24.8	7.8	48.7
R2	24.1	7.4	48.0
R3	24.0	7.4	47.8
R4	24.9	7.9	48.7
R5	24.7	7.8	48.6
R6	24.4	7.6	48.2
R7	24.2	7.5	48.0
R8	24.1	7.4	47.9
R9	24.0	7.4	47.8

**Table 6** presents the predicted cumulative 100th percentile annual average PM<sub>10</sub>, PM<sub>2.5</sub> and TSP for sensitive receivers respectively. The annual PM<sub>10</sub>, PM<sub>2.5</sub> and TSP impact assessment criteria are not exceeded at any sensitive receiver.

### 24 Hour Average PM<sub>10</sub>

The predicted concentrations at selected sensitive receivers of the 24-hour average PM<sub>10</sub> maximum increment for PKM facility are presented in **Table 7**.

**Table 7: Maximum Impact of 24 Hour Average PM<sub>10</sub>**

RECEIVER	PREDICTED INCREMENT (µG/M <sup>3</sup> )	MAXIMUM BACKGROUND CONCENTRATION (µG/M <sup>3</sup> )	TOTAL (µG/M <sup>3</sup> )
R1	7.1	46.6	53.7
R2	4.5		51.1
R3	1.3		47.9
R4	8.6		55.2
R5	8.0		54.6
R6	6.3		52.9
R7	4.7		51.3
R8	4.3		50.9
R9	1.5		48.1

The exceedances at nearby sensitive receivers of the 24-hour average PM<sub>10</sub> concentration presented in **Table 7** are likely a result of an elevated background PM<sub>10</sub> concentration. A Level 2 contemporaneous impact and background assessment is required to determine any additional exceedances as a result of the proposed operation.

A summary of the 24-hour average PM<sub>10</sub> contemporaneous impact and background assessment (Level 2 Assessment) for identified sensitive receivers are presented in Table 9 of the **Air Quality Impact Assessment** attached as **Appendix C**.

Two exceedances have been predicted in Table 9 due to a large background concentration and low predicted increment from the PKM. According to the NSW EPA guidance, mitigation measures or emission controls that reduce emissions are required. It should be noted that the exceedances occurred during January and February and are likely a result of the prolonged bushfire season during the summer of 2019-2020.

#### **24 Hour Average PM<sub>2.5</sub>**

The predicted concentrations at selected sensitive receivers of the 24-hour average PM<sub>2.5</sub> for the proposed operation are presented in **Table 8**. A maximum 24-hour PM<sub>2.5</sub> background concentration of 22.6 µg/m<sup>3</sup> has been applied (refer to **Table 5** above) to determine if further assessment is required.

**Table 8: Predicted Maximum 24 Hour Average PM<sub>2.5</sub> at Sensitive Receivers**

RECEIVER	SUBJECT SITE MAXIMUM PREDICTED INCREMENT (µG/M <sup>3</sup> )	MAXIMUM BACKGROUND CONCENTRATION (µG/M <sup>3</sup> )	TOTAL (µG/M <sup>3</sup> )
R1	4.1	22.6	26.7
R2	2.8		25.4
R3	0.9		23.5
R4	5.0		27.6
R5	4.7		27.3
R6	3.8		26.4
R7	2.8		25.4
R8	2.7		25.3
R9	0.9		23.5

The exceedances at nearby sensitive receivers of the 24-hour average PM<sub>2.5</sub> concentration presented in **Table 8** above are likely a result of an elevated background PM<sub>2.5</sub> concentration. A Level 2 contemporaneous impact and background assessment is required to determine any additional exceedances as a result of the proposed operation.

A summary of the 24-hour average PM<sub>2.5</sub> contemporaneous impact and background assessment (Level 2 Assessment) for identified sensitive receivers are presented in Table 11 of the **Air Quality Impact Assessment** attached as **Appendix C**.

Modelling indicates that there are no additional exceedances of the 24 hour PM<sub>2.5</sub> impact assessment criteria at nearby sensitive receivers in Table 11. According to the NSW EPA guidance, mitigation measures or emission controls that reduce emissions are not required.

#### **Dust Deposition**

The predicted annual average dust deposition rates at selected sensitive receivers for the proposed operation are presented in **Table 9**.

**Table 9: Predicted Dust Deposition at Sensitive Receivers**

RECEIVER	SUBJECT SITE MAXIMUM PREDICTED INCREMENT (G/M <sup>2</sup> /MONTH)	IMPACT ASSESSMENT CRITERIA
R1	0.1	2 g/m <sup>2</sup> /month
R2	<0.1	
R3	<0.1	
R4	0.1	
R5	0.1	
R6	0.1	
R7	<0.1	
R8	<0.1	
R9	<0.1	

Dispersion modelling indicates there are no exceedances of the maximum increase in deposited dust level criteria of 2 g/m<sup>2</sup>/month at nearby sensitive receivers. According to the NSW EPA guidance, mitigation measures or emission controls that reduce emissions are not required.

#### **Discussion**

The particulate dispersion modelling indicates that PM<sub>10</sub> impacts from the proposed increase in production at the PKM may cause an additional exceedance of the PM<sub>10</sub> impact assessment criteria at the identified nearby sensitive receivers (i.e R1 and R5). However elevated background levels (during the 2019-2020 bushfire season) appear to be largely responsible for any predicted exceedances of the NSW EPA impact criteria.

It should be noted that the dispersion model relies on the emission factor listed for bag filters venting outside from the emission estimation technique manual for cement manufacturing. This emission factor was applied to all bag filters on the dust collection at the Port Kembla site (except for the mill stack). This emissions factor for PM<sub>10</sub> (12 mg/m<sup>3</sup>) was larger than the stack testing results (ranged from 1.06 to 8.76 mg/m<sup>3</sup>) from the mill and could be considered an over representation of dust emissions.

The proposed increase in production is not predicted exceed the PM<sub>2.5</sub>, TSP, or deposited dust impact assessment criteria at the identified nearby sensitive receivers.

#### **5.2.5 Conclusions**

This assessment has modelled a worst-case scenario for the proposed increase in production at the CA PKM to determine the potential particulate impacts to sensitive receivers. The results of the CALPUFF modelling indicate that operation of the PKM will result in a small incremental increase in particulate matter and dust deposition at surrounding sensitive receivers. However elevated background levels (during the 2019-2020 bushfire season) appear to be largely responsible for any predicted exceedances of the NSW EPA impact criteria.

The proposed increase in throughput will be facilitated by increasing the utilisation of the existing milling plant. The increase in the throughput potentially means an increase in air and dust impacts from the facility. As the process is not being changed the rate of emissions are expected to be the same and within capacity of exiting controls. The existing facility was designed to accommodate the proposed throughput of up to 1.4 Mtpa. Based on the annual stack testing data, the mill is achieving air quality compliance against its environmental protection licence. It is expected that this modification will not change the air quality outcomes for the PKM.

Any exceedances that may occur will be likely attributed to elevated background concentrations rather than a significant incremental contribution from the proposed development. To minimise potential impacts from the mill operations, including minimising occurrences of predicted maximum increments, CA has implemented of the following measures:

- Enclosed storages areas and conveyors for all materials, and
- State of the art dust collection systems with bag filters at all dust sources.

## 5.3 Noise and Vibration

### 5.3.1 Introduction

An assessment of noise and vibration impacts from the proposed increase in production has been undertaken by Day Design. The purpose of this assessment was to determine potential noise and vibration impact at the nearest residential and industrial receivers to the site. The assessment also considered operational and transport noise impacts associated with the development.

The assessment has been prepared in accordance with the NSW Industrial Noise Policy (INP), NSW Interim Construction Noise Guideline (ICNG), NSW Road Noise Policy (RNP), NSW Assessing Vibration: a Technical Guideline, and NSW Draft Industrial Noise Guideline (DING). The **Noise and Vibration Impact Assessment** is attached as **Appendix D**.

### 5.3.2 Existing Environment

The PKM facility is located on reclaimed (by the Port Kembla Port Corporation) land (the land) within the Wollongong Local Government Area in the Outer Harbour of the Port of Port Kembla, on Lot 2002 DP 1176582. The land is leased from the NSW Ports and is accessible from Christy Drive.

The land is zoned SP1 Special Activities under Chapter 5 of *State Environmental Planning Policy (Transport and Infrastructure) 2021*.

The PKM facility is located within an industrial estate and is surrounded to the north, south and west by other industrial uses, with the Outer Harbour of Port Kembla to the east and Arawata Drive bounding the PKM facility to the west.

The nearest residences to the PKM facility are located on Wentworth Street, Port Kembla, circa 750 m to the south of the site. Between the PKM facility and the nearest residences are numerous industrial sites including, but not limited to, a container distribution yard, a rail locomotive maintenance workshop, motor mechanical workshops, and various light industrial activities.

Under the PKM facility's Environmental Protection License, EPL No. 20101, the nearest noise sensitive residential receivers to the Site, in various directions are as shown on **Figure 12**, and as follows in **Table 10**.



**Figure 12: Location Plan Showing Sensitive Receivers in relation to PKM**

**Table 10: Noise Sensitive Receivers**

RECEIVERS & TYPE	ADDRESS	DIRECTION FROM SITE
<b>R1- Residential</b>	7 Wentworth Street, Port Kembla	South
<b>R2- Residential</b>	14 O'Donnell Street, Port Kembla	South-West

The PKM facility is licenced to operate under the NSW Environmental Protection Authority Environment Protection Licence No. 20101, for cement or lime handling and shipping in bulk. As per the required annual returns to the EPA, the facility operates in compliance with its licence restrictions.

### 5.3.3 Existing Site Noise Emissions

Mechanical plant and equipment associated with the PKM facility consists of dust collection units, compressors, fans, motors for conveyors and the grinding mill, blowers, a hot gas generator, the grinding mill itself and blending plant within the silo.

The noise assessment is based on the existing mechanical plant and equipment and its locations. There are no changes proposed to any plant or equipment.

The schedule of the overall  $L_{eq, 15 \text{ minute}}$  'A' frequency weighted and octave band centre frequency sound power levels in decibels, re: 1 pW ( $10^{-12}$  Watts) for the existing mechanical plant and equipment is shown below in **Table 11**.

**Table 11: Existing Mechanical Plant and Equipment  $L_{eq, 15 \text{ minute}}$**

DESCRIPTION	SOUND POWER LEVELS (DB) AT OCTAVE BAND CENTRE FREQUENCIES (HZ)								
	DBA	63	125	250	500	1K	2K	4K	8K
<b>A – Extraction Fan Motors</b>	<b>76</b>	75	75	74	72	71	68	64	68
<b>B – Ship Dispatch &amp; Site</b>	<b>73</b>	72	72	71	69	69	65	61	65
<b>C – Standard Conveyor</b>	<b>90</b>	90	90	88	84	85	85	80	70
<b>D – Wharf Conveyor Motors</b>	<b>95</b>	95	95	93	89	90	88	84	79
<b>E – Classifier Motor</b>	<b>103</b>	103	106	106	100	99	91	83	78
<b>F – Clinker Reclaim Motor</b>	<b>95</b>	95	95	93	89	90	88	84	79
<b>G – Positive Displacement</b>	<b>84</b>	84	84	82	78	79	77	73	69
<b>H – Hot Gas Generator &amp; Fan</b>	<b>88</b>	88	88	86	82	83	81	77	73
<b>I – Blending Plant</b>	<b>83</b>	83	83	81	78	78	76	72	68
<b>J – Ball Grinding Mill</b>	<b>102</b>	98	99	98	98	96	95	91	81

The schedule of the overall  $L_{A1, 1 \text{ minute}}$  'A' frequency weighted and octave band centre frequency sound power levels in decibels, re: 1 pW ( $10^{-12}$  Watts) for the existing mechanical plant and equipment is shown below in **Table 12**.

**Table 12: Existing Mechanical Plant and Equipment  $L_{A1, 1 \text{ minute}}$**

DESCRIPTION	SOUND POWER LEVELS (DB) AT OCTAVE BAND CENTRE FREQUENCIES (HZ)								
	DBA	63	125	250	500	1K	2K	4K	8K
<b>A – Extraction Fan Motors</b>	<b>81</b>	80	80	79	77	76	73	69	73
<b>B – Ship Dispatch &amp; Site</b>	<b>78</b>	77	77	76	74	74	70	66	70
<b>C – Standard Conveyor</b>	<b>95</b>	95	95	93	89	90	90	85	75
<b>D – Wharf Conveyor Motors</b>	<b>100</b>	100	100	98	94	95	93	89	84
<b>E – Classifier Motor</b>	<b>108</b>	108	111	111	105	104	96	88	83
<b>F – Clinker Reclaim Motor</b>	<b>100</b>	100	100	98	94	95	93	89	84
<b>G – Positive Displacement</b>	<b>89</b>	89	89	87	83	84	82	78	74
<b>H – Hot Gas Generator &amp; Fan</b>	<b>93</b>	93	93	91	87	88	86	82	78
<b>I – Blending Plant</b>	<b>88</b>	88	88	86	83	83	81	77	73
<b>J – Ball Grinding Mill</b>	<b>107</b>	103	104	103	103	101	100	96	86

The Sound Exposure Level1 (SEL) and  $L_{A1, 1 \text{ minute}}$  sound power level and spectra of vehicle noise used for the assessment of heavy vehicle noise on the PKM facility are shown below in **Table 13** and are based on previous measurements of heavy vehicles by Day Design.

**Table 13: SEL & LA1, 1 minute Sound Power Levels – Heavy Vehicles**

DESCRIPTION	SOUND POWER LEVELS (DB) AT OCTAVE BAND CENTRE FREQUENCIES (HZ)								
	DBA	63	125	250	500	1K	2K	4K	8K
<b>SEL of a Heavy Vehicle</b>	<b>102</b>	102	97	98	99	98	95	90	82
<b>LA1, 1 minute of a Heavy Vehicle</b>	<b>87</b>	87	82	83	84	83	80	75	67

### 5.3.4 Assessment Criteria

Assessment criteria for operational noise, amenity, vibration, and traffic noise are provided in Section 4 of the **Noise and Vibration Impact Assessment** attached as **Appendix D**.

### 5.3.5 Methodology

Knowing the sound power level of a noise source (see **Tables 11, 12 and 13**), the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for distance losses, sound barriers, etc.

Calculations have been carried out using iNoise V2020.0 industrial noise prediction modelling software which incorporates the methods specified in ISO 9613.1/2<sup>2</sup> to calculate noise emissions. The noise emissions have been calculated to determine the noise level at each residential receptor location due to the future operation of the PKM facility.

### 5.3.6 Impact Assessment

#### Operations

**Table 13** shows the predicted noise levels at the nearby receiver locations from the existing and future use of the PKM facility, during day, evening and night periods.

**Table 14: Predicted L<sub>eq, 15 minute</sub> Existing and Future Noise Levels**

RECEPTOR	PREDICTED NOISE LEVEL (DBA)	NOISE CRITERION (DBA)	COMPLIANCE (YES/NO)
<b>Existing PKM Facility Use</b>			
<b>R1</b>			
- Mechanical Plant and Equipment	34		
- Vehicles	24		
<b>Cumulative Noise Level</b>	35	40	Yes
<b>R2</b>			
- Mechanical Plant and Equipment	26		
- Vehicles	20		
<b>Cumulative Noise Level</b>	27	37	Yes
<b>Existing PKM Facility Use</b>			
<b>R1</b>			
- Mechanical Plant and Equipment	34		
- Vehicles	25		
<b>Cumulative Noise Level</b>	35	40	Yes
<b>R2</b>			
- Mechanical Plant and Equipment	26		
- Vehicles	21		
<b>Cumulative Noise Level</b>	27	37	Yes

The predicted levels of noise from the existing and future use of the PKM facility, complies with the day, evening and night criteria at receptor locations 'R1' and 'R2', and are therefore considered acceptable.

**Sleep Disturbance**

The predicted  $L_{A1, 1 \text{ minute}}$  levels of noise from the use of the PKM facility are shown in **Table 15**.

**Table 15: Predicted  $L_{A1, 1 \text{ minute}}$  Noise Levels – Sleep Disturbance – Night (10pm-7am)**

PREDICTED NOISE LEVEL $L_{A1, 1 \text{ MINUTE}}$ (DBA) AT RECEPTOR LOCATIONS				
Description	Mechanical Plant & Equipment	Heavy Vehicle Movements	Acceptable noise limit	Compliance Yes/No
R1	39	39	51	Yes
R2	31	35	48	Yes

The predicted noise levels at residential receptors 'R1' and 'R2' comply with the night-time sleep disturbance criteria during all operational scenarios and are therefore considered acceptable.

**Road Traffic Noise**

The existing  $L_{eq, 15 \text{ hour}}$  and  $L_{eq, 9 \text{ hour}}$  road traffic noise levels have been measured at two residential locations – Locations 'A' and 'B' – where the additional daily heavy vehicle movements have the potential to increase intrusive on-road traffic noise, Locations 'A' and 'B' are shown in **Figures 13** and **14**.



**Figure 13: Road Traffic Noise Measurement Location 'A' – 118 New Mount Pleasant Road Mount Pleasant NSW**



**Figure 14: Road Traffic Noise Measurement Location 'B' – 145 Gladstone Avenue Mount Saint Thomas NSW**

The measured existing  $L_{eq, 15 \text{ hour}}$  and  $L_{eq, 9 \text{ hour}}$  road traffic noise levels at Locations 'A' and 'B' are shown below in **Table 16**.

**Table 16: Measured Existing  $L_{eq, 15 \text{ hour}}$  &  $L_{eq, 9 \text{ hour}}$  Road Traffic Noise Levels**

NOISE MEASUREMENT LOCATION	DATE & TIME PERIOD 31/01 TO 05/02/22 & 08/02 TO 17/02/22	EXISTING $L_{eq}$ ROAD TRAFFIC NOISE LEVEL
Location 'A'	Day $L_{eq, 15 \text{ hr}}$ (7 am to 10 pm) Night $L_{eq, 9 \text{ hr}}$ (10 pm to 7 am)	68.0 dBA 68.9 dBA
Location 'B'	Day $L_{eq, 15 \text{ hr}}$ (7 am to 10 pm) Night $L_{eq, 9 \text{ hr}}$ (10 pm to 7 am)	54.7 dBA 52.0 dBA

Calculations of the on-road traffic noise generated by vehicles associated with the use of the Site are based on the information provided by the project traffic engineer Bitziois Consulting.

It is noted that the existing traffic noise level at Location 'A' during both the day (68.0 dBA) and night (68.9 dBA) exceeds the Road Traffic Noise Assessment Criterion shown in Table 2 of this report. Section 3.4 of the RNP states that where the existing road traffic noise level already exceeds the Road Traffic Noise Assessment Criterion, an increase of 2 dB is considered negligible.

The relative traffic noise increase as a result of the additional heavy vehicle movements is calculated to be  $(10 \times \log [443/373] = ) 0.7 \text{ dB}$  for heavy vehicles associated with the PKM facility.

The calculated relative traffic noise increase to the existing  $L_{Aeq, 15 \text{ hour}}$  and  $L_{Aeq, 9 \text{ hour}}$  total traffic noise level at all receiver locations is less than 2 dB and is therefore considered acceptable.

Notwithstanding the above, it is noted that the increase to the total traffic noise levels (PKM facility + other road users) is likely to be less than 0.7 dB. E.g. the 2021 Average Daily Traffic Count on Mount Ousley Road, Station Id: MOHVC5 was 46,645 vehicles, with 17%, or 7,930 being heavy vehicles. The relative traffic noise increase based on vehicles associated with the PKM facility (existing + new) and other road users (heavy vehicles only) is  $(10 \times \log [8,373/7,930] = ) 0.2 \text{ dB}$ . This increase is also considered negligible ( $< 2 \text{ dB}$ ) and is therefore considered acceptable.

### **Vibration**

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. The guideline considers vibration from occasional loading and unloading activities as Impulsive Vibration.

The most relevant vibration management levels for this development are as follows:

DOCUMENT	SEE MOD
PROJECT	Port Kembla Milling
VERSION	1.0

AUTHOR	Sam Coles
POSITION	Developer Planner
DATE	02/05/2022

- An RMS Acceleration Value between 0.10 – 0.20 m/s<sup>2</sup> for human annoyance inside the nearby residence, and
- A Peak Particle Velocity no greater than 15 mm/s for cosmetic damage at the residential buildings.

Given the distances from neighbouring residences (and industrial premises) to the location of the PKM facility's plant and transport routes throughout the site, vibration at the receiver locations would be negligible.

In the unlikely event complaints are received regarding vibration originating from the use of the site, it is recommended that compliance monitoring of ground borne vibration is carried out at the nearest affected receptor location.

### 5.3.7 Conclusions

Calculations show that, subsequent to the modification application approval increase of the annual production throughput of cementitious material, the level of noise emitted by the use of the PKM facility, Arawata Drive, Port Kembla, NSW will meet the noise level requirements of the Environment Protection Authority at all receivers and be considered acceptable.

## 5.4 Other Impacts Considered

### 5.4.1 Stormwater

The proposed modification does not involve any physical works to the site, with no changes to amount of roofed area, hardstand area or the existing stormwater treatment system. It is unlikely that there will be any impacts from the proposed modification on the stormwater management on site. Similarly, the existing approved 4<sup>th</sup> weighbridge that may be installed is located within an enclosed truck loadout area that has stormwater controls at the entry and exit to the loading area. The installation of this weighbridge will not require alteration or extension to any stormwater infrastructure, including the bioretention basin.

With regard to water management impacts, there is also minimal to no change expected as a result of the modification. The site was constructed on reclaimed land within the Outer Harbour area, the reclamation used slag from the surrounding steel mills as fill, which in some cases contained chemical concentrations above guideline levels. CA currently undertake water monitoring which generally shows that the contamination from the slag is ongoing and is not causing/nor can be contributed to the current operations. The current water flows to the sediment / bioretention basin are not expected to increase substantially as the process is dry in nature. Water quality will be maintained as a result of the modification.

The approved stormwater management system, assessed under PA 10\_0102, is functioning as designed, with CA complying with their stormwater management and water quality management requirements under the EPL and conditions of consent.

## 5.5 Cumulative Impacts

The original project EIS considered the cumulative impacts of the grinding mill in relation to the existing users within the Outer Harbour area. The assessment concluded that the mill was suitable in relation to potential cumulative noise, air, traffic, and stormwater impacts on the surrounding environment and sensitive receivers, and that the potential benefit of the development outweighed any potential negative impact.

It is expected that the cumulative impacts from the proposed modification, in relation to the other uses within the Outer Harbour, area are likely to be similar to those currently. **Table 17** below provides an updated cumulative impact assessment based on the original assessment in the EIS for the original Project Approval.

**Table 17: Summary of Cumulative Impacts of the GMF, Outer Harbour, and the Proposed Modification**

ISSUE	GMF IMPACT (PROJECT EIS)	OUTER HARBOUR CUMULATIVE IMPACT (PROJECT EIS)	MODIFICATION IMPACT
<b>NOISE AND VIBRATION</b>	<p>There are three potential sources of noise &amp; vibration:</p> <ul style="list-style-type: none"> <li>a) Construction of the GMF</li> <li>b) Noise associated with the operational of GMF plant</li> <li>c) Noise associated with the dispatch &amp; delivery of product</li> </ul> <p>The Environmental Noise Impact has concluded there are no significant impacts during construction of the plant. Any impacts can be managed through a CEMP.</p> <p>Noise associated with the operation of the GMF will be managed through the use of appropriate controls to ensure compliance with DECCW criteria.</p> <p>The draft Statement of Commitments shows that Cement Australia will enter into a truck noise management plan. This, coupled with their on-going truck replacement program will ensure that all reasonable measures available will be employed to minimise noise associated with truck movements.</p>	<p>The noise modelling prepared for the Outer Harbour anticipated a range of developments as identified in the Concept Plan. Whilst this modelling included higher end noise impacts, definitive modelling will be derived when specific projects are identified.</p> <p>When these other proposals for the Outer Harbour are identified, they will also be required to meet relevant EPA criteria.</p> <p>Whilst the GMF will contribute to background noise levels, its cumulative impact will be commensurate with other activities in the area which will also be required to comply with EPA criteria to ensure there is no noise creep.</p>	<p>Calculations show that, subsequent to the modification application approval increase of the annual production throughput of cementitious material, the level of noise emitted by the use of the Port Kembla Milling facility, Arawata Drive, Port Kembla, NSW will meet the noise level requirements of the Environment Protection Authority at all receivers and be considered acceptable.</p> <p>The relative traffic noise increase based on vehicles associated with the PKM facility (existing + new) and other road users (heavy vehicles only) is <math>(10 \times \log [8,373/7,930]) = 0.2</math> dB. This increase is also considered negligible (<math>&lt; 2</math> dB) and is therefore considered acceptable.</p> <p>Given the distances from neighbouring residences (and industrial premises) to the location of the PKM facility's plant and transport routes throughout the site, vibration at the receiver locations would be negligible due to the proposed increase in production.</p> <p>The proposed increase in production is considered to not increase cumulative noise and vibration impacts of the Outer Harbour area.</p>
<b>AIR QUALITY</b>	<p>The Air Quality Assessment considered existing air quality and identified potential emission sources. It concluded that existing background level were not upper thresholds. Any exceedance by the GMF would be insignificant and be reflective of the existing levels rather than emissions from the GMF.</p>	<p>Whilst there is potential for a minor exceedance, it is reflective of existing background levels rather than reflective of the GMFs operations.</p> <p>When other specific proposals are known for the Outer Harbour, they will need to demonstrate compliance with relevant EPA criteria. On this basis, the cumulative impact of the GMF will be acceptable.</p>	<p>The particulate dispersion modelling indicates that PM<sub>10</sub> impacts from the proposed increase in production at the PKM may cause an additional exceedance of the PM<sub>10</sub> impact assessment criteria at the identified nearby sensitive receivers (i.e R1 and R5). However elevated background levels (during the 2019-2020 bushfire season) appear to be largely responsible</p>



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for any predicted exceedances of the NSW EPA impact criteria.

The proposed increase in production is not predicted exceed the PM<sub>2.5</sub>, TSP, or deposited dust impact assessment criteria at the identified nearby sensitive receivers.

As the process is not being changed the rate of emissions are expected to be the same and within capacity of exiting controls. The existing facility was designed to accommodate the proposed throughput of up to 1.4 Mtpa. Based on the annual stack testing data, the mill is achieving air quality compliance against its environmental protection licence. It is expected that this modification will not change the air quality outcomes for the PKM.

Any exceedances that may occur will be likely attributed to elevated background concentrations rather than a significant incremental contribution from the proposed development.

**TRAFFIC GENERATION**

The EA prepared for PKPC for the Outer Harbour has:

- estimated truck movements based on anticipated freight tonnage; and
- that freight movement for the multi-purpose terminal will be split between rail and road; and
- has assumed the range of activities that are likely to occur within Stage 1 of the Outer Harbour.

The estimates did not include the GMF site. Irrespective, the GMF is within the capped limits anticipated in Stage 1 of the Outer

Whilst the GMF will contribute to cumulative traffic impacts, the number of heavy vehicles will be low in comparison to background traffic that is forecast.

The traffic assessment has shown that the proposed increase in production will increase the average maximum daily truck raw materials rate from 44 trucks per day to 56 trucks per day which is well within the allowable limit of 280 trucks per day. This will also increase the average maximum daily truck dispatch rate from 256 trucks per day to 326 trucks per day which is also well within the allowable limit of 464 trucks per day.

Considering the contents of the traffic assessment, the proposal to increase the sites production is not expected to increase traffic impacts to the external road network, in addition

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	<p>Harbour with a take-up of truck numbers of between 65-70% of the cap. This 'take-up' number accommodates the anticipated capacity rather than peak capacity - which is described in the TIA.</p> <p>The cumulative impacts of traffic generation can be known with greater certainty when specific proposals are developed and lodged for consideration.</p> <p>The TIA has evaluated the GMF in the context of anticipated traffic volumes for 2013 and 2023. It has been concluded that the existing road network is at saturation point and that the volume of GMF heavy vehicles using these intersections is low in comparison to the background traffic that is forecast for the future. This statement is likely to remain true when operational traffic is using the Outer Harbour.</p>		<p>to what has already been approved. The proposed increase in production does will not lead to CA exceeding the allowable allocated truck movements under both the original approval and Outer Harbour Concept approval.</p>
<b>TOPOGRAHPHY, GEOLOGY &amp; SOILS</b>	<p>PKPC will 'construct' the site as part of Stage 1 of the Outer Harbour. The construction of Stage 1 will be in accordance with relevant conditions of consent.</p> <p>Cement Australia will lease the site from PKPC. The construction of the GMF will be supported by geotechnical advice where appropriate.</p>	<p>It is considered there are no cumulative impacts on topography, geology or soils as a consequence of this development.</p>	<p>There are no physical works proposed as a part of this modification. There will be no increased cumulative impact on any aspect of the topography, geology and soils.</p>
<b>CONTAMINATION &amp; ACID SULPHATE SOILS</b>	<p>The investigations that have been carried out for the GMF shows that their project site has evidence of contamination.</p> <p>It is anticipated that conditions imposed on PKPC for the delivery of Stage 1 will be compliant with relevant legislation.</p> <p>Any acid sulphate soils encountered during construction will be addressed through appropriate management plans.</p>	<p>It is considered there are no cumulative impacts regarding contamination or acid sulphate soils as a consequence of the GMF locating in the Outer Harbour.</p>	<p>There are no physical works proposed as a part of this modification. The proposed increase in production will not alter the consideration of this issue nor will other aspects of this modification impact on this assessment.</p>

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<b>HYDROLOGY &amp; WATER QUALITY</b>	<p>Stormwater will be directed to reception points within the site and directed to the bio-retention basin prior to discharge into the harbour.</p> <p>The design and location of these drainage lines/discharge points will link into the permanent drainage systems constructed by PKPC where possible.</p> <p>All works for the GMF below ground level will be fully tanked or sealed to ensure that there is no interaction with any groundwater that may be located on site.</p> <p>Any groundwater that may be encountered during construction of the GMF will be managed through appropriate management plans and in consultation with NOW where appropriate.</p>	<p>It is considered there are no cumulative impacts regarding hydrology and water quality.</p>	<p>The proposed modification does not involve any physical works to the site, with no changes to amount of roofed area, hardstand area or the existing stormwater system. It is unlikely that there will be any impacts from the proposed modification on the stormwater management on site, nor will water quality be impacted.</p> <p>It is considered there are no cumulative impacts regarding hydrology and water quality.</p>
<b>HAZARD &amp; RISK</b>	<p>The hazards and risks associated with operating the GMF have been assessed in accordance with the requirements of SEPP 33.</p> <p>Whilst potential sources of impacts have been identified, the likelihood of any 'events' occurring is highly unlikely.</p>	<p>It is considered that there are no cumulative impacts regarding hazards or risks as a consequence of the GMF.</p>	<p>The proposed modification does not involve any physical works to the site, with no changes to the operation of the facility.</p> <p>It is considered that there are no cumulative impacts regarding hazards or risks as a consequence of the GMF.</p>
<b>VISUAL ASSESSMENT</b>	<p>The Outer Harbour is being developed to provide a working industrial port. The GMF comprises a range of structures with the silo being the tallest structure at approximately 60m. The landscaping that is proposed will provide scale and some screening to the plant. As large trees will be provided as an 'avenue' at the northern entrance of the Outer Harbour, it will contribute to the sense of entry not only to the site but also the Outer Harbour. Furthermore, building's colour scheme has been chosen to be recessive and to reflect the</p>	<p>The GMF will contribute to developing landscape of the Outer Harbour and the industrial area of Port Kembla. Its cumulative impact is considered appropriate in the context.</p>	<p>The proposed modification does not include any changes to any of the buildings on site. The visual appearance of the facility will stay the same.</p>



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	industrial nature of the use so that the plant does not unduly dominate the skyline.		
<b>BIODIVERSITY</b>	<p>The delivery of the Outer Harbour and potential impacts on flora and fauna has been the subject of a separate EA submitted on behalf of PKPC.</p> <p>As a consequence of the construction of the site, there will be no fauna or flora of significance that will be impacted by the GMF.</p> <p>Whilst Green and Golden Bell Frogs have been located in the region, they are not located in close proximity to the subject site.</p>	It is considered that there are no negative impacts or cumulative impacts on flora or fauna.	It is considered that there are no negative impacts or cumulative impacts on flora or fauna.
<b>INFRASTRUCTURE &amp; UTILITY</b>	A range of services will be provided to the Outer Harbour. These will be augmented by the proponent during construction of the project as required.	It is considered that there are no negative cumulative impacts associated with the provision of utility or infrastructure services associated with the GMF.	There is no impact the modification would have on this consideration

## 6 Conclusions

Cement Australia is proposing to submit a S4.55 (1A) modification to its existing Development Consent, to enable an increase in production throughput from 1.1Mtpa to up to 1.4 Mtpa of cementitious material. The existing mill can produce more product than the amount assumed in the original development approval (1.1mtpa) and continued growth in the NSW market will mean that CA will need to use this latent capacity. The increase in throughput will be achieved through increased utilisation of the plant.

The proposed modification is critical to the continued growth of NSW, and the delivery of important infrastructure projects. Without the increase in throughput there is potential for the construction industry to stall among cement shortages.

The proposed development has been shown to be consistent with the relevant local, State and Commonwealth government planning instruments.

This statement SEE has demonstrated that the proposed increase in production at the PKM facility will have minimal environmental impact regarding noise, air and traffic, and the increase in production will not contribute increased cumulative impacts of the Port Kembla Outer Harbour area. It is considered that the existing facilities operational mitigation measures are suitable to mitigate any increase in impacts from the proposed increase.

Overall, the proposed mitigation is considered suitable in relation to environmental impact, sustainability and is in the public interest. On this basis, the proposed modification should be approved.

## 7 References

- *Air Quality Impact Assessment- Port Kembla Milling Facility- Rev. 1. McGaw, P. Advitech Pty Ltd. 7 April 2022*
- *Building a Strong Foundation for NSW- Policy Priorities for NSW. Cement Concrete & Aggregates Australia. Nov 2018.*
- *Cement Australia-Proposed Grinding Mill Facility- Environmental Assessment Report. Tresize, A. Site Plus Pty Ltd. Feb 2011*
- *Cement Australia- Proposed Grinding Mill Facility- Modification to Major Project No. 10\_0102- Environmental Assessment Report Modification. Tresize, A. Site Plus Pty Ltd. April 2012*
- *Environmental Noise and Vibration Impact Assessment- Cement Australia Port Kembla- Modification to DA10\_01020. Shearer, A. Day Design Pty Ltd. 6 April 2022*
- *Cement Australia Port Kembla Milling- Traffic Impact Assessment. Bitzios, A. Bitzios Consulting Pty Ltd. 30 March 2022*

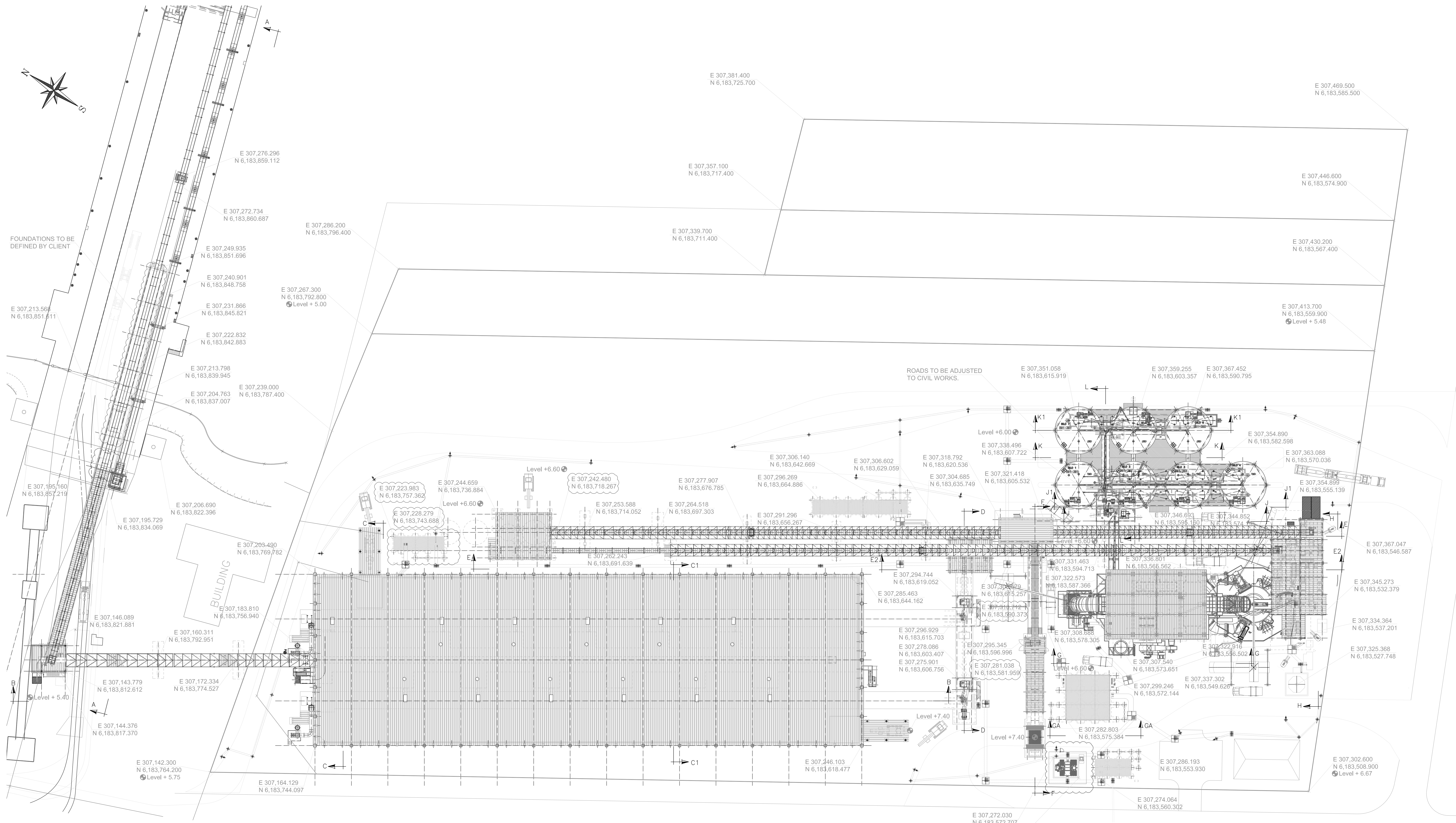
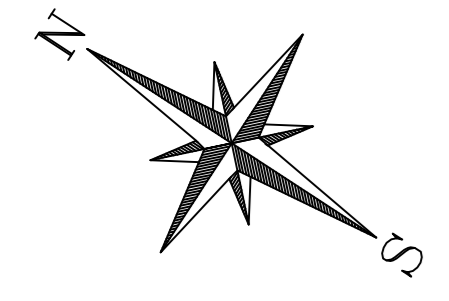


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## Appendix A: Existing Approved Site Plans



FOUNDATIONS TO BE DEFINED BY CLIENT

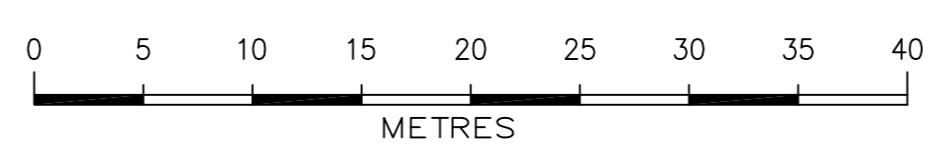
ROADS TO BE ADJUSTED TO CIVIL WORKS.

**NOTES:**  
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 Section B-B to see drawing PK01-CMGL-GA10-000000-0001  
 Section C-C to see drawing PK01-CMGL-GA10-000000-0003  
 Section C1-C1 to see drawing PK01-CMGL-GA10-000000-0004  
 Section D-D to see drawing PK01-CMGL-GA10-511000-0001  
 Section E-E to see drawing PK01-CMGL-GA10-000000-0002  
 Section E2-E2 to see drawing PK01-CMGL-GA10-000000-0005

Section F-F to see drawing PK01-CMGL-GA10-K91000-0001  
 Section G-G to see drawing PK01-CMGL-GA10-5813P1-0001  
 Section GA-GA to see drawing PK01-CMGL-E907-5013E1-0001  
 Section H-H to see drawing PK01-CMGL-GA10-5313P1-0001  
 Section L-L to see drawing PK01-CMGL-GA10-5913S1-0003  
 Section J-J to see drawing PK01-CMGL-GA10-5913S1-0001  
 Section J1-J1 to see drawing PK01-CMGL-GA10-5913S1-0005  
 Section K-K to see drawing PK01-CMGL-GA10-5913S1-0002  
 Section K1-K1 to see drawing PK01-CMGL-GA10-5913S1-0007

Layout drawing of trenches and cable pits To see drawing PK01-CMGL-E901-000000-0020

GENERAL PLAN  
Scale: 1 : 500



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Rev.	Modification	Date	Name
07	Change as clouded	13/06/2013	JRO
06	Change as clouded	09/05/2013	JRO
05	Change as clouded	14/03/2013	JRO
04	Change as clouded	09/01/2013	JRO
03	Conveyor bridges updated, cable trenches added	29/08/2012	JRO
02	Change as clouded	27/06/2012	JRO
01	Comments from TR-PK01-0009 implemented	06/03/2012	JRO
00	Comments from "Process as Noted" implemented	10/02/2012	JRO

Date	Signing	Project	Project no.
13/06/2013	JRO	PORT KEMELA GRINDING	PC0101101
10/02/2012	JRO		
10/02/2012	AVE		
10/02/2012	ACA		

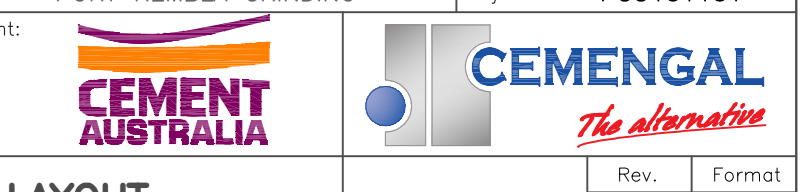
  

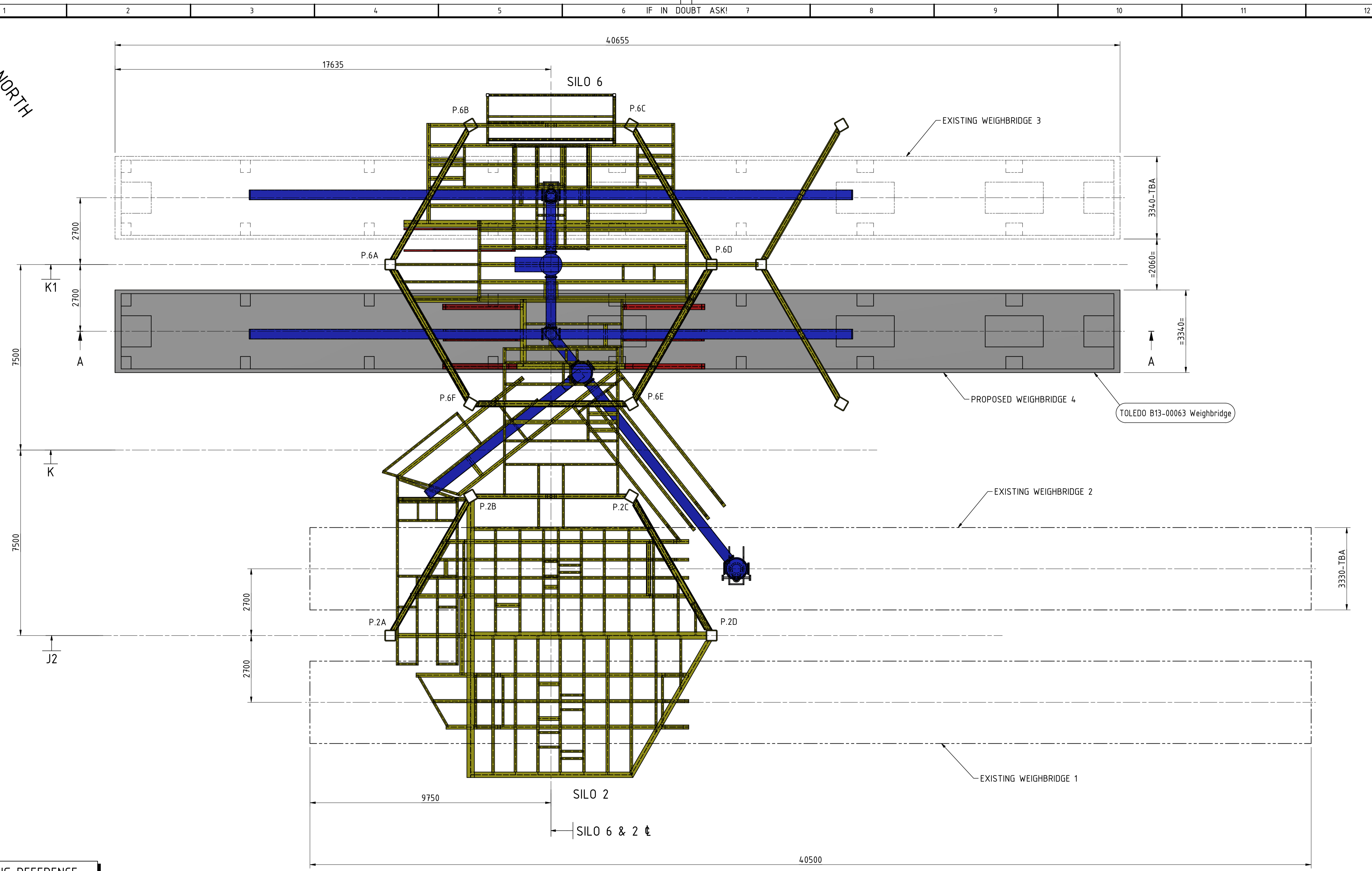
Rev.	Format
07	A0+

**GENERAL LAYOUT COORDINATES & SECTIONS**

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 Replaced for: [ ]  
 File Name: PK01-CMGL-GA01-000000-0001.dwg





**DRAWING REFERENCE:**  
 PK01-CMGL-GA10-5913S1-0004  
 PK01-CMGL-GA11-5913S1-0003  
 METTLER TOLEDO B13-00063

ALL DIMENSIONS SHOWN ARE SUBJECT TO SURVEY REPORT

**22040 GENERAL ARRANGEMENT**  
 SCALE 1 : 75

DRN	CHKD	RESP ENG	DISCP ENG	DATE	PROJECT	DRN	CHKD	RESP ENG	DISCP ENG	DATE	PROJECT

CLIENT JOB No: 22040

INDEX CODES

REFERENCE DRAWINGS

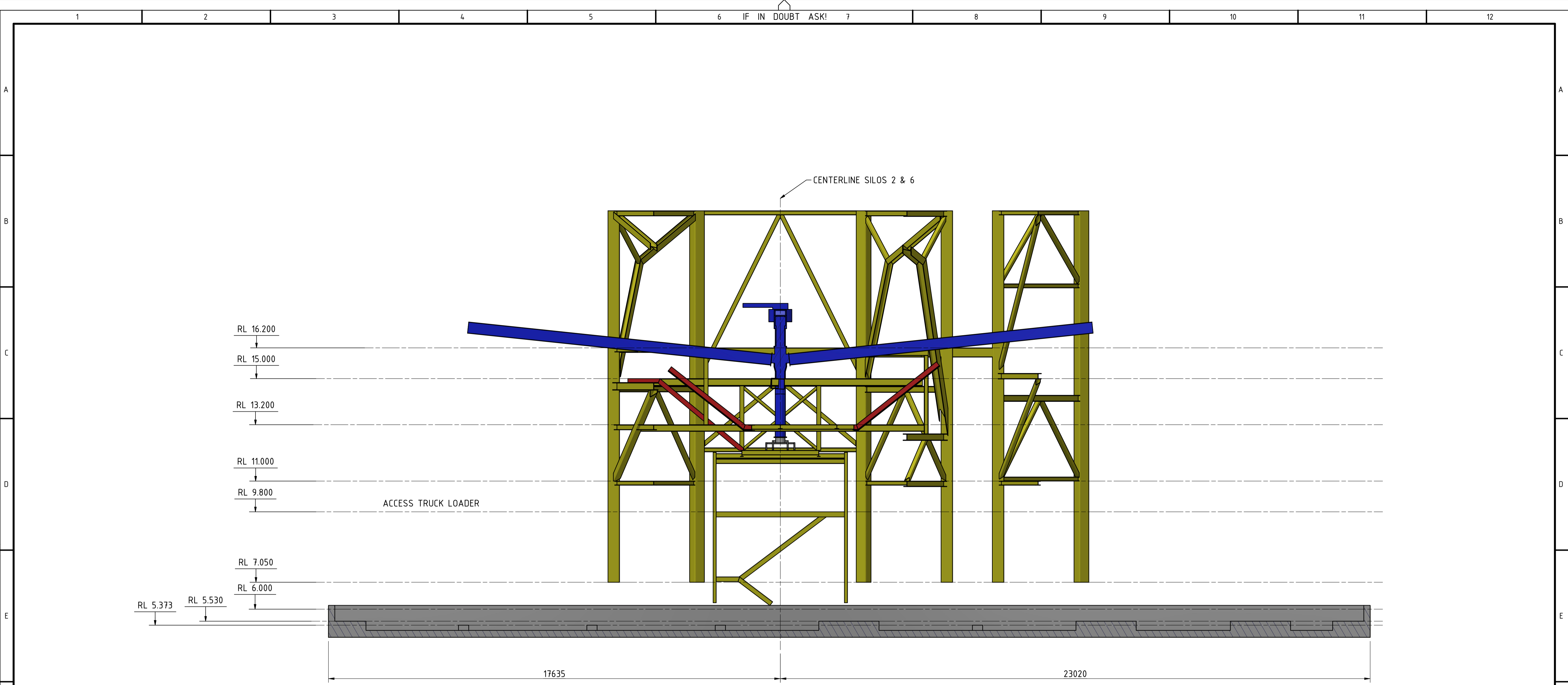
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CEMENT AUSTRALIA - PORT KEMBLA MILLING  
 PORT KEMBLA CEMENT GRINDING MILL  
 WEIGHBRIDGE No.4 & TRUCK LOADING  
 ENGINEERING & DESIGN  
 ARRANGEMENT

PROJECT No: 2022-040	SUB PROJECT No:	
MODEL FILE No:	XREF FILE No:	
DRAWN T. SHACKLETON	CHECKED F. SOTO jnr	RESPONSIBLE ENGINEER
DISC. ENGINEER	DISC. ENGINEER	REGISTRATION APPROVAL
DATE DRN	DRAWING No	REV No
SCALE AS NOTED	DRAWING STATUS	22040-01-00-00 ISSUED FOR COMMENT
		A

IF IN DOUBT ASK!



ACCESS TRUCK LOADER

CENTERLINE SILOS 2 & 6

SECTION A-A  
SCALE 1 : 75

THIS DRAWING TO BE READ IN CONJUNCTION WITH SHEET 1

DRN	CHKD	RESP ENG	DISCP ENG	DATE	PROJECT	DRN	CHKD	RESP ENG	DISCP ENG	DATE	PROJECT

CLIENT JOB No: 22040

INDEX CODES

REFERENCE DRAWINGS

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**CEMENT AUSTRALIA**

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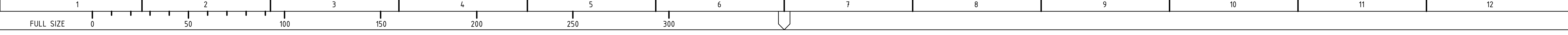
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**CEMENT AUSTRALIA - PORT KEMBLA MILLING**  
**PORT KEMBLA CEMENT GRINDING MILL**  
**WEIGHBRIDGE No.4 & TRUCK LOADING**  
**ENGINEERING & DESIGN**

PROJECT No: 2022-040	SUB PROJECT No:	
MODEL FILE No:	XREF FILE No:	
DRAWN T. SHACKLETON	CHECKED F. SOTO jnr	RESPONSIBLE ENGINEER
DISC. ENGINEER	DISC. ENGINEER	REGISTRATION APPROVAL
DATE DRN	DRAWING No	REV No
SCALE AS NOTED	DRAWING STATUS	A

SHEET 2 OF 2

22040-01-00-00  
ISSUED FOR COMMENT





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VERSION	1.0

AUTHOR	Sam Coles
POSITION	Developer Planner
DATE	02/05/2022



## Appendix B: Traffic Impact Assessment

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Your reference:

**3 May 2022**

Cement Australia  
18 Station Avenue  
Darra QLD 4076

Attention: **Diana Bozzetto**

Sent via email: [Diana.Bozzetto@cemaust.com.au](mailto:Diana.Bozzetto@cemaust.com.au)

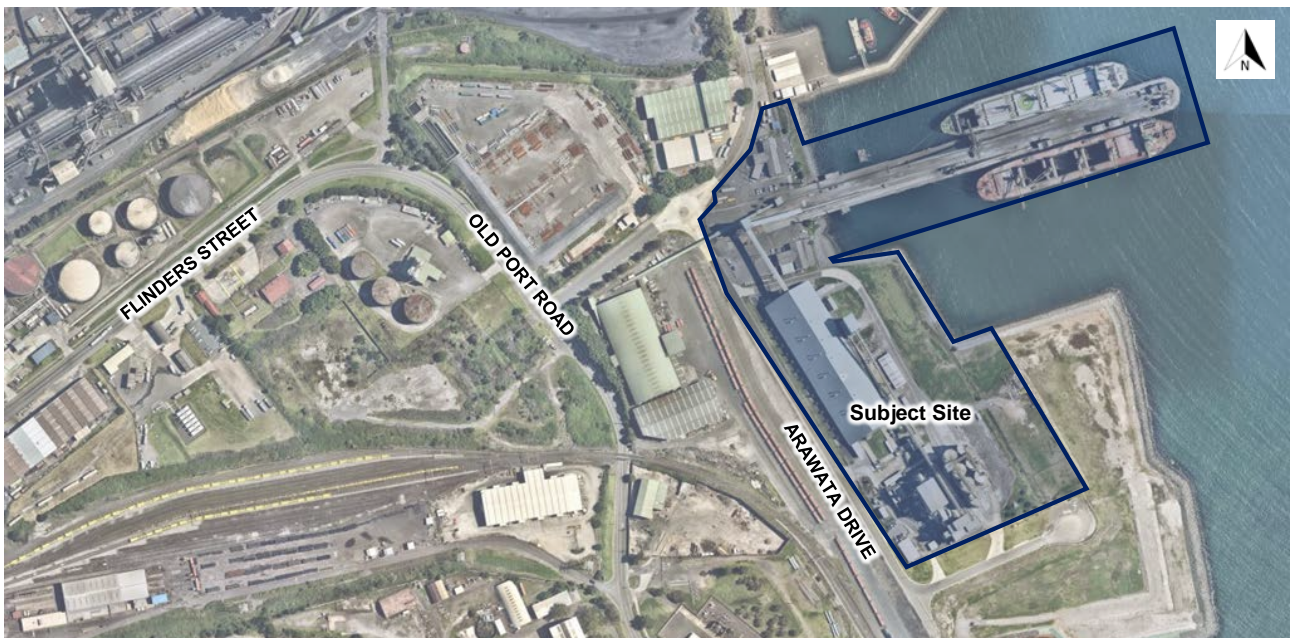
Dear Diana

**RE: CEMENT AUSTRALIA PORT KEMBLA MILLING – TRAFFIC IMPACT ASSESSMENT – 1 ARAWATA DRIVE, PORT KEMBLA**

**1.0 INTRODUCTION**

**1.1. Overview**

Bitzios Consulting (Bitzios) has been engaged by Cement Australia (CA) to prepare a Traffic Impact Assessment (TIS) for a proposed modification to the Port Kembla Milling (PKM) facility located at 1 Arawata Drive, Port Kembla. The subject site location is shown in Figure 1.1.



Source: Nearmap

**Figure 1.1: Subject Site Location**

The Port Kembla Milling site is located within the lot on plan boundaries shown in Figure 1.1, noting the operations utilise only parts of some of the lot on plans, in order to access allocated wharf area.

## 1.2. Background

CA propose to increase their current cement production rate of 1.1Mtpa to up to 1.4Mtpa given that their existing mill can produce more product than the current approved amount (1.1Mtpa). As such, CA also propose to submit a modification to its existing Development Consent where increasing their production throughput will be achieved by increased utilisation of the plant.

Although an increase in production throughput does not require any changes to the plant, a fourth (4<sup>th</sup>) weighbridge at the loading facility may be installed to assist in maintaining customer service levels and transport efficiencies. It should be noted that no additional approval is required for installing the 4<sup>th</sup> weighbridge given that it was included in the original development consent, and if constructed will be installed within the existing facility.

## 1.3. Existing Approval

CA currently have approval for 744 truck movements as per Condition 19 of the original Part 3A project approval. Monthly truck movement data has been submitted where the current truck movements demonstrate a 'maximum' monthly average daily movement of 256 trucks per day for production dispatch and 44 trucks per day for import (raw) material.

Table 1.1 illustrates the limiting daily truck movements as per Condition 19 of the original approval.

**Table 1.1: Current Truck Movement Capacity Limits**

Vehicle Type	Daily	Peak Hour
Raw Material Trucks (5am-6pm)	280	22
Dispatch Trucks (24 hour)	464	20
<b>Total</b>	<b>744</b>	<b>42</b>

## 1.4. Proposed Development

As mentioned in Section 1.2, CA are proposing to increase their Port Kembla mill operations from 1.1 Mtpa to 1.4 Mtpa for both imported material and production material, resulting in an increase of 27.2%. An increase in operations would then expect an increase in dispatch and raw materials truck movements to and from the site of a similar magnitude.

The material will be dispatched via truck external to the site where additional truck movements will occur from PKM to Cement Australia to Sydney i.e. external / main roads including Mt Ousley Road to the Hume / Princess Highway.

As there are no changes to the internal layout of the site, internal movements to traffic or additional infrastructure, swept paths remain unchanged from the current approved conditions. Additionally, as there will be no additional personnel on site, this project has not required additional carparks.

## 2.0 EXISTING CONDITIONS

### 2.1. Site Location and Context

PKM is located within the Wollongong Local Government Area in the Outer Harbour of the port of Port Kembla. The land that the facility is located on was reclaimed by the Port Kembla Port Corporation where the main site is described as Lot 2002 DP 1176582. Additional sites include the extent of the facility (Lot 1 DP 1236743) and the ship unloading infrastructure (Lot 41 DP 1158340) as illustrated in Figure 2.1 below:



Source: Space Urban

**Figure 2.1:** Site Location of Main Site and Secondary Sites

The subject site is predominately surrounded by industrial operations including BlueScope Steel, the Port Kembla Coal Terminal, the Port Kembla Grain Terminal and the vehicle import Terminal. The subject site is also well serviced by road, rail, and sea transport for both the existing and proposed industrial activities in Port Kembla. CA's rail siding is located on Darcy Road (Lot 11 DP 1006859), approximately 1.5km from the Arawata Road site. It is understood that the Port Kembla Port Corporation currently owns the site as a part of NSW ports and is leased by CA.

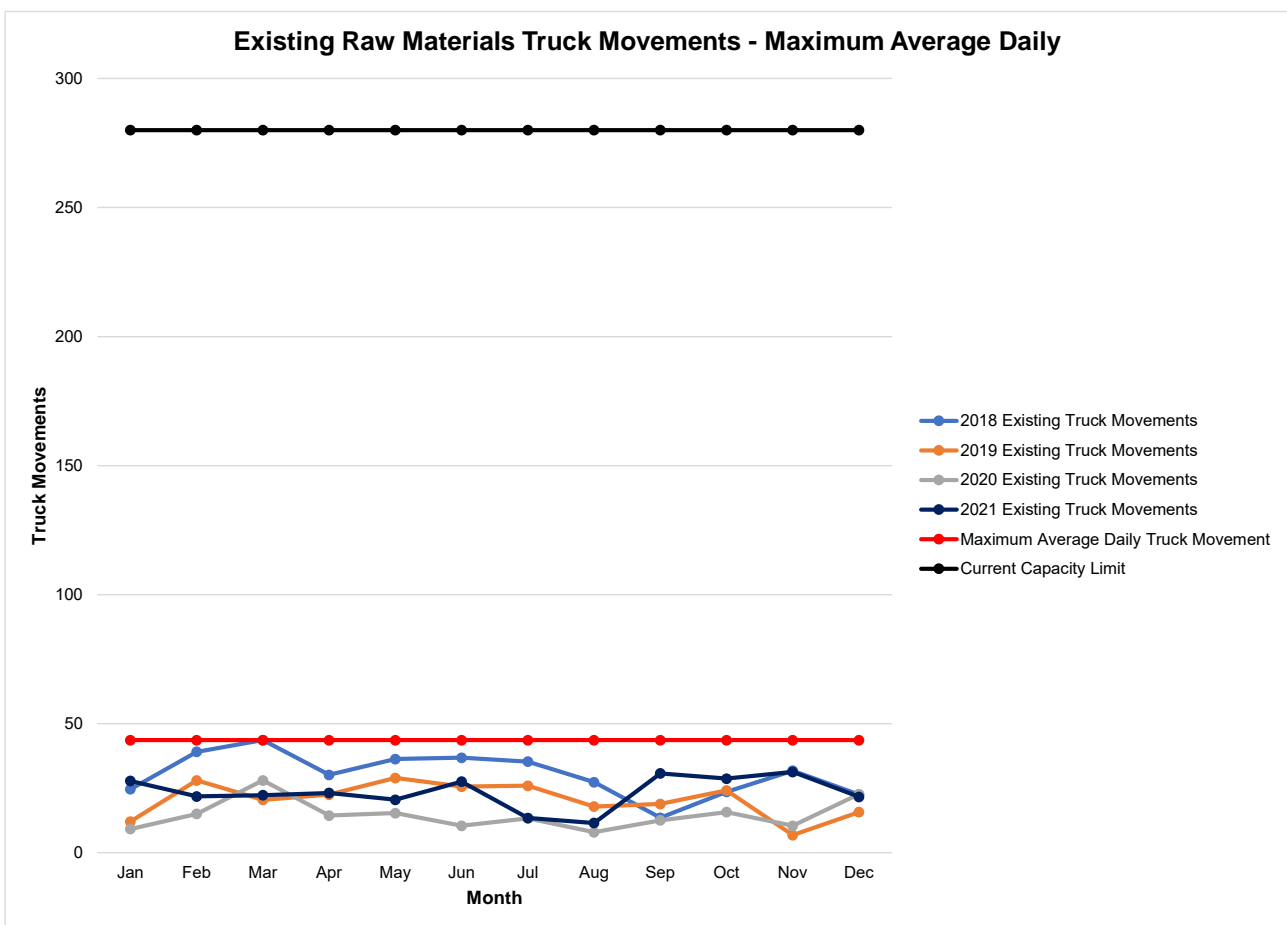
### 3.0 TRAFFIC ASSESSMENT

#### 3.1. Raw Materials Truck Movements

Daily raw materials truck movements were sourced from PKM where the maximum average daily truck movements for both existing and projected were anticipated to operate within the current truck movement capacity limit. The raw materials collected by the trucks include slag, limestone and gypsum.

##### Existing Raw Materials Truck Movements

The existing truck movements for raw materials from January 2018 to December 2021 is illustrated in Figure 3.1 below:

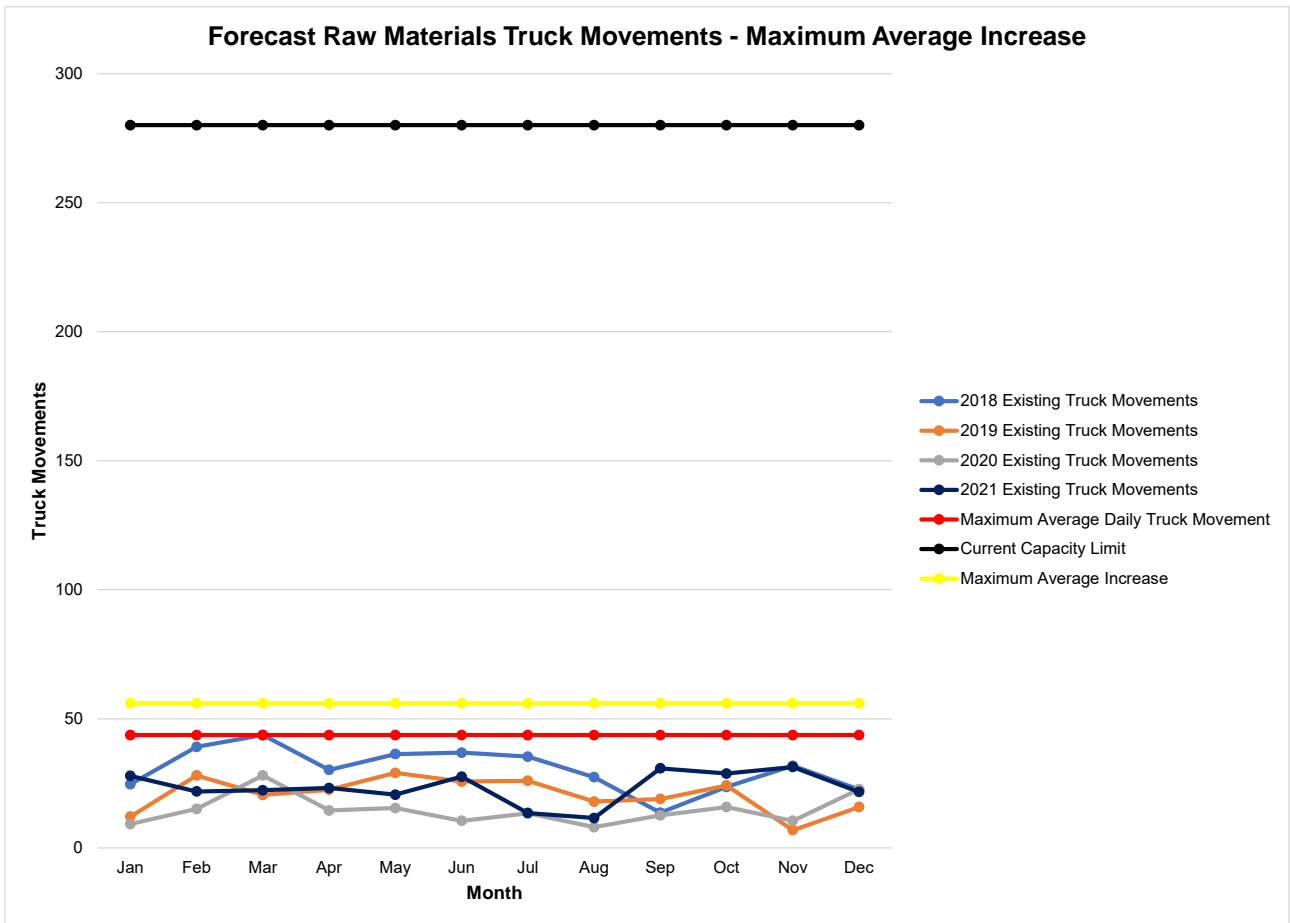


**Figure 3.1: Existing Daily Raw Materials Truck Movements**

Based on the figure above, the total peak number of existing truck movements (44) is well within the truck movement capacity limit (280).

##### Forecast Raw Materials Truck Movements

With a production throughput being increased from 1.1Mtpa to 1.4Mtpa, existing raw material truck movements are also increased by 27.2%. As such, the maximum average daily truck movement is increased to 56 vpd and is illustrated in Figure 3.2 below:



**Figure 3.2: Forecast Daily Raw Materials Truck Movements**

With a 27.2% increase from the maximum average daily truck movement (44), the maximum average daily increase (56) is still well within the current truck movement capacity limit (280).

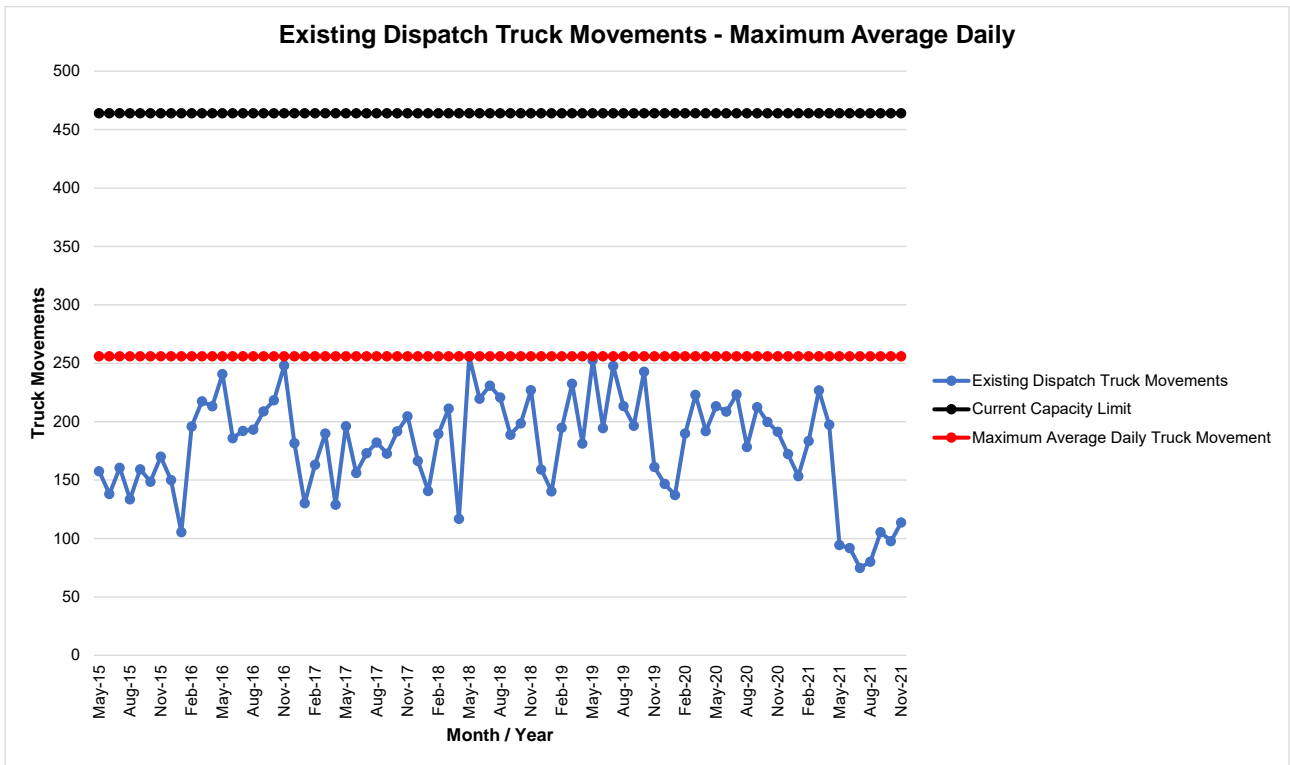
The additional forecast 12 truck movements per day is expected to have a negligible impact on the local road network, with traffic volumes on these roads expected to remain below 3,000 vehicles per day. Subsequently, no further assessment is considered necessary.

### 3.2. Dispatch Truck Movements

Similar to Section 3.1, the daily dispatch truck movements were sourced from PKM where the maximum average daily truck movements for both existing and projected were anticipated to operate within the current truck movement capacity limit.

#### Existing Dispatch Truck Movements

The existing dispatch of truck movements from May 2015 to November 2021 is illustrated in Figure 3.3 below:

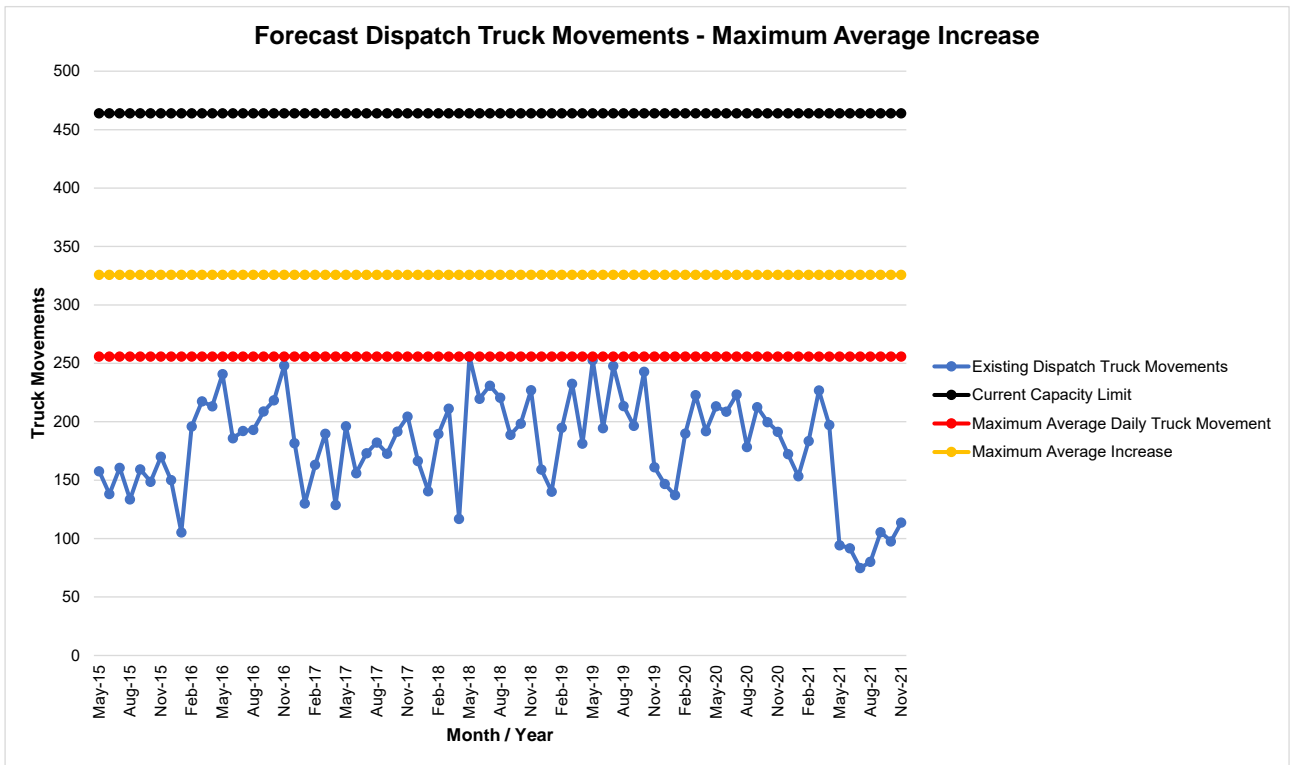


**Figure 3.3: Existing Daily Dispatch Truck Movements**

Based on the figure above, the peak number of existing truck movements (256) is well within the truck movement capacity limit (464).

**Forecast Dispatch Truck Movements**

With a production throughput being increased from 1.1Mtpa to 1.4Mtpa, existing dispatch truck movements are also increased by 27.2%. As such, the maximum average daily truck movement is increased to 326 vpd and is illustrated in Figure 3.4 below:



**Figure 3.4: Forecast Daily Dispatch Truck Movements**

With a 27.2% increase from the maximum average daily truck movement (256), the maximum average daily increase (326) is still well within the current truck movement capacity limit (464).

Similar to Section 3.1, the additional forecast 70 truck movements per day is expected to have a negligible impact on the local road network, with traffic volumes on these roads expected to remain below 3,000 vehicles per day. Subsequently, no further assessment is considered necessary.

#### 4.0 CONCLUSION

CA are proposing to increase the site production from 1.1mtpa to 1.4mtpa. The material is proposed to be dispatched via road utilising the existing approved haulage route.

The traffic assessment has shown that this increase in production will increase the average maximum daily truck raw materials rate from 44 truck movements (in/out) per day to 56 truck movements (in/out) per day which is well within the allowable limit of 280 trucks per day. This will also increase the average maximum daily truck dispatch rate from 256 trucks per day to 326 trucks per day which is also well within the allowable limit of 464 trucks per day.

Considering the contents of this assessment, the proposal to increase the sites production is not expected to increase traffic impacts to the external road network, in addition to what has already been approved. Notwithstanding this, CA will continue to investigate the use of heavy rail to transport material to and from the site as opportunities arise.

Yours faithfully



**Adrian Bitzios**

**Principal Engineer**

BITZIOS CONSULTING

Attachments:

A: Count Data

## **Attachment A**

### **Count Data**

Count Number 4031

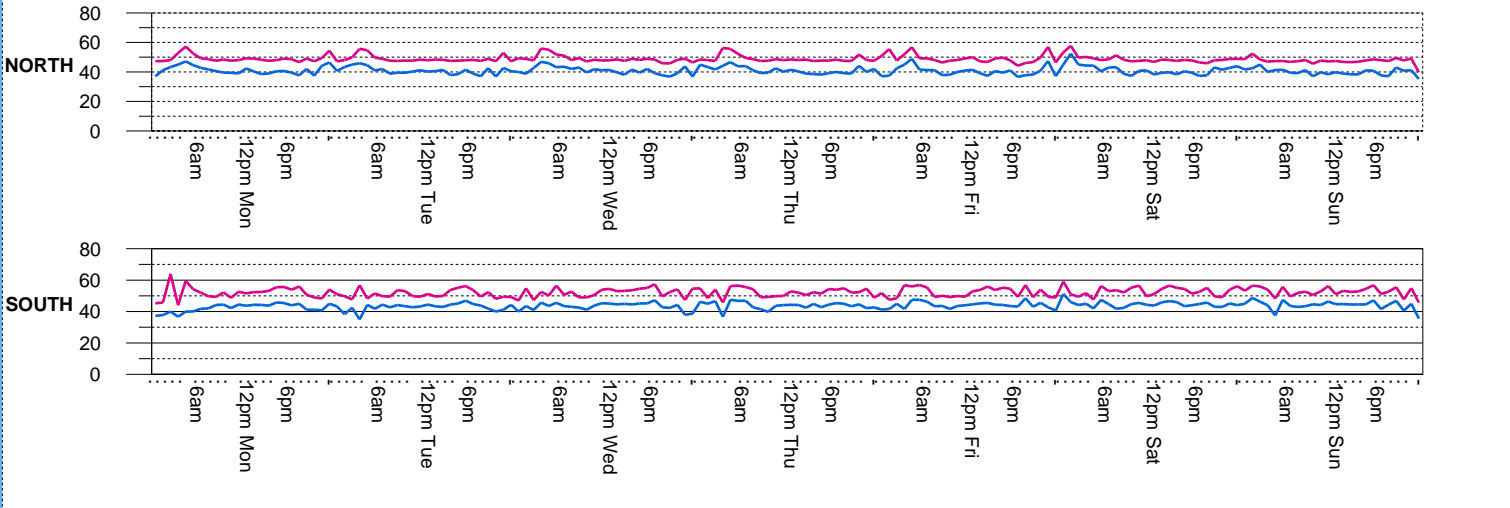
Street OLD PORT RD : Between DARCY RD & FORESHORE RD (bidirectional)

Location Near the Railway Bridge on No Stop Sign, ELP 886471

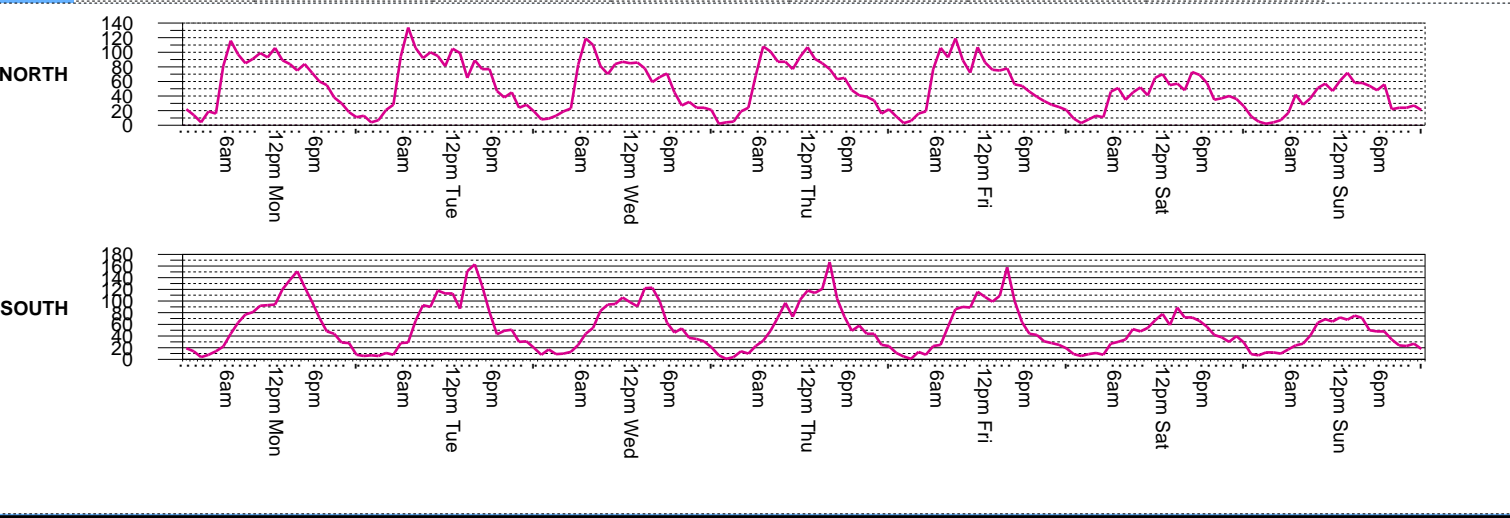
Start Date 10-DEC-21  
 Start Time 1900  
 Duration 7 DAYS  
 Interval 1 HOUR

Speed Limit 60 NORTH SOUTH COMBINED  
 Weekly 50th Percentile Speed 41 44 42  
 Weekly 85th Percentile Speed 48 53 50  
 Five Day AADT 1394 1431 2825  
 Seven Day AADT 1255 1299 2555

	MON 13-DEC-21			TUE 14-DEC-21			WED 15-DEC-21			THU 16-DEC-21			FRI 10-DEC-21			SAT 11-DEC-21			SUN 12-DEC-21			SEVENDAY AVERAGE		
	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir
85%ile	48.8	52.6	49.9	48.4	52.1	49.6	48.7	52.9	49.9	48.6	52.1	49.7	48.5	53.0	49.9	48.2	54.0	50.0	47.5	53.3	49.6	48.4	52.8	49.8
50%ile	40.9	43.7	42.4	40.4	43.7	42.2	41.4	44.0	42.8	41.0	43.8	42.5	39.8	44.2	42.3	40.5	44.7	42.8	39.3	44.5	42.3	40.5	44.1	42.4
> 70 k	1	1	2	0	3	3	1	2	3	0	3	3	0	1	1	3	3	6	1	1	2	.8571	2	2.857
%age	.1	.1	.1	.0	.2	.1	.1	.1	.1	.0	.2	.1	.0	.1	.0	.3	.3	.3	.1	.1	.1	.1	.2	.1
> 80 k	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	.1429	.2857
%age	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.1	.0	.0	.0



	MON	TUE	WED	THU	FRI	SAT	SUN	SEVENDAY AVERAGE																
Short %	84.7	83.3	84.0	83.7	79.5	81.5	84.1	82.7	83.4	85.3	81.2	83.2	83.6	82.1	82.9	89.7	88.2	88.9	93.3	88.8	91.0	85.7	83.2	84.4
Med %	11.4	13.4	12.4	12.9	16.8	14.9	12.5	12.6	12.5	10.6	15.0	12.8	10.6	14.7	12.6	6.3	9.3	7.8	4.3	9.2	6.9	10.3	13.4	11.9
Long %	3.9	3.3	3.6	3.4	3.8	3.6	3.4	4.7	4.1	4.2	3.8	4.0	5.8	3.2	4.5	4.0	2.5	3.2	2.4	2.0	2.2	3.9	3.4	3.7
AM Pk Vo	116	93	191	134	118	213	119	106	193	108	102	196	119	116	223	65	67	132	57	69	126	103	96	182
PM Pk Vo	106	151	226	105	163	252	86	123	200	107	167	244	86	158	236	73	89	148	72	75	140	91	132	207
7-7pm 24Hr Tot	1035	1201	2236	1033	1244	2277	922	1075	1997	982	1139	2121	951	1118	2069	668	747	1415	627	697	1324	888	1032	1920
	1459	1483	2942	1488	1520	3008	1324	1378	2702	1364	1424	2788	1336	1349	2685	983	1026	2009	834	914	1748	1255	1299	2555
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Class 1	1139	1133	2272	1108	1072	2180	1010	1020	2030	1058	1047	2105	1001	983	1984	805	828	1633	707	748	1455	975	976	1951
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Class 5	16	18	34	18	16	34	9	16	25	9	20	29	9	9	18	4	5	9	3	6	9	10	13	23
Class 6	2	1	3	0	0	3	1	2	3	3	2	2	2	2	2	0	0	0	1	2	3	1	1	2
Class 7	1	2	3	3	2	5	0	5	5	1	2	2	1	1	4	0	0	0	0	3	3	2	4	4
Class 8	3	1	4	4	3	5	0	3	5	1	2	2	2	2	6	0	0	0	1	0	1	2	2	4
Class 9	47	39	86	38	30	68	41	41	82	43	36	79	65	31	96	38	24	62	17	13	30	41	31	72
Class 10	4	6	10	6	21	27	2	14	16	8	11	19	4	7	11	1	1	2	1	0	1	4	9	12
Class 11	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

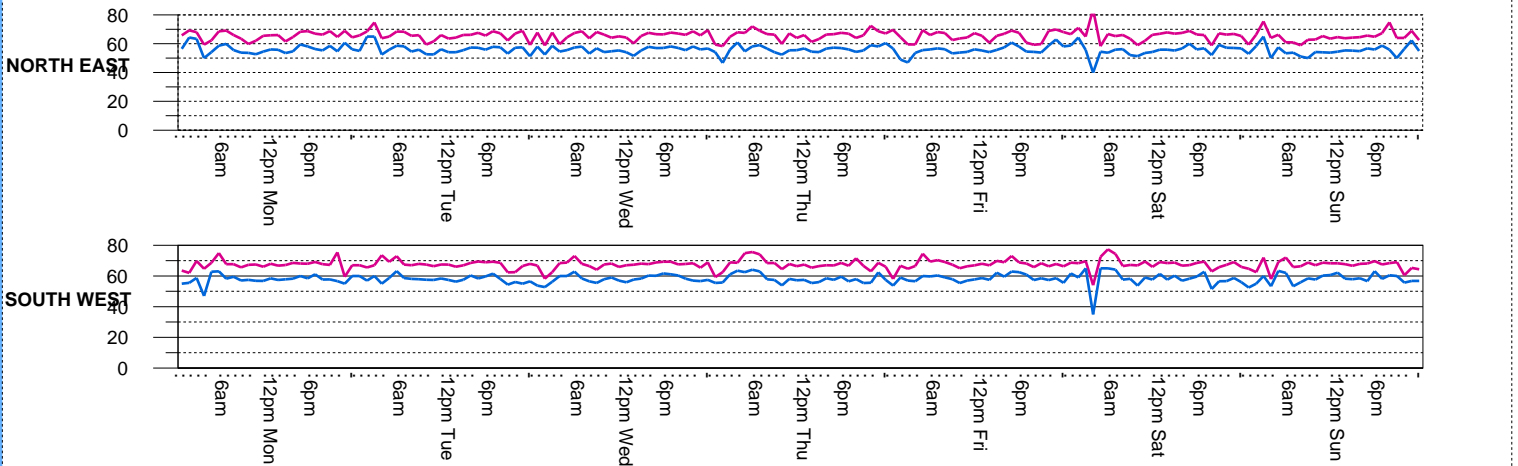


**Count Number** 4032 **Lat/Long** : S34 28.476 / E150 54.110  
**Street** **OLD PORT RD : Between FORESHORE RD & CHRISTY DR (bidirectional)**  
**Location** Fronting Bluescope CRM on ELP 886470

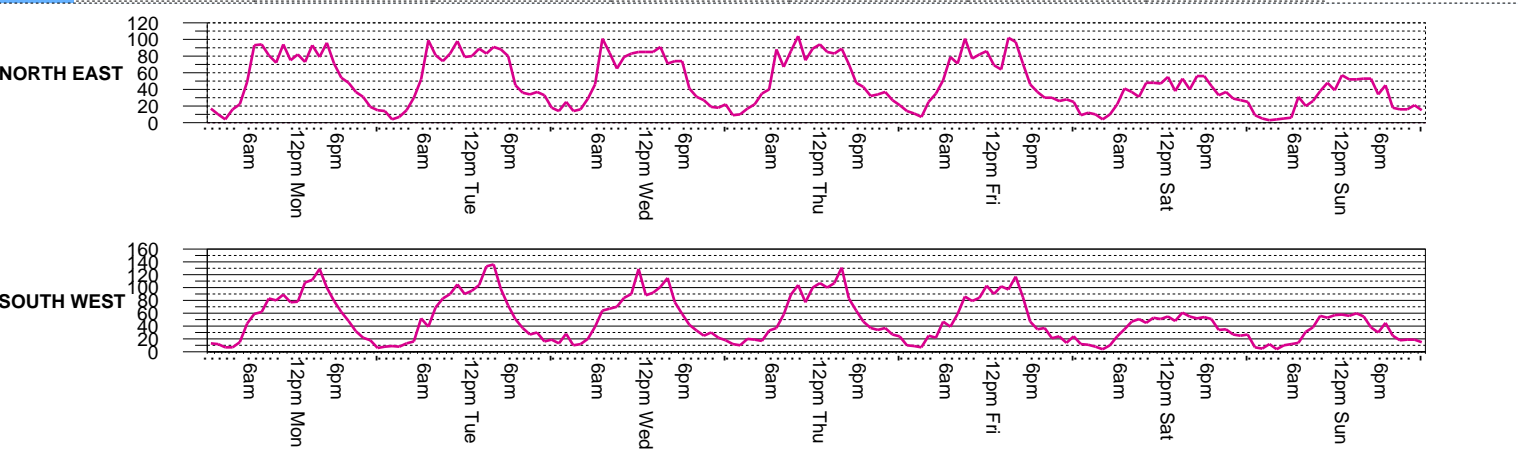
**Start Date** 10-DEC-21  
**Start Time** 1900  
**Duration** 7 DAYS  
**Interval** 1 HOUR

**Speed Limit** 60 **NORTH EAST** **SOUTH WEST** **COMBINED**  
**Weekly 50th Percentile Speed** 56 58 57  
**Weekly 85th Percentile Speed** 66 68 67  
**Five Day AADT** 1305 1341 2646  
**Seven Day AADT** 1143 1188 2331

	MON 13-DEC-21			TUE 14-DEC-21			WED 15-DEC-21			THU 16-DEC-21			FRI 10-DEC-21			SAT 11-DEC-21			SUN 12-DEC-21			SEVENDAY AVERAGE		
	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir
85%ile	66.4	67.8	67.2	66.0	67.8	67.1	66.1	67.7	67.0	66.4	67.4	67.0	66.3	68.2	67.4	66.3	68.3	67.5	65.0	67.8	66.8	66.1	67.8	67.1
50%ile	55.8	58.0	56.9	55.6	58.1	56.9	55.7	58.0	56.9	55.8	57.5	56.7	55.8	58.7	57.2	55.8	58.7	57.2	55.1	58.7	56.9	55.7	58.3	56.9
> 70 k	78	101	179	69	106	175	66	92	158	84	95	179	77	107	184	48	76	124	25	50	75	63.86	89.57	153.4
%age	5.9	7.5	6.7	5.1	7.6	6.4	5.2	6.9	6.1	6.4	6.9	6.7	6.1	8.5	7.3	5.9	8.7	7.4	3.8	6.8	5.3	5.5	7.6	6.5
> 80 k	13	15	28	12	8	20	20	18	38	21	10	31	12	12	24	13	21	34	6	8	14	13.86	13.14	27
%age	1.0	1.1	1.0	.9	.6	.7	1.6	1.4	1.5	1.6	.7	1.2	.9	.9	.9	1.6	2.4	2.0	.9	1.1	1.0	1.2	1.2	1.2



	MON	TUE	WED	THU	FRI	SAT	SUN	Average																
Short %	74.6	80.0	77.3	71.6	72.1	71.9	72.0	76.2	74.1	71.6	74.6	73.1	72.3	77.5	74.9	80.9	86.2	83.6	87.5	88.9	88.2	74.5	78.2	76.4
Med %	11.5	9.4	10.4	15.3	15.3	15.3	10.2	11.7	11.7	11.7	10.8	10.3	10.3	10.6	6.3	5.8	6.0	5.6	6.0	6.0	5.8	11.0	10.2	10.6
Long %	13.9	10.7	12.3	13.1	12.6	12.8	16.8	14.5	15.6	16.7	13.7	15.2	16.9	12.2	14.5	12.8	8.0	10.3	6.9	5.2	6.0	14.5	11.6	13.0
AM Pk Vo	94	89	183	99	105	203	101	129	214	104	104	207	101	103	189	48	53	101	48	57	101	85	91	171
PM Pk Vo	96	129	208	91	136	227	91	115	192	94	131	220	102	117	214	56	61	114	57	60	115	84	107	184
7-7pm 24Hr Tot	964	1059	2023	971	1126	2097	917	1014	1931	933	1067	2000	903	984	1887	553	623	1176	517	577	1094	823	921	1744
Class 0	79	88	167	83	84	167	83	100	183	87	107	194	104	109	213	83	100	183	66	46	112	84	91	174
Class 1	893	973	1866	860	905	1765	823	894	1717	834	909	1743	785	848	1633	565	643	1208	502	594	1096	752	824	1575
Class 2	17	12	29	23	21	44	15	18	33	13	9	22	25	22	47	9	11	20	15	15	30	17	15	32
Class 3	107	93	200	160	174	334	116	97	213	117	123	240	105	96	201	40	39	79	27	35	62	96	94	190
Class 4	28	20	48	34	30	64	18	17	35	27	29	56	21	27	48	9	18	27	7	7	16	21	20	41
Class 5	17	13	30	13	10	23	9	10	19	9	9	18	11	7	18	2	3	5	1	2	3	9	8	17
Class 6	1	1	2	0	3	3	2	1	3	2	4	4	3	2	5	1	0	1	0	1	1	1	1	3
Class 7	1	3	4	4	5	9	3	7	10	0	4	4	2	4	0	0	0	0	0	1	1	1	3	5
Class 8	7	13	20	2	16	18	1	20	21	4	19	23	7	18	25	3	7	10	1	2	3	4	14	17
Class 9	144	87	231	136	97	233	161	113	274	167	117	284	152	81	233	92	55	147	42	32	74	128	83	211
Class 10	22	30	52	32	52	84	39	46	85	39	40	79	45	46	91	8	4	12	3	2	5	27	31	58
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Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0





DOCUMENT	SEE MOD
PROJECT	Port Kembla Milling
VERSION	1.0

AUTHOR	Sam Coles
POSITION	Developer Planner
DATE	02/05/2022



# Appendix C: Air Quality Impact Assessment



Report

# Air Quality Impact Assessment

Port Kembla Milling Facility

Prepared for:

Cement Australia Pty Ltd

Prepared by:

Advitech Pty Limited

Job: J0210346, Folder: F22226

Revision: 1 (Final) 7 April 2022

# Document Details

## Air Quality Impact Assessment

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### History

Date	Revision	Comments
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07-04-2022	1	Final Issue

### Endorsements

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Checked By:	 advitech	<b>Dr Carl Fung</b> Lead Consultant – Process Engineering and Sustainability PhD, BE(Env), MIEAust, CPEng, NER, RPEQ, CAQP (Casanz)	07-04-2022
Authorised for Release By:	 advitech	<b>Dr Rod Bennison</b> Senior Environmental Consultant	07-04-2022

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- A: Contour Plots
- B: Port Kembla AWS – Annual Wind Roses
- C: CALMET & CALPUFF Model Inputs



# 1. Introduction

Advitech Pty Limited (trading as Advitech Environmental) was engaged by Cement Australia Pty Ltd (Cement Australia) on behalf of Port Kembla Milling Facility (PKM) to undertake an Air Quality Impact Assessment (AQIA) for Development Approval (DA) (10\_0102) to enable the increase of annual production of cementitious material. This report aims to provide assessment of air quality impacts of the DA modification to allow for throughput increase against the NSW EPA criteria.

It should be noted that this report was prepared by Advitech Pty Limited for Cement Australia Pty Ltd ("the customer") in accordance with the scope of work and specific requirements agreed between Advitech and the customer. This report was prepared with background information, terms of reference and assumptions agreed with the customer. The report is not intended for use by any other individual or organisation and as such, Advitech will not accept liability for use of the information contained in this report, other than that which was intended at the time of writing.

## 2. Background and Objectives

### 2.1 Site Location and Surrounding Land Uses

Port Kembla Milling (PKM) facility is located on 4.5 hectares (ha) of reclaimed land within the Wollongong Local Government Area in the Outer Harbour of the Port of Port Kembla. The existing facility is located on Lot 2002 DP 1176582 and is shown in **Figure 1**. The land is leased from the NSW Ports and is accessible from Christy Drive. The port of Port Kembla is the closest industrial port to Sydney, NSW. PKM lies in the Outer Harbour while to the north of the site is the Inner Harbour, servicing BlueScope Steel as well as grain, coal and Australian Amalgamated Terminals.

PKM produce Portland Cement and Ground Granulated Blast Furnace Slag (GGBFS). The facility consists of a processing plant with vertical roller mill, transfer hoppers, storage bins and silos for dispatch of product, a materials transfer system, transfer chutes and dust suppression system, a dust clinker storage shed, truck and ship unloading facilities, tuck loading facilities, associated office and amenities, workshop, substation, transformer yard and car parking.



Figure 1: Site Location



## 2.2 Project Description Associated with the Modification

With the submission of the modification to the current Development Consent, Cement Australia is proposing to increase production in throughput from 1.1 Mtpa up to 1.4 Mtpa of cementitious material. The proposed changes to current activities are as follows:

- Up to 1 Mtpa of raw material (e.g., clinker) will be shipped into Port Kembla via the existing wharf terminal facilities. This will see approximately seven additional ships per year at the site;
- The additional 300 ktpa of cementitious material produced will be transported by intermodal road and/or rail transfers on local Port Roads to the existing Darcy Road site or via truck to Sydney and other markets via Mt Ousley road to the Hume / Princess Highway; and
- This will equate to approximately 60 additional truck movements per day.

### 2.2.1 Summary of Changes to the Activity

- Shipping movements – approximately an additional seven per year into the existing PKM Grinding facility wharf. Ship activities take up to 5 days at berth. Ships will be similar as currently utilised by Cement Australia and shipping routes. There will be no changes required to the wharf facility to accommodate additional movement; and
- Truck movements – an additional 72 truck movements (60 dispatch trucks and 12 raw truck) per day within internal Port roads only (facility at Arawata drive to railhead location at Darcy Road, via Christy Drive and Old Port Road).

### 2.2.2 Summary of Aspects that will not change

- Infrastructure – currently no proposed changes to existing infrastructure at the plant / supporting infrastructure (i.e., wharf and railhead). The requested increase will be obtained through plant efficiencies and is close to the maximum production capacity for the Port Kembla Grinding Facility; and
- Operating Hours – no changes to operating hours. PKM facility currently operates 24 hours a day, seven days a week.

## 2.3 Sensitive receivers

The nearest potentially affected residences to the site are located on Wentworth Road, 750 m to the south of the site. Between the site and the nearest residences are other numerous industrial sites including a container distribution yard, a rail locomotive maintenance workshop, motor mechanical workshops and other various light industrial activities. The potential residences are provided in **Table 1**.

**Table 1: Sensitive Receivers.**

Receiver ID	Address	Easting UTM (m)	Northing UTM (m)	Receiver Type
R1	Port Kembla Train Station	307328	6182924	Public Place
R2	Port Kembla North Train Station	306065	6183400	Public Place
R3	Cringila Train Station	305130	6184017	Public Place
R4	7 Military Road, Port Kembla	307149	6182786	Private Residence
R5	3 Wentworth St, Port Kembla	306968	6182775	Private Residence
R6	2 Holman St, Port Kembla	306322	6182554	Private Residence
R7	2 First Ave N, Port Kembla	305918	6182646	Private Residence
R8	48 Flagstaff Rd, Warrawong	305629	6182835	Private Residence
R9	2 Birmingham St, Cringila	304842	6183919	Private Residence

### 3. Air Quality Guidelines

The NSW Environment Protection Authority (EPA) specify the impact assessment criteria in the publication *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*, 2016. The relevant sections from this publication are reproduced below in **Table 2** which presents the ground level concentration (GLC) criteria for each applicable air pollutant.

**Table 2: NSW EPA Impact Assessment Criteria.**

Pollutant	NSW EPA Design Criteria	Units	Averaging Time
TSP <sup>a</sup>	90	µg/m <sup>3</sup>	Annual
PM <sub>10</sub> <sup>b</sup>	50	µg/m <sup>3</sup>	24 hours
	25	µg/m <sup>3</sup>	Annual
PM <sub>2.5</sub> <sup>c</sup>	25	µg/m <sup>3</sup>	24 hours
	8	µg/m <sup>3</sup>	Annual
Deposited Dust <sup>d</sup>	2 <sup>e</sup>	g/m <sup>2</sup> /month	Annual
	4 <sup>f</sup>		

<sup>a</sup> Total suspended particulates.

<sup>b</sup> Particulate materials with an aerodynamic diameter less than 10 µm.

<sup>c</sup> Particulate materials with an aerodynamic diameter less than 2.5 µm.

<sup>d</sup> Dust is assessed as insoluble solids as defined by AS 3580.10.1.

<sup>e</sup> Maximum increase in deposited dust level.

<sup>f</sup> Maximum total deposited dust level.

### 4. Meteorological Data

#### 4.1 Bureau of Meteorology Data

To determine the most representative 12-month calendar period required for modelling air emissions from the Port Kembla Milling (PKM) facility historical Bureau of Meteorology (BOM) climate data at the Port Kembla Automatic Weather Station (AWS) (068253) was reviewed in **Table 3**. Historical BOM wind roses at Port Kembla from 2015 – 2020 have been presented in Appendix B.

**Table 3: Bureau of Meteorology (BoM) Climate Data History for Port Kembla (068253).**

Year	Temperature (°C)				Rainfall (mm)	
	Maximum year average	Difference from long term average	Minimum year average	Difference from long term average	Yearly total	Percentage of long-term average
2015	22.5	0.2	12	0.4	1106.4	121%
2016	23.3	-0.6	12.4	0.8	861	94%
2017	23.4	-0.7	12.1	0.5	971.8	107%
2018	22.9	-0.2	11.5	-0.1	637.2	70%
2019	23.6	-0.9	11.8	0.2	596	65%
2020	22.6	0.1	12.4	0.8	1266.6	139%

A review of BOM climate and wind rose data suggests the years with the least deviation from the long-term average climate statistics are years 2015 and 2020. As a result of the review of climatic data (refer to **Table 3**) and wind rose data (refer to **Appendix B**), this report has adopted the year 2020 for air dispersion modelling purposes.

## 4.2 Calmet

Air dispersion modelling requires the creation of a three-dimensional (3D) CALMET meteorological data file that represents the weather and climate for the region (domain) modelled. In brief, CALMET is a meteorological model that develops hourly (or sub-hourly) wind and other meteorological fields on a 3D gridded modelling domain. Associated two dimensional fields such as mixing height, surface characteristics, and dispersion properties are also included in the file produced by CALMET. The final time varying wind field thus reflects the influences of local topography and land uses.

Compilation of a 2020 three dimensional (3D) meteorological data file for the Port Kembla area representative of the proposed site was obtained from the following data sources:

- Mesoscale Prognostic Weather Research and Forecasting (WRF) Model for 2020;
- Bureau of Meteorology (BoM) automatic weather stations at Port Kembla, Albion Park and Bellambi;
- NSW DECC 2007 Land Use NSW; and
- Terrain data set with SRTM1 30 m resolution topography data.

The Weather Research and Forecasting (WRF) Model is a next generation mesoscale numerical weather prediction system designed for both atmospheric research and operational forecasting applications. It features two dynamic cores, a data assimilation system, and software architecture supporting parallel computation and system extensibility. The model serves a wide range of meteorological applications across scales from tens of metres to thousands of kilometres.

The generated 3D meteorological file used in this report was developed using the hybrid mode (using WRF and observational data) in CALMET. The WRF wind field was used as an initial guess in CALMET which was subsequently used to generate its wind. The initial wind was then adjusted to account for the kinematic and thermal effects of terrain and land use on wind.

**Figure 2** shows the frequency of wind speed and direction for each season during the 2020 calendar year extracted from the CALMET generated file. The CALMET seasonal wind roses predict that the predominant winds are from a north-east direction in summer and spring months and west to south-west direction in the autumn, winter, and spring months.

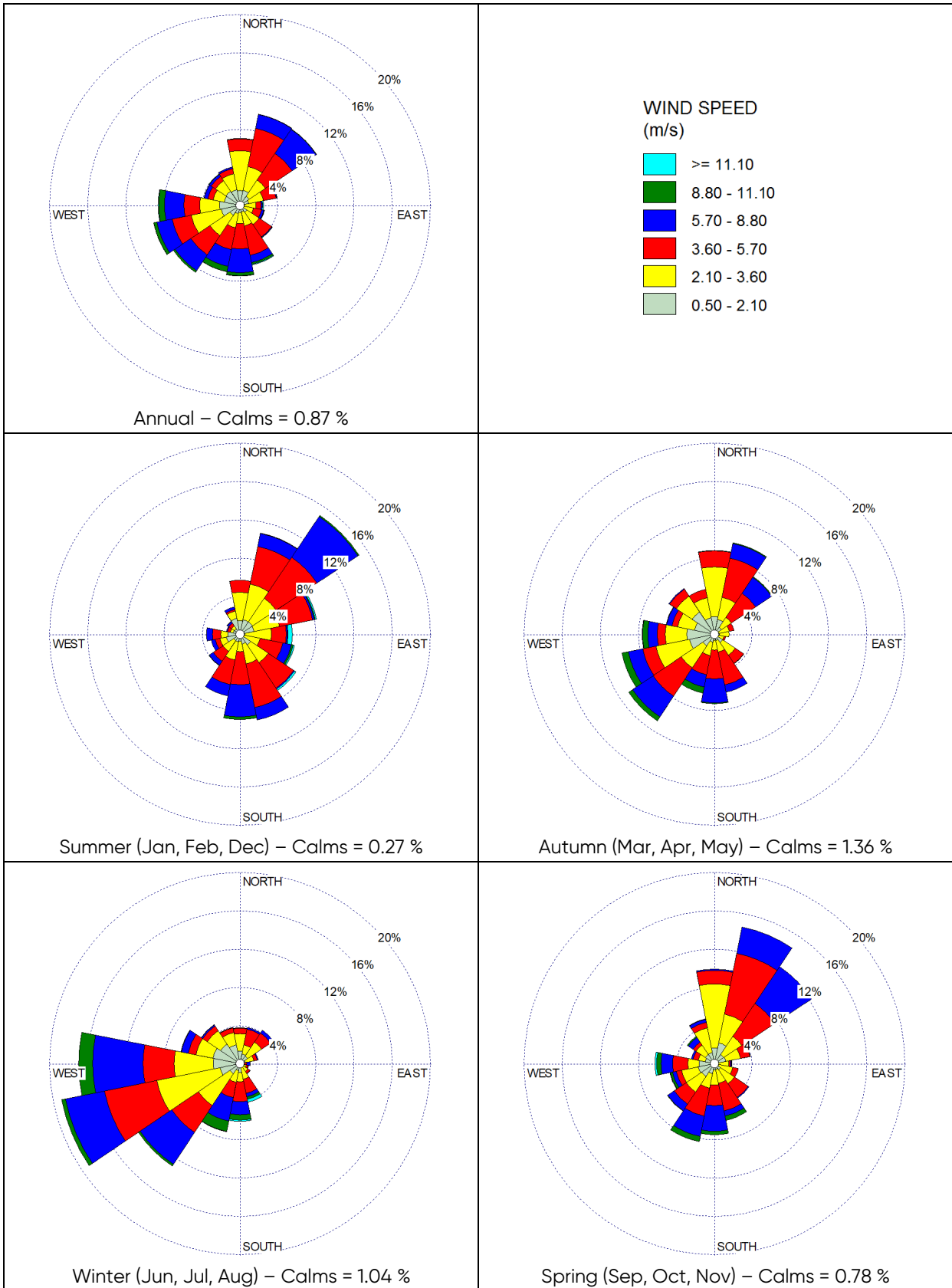


Figure 2: CALMET 2020 Port Kembla Seasonal Wind Roses

## 5. Modelling Approach/Methodology

### 5.1 Background Air Quality (Particulates)

Assessment of background air quality data has been undertaken for the airshed surrounding the proposed Port Kembla Milling operations.

The NSW Department of Planning and Environment (DPE) operate an air quality monitoring program that collects accurate real-time measurements of ambient level pollutants at 28 monitoring sites within the air quality monitoring network (AQMN), located around the greater metropolitan area of Sydney, the Illawarra, the Lower Hunter and selected rural sites around NSW (refer to **Section 9**, Reference 6). The nearest monitoring stations to the Port Kembla site are in Wollongong (6 km north) and Kembla Grange (7 km west).

The BlueScope Steel Port Kembla Plant operates an air quality monitoring system as part of its environmental management system. The site operates two real-time ambient monitoring stations to the north (North Gate) and the south (Scouts Hall) of the BlueScope site. The air quality monitoring is undertaken inline with the conditions of the plants environmental protection licence and prepares monthly reports to meet its regulatory requirements. The real-time and historical data is available online by BlueScope.

For the purpose of the air quality assessment, the Scouts Hall air quality station was primarily used for the ambient PM<sub>10</sub> concentrations as it is 2 km west from the Port Kembla Milling site. Where data was unavailable, the average concentrations of the North Gate, Wollongong and Kembla Grange stations were applied. The average of the Wollongong and Kembla Grange stations were applied for PM<sub>2.5</sub> ambient concentration (North Gate and Scouts Hall does not measure PM<sub>2.5</sub>).

A Level 1 assessment of particulate background concentrations has been prepared for the pollutants listed in **Table 4** for the 2020 monitoring year to correspond with the meteorological data. The Level 1 assessment has assumed a worst-case background concentration by using the maximum reported value.

**Table 4: Background Air Quality.**

Pollutant	Background Concentration	Units	Averaging Time
TSP	47.8 <sup>a</sup>	µg/m <sup>3</sup>	Annual
PM <sub>10</sub>	varies	µg/m <sup>3</sup>	24 Hours
	23.9	µg/m <sup>3</sup>	Annual
PM <sub>2.5</sub>	varies	µg/m <sup>3</sup>	24 Hours
	7.3	µg/m <sup>3</sup>	Annual

<sup>a</sup> Assumed from annual average PM<sub>10</sub> background concentration (TSP = 2 x PM<sub>10</sub>).

The maximum reported 24-hour average PM<sub>10</sub> background concentration for the 2020 monitoring period was 187 µg/m<sup>3</sup>, which is above the NSW EPA impact assessment criteria. As such, a Level 2 contemporaneous assessment of the PM<sub>10</sub> background concentration is required to understand the cumulative impact of the proposed development. **Figure 3** displays the PM<sub>10</sub> 24-hour average background concentrations for 2020 and indicates exceedances of the NSW EPA impact assessment criteria. It should be noted that elevated background concentrations during January and February are likely a result of the prolonged bushfire season during the summer of 2019-2020.

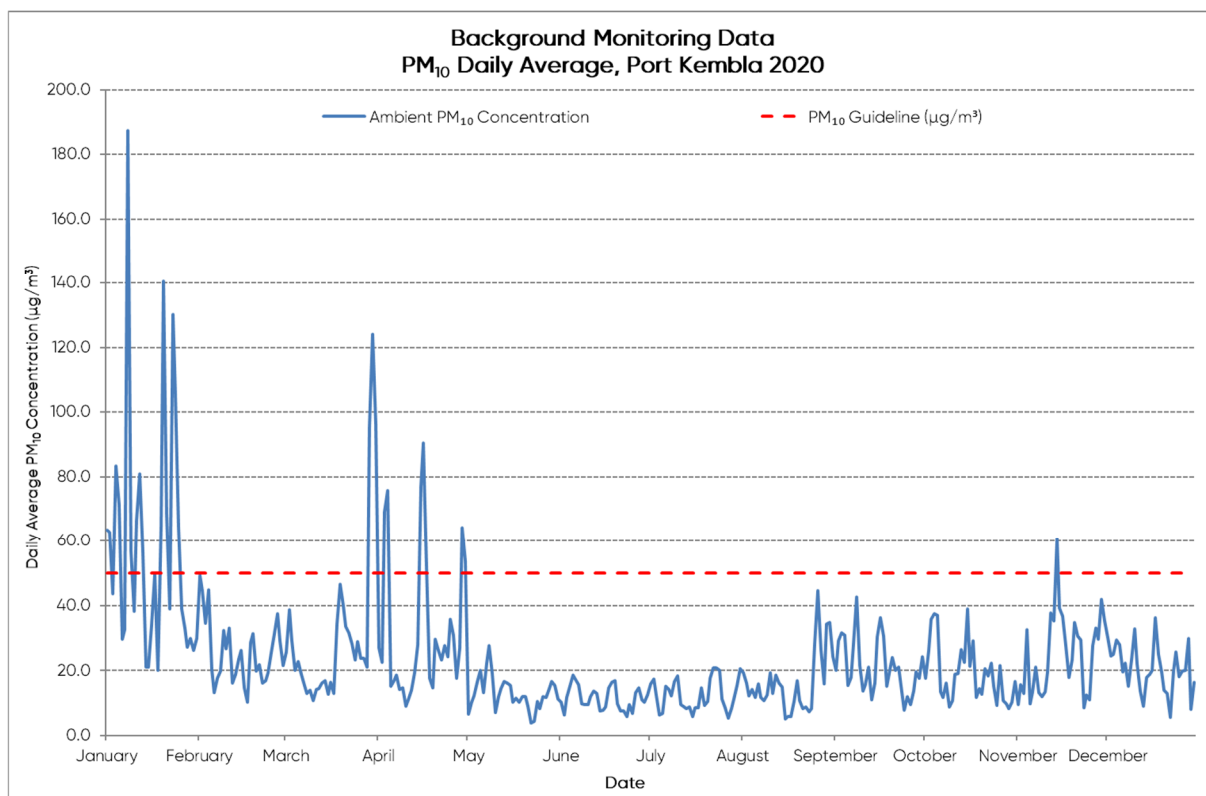


Figure 3: Daily Particulate Matter (PM<sub>10</sub>) Concentrations for Port Kembla 2020.

## 5.2 Meteorological Model Configuration

Table 5 details the parameters used in the meteorological modelling to drive the CALMET model. The nearest BOM observational station at Port Kembla AWS is approximately 1 km south east of the subject site. After comparison of the local observational data with regional observational data, Advitech considered the local data suitable for meteorological modelling. Therefore, the CALMET model was undertaken in 'Hybrid' mode using prognostic MM5 data with local and regional meteorological observations.

Table 5: CALMET Meteorological Parameters used in this Report.

Identifier	Descriptor	Comment
WRF	Grid spacing	4 km
	Year of analysis	2020
	Time step	Hourly
CALMET (v 6.4.0)	Meteorological grid domain	25 km x 25 km
	Meteorological grid origin (SW corner)	288.0, 6170.6 km
	Meteorological grid resolution	0.2 km
	TERRAD value	8 km
	R1, R2 (km)	8 km
	RMax1, RMax2 (km)	5 km
	Cell Face Heights	0, 20, 40, 80, 160, 320, 640, 1000, 1500, 2300, 3000

### 5.3 Dispersion Modelling Configuration

CALPUFF is an advanced non-steady-state meteorological and air quality modelling system. The model advects 'puffs' of material emitted from modelled sources, simulating the dispersion and transformation processes along the way. The model has been adopted by the US Environmental Protection Agency (US EPA) in its guideline on air quality models. CALPUFF uses the 3D wind fields generated by CALMET with the primary output files from CALPUFF processed in CALPOST to produce time-based concentration or deposition fluxes evaluated at selected receiver locations.

Particulate concentrations were simulated for a regular Cartesian receiver grid covering a 25 km by 25 km computational domain, set within the CALMET modelling domain with a grid resolution of 0.2 km.

**Section 5.5** outlines the assumptions made for the AQIA. **Appendix C** contains critical parameters required for the CALMET and CALPUFF dispersion models.

### 5.4 Air Dispersion Model

The Pork Kembla Milling operations are to proceed as per the project description outlined in **Section 2.2**. The modelling scenario (a 'worst-case') has been undertaken on the assumption basis presented in **Section 5.5**.

Dispersion modelling has been undertaken for the entire 2020 calendar year. The modelling scenario was conservatively assumed to be operating at a typical production rate for 24 hours a day and seven days a week.

### 5.5 Assumptions

Assumptions used in the computation of GLCs and deposition for particulates using the CALPUFF dispersion model are listed below.

#### 5.5.1 General

The following assumptions have been applied to the dispersion modelling of the Port Kembla Milling (PKM) Facility:

- Options within CALPUFF modelling reflect the *NSW OEH Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System guidelines* (refer to **Section 9**, Reference 5);
- All operations have been conservatively modelled to be operating simultaneously and constantly for the entire 2020 modelling period;
- Clinker unloading operations have been conservatively modelled constantly for the entire year. Unloading operations occur periodically throughout the year;
- Ship combustion emissions (CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and VOCs) have not been modelled as they are considered out of the scope of the milling operations;
- Vehicle combustion (CO, NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and VOCs) and wheel dust emissions were not modelled as the emission rates are considered negligible compared to the dust emissions from other sources;
- The operating times for PKM are: 24 hours a day seven days a week;
- Milling stack emissions were calculated using annual stack testing reports from 2019 and 2021. The maximum emission rates from the stack testing data was applied to the milling stack;
- Emissions from the dust collectors were calculated in accordance with the emissions techniques manual for cement manufacturing version 2.1;
- For dust deposition modelling, a geometric mass mean diameter (GMMD) of 11.5 µm for TSP, 4.6 µm for PM<sub>10</sub> and 1.4 µm for PM<sub>2.5</sub> with geometric standard deviation (GSD) of 2.8 µm for TSP, 2.3 µm for PM<sub>10</sub> and 1.8 µm for PM<sub>2.5</sub> respectively was applied.

## 5.5.2 Dispersion Modelling Scenario

The modelling scenario presented conservatively models the current Port Kembla Milling operation intensity for the entire modelling year (2020). PKM intends to increase the annual throughput by increasing the utilisation of the mill (i.e. increase milling hours) without any changes to its existing infrastructure. The modelling scenario conservatively assumes that all sites operations (i.e. ships unloading, mill operating, loading trucks, etc.) are undertaken constantly. In reality, there would be operational downtime for all activities at the PKM site.

## 5.6 Emission Sources

The activities associated with the Port Kembla Milling operations with the potential to generate dust are:

- Unloading clinker material from ships into receiver bins;
- Conveying raw materials to/from storage silos and bins to the milling operations;
- Milling of raw materials (clinker, blast furnace slag, limestone, gypsum) and producing cement products;
- Dust collection in conveyors and storage shed/silos;
- Unloading of cement products into trucks at the weighbridge area;

Details of each emission source are given in **Table 6** and **Appendix C**. The emission factors and estimates are based on the annual stack testing reports and *Emission Estimation Technique (EET) Manual for Cement Manufacturing - Version 2.1*. The location of the emissions sources are presented in **Figure 4**.



Figure 4: Port Kembla Milling Emissions Sources

**Table 6: Emission Sources**

Emitter Name	Emission Factor			Modelled days (Days) <sup>2</sup>	Modelled Working hours (hours/day)	Emission Rate (g/s)		
	TSP	PM <sub>10</sub>	Units			TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Slag Conveyor	15	12	mg/m <sup>3</sup>	366	24	0.041	0.033	0.018
Rejects Bin	15	12	mg/m <sup>3</sup>	366	24	0.044	0.035	0.019
Clinker Bin	15	12	mg/m <sup>3</sup>	366	24	0.013	0.010	0.006
Clinker Receiver Bin	15	12	mg/m <sup>3</sup>	366	24	0.100	0.080	0.044
Clinker Reclaim 1	15	12	mg/m <sup>3</sup>	366	24	0.025	0.020	0.011
Clinker Reclaim 2	15	12	mg/m <sup>3</sup>	366	24	0.025	0.020	0.011
Clinker Reclaim 3	15	12	mg/m <sup>3</sup>	366	24	0.025	0.020	0.011
Clinker Shed 1	15	12	mg/m <sup>3</sup>	366	24	0.100	0.080	0.044
Clinker Shed 10	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 11	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 2	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 3	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 4	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 5	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 6	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 7	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 8	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Clinker Shed 9	15	12	mg/m <sup>3</sup>	366	24	0.050	0.040	0.022
Gypsum Bin	15	12	mg/m <sup>3</sup>	366	24	0.028	0.022	0.012
Limestone Bin	15	12	mg/m <sup>3</sup>	366	24	0.039	0.031	0.017
Milling Stack <sup>1</sup>	-	-	-	366	24	0.30	0.30	0.23
Product Silo 1	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Product Silo 2	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Product Silo 3	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Product Silo 4	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Product Silo 5	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Product Silo 6	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Product Silo 7	15	12	mg/m <sup>3</sup>	366	24	0.010	0.008	0.004
Wharf Conveyor 1	15	12	mg/m <sup>3</sup>	366	24	0.013	0.010	0.006
Wharf Conveyor 2	15	12	mg/m <sup>3</sup>	366	24	0.023	0.018	0.010
Weighbridge 1	15	12	mg/m <sup>3</sup>	366	24	0.019	0.015	0.008
Weighbridge 2	15	12	mg/m <sup>3</sup>	366	24	0.030	0.024	0.013
Weighbridge 3	15	12	mg/m <sup>3</sup>	366	24	0.025	0.020	0.011

**Notes:**

<sup>1</sup> – Milling Stack emissions taken from stack testing data reports.

<sup>2</sup> – 2020 modelled year is a leap year (i.e. 366 days).



## 6. Dispersion Modelling Results

### 6.1 Annual Average PM<sub>10</sub>, PM<sub>2.5</sub>, TSP

The predicted concentrations at selected sensitive receivers of the annual average PM<sub>10</sub>, PM<sub>2.5</sub> and TSP for the Port Kembla Milling (PKM) facility are presented in **Table 7**.

**Table 7: Predicted Annual Average PM<sub>10</sub>, PM<sub>2.5</sub> and TSP at Sensitive Receivers (Worst Case)**

Receiver	Predicted Annual Average PM <sub>10</sub> Increment + Background (µg/m <sup>3</sup> )	Predicted Annual Average PM <sub>2.5</sub> Increment + Background (µg/m <sup>3</sup> )	Predicted Annual Average TSP Increment + Background (µg/m <sup>3</sup> )
Background Concentration (µg/m <sup>3</sup> )	23.9	7.3	47.8
R1	24.8	7.8	48.7
R2	24.1	7.4	48.0
R3	24.0	7.4	47.8
R4	24.9	7.9	48.7
R5	24.7	7.8	48.6
R6	24.4	7.6	48.2
R7	24.2	7.5	48.0
R8	24.1	7.4	47.9
R9	24.0	7.4	47.8

<sup>1</sup> – Background particulate concentrations using **Table 4**.

**Table 7** presents the predicted cumulative 100<sup>th</sup> percentile annual average PM<sub>10</sub>, PM<sub>2.5</sub> and TSP for sensitive receivers respectively. The annual PM<sub>10</sub>, PM<sub>2.5</sub> and TSP impact assessment criteria are not exceeded at any sensitive receiver.

### 6.2 24 Hour Average PM<sub>10</sub>

The predicted concentrations at selected sensitive receivers of the 24-hour average PM<sub>10</sub> maximum increment for PKM facility are presented in **Table 8**.

**Table 8: Maximum Impact of 24 Hour Average PM<sub>10</sub>**

Receiver	Port Kembla Mill Maximum Predicted Increment (µg/m <sup>3</sup> )	Maximum Background Concentration (µg/m <sup>3</sup> ) <sup>1</sup>	Total (µg/m <sup>3</sup> )
R1	7.1	46.6	53.7
R2	4.5		51.1
R3	1.3		47.9
R4	8.6		55.2
R5	8.0		54.6
R6	6.3		52.9
R7	4.7		51.3
R8	4.3		50.9
R9	1.5		48.1

Notes:

<sup>1</sup> – The backgrounds concentration above 50 µg/m<sup>3</sup> (refer to **Figure 3**) have been discounted as it is above the impact assessment criteria. Therefore, the next highest value of 46.6 µg/m<sup>3</sup> was used.

The exceedances at nearby sensitive receivers of the 24-hour average PM<sub>10</sub> concentration presented in **Table 8** are likely a result of an elevated background PM<sub>10</sub> concentration. A Level 2 contemporaneous impact and background assessment is required to determine any additional exceedances as a result of the proposed operation.

A summary of the 24-hour average PM<sub>10</sub> contemporaneous impact and background assessment (Level 2 Assessment) for identified sensitive receivers are presented in **Table 9**.

Table 9: Summary of the 24 Hour Average PM<sub>10</sub> Contemporaneous Impact and Background

Date	PM <sub>10</sub> 24-hour average (µg/m <sup>3</sup> )				Date	PM <sub>10</sub> 24-hour average (µg/m <sup>3</sup> )			
	Highest Background <sup>1</sup>	Predicted Increment – Port Kembla Mill	Receiver	Total		Background <sup>1</sup>	Highest Predicted Increment – Port Kembla Mill	Receiver	Total
17/01/2020	49.9	0.0	R1	49.9	22/10/2020	18.3	8.6	R4	26.9
1/02/2020	49.3	1.9	R5	<b>51.2</b>	3/10/2020	35.9	8.0	R5	43.9
19/03/2020	46.6	7.1	R1	<b>53.7</b>	19/03/2020	46.6	7.1	R1	<b>53.7</b>
4/02/2020	44.9	0.6	R2	45.5	16/09/2020	36.3	6.4	R4	42.7
2/02/2020	44.7	0.1	R7	44.8	18/02/2020	28.7	6.3	R6	35.0
26/08/2020	44.6	0.5	R6	45.1	16/04/2020	90.5	6.2	R4	96.7
3/01/2020	43.7	1.5	R2	45.2	7/10/2020	11.8	5.8	R1	17.6
8/09/2020	42.6	4.9	R1	47.5	14/12/2020	17.8	5.7	R4	23.5
29/11/2020	42.0	0.1	R1	42.1	27/11/2020	33.0	5.3	R5	38.3
20/03/2020	39.9	1.7	R1	41.6	25/02/2020	25.6	5.3	R4	30.9
15/11/2020	39.2	4.2	R1	43.4	14/01/2020	21.0	5.3	R1	26.3
22/01/2020	39.0	1.3	R6	40.3	2/10/2020	26.3	5.1	R4	31.4
15/10/2020	38.9	3.8	R1	42.7	19/11/2020	23.3	5.0	R4	28.3
26/01/2020	38.9	1.6	R2	40.5	8/09/2020	42.6	4.9	R1	47.5
2/03/2020	38.8	1.2	R6	40.0	31/05/2020	11.4	4.8	R4	16.2
10/01/2020	38.2	4.5	R5	42.7	15/04/2020	76.9	4.8	R6	81.7
12/11/2020	37.8	3.6	R5	41.4	11/11/2020	19.7	4.7	R4	24.4
27/02/2020	37.6	1.9	R1	39.5	10/02/2020	26.7	4.7	R7	31.4
4/10/2020	37.5	4.0	R1	41.5	29/03/2020	95.4	4.6	R1	100.0

Notes:

<sup>1</sup> – Dates where the background 24 hour average PM<sub>10</sub> concentration was already at the NSW EPA impact criteria were discounted.

Two exceedances have been predicted in **Table 9** due to a large background concentration and low predicted increment from the Port Kembla Mill. According to the NSW EPA guidance, mitigation measures or emission controls that reduce emissions are required. It should be noted that the exceedances occurred during January and February and are likely a result of the prolonged bushfire season during the summer of 2019–2020.

### 6.3 24 Hour Average PM<sub>2.5</sub>

The predicted concentrations at selected sensitive receivers of the 24-hour average PM<sub>2.5</sub> for the proposed operation are presented in **Table 10**. A maximum 24-hour PM<sub>2.5</sub> background concentration of 22.6 µg/m<sup>3</sup> has been applied (refer to **Table 4**) to determine if further assessment is required.

**Table 10: Predicted Maximum 24 Hour Average PM<sub>2.5</sub> at Sensitive Receivers**

Receiver	Subject Site Maximum Predicted Increment (µg/m <sup>3</sup> )	Maximum Background Concentration (µg/m <sup>3</sup> ) <sup>1</sup>	Total (µg/m <sup>3</sup> )
R1	4.1	22.6	26.7
R2	2.8		25.4
R3	0.9		23.5
R4	5.0		27.6
R5	4.7		27.3
R6	3.8		26.4
R7	2.8		25.4
R8	2.7		25.3
R9	0.9		23.5

Notes:

<sup>1</sup> – The background concentration above 25 µg/m<sup>3</sup> (refer to **Figure 3**) has been discounted as it is above the impact assessment criteria. Therefore, the next highest value of 22.6 µg/m<sup>3</sup> was used.

The exceedances at nearby sensitive receivers of the 24-hour average PM<sub>2.5</sub> concentration presented in **Table 10** are likely a result of an elevated background PM<sub>2.5</sub> concentration. A Level 2 contemporaneous impact and background assessment is required to determine any additional exceedances as a result of the proposed operation.

A summary of the 24-hour average PM<sub>2.5</sub> contemporaneous impact and background assessment (Level 2 Assessment) for identified sensitive receivers are presented in **Table 11**.

Table 11: Summary of the 24 Hour Average PM<sub>2.5</sub> Contemporaneous Impact and Background

Date	PM <sub>2.5</sub> 24-hour average (µg/m <sup>3</sup> )				Date	PM <sub>2.5</sub> 24-hour average (µg/m <sup>3</sup> )	
	Highest Background <sup>1</sup>	Predicted Increment – Port Kembla Mill	Receiver	Total		Background <sup>1</sup>	Highest Predicted Total
7/01/2020	22.6	1.3	R5	23.9	22/10/2020	4.9	5.5
4/02/2020	20.3	0.4	R2	20.7	3/10/2020	10.8	4.4
3/02/2020	19.9	0.1	R2	20.0	19/03/2020	8.9	4.4
2/02/2020	19.0	0.1	R7	19.1	18/02/2020	7.5	3.9
30/08/2020	18.2	2.5	R4	20.7	16/09/2020	11.3	3.9
1/02/2020	17.5	1.2	R5	18.7	16/04/2020	11.7	3.9
9/01/2020	16.4	0.2	R7	16.6	7/10/2020	2.9	3.9
16/01/2020	16.3	1.6	R6	17.9	14/12/2020	4.8	3.9
8/05/2020	16.0	1.3	R6	17.3	27/11/2020	10.6	3.9
18/01/2020	15.6	0.0	R1	15.6	25/02/2020	4.1	3.9
20/01/2020	14.7	1.9	R6	16.6	14/01/2020	5.7	2.9
22/11/2020	14.3	1.5	R5	15.8	10/01/2020	13.8	2.9
10/01/2020	13.8	2.9	R5	16.7	2/10/2020	8.2	2.9
20/11/2020	13.6	1.0	R5	14.6	8/09/2020	10.6	2.9
15/04/2020	13.3	2.8	R6	16.1	19/11/2020	5.5	2.9
2/12/2020	12.6	0.1	R3	12.7	26/12/2020	3.1	2.9
31/01/2020	12.5	1.1	R5	13.6	15/04/2020	13.3	2.9
21/11/2020	12.5	0.0	R3	12.5	20/05/2020	0.0	2.9
4/10/2020	12.4	2.2	R1	14.6	20/12/2020	3.5	2.9

Notes:

<sup>1</sup> – Dates where the background 24 hour average PM<sub>2.5</sub> concentration was already at the NSW EPA impact criteria were discounted.

Modelling indicates that there are no additional exceedances of the 24 hour PM<sub>2.5</sub> impact assessment criteria at nearby sensitive receivers in **Table 11**. According to the NSW EPA guidance, mitigation measures or emission controls that reduce emissions are not required.

## 6.4 Dust Deposition

The predicted annual average dust deposition rates at selected sensitive receivers for the proposed operation are presented in **Table 12**.

**Table 12: Predicted Dust Deposition at Sensitive Receivers**

Receiver	Subject Site Maximum Predicted Increment (g/m <sup>2</sup> /month)	Impact Assessment Criteria
R1	0.1	2 g/m <sup>2</sup> /month
R2	<0.1	
R3	<0.1	
R4	0.1	
R5	0.1	
R6	0.1	
R7	<0.1	
R8	<0.1	
R9	<0.1	

Dispersion modelling indicates there are no exceedances of the maximum increase in deposited dust level criteria of 2 g/m<sup>2</sup>/month at nearby sensitive receivers. According to the NSW EPA guidance, mitigation measures or emission controls that reduce emissions are not required.

## 7. Discussion

The particulate dispersion modelling indicates that PM<sub>10</sub> impacts from the proposed increase in production at the Port Kembla Mill may cause an additional exceedance of the PM<sub>10</sub> impact assessment criteria at the identified nearby sensitive receivers (i.e R1 and R5). Elevated background levels (during the 2019–2020 bushfire season) appear to be largely responsible for any predicted exceedances of the NSW EPA impact criteria.

It should be noted that the dispersion model relies on the emission factor listed for bag filters venting outside from the emission estimation technique manual for cement manufacturing. This emission factor was applied to all bag filters on the dust collection at the Port Kembla site (except for the mill stack). This emissions factor for PM<sub>10</sub> (12 mg/m<sup>3</sup>) was larger than the stack testing results (ranged from 1.06 to 8.76 mg/m<sup>3</sup>) from the mill and could be considered a conservative over representation of dust emissions.

The proposed increase in production is not predicted exceed the PM<sub>2.5</sub>, TSP, or deposited dust impact assessment criteria at the identified nearby sensitive receivers.



## 8. Conclusions and Recommendations

Advitech Environmental modelled a worst case scenario for the proposed increase in production at the Cement Australia Port Kembla Mill to assess the potential particulate impacts to sensitive receivers. The results of the CALPUFF modelling indicate that operation of the Port Kembla Mill will result in a small incremental increase in particulate matter and dust deposition at surrounding sensitive receivers.

The proposed increase in throughput will be facilitated by increasing the utilisation of the existing milling plant. The increase in the throughput potentially means an increase in air and dust impacts from the facility. As the process is not being changed the rate of emissions are expected to be the same and within capacity of existing controls. The existing facility was designed to accommodate the proposed throughput of up to 1.4 Mtpa. Based on the annual stack testing data, the mill is achieving air quality compliance against its environmental protection licence. It is expected that this modification will not change the air quality outcomes for the Port Kembla Mill.

Any exceedances that may occur will be likely attributed to elevated background concentrations rather than a significant incremental contribution from the proposed development. To minimise potential impacts from the mill operations, including minimising occurrences of predicted maximum increments, Cement Australia has implemented of the following measures:

- Enclosed storages areas and conveyors for all materials; and
- State of the art dust collection systems with bag filters at all dust sources.

## 9. References

The following information was used in the preparation of this report:

1. Bureau of Meteorology Climate Statistics accessed via <http://www.bom.gov.au/climate/data/> on 20 December, 2021.
2. Department of Sustainability, Environment, Water, Population and Communities, 2008. *Emission Estimation Technique (EET) Manual for Cement Manufacturing - Version 2.1*.
3. NSW EPA, 2016. *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*.
4. NSW OEH, 2011. *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the 'Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia'*.
5. NSW OEH, Air Quality Monitoring Network accessed via <http://www.environment.nsw.gov.au/AQMS/> on 20 December, 2021.
6. Cement Australia supplied information, drawings and plans.



# Appendix A

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## Contour Plots



Figure 5: 100th Percentile 24-hr Average PM<sub>10</sub> Concentration (Contour labels = 5, 10, 20 µg/m<sup>3</sup>)



Figure 6: 100th Percentile 24-hr Average PM<sub>2.5</sub> Concentration (Contour labels = 2, 5, 10 µg/m<sup>3</sup>)



Figure 7: 100th Percentile Annual Average PM<sub>10</sub> Concentration (Contour labels = 0.5, 1, 2 µg/m<sup>3</sup>)

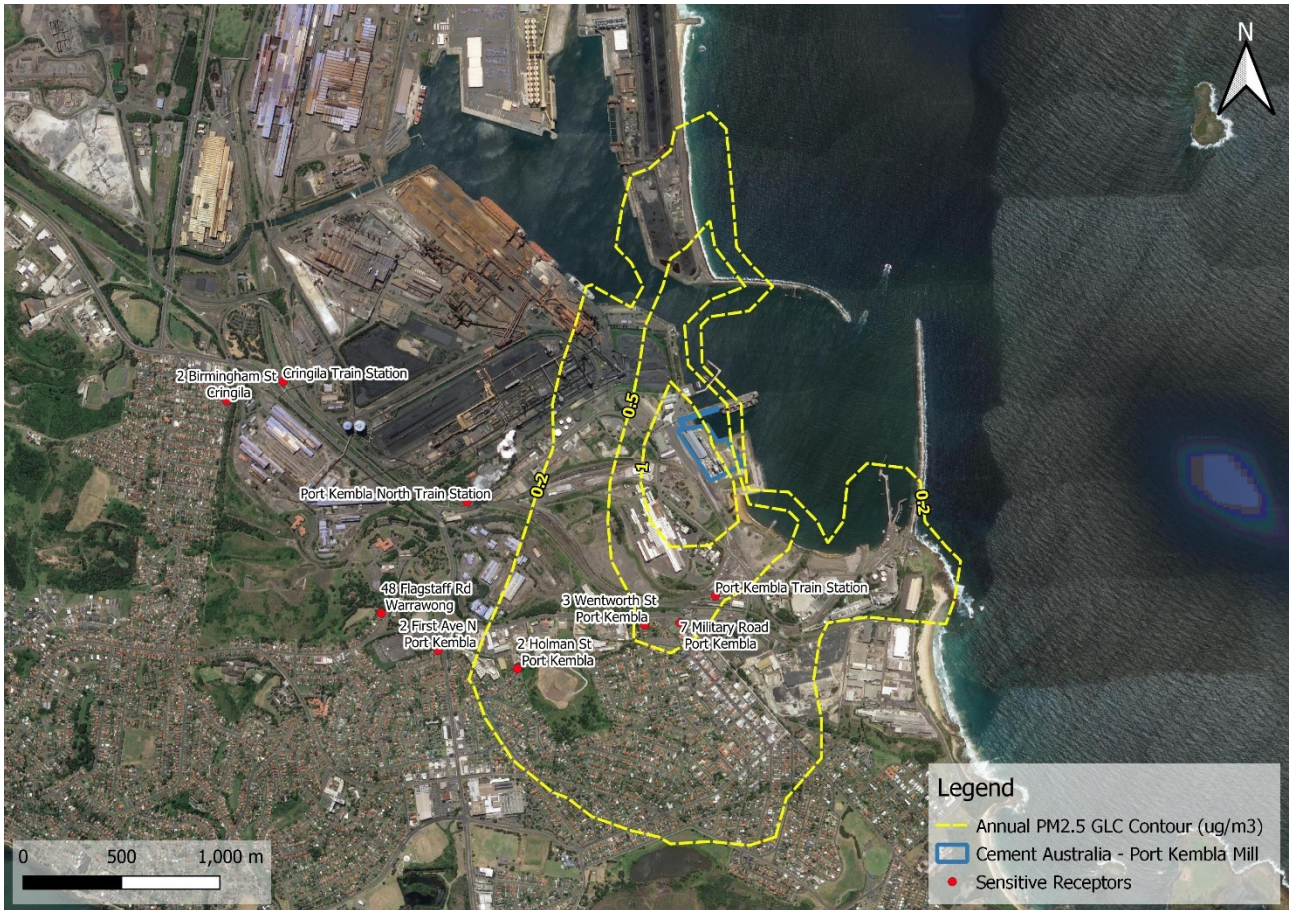


Figure 8: 100th Percentile Annual Average PM<sub>2.5</sub> Concentration (Contour labels = 0.2, 0.5, 1  $\mu\text{g}/\text{m}^3$ )

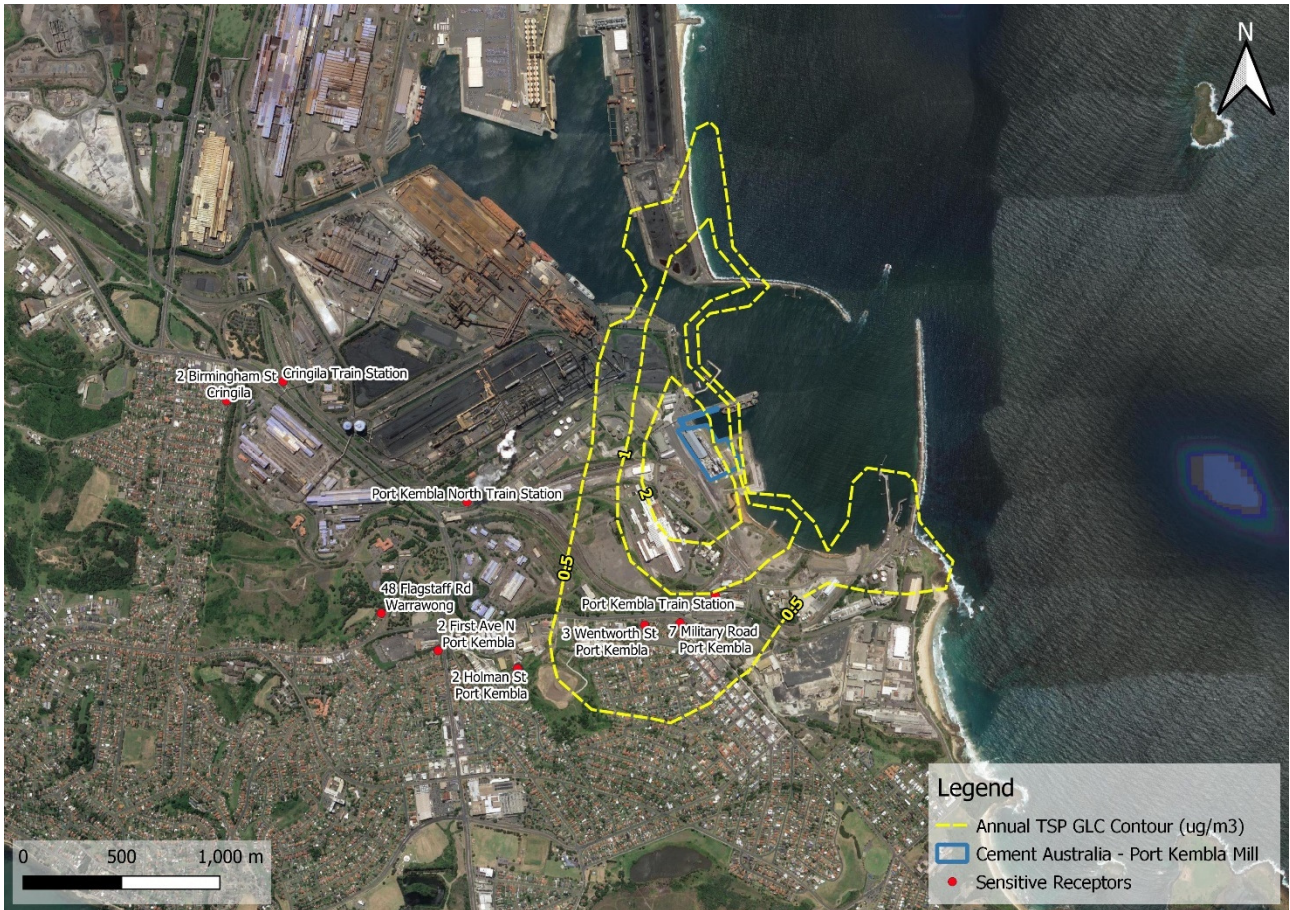


Figure 9: 100th Percentile Annual Average TSP Concentration (Contour labels = 0.5, 1, 2  $\mu\text{g}/\text{m}^3$ )



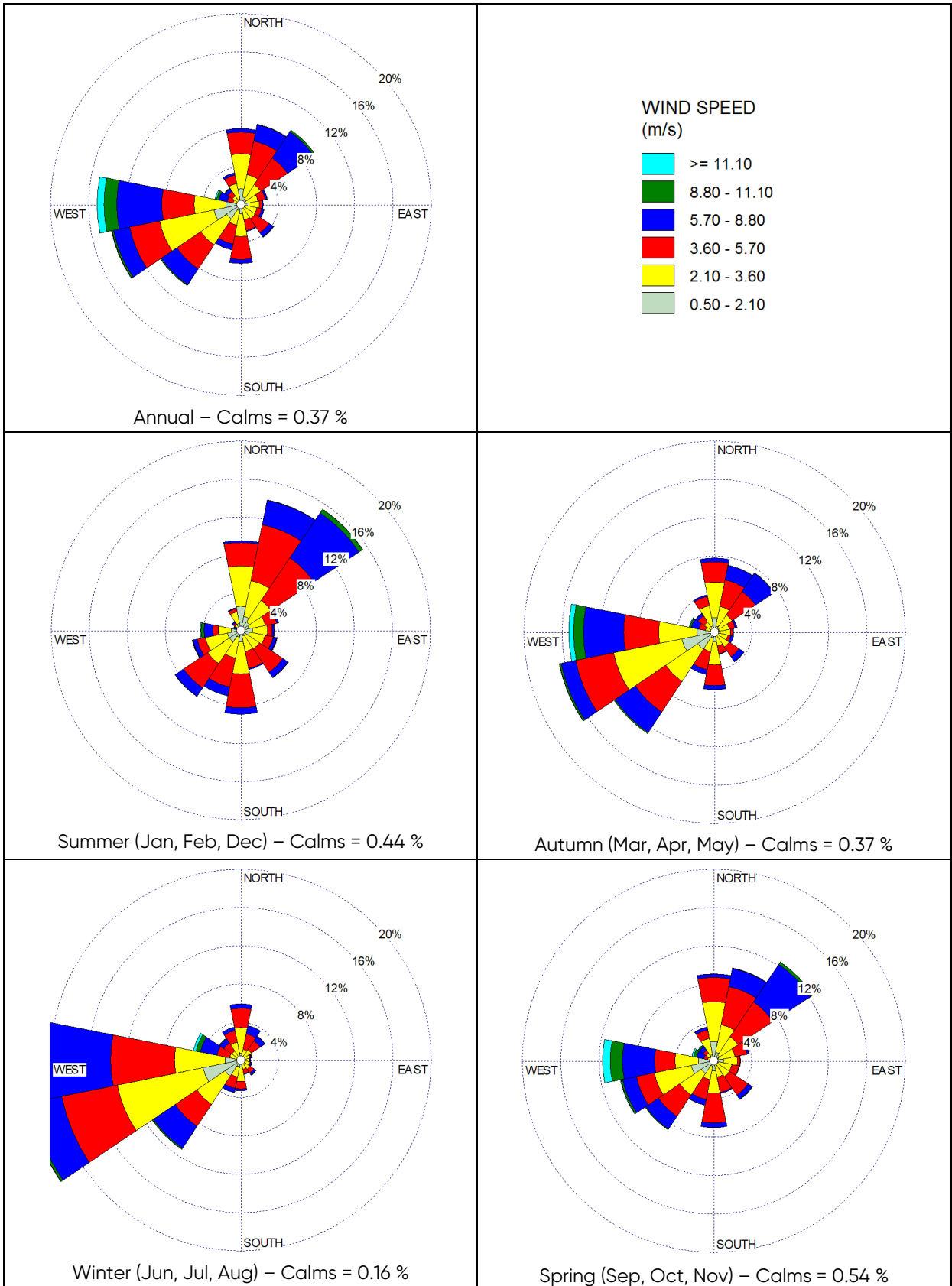
Figure 10: 100th Percentile Annual Average Incremental Dust Deposition Rate (Contour labels = 0.1, 0.2 g/m<sup>2</sup>/month)



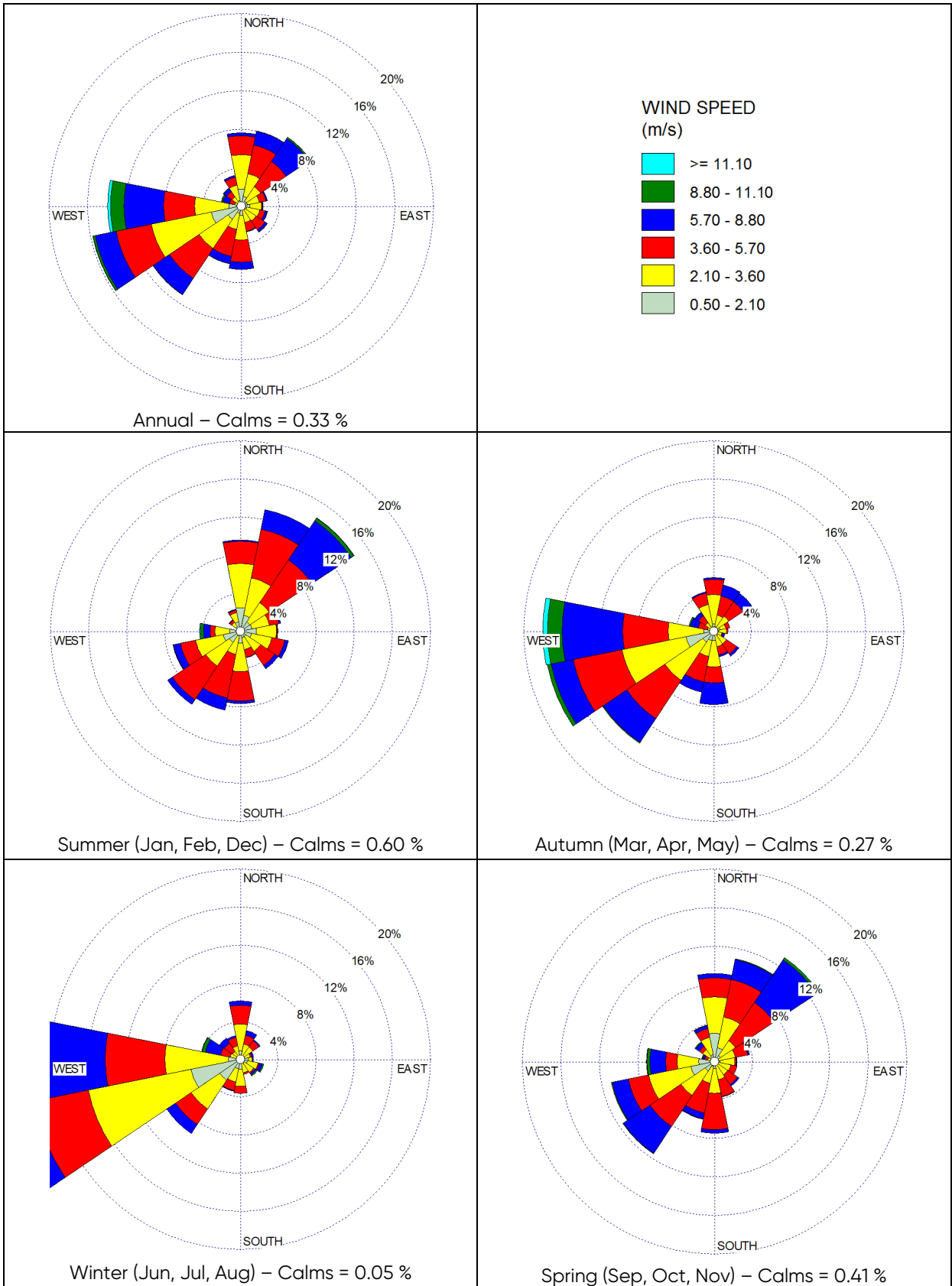
# Appendix B

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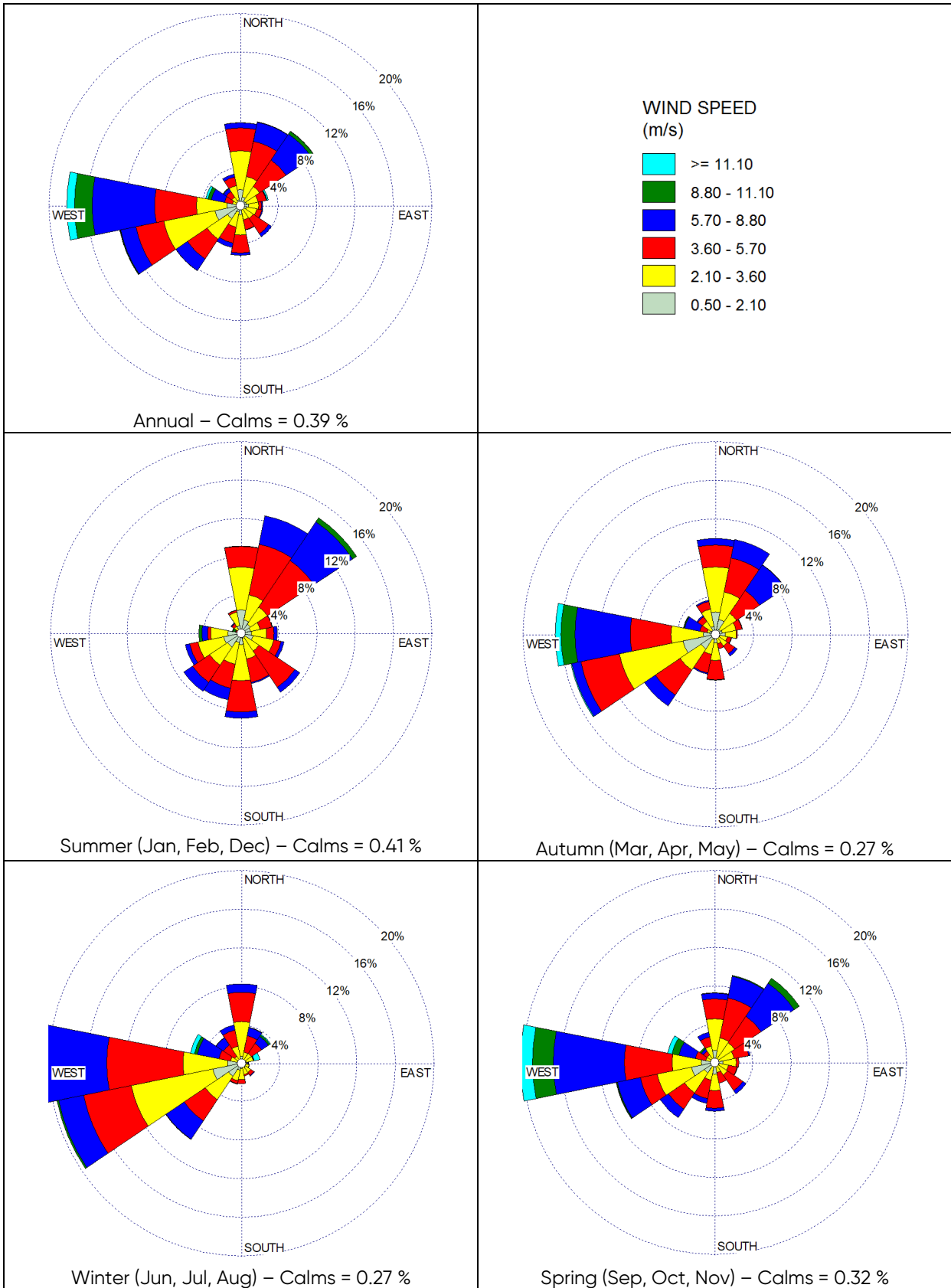
Port Kembla AWS - Annual Wind Roses



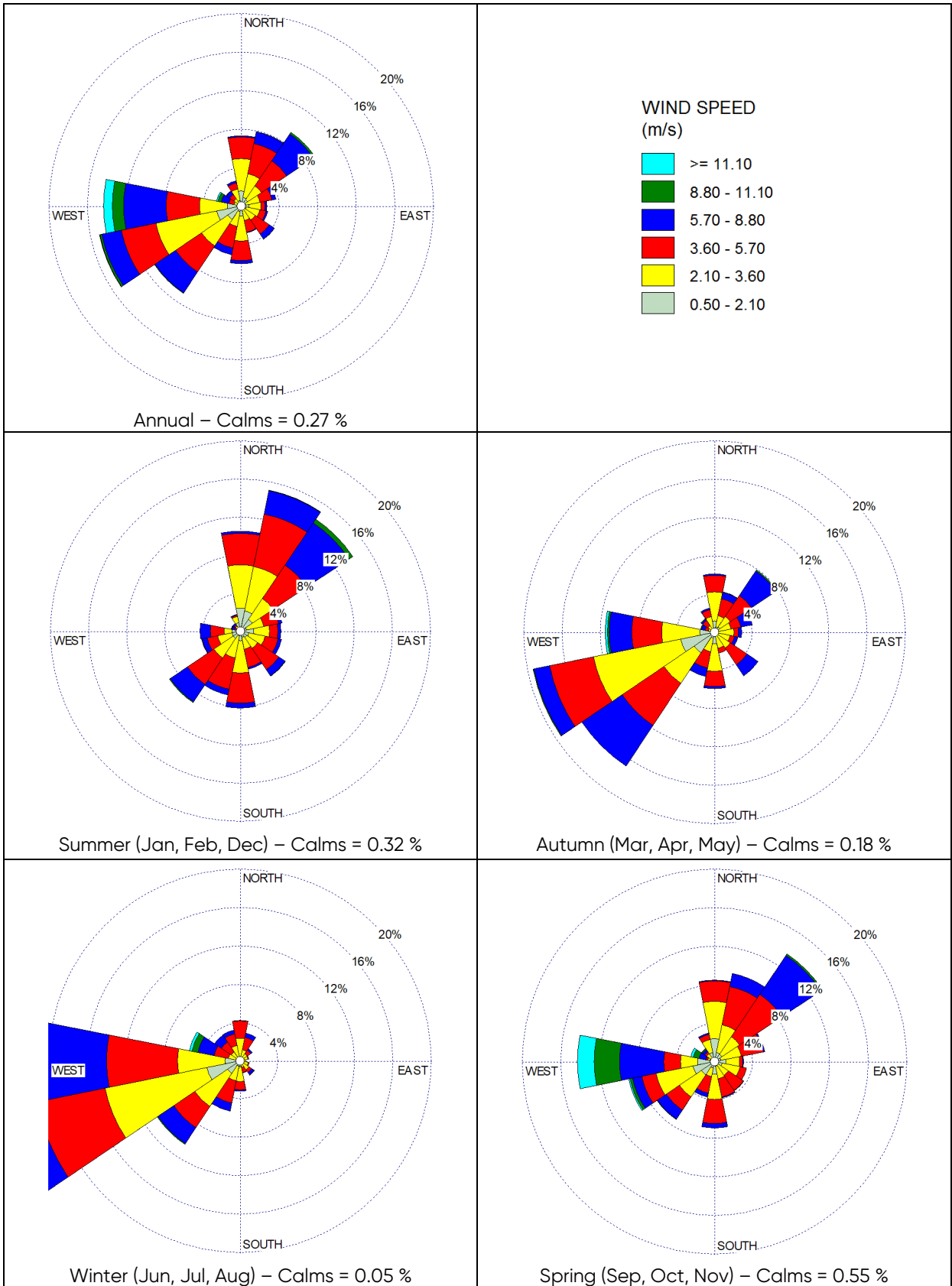
Port Kembla AWS (068253) 2012 – 2020 Annual and Seasonal Wind Roses



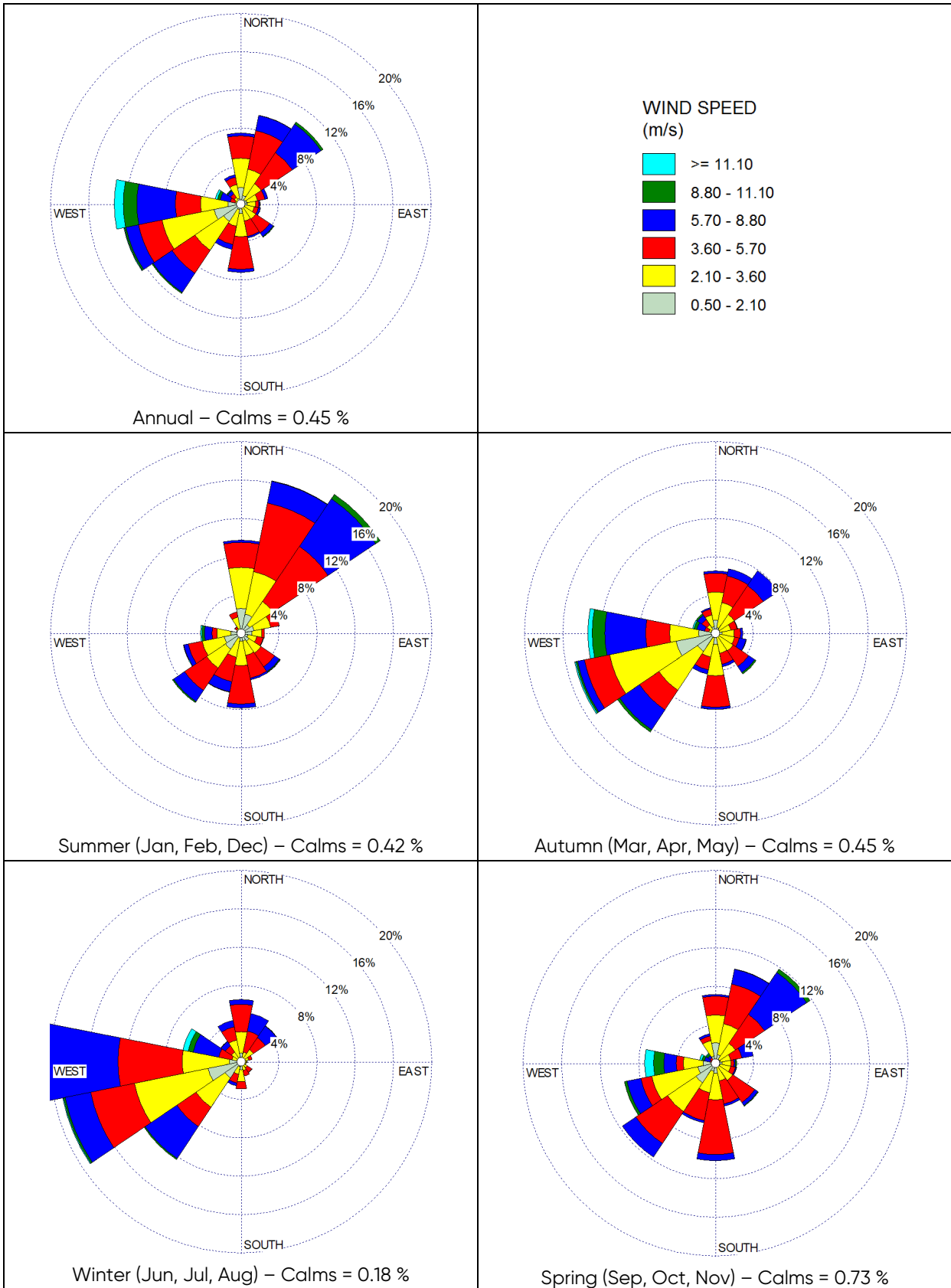
Port Kembla AWS (068253) 2015 Annual and Seasonal Wind Roses



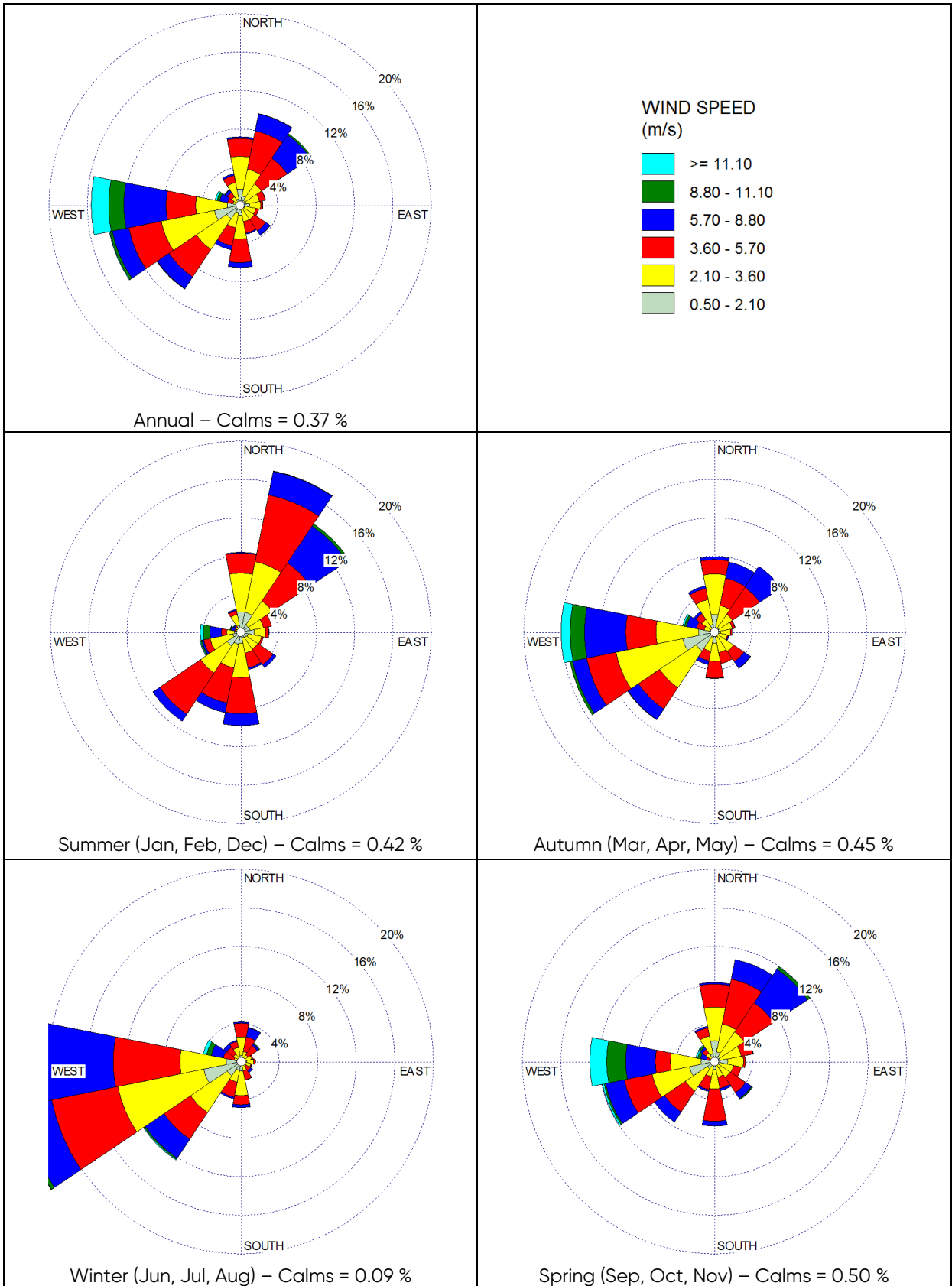
**Port Kembla AWS (068253) 2016 Annual and Seasonal Wind Roses**



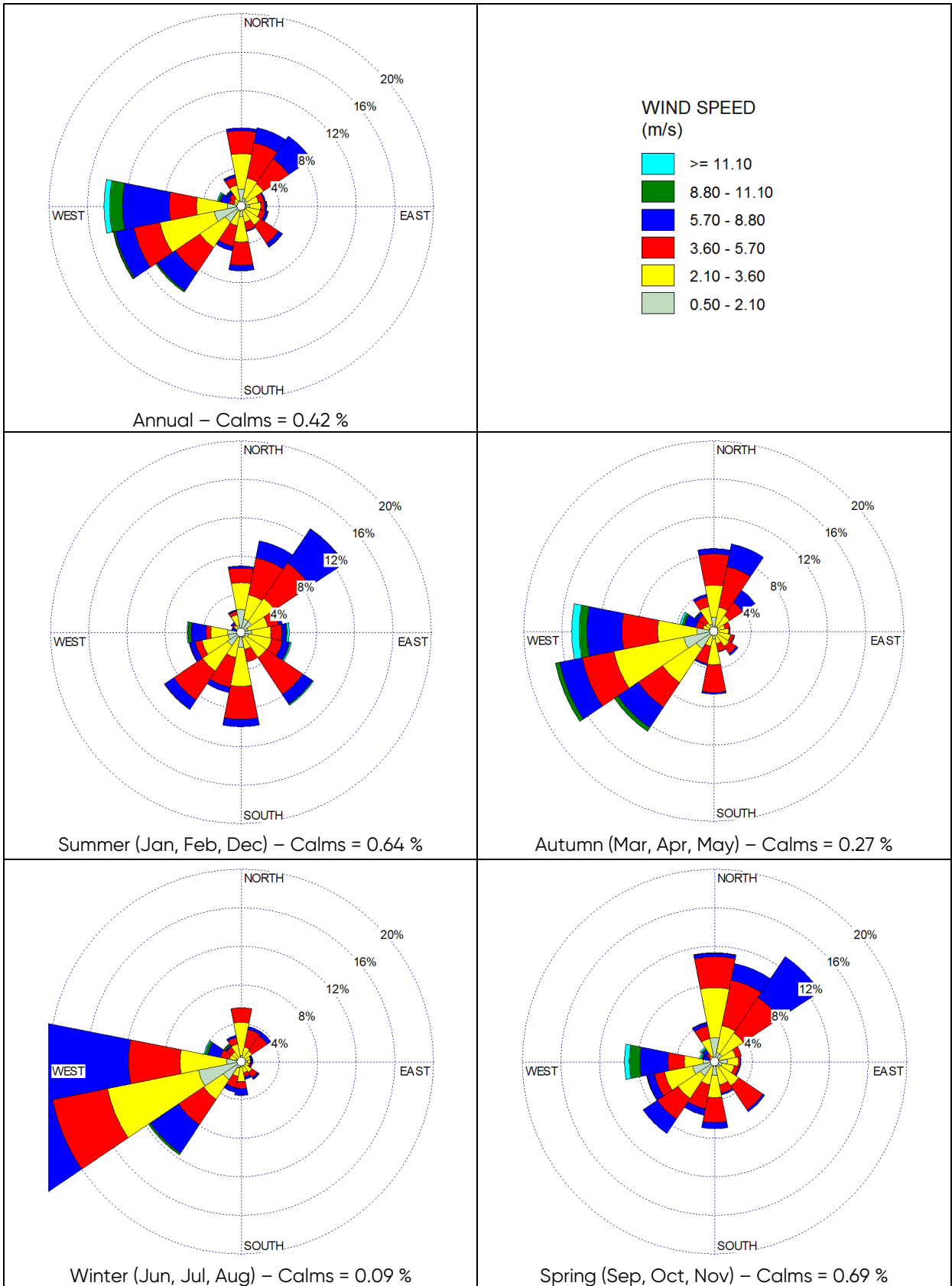
**Port Kembla AWS (068253) 2017 Annual and Seasonal Wind Roses**



Port Kembla AWS (068253) 2018 Annual and Seasonal Wind Roses



Port Kembla AWS (068253) 2019 Annual and Seasonal Wind Roses



Port Kembla AWS (068253) 2020 Annual and Seasonal Wind Roses



# Appendix C

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## CALMET & CALPUFF Model Inputs

Table 13: Applied CALMET Modelling Parameters

Parameter	Value Used	Comment
Terrain radius of influence (TERRAD)	8 km	TERRAD can be estimated as the typical ridge-to-ridge distance divided by two, and usually rounded up. Typical values of TERRAD are between 5-15 km with an upper limit of about 20 km.
Modelling mode (NOOBS)	1 (Hybrid)	Using WRF data and BoM station data from Port Kembla, Albion Park Airport and Bellambi for 2020
Layer dependent weighting factor (BIAS)	-1, -1, -1, -1, -1, 0, 1, 1, 1, 1	
Weighting parameter for Step 1 wind field vs. observations in Layer 1 (R1) and Layer 2 and above (R2)	8 km	
Maximum radius of influence for meteorological stations in layer 1 (Step 1) and layers aloft (Step 2) (RMax1 and RMax2)	5 km	
No. of vertical layers (NZ)	10	
Cell face heights in arbitrary vertical grid (ZFACE) (m)	0, 20, 40, 80, 160, 320, 640, 1000, 1500, 2300, 3000	

Note: CALMET input parameters not listed in the table are set as default values.

Table 14: Applied CALPUFF Modelling Parameters

Parameter	Value Used	Comment
Dry deposition modelled (MDRY)	1	Dry deposition was modelled. Geometric mass mean diameters applied are presented in <b>Section 5.4.1</b> .
Chemical transformation	0	Chemical transformation was not modelled
Method used to compute dispersion coefficients (MDISP)	2 (dispersion coefficients from internally calculated sigma v, sigma w using micrometeorological variables)	As recommended by the NSW Generic Guidance and Optimum Model Settings for CALPUFF.
Default minimum turbulence velocities sigma-v for each stability class over land and over water (m/s) (SVMIN)	0.2 m/s for all stability classes	As recommended by the NSW Generic Guidance and Optimum Model Settings for CALPUFF.
Emission Sources	35 Point Sources	Constant emission rates.

Note: CALPUFF input parameters not listed in the table are set as default values.

**Table 15: Modelled Point Source Parameters**

Emitter Name	Location		Stack Height (m)	Stack Velocity (m)	Exit Temp (K)	Emission Rate(g/s)		
	X coord (km)	Y coord (km)				TSP	PM <sub>10</sub>	PM <sub>2.5</sub>
Slag Conveyor	307.366	6183.544	20	10	293.15	0.041	0.033	0.018
Rejects Bin	307.366	6183.544	20	10	293.15	0.044	0.035	0.019
Clinker Bin	307.366	6183.544	20	10	293.15	0.013	0.010	0.006
Clinker Receiver Bin	307.406	6183.898	5	10	293.15	0.100	0.080	0.044
Clinker Reclaim 1	307.276	6183.603	5	10	293.15	0.025	0.020	0.011
Clinker Reclaim 2	307.295	6183.615	5	10	293.15	0.025	0.020	0.011
Clinker Reclaim 3	307.306	6183.623	10	10	293.15	0.025	0.020	0.011
Clinker Shed 1	307.198	6183.734	15	10	293.15	0.100	0.080	0.044
Clinker Shed 10	307.255	6183.663	15	10	293.15	0.050	0.040	0.022
Clinker Shed 11	307.252	6183.649	15	10	293.15	0.050	0.040	0.022
Clinker Shed 2	307.211	6183.731	15	10	293.15	0.050	0.040	0.022
Clinker Shed 3	307.209	6183.717	15	10	293.15	0.050	0.040	0.022
Clinker Shed 4	307.223	6183.714	15	10	293.15	0.050	0.040	0.022
Clinker Shed 5	307.219	6183.700	15	10	293.15	0.050	0.040	0.022
Clinker Shed 6	307.233	6183.697	15	10	293.15	0.050	0.040	0.022
Clinker Shed 7	307.231	6183.684	15	10	293.15	0.050	0.040	0.022
Clinker Shed 8	307.244	6183.681	15	10	293.15	0.050	0.040	0.022
Clinker Shed 9	307.242	6183.667	15	10	293.15	0.050	0.040	0.022
Gypsum Bin	307.251	6183.728	20	10	293.15	0.028	0.022	0.012
Limestone Bin	307.254	6183.724	20	10	293.15	0.039	0.031	0.017
Milling Stack <sup>1</sup>	307.316	6183.573	20	8.15	372.7	0.30	0.30	0.23
Product Silo 1	307.344	6183.605	20	10	293.15	0.010	0.008	0.004
Product Silo 2	307.353	6183.592	20	10	293.15	0.010	0.008	0.004
Product Silo 3	307.360	6183.580	20	10	293.15	0.010	0.008	0.004
Product Silo 4	307.369	6183.567	20	10	293.15	0.010	0.008	0.004
Product Silo 5	307.380	6183.591	20	10	293.15	0.010	0.008	0.004
Product Silo 6	307.372	6183.602	20	10	293.15	0.010	0.008	0.004
Product Silo 7	307.363	6183.616	20	10	293.15	0.010	0.008	0.004
Wharf Conveyor 1	307.335	6183.880	10	10	293.15	0.013	0.010	0.006
Wharf Conveyor 2	307.149	6183.817	15	10	293.15	0.023	0.018	0.010
Weighbridge 1	307.344	6183.605	15	10	293.15	0.019	0.015	0.008
Weighbridge 2	307.344	6183.605	15	10	293.15	0.030	0.024	0.013
Weighbridge 3	307.344	6183.605	15	10	293.15	0.025	0.020	0.011



DOCUMENT	SEE MOD
PROJECT	Port Kembla Milling
VERSION	1.0

AUTHOR	Sam Coles
POSITION	Developer Planner
DATE	02/05/2022



# Appendix D: Noise and Vibration Impact Assessment



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# Environmental Noise & Vibration Impact Assessment

Cement Australia Port Kembla– Modification to DA 10\_0102  
Arawata Drive, Port Kembla, NSW

REPORT NUMBER  
**7397-1.1R**

DATE ISSUED  
**6 April 2022**

**Prepared For:**

Cement Australia Pty Ltd  
18 Station Avenue  
Darra QLD 4076

Attention: Ms Diana Bozzetto



## Revision History

Status	Date	Prepared	Checked	Comment
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Draft 2	01/04/2022	Adam Shearer	Stephen Gauld	Client comments
Final	06/04/2022	Adam Shearer	Stephen Gauld	

Document 7397-1.1R, 29 pages plus attachments

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## 1.0 EXECUTIVE SUMMARY

Cement Australia Pty Ltd is preparing to submit a modification application to modify their existing Development Approval (DA 10\_0102) to enable an increase of the annual production throughput of cementitious material at the Port Kembla Milling (PKM) facility, Arawata Drive, Port Kembla, NSW.

The NSW Department of Planning and Environment (DPE) require an acoustic report that assesses the potential noise and vibration impact from the use of the PKM facility on the surrounding area, following the modification to the DA.

The PKM facility is located on reclaimed (by the Port Kembla Port Corporation) land (the land) within the Wollongong Local Government Area in the Outer Harbour of the Port of Port Kembla, on Lot 2002 DP 1176582. The land is leased from NSW Ports and is accessible from Christy Drive.

The land is zoned in the Wollongong Local Environment Plan (LEP) as MD SEPP (Major Development – State Environment Planning Policy). Under the State Environmental Planning Policy (Major Projects) Amendment (Three Ports) 2009 the land is zone SP1 Special Activities.

The PKM facility is located within an industrial estate and is surrounded to the north, south and west by other industrial uses, with the Outer Harbour of Port Kembla to the east and Arawata Drive bounding the PKM facility to the west.

The nearest residences to the PKM facility are located on Wentworth Street, Port Kembla, circa 750 m to the south of the site. Between the PKM facility and the nearest residences are numerous industrial sites including a container distribution yard; a rail locomotive maintenance workshop; motor mechanical workshops; and various light industrial activities.

The PKM facility produces Portland Cement and Ground Granulated Blast Furnace Slag (GGBFS) Cement using a vertical roller mill. The facility operates 24 hours, 7 days a week. The facility consists of a processing plant with vertical roller mill, transfer hoppers, storage bins and silos for dispatch of product, a materials transfer system, transfer chutes and dust suppression systems, a clinker storage shed, truck and ship unloading facilities, truck loading facilities, associated office and amenities, workshop, substation, transformer yard and car parking.

The PKM facility holds Environmental Protection License, EPL No. 20101 administered by the NSW Environment Protection Authority (EPA).

It is proposed to submit an application to modify the existing *DA 10\_0102, Department of Environment and Planning* (now DPE), dated 2011 – and as modified 22 June 2012 - to enable an increase in production throughput from 1.1 million tonnes per annum (Mtpa) to 1.4 Mtpa of cementitious material.

The existing plant is capable of facilitating the increase in production throughput, therefore, no changes to the type or capacity of the plant is proposed as part of this modification.

No changes to the approved operating hours are proposed.



The additional 300 kilo-tonnes per annum (ktpa) of cementitious material will be transported by intermodal road/rail transfers on local Port Roads to the existing Darcy Road (Port Kembla) site or via truck to Sydney and other markets via Mt Ousley Road to the Hume/Princes Motorway.

Day Design has conducted this Environmental Noise and Vibration Impact Assessment in accordance with the requirements of the NSW EPA.

Acceptable noise and vibration limits are derived from the EPA's *Environmental Protection License EPL No. 20101* and *Assessing Vibration: A Technical Guideline (2006)* for intrusive noise and vibration arising from the use of the mechanical plant and equipment and vehicle noise on the PKM facility and the *NSW Road Noise Policy* for vehicle noise associated with the proposal on the local roads.

This assessment considers the noise and vibration impact from the proposal. Noise and vibration emission calculations are based on the proposed future use of the PKM facility.

Calculations show that the noise and vibration emissions from the proposal will comply with the NSW EPA's Project Noise Trigger Levels (Noise Limits) and vibration criteria as outlined in Section 4.3.



## 2.0 CONSULTING BRIEF

Day Design Pty Ltd is engaged by Cement Australia Pty Ltd to assess the environmental noise and vibration impact of the proposed increase of the annual production throughput of cementitious material at the Port Kembla Milling (PKM) facility, Arawata Drive, Port Kembla, NSW.

This commission involves the following:

### Scope of Work:

- Inspect the site and environs
- Measure the background noise levels at critical locations and times
- Establish acceptable noise and vibration level criteria
- Quantify the future noise and vibration emissions from the use of the Site
- Calculate the level of noise and vibration emission, taking into account screen walls and distance attenuation
- Prepare a site plan identifying the development and nearby noise sensitive locations
- Provide recommendations for acoustical treatment (if necessary)
- Prepare an Environmental Noise and Vibration Impact Assessment Report.



### 3.0 SITE & DEVELOPMENT DESCRIPTION

#### 3.1 Site Description

The PKM facility is located on reclaimed (by the Port Kembla Port Corporation) land (the land) within the Wollongong Local Government Area in the Outer Harbour of the Port of Port Kembla, on Lot 2002 DP 1176582. The land is leased from the NSW Ports and is accessible from Christy Drive.

The land is zoned in the Wollongong Local Environment Plan (LEP) as MD SEPP (Major Development – State Environment Planning Policy). Under the State Environmental Planning Policy (Major Projects) Amendment (Three Ports) 2009 the land is zone SP1 Special Activities.

The PKM facility is located within an industrial estate and is surrounded to the north, south and west by other industrial uses, with the Outer Harbour of Port Kembla to the east and Arawata Drive bounding the PKM facility to the west.

The nearest residences to the PKM facility are located on Wentworth Street, Port Kembla, circa 750 m to the south of the site. Between the PKM facility and the nearest residences are numerous industrial sites including, but not limited to, a container distribution yard, a rail locomotive maintenance workshop, motor mechanical workshops, and various light industrial activities.

Under the PKM facility’s Environmental Protection License, EPL No. 20101, the nearest noise sensitive residential receivers to the Site, in various directions are as shown on Figures 1 and 2, and as follows in Table 1.

**Table 1 Noise Sensitive Receivers**

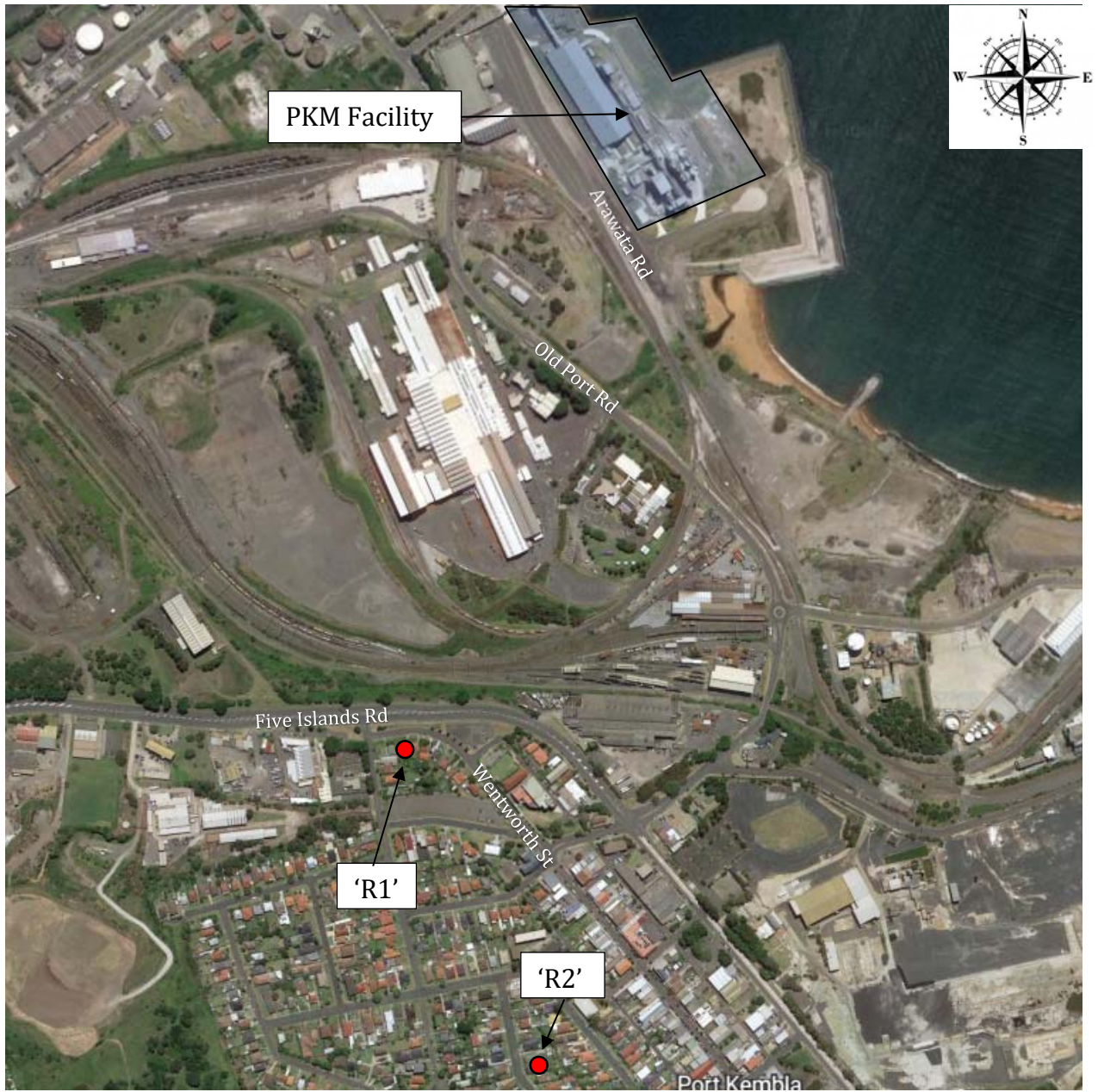
Receivers & Type	Address	Direction from site
R1 – Residential	7 Wentworth Street, Port Kembla	South
R2 – Residential	14 O’Donnell Street, Port Kembla	South-West

Compliance at the most affected receivers will ensure compliance at all other receiver locations.





**Figure 1. Location Plan 1 – Port Kembla Milling Facility, Port Kembla, NSW.**



**Figure 2. Location Plan 2 – Port Kembla Milling Facility, Port Kembla, NSW.**

### 3.2 Development Description

The PKM facility produces Portland Cement and GGBFS Cement using a vertical roller mill and the facility operates 24 hours, 7 days a week. The facility consists of a processing plant with vertical roller mill, transfer hoppers, storage bins and silos for dispatch of product, a materials transfer system, transfer chutes and dust suppression systems, a clinker storage shed, truck and ship unloading facilities, truck loading facilities, associated office and amenities, workshop, substation, transformer yard and car parking.

The proposal seeks approval to modify the existing *DA 10\_0102, Department of Environment and Planning* (now DPE), dated 2011 – and as modified 22 June 2012 - to enable an increase in production throughput from 1.1 Mtpa to 1.4 Mtpa of cementitious material. The existing mill can produce more product than the amount assumed in the original DA (1.1 Mtpa) and continued growth in the NSW market will mean that Cement Australia will need to use this latent capacity.

The proposed increase in production throughput is possible without any changes to the type or capacity of the existing plant, however to assist in maintaining customer service levels and transport efficiencies, it is proposed to construct an additional weighbridge loading facility at the current site. The additional weighbridge will be constructed within the existing facility.

No changes to the approved operating hours are proposed.

The additional 300 ktpa of cementitious material will be transported by intermodal road/rail transfers on local Port Roads to the existing Darcy Road (Port Kembla) site or via truck to Sydney and other markets via Mt Ousley Road to the Hume/Princess Highway. Based on information provided by the project traffic engineer (see Section 5.2 for detail), it is estimated a total of 70 additional daily heavy vehicle movements will be required to facilitate the increase in production throughput.

The existing general layout provided by Cement Australia, dated 13 June 2013 is attached as Appendix A.



## 4.0 ACOUSTICAL CRITERIA

### 4.1 NSW Environment Protection Authority

#### 4.1.1 Environment Protection Licence No. 20101

The PKM facility is licensed to operate under the NSW Environmental Protection Authority *Environment Protection Licence No. 20101*, for cement or lime handling and shipping in bulk.

Section 3 Limit Conditions, Condition L3 refers to noise and is shown below:

#### **L3 Noise limits**

*L3.1 Noise from the operational premises must not exceed the following levels at the following locations:*

*7 Wentworth Road [sic, Street], Port Kembla*

- a) 40 dB(A)  $L_{Aeq}$  (15 minute) for the day time period from 7 am to 6 pm Monday to Saturday or 8 am to 6 pm Sundays or public holidays; and*
- b) 40 dB(A)  $L_{Aeq}$  (15 minute) for the evening period 6 pm to 10 pm Monday to Sunday; and*
- c) 40 dB(A)  $L_{Aeq}$  (15 minute) for the night time period 10 pm to 7 am Monday to Saturday or 10 pm to 8 am Sundays or public holidays; and*
- d) An  $L_{A1}$  (1 minute) noise emission criterion of 51 dB(A) during the night time period 10 pm to 7 am Monday to Saturday.*

*14 O'Donnell Street, Port Kembla*

- a) 37 dB(A)  $L_{Aeq}$  (15 minute) for the day time period from 7 am to 6 pm Monday to Saturday or 8 am to 6 pm Sundays or public holidays; and*
- b) 37 dB(A)  $L_{Aeq}$  (15 minute) for the evening period 6 pm to 10 pm Monday to Sunday; and*
- c) 37 dB(A)  $L_{Aeq}$  (15 minute) for the night time period 10 pm to 7 am Monday to Saturday or 10 pm to 8 am Sundays or public holidays; and*
- d) An  $L_{A1}$  (1 minute) noise emission criterion of 48 dB(A) during the night time period 10 pm to 7 am Monday to Saturday.*

*L3.2 For the purpose of Condition L3.1;*

- Day is defined as the period from 7 am to 6 pm Monday to Saturday and 8 am to 6 pm Sunday and Public Holidays.*
- Evening is defined as the period 6 pm to 10 pm.*
- Night is defined as the period from 10 pm to 7 am Monday to Saturday and 10 pm to 8 am Sunday and Public Holidays.*

*L3.3 The noise limits set out in Condition L3.1 apply under all meteorological conditions except for any one of the following:*

- i. Wind speeds greater than 3 m/s at 10 m above ground level; or*



- ii. *Temperature inversion conditions up to 3°C/100 m and wind speeds greater than 2 m/s at 10 m above ground level; or*
- iii. *Temperature inversion conditions greater than 3°C/100 m.*

**4.1.2 NSW Road Noise Policy**

**4.1.2.1 On Road Traffic Noise Criteria**

The NSW Road Noise Policy (RNP), in Section 2.3.1, sets out road traffic noise assessment criteria for residential land uses in Table 3. The information in that table is extracted below in Table 2.

**Table 2 Road Traffic Noise Assessment Criterion - Residential**

Road Category	Type of project/land use	Assessment Criteria - dB(A)	
		Day (7 am - 10 pm)	Night (10 pm - 7 am)
Freeway/ arterial/ sub-arterial roads	6. Existing residences affected by <b>additional traffic</b> on existing freeways/arterial/sub-arterial roads generated by land use developments	L <sub>Aeq, (15 hour)</sub> 60 (external)	L <sub>Aeq, (9 hour)</sub> 55 (external)

Note: where the existing road traffic noise level already exceeds the Road Traffic Noise Assessment Criterion shown in Table 2 above at the residential receiver, an increase of 2 dB is considered negligible – see Section 3.4 of the RNP.

Section 2.4 of the RNP specifies that in addition to the assessment criteria outlined in Table 3, any increase in the total traffic noise level at a location due to a proposed project or traffic-generating development must be considered. The relative increase criteria for residential land uses shown in Table 6 of the RNP indicates that the relative increase from land use development with the potential to generate additional traffic on existing road should not increase the existing L<sub>Aeq, 15 hour</sub> or L<sub>Aeq, 9 hour</sub> total traffic noise level by more than 12 dB (external).



#### 4.1.2.2 Measured Road Traffic Noise Levels

The existing  $L_{eq}$ , 15 hour and  $L_{eq}$ , 9 hour road traffic noise levels have been measured at two residential locations – Locations ‘A’ and ‘B’ – where the additional daily heavy vehicle movements have the potential to increase intrusive on-road traffic noise, Locations ‘A’ and ‘B’ are shown in Figures 3 and 4.



**Figure 3. Road Traffic Noise Measurement Location ‘A’ – 118 New Mount Pleasant Road, Mount Pleasant, NSW**



**Figure 4. Road Traffic Noise Measurement Location 'B' – 145 Gladstone Avenue, Mount Saint Thomas, NSW**

The measured existing  $L_{eq, 15 \text{ hour}}$  and  $L_{eq, 9 \text{ hour}}$  road traffic noise levels at Locations 'A' and 'B' are shown below in Table 3.

**Table 3 Measured Existing  $L_{eq, 15 \text{ hour}}$  &  $L_{eq, 9 \text{ hour}}$  Road Traffic Noise Levels**

Noise Measurement Location	Date & Time Period 31/01 to 05/02/2022 & 08/02 to 17/02	Existing $L_{eq}$ Road Traffic Noise Level
Location 'A'	Day $L_{eq, 15 \text{ hr}}$ (7 am to 10 pm)	<b>68.0 dBA</b>
	Night $L_{eq, 9 \text{ hr}}$ (10 pm to 7 am)	<b>68.9 dBA</b>
Location 'B'	Day $L_{eq, 15 \text{ hr}}$ (7 am to 10 pm)	<b>54.7 dBA</b>
	Night $L_{eq, 9 \text{ hr}}$ (10 pm to 7 am)	<b>52.0 dBA</b>



## 4.2 Vibration Guidelines

### 4.2.1 EPA Vibration Guideline

The NSW EPA published the *Assessing Vibration: a technical guideline* in February 2006. This guideline is based on the British Standard BS6472:1992 “*Evaluation of human exposure to vibration in buildings (1 Hz to 80 Hz).*”

The guideline presents preferred and maximum vibration values for use in assessing human responses to vibration and provides recommendations for measurement and evaluation techniques. The guideline considers vibration from occasional loading and unloading activities as Impulsive Vibration. Table 2.4 of the guideline sets out limits for Vibration Dose Values to assess impulsive vibration and is replicated in Table 4 for residential receptor locations.

**Table 4 Preferred & Maximum Weighted RMS Values for Impulsive Vibration Acceleration (m/s<sup>2</sup>) - 1 – 80 Hz**

Receptor Location	Daytime <sup>1</sup>		Night - time <sup>1</sup>	
	Preferred Value	Maximum value	Preferred Value	Maximum value
Residences	0.30	0.60	0.10	0.20

<sup>1</sup> Daytime is 7.00 am to 10.00 pm and night-time is 10.00 pm to 7.00 am.

### 4.2.2 British Standard BS7385-2

The British Standard BS7385-2:1993 “*Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from groundborne vibration*” provides guide values for transient vibration relating to cosmetic damage, replicated in Table 5 for residential buildings.

**Table 5 Transient Vibration Guide Values for Cosmetic Damage**

Type of building	Peak component particle velocity in frequency range of predominant pulse	
	4 Hz to 15 Hz	15 Hz and above
Residential buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

In our opinion, an overall peak particle velocity of **15 mm/s** at the residential boundaries will comply with the recommended values in Table 5, and is an acceptable criterion for impulsive vibration to prevent cosmetic damage to the residential buildings some 750 metres away.



### 4.2.3 German Standard - DIN4150:1999

Service pipelines may exist in the immediate area surrounding the site. German Standard DIN4150-3:1999 also provides guideline vibration values for buried pipework, which is summarised as follows in Table 6.

**Table 6 Guideline Values for Vibration on Buried Pipework**

Line	Pipe Material	Guideline Values For Velocity Measured On The Pipe - mm/sec
1	Steel (including welded pipes)	100
2	Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80
3	Masonry, plastic	50

These values shall be adopted when assessing vibration levels for services and pipework in areas nearby the site.

Day Design is unaware of a current Standard that specifies acceptable vibration levels for power poles. We have therefore recommended the most stringent value from Table 6 above (50 mm/sec) for the assessment of vibration on power poles located nearby.



### 4.3 Project Noise Trigger Levels & Vibration Criteria

Based on Section 4.1 and 4.2, the following Project Noise Trigger Levels and vibration criteria are applicable to the proposal:

#### 4.3.1 Noise - Residential Noise Trigger Levels

- 'R1' – **40 dBA**  $L_{eq, 15 \text{ minute}}$  during the day, evening and night; and
- 'R2' – **37 dBA**  $L_{eq, 15 \text{ minute}}$  during the day, evening and night.

The residential criteria apply at the boundary of any affected residence at ground level. At upper floors, the noise is assessed outside the nearest window.

#### 4.3.2 Noise - Sleep Disturbance Criteria

The following criteria will be applied at 1 metre from the potentially most affected residential façades of, 'R1' and 'R2' for potential sleep disturbance caused by the use of the PKM facility during the night:

- 'R1' – **51 dBA**  $L_{A1, 1 \text{ minute}}$  at night; and
- 'R2' – **48 dBA**  $L_{A1, 1 \text{ minute}}$  at night.

#### 4.3.3 Noise - On-Road Traffic Noise Criteria

The following criteria will be applied at 1 metre from the residential façade of 'R1' and 'R2' for on-road traffic noise caused by the use of the PKM facility during the day and night:

- **60 dBA**  $L_{eq, 15 \text{ hour}}$  during the day; and
- **55 dBA**  $L_{eq, 9 \text{ hour}}$  at night time.

Note: where the existing road traffic noise level already exceeds the Road Traffic Noise Assessment Criterion shown in Table 2 of this report at the residential receiver, an increase of 2 dB is considered negligible – see Section 3.4 of the RNP.

#### 4.3.4 Vibration - Residential Receptors

The most relevant vibration management levels for this development are as follows:

- An RMS Acceleration Value between **0.10 – 0.20 m/s<sup>2</sup>** for human annoyance inside the nearby residence; and
- A Peak Particle Velocity no greater than **15 mm/s** for cosmetic damage at the residential buildings.

**NOTE:** Day Design is of the opinion the proposed (and existing) use of the site, which includes truck movements and the milling process, will not cause vibration at a level that may cause human discomfort or the dilapidation of the surrounding / nearby premises / infrastructure. However, recommendations are provided in Section 6.0 of this report in the unlikely event complaints are received regarding vibration levels from the use of the PKM facility.



#### **4.3.5 Vibration – Services, Buried Pipework & Power Poles**

Peak Particle Velocity values for services, buried pipework and power poles, as measured on or within close proximity to the services, buried pipework and power poles for structural damage of:

- 50 mm/s for masonry or plastic pipes and power poles;
- 80 mm/s for concrete, clay or metal pipes; and
- 100 mm/s for steel pipes.

Given the relatively high guideline vibration values and the distances from the PKM facility's mechanical plant and equipment and haulage routes, it is unlikely that any residential premises, services or buried pipework, or power poles will be exposed to vibration levels approaching these values.

In addition, we note that the nearby existing power poles surrounding the PKM facility, are currently affected by negligible levels of vibration from the use of the site with no known damage.



## 5.0 SITE NOISE EMISSIONS

As part of the PKM facility's *Environment Protection Licence (EPL) No. 20101* yearly compliance monitoring of noise emissions from the site is required at the potentially most affected residential receivers. It is Day Design's understanding that during all historical yearly compliance monitoring, the noise emissions from the existing and ongoing use of the PKM facility have complied with the Project Noise Trigger Levels (noise limits) adopted in EPL No. 20101.

As detailed in Sections 1.0 and 3.2 of this report, there are no changes to the type or capacity of the existing plant at the PKM facility as part of this application, therefore, no increase to the noise emissions, and resultant potential noise impact at the residential receivers, from the use of the existing plant is predicted as the result of an increase in production throughput.

The only noise source on the PKM facility that has the potential to increase noise emissions from the site is the use of the additional heavy vehicles (trucks) used to transport the additional 300 ktpa of cementitious material, as detailed in Section 5.2. Notwithstanding the previous sentence, it is noted that with the additional heavy vehicle movements the PKM facility will still be operating within its approved (DA 10\_0102) Operational Traffic Generation (see Section 5.2, Table 9).

The noise impact from the mechanical plant and equipment, and vehicles has been calculated and the cumulative noise impact established for the most affected receptors. On-road traffic noise generated by the use of the proposal has also been calculated at the most affected receiver locations.



### 5.1 Mechanical Plant & Equipment Noise Emission

Mechanical plant and equipment associated with the PKM facility consists of dust collection units, compressors, fans, motors for conveyors and the grinding mill, blowers, a hot gas generator, the grinding mill itself and blending plant within the silo

The attached Appendix A shows the locations of the existing mechanical plant and equipment. This noise assessment is based on the existing mechanical plant and equipment and its locations.

The schedule of the overall  $L_{eq, 15\text{minute}}$  'A' frequency weighted and octave band centre frequency sound power levels in decibels, re: 1 pW ( $10^{-12}$  Watts) for the existing mechanical plant and equipment is shown below in Table 7.

**Table 7 Existing Mechanical Plant & Equipment-  $L_{eq, 15\text{ minute}}$  Sound Power Levels**

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
A - Extraction Fan Motors	<b>76</b>	75	75	74	72	71	68	64	68
B - Ship Dispatch & Site Compressors	<b>73</b>	72	72	71	69	69	65	61	65
C - Standard Conveyor Motors	<b>90</b>	90	90	88	84	85	85	80	70
D - Wharf Conveyor Motors	<b>95</b>	95	95	93	89	90	88	84	79
E - Classifier Motor	<b>103</b>	103	106	106	100	99	91	83	78
F - Clinker Reclaim Motor	<b>95</b>	95	95	93	89	90	88	84	79
G - Positive Displacement Blowers	<b>84</b>	84	84	82	78	79	77	73	69
H - Hot Gas Generator & Fan	<b>88</b>	88	88	86	82	83	81	77	73
I - Blending Plant	<b>83</b>	83	83	81	78	78	76	72	68
J - Ball Grinding Mill	<b>102</b>	98	99	98	98	96	95	91	81



The schedule of the overall  $L_{A1, 1\text{minute}}$  'A' frequency weighted and octave band centre frequency sound power levels in decibels, re: 1 pW ( $10^{-12}$  Watts) for the existing mechanical plant and equipment is shown below in Table 8.

**Table 8 Existing Mechanical Plant & Equipment-  $L_{A1, 1\text{minute}}$  Sound Power Levels**

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
A - Extraction Fan Motors	<b>81</b>	80	80	79	77	76	73	69	73
B - Ship Dispatch & Site Compressors	<b>78</b>	77	77	76	74	74	70	66	70
C - Standard Conveyor Motors	<b>95</b>	95	95	93	89	90	90	85	75
D - Wharf Conveyor Motors	<b>100</b>	100	100	98	94	95	93	89	84
E - Classifier Motor	<b>108</b>	108	111	111	105	104	96	88	83
F - Clinker Reclaim Motor	<b>100</b>	100	100	98	94	95	93	89	84
G - Positive Displacement Blowers	<b>89</b>	89	89	87	83	84	82	78	74
H - Hot Gas Generator & Fan	<b>93</b>	93	93	91	87	88	86	82	78
I - Blending Plant	<b>88</b>	88	88	86	83	83	81	77	73
J - Ball Grinding Mill	<b>107</b>	103	104	103	103	101	100	96	86



## 5.2 Vehicle Noise Emissions

Assumptions relating to traffic generation at the PKM facility and on the local road network are taken from the information provided in the Traffic Impact Assessment (TIA), prepared by Bitzios Consulting, Reference. P5515.001L, dated 30 March 2022, prepared as part of this modification application.

Section 3 of the TIA states that, following the increase in production throughput the total traffic generation from the PKM facility will be as shown in Table 9.

**Table 9 Operational Traffic Generation**

Vehicle Type	Current (DA)		Current (Actual)		Proposed (1.4 Mtpa)	
	Daily	Peak Hour	Daily	Peak Hour	Daily	Peak Hour
Raw Material Trucks	280	22	117	9	117	9
Dispatch Trucks	464	20	256	11	326 (+ 70)	14 (+ 3)
<b>Total</b>	<b>744</b>	<b>42</b>	<b>373</b>	<b>20</b>	<b>443 (+ 70)</b>	<b>23 (+ 3)</b>

With regards to traffic routes associated with PKM facility, we have been advised that  $\geq 90\%$  of the time the route taken by truck is via the following route (in/out):

- Arawata Drive – Christy Drive – Old Port Road – Flinders Street - Five Islands Road – Springhill Road – Masters Road – Princes Motorway.

The Sound Exposure Level<sup>1</sup> (SEL) and  $L_{A1, 1 \text{ minute}}$  sound power level and spectra of vehicle noise used for the assessment of heavy vehicle noise on the PKM facility are shown below in Table 10 and are based on previous measurements of heavy vehicles by Day Design.

**Table 10 SEL &  $L_{A1, 1 \text{ minute}}$  Sound Power Levels – Heavy Vehicles**

Description	Sound Power Levels (dB) at Octave Band Centre Frequencies (Hz)								
	dBA	63	125	250	500	1k	2k	4k	8k
SEL of a heavy vehicle passing at 10 km/h	<b>102</b>	102	97	98	99	98	95	90	82
$L_{A1, 1 \text{ minute}}$ of a heavy vehicle passing at 10 km/h	<b>87</b>	87	82	83	84	83	80	75	67

<sup>1</sup> SEL is the total sound energy of a single noise event condensed into a one second duration.



### 5.3 Predicted Noise Levels at Residential Receivers – General Operations

Knowing the sound power level of a noise source (see Tables 7, 8 and 10), the sound pressure level (as measured with a sound level meter) can be calculated at a remote location using suitable formulae to account for distance losses, sound barriers, etc.

Calculations have been carried out using *iNoise V2020.0* industrial noise prediction modelling software which incorporates the methods specified in *ISO 9613.1/2*<sup>2</sup> to calculate noise emissions. The noise emissions have been calculated to determine the noise level at each residential receptor location due to the future operation of the PKM facility. Noise contour maps for all scenarios in the following Sections are attached in Appendix B.

All predictions in Table 11 and Table 12 are based on the assumptions outlined above and the existing layout detailed in the drawings, attached as Appendix A.

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<sup>2</sup> *ISO6913-1 - Acoustics – Attenuation of sound during propagation outdoors, Parts 1 - Calculation of the absorption of sound by the atmosphere and Part 2 - General method of calculation.*



**5.3.1 PKM Facility Noise Emissions**

Table 11 shows the predicted noise levels at the nearby receiver locations from the existing and future use of the PKM facility, during day, evening and night periods.

**Table 11 Predicted  $L_{eq, 15 \text{ minute}}$  Existing & Future Noise Levels**

Receptor Location	Predicted Noise Level (dBA)	Noise Criterion (dBA)	Compliance (Yes/No)
<b>Existing PKM Facility Use</b>			
<b>R1 -</b>			
- Mechanical Plant & Equipment	34		
- Vehicles	24		
Cumulative Noise Level	35	40	Yes
<b>R2 -</b>			
- Mechanical Plant & Equipment	26		
- Vehicles	20		
Cumulative Noise Level	27	37	Yes
<b>Future PKM Facility Use</b>			
<b>R1 -</b>			
- Mechanical Plant & Equipment	34		
- Vehicles	25		
Cumulative Noise Level	35	40	Yes
<b>R2 -</b>			
- Mechanical Plant & Equipment	26		
- Vehicles	21		
Cumulative Noise Level	27	37	Yes

The predicted levels of noise from the existing and future use of the PKM facility, complies with the day, evening and night criteria in Section 4.3 of this report at receptor locations 'R1' and 'R2', and are therefore considered acceptable.



### 5.3.2 Sleep Disturbance

The predicted  $L_{A1, 1 \text{ minute}}$  levels of noise from the use of the PKM facility are shown in Table 12.

**Table 12 Predicted  $L_{A1, 1 \text{ minute}}$  Noise Levels – Sleep Disturbance – Night (10 pm – 7 am)**

Description	Predicted Noise Level $L_{A1, 1 \text{ minute}}$ (dBA) at Receptor Locations			Compliance Yes/No
	Mechanical Plant & Equipment	Heavy Vehicle Movements	Acceptable Noise Limit	
R1	39	39	51	Yes
R2	31	35	48	Yes

The predicted  $L_{A1, 1 \text{ minute}}$  level of noise from the future the use of the PKM facility, outside the nearest potentially affected residences, is shown above in Table 12. The predicted noise levels at residential receptors ‘R1’ and ‘R2’ comply with the night time sleep disturbance criteria established in Section 4.3 during all operational scenarios, and are therefore considered acceptable.



### 5.3.3 On – Road Traffic

Calculations of the on-road traffic noise generated by vehicles associated with the use of the Site are based on the information provided by the project traffic engineer Bitziois Consulting, as outlined in Section 5.2 of this report.

We note that the existing traffic noise level at Location 'A' during both the day (68.0 dBA) and night (68.9 dBA) exceeds the Road Traffic Noise Assessment Criterion shown in Table 2 of this report. Section 3.4 of the RNP states that where the existing road traffic noise level already exceeds the Road Traffic Noise Assessment Criterion, an increase of 2 dB is considered negligible.

The relative traffic noise increase as a result of the additional heavy vehicle movements is calculated to be  $(10 \times \text{Log} [443/373] = )$  0.7 dB for heavy vehicles associated with the PKM facility.

The calculated relative traffic noise increase to the existing  $L_{Aeq, 15 \text{ hour}}$  and  $L_{Aeq, 9 \text{ hour}}$  total traffic noise level at all receiver locations is less than 2 dB, and is therefore considered acceptable.

Notwithstanding the above, it is noted that the increase to the total traffic noise levels (PKM facility + other road users) is likely to be less than 0.7 dB. E.g. the 2021 Average Daily Traffic Count on Mount Ousley Road, Station Id: MOHVCS was 46,645 vehicles, with 17 %, or 7,930 being heavy vehicles. The relative traffic noise increase based on vehicles associated with the PKM facility (existing + new) and other road users (heavy vehicles only) is  $(10 \times \text{Log} [8,373/7,930] = )$  0.2 dB. This increase is also considered negligible ( $< 2$  dB), and is therefore considered acceptable.

Considering the above, the road traffic noise associated with the development is considered acceptable, and is not likely to be perceptible to the average person.



## 6.0 VIBRATION EMISSION

Given the distances from neighbouring residences (and industrial premises) to the location of the PKM facility's plant and transport routes throughout the site, we are of the opinion any vibration at the receiver locations would be negligible.


In the unlikely event complaints are received regarding vibration originating from the use of the site, we recommend that compliance monitoring of ground borne vibration is carried out at the nearest affected receptor location.



## 7.0 NOISE IMPACT STATEMENT

Day Design Pty Ltd was engaged by Cement Australia Pty Ltd to assess the environmental noise and vibration impact of the proposed increase of the annual production throughput of cementitious material at the Port Kembla Milling facility, Arawata Drive, Port Kembla, NSW.

Calculations show that, subsequent to the modification application approval increase of the annual production throughput of cementitious material, the level of noise emitted by the use of the Port Kembla Milling facility, Arawata Drive, Port Kembla, NSW will meet the noise level requirements of the Environment Protection Authority as detailed in Section 4 of this report at all receivers, and be considered acceptable.



**Adam Shearer**, BCT (Audio), MDesSc (Audio & Acoustics), MAAS  
Senior Acoustical Consultant  
for and on behalf of Day Design Pty Ltd

### AAAC MEMBERSHIP

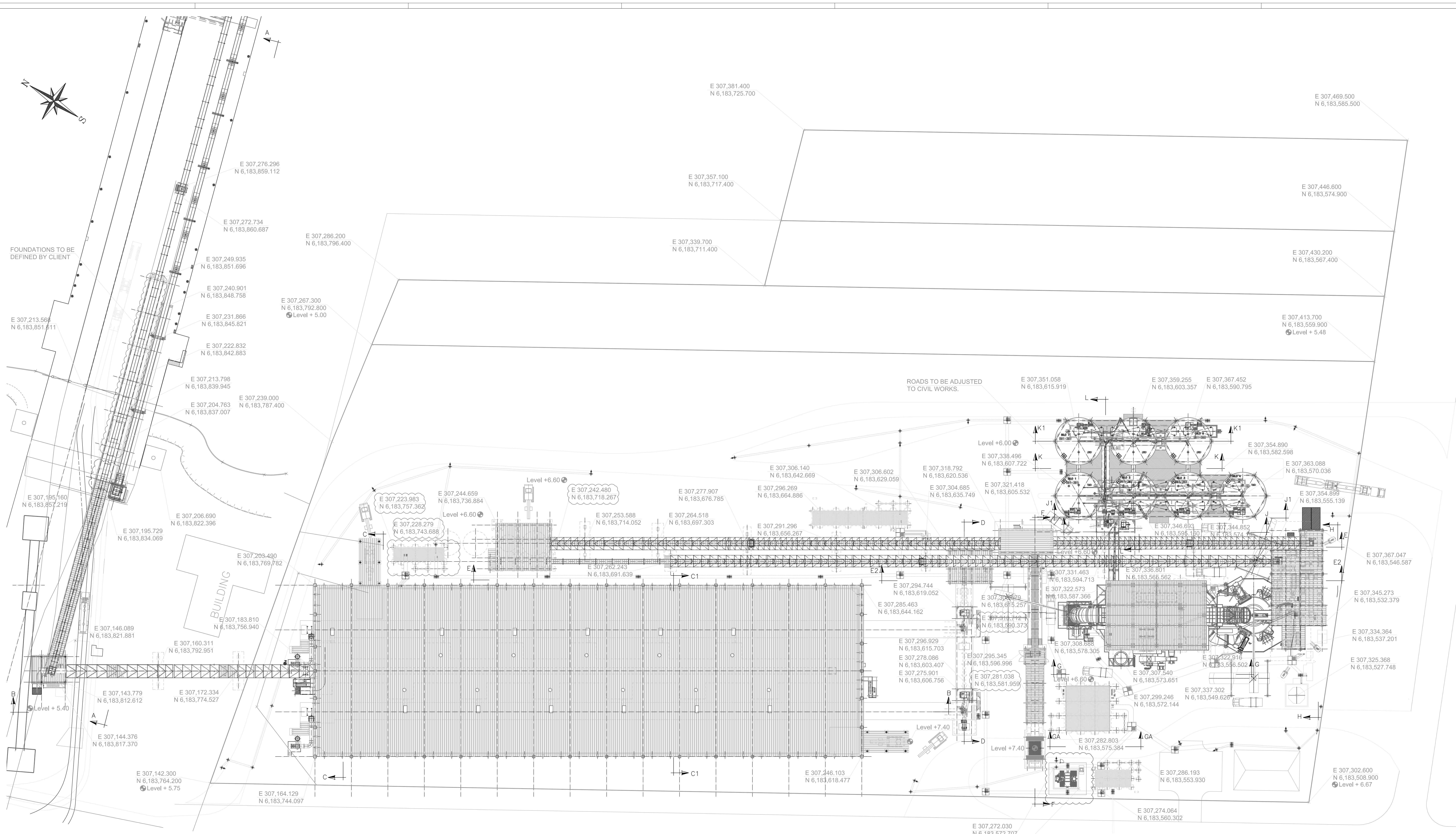
Day Design Pty Ltd is a member company of the Association of Australasian Acoustical Consultants, and the work herein reported has been performed in accordance with the terms of membership.

### Attachments:

Appendix A – Site Plan

Appendix B – *iNoise* Contour Maps



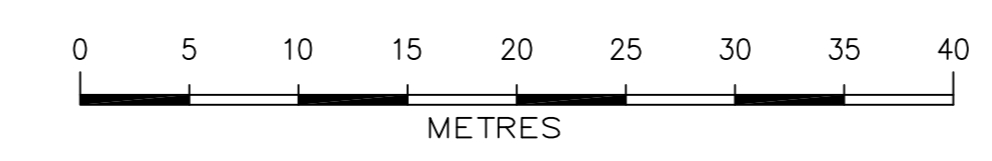


**NOTES:**  
 Section A-A to see drawing PK01-CMGL-GA10-5E1000-0002  
 Section B-B to see drawing PK01-CMGL-GA10-000000-0001  
 Section C-C to see drawing PK01-CMGL-GA10-000000-0003  
 Section C1-C1 to see drawing PK01-CMGL-GA10-000000-0004  
 Section D-D to see drawing PK01-CMGL-GA10-511000-0001  
 Section E-E to see drawing PK01-CMGL-GA10-000000-0002  
 Section E2-E2 to see drawing PK01-CMGL-GA10-000000-0005

Section F-F to see drawing PK01-CMGL-GA10-K91000-0001  
 Section G-G to see drawing PK01-CMGL-GA10-5813P1-0001  
 Section GA-GA to see drawing PK01-CMGL-E907-5013E1-0001  
 Section H-H to see drawing PK01-CMGL-GA10-5313P1-0001  
 Section L-L to see drawing PK01-CMGL-GA10-5913S1-0003  
 Section J-J to see drawing PK01-CMGL-GA10-5913S1-0001  
 Section J1-J1 to see drawing PK01-CMGL-GA10-5913S1-0005  
 Section K-K to see drawing PK01-CMGL-GA10-5913S1-0002  
 Section K1-K1 to see drawing PK01-CMGL-GA10-5913S1-0007

Layout drawing of trenches and cable pits To see drawing PK01-CMGL-E901-000000-0020

**GENERAL PLAN**  
 Scale: 1 : 500



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Rev.	Modification	Date	Name
07	Change as clouded	13/06/2013	JRO
06	Change as clouded	09/05/2013	JRO
05	Change as clouded	14/03/2013	JRO
04	Change as clouded	09/01/2013	JRO
03	Conveyor bridges updated, cable trenches added	29/08/2012	JRO
02	Change as clouded	27/06/2012	JRO
01	Comments from TR-PK01-0009 implemented	06/03/2012	JRO
00	Comments from "Process as noted" implemented	10/02/2012	JRO

Date	Signature	Project	Project No.
13/06/2013	JRO	PORT KEMELA GRINDING	PC0101101
10/02/2012	JRO		
10/02/2012	AVE		
10/02/2012	ACA		

Rev.	Format
07	A0+

**GENERAL LAYOUT COORDINATES & SECTIONS**

Scale: 1:500  
 Drawing No: PK01-CMGL-GA01-000000-0001  
 File Name: PK01-CMGL-GA01-000000-0001.dwg

