

Marine Navigation Report

Lot 12 Sommerville Road, Rozelle
(Glebe Island Silos)

Cement Handling and Distribution Facility
Capacity Upgrade

Submitted to the Department of Planning, Industry
and Environment
On behalf of Cement Australia

20/09/2021 | 218638



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1.0 Introduction

This report is prepared in relation to Development Application (DA) for a throughput increase of cementitious material at the existing terminal facility operated by Cement Australia at the Glebe Island Silos (SSD 8595604). Glebe Island currently operates as a working industrial port under the management of Ports Authority of NSW (Port Authority). Cement is currently delivered to the site by ships berthed at Glebe Island Berth No. 8 (GLB8) and this is proposed to continue at an increased rate as part of the proposal.

As required by the Secretary's Environmental Assessment Requirements (SEARs), this report provides details of the Cement Australia facility's proposed vessel movements including frequency and vessel size, as well as information relating to marine traffic, navigation and safety, and outlines measures required to minimise and mitigate any impacts resulting from the proposed development.

For the purposes of this DA, this report provides a preliminary navigation impact assessment and outlines the general processes and guidelines in place that governs marine traffic flow within the context of the site at GLB8, Glebe Island and Sydney Harbour.

2.0 Background and Context

2.1 The Site

The Cement Australia cementitious material storage and distribution facility is located within the existing Glebe Island Silos set at Lot 12, Sommerville Road, Rozelle. The site is located approximately 2km west of the Sydney CBD and 200m south of west of White Bay, within The Bays Precinct. The area surrounding Sommerville Road beneath the Anzac Bridge is reclaimed from the sea and known as Glebe Island, with the foreshore being used for port related industrial activity.

The site features 16 of the total set of 30 silos which make up the complete Glebe Island Silos set (the remaining 14 silos are operated by Sugar Australia). The silos are identified on the State Heritage Register as the 'Glebe Island Silos', listing number 4560016. They ceased grain storage in 1984 and were converted to cement storage and handling in 1994.

2.2 The Existing Facility

The existing cementitious material handling and distribution facility currently has approval for an annual throughput capacity of cementitious material of 500,000 tonnes per annum (tpa) in accordance with Development Consent 350/91. In 2019 DA9967 was approved which allowed for a temporary increase to 600,000 tonnes per annum for a maximum period of 18 months from the approval date of the Operational Environmental Management Plan.

Cement Australia currently receives ships at GLB8, which is located approximately 150 metres to the north of the silos. The ships utilised by Cement Australia have a capacity of up to approximately 25,000 tonnes of cementitious material per shipment. However, with consideration of the annual throughput capacity limit of 500,000 tonnes per annum, Cement Australia have generally limited average shipment sizes to approximately 15,000 - 18,000 tonnes per shipment over the last 5 years. Cement Australia currently receive approximately 20-30 ships year.

Existing wharf infrastructure alongside GLB8 is used to unload cementitious material via above and below pipelines which connect directly into the Glebe Island Silos. Cementitious material is then dispatched by tanker truck from the silos to concrete batching plants and other customers around Sydney. Cementitious material is transferred to and from the silos via a pneumatically sealed delivery system, allowing fine dust to be captured and ensuring that only a negligible amount of dust has the potential to be emitted to the atmosphere. **Figure 1** shows a ship berthed at GLB8 discharging to the Glebe Island Silos.



Figure 1 Site Context – Cement Silos and GLB8

2.3 The Proposal

The proposed development seeks an increase of the annual throughput capacity for the existing cementitious material handling and distribution facility to 1,200,000 tpa. No physical works to the existing cement silos or wharf infrastructure are proposed.

In order to achieve the increased throughput capacity, Cement Australia has estimated that average shipment load would need to increase up to approximately 22,000 tonnes per shipment, and has established a target payload of 25,000 tonnes per shipment. Based on this average shipment, a total of 55 vessel visits would need to occur across the year to achieve the maximum throughput.

The objectives of the proposed increase in throughput capacity are to:

- Service existing and future demand for Greater Sydney's cementitious material requirements in an efficient and sustainable way;
- Promote the orderly and economic use of an existing concrete silo facility to secure future cement supply;
- Maximise the unique location of the site within a deep water port with direct access to the major road network;
- Capitalise on the site's close proximity to end user's plants and facilities located at or near Glebe Island.
- Continue to support Australian jobs and the economy through the efficient throughput of cementitious product.

2.4 Secretary's Requirements

In relation to marine traffic, navigation and safety the Secretary's Environmental Assessment Requirements include the following issues, which have been addressed in this report:

- an assessment of the proposed development on water-based traffic, marine structures, marine safety and navigation, including cumulative impacts.
- provide details of vessel movements including frequency and vessel size.

3.0 Existing Waterway Navigation and Usage

3.1 Tidal Water Levels

The tidal data is summarised in the **Table 1** below.

Table 1 Tidal water levels

Tidal Plane	Chart Datum (metres)	Australian Height Datum (metres)
Highest Astronomical Tide (HAT)	2.1	1.18
Mean High Water Springs (MHWS)	1.57	0.65
Mean High Water (MHW)	1.45	0.53
Mean High Water Neaps (MHWN)	1.33	0.41
Mean Sea Level (MSL)	0.95	0.03
Mean Low Water Neaps (MLWN)	0.56	-0.37
Mean Low Water (MLW)	0.44	-0.49
Mean Low Water Springs (MLWS)	0.32	-0.61
Lowest Astronomical Tide (LAT)	0	-0.93

Source: OEH NSW Tidal Planes Analysis 1990 – 2010 Harmonic Analysis, Report MHL 2053

3.2 Berth Characteristics and Access Arrangements

Based on current Port Authority survey data, the water depth levels (LAT) of GLB8 is a uniform depth of 9.4m. The continuous berth box dimensions are 175m x 35m¹.

All cement carriers berthing to GLB8 employ bow thruster and require a tug assistance on the stern. In some cases tug assistance may also be needed at the front of the vessel. Vessels enter White Bay at a very slow speed in a controlled manner, especially when another ship is alongside GLB7. As is currently the case, if there is a vessel at GLB7 at the time that a cementitious material carrier is intending to berth or unberth at GLB8, then the vessel at GLB7 may need to shift to provide a safe clearance. There are specific requirements for ships berthing at GLB8 set out in Section 3.3 of the Harbour Masters Directions – see **Section 3.4.1** below. In particular, the Harbour Masters Directions specify that a safe distance between the berthing and unberthing vessel and the vessel at GLB7 is 70m, which must be maintained during the berthing/unberthing manoeuvre. Once the manoeuvre is completed, the distance between the vessels at GLB7 and GLB8 may be reduced to 20m.

When alongside the wharf, the vessel will place no more than two lines on each bollard to secure itself.

On departure, the vessel will lift off the berth and proceed stern into the Johnstons Bay, where it will swing around and depart the port in accordance with the official voyage plan 'WBCT to Sea'. The Pilot will disembark the vessel once the vessel has passed the heads.

3.3 Existing Vessels and Usage

For the period 1 July 2017 to 30 June 2018, Glebe Island and White Bay berths serviced approximately 1000 vessel arrivals. The breakdown being approximately 126 cruise ship vessel visits, 160 bulk and general cargo vessel visits with the remainder being bunker vessels, charter vessels, vessel lay-ups and other non-port trading vessels.

Historically, the existing Cement Australia facility has operated with a throughput capacity of 500,000 tonnes per annum, and an average vessel capacity of approximately 15,000 tonne vessels. This resulted in vessel movements of approximately 50 vessels per year visiting the facility. However, approximately 3 years ago Cement Australia increased the ship capacity to 22,000 tonne vessels, which has equated to a decrease in marine traffic movements over that period by around 18 vessels per year. In 2017/2018, a total of 32 vessels visited the Cement Australia facility.

¹ Berths and Channels updated 15 March 2021 as advised by CSL

The construction and operation of the new Multi User Facility at Glebe Island is also anticipated to result in additional ship movements across the harbour. The Multi User Facility is located adjacent to Glebe Island Berth No. 1 and 2 on the eastern side of Glebe Island, with direct access to Jones Bay. The Review of Environmental Factors for the Multi User Facility notes that current vessel movements to Glebe Island Berth No. 1 and No. 2 for bulk shipping deliveries is approximately 30 vessels per year, but that historically these berths accepted between 215 and 264 vessels per year (most recently when Glebe Island was used for importing motor vehicles).

A proposal by Hanson for a new Concrete Batching Plant and Aggregate Terminal is currently under assessment by the Department of Planning, Industry and Environment. The Hanson facility is proposed to be located adjacent to Glebe Island Berth No. 1 on the eastern side of Glebe Island, with direct access to Jones Bay. It is predicted to require approximately 120 vessel visits per annum.

The majority of the recreational boat, dry boat storage and sailing yacht facilities are located south of the site, beyond the Glebe Island Bridge in Rozelle Bay. The Rozelle Bay Superyacht marina is located south of the site. A number of public wharves are also located beyond the Glebe Island Bridge at Rozelle Bay including:

- Rozelle Bay Public Pontoon at Bicentennial Park – maximum vessel length that can be accommodated is 10m, and maximum draught at low tide of 1.4m;
- Blackwattle Bay Public Pontoon at the headland adjacent to Bellevue House – maximum vessel length of 10m, and maximum draught at low tide of 2.4m;
- Glebe Rowing Club pontoon in Blackwattle Bay – low freeboard pontoon for rowing boat access; and,
- Sydney Fish Market Public Pontoon in Blackwattle Bay – provides a drop off/pick up facility for visitors to the Fish Market and accommodates vessels of up to 6m in length, 1.2m water depth is available at low tide.

Sailing yacht facilities in proximity include

- Sydney City Marine – boat repair and refitting of sailing yachts;
- Sydney Heritage Fleet – restoration of heritage boats including sailing skiffs; and,
- Seawind Catamaran Marina – marina offering berths specifically for service, repair, chartering and boat management of large ocean going catamarans and tri-marans (only dedicated multihull marina in Sydney), some motor yachts and cruisers are also berthed.

3.4 Navigation Rules

The port of Sydney Harbour, including Glebe Island fall within the jurisdiction of the Port Authority. Safe navigation of all cargo and passenger vessels through the harbour is facilitated by Port Authority through its Sydney Vessel Traffic Service (VTS), the Harbour Master's Directions and the provision of compulsory pilotage service for all vessels larger than 30m.

Given that waters around Glebe Island also permit recreational vessels, the navigational rules that apply to recreational vessels are also discussed in the relevant sections below. Importantly, protocols or measures in place to manage conflicts between larger cargo/passenger vessels and recreational vessels are also discussed below.

3.4.1 Commercial Vessels

Vessel Traffic Service

The Port Authority's VTS manages marine traffic and facilitates the safe movement of vessels within Sydney Harbour's VTS coverage area. The VTS monitors the movement of vessels and their approaches using a combination of radar, Automatic Identification System (AIS), CCTV and VHF radio in order to manage marine traffic and coordinate movement of commercial ships, cruise ships, ferries and recreational vessels.

Further, all vessels (30m or more in length) entering, departing or moving through Sydney Harbour are required to report to the VTS when passing through the following positions:

- Line Zulu – a line extending between Outer North Head Light and Macquarie Light.
- Sea buoy – a line extending from the Middle Head buoy through the junction buoy to the Lady Bay buoy

- Bradleys Head – a line extending from Bradleys Head Light Tower south-easterly through the safe water mark and then south-east to Point Piper
- Fort Denison – a line extending from Kurraba Point through Fort Denison to Mrs. Macquarie's Point
- Longnose Point – a line extending between Manns Point and Longnose Point

Harbour Masters Directions

All vessel operators are required to comply with the latest release of the Harbour Master's Directions (Directions). The Harbour Master Directions for Sydney Harbour and Botany Bay set out the requirements for operating vessels, managing marine traffic, manoeuvring and berthing vessels.

Section 2.3 of the Directions relates to pilotage, and would require pilotage from the Port Authority unless the vessel already has a Master who is the holder of a relevant Marine Pilotage Exemption Certificate or a Certificate of Local Knowledge.

Section 2.5 specifies minimum draft requirements, minimum propeller immersion and maximum trim requirements.

Section 2.6 relates to towage requirements, and together with the Towage Tables, specifies the number and class of tugs required for each ship. For general cargo ships of the size used as cement tankers, typically 2 tugs are required, although this could be reduced to only one tug under certain wind conditions if the ship has an approved bow thruster.

Section 2.7 requires the Harbour Master to be notified of any marine accident or incident.

Section 2.8 requires the mooring of vessels at berth to be appropriately secured in accordance with best practice.

Section 2.12 specifies that the piloted cement tankers would require an escort vessel provided by the Port Authority for transit within port limits. All other vessels must remain 30m away from the vessel being escorted, and must not pass between the escort and the vessel being escorted.

Section 3.1 specifies that the vessel must maintain a minimum clearance underneath the Sydney Harbour Bridge of at least 2m.

Section 3.3 of the Directions sets out specific rules for vessels berthing and unberthing at Glebe Island Berths 7 and 8, including:

- During berthing and unberthing at GLB8, a vessel at GLB7 must maintain 70m clearance to the vessel at GLB8 during the manoeuvre. This may require the vessel at GLB7 to temporarily relocate during the manoeuvre. Once the manoeuvre is completed, the distance between the vessels at GLB7 and GLB8 may be reduced to 20m.
- If the vessel berthing or unberthing at GLB8 is using two A class tugs, GLB7 must be clear of any vessel. This is only predicted to be the case for cement tankers when wind is gusting at 15-25 knots.
- If a vessel at GLB7 is scheduled to depart within 4 hours, a vessel arriving at or departing from GLB8 must wait until the vessel at GLB7 has departed. If a vessel at GLB7 is scheduled to depart after a period of 4 hours or more, the vessel at GLB7 must relocate to allow a vessel to arrive to or depart from GLB8.
- If a vessel at GLB7 must relocate to allow for a vessel to arrive at Glebe 8, the costs associated with the relocation (pilotage, tugs, and lines boat) must be borne by the vessel arriving at or departing from GLB8.

Section 3.4 specifies that the Harbour Master's consent is required to anchor.

3.4.2 Recreational Vessels

Recreational vessels include superyachts, yachts and other recreational (power or sail) boats. In addition to the Harbour Master Directions, the Roads and Maritime Service (RMS) Boating Handbook sets out the guidelines and navigation rules specifically in place for recreational boat users. Section 5 of the handbook outlines the navigational rules that apply to all recreational vessels within NSW navigable waters including Sydney Harbour. Sydney Harbour waters are identified as an extremely busy waterway that is used extensively by a diverse range of recreational and commercial vessels. The handbook outlines specific tips on safely navigating interactions with big ships and vessels. The use of Active Radar Reflectors (ARR) are encouraged. The device emits a signal to nearby receivers, making the approach and presence of smaller recreational vessels known to larger ships.

The responsibility for managing a recreational vessel lies with the individual operating the vessel under the RMS handbook. Additionally, RMS has recently launched a safety awareness initiative entitled: *You're the Skipper. You're Responsible*, aimed at the increasing awareness and promoting safety for recreational boat users on water. Recreational boat users are required to hold a valid boat driving license. All licensed recreational boat users are required to be familiar with the navigational rules and the protocols in place to adequately manoeuvre the boat on waters and mitigate small vessel and cargo vessel conflicts.

The RMS also have specific standalone guidelines that apply to Superyachts on Sydney Harbour Waters, although these Sydney Harbour Superyacht Guidelines are dated 2016 and may not reflect the more recent Harbour Master Directions in some instances.

Rowing is a popular activity in nearby waters such Blackwattle Bay and Rozelle Bay. Rowing NSW has Code of Conduct for Rowing and Sculling Shells. This document outlines additional light requirements (over and above Rule 25 of the Regulations for Preventing Collisions at Sea, adopted in NSW through the Navigation (Collision) Regulations 1983) for rowing and sculling shells over 4m in length. All members are expected to comply with the code of conduct.

3.5 Navigation Restrictions

Navigation restrictions such as speed limits and no anchoring points for the waters around Glebe Island and Sydney Harbour are presented on the RMS boating map. An extract of this map is provided at **Figure 2** below.

Recreational vessel speed limits around Johnstons Bay and White Bay is 8 knots. Relevant navigation aids installed to guide vessels within the waterway include a north cardinal mark to indicate shallow water offshore of the entrance to Johnstons Creek.



Figure 2 Extract of the Port Jackson, West lane cove and Parramatta boating map

Source: Extract from RMS Boating Map 9G

4.0 Description of the Proposed Development

This development application seeks approval for the increase of the annual throughput capacity of cementitious material to 1,200,000 tpa by the existing cement handling and distribution facility.

4.1 Ship Usage

The increase in annual throughput results in an associated increase in shipping movements required to facilitate the proposed throughput.

Cement Australia currently uses ships with a capacity up to approximately 25,000 tonnes of cement per shipment. However, with consideration of the annual throughput capacity limit of 500,000 tonnes per annum, Cement Australia have generally limited average shipment sizes to approximately 15,000 - 18,000 tonnes per shipment over the last 5 years.

However, in order to achieve the increased throughput capacity of up to 1.2 million tpa, Cement Australia has estimated that average shipment load would need to increase up to approximately 22,000 tonnes per shipment, and has established a target payload of 25,000 tonnes per shipment. Ships proposed to be used at the facility will generally be the Akuna and the Wyuna, or similar vessels. These vessels are specially converted cement tankers:

- That are approximately 169m long and 27m wide, with a draft of 9.8m.
- Have a hold capacity of approximately 25,000m³ and 30,000 tonnes.
- Can discharge cementitious material up to an approximate maximum of 1,000 tonnes per hour.

Based on the predicted average shipment, a total of 55 vessel visits would need to occur across the year. This equates to up to an additional 25 vessel visits per year to the Cement Australia facility, above the current vessels visits required to service the existing throughput capacity.

With consideration of the larger average shipment load, average time at port would also need to increase from approximately 36 hours to 48 hours per shipment. As such, the total amount of ship time at berth is expected to increase from approximately 50 days/nights per annum, to approximately 110 days/nights per annum.

It is highlighted that historically Cement Australia used smaller ships, meaning that ship visits to GLB8 discharging cement were historically more similar to what is now proposed. Approximately 3 years ago Cement Australia increased the ship capacity from 15,000 tonne vessels to 22,000 tonne vessels, which has equated to a decrease in marine traffic movements over that period of around 18 vessel movements per year. As such, the proposed increase of around an additional 25 vessel visits per year is largely making up for the reduced ship visits over the last few years.

4.2 Hours of Operation

The facility is to maintain its existing hours of operation, operating 24 hours a day, 7 days a week.

4.3 Wharf side infrastructure

The proposal does not involve physical works and will rely entirely on existing wharf side infrastructure for discharging cementitious material to the existing silos.

4.4 Origin of shipping

Cement Australia intend on accepting some shipments from overseas cement suppliers. Although Cement Australia anticipate the vast majority of shipping processed to originate from Australia, some shipping and their associated cementitious material is anticipated to come from overseas.

The Cement Australia facility operates in accordance with a Maritime Security Plan which has been prepared in accordance with the requirements of the Maritime Transport and Offshore Facilities Security Act and Regulations 2003. The Plan identifies the security arrangements around the facility when overseas vessels are visiting,

including the establishment of a Landside Restricted Zone at Maritime Security Levels 2 & 3 immediately adjacent to the berth.

5.0 Assessment of Impacts

The proposed development does not involve the construction of any new maritime infrastructure and therefore no physical changes to the navigable areas of the harbour is envisaged to be introduced by the proposed development.

The frequency that the existing GLB8 berth is occupied will increase as a direct result of the proposed development – up to approximately 110 ship day/nights per year. Cement Australia vessels will continue to berth at GLB8 to facilitate easy transfer of cementitious materials from the vessel to the silos. The increased vessel movements to GLB8 will also result in increased use of tugs through White Bay in close proximity to other berth users. Berths will continue to be booked by Cement Australia through the Port Authority's SHIPS system.

The Port Authority protocols, and navigational rules discussed in **Section 3.4.1** of this report will apply to a vessel delivering cementitious material to the cement storage and distribution facility, in particular including the Harbour Masters Directions and the requirements set out in the Port Authority's Towage Tables.

Cement Australia will continue to coordinate with the vessel operator to coordinate ship deliveries and organise deliveries at suitable times. In particular, Cement Australia will consult regularly with the users of GLB7, and the Port Authority in relation to the use of GLB7, and will endeavour to minimise the need for a vessel at GLB7 to relocate in order to accommodate the berthing or unberthing of a cement tanker at GLB8.

Any yachts larger than 30m navigating waters in proximity to Glebe Island are subject to the same regulations and navigational rules as cargo vessels and large passenger vessels. The Port Authority's VTS manages vessel traffic on Sydney Harbour waters, including the passenger ships berthing to the north east of the site at the White Bay.

Recreational users of small craft, including rowers and dragon boaters, will need to be made aware of the increased frequency of vessel movements in the vicinity of GLB8.

Further afield, the increased frequency of vessels at GLB8 will increase general cargo ship activity throughout the harbour including the main channels between White Bay and the Heads. The interaction between recreational vessels and the cement tankers would be generally governed by the Harbour Masters Directions, including the need for all vessels to remain at least 30m away from an escorted vessel. The cement tanker vessels would also be required to participate in the Port Authority's VTS for Sydney Harbour, which would also help to manage potential vessel conflict throughout the harbour.

Sydney Harbour is Australia's busiest waterway, with thousands of recreational, passenger and working vessels sharing the water with around 1,200 large commercial vessels each year. Further, the development of the Port Authority of NSW's Multi-User Facility and Hanson's Concrete Batching Plant and Aggregate Import Terminal are projected to increase commercial ship visits to Glebe Island Berth No. 1 and 2 by potentially up to 380 additional vessels per year. In this context it is highlighted that the proposed increased throughput capacity would increase Cement Australia vessels in Sydney Harbour by approximately 25 vessels per year, to a total of approximately 55 vessels per year. Therefore, the number of additional vessels in Sydney Harbour as a result of the proposed development is less than 5% of total current shipping movements of large commercial vessels, and less than 2% compared to the possible future large commercial vessel movements.

This statement outlines the general processes and guidelines in place that govern marine traffic flow within the context of White Bay and Sydney Harbour, demonstrating that:

- The impacts are not likely to be significant.
- There are appropriate processes in place to ensure the increased movements of large commercial vessels associated with the proposed development can be safely accommodated and managed through White Bay and the broader Sydney Harbour shipping channels.

6.0 References

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