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1.0 Introduction

This report is prepared in relation to a State Significant Development Application (SSDA) for an Aggregate Handling and Concrete Batching facility at Glebe Island (SSD 8854). Glebe Island currently operates as a working industrial port under the management of Ports Authority of NSW (Port Authority). The aggregate handling and concrete batching facility is proposed adjacent to the existing Glebe Island Berth 1 (GLB1) terminal. Aggregate is proposed to be delivered by ship to the GLB1 berth at Glebe Island.

This report provides information relating to marine traffic, navigation and safety and outlines any potential maritime safety issues, and measures required to minimise and mitigate any impacts resulting from the proposed development.

2.0 Background

The SSDA was submitted to the Department of Planning and Environment (DP&E) in March 2018 and subsequently placed on formal public exhibition for 5 weeks, between 11 April 2018 and 15 May 2018. On 20 August 2018, a Request for Additional Information (RFI) was issued by the DP&E. This report responds to the additional information sought in relation to the maritime traffic, safety and navigation impact assessment (Issues 30 – 32 under Schedule 1) for the new facility at Glebe Island.

For the purposes of this SSDA, this statement 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 GLB1, Glebe Island and Sydney Harbour. Port Authority has accepted that a comprehensive marine traffic, navigation and safety plan will be prepared at detailed design stage when specific information (e.g. vessel type and other operational specifics) becomes available. On this basis, a more detailed Navigation Assessment Report will be prepared and submitted to Port Authority for review, comment and approval prior to operations commencing on the site.

3.0 Existing Waterway Navigation and Usage

3.1 Tidal Water Levels

The tidal data, is summarised in the table below.

Table 1 Tidal water levels

Tidal Plane	Chart Datum (m)	Australian Height Datum (m)
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 Water Depths

Based on current Port Authority survey data, the water depth levels (LAT) of the GLB1 is 11.9m. The berth box dimensions are 232m x 35m¹.

3.3 Navigation Widths

The navigable width between GLB1 and the Sydney harbour heads is unencumbered.

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 Sydney Vessel Traffic Services (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 Vessel

Vessel Traffic Service

VTS manages marine traffic and facilitates the safe movement of vessels within Sydney Harbour's VTS coverage area. 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 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

¹ Berths and Channels dated 19 September 2018, Port Authority of NSW - <https://www.portauthoritynsw.com.au/media/3312/berths-and-channels-final-v41-0-19-september-2018.pdf>

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 2.20 and Section 2.110 outline directions for vessels arriving and departing Sydney Harbour respectively, including requirements relating to communicating with VTS, and seeking clearance to enter or depart the port.

Section 2.91 of the Directions sets out specific rules for vessels berthing at Glebe Island, including requirements to minimise noise and emissions from ships while at berth, as well as measures to manage ship traffic at White Bay and Glebe Island. The berths at Glebe Island are common berths and therefore operate on the principle of 'turn of arrival' – essentially meaning that the ship that arrives at the Port first will have priority to access the berth. Notwithstanding the 'turn of arrival' principle, under Section 2.91 of the Directions:

2.91.19 The [Port] Authority reserves the right to allocate another berth to the first ship, when:

- the second ship can only use the berth requested by the first ship; AND*
- the allocated berth will not adversely affect the cargo operations of the first ship*

2.91.20 If a breakdown or stoppage occurs for a period of more than 6 hours / or is likely to exceed 6 hours the ship and/or operating company are to notify the Sydney Ports VTS as soon as practicable. The [Port] Authority reserves the right to require the vessel to move, if another vessel is waiting to berth. The safe and efficient use of the berth will always be the primary consideration

The Directions also outline incident management processes. Ongoing monitoring and audit review are also in place to better manage and mitigate incidents.

Pilotage Services

Pursuant to the Marine Safety Act 1998, pilotage is compulsory for all vessels 30m or over within Sydney Harbour unless exempt by the Act. As such, vessels associated with delivering aggregates for this development will be working with the various services of the port including pilotage, tugs and VTS for berthing at GLB1.

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 ².

² Sydney Harbour superyacht guidelines

Paddle Safety on Sydney Harbour

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 1** below.



The following current restrictions apply to recreational vessel in the area surrounding GLB1:

- Speed around Johnstons Bay and White Bay is limited to 8 knots
- Speed limits of 4 knot applies to Rozelle Bay and Blackwattle Bay
- Some navigation aids installed to guide vessels within the waterway include:
 - north cardinal mark to indicate shallow water offshore of the entrance to Johnstons Creek;
 - lit port and starboard beacons to delineate the navigation channel beneath Anzac Bridge;
 - lit port and starboard beacons to delineate the navigation channel through the eastern portal of the Glebe Island Bridge;
 - lit special mark beacons to indicate the ends of the Glebe Island Bridge (normally rests in open position); and,
 - lit special mark beacons to indicate the end of the eastern (Pyrmont) road approach to the Glebe Island Bridge.

Glebe Island Bridge

The Glebe Island Bridge is located to the immediate south of the site. When operational, the bridge is able to swing open to allow ships to enter and exit Rozelle and Blackwattle Bay from Jones Bay. Currently Glebe Island Bridge is not operational and is permanently open. Vessels must navigate through the Eastern Channel of the old Glebe Island Bridge only, unless directed otherwise by the Sydney Harbour Master. The Western Channel is generally closed to navigation.

3.6 Existing Vessel Use

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. 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 new facility is located adjacent to the site immediate to its north east. As shown in **Figure 2**.



Figure 2 Multi User Facility

Source: MUF Community Consultation document, Port Authority

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.

4.0 Proposed Development

The SSD application proposes a new aggregate handling and concrete batching facility at Glebe Island, on land owned by Port Authority. The proposed development will be located adjacent to the existing GLB1 berth. The layout of the proposed facility is shown in plan at **Figure 3** below. The proposed development does not include any new maritime infrastructure, consisting solely of works on the land-side of GLB1, including the following components:

- Six (6) aggregate silos located along the southern edge of the island with a roof structure and a conveyor feed for aggregates to be delivered by ship;
- A fully enclosed double height warehouse facility that will accommodate within which all activities related to processing and mixing of concrete will occur;
- A separate site office building; and
- At grade car parking with 47 spaces (for 42 employees, 4 visitors, and one accessible space).

4.1 Ship Usage

As part of the proposed development, delivery of the aggregate materials is proposed via ships to the existing deep water GLB1 berth at Glebe Island. Ship deliveries are expected three times per week and each delivery will last approximately 12 hours. Overall, a total of 10 ships are anticipated each month when operating at full capacity, or approximately 120 ships per year. It is not expected that the development will operate at full capacity until at least 2023.

Aggregate received from the ship will be stored within the proposed aggregate silos. Importantly, the proposal seeks to use an existing berth within an operational port facility. The frequency and use of the berth by the proposed development is anticipated to be broadly comparable with historical movements and use of this berth. The frequency and use of Glebe Island berths have changed over time in response to port requirements, different trades and demands. . At its most recent intensive period as a car terminal, frequency of ship deliveries to GLB1 and GLB2 was almost one vessel daily corresponding to 263 ships for the period of 2007/08 and 264 ships for the period of 2006/07³.

The anticipated frequency of ship visits to Glebe Island 1 and 2 associated with the operation of the Multi - User Facility is around 80 ship visits per year (based on large ships carrying approximately 40,000 tonnes of product). It

³ Port Authority of New South Wales, Glebe Island Multi User Facility, Review of Environmental Factors, prepared by AECOM and dated 24 January 2018

The exact intensity of use would depend on many factors (market demand for the dry bulk products, commercial relationships between the importer/s and users of these materials and capacity of ships bringing the products).

The Hanson development proposes approximately 120 ships per year. On this basis, the combined future ship deliveries to GLB1 and GLB2 associated with the two facilities (i.e. the proposed Hanson facility and the Multi User Facility) would not be expected to exceed the historical number of ships berthing at Glebe Island.

All vessel operators will comply with the Harbour Master's Direction.

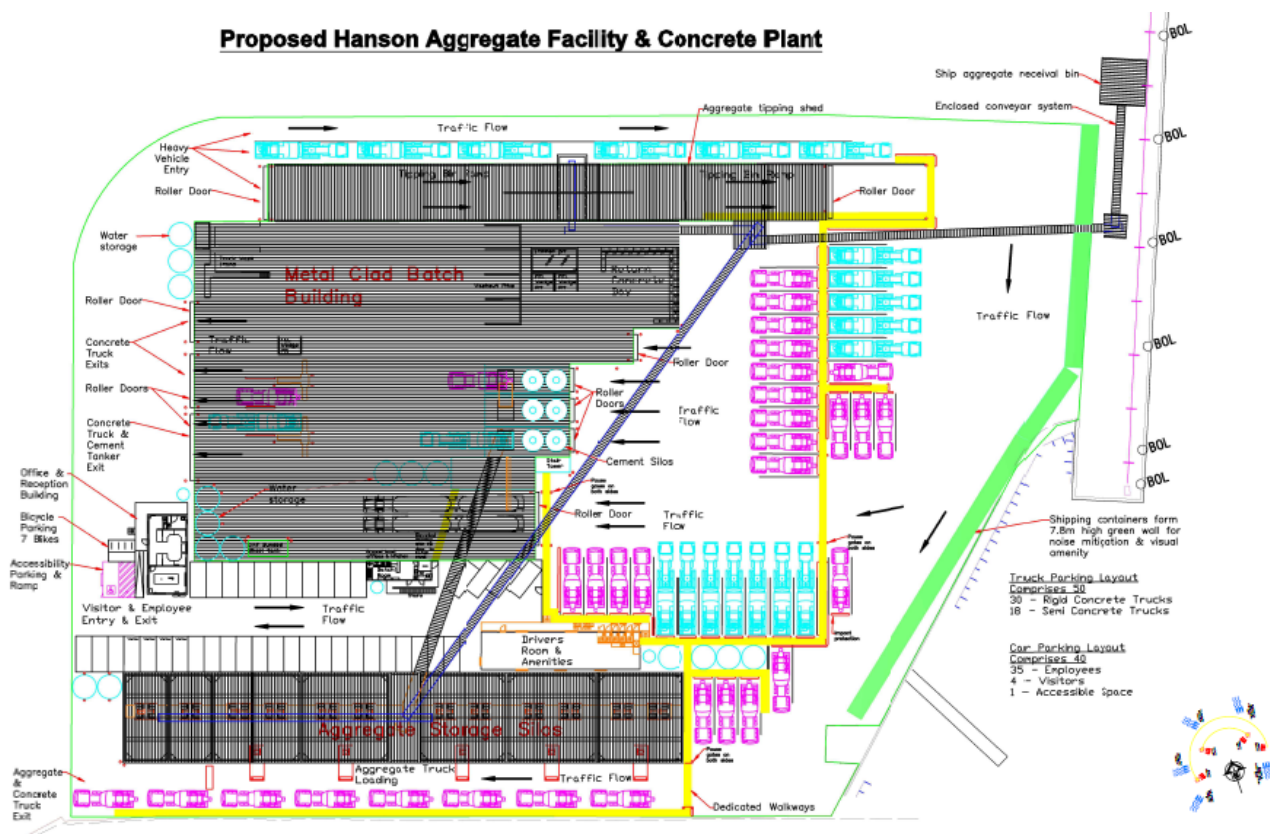


Figure 3 Layout plan of proposed development



Figure 4 Photomontage of the proposed development when viewed from the open space parks at Pyrmont

Source AECOM

5.0 Assessment of Impacts and Mitigation Measures

5.1 Vessel Interaction

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 GLB1 berth is occupied will increase as a direct result of the proposed development. The Port Authority protocols and navigational rules discussed in **Section 3.4.1** of this report will apply to a vessel delivering aggregates to the aggregate handling and concrete batching facility at GLB1 berth. Hanson will coordinate with the vessel operator to coordinate ship deliveries and organise deliveries at suitable times.

Hanson vessels will berth at GLB1 to facilitate easy transfer of aggregates from the vessel to the receiver bin and then to the aggregate storage silos via enclosed conveyor belt system. Berths will be booked through the Port Authority's SHIPS system.

An existing superyacht marina is located west of the site at Rozelle Bay. Superyachts (30m in length) navigating waters in proximity to Glebe Island are subject to the same regulations and navigational rules as cargo vessels and large passenger vessels. Sydney 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 GLB1.

This statement outlines the general processes and guidelines in place that governs marine traffic flow within the context of Glebe Island and Sydney Harbour. Hanson understands that Port Authority require a more detailed Navigation Impact Assessment to inform the operation of a development. However, given the preliminary stage of this proposal, a detailed assessment is considered to be premature as specific information around operations such as vessel type and other operational specifics are not known at this point of time. On this basis, Hanson will prepare a detailed marine traffic, navigation and safety impact assessment to be submitted to the Port Authority for review, comment and acceptance prior to commencing operations.

5.2 Summary of Mitigation Measures

Measures to minimise berth activity noise levels associated with unloading of raw materials, ventilation systems, ships engine will be considered by Hanson in consultation with the Port Authority.

Hanson will prepare a detailed marine traffic, navigation and safety impact assessment to be submitted to the Port Authority for review, comment and acceptance prior to operations commencing on the site. This will ensure that operation and use of development is properly managed, does not adversely impact marine traffic, and is consistent with Port Authority requirements.

6.0 References

Manly Hydraulic Laboratory [MHL] (2012), OEH NSW Tidal Planes Analysis: 1990-2010 Harmonic Analysis, Report MHL2053, prepared for NSW Office of Environment and Heritage, October.

Port Authority of NSW (2018), Berths and Channels, September.

RMS (2016), Boating Handbook, prepared by Roads and Maritime Services, NSW Transport Maritime, October 2016.

Royal HaskoningDHV (2017), Bank St Navigation Impact Assessment, November.

Transport for NSW (2014), Boating Safety Plan: Sydney Harbour and its tributaries, prepared by Maritime Management Centre, July.

Port Authority of New South Wales, Glebe Island Multi User Facility, Review of Environmental Factors, prepared by AECOM and dated 24 January 2018