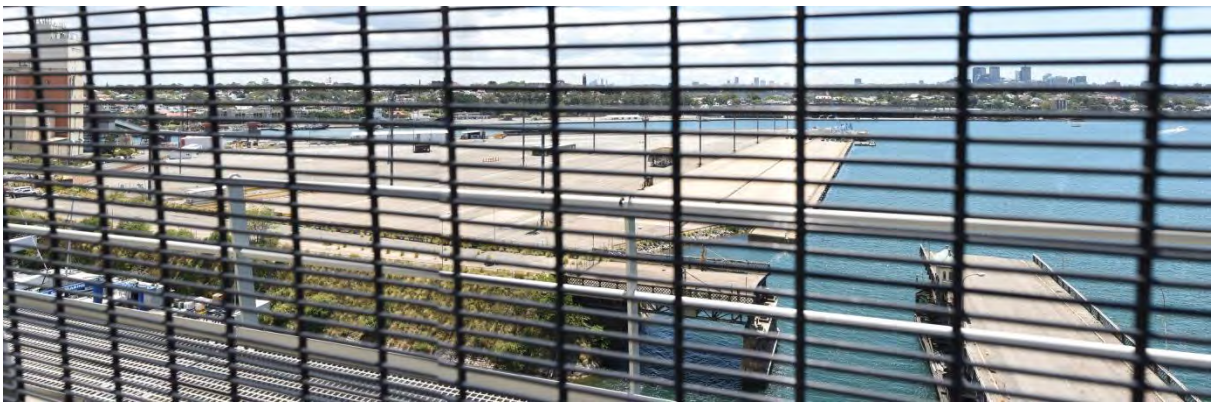

Figure 70 Existing view from OL 8 looking west towards the Project Site

Changes to the View

The Project would be viewed from this location as a new large industrial complex comprising a number of built structures and vehicular activity, positioned very close to the Glebe Island Bridge. The new silos would partly screen much of the concrete wharf of Glebe Island (refer Figure 71).

The Project would be seen in a high amount of detail due to the close proximity of viewing (from an elevated location). All elements of the Project would be seen from this location. The movement of trucks on the wharf would be readily distinguishable.

The frequency of ships berthing at the Project Site would increase, resulting in a change within the view, with a ship arriving at this berth approximately every three days and spending around 12 hours at berth to unload its aggregate cargo.

Figure 71 Photomontage of the view from OL 8 looking towards the Project Site, showing the proposed Project (source: AECOM). Refer to Appendix A for all photomontages at A3 size

From this location, the eastern façade of the wall of shipping containers would be clearly seen in a high amount of detail. This treatment could include a façade of solar panels (refer Figure 66) or a green wall (refer Figure 67).

Figure 72 Detailed photomontage showing the Project with the solar panel option for the eastern façade of the shipping container wall (source: AECOM). Refer to Appendix A for all photomontages at A3 size

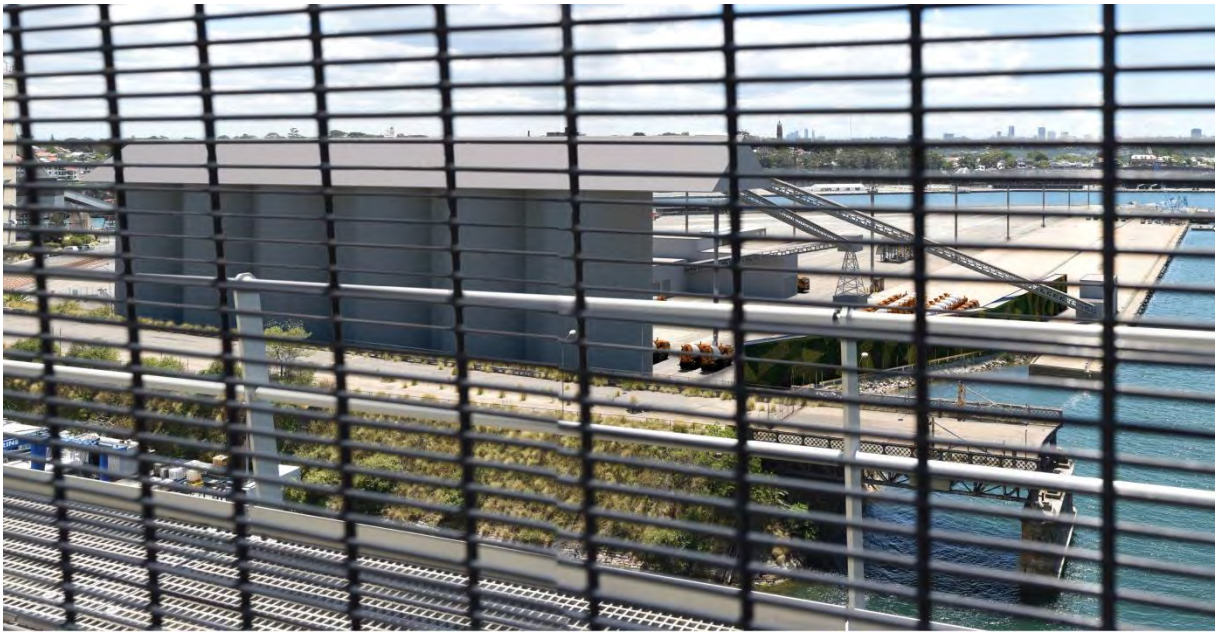

Figure 73 Detailed photomontage showing the Project with the green wall option for the eastern façade of the shipping container wall (source: AECOM). Refer to Appendix A for all photomontages at A3 size

Sensitivity of Receptors

Receptor groups at this location would collectively have a Moderate level of sensitivity to changes in the view. Although there are a high number of travellers who cross the bridge on a daily basis with their attention focussed on the view to the harbour (including the Project Site), viewing the Project at close proximity, many of them would not see the view due to their position on the bridge. Only pedestrians and some vehicles would see the view to the Project.

Magnitude of Visual Effects

The magnitude of change in the view would be High. The Project would comprise a substantial new element situated in close proximity to the OL, and in a prominent, waterfront location within the

landscape. However, the development would be contextually in keeping with the industrial waterfront setting, with the silos viewed as a similar element to the existing silos on Glebe Island.

The development would initially stand out from its surrounds, particularly with the fresh, clean finish of the silver-grey silos and the building housing the batching activity. Over time this effect may 'bed down' into its surrounds as the development weathers.

From this location, the eastern façade of the wall of shipping containers is clearly seen. The finish of this element would have an effect on the character of the development. The façade of solar panels may be reflective from this position, given their east-facing orientation. The green wall would have a more muted, dark façade, which would soften the hard materiality of the shipping container surface. However, the finishes of solar panels or a green wall would be out of context for Glebe Island, given the industrial maritime character of the setting.

Overall Assessment

The change in the view from this location would be High to Moderate.

Night Lighting

Receptors at this OL would obtain an elevated view to the brightly lit apartment buildings at Jacksons Landing, and the existing well-lit silos. The eastern end of Glebe Island is relatively dark within the view, and seen adjacent to the dark waterway.

Proposed outdoor lighting at the Project Site would be limited to vehicle parking and driveway areas, with all lights directed down producing no light spill outside the Hanson lease boundary.

Ships berthed alongside the Project would be lit during the night, but the lighting would be minimised with controllable and dimmable open deck lighting with multi-zone lighting control to allow work within different areas of the ship without excessive lighting. Some directional flood lighting would be required, but would be minimised to mooring decks and LSA areas (raft and boat).

The sensitivity of receptors to night lighting is Moderate. Fewer receptors would see view to the Project Site and landscape, although receptors would be viewing the Project Site from an elevated position and from close proximity. The existing view to most of the harbour foreshore is well lit, particularly the existing silos on Glebe Island, which are dominant within the view.

The magnitude of the change to night lighting is High. Although the existing foreshore is well lit, the Project Site is currently unlit and lies adjacent to the landmark ANZAC Bridge. Ships would be well lit and in a prominent position within the view, and would be seen in their entirety when berthed.

The overall change in the view from night lighting is High to Moderate.

4.3 Assessment of Cumulative Impacts

This section provides an analysis of the potential cumulative impacts of major infrastructure and urban renewal projects in the vicinity of the subject site. These projects are WestConnex and the Western Harbour Tunnel, managed by NSW Roads and Maritime Services (RMS), the Glebe Island Multi-User Facility by the Port Authority of NSW, and The Bays Precinct Transformation, managed by UrbanGrowth NSW (UGNSW).

WestConnex

The WestConnex project consists of the following components:

- New M4 (M4 east) – from Haberfield to Homebush Bay Drive
- New M5 – from St Peters to Beverly Hills
- M4-M5 Link – From Haberfield to St Peters
- Rozelle Interchange and Iron Cove Link – connecting the M4-M5 link to an interchange at Rozelle and Lilyfield, and tunnel connection between ANZAC Bridge and Victoria Road, east of Iron Cove Bridge.
- Sydney Gateway – proposed future connection to Sydney Airport and Port Botany.

The Western Harbour Tunnel and Beaches Link is a separate project to WestConnex, although is being planned to connect to WestConnex at Rozelle to the northern beaches.

The approximate locations of the tunnels and connections, as well as the targeted opening dates, shown in Figure 74.

Figure 74 Locations of WestConnex components and opening dates (Source: RMS)

A State Significant Infrastructure application for the M4-M5 Link is currently under assessment by the NSW Department of Planning. The most up to date information about this project is from Environmental Impact Assessment prepared by RMS, which exhibited till 16 October 2017.

The works at the Rozelle Interchange are likely to have the greatest impact on the project site. Construction has been targeted to run from 2018 to 2023, although will be subject to the assessment process and other external factors.

The Rozelle Interchange is to connect the M4-M5 Link tunnels with:

- tunnels to provide connections to the M4 East and New M5 motorway;
- dive structure and tunnel portals within the Rozelle Rail Yards, north of City West Link;
- entry and exit ramps exiting norther underground from the tunnel portal sin the Rozelle Rail Yards to join the proposed future Western Harbour Tunnel and Beaches Link; and
- ventilation outlet and ancillary facilities.

The majority of the motorway will be below ground, with the visible features of the motorway at Rozelle contained within the disused Rozelle Rail Yards. The Rozelle Interchange would provide connections to the surface road network at City West Link and ANZAC Bridge. The intersection of City West Link and The Crescent is to be modified and a new, low-level road bridge structure across Whites Creek will be built. The changes will also reduce upstream flooding in Whites Creek, which is a longstanding issue in the area.

For the Rozelle area adjoining Victoria Road and other streets near the Iron Cove Bridge, the works include:

- widening of Victoria Road near the Iron Cove Bridge to include tunnel entry and exit points for the Iron Cove Link; and
- construction site on Victoria Road, between Springside Street and the Iron Cove Bridge.

For the Rozelle Rail Yards portion further south of the site and City West Link the works are proposed to comprise:

- a new intersection on City West Link about 300 metres west of The Crescent that would provide a new connection between City West Link and the southbound main tunnels that connect to the New M5 at St Peters
- modification of the intersection at City West Link and The Crescent at Annandale;
- modification of the intersection of City West Link and James Craig Road at Rozelle;
- realignment, widening and resurfacing of the intersection of Victoria Road and The Crescent; and
- construction of a new bridge at Victoria Road to accommodate a new pedestrian and cycle connection under Victoria Road.

The Rozelle Rail Yards will be used as the main construction site for the M4-M5 Link (refer Figure 75). Construction activities will include launching the tunnelling machines, stockpiling and removal of extracted material, workforce carparking, offices and amenities, as well as infrastructure required to support the construction of the tunnels such as sedimentation ponds. Options to move all heavy construction traffic directly onto City West Link are being examined.

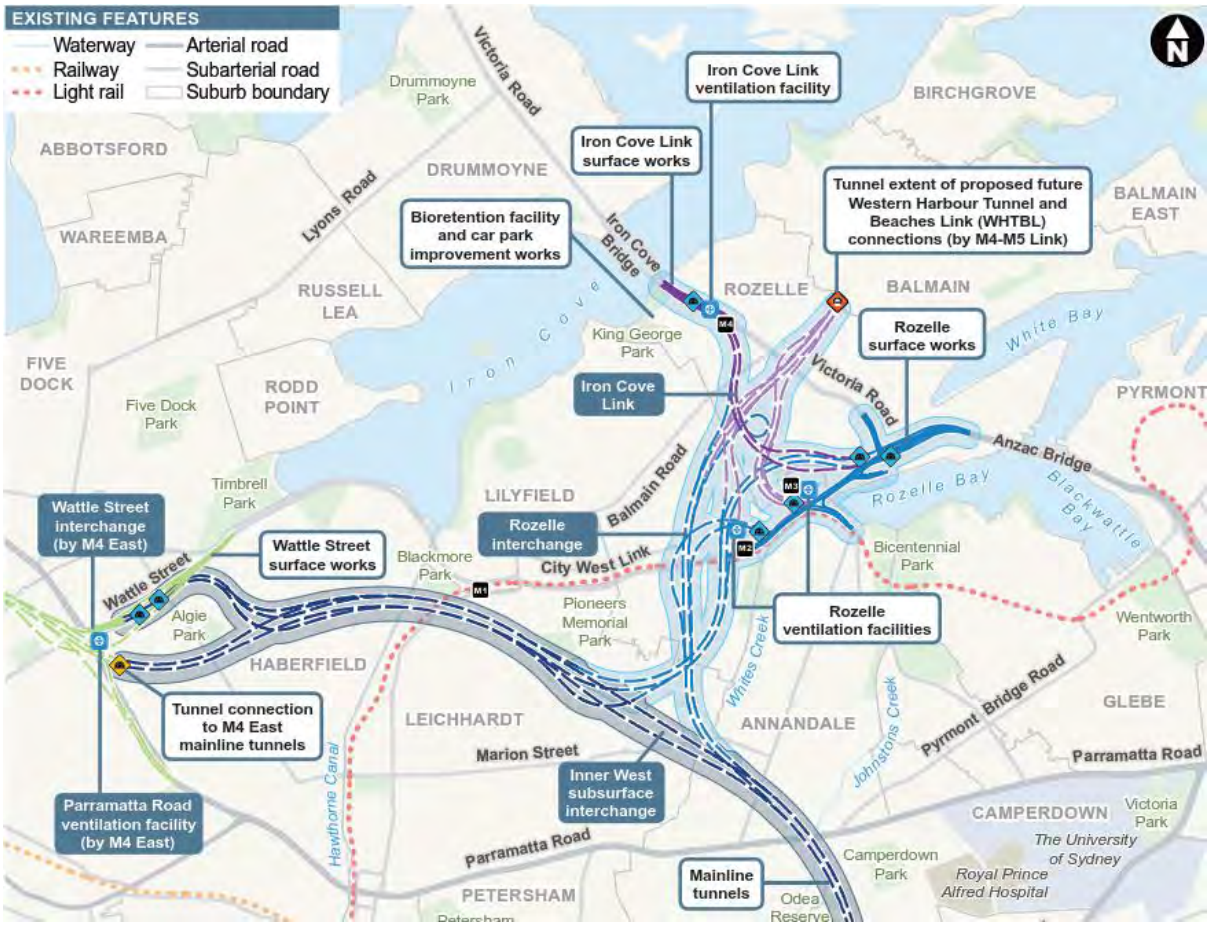

Figure 75 Construction sites for the M4-M5 Link and Rozelle Interchange near the subject site (Source: RMS)

The Western Harbour Tunnel

The Western Harbour Tunnel and Beaches Link was announced by the NSW Government in March 2017, with a State Significant Infrastructure Application lodged, and SEARs requested. The proposed tunnel is to start at the Rozelle interchange, with twin mainline tunnels passing under Balmain, crossing Sydney Harbour between Birchgrove and Balls Head linking directly to the Warringah Freeway around the Falcon Street overpass. The works at Rozelle are planned to comprise:

- free flowing general traffic lanes to provide onward connectivity with the WestConnex M4 East and WestConnex New M5 corridors; and
- a ramp connection between the project and the City West Link including intersections to provide connectivity with The Crescent, ANZAC Bridge and Victoria Road.

Roads and Maritime have stated that it is working closely with the Sydney Motorway Corporation to ensure coordination of works at the interface between WestConnex and the project. For example, there may be opportunities to use common construction sites to minimise cumulative impacts.

The project is expected to take around five to six years to build, although a start date has not been announced, with more information expected once the environmental impact statement has been prepared.

RMS acknowledges the importance of commercial shipping operations in Sydney Harbour, and that the port handles a wide range of freight including dry bulk, bulk liquids and general cargo through berths at Glebe Island and White Bay. As a result construction of the Western Harbour Tunnel may affect commercial shipping operations and ferry services, particularly if an immersed tube tunnel design is pursued, which will need to be addressed as part of the design.

Glebe Island adjacent to White Bay is proposed to be used as a spoil handling area for the Western Harbour Tunnel and Warringah Freeway Upgrade project, prior to the commencement of works for the Bays Precinct in 2022. This may lead to cumulative impacts for the subject proposal including increases in truck movement activity and noise, which should be addressed as part of the environmental impact for the motorway project, although noting that due to the proposed timing, it is likely to result in a continuation of the construction activity for the WestConnex project rather than addition.

Sydney Metro West

An underground metro rail that will link the Parramatta and Sydney CBDs, and it is at the preliminary planning stage with little information available. The final number of potential stations are still being determined and will be identified following community and industry consultation. Four key precincts to be serviced have initially been identified, including one at The Bays Precinct, as well as the Sydney CBD, Sydney Olympic Park and Parramatta. Due to the limited information available, the impact on the subject site is unknown.

Potential future development at The Bays Precinct

UGNSW's planning for The Bays Precinct envisages an area with a broad range of uses and opportunities including places for cultural, maritime, recreational, retail, residential, research and development, education, and commercial uses. It is a 25 year plan, with the short term works, programmed for 2015-2019 including the Bays Waterfront Promenade from Pyrmont, Bays Market District, Wentworth Park and White Bay Power station.

The works in the medium term in The Bays Precinct, from 2019 to 2022 are the Rozelle Bay and Bays Waterways. The final stage, post 2022, include the Rozelle Rail Yards, White Bay and Glebe Island, which would coincide with the completion of the WestConnex works planned for 2023. This would reduce the cumulative impacts of the redevelopment of available sites within Glebe Island, and motorway construction activities.

Glebe Island Multi-User Facility

The Port Authority of NSW has proposed the construction and operation of a multi-user facility for the import, storage and distribution of dry bulk construction materials (e.g. sand and aggregates) at Glebe

Island 1 and 2, adjacent (north of) the proposed Hanson Glebe Island Concrete Batching Plant Project. At completion, the facility would operate 24 hours a day, seven days a week as required.

The Project would include the following key features:

- An enclosed bulk material storage building consisting of storage bays designed to allow products to be conveyor fed through the building's wall/roof slots. The building slots would be closed at times when material is not being unloaded from ships. The total storage capacity of the storage structure would be approximately 70,000m^3 distributed in stockpiles over the bays (e.g. 14,000m^3 per bay if it was operated in a five bay arrangement).
- Electric radial stackers on the wharf edge, with a maximum of two stackers operating at any one time. The stackers would deliver bulk materials directly into the individual storage bays through the building slots. Bulk material would be fed into the radial stackers from moored ships.
- Truck-loading located internally to the storage building allowing multiple trucks to be loaded. Truck loading would involve the use of front end loaders. The building and internal operations would be designed to minimise dust and noise emissions.
- A weighbridge located next to the storage building to ensure truck and dogs are loaded to acceptable limits.
- Demountable offices and amenities block. The amenities block would likely be connected to town water and sewerage systems.
- If required, a multi-user above ground diesel fuel tank with an approximate capacity of 20,000 litres. The storage tank would be bundled to meet the requirements of Australian Standard 1940: Storage and Handling of Flammable and Combustible Liquids, and include in-built dispensers.
- Operational lighting, connection to existing services, and associated plant and equipment.
- Common areas such as access ways and other areas where customer's users may interface with each other.

The relevant transportation aspects of a multi-user facility at Glebe Island Berths 1 and 2 handling dry bulk goods from ship onto the wharf deck or directly into trucks (with subsequent truck movements to separate/remote locations), have previously been assessed by the former Sydney Ports Corporation in a REF prepared and determined under Part 5 of the EP&A Act in 2013 (SPC Reference: C13/115). There are no additional trucking movements associated with the current multi-user facility proposed.

A series of artists impressions have been prepared to illustrate the view to the Project and the Glebe Island Multi-User Facility from Pyrmont and Jacksons Landing (refer https://www.portauthoritynsw.com.au/glebeisland).

Cumulative impacts of infrastructure and local development during construction and at operation

Construction activity for WestConnex is planned to occur from 2018 to 2023, with construction of the Western Harbour Tunnel expected to begin after this time period. The cumulative impact on the subject proposal would largely be construction impacts including additional truck movements and visual construction activity, although most of the construction activity is to be located on the southern side of the ANZAC Bridge. This construction will reflect the infrastructure construction boom in Sydney. The need to support growth identified in both *A Plan for Growing Sydney* and recently released *Draft Greater Sydney Region Plan.*

The subject site is located in an area with a long history of significant infrastructure, industrial and maritime uses. As outlined in *The Bays Transformation Plan*, the White Bay Power Station, which opened in 1913, powered Sydney's vital train and tram network (and was decommissioned in 1983); the grain silos were built at Glebe Island in 1975; and the Rozelle Rail Yards became a marshalling area for trains when the Metropolitan Goods railway line opened in 1922.

The Sydney Fish Market moved to its current site in 1966 and the first NSW container terminal opened at White Bay in 1969. Glebe Island's former role as a terminal for imported cars began in the early

1990s, the eight-lane ANZAC Bridge opened in 1995 and a new super yacht marina opened at Rozelle Bay in 2000.

One of the principles of *The Bays Transformation Plan* is to support the economic activities of maritime industries and celebrate the authenticity of the working harbour, which the subject proposal would do.

At completion, the subject proposal and the Port Authorities Multi-User Facility would be operating simultaneously and adjacent to one another. The character of the two facilities are similar, both in building form (with the exception of the Hanson facility silos, which are considerably taller), materiality, and in the truck and shipping activity on the two sites which would be visible from the surrounding landscape. The size and position of the Multi-User Facilities main bulk material storage building would be seen as a continuation of the lower concrete batching shed of the Hanson Project. These lower buildings would be partially obscured from view from the closest position of viewing (Pyrmont and Jacksons Landing) when a ship was at berth.

In conclusion, it is considered that the subject proposal, along with the proposed infrastructure and redevelopment in the vicinity of this site, would continue this role and function and therefore maintain the visual character of the area. The visual impact of the proposed facility would be a continuation of the existing industrial character of Glebe Island, with the benefit of the final finishes and material of the facility (which would be informed as part of the consultation process) potentially becoming a new iconic feature of this landscape, like the existing finishes of the Glebe Island Silos.

5.0 Conclusion and Mitigation Measures

5.1 Summary of Landscape Character Impacts

The impacts of the Project on landscape character and recommended mitigation measures are summarised in Table 3.

Table 3 Landscape character impact summary table

Landscape Character Zone	Rating	Mitigation Measures
LCZ 1: Infrastructure Corridor	High	Investigation into alternative roof forms (or no covering structure) at top of the silos
LCZ 2: Industrial / Commercial Waterfront	Moderate	-
LCZ 3: Residential Development (low to medium)	Moderate - Low	Investigation into alternative roof forms (or no covering structure) at top of the silos
LCZ 4: Residential Development (medium to high)	Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos
LCZ 5: Mixed Use / Commercial Development (low)	Negligible	-
LCZ 6: Mixed Use / Commercial Development (high)	Negligible	-
LCZ 7 Public Open Space	High to Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos

5.2 Summary of Visual Impacts and Night Lighting Impacts

The visual and night lighting impacts of the Project and recommended mitigation measures are summarised in Table 4.

Table 4 Visual impact and night lighting impact summary table

Observer Location	Project Component	Rating	Mitigation Measures
OL1: Peacock Point, Balmain East	Visual Impact	High to Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos Investigation into a public art strategy, which could include a mural on the silos
	Night Lighting	Moderate	
OL 2: Birrung Park, Balmain	Visual Impact	High to Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos Investigation into a public art strategy, which could include a mural on the silos
	Night Lighting	Moderate	
OL 3: Mansfield Street, Rozelle	Visual Impact	High to Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos Investigation into a public art strategy, which could include a mural on the silos
	Night Lighting	Moderate	

		to Low	
OL 4: Glebe Foreshore Walk	Visual Impact	High	Investigation into alternative roof forms (or no covering structure) at top of the silos Investigation into a public art strategy, which could include a mural on the silos
	Night Lighting	Moderate	
OL 5: Glebe Foreshore Walk (The Boathouse on Blackwattle Bay)	Visual Impact	Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos Investigation into a public art strategy, which could include a mural on the silos
	Night Lighting	Moderate to Low	
OL 6: Pirrama Park, Pyrmont	Visual Impact	High to Moderate	Investigation into a public art strategy, which could include a mural on the silos
	Night Lighting	Moderate	
OL 7: Waterfront Park, Pyrmont	Visual Impacts	High	Consideration of shipping container wall aesthetic
	Night Lighting	High	
OL 8: ANZAC Bridge	Visual Impact	High to Moderate	Investigation into alternative roof forms (or no covering structure) at top of the silos Investigation into a public art strategy, which could include a mural on the silos Consideration of shipping container wall aesthetic
	Night Lighting	High to Moderate	

5.3 Mitigation measures

A number of mitigation measures could be considered to reduce the impact on the landscape character and views to the Project Site, including:

- Investigation into alternative roof forms on the silos to reduce the visual impact of the structure against the deck of the ANZAC Bridge. The reduction in built form on the top of the silos, even if the core structure was left open, may be a better result in terms of visual permeability, than a heavier roof structure or something that encloses the top structures.
- Preparation of an urban design and landscape masterplan that addresses all key elements of the site, including issues such as the nature of any screening and finishes to structures.
- Preparation of a public art strategy, which may include:
    - commissioning of a mural on the silos rather than leaving them bare concrete. This could be in consultation with the community and complement the aesthetic of the existing silos. By breaking up the solid grey surface of the silos, this could help to reduce the bulk of the structure within the landscape, and potentially create a landmark element which is enjoyed by the community; and
    - consideration of a different treatment of the shipping container wall, e.g. something that references the existing character of the site and area. This could be achieved by staggering of shipping containers within the wall, with occasional containers jutting out of the wall and planted with grasses, climbers or shrubs. Consideration of the species

already growing near the site could help to further integrate the structure into the landscape, potentially referencing the vegetated abutment of the Glebe Island Bridge. It is noted that the finish on the shipping container wall would be designed in response to community consultation and commercial assessment.

5.4 Conclusion

Overall, the positioning of the Project is considered to be visually in keeping with the industrial maritime character of Glebe Island and White Bay foreshore. Further, the relocation of concrete batching activity from Blackwattle Bay to Glebe Island is an appropriate relocation considering the development intention of the Bays Precinct in the vicinity of the Sydney Fish Market.

The position of the large storage silos parallel to the Glebe Island Bridge and the ANZAC Bridge result in the greatest impact on landscape character and views to the Project Site from the surrounding area. However, it is noted that the scale and form of these structures are not new within the landscape, with the existing larger silos situated in the adjacent site to the west of the Project. Within this project, the silos have been positioned for ease of operation, but also to reflect the location of the existing Glebe Island Silos, offset from Victoria Road by approximately 100m. This would maintain a theme of maritime industry and associated storage structures in this part of Glebe Island. Locating the silos adjacent to the ANZAC Bridge assists in reducing the apparent scale of the silos, and avoiding tall development in the northern section of the site (where the site is flat and open).

Although the mitigation measures suggested in Section 5.3 of this report would not change the visual bulk or scale of the Project when viewed from the surrounding landscape, they would assist in softening the visual nature of the Project, and assist in ‘bedding down’ the structures into the surrounding landscape. Further, the consideration of a landscape and public art strategy within the development could potentially create a landmark element which is enjoyed by the community.

The sensitivity of receivers viewing the Project from nearby surrounding areas has been assessed as high. Many of these receivers view the site from places in which they have a proprietary interest, e.g. their places of residence or from public open spaces where their attention would be focussed on the landscape. The sensitivity of these receptors informs many of the high visual impact ratings.

In the coming years, the landscape surrounding and including Glebe Island will be subject to substantial changes, including WestConnex, the Bays Precinct, and the Glebe Island Multi-User Facility. Within the context of this changing setting, the Project is considered to be visually representative given the surrounding working harbour character, and would be viewed in conjunction with construction activity due to local development.

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Appendix A

Photomontages of the Proposed Development from Surrounding Observer Locations

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Appendix B

Shadow Analysis for Proposed Development

Scope and Purpose of Analysis

This appendix has been prepared to assess the shadows cast by the proposed development (the Project), as described in Section 1.3 of the LVIA report. This analysis includes the production of shadow diagrams to illustrate the shadows cast by the Project, and a written assessment of the results.

Methodology

Shadow analysis diagrams are produced using the computer program 3DS Max, which is certified by the Illuminating Engineering Society (IES) for lighting accuracy. An accurate 3d model of the proposed development is produced in 3DS Max using supplied design information. Once the model is complete, an IES certified lighting system is set-up that provides accurate sun positions for the location at any time of the year (regarding the position of the sun).

Images are rendered at 9am, 12pm and 3pm on the winter and summer solstices (when the sun is positioned at the extremes of height in the sky) and also the spring-equinox, which shows a typical shoulder-season solar position. These rendered images provide an accurate representation of where the shadow will fall at each of these times and their impact can be analysed.

The heights of surrounding development (including buildings, structures) and landform are modelled within 3DS Max with the use of spot-heights or digital contour information. This assists in the accuracy of the diagrams produced, as the shadows cast by the development may not affect some surrounding structures or landform based on placement and height.

The shadows cast by surrounding landform and developments are not modelled within this analysis, but are discussed in the assessment.

Surrounding Environment

The Project is positioned on Glebe Island, as described in Section 2.0 of the LVIA report. The immediate surrounds of the Project include the Glebe Island Bridge (to the south of the site), Sydney City Marine (between the Glebe Island Bridge western abutment and the ANZAC Bridge), and the ANZAC Bridge south of that (refer Figure 78).

Figure 76 Existing view to the Project site, showing the immediate surrounding development, including the Glebe Island Bridge, Sydney City Marine, The ANZAC Bridge and the existing silos on Glebe Island (Source: AECOM)

Sydney City Marine is a boat servicing and building company situated on James Craig Road, Rozelle. The boat shed, yards and marina are positioned to the south of the western abutment of the Glebe Island Bridge, and extend under and south of the ANZAC Bridge (refer Figure 77).

Figure 77 Aerial photo showing Sydney City Marine, positioned south of the Glebe Island Bridge (right of frame) and extending under the ANZAC Bridge (Source: Sydney City Marine, http://www.sydneycitymarine.com.au)

Shadow Analysis

During summer, the shadows cast by the Project between the hours of 9am and 3pm remain roughly within the site boundary (refer Figure 78, Figure 79, and Figure 80). The shadows do not fall on any public areas or roadways, and only fall on the northern edge of the Glebe Island Bridge abutment up until just after midday.

Figure 78 Estimated shadows cast by the Project at 9am on the Summer Solstice (22nd December, 2018)

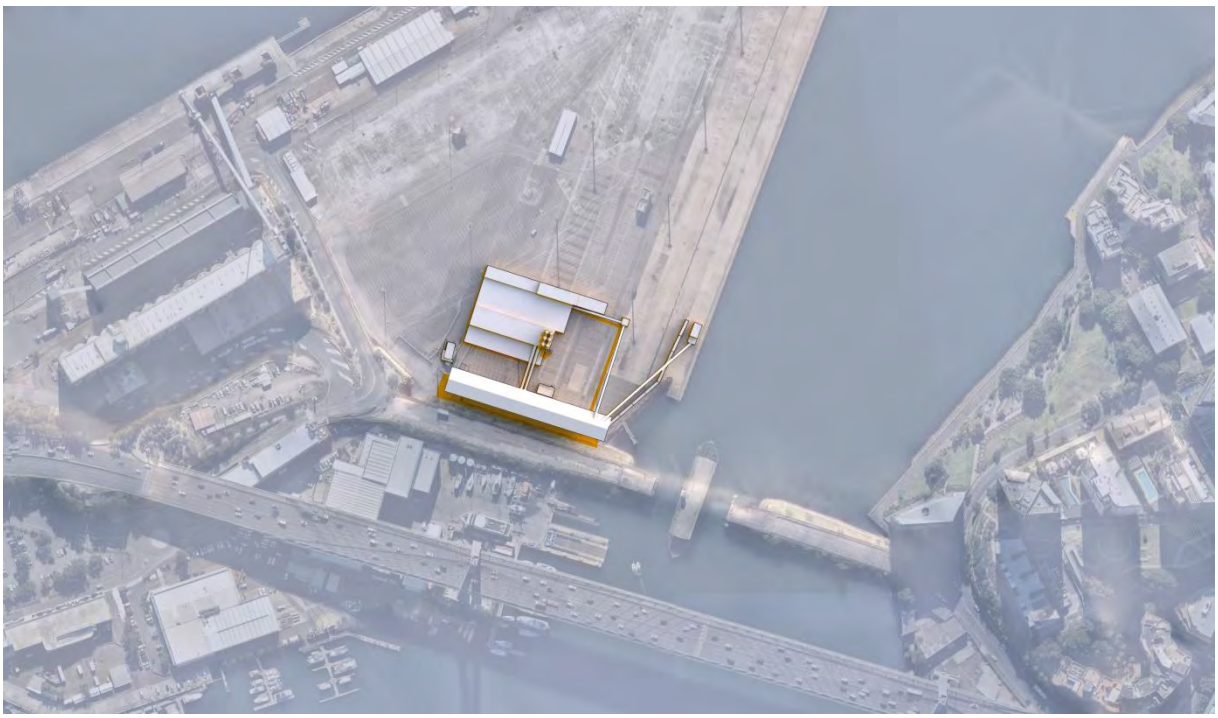

Figure 79 Estimated shadows cast by the Project at 12pm on the Summer Solstice (22nd December, 2018)

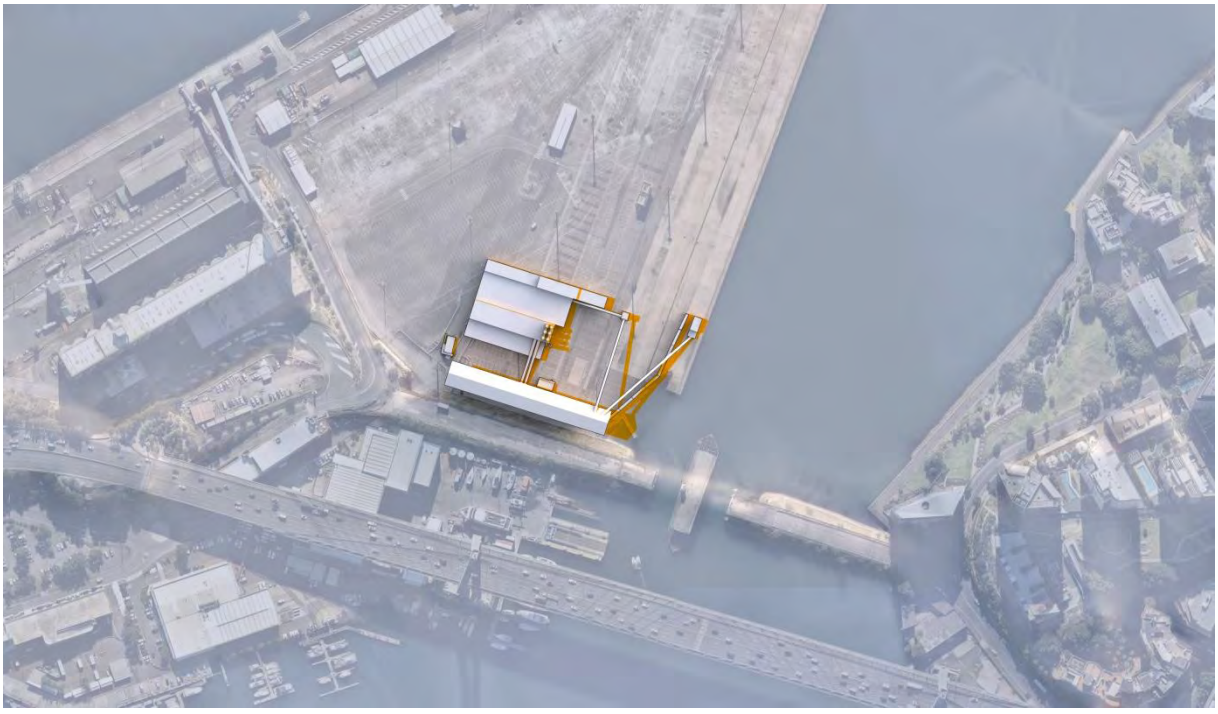

Figure 80 Estimated shadows cast by the Project at 3pm on the Summer Solstice (22nd December, 2018)

In winter, the shadows cast by the Project would be the longest due to the sun's low position in the sky. At 9am the silos positioned at the southern edge of the site cast shadows south beyond the ANZAC Bridge, overshadowing the Sydney City Marine's boat shed and the western end of the boat yard. The 'break' in the shadow seen directly to the south of the western abutment of the Glebe Island Bridge would be the existing shadow caused by the Glebe Island Bridge, and for this area to be in shadow would not be a change from the existing situation.

As the day progresses, the shadows caused by the silos would shorten, until the only the area directly south of the western abutment of the Glebe Island Bridge would be in shadow. A majority of the boat yard and marina would get solar access from this point and into the afternoon.

The overshadowing of the Sydney City Marine buildings and boat yard for a few hours in the mornings in winter would be acceptable considering that this is a place of work rather than a more sensitive use, for example a public open space or residential area. The building and boat yard receive direct sunlight for most of the day, with only minor overshadowing of the very northern edge of the boat yard adjacent to the western abutment of the Glebe Island Bridge. The buildings have no windows on the northern face.

The western abutment of the Glebe Island Bridge would be in shadow for most of the day, certainly during the study period of between 9am and 3pm. This is not publicly accessible land, and therefore the overshadowing of this structure would be considered to be acceptable during winter considering its lack of use.

The deck of the ANZAC Bridge is not overshadowed at any time due to its height.

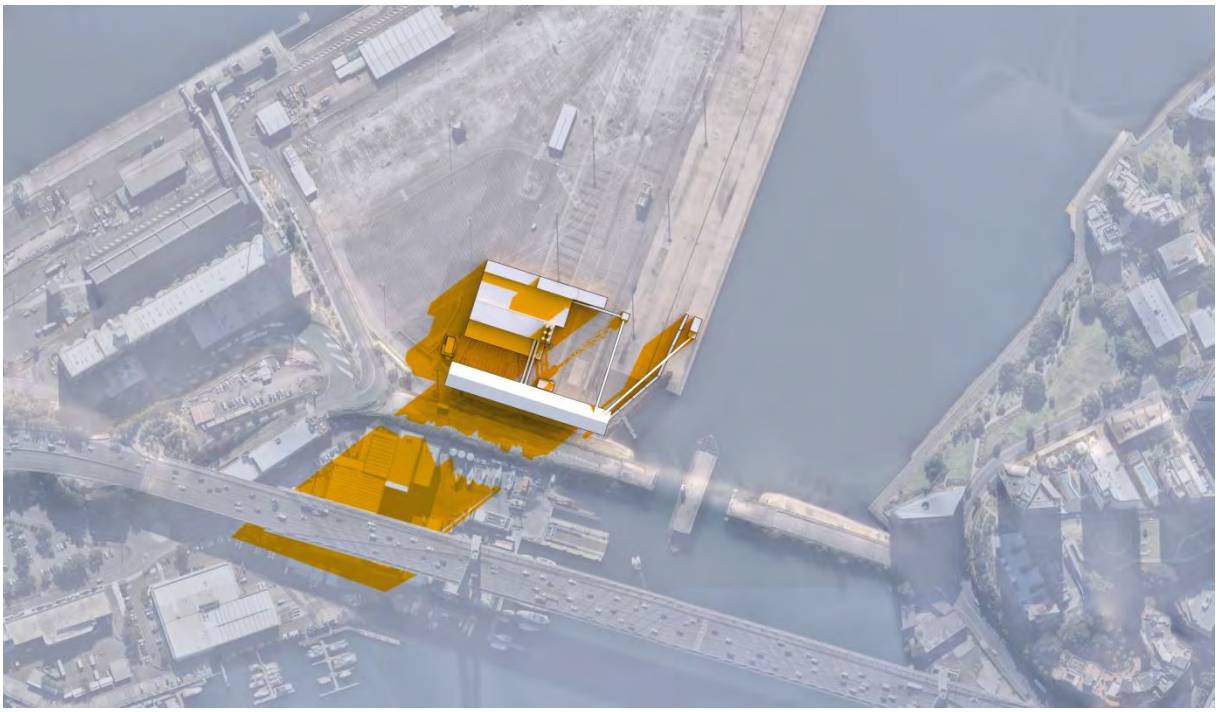

Figure 81 Estimated shadows cast by the Project at 9am on the Winter Solstice (21st June, 2018)

Figure 82 Estimated shadows cast by the Project at 12pm on the Winter Solstice (21st June, 2018)

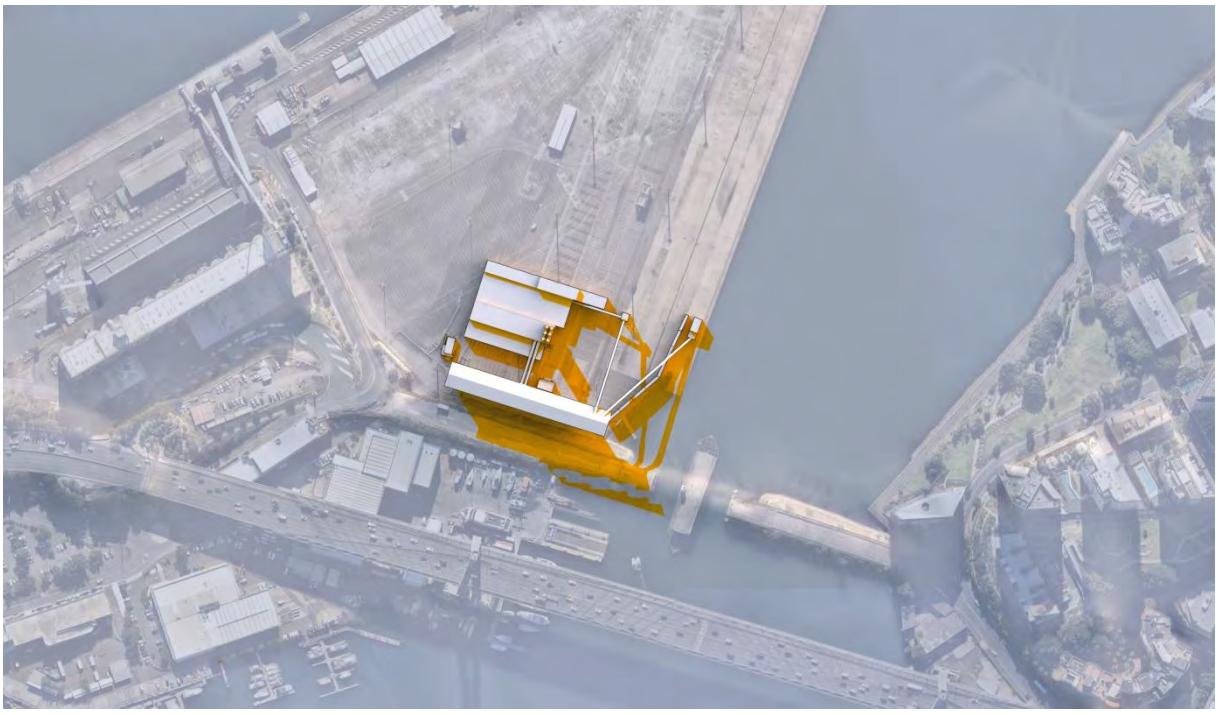

Figure 83 Estimated shadows cast by the Project at 3pm on the Winter Solstice (21st June, 2018)

Shadow diagrams produced for the spring solstice provide an approximation of shadows cast by the Project during the shoulder seasons (refer Figure 84, Figure 85, and Figure 86). At 9am, the silo buildings associated with the Project cast a shadow south over the western abutment of the Glebe Island Bridge, overshadowing only half of the path situated on the top of the bridge berm. By midday, the shadows have shortened so that only the northern berm of the bridge abutment is in shadow. By 3pm, the shadows cast by the Project are predominantly contained within the site boundaries, and do not overshadow any external structures.

Figure 84 Estimated shadows cast by the Project at 9am on the Spring Equinox (23rd September, 2018)

Figure 85 Estimated shadows cast by the Project at 12pm on the Spring Equinox (23rd September, 2018)

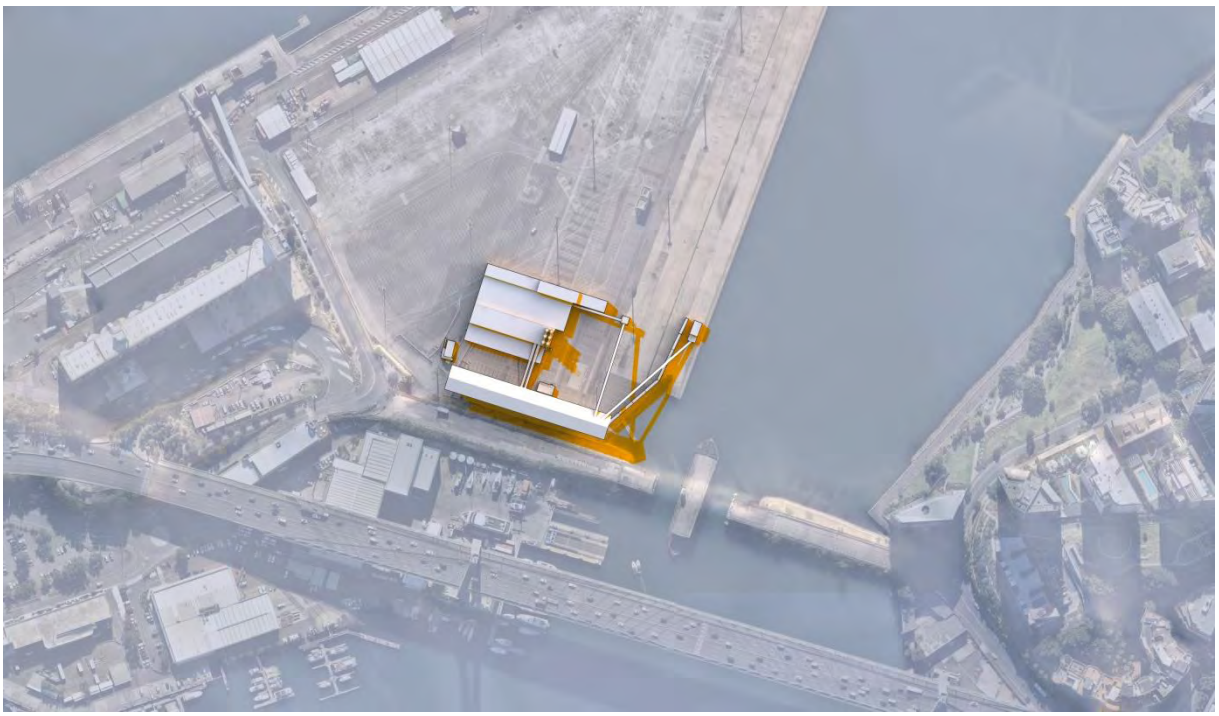

Figure 86 Estimated shadows cast by the Project at 3pm on the Spring Equinox (23rd September, 2018)

Conclusion

The Project is relatively isolated, with the nearest development to it positioned south of Glebe Island (Sydney City Marine). This limits the potential for overshadowing by the Project.

A majority of the structures within the Project do not cast shadows at any time of year which impact surrounding development. The largest structures within the proposal are the silos, which are positioned to the south of the Project site, north of the western abutment of the Glebe Island Bridge. These silos do overshadow the surrounding development, but only in the middle of winter, and only in the morning. The Sydney City Marine buildings and boat yards still receive good solar access for most of the day during winter, and are not impacted in the shoulder seasons or during summer.

The overshadowing caused by the Project is considered acceptable, as it does not cause significant overshadowing of any sensitive location for unacceptable amounts of time throughout the year.