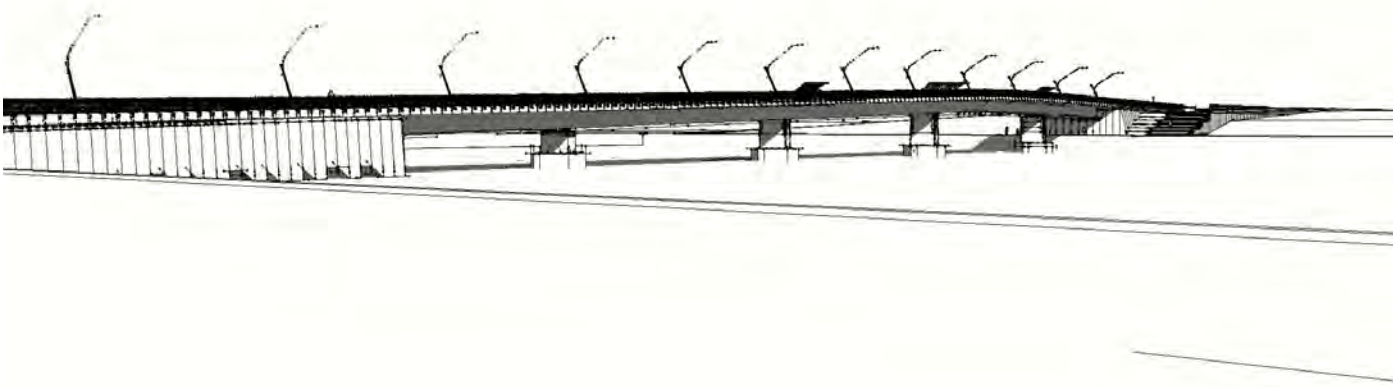
Homebush Bay Bridge | Environmental Assessment

PART B

Description of the proposal and consultation



4 Proposal description

This Chapter provides a description of the Homebush Bay Bridge proposal.

It draws on the evaluation of alternative options described in Chapter 3 to address the Director General's requirement to provide a rationale for the overall design (length, height, width and appearance) of the bridge, including:

- Justification for the proposed width of the bridge based on shared use by pedestrians, cyclists and public transport.
- Details of pedestrian and cyclist access (dedicated or shared-use), and public transport and emergency vehicle access.
- Design relationship to the existing and proposed Wentworth Point and Rhodes built forms and streetscapes.

It also specifically addresses the Director's General's requirements to provide an assessment of the built form (materials and finishes) and urban design (bulk and scale) of the bridge, including:

- Design details such as lighting, balustrades, street furniture and their integration generally.

An assessment of the views to and from the bridge and of the wind and wind-wash effects on the bridge and bridge users is presented in Chapter 10 and Chapter 17 respectively.

4.1 Bridge overview and access

Figure 4.1 illustrates the bridge in plan form. Bridge engineering drawings are found in Appendix C. The proposed Homebush Bay Bridge would be 300 m in length, 11.4 m in width and 9.2 m at its highest point. It is made up of the following components, which are described in more detail in this section.

Table 4.1 – Homebush Bay Bridge components

Element	Description
Main bridge	Bridge structure over the unremediated area of Homebush Bay
Approach bridge	Bridge structure over the Rhodes mudflats which have been subject to remediation works.
Superstructure	Structural elements that are above the bridge piers
Piers	Vertical supports for the bridge
Deck	Roadway and footpath surface of the bridge
Foundations	Structural element at the bottom of the bridge
Road approaches	Approach roads built on an embankment
Abutments	Structures where the bridge meets the shoreline
Deck fixtures	Safety barriers, balustrades, rest stops, lighting, services

Figure 4.1 shows pedestrians would access the bridge via a dedicated pedestrian footpaths located on the northern side while cyclist, buses, maintenance and emergency vehicles would access the bridge via two lanes. Figure 4.2 shows that, other than driven piles and associated pile caps, it is not proposed to have any other overwater element of the bridge below high tide level.

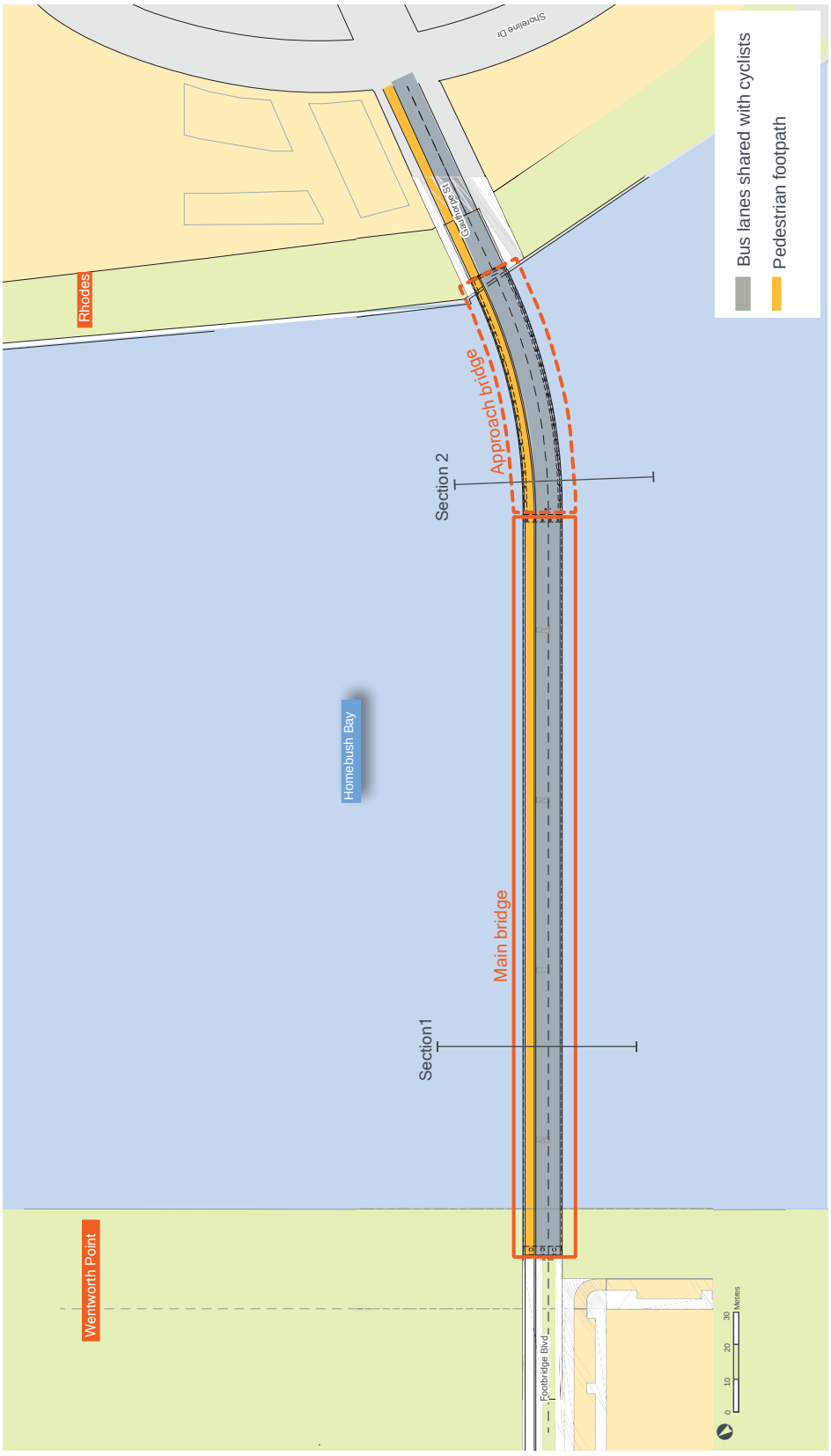


Figure 4.1 – Proposed Homebush Bay Bridge in plan

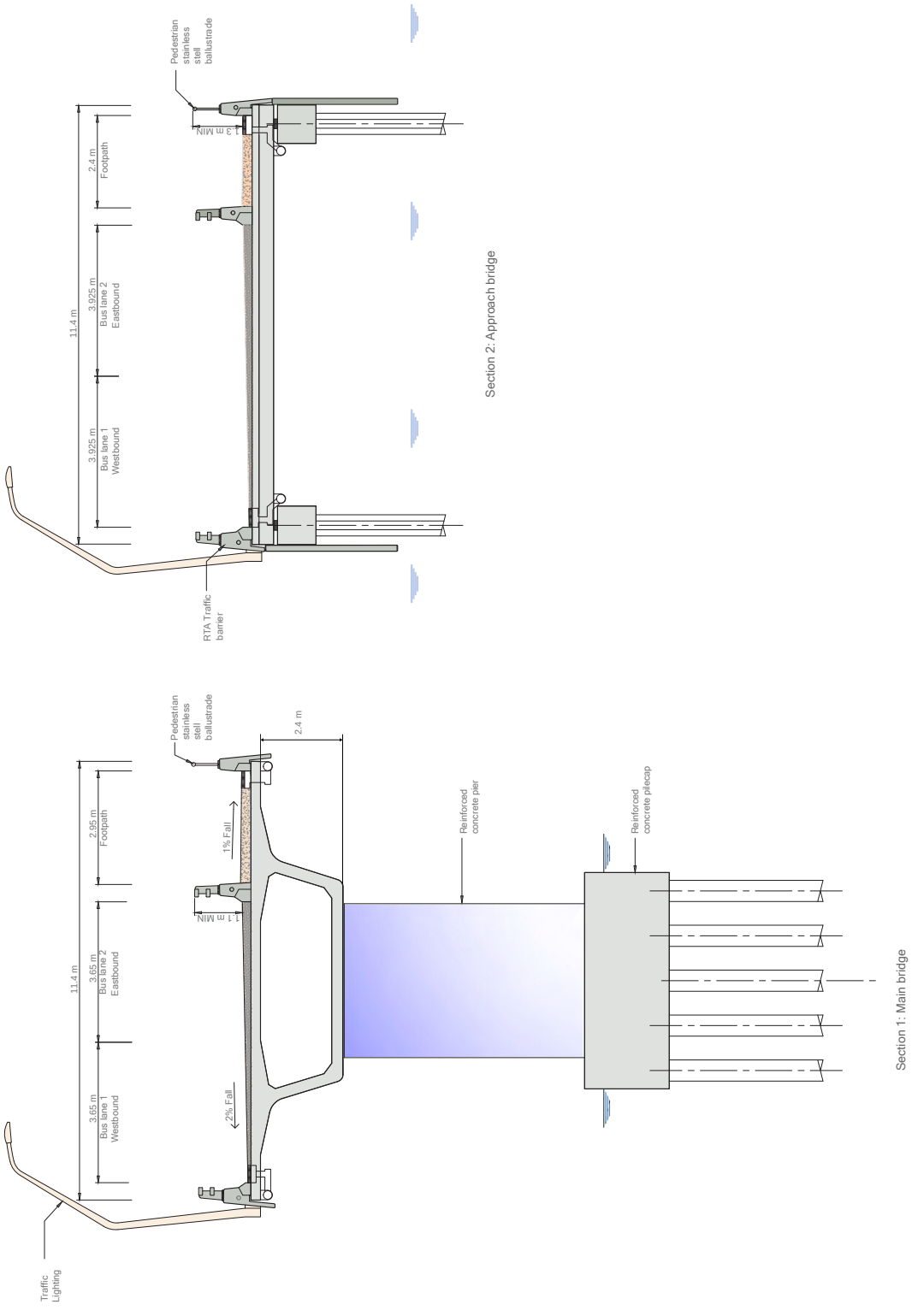


Figure 4.2 – Proposed Homebush Bay Bridge in cross-section looking west

4.2 Design rationale

The proposed bridge has been designed to connect the communities of Rhodes and Wentworth Point. Connecting these two currently separate communities would bring complementary benefits to each. In particular, the bridge would connect the Wentworth Point community to the Rhodes railway station and thereby change the transport preferences of many in the community.

The overall design of the bridge balances cost, constructability, aesthetics and functionality considerations with the environmental wellbeing of the waterway it traverses and connections with the communities at either end. Evolution of the Homebush Bay Bridge alignment and configuration rationale is described in Chapter 3. Engineering design drawings are presented in Appendix C.

4.2.1 Length

The length of the bridge (300m) has been determined by the preferred alignment (Alignment C2 described in Chapter 3) which achieves better connections with existing and future street grids and footpaths at Rhodes and Wentworth Point.

4.2.2 Vertical alignment and navigable clearance

The vertical alignment (i.e. the vertical profile of the bridge along its length) of the bridge is set by the considerations listed in Table 4.2. Some of these considerations have been identified by stakeholders during the consultation carried out for the proposal (Refer to Chapter 6 Consultation).

Table 4.2 – Height and vertical alignment considerations

Consideration	Description
Navigable clearance	A minimum 5.7 m vertical clearance is required to the underside of the bridge (at High Water Sea Level) over a 20 m width of navigable channel to provide navigational clearance for vessels. Also, a clearance width of at least 39 m between bridge pile caps is required with 3 m minimum headroom (at HWSL) for the proposed Rowing NSW race course.
Crest height - foreshore clearance at Wentworth Point	At Wentworth Point, sufficient headroom is required under the bridge at the planned foreshore park. A clearance under the bridge of approximately 3.5 m would be achieved based on the minimum clearance required for the navigable channel.
Gradient	The bridge must adhere to a maximum gradient of 1:33 to provide full accessibility in accordance with Australian Standard AS 1428.1.
Landing level at Rhodes	The landing level is constrained by the predicted 1-in-2,000 years extreme sea level event for year 2100 (Refer to Chapter 10 Climate change) and the maximum gradient of 1:33 (AS 1428.1) falling from the bridge crest to a landing level between 2.8 and 3.5 m AHD. The final landing level would be determined during the detailed design stage and in consultation with City of Canada Bay Council.
Landing level at Wentworth Point	The landing level is constrained by the approach levels of Footbridge Boulevard. Under the existing development proposal for Lot 122 DP 1156412, Footbridge Boulevard is proposed to be elevated as to connect to the bridge landing at a level of approximately 7.6 m AHD.

Vertical clearances between 3 m and 6.5 m above mean high water spring level have been considered for the navigable channel. A minimum vertical clearance of 5.7 m was found to be preferred solution as the deck level of the bridge is governed by:

- The required level at the Rhodes foreshore landing allowing for the extreme high water level based on current predictions for sea level rise from global warming over the design service life of the bridge.
- Achieving a gradient of less than 1:33 for accessibility across the bridge from the Rhodes shore.
- Achieving adequate headroom under the bridge on the Wentworth point foreshore.

The vertical clearance under the bridge structure is provided to ensure:

- Adequate freeboard under extreme high water levels based on current predictions for sea level rise from global warming over the design service life of the bridge
- 3 m minimum vertical clearance above mean high water spring level (under two adjacent spans) for the proposed Rowing NSW race course with a clear width between bridge pile caps of at least 39 m.
- 5.7 m minimum vertical clearance above mean high water spring level over a clear width of at least 20 m in the deepest part of the bay, accessible to emergency services vessels and workboats associated with construction and maintenance of the bridge and other infrastructure on Homebush Bay.

4.2.3 Width and horizontal alignment

The width and horizontal alignment (the horizontal profile of the bridge along its width) of the proposed bridge is set by the considerations listed in Table 4.3. Some of these considerations have been identified by stakeholders during the consultation carried out for the proposal (Refer to Chapter 6 Consultation).

Table 4.3 – Width and horizontal alignment considerations

Consideration	Description
Width	The width of the bridge has been determined by the preferred lane configuration (Option 2C described in Chapter 3), which allows for two-way bus and cyclist access and a pedestrian footpath. This corresponds to a width of 11.4m.
Landing at Rhodes	The approach bridge would align with Gauthorpe Street, with the centreline of the proposed two bus lanes aligned with the centreline of the Gauthorpe Street road reservation. The footpath would extend from the northern side of the bridge through the proposed foreshore park to join Rhodes street pathway system.
Landing at Wentworth Point	The proposed two bus lanes bridge would align with Footbridge Boulevard, with the eastbound bus lane kerb line aligned with the kerb line for Footbridge Boulevard. The footpath would be located on the northern side of the bridge adjacent to the proposed park at Wentworth Point and would directly connect to the street pathway adjoining the proposed central park.

Ground levels

Survey plans for Rhodes and Wentwoth Point are presented in Appendix C.

The ground levels shown in the plans are currently in transition, due to the continuing redevelopment of the Homebush Bay area.

The survey plans in Appendix C show that the ground level at the area to be occupied by the bridge landing at Rhodes is about 3.2 m AHD. It is understood City of Canada Bay Council will modify these ground levels in the near future as part of its proposed community facility and foreshore works. The final ground level is yet to be determined by Council but they are likely to be between 2.8 and 3.5 m AHD. The bridge design team would continue consulting with Council during detailed design to respond to the final ground levels.

The survey plans in Appendix C also show that the existing ground level at the area to be occupied by the bridge landing at Wentworth Point is between 1.8 and 2.0 m AHD. This level will be increased to approximately 6.9 m AHD as part of the proposal for the Wentworth Point development.

4.2.4 Bridge relationship to Rhodes and Wentworth Point

At Rhodes, it is proposed to construct a simple curved approach bridge as an extension of Gauthorpe Street. This alignment with Gauthorpe Street would be perpendicular to the railway line, Shoreline Avenue, Marquet Street and Walker Street, which would complement well the grid of Rhodes.

At Wentworth Point, the bridge would comprise of a box girder with cantilevered edges. These edges help to create a deep shadow line, which serves to present a thinner elevation to the Homebush Bay waterway. The bridge alignment with Footbridge Boulevard would be perpendicular to the foreshore, Monza Drive and Hill Road which would help form the block grid of Lot 122 DP 1156412.

4.2.5 Appearance, bulk and scale

The bridge would be launched from a higher level at Wentworth Point, arriving at a lower level at Rhodes. This difference would make the bridge appear very low-slung, more so than if it were rising as an arch from a low level at each shoreline. Although the bridge would rise slightly at the Wentworth Point end, to a crown over the water, the overall appearance would be of a structure that flows seamlessly from Wentworth Point and ramps down to Rhodes in a simple and unaffected way.

The level difference between Rhodes and Wentworth Point generates quite different design demands on the appearance of each of the bridge's junctions with the land:

- At Rhodes, the bridge would merge with the shallow mudflat before reaching the shore.

- At Wentworth Point, the bridge abutment would reach from the adjacent, deeper water above the foreshore promenade.

The visual definition of the bridge would not be confined to its span over the waterway. At each end, the bridge would appear to reach onto the land to the point where its abutments intersect with the topography:

- At Rhodes, the balustrades would continue just beyond the bridge onto the land.
- At Wentworth Point, the abutment cladding and balustrades would extend to the point where the bridge gradient meets the land-based roadway.

Tidal levels, as well as the predicted level of the water due to sea level rise, determine the safe distance from the water at which the steel bearings (bearings are the mechanical elements that are placed between the bridge deck and the bridge piers) of the bridge can be located. This, in turn, determines the location of the last structural support for the spanning sections of the bridge and the beginning of the solid precast skirting. Each of the bridge landings would be related aesthetically by the use of common precast concrete panels.

4.3 Structural design considerations

4.3.1 Design loads

All bridge design loads would be in accordance with Australian Standard AS 5100 Bridge Design (set). The following are key design loads:

- Traffic load – The proposed two lanes would be used for bus, emergency vehicles and general services (garbage, maintenance vehicles) traffic. The correspondent traffic load category under AS 5100 is T44 which would be adopted for the bridge design loads.
- Fatigue loads – A route factor of 0.3 with an estimated daily traffic of 120 heavy vehicles per day per lane would form the basis for fatigue design.
- Pedestrian loads – A normal pedestrian loading set out in AS 5100 part 2 would be considered.
- Thermal effects – The proposed bridge location accords with AS 5100 'Region II, Coastal, 1,000 ms above sea level'.
- Collision loads – Vessel impact risk would be considered and collision load case considered accordingly for collision on both bridge substructures and superstructures.
- Wind loading – The Bridge would be designed for a wind average return interval of 20 years for Serviceability Limit State and an average return interval of 2,000 years for Ultimate Limit State.
- Earthquake loading: The appropriate earthquake loading for the bridge would be Bridge Earthquake Design Category BEDC-1.

4.3.2 Bridge durability

The material parameters for the design and construction of the bridge would be set by AS 5100.

Design life

The structural components of the bridge would be designed for a service life of 100

years during which only minor maintenance works would be expected.

Mechanical devices such as bearings, expansion joints, sign gantries, light poles and marine signs would be designed for a service life of 30 years.

Exposure

The exposure classification of different bridge elements would be determined in accordance with Australian Standards AS 4997 (Guidelines for the Design of Maritime Structures) and AS 5100 (Bridge Design Set) taking into account the aggressive marine environment of Homebush Bay. The exposure classification of different bridge elements would be also determined by the following RMS specifications:

- Aboveground/water structures – B2.
- Permanently submerged – B2.
- Internal surfaces of box girder – B1.
- In tidal/splash/spray zones – C.
- Concrete specifications B80

Particular attention would be given to the concrete mix design to ensure a satisfactory weathering of the structure over time. In particular, the water-to-cement ratio would be maintained to a relatively low level. Cement content and binding type would be suitable for marine environments with possible use of blended cements for the most severely exposed structural elements. Concrete mix would contain corrosion inhibitors that prevent corrosion (for example, corrosion from acid sulfate soils).

4.4 Structural design elements

This section provides details of the main structural design elements of the proposed bridge. Engineering drawings showing these elements are provided in Appendix C.

4.4.1 Structural system

As shown in Figure 4.2, the proposal comprises:

- Approach bridge (Travelling over the remediated section of Homebush Bay on the Rhodes side. Approximately 73.3 m length) – A bridge comprising continuous deck units from the abutment on the Rhodes to the fifth pier located in the bay.
- Main bridge (Travelling over the unremediated section of Homebush Bay. Approximately 222.15 m length): A five-span single-cell conventional box girder bridge from the abutment on Wentworth Point to the fifth pier that would be located in the bay.

4.4.2 Spans and pier locations

Four piers would be located in the bay to support the main bridge. The approach bridge would be supported by continuous headstocks directly supported and integral with piles in the form of either steel or concrete.

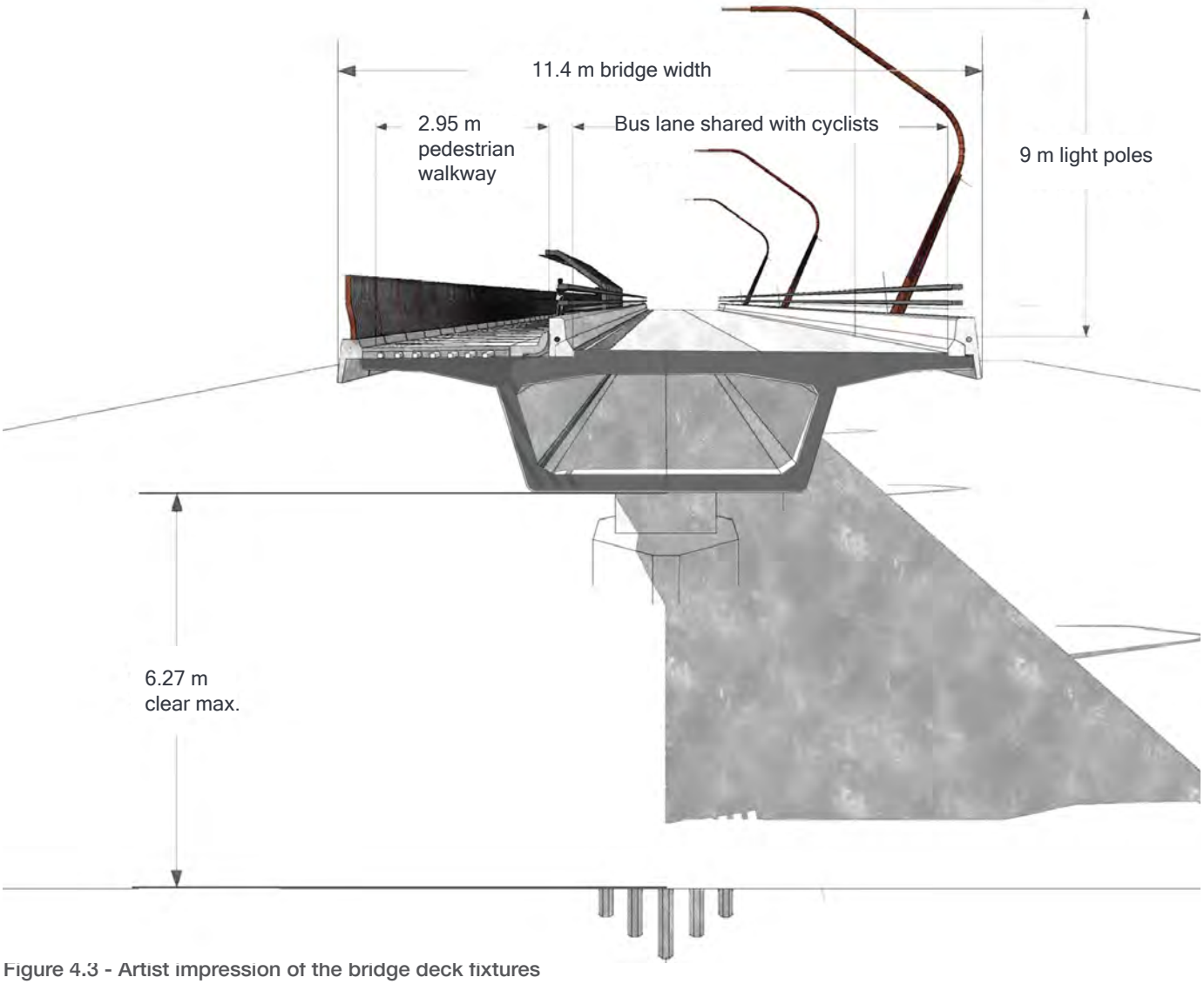


Figure 4.3 - Artist impression of the bridge deck fixtures

The end and internal spans of the main bridge would be distributed to optimise the structural efficiency of the spans. This is also a logical span distribution from an architectural point of view.

4.4.3 Superstructure

Approach bridge

The approach bridge superstructure would consist of approximately 75 deep, precast, prestressed concrete planks installed transversely on laminated elastomeric bearings or mortar pads with an in-situ concrete topping slab. The planks would bear at each end on continuous reinforced concrete headstocks, cast integrally with the precast piles. The use of concrete planks along the approach bridge superstructure would be sympathetic to the recently remediated section of the bay.

Approach bridge

The main bridge superstructure would comprise a single-cell conventional box girder with a constant depth of 2.4 m as shown in Figure 4.1. The depth-to-span ratio would be kept constant to 1:21 for the internal spans, which is standard for this type of bridge.

4.4.4 Deck

The deck of the main bridge and the approach bridge comprise of:

- Two lanes (east bound and west bound) for buses, cyclist, emergency and maintenance vehicles.
- A footpath at the northern edge of the bridge for pedestrians.
- Fixtures including safety barriers,balustrades, rest stops, shade structures, lighting poles. Bridge deck fixtures are discussed in detail in Section 4.5.

A sketch of the proposed bridge deck is presented in Figure 4.3.

4.4.5 Piers

To harmoniously match the shape of the main bridge superstructure, and for architectural consistency, the piers would be rectangular, constructed from reinforced concrete. The cross-sectional dimensions would be approximately 4 m by 1.8 m.

The piers of the main bridge would be located in the bay and spaced at 51-m intervals. The two central piers would be cast integral with the superstructure while the two edge piers would provide an articulated connection with the superstructure. These articulations are required to release the longitudinal movements of the deck, which are significant above the edge piers. This would avoid the generation of detrimental forces in the piers while the deck expands and contracts under thermal and sustained loads.

4.4.6 Foundations

The bridge foundations would comprise piles placed into bedrock supporting concrete pile caps and piers. Concrete pile caps would require a pile group of at least 14 550 mm diamtetre octagonal piles and would be constructed of reinforced concrete, partially submerged but visible at all times for navigational safety reasons. All pile caps would have a similar shape and top level for consistency and aesthetics.

Steel tubular piles may be also considered during the detailed design of the bridge. These would require a pile group of at least 10 1 m diameter circular hollow piles.

Both concrete and steel tubular piles are considered to be suitable to the environmental conditions and the contaminated nature of the Homebush Bay seabed.

Piles and associated pile caps would be the only overwater elements of the bridge below high tide level.

4.4.7 Abutments

Reinforced concrete abutments would support the end-spans of the approach bridge and the main bridge.

On the Rhodes side, driving of the abutment piles and construction of the abutment headstock would take place behind the seawall to minimise risks to its structural integrity.

On the Wentworth Point side, construction of the main bridge abutment would be coordinated with the Wentworth Point development (Lot 122 DP 1156412). The superstructure would be supported by pot/spherical bearings at this location.

4.4.8 Approach roads

Approach roads would connect to:

- Gauthorpe Street on the Rhodes side. The approach road to Gauthorpe Street would be a continuation of the bus lanes and footpath configuration associated with the approach bridge.
- Footbridge Boulevard on the Wentworth Point side. The portion of Footbridge Boulevard that would be constructed and approved as part of Lot 122 DP 1156412 would provide the connection between the main bridge and Hill Road.

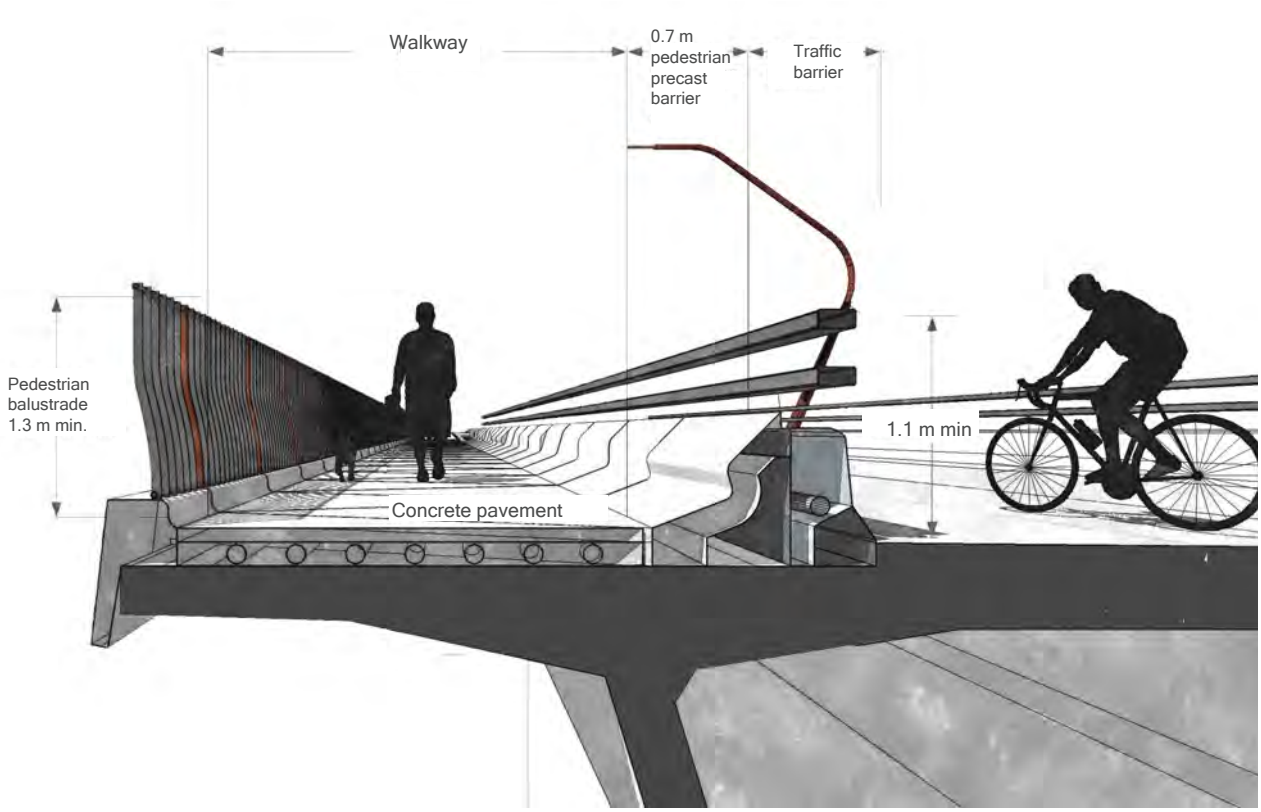


Figure 4.4 - Artist impression of the bridge deck fixtures

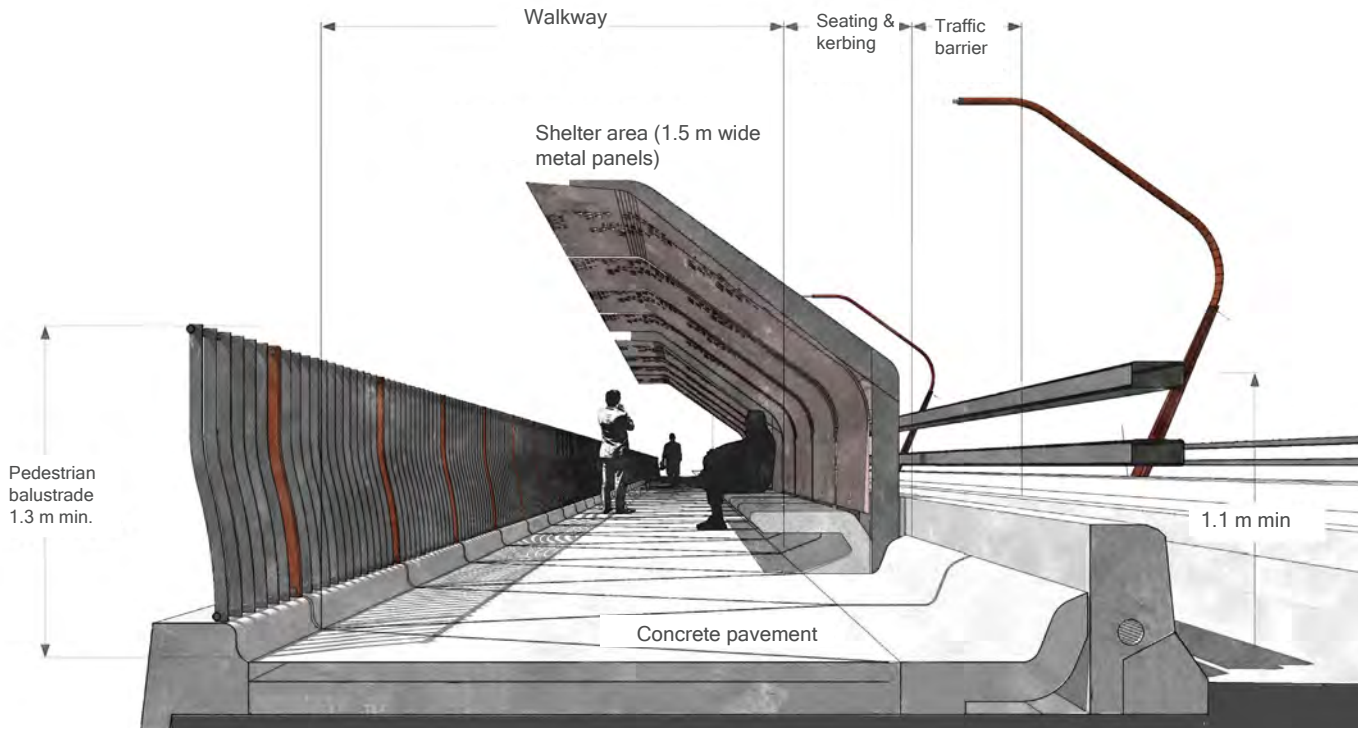


Figure 4.5 - Artist impression of the bridge deck fixtures

4.5 Bridge deck fixtures

The deck fixtures of the approach bridge and main bridge deck would be responsive to the bridge lane configurations. Deck fixtures configuration is described below. An artist impression showing the bridge deck fixtures at selected locations is presented in Figure 4.4 and Figure 4.5, detailed drawings of these fixtures are presented in Appendix C.

4.5.1 Safety barriers

The bridge would be equipped with traffic barriers on the northern and southern sides of the pavement. To ensure bridge symmetry, the barriers on both sides of the bridge would match and comply with the absolute minimum effective height.

4.5.2 Balustrades

Galvanised steel balustrades would be installed on the northern side of the bridge to ensure pedestrian safety. The balustrades allow sunlight onto the bridge deck and maximise views from the bridge.

4.5.3 Rest stops and shade structures

Pedestrian rest stops with seating would be provided at a number of locations (Figure 4.5). Shade structures would be provided at a number of rest stops. The current concept (identified for costing purposes) is for shelters that may be constructed from galvanised steel. These would provide shade from overhead summer sun as well as adverse weather from the south. They would allow winter sun to project onto the seats.

4.5.4 Lighting

The bridge lighting design would comply with *Australian Standard AS1158 Lighting for roads and public spaces*, which outlines the design parameters for road lighting on vehicular road and pedestrian, as well as *Australian Standard 4282 Control of the obtrusive effects of outdoor lighting*, which deals with the obtrusive lighting that would affect the adjoining residential development.

Lighting Criteria

The bus lane lighting would be in accordance with AS1158.1.1 Vehicular Traffic (Category V) Lighting. Based on the primary use of the lanes and the volume of traffic anticipated, the bus lane lighting would be designed to category V3 as per table 2.1 of the AS1158.1.1.

The footpath lighting would be in accordance with AS1158.3.1 Pedestrian Area (Category P) Lighting. Based on design categories set in table 2.1 of the AS 1158.3.1, the footpath on the bridge would be illuminated to either category P2 or P3.

Specific lighting requirements for the proposed CCTV system (used for bus only access control) would be taken into consideration during the detailed design stage.

As the bridge would be in close proximity to residential buildings, it is important to ensure the lighting produced by the bridge does not result in undesirable spill light to the surrounding residential development. In this regard, the proposed bridge lighting arrangements would comply with AS4282.

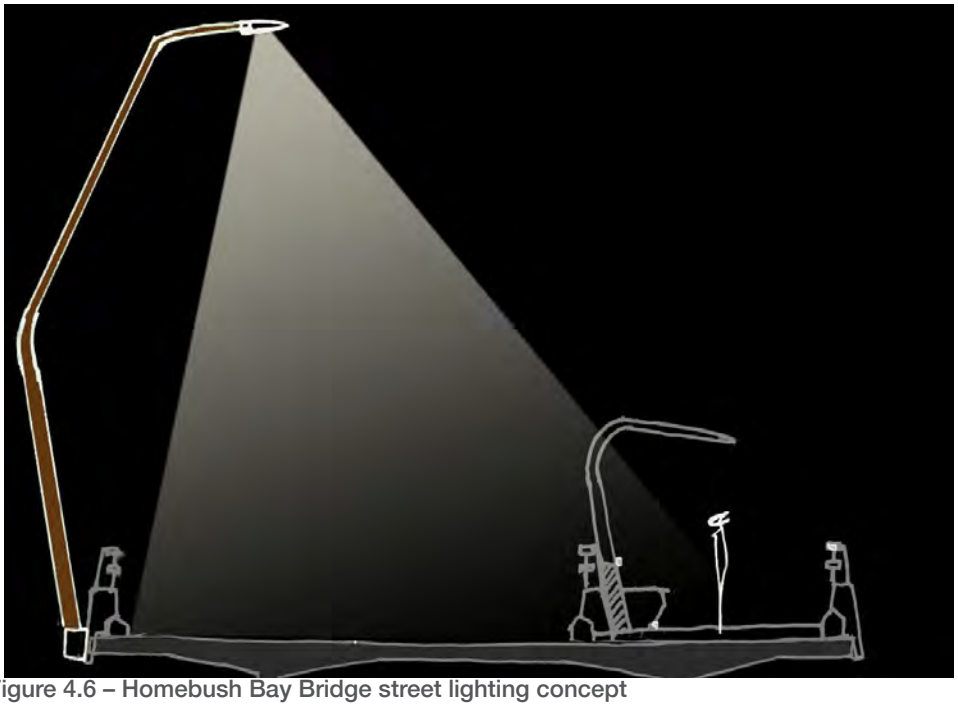


Figure 4.6 – Homebush Bay Bridge street lighting concept

Lighting Concept

The lighting concept for the bus lanes, footpath and piers is presented in Figure 4.6 and Figure 4.7.

To provide the vehicular and pedestrian lighting level, 9m high custom made poles are proposed to be installed on the southern edge of the bridge, spacing at an estimated 25 m apart. LED street luminaires would be considered upon the pole, to provide the lighting required on the bus lanes. LED street luminaires have a longer lamp life than a conventional lighting system, thus reducing maintenance requirements.

A dimming system is proposed to provide additional lighting control, minimising the potential light spill to the adjoining residential development. This element would be installed through the length of the bridge to provide a uniform appearance. Cool white colour temperature would be installed for the pole mounted fitting for good colour rendering, as well as to be in line with the adjoining suburban street lighting lamp colour.

Continuous LED handrail lighting is proposed at the balustrades on the footpath side. The fixtures would be concealed and incorporated into the handrail to enhance the aesthetic of the bridge, improve the pedestrian journey experience and supplement the lighting level required on the pedestrian footpath. The low mounting height of the handrail lighting would reduce interference of the viewing of the surrounding environment from the bridge.

Under bench LED lighting are proposed at the precast bench to help identify and highlight these resting areas and to provide a more comfortable ambience for the pedestrian to approach. Warm white lamp colour would be installed for the lighting on the pedestrian side, in order to provide a more intimate and welcoming atmosphere.

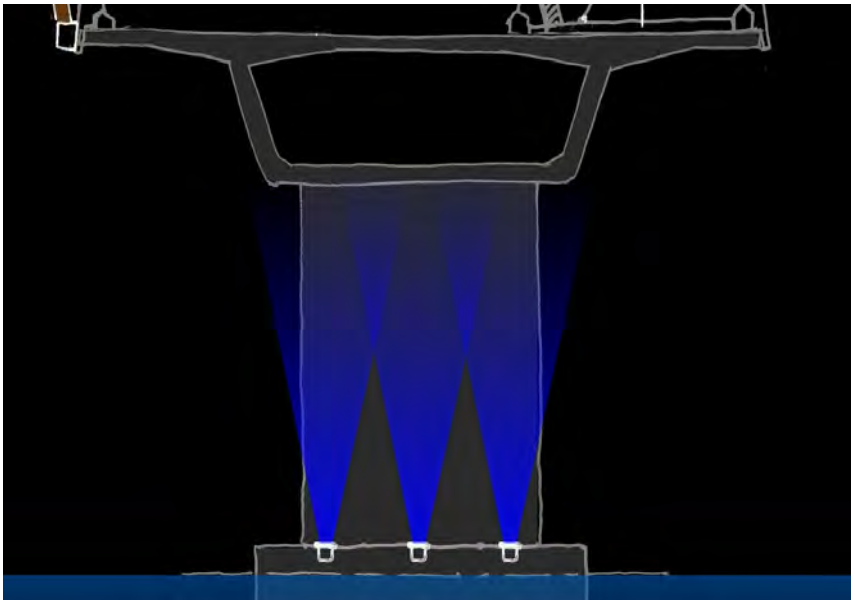


Figure 4.7– Homebush Bay Bridge pier lighting concept

Architectural lighting to the piers and seawalls underside the bridge would help identify the elements for any night time water traffic and provide the bridge with its own character. Colour LED uplights would be installed at the piers and on the floor slab adjacent to the seawall, providing a soft glow to the vertical surface as well as the underside of the bridge.

4.6 Bridge services

4.6.1 Electrical services

Details on the proposed electrical services for the bridge are presented below. Consultation with energy providers would be carried out at the detailed design stage to arrange the provision of such services to the proposal.

Lighting, small power and ancillary services

Electricity would be provided to the approach bridge and main bridge services as required. Services are likely to include:

- Functional road lighting.
- Functional footpath lighting.
- Marine lighting.
- Architectural lighting.
- Traffic control.
- Signage.

The majority of the electrical load would be attributed to lighting. As such, lighting circuits would be distributed as three-phase circuits with single-phase tap-offs at each lighting pole. Access panels would be located near the base of each lighting pole and would be of sufficient size to allow for cables to be pulled through and for general maintenance activities to be carried out. Residual-current device protection of circuits would be provided as required.

Cable distribution

Cable routes for the footpath lighting will be provided within the structure, the exact location would be determined during design development stage and cables routes for the road lighting would depend on the final location of the lighting poles with respect to the traffic barriers. It is anticipated that a cable route may be provided within the traffic barrier construction or within any structure required to mount the poles behind the traffic barrier.

A vertical route would be provided within the bridge pier structures to supply the proposed lighting mounted on, or within, the pier base. Access would be provided as required at the transition point into the pier structure from deck level, and at the base of the pier structure.

Cableways for the handrail lighting would be integrated into the handrail structure.

Standby power

No standby power supplies would be required for services to the bridge.

Lightning protection and earthing

The earthing arrangement for the power supply to the bridge would be in accordance with Ausgrid and Australian Standards. Any intrinsic metal work would be bonded to form a continuous system to earth.

Drainage

A concept of the proposed drainage arrangement for the bridge is presented in Appendix C drawing D102. The main drainage elements are the bridge drainage and the drainage at and near the abutments.

Consultation with City of Canada Bay Council and Auburn Council would be undertaken during the detailed design stage to arrange the bridge drainage connection to the Rhodes and Wentworth Point stormwater networks.

Bridge drainage

The variable longitudinal gradient combined with pavement cross-falls would reduce the need for drainage equipment on the superstructure. However, a drainage strategy has been developed to prevent any flow onto traffic lanes up to the minor (20 years) average recurrence interval event. The drainage strategy for the bridge would involve:

- Grate inlets at intervals of up to 30 ms to capture runoff and discharge flows to the abutment drainage networks. The inlets have been sized to allow for 20% blockage of inlet capacity.
- Vertical drop pipes that would connect to a carrier pipe below. The pipes would be aligned with the longitudinal gradient of the bridge, which would enable the main carrier pipe to achieve a self-cleansing velocity in the pipe (0.6 m per second for six months' average recurrence interval for storm lasting up to 30 minutes). Pipes have been sized to achieve a minimum 150 mm freeboard to the road surface for the minor storm event (20-year average recurrence interval).
- Carrier pipe as outlined in the bullet point above. This would be installed as close as possible to the concrete box girder to conceal it from view (when viewed in the horizontal).
- Drainage within the concrete box girders to avoid pooling of water. This would involve providing U-PVC drainage outlets at each low point.

Drainage at and near the abutments

The bridge drainage networks at the abutments would connect into the approach drainage system.

There would also be at least one gross pollutant trap installed in abutment drainage networks to capture large pieces of debris (> 5 mm), grease and oil spills. The size and capacity of the gross pollutant trap would be determined during the detailed design stage.

4.6.2 Allowance for utilities

This section provides details on public utilities that have expressed an interest in using the proposed bridge to carry their infrastructure. It is informed by the consultation carried out to date with public utility providers (Refer to Chapter 6).

Recycled water main

Homebush Bay Bridge would enable Sydney Water to provide a recycled water main to Rhodes. If it was installed, the recycled water main would be 300 mm in diameter and installed on the proposed bridge in a designated duct within the box girder or under the approach bridge.

Electricity and telecommunications

The proposed bridge would also provide an opportunity for a utilities corridor to accommodate future electricity and telecommunications services. The requirements of the public utility providers are still to be confirmed, but an allowance would be made for:

- 6 x 125mm ducts for high-voltage electrical cables.
- 2 x 100 mm ducts for telecommunications.

It is anticipated that cables would be laid across the span of the bridge without requiring intermediate cable access or pulling chambers.

4.7 Landscape treatment

No landscape planting is proposed as part of the proposal as the proposal boundaries are confined to the bridge and edge of the approach roads. The bridge landings on both sides of the bay have been developed to integrate with any future landscape treatments implemented in the adjacent open space and future private developments.

4.8 Construction

This Section presents details on the proposed construction methodology for the proposal including an indicative construction timeframe, normal construction hours, construction sites and activities and likely construction equipment and material to be utilised.

4.8.1 Construction timeframe

The project would have an estimated two-year construction timeframe, as indicated in Table 4.4.

Table 4.4 - Estimated construction timeframe

Stage	Timeframe
Earthworks and pier/foundation construction	10 months
Bridge construction	12 months
Finishing works	2 months

4.8.2 Working hours

The normal construction hours would be:

- Monday to Friday 7.00 am to 6.00 pm.
- Saturdays 8.00 am to 1.00 pm.

No construction works are proposed on Sundays or Public Holidays.

A small number of construction tasks would required to be carried out continuously (e.g. concrete pouring) and therefore may potentially fall outside of the standard hours. Also, some work may be scheduled outside normal construction hour as to reduce impact on residents or road users (e.g. delivery of materials as requested by the police or other authorities for safety reasons or emergency works).

Any work required outside normal construction hours would be undertaken whenever possible after prior notification to Rhodes and Wentworth Point residents and Auburn and City of Canada Bay Councils.

4.8.3 Construction sites

There would be two construction sites on either side of the bridge alignment as shown on Figure 4.8, with a combined footprint of approximately 10,300 m^2. The location of these sites is considered suitable as they are reasonably close to the location of the proposed bridge landings.

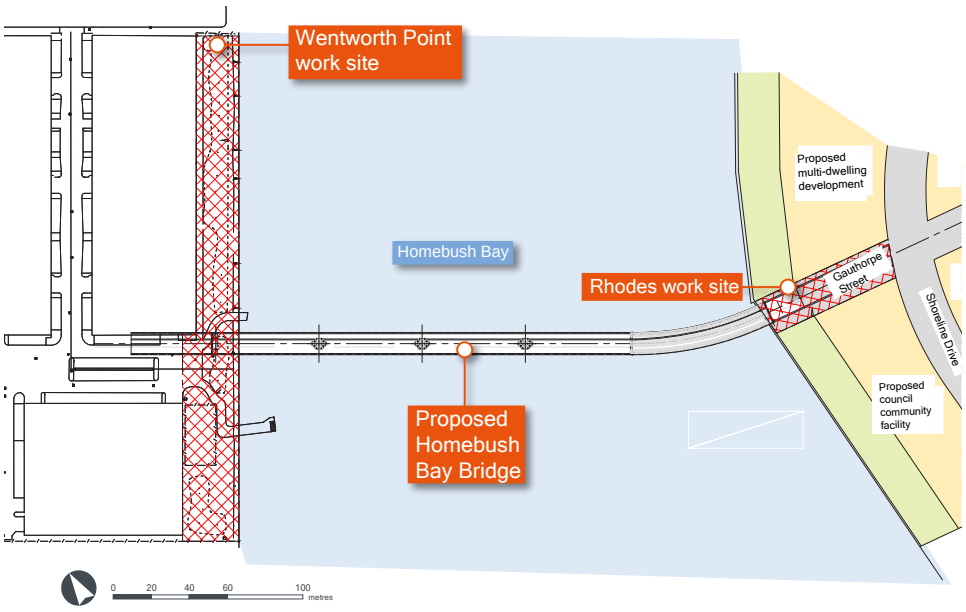


Figure 4.8 – Indicative footprint of the proposed construction work sites

Most land-based construction activities would occur on the Wentworth Point side of the bay. This would be the primary construction site with all materials and equipment storage, site offices, reinforcement assembly jigs, construction plant parking, and workers area.

Rhodes has limited storage area and access. The construction activities on the Rhodes side would be restricted and limited to the incremental launch of the approach bridge and the supplies of materials that cannot be conveniently delivered and installed from the Wentworth Point side.

4.8.4 Pre-construction activities

Site preparation works prior to construction of any permanent works would include, but not be limited to:

- Installing site fences and warning/information signs.
- Installing road signs and detour signs if required.
- Excavating on both sides of the bay.
- Installing site sheds (offices, workers' space, etc).
- Installing utilities (water, electricity).

4.8.5 Land-based construction activities

Land-based construction would include construction of an abutment on each foreshore, as follows.

On the Rhodes side, construction activities would include:

- Building permanent earthworks as part of the Rhodes approaches. Suitable selected imported fill would be required. Local fill from the project construction sites would be used where possible.
- Constructing the foundations, abutment walls and retaining structures.
- Finishing works and architectural treatment of abutment walls.
- Restoration of disturbed areas during the course of the works.

The Wentworth Point abutment would be cast against the proposed car park building constructed under Footbridge Boulevard. Coordination with the proposed development at Lot 122 DP 1156412 would be undertaken. The construction activities would include, but would not be limited to:

- Constructing the abutment walls and retaining structures.
- Casting the western end-span on falsework. Between about six and nine ms of superstructure are expected to be cast using this method.
- Finishing works and architectural treatment of abutment walls.

In addition, on both sides:

- About six precast driven piles would be installed (an alternative would be the installation of equivalent-load-capacity steel, circular hollow-section piles). The final number of piles would be determined during detailed design.
- Finishing works, including edge barriers, surfacing, drainage and lighting.

4.8.6 Marine-based construction activities

The proposed construction methodology for marine-based construction activities has been informed by the contamination and contamination auditor consultant for the proposal (Refer to Appendix H and Appendix I) and by the feedback received from government authorities and other stakeholders. It aims to minimise the disturbance of sediments on the bay including the area that has been recently remediated at Rhodes.

Marine-based construction would involve installing piles, pile caps and piers, and installing the superstructure. Marine-based construction would not involve

excavation of contaminated sediments or material nor generation of hazardous waste. Construction would include, but not be limited to, the following activities.

Piles, pile caps and piers

Foundations would be required at each bridge pier to provide a firm support down to bedrock. Options for foundations at the pier locations include:

- Octagonal precast concrete or steel circular hollow-section piles driven to bedrock.
- Bored concrete piles cast within permanent steel casings driven to bedrock.
- Concrete footings cast within a large diameter steel tube or steel sheet pile cofferdam driven to bedrock.

The preferred approach would be defined during detailed design.

Piling would be carried out either from piling barges or barges supporting a piling rig, either from a temporary bridge or a temporary bund. Barges would be moored in position with concrete blocks, which would be removed on completion.

The piles would be lowered through the softer sediments under their own weight, or using vibration, and then driven through the firmer sediments into bedrock.

It is possible that additional temporary piles would need to be driven to facilitate pile load testing. These would either be retrieved or cut off at seabed level.

Once the piles have been installed, the bridge piers would be constructed from reinforced concrete using precast and/or in-situ methods.

Pile caps would be constructed using a precast sacrificial formwork, which would reduce and simplify the construction works and ensure high control over the finish of the exposed concrete surface for long-term durability and aesthetics.

Superstructure

The bridge superstructure would be constructed from reinforced and prestressed concrete. The proposed construction method would be in-situ precast.

The ‘balanced cantilever’ method would be used to construct the bridge superstructure in segments. This method is illustrated in Appendix C drawings S101 and S102. The segments would be cast off the pier in a balanced manner and in such a way that out-of-balance bending forces were minimised during the casting process.

Construction using in-situ concrete would require a travelling formwork system attached to the deck. Reinforcement and post-tensioning would be lifted by crane from barges. Concrete would be batched in a batch plant or delivered by ready mix truck to the Wentworth Point worksite, from where it would be pumped into the segment form. Alternatively, the concrete would be pumped from a barge, which would require concrete to be delivered to the barge using additional barge(s).

To complete the bridge adjacent to the abutments at either end of the bridge, eight to nine ms of superstructure not supported from the cantilevered bridge deck would be cast on falsework.

4.8.7 Land-based construction activities

Rhodes

The road from the end of Gauthorpe Street to the seawall would be constructed in basic form at the commencement of bridge construction to provide all-weather access to the Rhodes worksite.

Construction of the pedestrian path, kerb and guttering, street lighting, road surfacing, lane marking and signage would most likely occur towards the end of the construction period.

Wentworth Point

Construction of the pedestrian path, kerb and guttering, street lighting, road surfacing, lane marking and signage would occur towards the end of the construction period.

Completion of the Wentworth Point side would be coordinated to the construction works occurring on Lot 122 DP 1156412 including the construction of Footbridge Boulevard.

Land-based construction activites would not involve excavating or disturbing contaminated material nor generate hazardous waste.

4.8.8 Decommissioning activities and bridge opening

Decommissioning activities would include, but not be limited to:

- Cleaning up the site.
- Removing barriers, fences and other temporary structures.
- Removing site compounds, fencing, signage, etc.
- Removing material stockpiles.
- Providing full waterway access.
- Commissioning the lighting and security cameras.
- Opening the bridge.
- Rehabilitating of the construction compounds and other affected areas.

4.8.9 Construction equipment and materials

Construction equipment may include, but is not limited to:

- Excavation plant.
- Compaction plant, including rollers, vibrating rollers, concrete vibrators and trench plate compactors.
- Pneumatic jack hammers.
- Profiling and road-paving plant.
- Miscellaneous vehicles, including utilities, trucks, bogies and semi-trailers.
- Miscellaneous hand tools and equipment.
- Generators, lighting towers and signage.
- Various barges, workboats and pontoons.
- Piling rigs and various mobile cranes (each up to 200 tonnes).

- Concrete and grouting pumps and transport vehicles.
- Support trusses, stress jacks and scaffold systems.

Construction materials and approximate quantities are estimated in Table 4.5.

Table 4.5 – Construction materials

Construction materials	Approximate quantities
Concrete	2,900 m^3
Steel reinforcement	400 tonnes
Prestressing	70 tonnes
Road base	2,600 m^2
Structural steel	10 tonnes (if steel foundation piles are used rather than concrete)
Imported fill	To be determined
Exported fill	0

4.9 Future ownership

Sydney Olympic Park Authority (SOPA) would take ownership of the proposed Homebush Bay Bridge once completed.

Ownership of the bridge would require an amendment of the Sydney Olympic Park Authority Act 2001 to include the bridge, the land that supports it and a suitable access route to it within the definition of Sydney Olympic Park. The Minister for Roads and the relevant minister responsible for the Sydney Olympic Park Authority Act 2001 would extend the delegation related to SOPA's road authority and traffic authority functions to include the proposed bridge and access routes.

SOPA would lease from RMS the portions of land below the mean high water mark occupied by the bridge foundations. SOPA would also obtain a licence from City of Canada Bay Council for the roadway and abutments at the Rhodes landing, and a licence from Auburn Council for the abutments at the Wentworth Point landing.

4.10 Maintenance

No major maintenance works are expected during the first 30 years of the life of the bridge. Potential maintenance could include but not be limited to:

- Replacing bridge bearings.
- Replacing bridge expansion joints.
- Undertaking routine inspections.
- Inspecting post-tensioning anchorages.
- Maintaining and auscultation of asphalt.
- Inspecting all concrete structural components.
- Maintaining light poles.
- Maintaining deck furniture.
- Remediating vandalised components (when required).

Maintaining the bridge and all its components (structural as well as non-structural) would be the responsibility of the asset owner.

The bridge maintenance regime would be undertaken as per the RMS Quality Assurance Maintenance Specifications (M-Series Specifications).

4.10.1 Deck furniture

All deck furniture (e.g. barriers, pedestrian path, deck wearing surface and amenity furniture) could be easily accessible from the deck to enable any required maintenance and inspections.

Maintenance vehicles could be parked on the busway with appropriate warning signs allowing intervention of workers at all locations on the deck.

Any intervention required on the lighting poles (repairs, bulb changes, etc) could be carried out from an elevated working platform mounted on the deck. The platform would require appropriate health and safety measures.

4.10.2 Superstructure soffit and substructures

Superstructure soffit (both the main bridge and the approach bridge) and substructures (piers and pile caps) could be inspected from the bay by boat and any intervention could be undertaken from the bay.

4.10.3 Box girders

The inside of the box girder could be easily accessible and intervention anywhere in the box would not present any major difficulty. A minimum clearance of 1.8 ms inside the box could be maintained at each span.

Access could be possible through both abutments. This would be provided by a recess with a square hatch of at least 1.1 ms by 1.1 ms to allow person access from one span to the adjacent one.

Human access through the bottom flange of the box girder at some spans would be considered during detailed design.

The box girder would be considered a ‘confined space’. Therefore, health and safety requirements relating to confined spaces would apply if interventions were required inside the box.

4.10.4 Gross pollutant traps

Gross pollutant traps could be maintained on a regular basis unless there is a major spill on the road in which case the gross pollutant trap would be cleaned immediately and in accordance to the Operational Incident Response Plan for the bridge (Refer to Chapter 13).

5 Proposal cost and funding

This Chapter identifies the estimated cost and funding for the proposed Homebush Bay Bridge. In particular it adresses the following matters of consideration outlined in the Director General's requirements:

- Provision of an independent and detailed costing for the bridge construction and ongoing operation.
- Details of proposed funding arrangements and ownership, including any proposed Voluntary Planning Agreement with Government agencies and/ or Councils.

5.1 Proposal cost

The estimated cost for the proposal was prepared by Rider Levett Bucknall and is presented in Appendix F.

The proposed Homebush Bay Bridge is estimated to cost an estimated total of $43,320,000. A break down of the estimated costs for the relevant elements of the proposed bridge is shown in Table 5.1. The estimated cost of the proposed bridge was undertaken by Rider Levett Bucknall independently and fairly, based on engineering drawings and information provided by Arup and architectural and urban designs by Scott Carver.

Table 5.1 - Proposal cost estimate

Element	Approximate cost
DESIGN & CONSTRUCTION STAGE	**$36,220,000**
Piers and footings	**$8,030,000**
Including piles, pile caps, temporary works, piers and navigational aids	
Superstructure	**$13,040,000**
Including bridge deck, roadway, girders, bridge barriers and temporary works	
Land based work - Rhodes	**$1,280,000**
Including connection to Gauthorpe Street	
Land based work - Wentworth Point	**$5,410,000**
Including connections to Hill Road	
Finishes	**$1,450,000**
Including barriers, pedestrian protection, decorative lighting and street lighting	
Pedestrian experience	**$1,830,000**
Including shelters, decorative paving, public art and seating	
Professional fees	**$5,180,000**
Including Environmental Assessment and design	
OPERATIONAL STAGE (bridge operation and maintenance)	**$7,100,000**
Interest costs	$1,000,000
Sinking fund	$750,000
Development costs	$2,000,000
Escalation costs	$3,350,000
Total cost	**$43,320,000**

5.2 Proposal funding

Although the need for a connecting bridge has been identified for some time within several planning documents (refer to Section 2.5, Section 2.13, Section 2.14, Section 2.15 and Section 2.16) no government agency has set aside funding for it.

This is partly a consequence of the split in responsibilities between City of Canada Bay and Auburn City Councils as well as State interest given its role in setting the framework for redevelopment of the Rhodes and Wentworth Point peninsulas. It is also a reflection of government funding priorities.

Accordingly, the bridge is currently to be funded by the landowners of Wentworth Point as part of a Voluntary Planning Agreement (VPA) to be offered by Fairmead Business Proprietary Ltd (the proponent).

A VPA is proposed to be entered into by Fairmead Business Pty Ltd, the owner of land know as 1 Burroway Road, Wentworth Point (Lot 122 DP 1156412), with SOPA. Fairmead Business Pty Ltd will undertake to unconditionally construct the bridge as part of the redevelopment of 1 Burroway Road, Wentworth Point as well as ownership of the infrastructure and associated rights over land being accepted by SOPA.

The VPA is intended to not exclude all other planning obligations under the EP&A Act (such as for section 94, 94A 94EF). It requires Fairmead Business Pty Ltd to accept all risks associated with the construction and delivery of the bridge and provides adequate guarantees and warrantees as usually required such as for rectification of defects, transfer of lands, provision of securities, dispute resolution mechanisms, etc.

Adjoining landowners that are included in the proposal for amendment to the planning controls have a separate commercial arrangement with Fairmead Business Pty Ltd to contribute to the cost of the bridge. This approach is required to ensure that the VPA can be operational and practical. Initial feedback on a VPA was received from SOPA, Auburn Council and DP&I which will be subject to further refinement with SOPA and other stakeholders. The VPA will be subject to a separate public exhibition process.

The VPA would provide for the construction of the proposed bridge and its dedication to government authorities on completion. SOPA has agreed in principle to take ownership of the proposed bridge and accordingly, will be party to the VPA.

Should the VPA not proceed to execution, other means of Government or private funding may be available to construct and operate the proposed bridge.

6 Communications and consultation

This Chapter provides a summary of the stakeholder communications and consultation process undertaken during the preparation of the environmental assessment. It addresses the Director General's requirements related to consultation. Specifically, it addresses the following Director General requirements:

- The environmental assessment must reflect an appropriate and justified level of consultation with relevant stakeholders during the preparation of the Environmental Assessment, including:
  - Office of Environment and Heritage (EPA)
  - Former NSW Maritime (now RMS)
  - Transport NSW
  - Former RTA (now RMS)
  - City Rail
  - SOPA
  - Industry and Investment NSW
  - NSW Office of Water
  - City of Canada Bay Council
  - Auburn City Council
  - Specialist interest groups, the public and affected landowners.
- The environmental assessment must outline the consultation process, document all community consultation undertaken to date and identify the issues raised (including where these have been addressed in the environmental assessment).

A report documenting the community and stakeholder consultation process has been prepared by KJA consultants and is presented in Appendix D. Consultation with government authorities and public utility providers is documented in Appendix E.

6.1 Objectives

The objectives of the communications and consultation process were to:

- Create awareness of the Homebush Bay Bridge proposal with government authorities, the local community and other stakeholders.
- Deliver accurate, consistent and timely communications on the proposal during the planning and investigation phase.
- Help the project team to understand community attitudes towards the proposal.
- Develop and enhance positive relationships with key stakeholders and local community groups.
- Communicate the planning and approvals process, and timeframes.
- Identify potential issues, opportunities and constraints that needed to be considered.
- Seek feedback and input that could considered in the engineering design and the environmental assessment report.
- Ensure that consultation activities meet the Director General's requirements.

6.2 Key components of the consultation process

The Homebush Bay Bridge communications and consultation process commenced in late 2010. The key components of the process are outlined below.

6.2.1 Community reference group

A community reference group was established in November 2010. It provided a forum for representatives of local residents, interest groups, businesses, councils, the SOPA, the former NSW Maritime (now RMS), and Energy Australia to discuss ideas, issues and opportunities relating to the planning, design and future construction of the bridge.

It met on the following dates: 16 November 2010, 16 December 2010, 20 January 2011, 10 February 2011, 31 March 2011, 26 May 2011, and 14 July 2011.

6.2.2 Project website

A dedicated Homebush Bay Bridge website (www.homebushbaybridge.com.au) was launched in October 2010 to provide general information on the bridge proposal. The website is updated regularly and currently includes a copy of the project flyer, details of the Wentworth Point Information Day, a copy of the Minister's Major Project Declaration of the project, the Director General's requirements and a link to the Department of Planning and Infrastructure's project application page.

6.2.3 1800 community line and project email

A community information line (1800 252 040) and email address (info@homebushbaybridge.com.au) were established from the start of the consultation process to provide a central point of contact for all Homebush Bay Bridge enquiries. Both the number and email address were promoted via the website, in the Homebush Bay Bridge flyer and at community presentations.

About 30 phone calls/emails were received. Most enquires have related to the timing, status and anticipated completion of the bridge.

6.2.4 'Flyer'

An A4 double-sided flyer was produced and distributed at the Wentworth Point Spring Community Festival in October 2010, as well as at various stakeholder briefings.

The flyer included a general overview and key benefits of the proposal, along with details of the project website, the email address, and the 1800 number for access to more information.

6.2.5 Community information days

Two community information days were held to provide information about the proposal:

- Wentworth Point Spring Community Festival (October 2010). This was the first opportunity to provide general information to the community on the proposal and direct the community to the website for further information. More than 450 copies of the flyer were distributed on the day.

- Wentworth Point/Homebush Bay Bridge Community Information Day (5 March 2011). The information day was held at the Pulse Function Centre, Wentworth Point. Some 250 people attended the event and 28 feedback forms were received on the project.

6.3 Stakeholders

Stakeholders identified for the proposal, and consultation activities undertaken with them, are presented in Table 6.1.

Table 6.1 – Key stakeholders for the proposed Homebush Bay Bridge

Stakeholder	Consultation activities undertaken to date
Non-government authorities	
Local residents and businesses in Wentworth Point. Local residents and businesses from Rhodes. Community groups in the adjacent area of Newington. Rhodes shopping centre. Local community groups, including: - Rhodes Community Reference Group. - Wentworth Point Probus Club. - Canada Bay Bicycle Users Group (Bay Bug). - Newington Cycle Club. - Newington Public School. - Rhodes Sea Scouts. - Wentworth Point Kayak Club. - The Conservation Council of NSW.	Community reference group meetings. Face-to-face meetings. Project website. Community information line (1800 252 040). Correspondence via project email address (info@homebushbaybridge.com.au). Homebush Bay Bridge flyer. Community information day. (Refer to Appendix D).
Rowing NSW.	Consultation meetings. Email correspondence. Phone discussions. (Refer to Appendix D).
Adjacent landowners at Rhodes.	Consultation meetings. (Refer to Appendix D).
The Wentworth Point Probus Association.	Consultation meeting. (Refer to Appendix D).
Nature Conservation Council of NSW.	Phone discussions. Email correspondence. (Refer to Appendix D).
Members of Parliament for Auburn and Drummoyne.	Briefing note correspondence (Refer to Appendix D).

Stakeholder	Consultation activities undertaken to date
Utility providers: / Energy Australia*. / Sydney Water. / AGL. / NBN Co. / Jemena.	Telephone discussions. Email correspondence (Refer to Appendix E).
Thiess (Consultant undertaking remediation works at Rhodes)	Consultation meeting. (Refer to Appendix D).
Government authorities	
City of Canada Bay Council*. Auburn City Council*. NSW Maritime (now RMS)*. NSW Department of Transport. NSW RTA (now RMS). NSW STA. SOPA*.	Consultation meetings (Refer to Appendix E). Emails. Telephone discussions.
Office of Environment and Heritage (EPA).	Telephone discussions, email correspondence (via contamination auditor. See correspondence in Appendix E).
RailCorp. NSW Office of Water. Industry and Investment NSW (Fisheries).	Telephone discussions. Email correspondence (See correspondence in Appendix E).

* These stakeholders also attended some community reference group meetings.

6.4 Summary of issues raised during consultation

Issues raised during the communications and consultation process have been documented and considered by the design and environmental assessment team where appropriate. Issues would continue to be addressed through subsequent project stages.

6.4.1 Summary of issues raised by non-government authorities

Community reference group

Issues raised by the community reference group are summarised in Table 6.2.

Table 6.2– Issues raised by the Homebush Bay Bridge community reference group

No	Issue	Reference to where addressed in this report
1	Contamination in the bay and impact of disturbance from bridge construction.	Chapter 13 Appendix I Appendix J
2	Potential impact of water flows resulting in scouring and deposition of both remediated and unremediated areas of the bay floor, particularly at the Rhodes landing point.	Section 18.1
3	Ecology of the bay, and impact on birds and fish.	Chapter 16 Appendix L
4	Height clearances for boat access under the bridge.	Chapter 4 Appendix C
5	The height of the landing point at Wentworth Point and the impact of potential noise from buses on adjacent properties (landing point could be up to 2 storeys high). Consideration of designing steeper gradient for bus access.	Chapter 15 Appendix K Chapter 4
6	Accommodation of disabled access in relation to the above (i.e. consider footpath gradient for disable access).	Chapter 4 Appendix C
7	Potential liaison with other stakeholders for early works at landing points (particularly at Rhodes) to minimise future impact from noise on residents.	Section 18.7
8	Investigation and liaison with Thiess – which undertook the remediation works including the seawall reconstruction – to facilitate best outcome for integration of bridge landing with sea wall and promenade height at Rhodes.	Section 4.2 Consultation would be undertaken with City of Canada Bay Council.
9	Impact of climate change and potential future sea level and tidal changes.	Chapter 11
10	Updated survey of remediation and mud levels of bay to be undertaken or resolved during further planning and investigation.	Chapter 13 Appendix I Appendix J Survey of completed remediation works at Rhodes has been completed by others

No	Issue	Reference to where addressed in this report
11	Future presentations and involvement by EPA, cycling groups, traffic planners, wildlife experts, sport and recreation groups (Rowing NSW, dragon boats, etc).	Section 6.5
12	Impact of lights (both bridge and traffic) on residents.	Section 4.5.4 Bus lights would not spill into residential buildings as the bus lanes would be aligned with Gauthorpe Street and Footbridge Boulevard.
13	Protection of main piers from impact by vessels.	Chapter 12
14	Need to ensure future demographics of the area are considered in planning.	The environmental assessment has noted growth forecast and demographics for Rhodes, Wentworth Point and Auburn and City of Canada Bay local government areas.
15	Need to consider the timing of the proposed Wentworth Point school as it would provide access for Rhodes residents' children in the near term.	The environmental assessment has considered future known development proposals.
16	Traffic issues on local roads and traffic routing effects in Rhodes, including volume and size of buses.	Chapter 8
17	Designated cycleways (either side of bridge) need to be integrated into project.	Chapter 9 Appendix H
18	Concern over potential access by private vehicles in the future and the bridge becoming a 'rat run'. Need safeguards in place to ensure private vehicle traffic can never access the bridge.	Chapter 8
19	Location of potential school in Wentworth Point and Rhodes and future demographics.	The environmental assessment has considered future known development proposals.

Issues raised by other stakeholders

Issues raised by stakeholders other than the community reference group and government authorities are summarised in Table 6.3.

Table 6.3 – Issues raised by the other stakeholders

Issue	Reference to where addressed in this report
Public utilities	
Sydney Water has expressed interest in utilising the bridge to carry a 300 mm diameter recycled water main to link recycled water networks in Homebush Bay West and Rhodes.	Bridge design proposal has allowed for this (Chapter 4)

Issue	Reference to where addressed in this report
Rowing NSW	
Rowing NSW requests allowance for a proposed racing course. It would run parallel to Wentworth Point and comprise 6 lanes unmarked by buoys. Each lane would be 12.5 to 13 m wide. Vertical clearance of 3 m is required.	Bridge design proposal has allowed for this (Chapter 4)
Adjacent landowners at Rhodes	
The project should consider the proposed Rhodes development located north of the proposed approach road.	Bridge design proposal has allowed for this (Chapter 4)
Local residents identified the following uses as needed: shopping facilities, preschool and school, local park, additional parking and community housing.	Not relevant to the proposal
The local community raised concerns about the impact of high-rise buildings on the landscape.	Not relevant to the proposal
Some residents expressed their desire to see the existing wharves at the southern end of the bay restored and, possibly, one of the jetties maintained.	Not relevant to the proposal
There are safety concerns about buses sharing the bridge with cyclists and pedestrians.	Chapter 9 Appendix H

6.4.2 Summary of issues raised by government authorities

The issues raised by government authorities are presented in Table 6.4. The minutes of meetings with government authorities, and correspondence, are presented in Appendix D.

Table 6.4 – Issues raised by government authorities

Issues	Reference to where addressed in this report
City of Canada Bay Council (Note: A detailed response letter addressing Council's comments is provided in Appendix E)	
Proposed community centre	
Council would like its community centre and forecourt area to be the focal point of the Rhodes foreshore.	Chapter 9 Appendix H
Maintenance and construction issues	
The roadway and abutment through the park would require a licence to occupy the park. The licence shall include a provision that SOPA would be the maintaining and renewal authority for the bridge and associated infrastructure.	Chapter 4.9
The developer shall be responsible for constructing the disabled access ramps, adjusting the park and foreshore levels to suit the bridge, strengthening and raising the seawalls as a result of the bridge levels, and undertaking landscaping. A plan clearly showing the exact extent of works funded by the developer is requested as soon as possible for Council's further consideration. Council's view is that these works must be funded by the developer, as they have been made necessary due to the bridge.	Refer to response letter addressing Council's comments in Appendix E

Issues	Reference to where addressed in this report
Access issues and safety issues	
Planning for children walking across the bridge, potentially from Rhodes to a new school at Wentworth Point, should be incorporated into the bridge design. This would necessitate a physical barrier to prevent children from moving from the bridge walkway onto the bridge roadway.	Chapter 4 Appendix C
Council considers that the approach roadway through the foreshore park should operate as a shared 10 km/hr zone in keeping with the use of the park by pedestrians. Council requests that the proponent consult with Council's Access Committee in respect of the proposal.	Based on comments provided by transport authorities, the adopted speed limit is 50 km/h
Additional bus traffic on local Rhodes roads	
Assessment of the impact of the additional bus traffic on the roads in the Rhodes area is requested, with an indication of what ameliorative measures can and would be undertaken by the developer or other government authorities (i.e. STA, RMS) to ensure access for buses is adequate.	Chapter 8
Council requires information on the funding and location of bus shelters and associated infrastructure to ensure people's comfort and shelter when waiting for buses, and to encourage high use as soon as the services become available. This needs to be considered as part of public domain planning around the bridge landing area.	Refer to response letter addressing Council's comments in Appendix E
Bridge design in response to sea level rise.	Chapter 11
Council would expect the developer to raise and strengthen the seawall at the abutment and the ramps to accommodate the bridge levels. This would ensure that Council would not have to fund bridge abutment protection measures in the future, arising from sea level rise due to climate change.	Refer to response letter addressing Council's comments in Appendix E
The bridge abutment shall be immediately behind the seawall to minimise the bridge's occupation of the foreshore park and community centre forecourt. This would allow Council's foreshore park and community centre forecourt to be designed without the constraint of the bridge abutment, terminals, fencing and traffic barrier rails.	Refer to response letter addressing Council's comments in Appendix E
Public art and cultural experience of using the bridge	
Council would like more information on the opportunities that the proponent proposes for the incorporation of public art in the bridge and associated landing areas.	Appendix H
Auburn City Council	
Pedestrian desire lines should be considered to understand pedestrian movements and safety implications and interface between development on Wentworth Point.	Chapter 9 Appendix H
Council requests details on travel mode split changes.	Chapter 8 Appendix G
Council has concerns about the visual impact of the bridge landing at Wentworth Point.	Chapter 10 Appendix H

Issues	Reference to where addressed in this report
NSW Maritime (now RMS)	
There is a need to consult Rowing NSW about its horizontal clearance requirements for the proposed rowing course.	Consultation has been undertaken. Bridge design proposal has allowed for rowing course (Chapter 4)
There is a need to consider existing and likely future maritime activity on the bay when designing the proposed vertical clearance.	Chapter 12
Maintenance boats serving two RMS wharves upstream of the proposed bridge require a vertical clearance across the main navigable span of 5.7 m.	Noted. Clearance provided (Chapter 4 and Appendix C)
Transport authorities (Department of Transport, RMS and STA)	
General	
The bridge needs to be seen as a 100-year piece of infrastructure. For the first five to 10 years it may be underutilised, but it would establish a key connection between the two developing communities.	Noted
In the long term, STA may consider integrating the two communities with regional bus links.	Noted
Consideration for event bus movements is not within the scope of the Part 3A Environmental Assessment; if required in the long term, SOPA will lodge a Part 3A modification.	Noted
Community reference group feedback on the bridge design concept and bus service should be considered along with the analysis of future demand.	Community reference group feedback has been considered as detailed in this Chapter
Bridge design	
TNSW and the RMS require a two-lane busway and separated shared pedestrian/ cycleway. Therefore, the 8 m wide bridge options are not supported.	Noted
A grade-separated crossing of the intersection where the bridge lands at the Wentworth Point side is not an option to be considered.	Noted
The bridge and its interface with landings shall be designed to be as safe as possible for pedestrians.	Chapter 4 Chapter 8 Chapter 9 Appendix H
A speed limit of 50 km/hr is preferred given the length of the bridge and its transport function, and given the higher speeds used by confident cyclists and practicality issues for bus operation.	A speed limit of 50 km/hr has been adopted
The bridge design should convey understanding of traffic and pedestrian, cyclist interaction (i.e. safety at conflict points).	Chapter 9 Appendix H
There are no major issues with high-speed cycle commuters sharing bus lanes with buses.	Noted

Issues	Reference to where addressed in this report
Bus service	
High- and low-frequency bus movements are considered a safety concern with potential for pedestrian/cyclist/bus collisions. Lower frequency bus movements could result in pedestrians and cyclists being less aware of the potential for pedestrian/cyclists/bus collisions.	Chapter 9 Appendix H
SOPA	
Appropriate funding must be allocated to cover bridge operating costs during the initial lifespan of the asset.	Chapter 5 Appendix F
The bridge needs to comply with RMS standards.	Chapter 4
Suitable use of the area under the bridge, beside the proposed abutment, needs to be considered during design development stage.	Chapter 4
Office of Environment and Heritage	
The marine environment must be protected during piling.	Chapter 13 Chapter 14 Chapter 16 Appendix I Appendix J Appendix L
Rationale behind vertical clearance	Chapter 2 Chapter 12
Appreciation / acknowledgement of the high contamination levels in Homebush Bay Avoid excavating or disturbing contaminated sediments / material nor generate hazardous waste Monitoring regime during construction Human exposure pathways	Chapter 13 Appendix I
Scouring	Chapter 18
Consult EPA during prepration of CEMP	Chapter 19
Industry and Investment (Fisheries)	
Fisheries is concerned about the potential for harm of marine vegetation during construction (although this would probably be unlikely considering the local environment).	Chapter 16 Appendix L

Issues	Reference to where addressed in this report
Fisheries is concerned about potential dredging/excavation activities associated with the pier works. Fisheries prefers that any excavated material be removed from the waterway and deposited on land.	Chapter 13 Chapter 14 Appendix I Appendix J
Fisheries is interested in the management of any contamination issues associated with these works and would prefer that the redistribution of contaminated material in the waterway be avoided where possible.	Chapter 13 Chapter 14 Appendix I Appendix J
No comments were received from Railcorp and the NSW Office of Water.	

6.5 Future and ongoing consultation

The communications and consultation strategy for the Homebush Bay Bridge proposal will continue. At the time of the preparation of this environmental assessment, the project team has been in contact with a range of other stakeholders and community groups. Additional briefings are proposed with:

- Newington Public School.
- Newington Cycle Club.
- Rhodes Sea Scouts.
- Bay BUG (the main local area cycling group).
- Wentworth Point Kayak Club.

Future consultation would be carried with:

- OEH (EPA) during the preparation of the contamination management plan and monitoring program for the construction stage of the project.
- City of Canada Bay and Auburn Councils to arrange the provision of stormwater services to the proposal.
- Energy provider to arrange the provision of electrical services to the proposal.

In addition, the Director General of the DP&I is exhibiting this environmental assessment and supporting documentation for a minimum of 30 days and inviting public comment.

Advertisements are being placed in appropriate newspapers and relevant public authorities are being notified in writing. The environmental assessment is available for inspection during the exhibition period at the DP&I's head office and local council offices as well as on the DP&I's website.

During the exhibition period, any person is able to make a written submission to the Director General regarding the project.

Further consultation will be conducted with relevant stakeholders, including local residents and Councils, in regard to the construction stage of the proposal, should the proposal gain government approval.