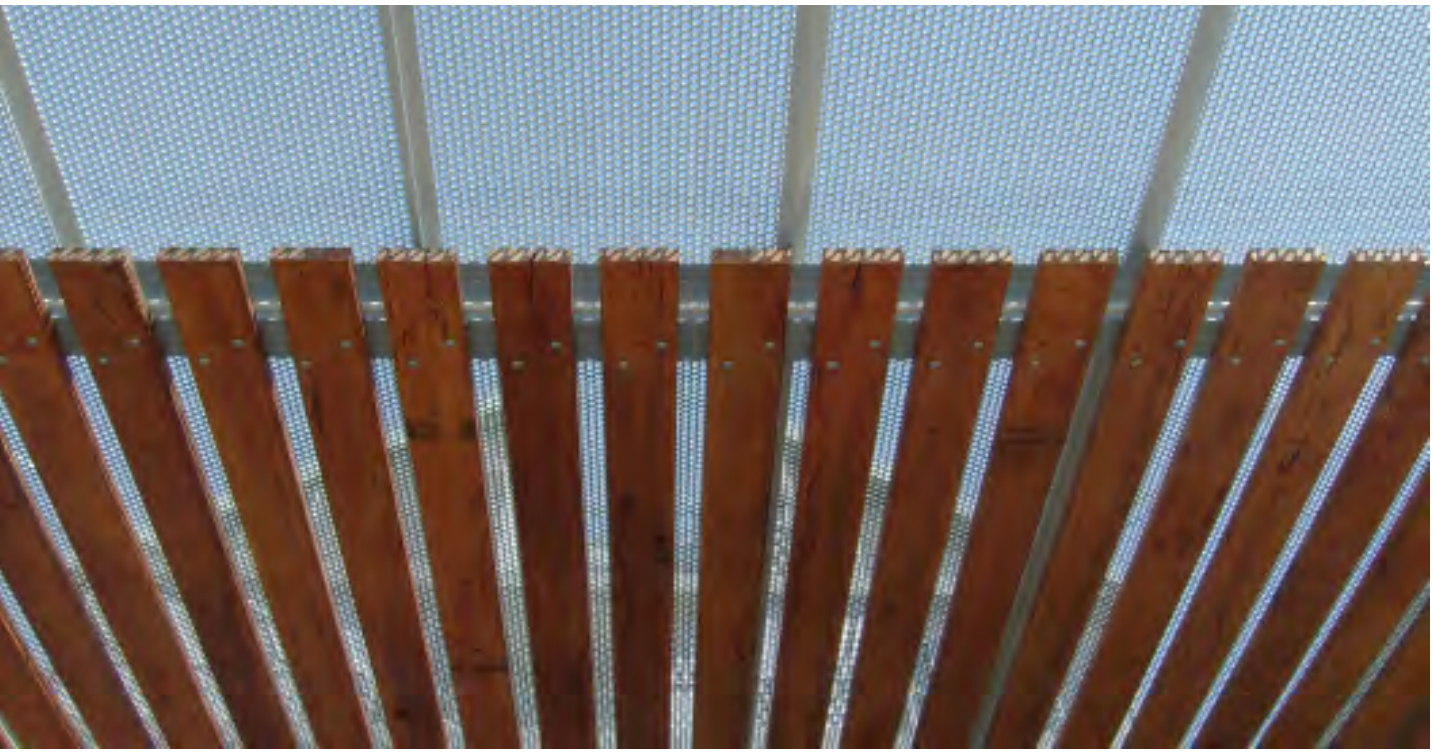


Homebush Bay Bridge | Environmental Assessment

APPENDIX H

Urban design report

Homebush Bay Bridge
Urban Design Report
08.2011
20100032
Fairmead Business Pty Ltd

Scott Carver

Prepared for

Fairmead Business Pty Ltd

Suite 101, 25 Angas St, Meadowbank

Submission Status

Final

H:\2010\20100032 Homebush Bay Bridge - Urban Design Study\B Bridge\Reports\20100032 Homebush Bay Bridge Urban Design Report v4.indd

Approved by

Greg Dowling

30.08.2011

Signed

Scott Carver Pty Ltd
Level 8, 71 Macquarie Street
Sydney NSW 2000 Australia
Telephone +61 2 9957 3988
www.scottcarver.com.au

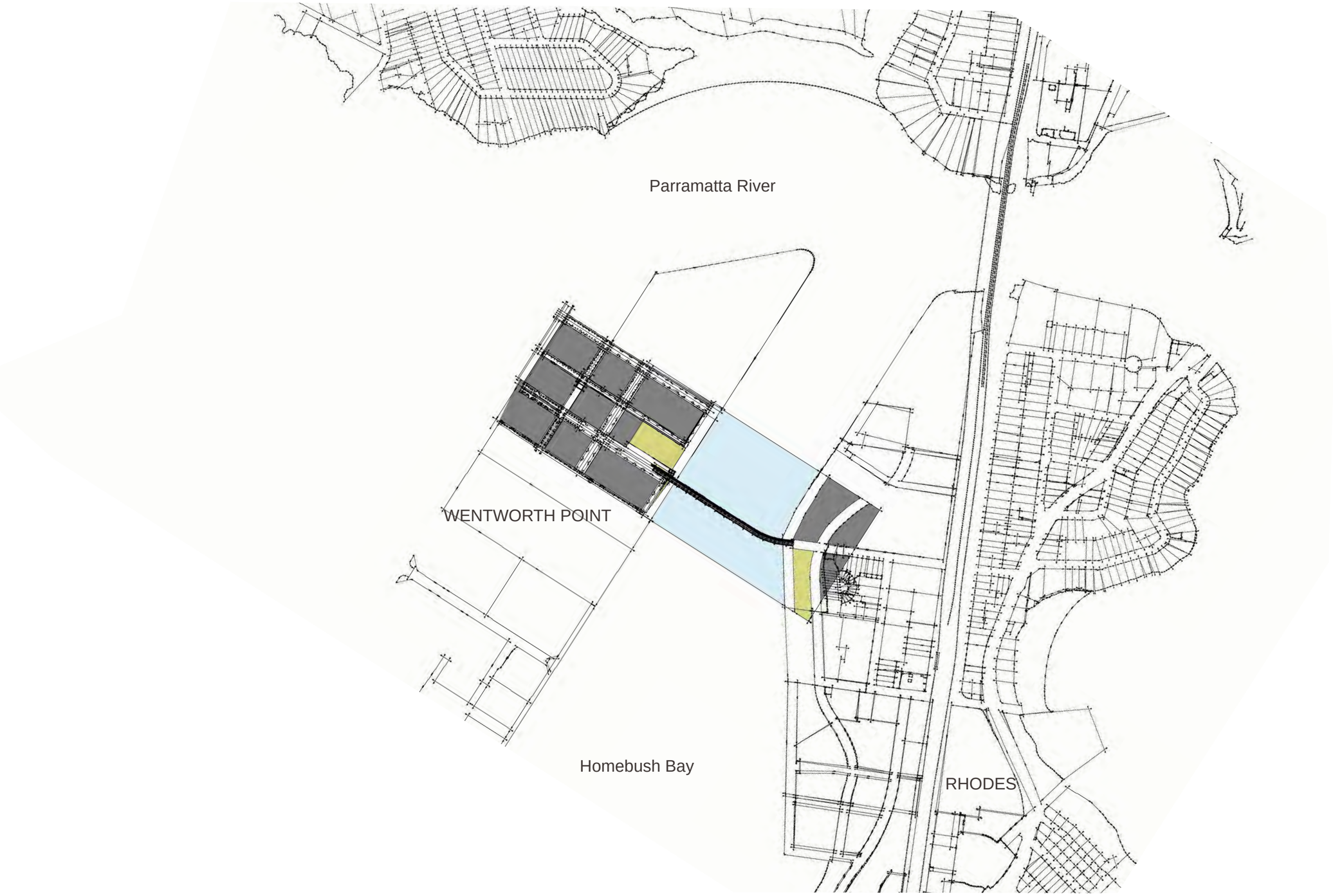
Contents

1 Introduction

1.1 Purpose of report

This Urban Design Report has been prepared for the Environmental Assessment of the Homebush Bay Bridge application which forms part of the response to the Department of Planning's Director General Requirements (application number MP 10_0192, issued 21 December 2010).

The purpose of the report is to discuss the rationale of the proposed concepts and designs for the bridge having regard to its wider and localised context, its visual and shadowing effect, the relationship to and ability to integrate with the landings areas and the experience of the pedestrian users in particular.


Parramatta River
WENTWORTH POINT
Homebush Bay
RHODES

2 Setting

2.1 Geological setting

The predominantly Ashfield Shale sedimentary profile in the vicinity of Homebush Bay and south of the Parramatta River was shaped and weathered 60 million years ago forming a subtle and low undulating landscape and a relatively fertile soil profile.

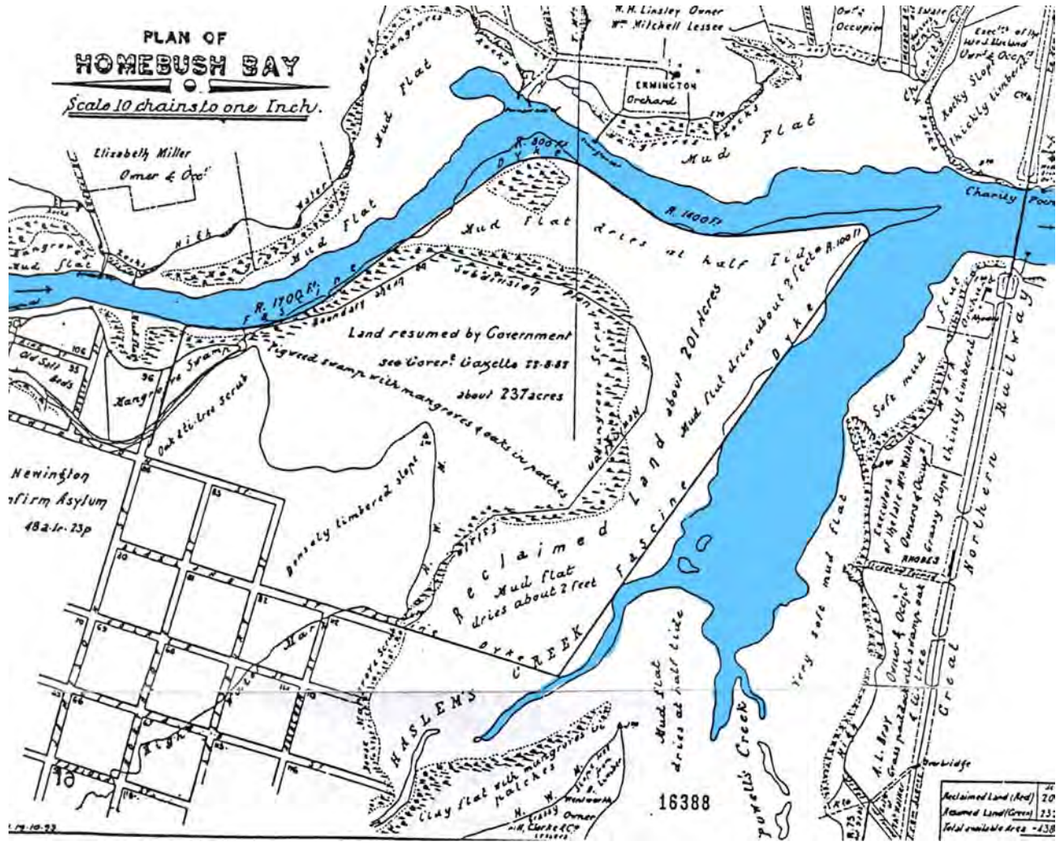
The shape of the landscape at Homebush Bay and surrounds underwent many changes during the Quaternary Period (and the Pleistocene Epoch in particular c. 1.8 million to 10,000 years ago) with frequent, rapid rises and falls in sea level. The sea level stabilised at its current level approximately 6,000 years ago with a shallow bay forming within the catchment of Haslam and Powell Creek to form the area that is known today as Homebush Bay.

The area was characterised by tidal mud flats and mangroves, which collected sediment brought downstream by floods in the Parramatta River, resulting in the growth of Casuarina forest inland.

2.2 Historical setting

The Wann-gal Aboriginal ancestors would have occupied the forests and mudflats over 20,000 years ago. Emma Lee has written about Homebush Bay being a meeting place between coastal and inland indigenous people whereby seafood, and whale meat was traded with stone raw materials for tools given the unsuitability of coastal sandstone for sharp cutting edges.

Lee in 1998 and 2004 states that “in looking at places where coastal and inland people might meet to talk about feasts or trade or war, Homebush seems a good place to do so. Further, Homebush Bay was referred to by one elder as the ‘Flemington Market’ of the area (given that) the food types and resources would have been suitable for both coastal and inland people, and the remnant Cumberland Plain forest would have provided fish, land animals, tubers and fruits, as well as woods for implements, such as the mangroves for boomerang making.”



European settlement had a significant impact upon the landscape and nature of Homebush Bay. By the late 1980s the lower profile areas, including mangroves, near the Parramatta River estuary were reclaimed with bay bed sediment or infilled with waste from industrial uses nearby. The surrounding landscape was also impacted upon by excavations for building materials which were then abandoned or infilled with waste.

European settlement saw the use of the land for saltworks, cattle farming and industrial uses in the early 1800s; timber yards in 1840s/50s, brickworks and abattoirs early 1900s to 1988; and chemical industry from 1928.

Remediation and renewal of the area started approximately 30 years ago. Remediation of the former industrial uses at Rhodes has been underway to curb the spread of contamination, restore waterways, to support the urban use of land and to ensure the recreational value of the Bay. Parts of the Bay are not able to be remediated and contamination is a prevalent issue to be considered in the redevelopment of the area.

2.3 Built and natural forms

The urban redevelopment of industrial lands at Wentworth Point and Rhodes is underway. Rhodes West redevelopment has occurred under a planning framework consisting of the Sydney Regional Environmental Plan No. 29 Rhodes Peninsula (now repealed) and the Renewing Rhodes Development Control Plan 2000 (now superseded).

Redevelopment of the precinct is approximately mid way complete with additional buildings under construction or having received approval. Currently, the Rhodes West Master Plan 2009, Rhodes West Development Control Plan 2010, and inclusion in the Canada Bay Local Environmental Plan 2008 has predominantly earmarked the land for high density residential, with a supportive district centre, neighbourhood shops and commercial offices. Land east of the railway line is earmarked as low to medium density residential. The redevelopment of Rhodes is anticipated to accommodate 12,000 additional residents.

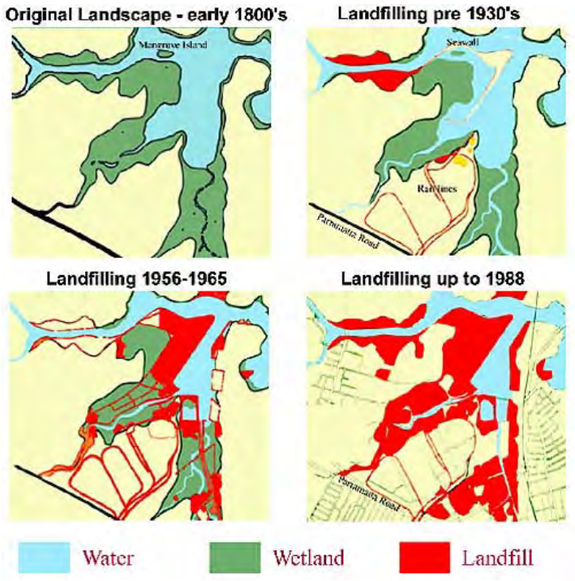
More of the formal industrial and warehousing sites at Wentworth Point are becoming available for large scale residential development and supportive uses. Redevelopment is occurring under the Sydney Regional Environmental Plan No. 24 Homebush Bay Area and Homebush Bay West Development Control Plan 2004 (HBWDCP) with development about mid way complete and buildings under construction or having received approval.

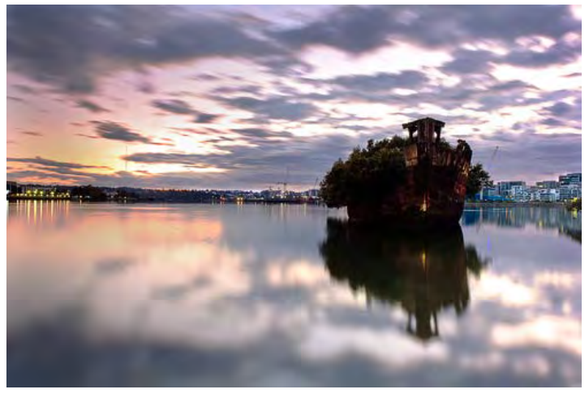
Development at Wentworth Point is predominantly residential but with an existing planned centre and a maritime ‘hub’ to the north. A primary school has also been contemplated under the HBWDCP at this location.

The urban redevelopment of both Rhodes and Wentworth Point is characterised by gridded street systems reinforced by edge defining buildings of 4 to 8 storeys punctuated by a number of tower forms up to 25 stories.

The foreshores are characterised by its rectilinear edges created by industrial reclamation but which now is forming as continuous foreshore reserve between 20 and 30 metres wide, extending onto larger urban parks. One such park is earmarked for the most northerly point in association with maritime facilities.

The south of the Bay falls within Sydney Olympic Park and while also modified from its original landscape, contains areas of major ecological significance. This and the opposing edge at Parramatta River comprise of mangroves with remnant exposed boat wrecks to the south of the Bay.





Aerial view of Homebush Bay looking southward

Aerial view illustrating fully developed Rhodes and Wentworth Point with bridge crossing

3 Design rationale

The Homebush Bay Bridge has been designed to connect the communities of Wentworth Point and Rhodes Peninsula by accommodating pedestrian, cycle and bus modes of movement.

The connection of two communities will bring complementary benefits to each and will reinforce social complexity into situations that are otherwise separate, peninsula communities.

More particularly, the bridge will connect Wentworth Point to the Rhodes Railway Station and thereby change the transport preferences of the community.

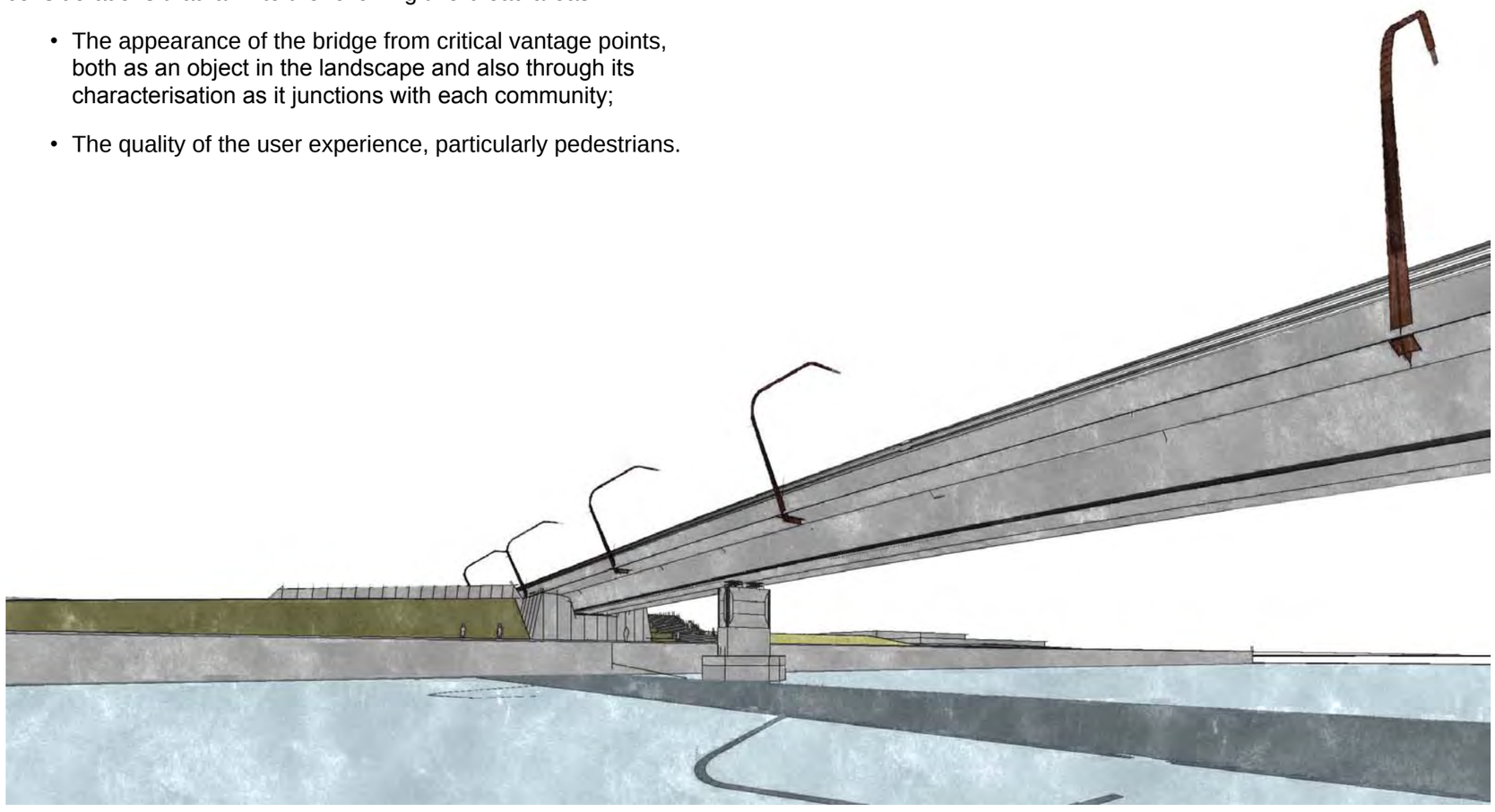
The design rationale of the bridge must, of course, consider the functionality and environmental wellbeing of the waterway it traverses. These matters are described elsewhere in detail and this section of the report is focussed on visual and operational considerations that fall into the following two broad areas:

- The appearance of the bridge from critical vantage points, both as an object in the landscape and also through its characterisation as it junctions with each community;
- The quality of the user experience, particularly pedestrians.

3.1 Appearance as an object in the landscape

The overall form of the bridge is largely dictated by pragmatic engineering considerations. The choice of reinforced concrete as the main building material will minimise maintenance costs compared to steel options.

The cross section of the bridge comprises a box girder with cantilevered edges. These edges help to create a deep shadow line, which serves to present a thinner elevation to the waterway. In its plan form the bridge is designed to extend directly over the water as a continuation of the streets that serve it from each end.



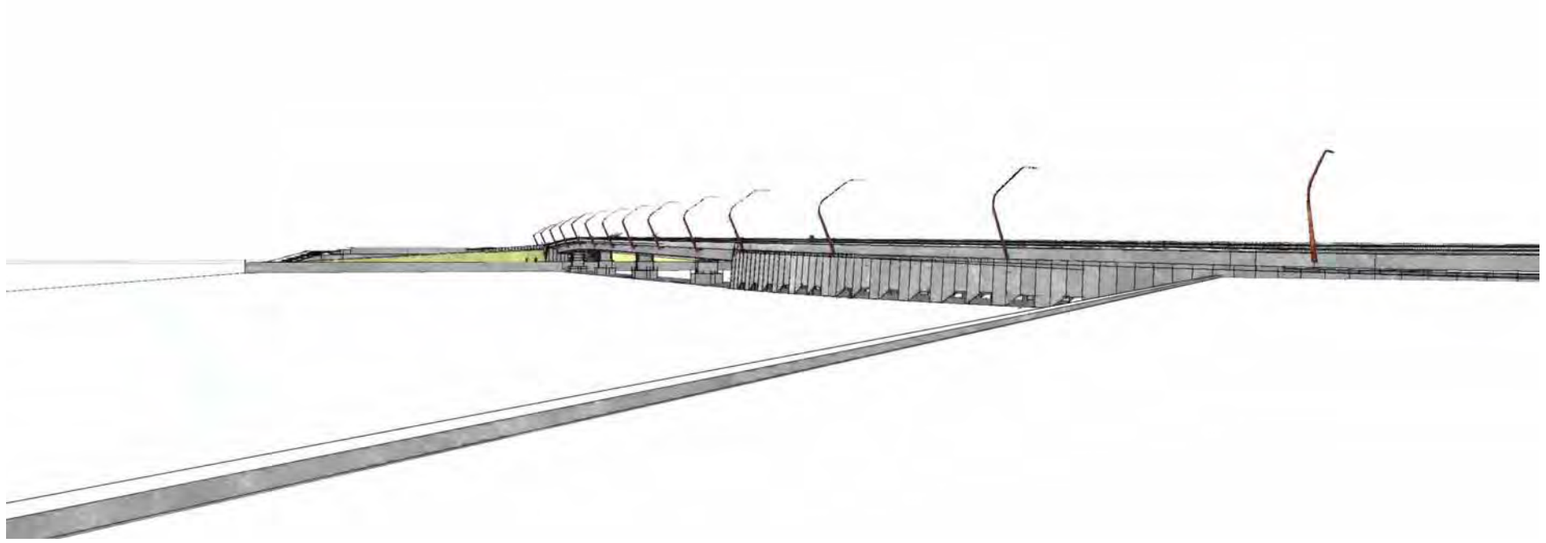
At Rhodes, this philosophy results in a simple curve that negotiates the transition in angles of approach from each side into a sweeping ‘elbow’ that still preserves the direct junction of the bridge at the foreshore as an extension of Gauthorpe Street.

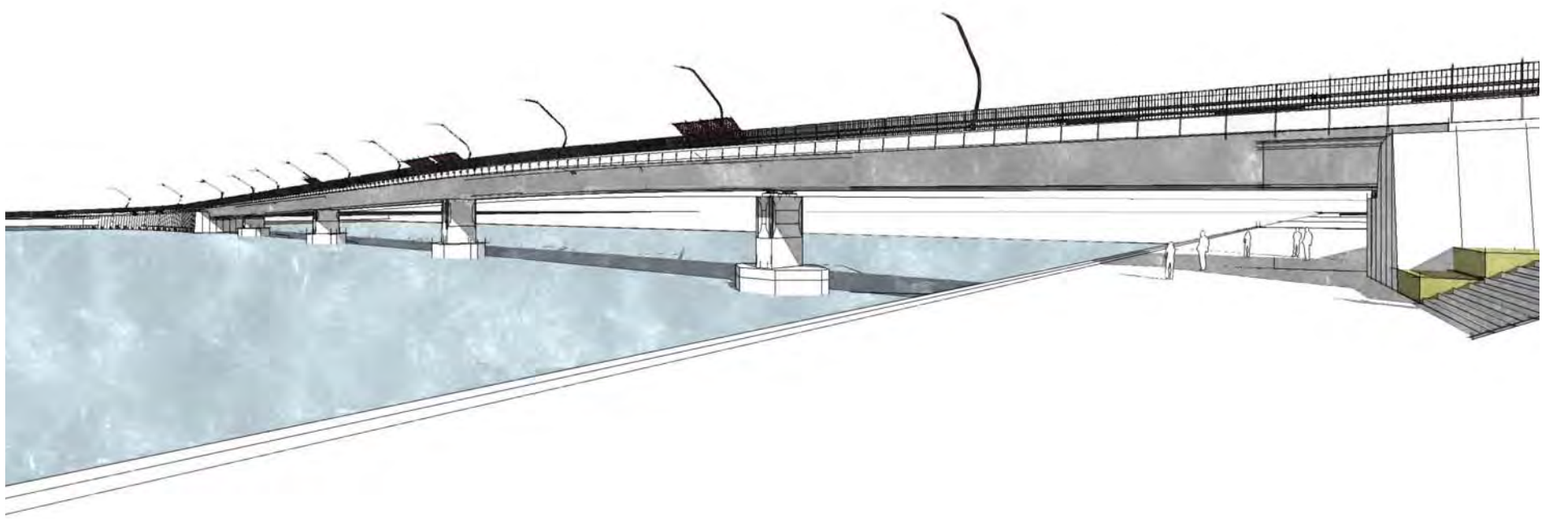
This alignment with Gauthorpe Street is also perpendicular to the railway line and other streets parallel to the line that help to form the block grid of Rhodes.

The bridge is launched from a higher level at Wentworth Point, arriving at a lower level at Rhodes. This topographic situation serves to 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 rises slightly at the Wentworth Point end, to a crown over the water, the overall appearance is of a structure that flows seamlessly from Wentworth Point and ramps down to Rhodes in a simple and unaffected way.

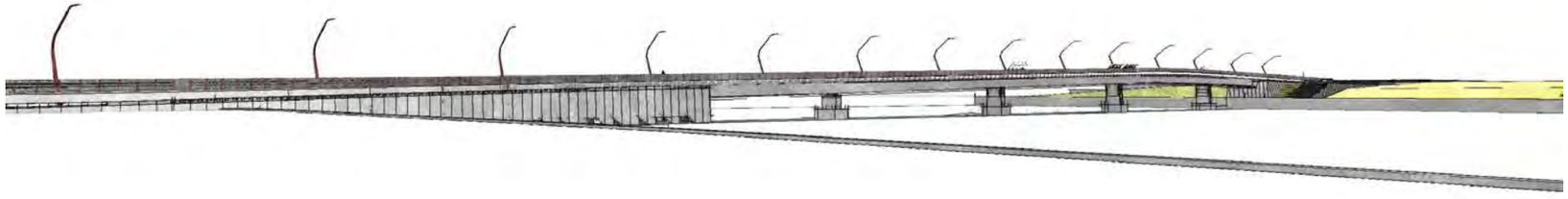
This topographic difference, high at Wentworth Point and low at Rhodes, generates quite different design demands on the appearance of each of the bridge’s junctions with the land.

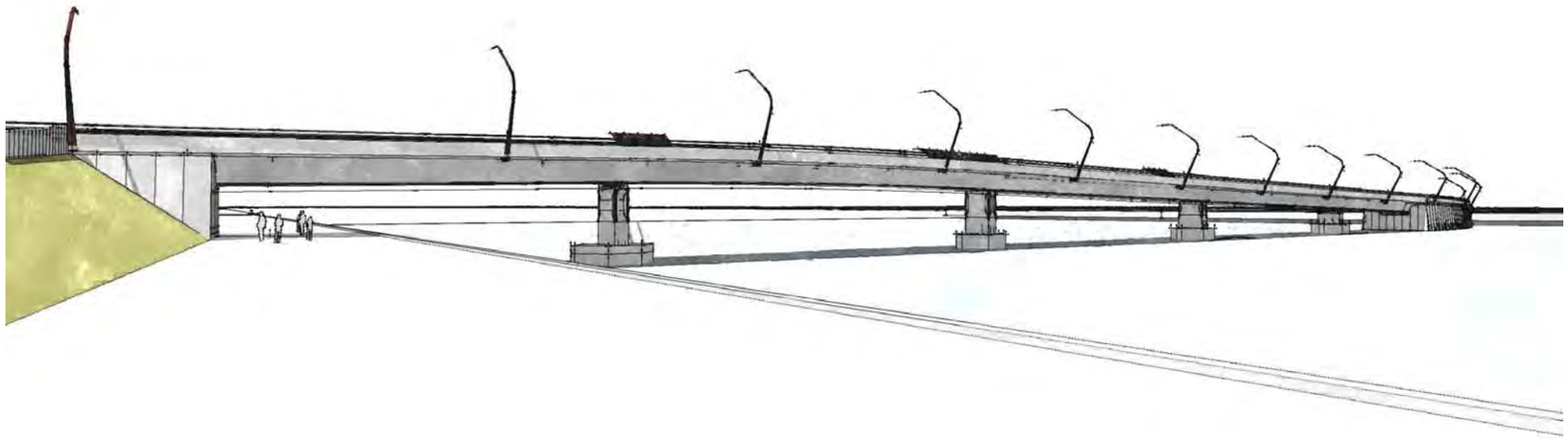
At Wentworth Point, the bridge abutment reaches from the adjacent, deeper water above the foreshore promenade while at Rhodes, the bridge merges with the shallow mudflat before it reaches the shore.





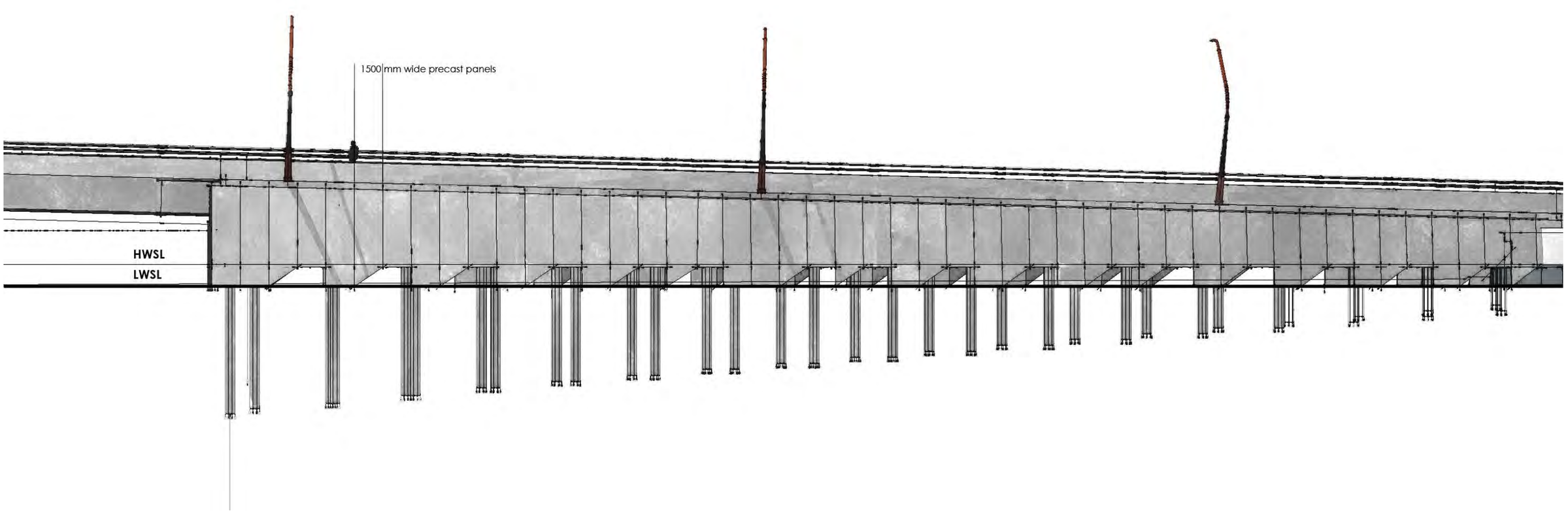
The visual definition of the bridge is not confined to its span over the waterway. At each end the bridge appears to reach onto the land to the point where its abutments intersect with the topography. On the Wentworth Point side the precast concrete abutment cladding and balustrades extend to the point where the bridge gradient meets the form of the land-based roadway. On the Rhodes side the precast skirting and balustrades also continue slightly onto the land.





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 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 foreshore junction is related aesthetically by the use of common precast concrete panels though the form of each junction is completely different. These precast skirtings define the presence of the bridge in the landscape regardless of the methods of construction employed to support the bridge deck at the landings.

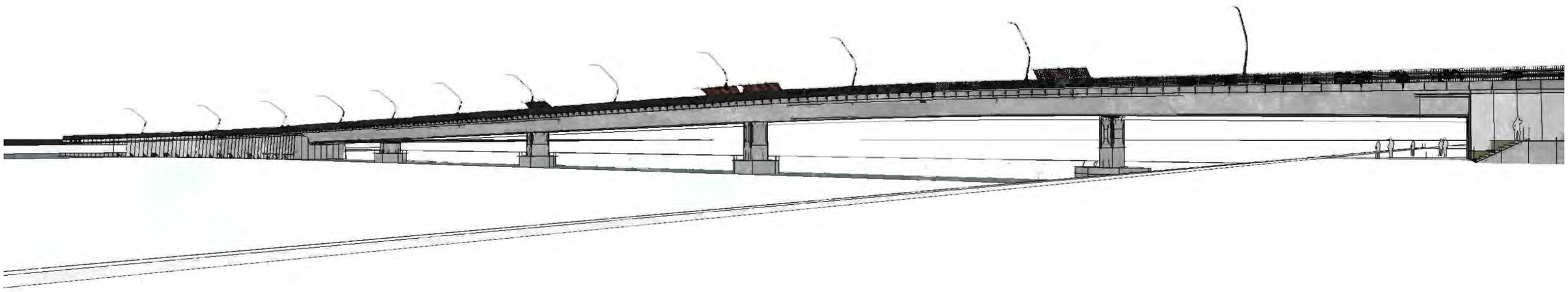


The bridge abutments, though different in form at each end of the bridge, are united through their finish as precast concrete.

This finish is legible as an abutment and is contained to the ends of the bridge and not allowed to ‘wander’ into adjacent areas to create ambiguity.

The cladding covers supports that comprise closely spaced columns instead of the clear spans that typify the residual of the bridge.

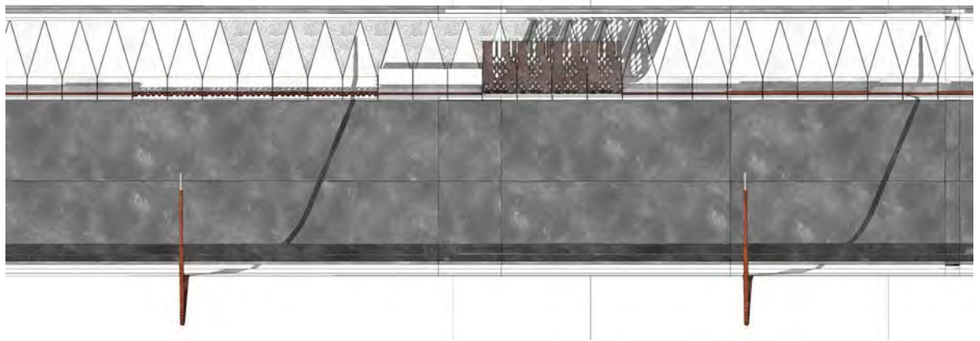
The abutment at the Rhodes end covers columns that are seated in the tidal flat. This means that the lower portion of the panels will be revealed at low tide and will attract organic marine growth in the intertidal zone. Sections of the panels are left open to allow water between tides to circulate under the bridge deck.



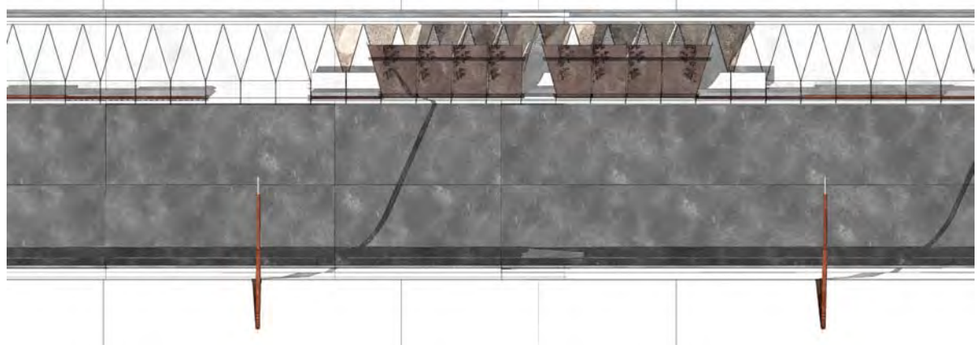
Fixtures on the deck of the bridge such as lighting, shade structures and balustrades also form an important part of the visual character of the bridge at closer range. In form and material these elements are coordinated.

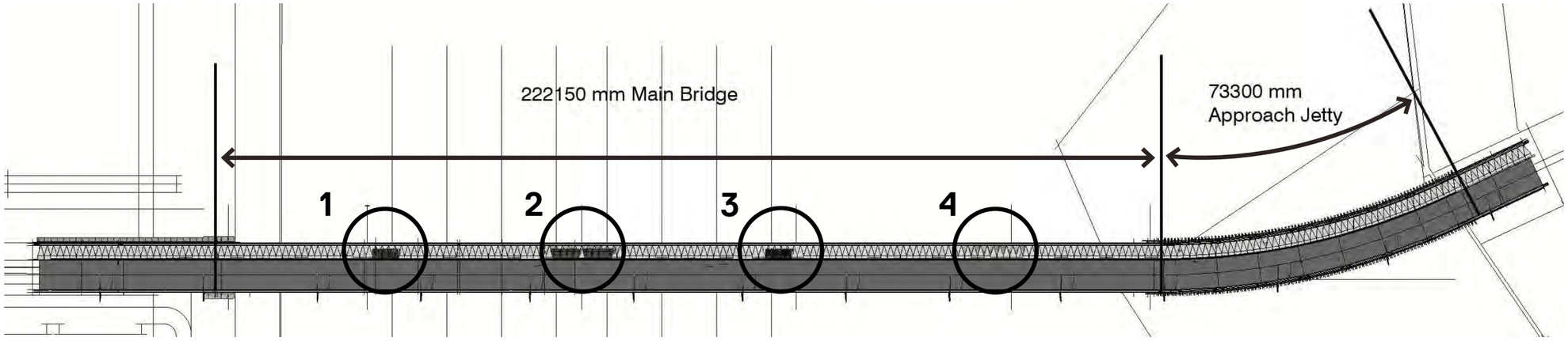
Although 4 seating positions occur along the length of the bridge, for aesthetic reasons when looking at the bridge, shade structures have been restricted to those 3 seating event that occur on and flanking the crown of the arch.

1 **Seating Area 1 (7 Precast seats , 4 shelter panels)**

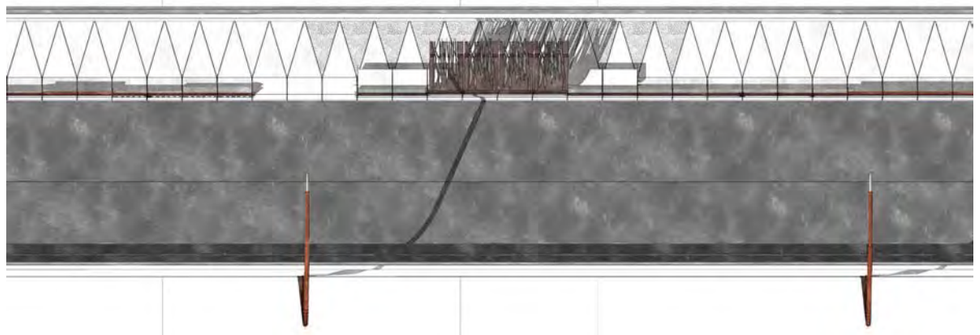


2 **Seating Area 2 (13 Precast seats, 8 shelter panels)**

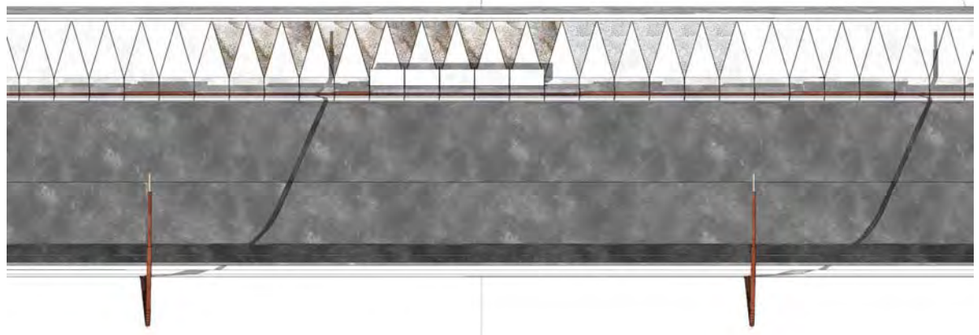




3 Seating Area 3 (8 Precast seats, 4 shelter panels)



4 Seating Area 4 (5 Precast seats)



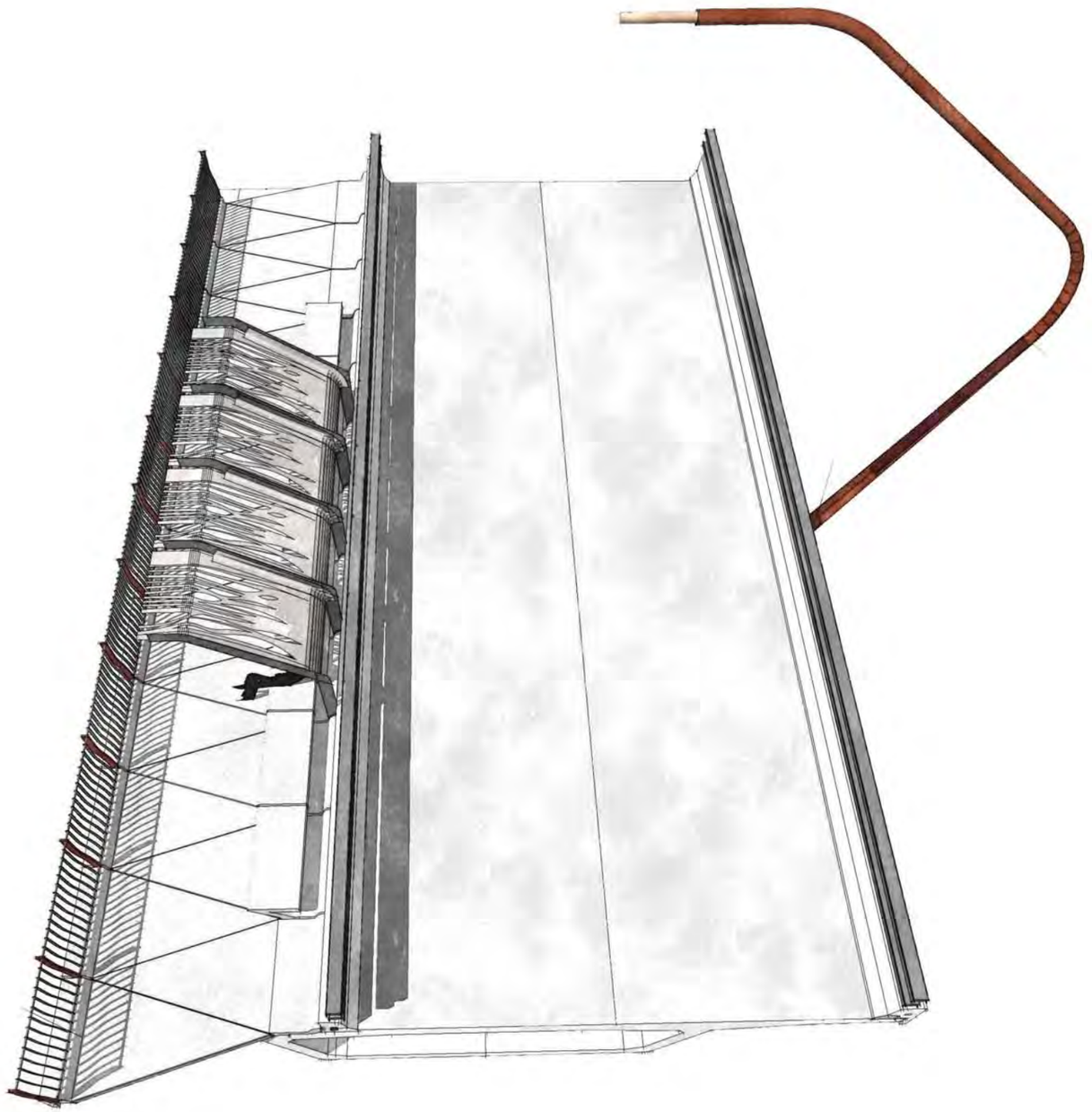
3.2 User experience

The length of the bridge, as an experience wherein the user is committed by way of confined thoroughfares, exceeds 360 metres. This journey is qualitatively important to pedestrians and attention has therefore been paid to the design of the pedestrian experience.

The general design philosophy is to moderate the length of the journey by manufacturing variety and by providing intermittent amenity in the form of seating.

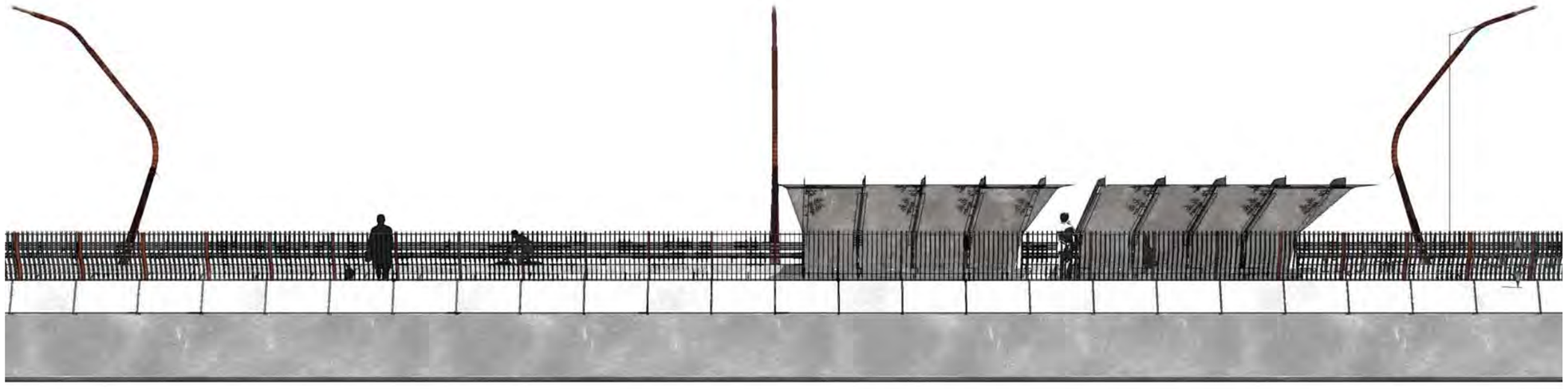
Materials used for amenities on the deck of the bridge have been chosen for their character and their long-term performance in a marine climate. These materials are precast concrete for seating and barriers and galvanised steel for shade structures. Weathering metals will be used for the lighting poles and the metal balustrades. Ceramic tiles may be introduced as part of the paving design if deemed suitable as part of a public art program, otherwise the footpath is in-situ concrete with special textures and a designed joint pattern.

The form of shade structures and lighting poles has been coordinated to read together in perspective when crossing the bridge. The custom design of the light poles is an important visual device in particularising the character of the bridge. Generic light poles would severely limit the place-making intentions of the design.



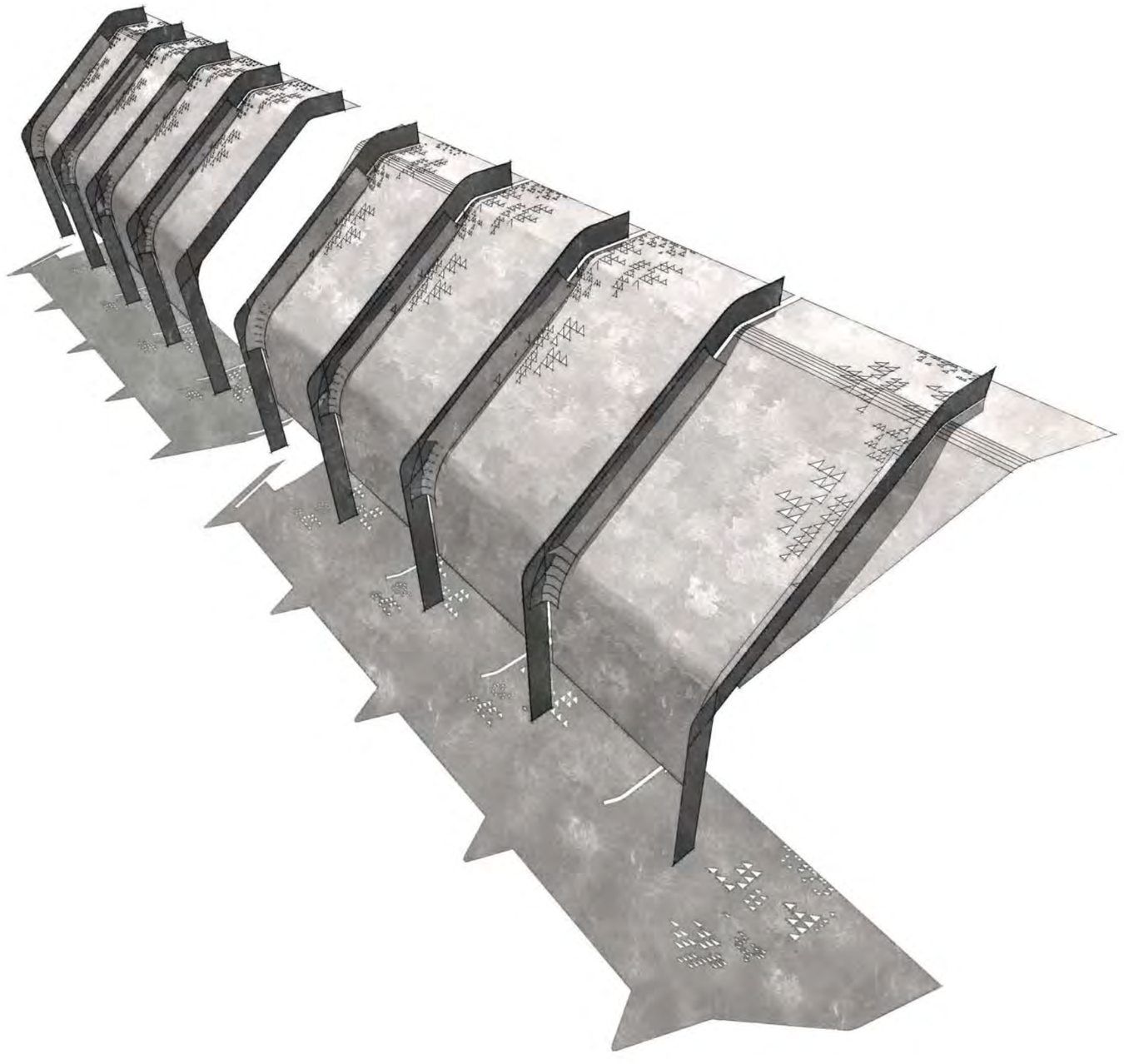
3.2.1 Balustrade

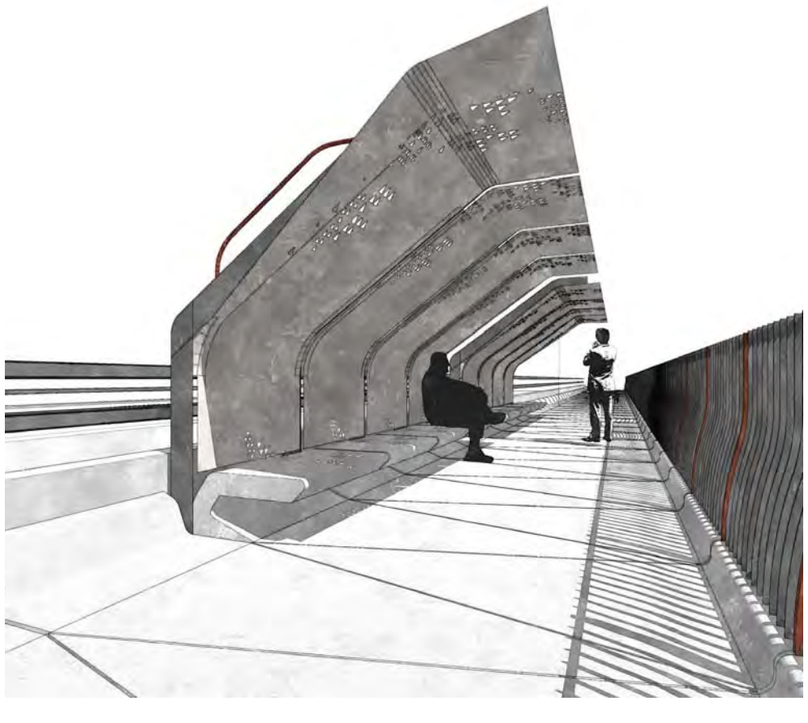
The balustrade is designed in galvanised and other steel as a series of vertical balusters that allow winter sunlight onto the deck and also maximising visibility when seated at the various rest stops.

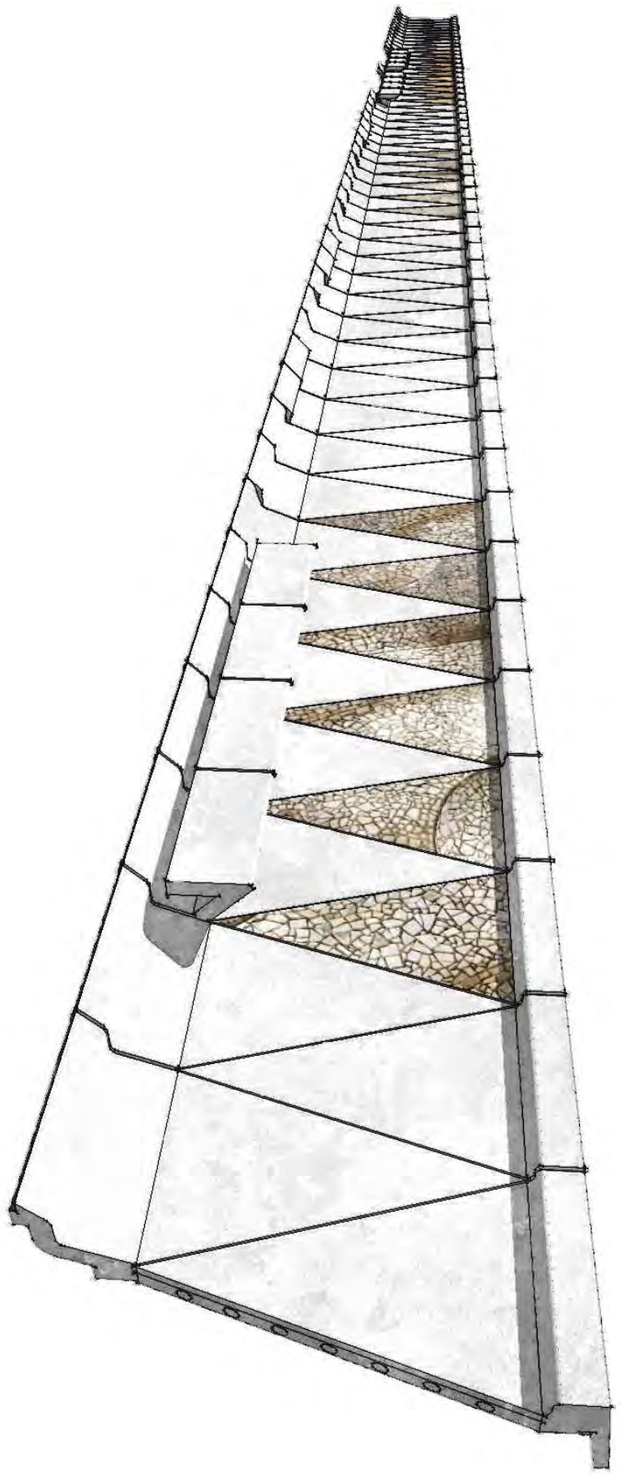


3.2.2 Shading structures

Shading structures are provided at 3 of the 4 rest points on the bridge. These may be designed in materials such as galvanised or other types of steel, bent to echo the profile of the light poles on the far side of the bridge. Supported by galvanised steel frames they will provide shade from the overhead summer sun and protection from the late afternoon summer sun from south west as well as storm conditions usually emanating from the south. At the same time the structures gesture towards the north and allow the winter sun to project onto the seats.







3.2.3 Pedestrian footpath zone

The pedestrian footpath is protected from the bus and bike carriageway by a continuous RTA-approved precast safety kerb. Combined with the safety rail along the southern side of the bridge this detail means that buses are contained within the road carriageway and that, consequently, the pedestrian footpath and its balustrade are free from vehicle impact requirements.

The pedestrian side of the bus safety kerb is used to create a variety of decorative effects from precast kerbs and seating profiles, all directing attention to the waterway and the winter sun to the north, with their backs to the vehicle carriageway.

3.2.4 Footpath surface

The footpath surface is in-situ concrete paving laid to fall to the edge of the bridge and to drain into Homebush Bay as clean run-off. The paving will have its joints coordinated with the rhythm of precast kerbs adjacent. This pattern provides a regular calibration within which changes in texture can help to create events along the way.

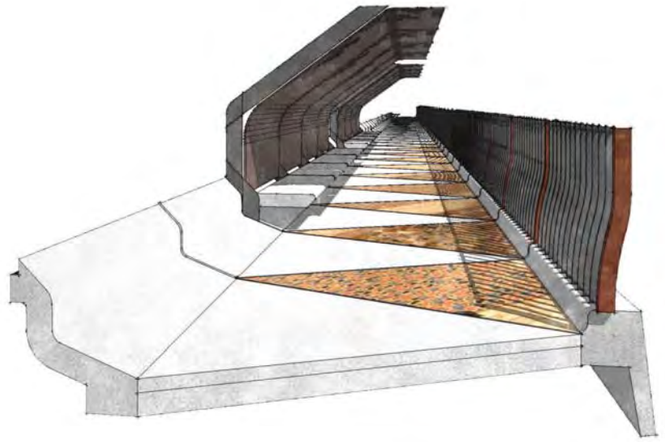
Such events might be culminations of texture and interest at the zones around seating. Public art could include decorative ceramic inserts at these locations.

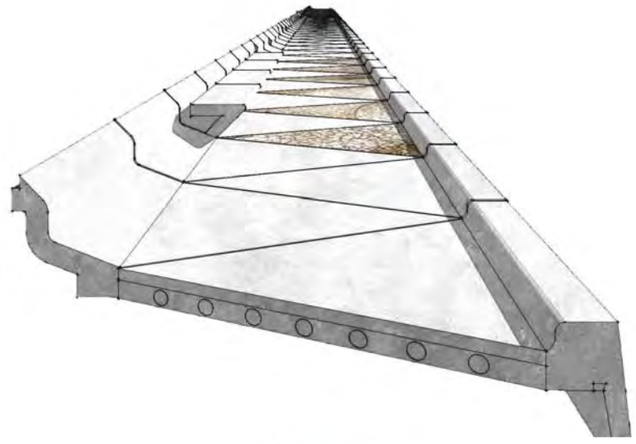
3.2.5 Public Art

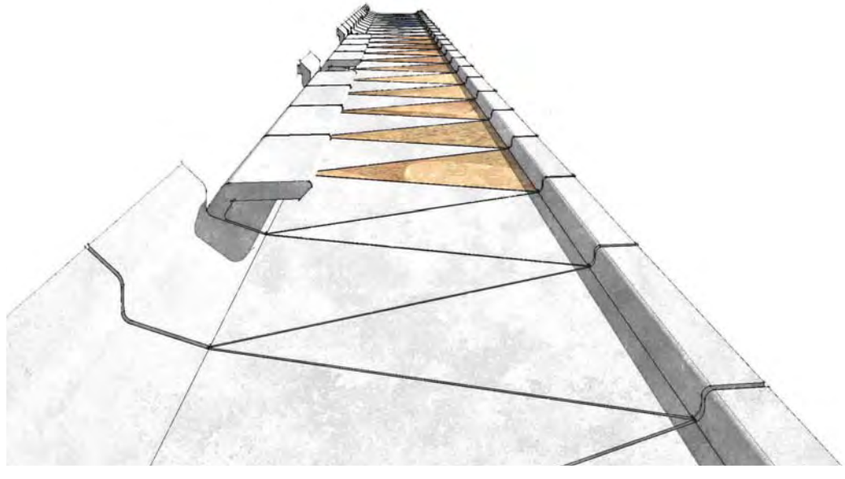
While it is too early to prescribe the nature of public art installations, the pedestrian experience could benefit from application of art to functional elements and finishes. Seats and shade structures, as highlights along the footpath, may be good locations to enrich the bridge, being places where people might pause and have time to better appreciate the work.

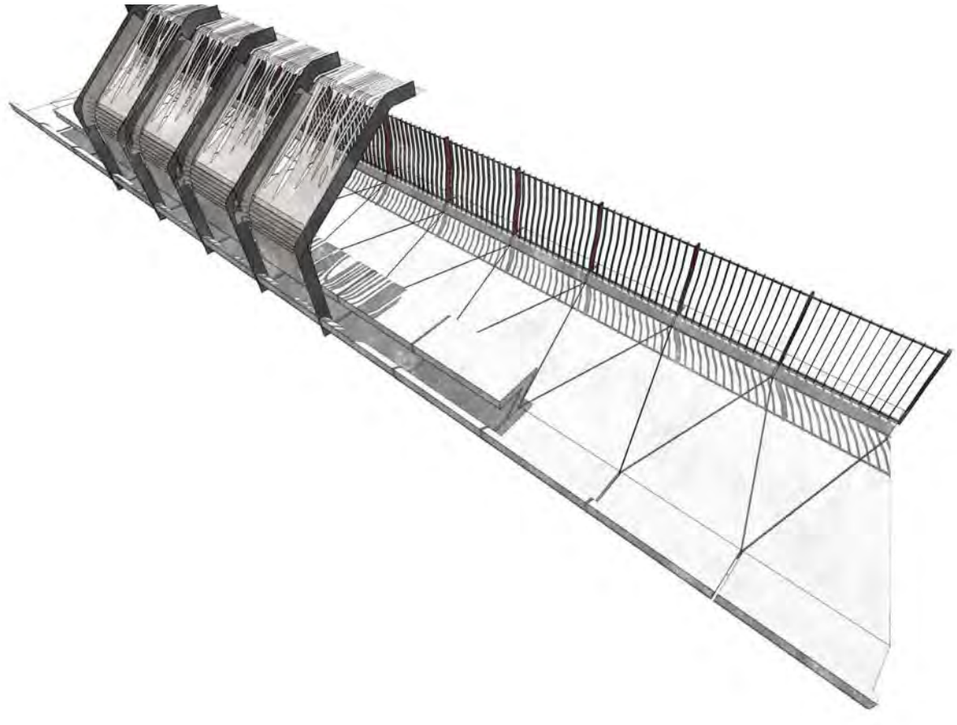
3.2.6 Precast elements

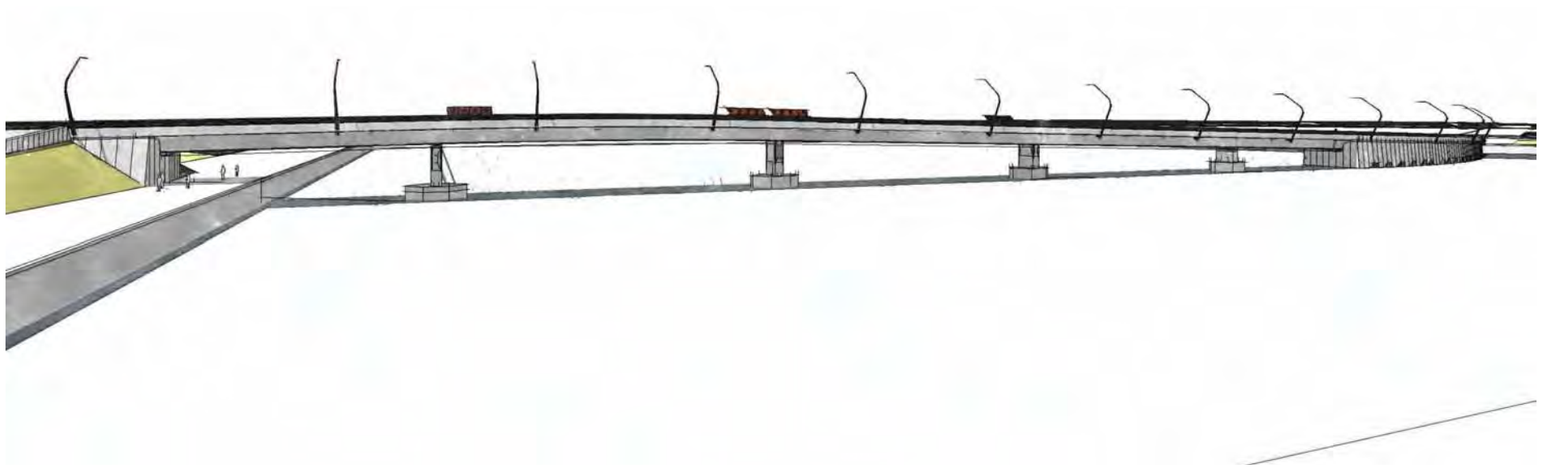
Inside the vehicle safety kerb, precast concrete elements transform from a simple laid-back kerb into seating forms. This creates a sense of containment to the pedestrian walking plane while also mixing in different adjacencies to create rhythms and consistent effects.

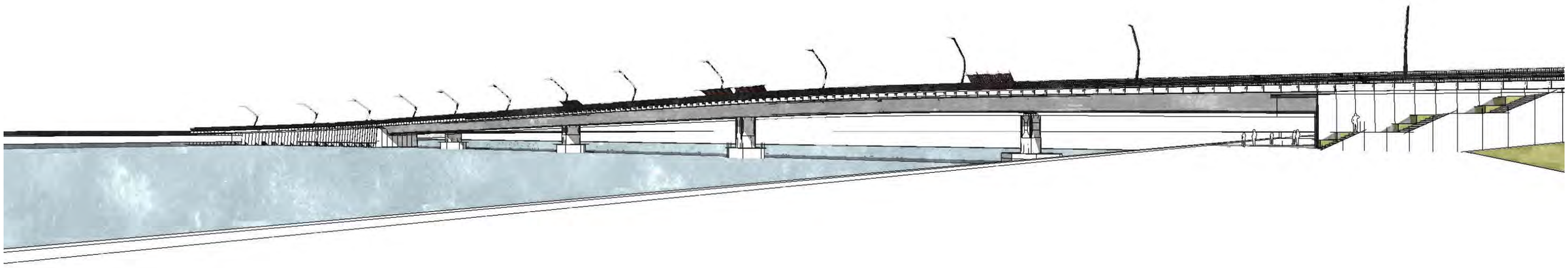












3.3 Length and height

That part of the bridge, which spans between supports across Homebush Bay, is approximately 220 metres long. A further 73 metres of curved bridge at the Rhodes end is still over the water. However, this section is constructed on columns, similar to a jetty, and traverses the shallow part of the bay that is exposed gradually as the tide recedes.

At the Wentworth point end of the bridge, the bridge's approach extends approximately 50 metres further over the land until it intersects with the gradient of the road along Footbridge Boulevard.

At the Rhodes end, the bridge approaches also extend approximately 15 metres onto the land until intersecting with the gradient of an extended Gauthorpe Street.

All of these elements combined generate a perceived bridge, contained within balustrades, that is approximately 365 metres long. It is this overall length that dictates the need for a varied pedestrian experience.

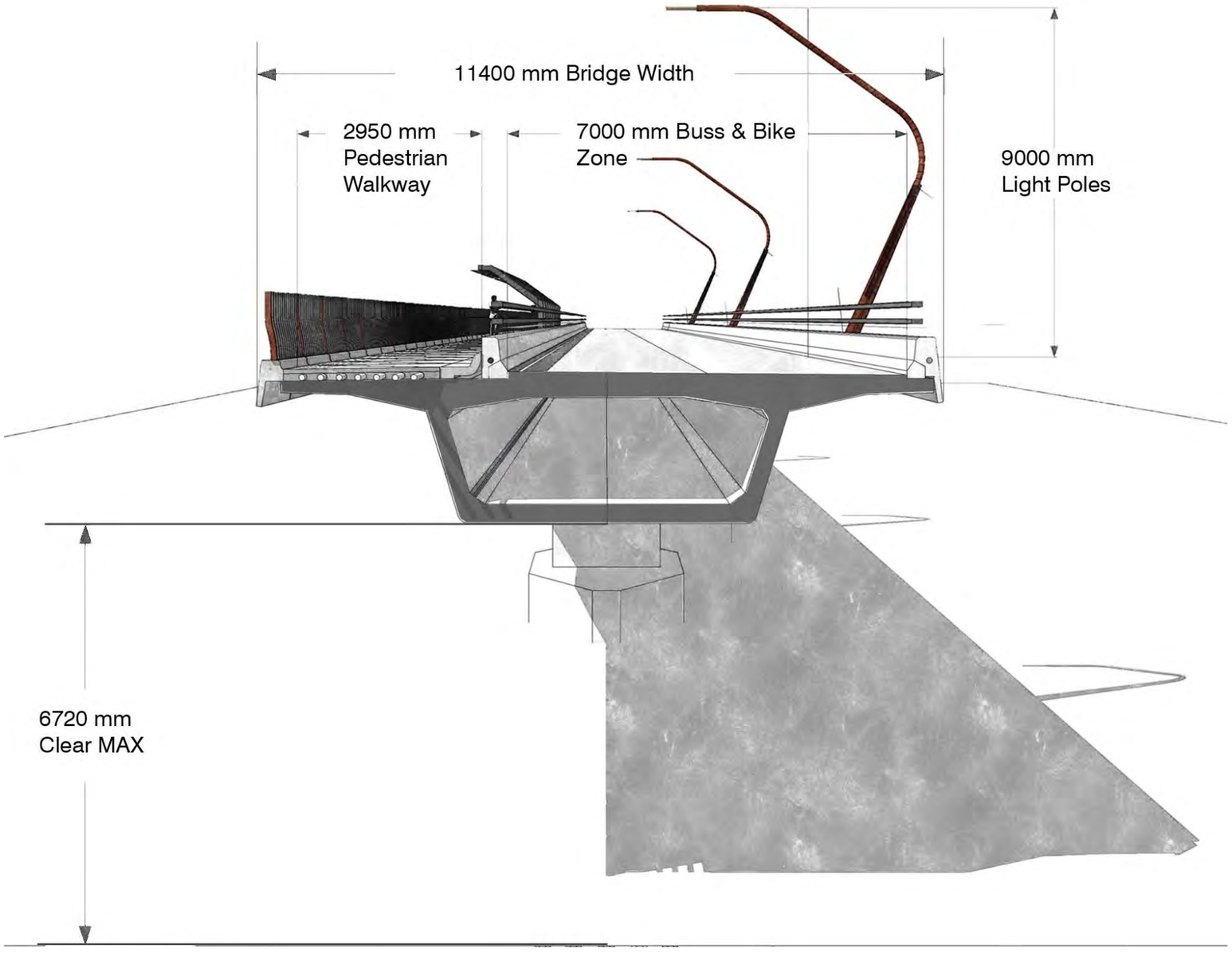
The overall height of the bridge varies (refer engineering reports for details), however the overall depth of the structure is 2.4 metres deep.

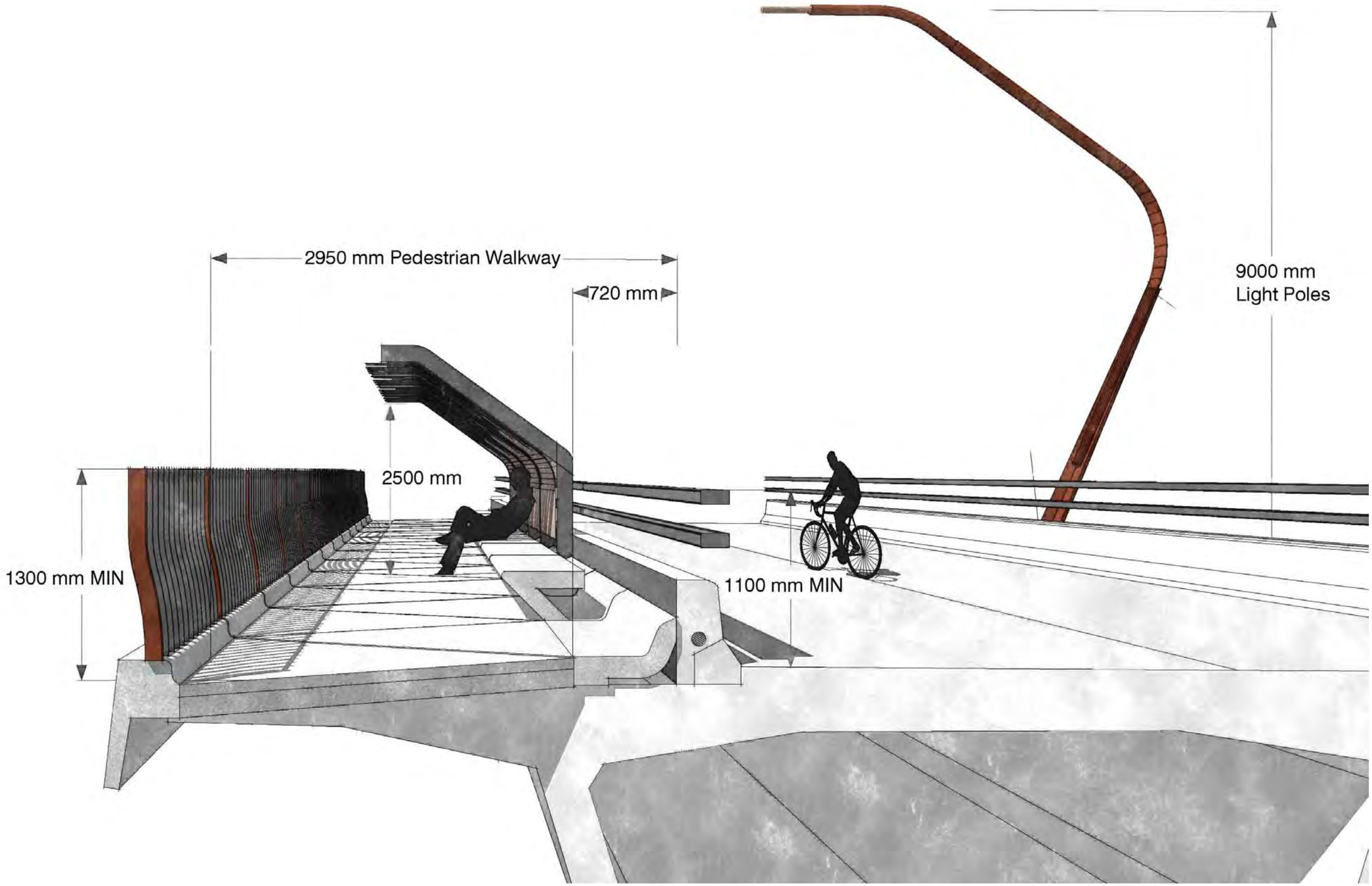
3.4 Width and function

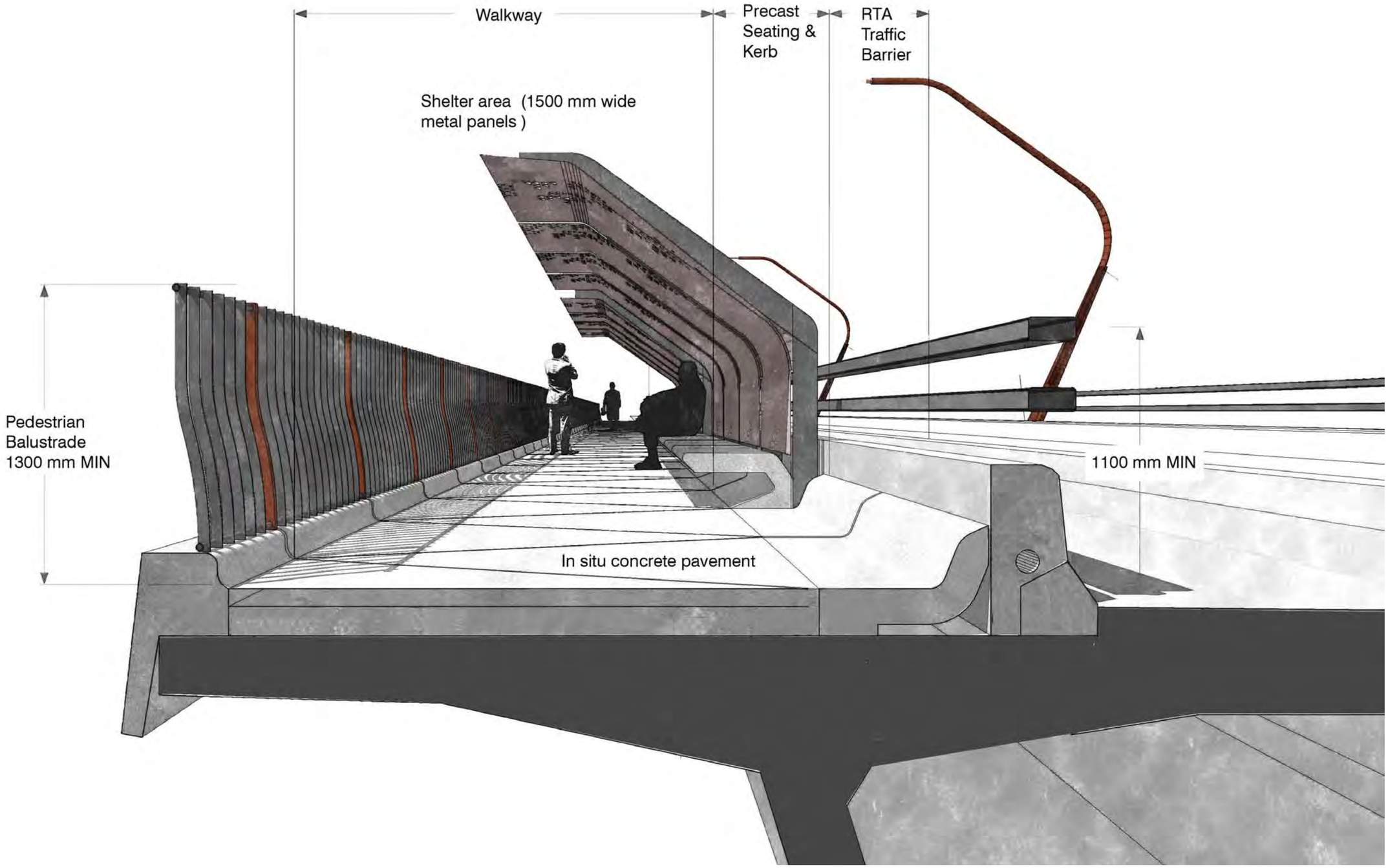
The Homebush Bay Bridge is divided into two distinct zones for usage. A 7 metre clear carriageway is dedicated for two-way movement of buses and bicycles. Due to the reasonably infrequent bus traffic, this zone will make a safe and convenient connection for cyclists.

Adjacent to this carriageway, and separated by reinforced concrete RTA kerb, is a 2950mm pedestrian footpath.

Emergency vehicle access will be permitted in the bus/cycle carriageway.




2950 mm Pedestrian Walkway
720 mm
9000 mm
Light Poles
2500 mm
1300 mm MIN
1100 mm MIN


Walkway
Precast
Seating &
Kerb
RTA
Traffic
Barrier
Shelter area (1500 mm wide
metal panels)
Pedestrian
Balustrade
1300 mm MIN
1100 mm MIN
In situ concrete pavement

4 Bridge interfaces

4.1 Introduction

The interface of the bridge occurs at the Rhodes and Wentworth Point landings where the movement of pedestrians, bikes, buses and emergency vehicles are required to transition from the bridge to the adjoining urban conditions.

The design objectives for the bridge interfaces are firstly to properly manage the potential for conflict between the movement of pedestrians, bikes and vehicles arriving to and departing from the bridge with that occurring on the foreshore. The more significant consideration in this regard is the infrequent movement of buses as well as the means to deliver bridge users to the appropriate movement paths on the adjoining streets.

While the bridge and its landings occur within the public domain, there are a number of different conditions and functions that are required to be taken into account to ensure a legible and safe interaction. In particular, pedestrians and cyclists need to be enabled to understand the logical hierarchy of movement so that they can adequately anticipate potential risks that occur within everyday street environments. This is particularly the case in areas where buses would not usually be expected to be found, such as park settings as well as where recreational cyclists travel at high speed on conflicting paths.

Another design objective is to minimise the potential for adverse impacts on the amenity and use of future foreshore open space. While a consumption of land is necessary, the footprint required for the bridge and access has been minimised. Otherwise, surface and clearance levels for the bridge have been carefully optimised to provide for successful integration at the opposing foreshores while also allowing for sound aesthetic responses.

Finally, it is considered important that the bridge be visually understood as a simple, robust and elegant structure that is separate from other adjoining infrastructure, built form, landscape elements and treatments anticipated at the landings. That is, the design approach is to ensure that users know when they are entering and leaving the bridge structure while elements that belong to the bridge such as the abutments, have a common and appropriate language that unifies the bridge structure overall.

4.2 Landing conditions

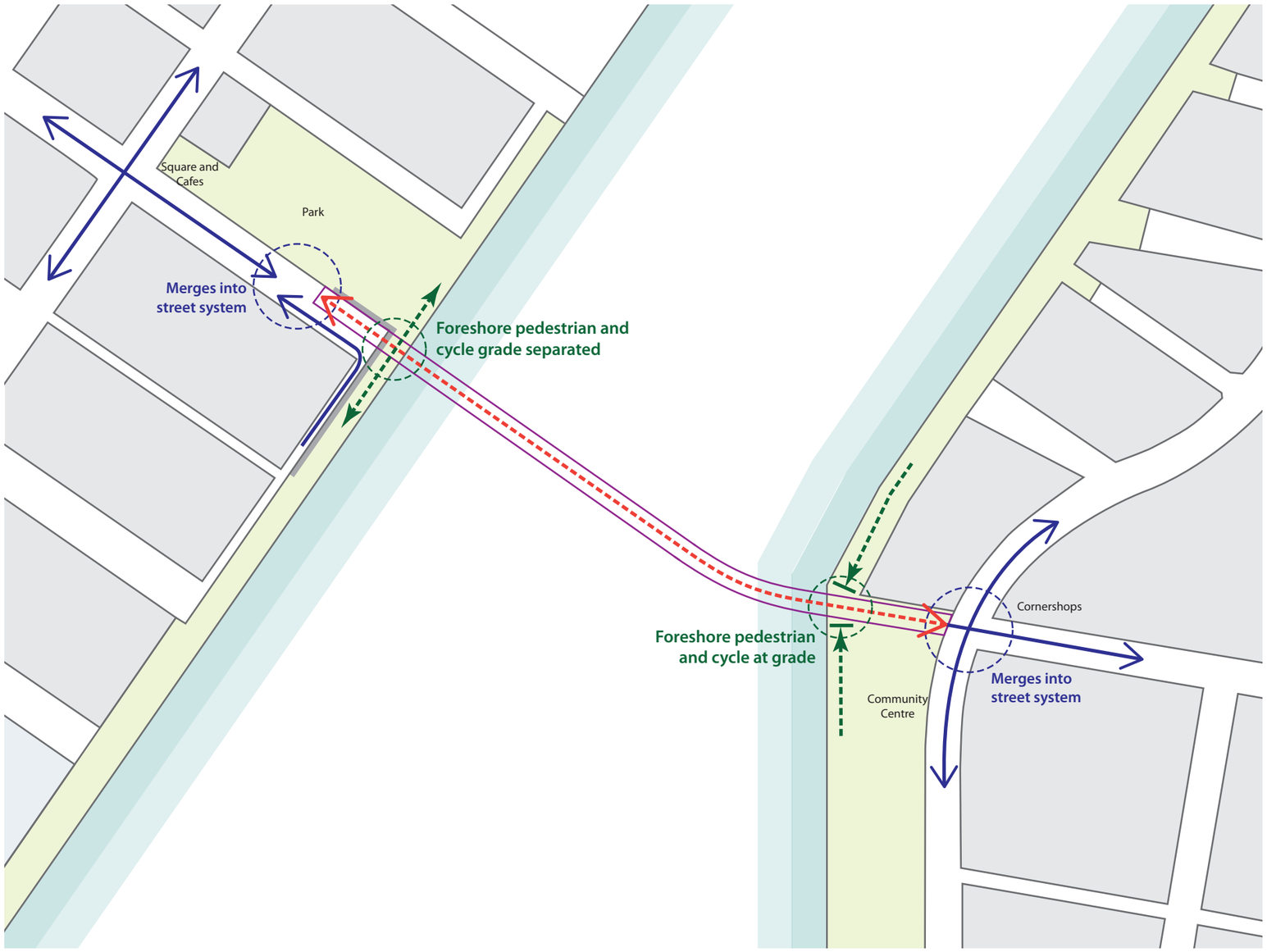
4.2.1 Overview

The bridge landings at Rhodes and Wentworth Point share contextual similarities in that they both adjoin large parks at the bridge arrival with a number of supporting activities such as a community centre, shops, cafes and restaurants. The bus and bike usage of the bridge requires the respective lanes to join the emerging grid street systems alike.

However the bridge landings differ greatly at their more immediate context. The bridge at the Rhodes end arrives at near ground level and within the foreshore reserve and park system requiring pedestrians, bikes and buses to travel across public open space before joining the street system at an intersection.

The bridge at the Wentworth Point end is grade separated from the foreshore reserve and lands directly within a wide elevated street. This allows buses and bikes to merge directly into the street carriageways without potential pedestrian conflict albeit with the need to merge with traffic outside of an intersection.

Importantly, this condition influenced the placement of the pedestrian path on northern edge of the bridge to allow pedestrian desire lines to be best managed and ensure safe movements.



4.2.2 Rhodes

The landing at Rhodes occurs near grade and within an area that has undergone comprehensive remediation from contamination being formerly part of the Union Carbide site.

The area has been set aside for a 20m linear foreshore public reserve that combines with a major foreshore park serving the needs of the new Rhodes community. Canada Bay Council has earmarked this part of the foreshore park for a major two storey community centre and regard its juxtaposition with the bridge as advantageous for the facility.

The park location may be suitable for bus stops, being an adequate distance from the Rhodes rail station, but also suitable for departures westerly across the bridge to facilities at Wentworth Point, Newington and Sydney Olympic Park.

Bus stops located within the park, but near the intersection of Gauthorpe Street and Shoreline Drive, may assist in the accumulation of activity in this area when combined with the operation of the future community centre and proposed nearby corner shops as well as that of the street intersection in general.

The linear foreshore reserve at Rhodes is consistently characterised by a continuous pedestrian promenade of some 4m in width at the water's edge that is punctuated by a variety of conditions created by street terminations. A distinctive characteristic is a separate winding 2.4m wide cycle path, creating pockets of landscaping of plantings and grass. The cycleway interacts frequently with pedestrian crossings at street terminations and elsewhere.

The pedestrian promenade is at RL 2.0 and rises gently towards the adjoining private open space to the apartments as well as the street terminations at about RL 3.0. The rise in levels within the park near the bridge landing continues to about RL 5.0 at the intersection of Gauthorpe Street and Foreshore Drive some 80 metres from the Bay wall.

The bus and cycle lanes will join the street system at the intersection of Gauthorpe and Foreshore Drive which comprise two way general traffic. The pedestrian path will extend from the northern side of the bridge through the park to join with the Rhodes street pathway system. However, there will be a desire line for pedestrians at the bridge landing to cross the path of the bus and cycle way to travel south on the foreshore and south-east to the community centre and beyond.

4.2.3 Wentworth Point

The landing at Wentworth Point is elevated to approximately RL 8.5m measured to the bridge surface level at the water's edge, and falling in level. This is a result of having to provide for a minimum clearance under the bridge for boat navigation at the deep water which occurs nearest to the Wentworth Point shoreline.

Development at this part of Wentworth Point comprises a street system and is based on an elevated false terrain to take account of the geological conditions and the inability to create building basements for parking.

The area which the bridge will pass over is set aside for a linear foreshore public reserve varying between 20 to 30 metres in width. Similar to Rhodes, the foreshore reserve merges north of the bridge alignment into a proposed large central public park which extends deep within surrounding urban development and public streets.

The condition of foreshore reserves at Wentworth Point is more mixed than that occurring at Rhodes but consistently contains a foreshore pedestrian promenade generally at RL 2.0. It is generally of sufficient width to allow for combined bicycle travel. The foreshore levels do not generally rise towards adjoining apartments in the areas of existing development but is proposed to rise in a similar fashion to Rhodes near the landing area where a false terrain is being constructed.

Under current plans, the foreshore reserve south of the bridge alignment adjoins a public street separating the reserve from residential apartments. This is proposed to include a one-way traffic lane and joins into a major 25m wide east-west street that contains a central median for planting known as Footbridge Boulevard.

Accordingly, the bridge will land directly onto the elevated Footbridge Boulevard, aligned to its northern extent. This allows the pedestrian path from the bridge to directly connect to the street pathway adjoining the large central park while the bus and cycle lanes are able to transition into the trafficable lanes within the boulevard.

Footbridge Boulevard connects directly to Hill Road, the closest intersection central to the development and the western most extent of the central park site which is planned to contain an urban square with associated shops, cafes and restaurants. This area may be suitable for bus stops given the level of after hour activity, central well connected location and appropriate distance from the Sydney Olympic Park ferry terminal on Parramatta River.

4.3 Rhodes landing response

4.3.1 Design requirements

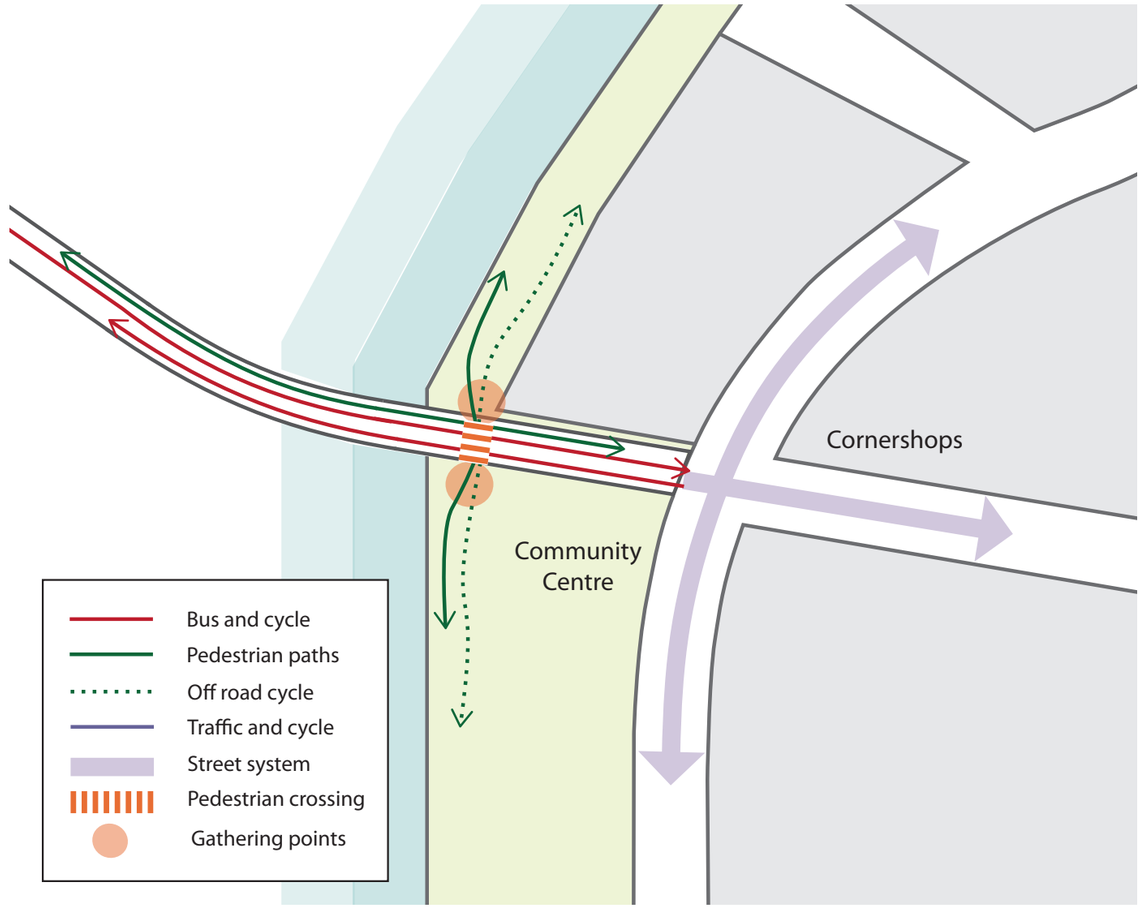
The slope of the foreshore park at Rhodes should allow for good visibility for pedestrians, bike riders and bus drivers which is a necessary requirement given the need for an at-grade crossing of east-west and north-south movements of all modes.

The difference in levels between the bridge surface and the foreshore promenade is estimated to be between 0.8 to 1.5 m, to be determined by detailed design, with a preference to minimise the difference. The lower level of RL 2.8m is governed by the need to remain above maximum sea level rise, tidal and flooding high water mark for the life of the bridge. The higher level of RL 3.5m is based on engineering analysis of bridge levels and structural depths having regard to the need to maintain a 3% slope for accessibility and a minimum navigational clearance for boats.

The level difference may be utilised to the advantage of slowing and corralling pedestrians and bike riders to a single collection and decision point on which to cross the path of bikes and buses leaving the bridge, while also providing greater certainty and clarity for bus drivers and bike riders leaving the bridge to give way. The level change also makes it possible to slow bikes travelling at speed from the bike lanes to ensure they cross the opposing bus and bike path in a controlled manner.

Level changes will require a number of path changes and accessibility requirements that are suitable for the mixing of bikes with pedestrians some of whom may be mobility impaired. This requires a suitably large area with multiple entrances directly adjoining the level crossing.

The slope of the parklands towards the water opposes the sloping grade of the bridge arriving at 3%, requiring a transition on land. This allows levels to be reconciled at the transition of the pedestrian and bike crossing.



4.3.2 Design principles

The design principles recommended for the integration of the bridge landing at Rhodes with its landscaping of the foreshore reserve / park surrounds are as follows, having regard to the contextual requirements discussed above.

- The language of the bridge structure should extend onto the land until the surface levels reconcile with the ground level of the park reserve and remain separate of all other structures (including the adjoining sea walls) and landscaping treatments.
- A wide and raised level pedestrian and bicycle crossing be placed where the bridge and ground levels reconcile at approximately RL 3.0 m and 10 to 15 metres from the foreshore subject to more detailed design.
- Pedestrian paths are required to be diverted from the foreshore immediately at the bridge landing (in association with buffered landscaping as required.) Additional pathways are also required that are accessibility compliant and naturally corralled at the level crossing utilising passive design and signage as required.
- Bikes need to be slowed before leaving bike paths and then directed towards the crossing to allow good visibility with hierarchical treatment (eg surfaces and signage) to ensure safe merging with pedestrians prior to the crossing.
- Appropriately signposted bus and bike lanes are required to extend from the bridge to join the Gauthorpe Street and Shoreline Drive intersection and should be at ground level for improved amenity and safety.
- Consideration should be given to providing low soft landscape barriers between the parklands and associated pathways to the bus and bike lanes to mitigate safety and amenity of pedestrian paths and areas adjoining moving buses while maintaining a high level of visibility.
- Provision should be allowed for the installation of a bus stop with appropriate shelters on the bus and bike lane near the intersection of Gauthorpe Street and Shoreline Drive subject to more detailed bus service planning.
- The proposed community centre should realise the potential of the bridge through its orientation, interface and levels especially to optimises activity and passive surveillance towards the bridge and potential bus stops.

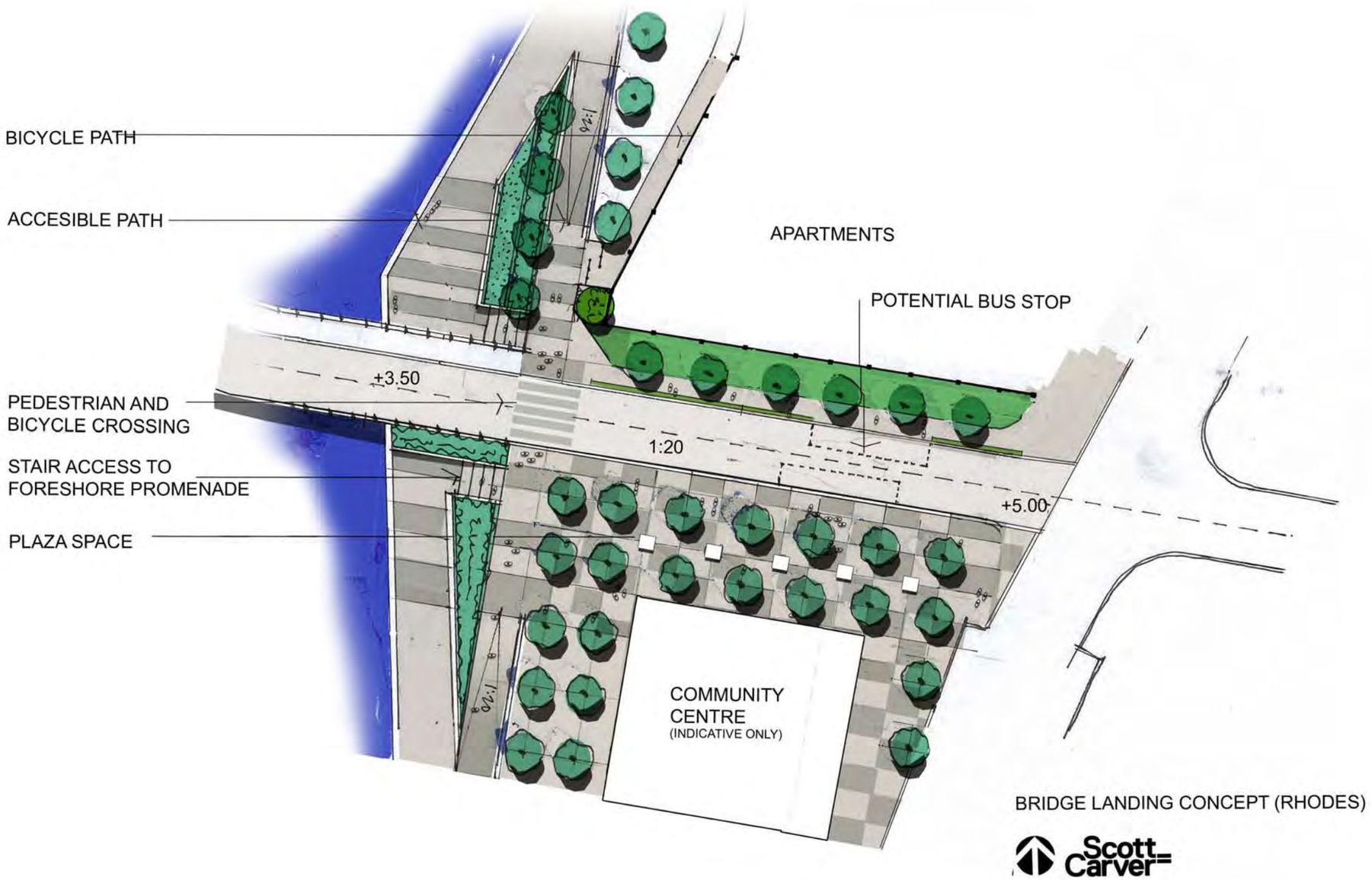
4.3.3 Illustrative concept

An illustrative concept has been prepared to demonstrate that levels and connections can be resolved. Note that this is not a proposed design and that a final solution would be developed by Canada Bay Council in response to the requirements and opportunities presented through the design of their planned Community Centre adjacent.

The illustrative concept has been prepared to demonstrate the application of the design principles for the Rhodes landing but should not be considered as a proposed design to be undertaken with the bridge.

At the time of report preparation, the owners of the land were lodging landscape plans for the foreshore reserve while Council has yet to commence its planning and design for the foreshore park including the proposed community centre.

The illustrative concept should however provide confidence that the design principles can be practically applied to minimise amenity impacts and potential conflicts between buses, bikes and pedestrians as well as optimising the advantages and opportunities provided by the bridge.



BRIDGE LANDING CONCEPT (RHODES)

Scott Carver

4.4 Wentworth Point response

4.4.1 Design requirements

The height of the bridge surface at the Wentworth Point landing is RL 8.5m, some 4m above the foreshore promenade when measured to its lowest element. This requires a response from the master planning of the receiving land.

In particular, the false terrain is required to be adapted to provide an elevated street condition for Footbridge Boulevard for the bridge to land on otherwise it would be required to extend deep into the urban development because of the accessible slope requirements of the bridge.

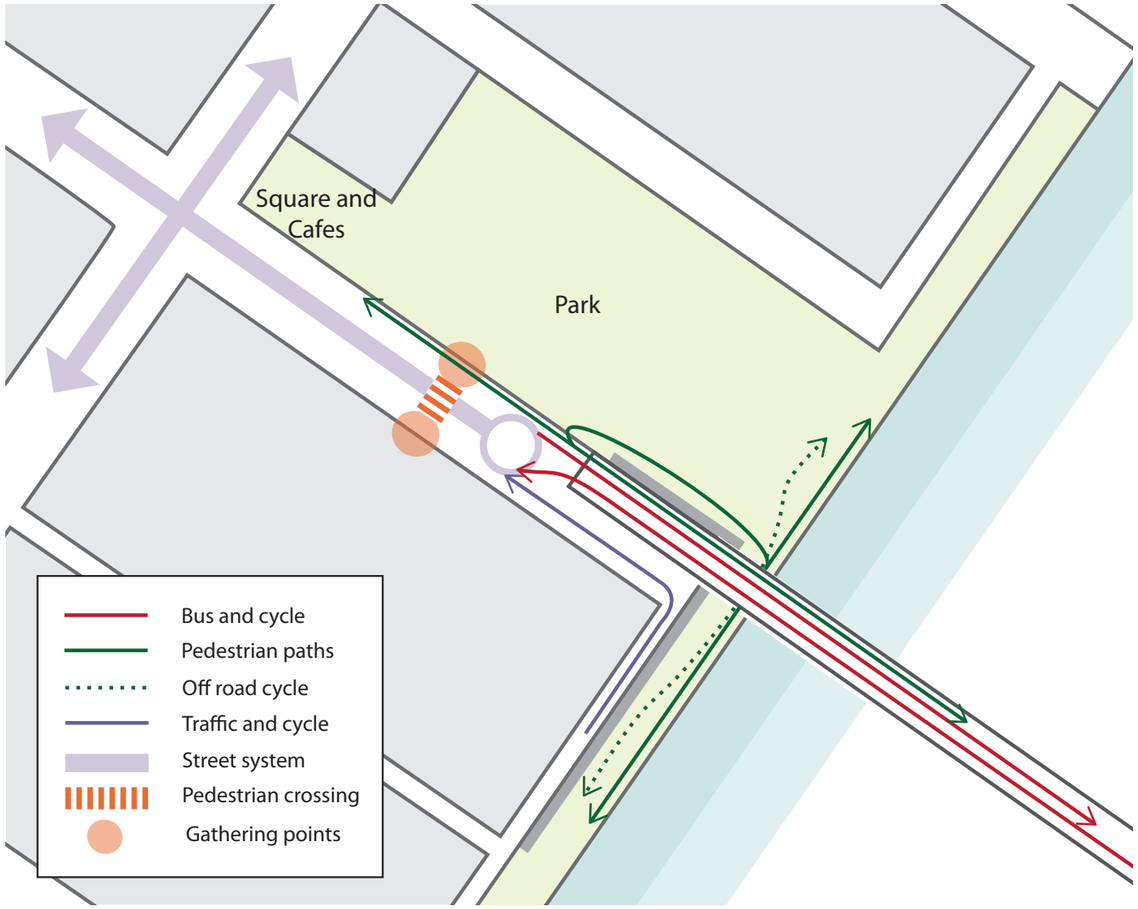
The elevated street condition allows adjoining apartments not to be dominated by above ground bridge infrastructure and elevated bus movements. It also protects the amenity of the receiving street from being diminished by a significant south facing abutment wall creating a minor but mostly shaded canyon effect.

The other important design requirement is to minimise adverse impacts on the foreshore reserve given the need for walls to the abutment and rising street edge and well as the under croft condition between the bridge abutment and the water edge. If untreated, this could lead to a series of undesirable and unsafe domains with deeply shaded areas, poor overlooking from street and apartments, proneness to vandalism, personal threat and a harsh visual effect.

The strategy to overcome the potential for adverse effects from the bridge is to firstly remove ground planes that would be subject to adverse conditions such as areas that are unsupervised, deeply shaded or enclosed by walls. A secondary strategy is to optimise opportunities for utilising the abutment and pathways for activity associated with the park lands.

The potential of a deeply shaded, unsupervised and poorly perceived space under the bridge will be moderated by the narrowness of the adopted profile and the minimum height from the foreshore promenade level of approximately 4m. This maximises solar, ‘weather‘ and visual penetration of the under croft area which can be improved by placing the abutment wall closer to the foreshore to minimise the extent of diminished space.

The pathway for pedestrians is able to continue unchanged from the bridge arrival at Wentworth Point onto the street path on Footbridge Boulevard without potential conflict but with opportunities for travel directly through the park to the foreshore. The pathways within the central park would allow for a number of means for pedestrian and bike movement also allow for accessibility.



The placement of the bridge landing directly onto Footbridge Boulevard effects its operation for traffic. The bus and cycle lanes are able to connect directly to the respective traffic lanes that are separated by a central median. The west bound bridge lane must merge with one-way traffic travelling westward from the foreshore street and arriving from a different level. This creates poor visibility between drivers and bike riders with the potential for avoidable accidents and needs to be reconciled by traffic engineering means within the street.

Another consequence of the street landing is that east travelling traffic cannot continue onto the street adjoining the foreshore reserve.

One option to manage this is to stop east bound traffic onto this part of the boulevard, that is, past the nearest intersection. This would result in a long bus and bike only lane within a street condition which is considered a poor outcome for the amenity and animation of the street, particularly on its edge to the central park.

Consequently, the preferred option is to provide a roundabout to manage the merging of bus and bikes with other traffic which allows most of Footbridge Boulevard to act as a normal street. A cul-de-sac type condition can be avoided because of the 25m width of the boulevard allowing direct pedestrians paths not to be interrupted.

Landscaping will be required to treat unavoidable consequences of level differences but can be utilized positively given the extent of the foreshore and central park lands. A condition also requiring treatment arises from the continuation of the south-facing, falling abutment wall onto the rising elevated street at its intersection on the foreshore reserve edge. However, the level difference here is likely to be limited to 1 to 1.5 m allowing for simple treatments.

4.4.2 Design principles

The design principles recommended for the integration of the Wentworth Point bridge landing with the Footbridge Boulevard and the foreshore reserve / park surrounds are as follows having regards to the contextual requirements discussed above.

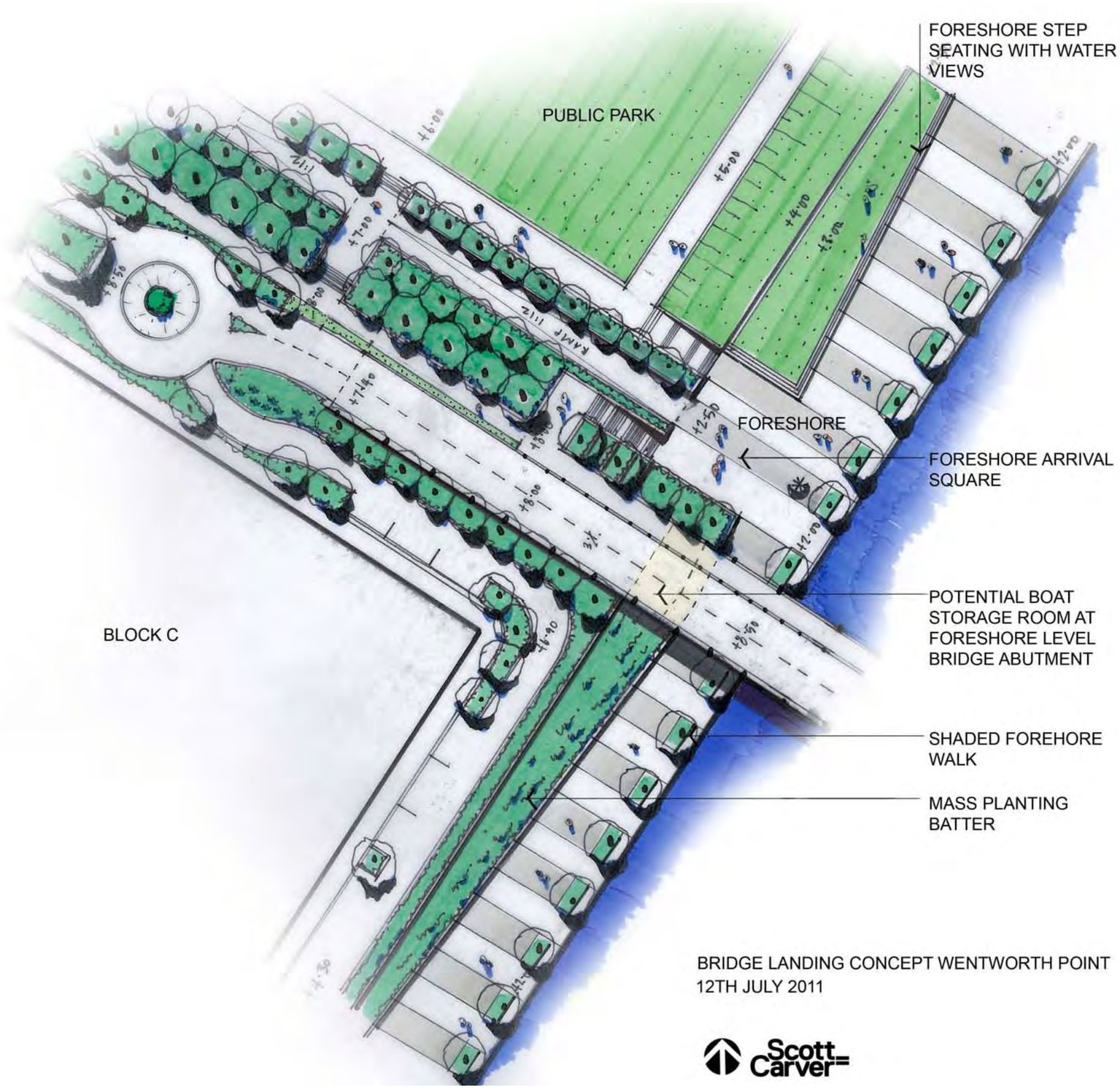
- The language of the bridge structure should extend onto the land until the levels reconcile with that of Footbridge Boulevard and remain separate of all other structures (including the adjoining street support walls) and landscaping treatments.
- The abutment placement be optimised towards the foreshore to minimise the extent of shaded and unsupervised ground while still allowing for easy passage of pedestrians, bikes and maintenance vehicles with good visibility and the removal of opportunities for concealment and entrapment.
- Consideration should be given to a sloping landscape treatment to conceal the street support wall while eliminating poor, unsupervised space at the wall edge and emphasising the bridge and its abutment as a separate element in the landscape.
- Landscaping be employed to mitigate against the potential for vandalism and concealment around the abutment and street supporting walls and corners.
- Consideration should also be given to occupying the abutment void with activities suitable for its foreshore reserve context with uses such as boat or kayak storage, community activities and the like.
- A roundabout be utilised to manage the merging of buses and bikes onto the traffic carriageways within Footbridge Boulevard at the soonest opportunity from the bridge landing having regard to vehicle safety but so as to minimise the effect on the street condition.
- A separate pedestrian crossing occur soon after, but at a sufficiently safe distance west of the roundabout to direct pedestrians with southerly desire lines as well as to allow bicycles to safely cross opposing traffic to enter the central and foreshore park system.
- The design of the central park allow for a series of accessible and stepped pathways from the bridge landing and receiving street to optimise the opportunities for recreational usage and interaction with the bridge.
- Consideration be given to the placement of bus stops and shelters near the intersection with “Ridge Road” and adjoining the proposed urban square and associated cafes and restaurants to allow for good after-hour casual supervision.

4.4.3 Illustrative concept

The illustrative concept has been prepared to demonstrate the application of the design principles at the Wentworth Point landing but should not be considered as a proposed design to be undertaken with the bridge.

At the time of report preparation, the owners of the land were commencing the preparation of a revised public domain plan that would respond to the bridge landing as well as a range of other matters unassociated with the bridge. This will be undertaken in conjunction with the relevant planning authorities responsible for its approval and Auburn Council in particular, given that it will take possession of parts of the foreshore reserve.

The illustrative concept should however provide confidence that the design principles can be practically applied to minimise amenity impacts and potential conflicts between buses, bikes and pedestrians as well as optimising the advantages and opportunities provided by the bridge.



BRIDGE LANDING CONCEPT WENTWORTH POINT
12TH JULY 2011

Scott Carver


Victoria Road
Victoria Road
Meadowbank Park
Parramatta River
Helene Park
Wentworth Point
Rhodes Peninsula
Parramatta River
Homebush Bay
Haslams Creek
Bennelong Road
Haslams Creek
Sydney Olympic Park
The Brickpit
Badu Mangroves
Bicentennial Park