

4.8 Artarmon precinct



VIEW OVER THE GOREHILL FREEWAY FROM HAMPDEN ROAD BRIDGE

4.8.1 Precinct context

Artarmon is a mixed-use urban area located to the north west of North Sydney. The precinct is centred on the Gore Hill Freeway/Lane Cove tunnel, which cuts through the precinct in an east/west direction.

Land use

The precinct has residential land use in the north and industrial and institutional land use to the south, including a portion of the Artarmon/St Leonards industrial area.

North of the Gore Hill freeway, the precinct encompasses the open spaces of Artarmon Reserve.

Road connections

The precinct encompasses traffic flows to and from the CBD from points north and west. The Northern Railway line traverses the precinct with Artarmon Station being located to the north of the precinct and St Leonards Station to the south.

The major node point is located at Reserve Road where it connects to the Freeway. The Gore Hill Freeway enters the Lane Cove Tunnel at the western edge of the precinct.

Major intersections include Hampden Road/Herbert Street and Reserve Road and Dickson Avenue. There is little east/west connectivity with surroundings due to the locations of the Pacific Highway and Northern Railway Line.

Cycle and pedestrian network

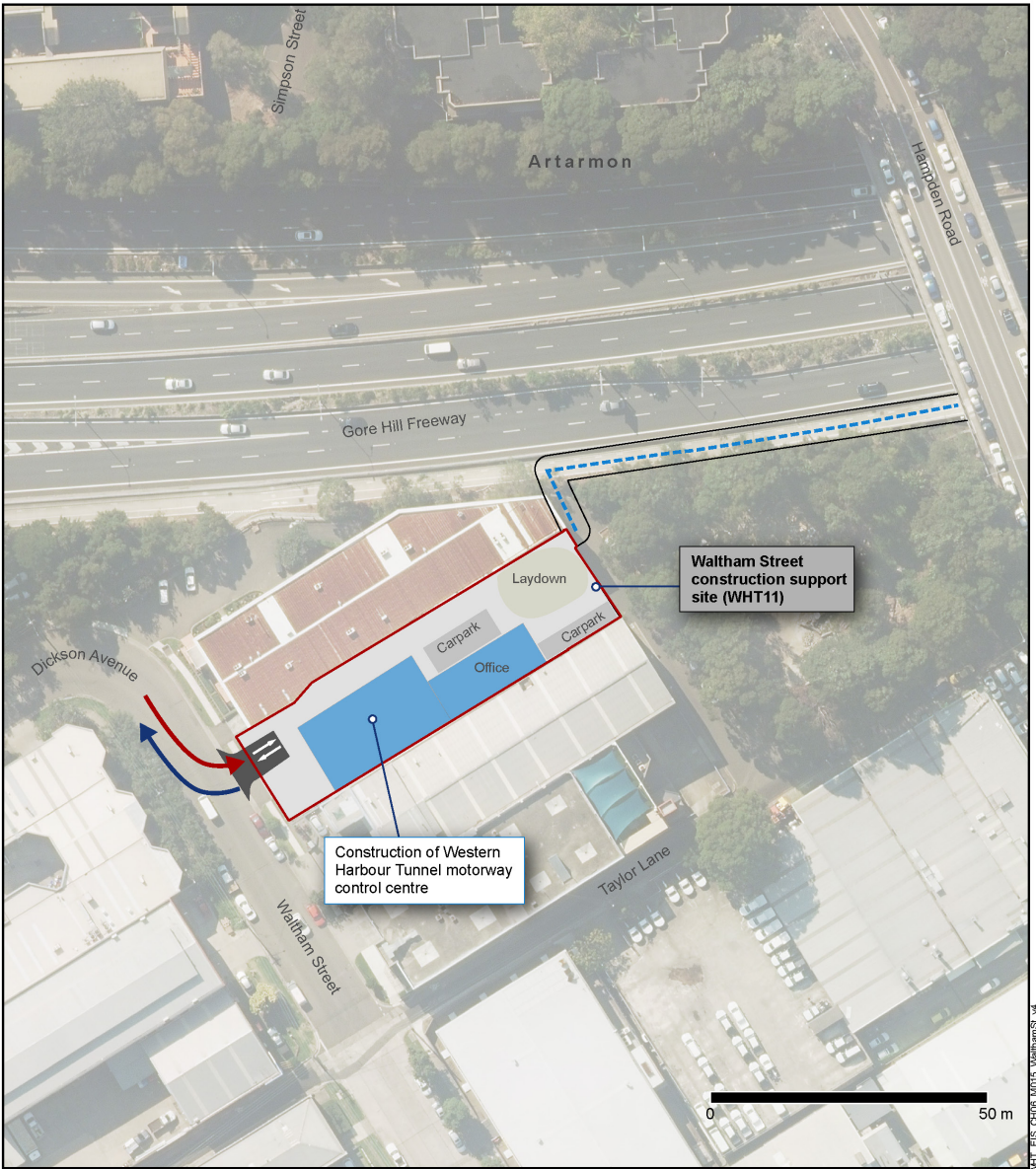
Pedestrian movement across the freeway takes place at Reserve Road and Hampden Road, although there are no dedicated footbridges across the freeway.

A shared user path is located along the south side of the Gore Hill Freeway with connections to Artarmon Reserve and surface streets.

4.8.2 Local policy and planning

The precinct is covered by the Willoughby LEP (2012) and DCP (2016). These documents set relevant objectives in relation to views and amenity of non-residential development. The DCP includes planning and locality areas which have specific outcomes regarding views.

Where relevant, these are discussed within the precinct visual impact assessment section.



- Indicative only – subject to design development
- Legend**
- Construction footprint
  - Construction support site
  - Construction support site buildings
  - Communications cable for motorway control centre
  - Temporary site access
  - Site access - in
  - Site access - out

FIGURE 4.18 - WALTHAM STREET CONSTRUCTION SUPPORT SITE (WHT11) LAYOUT



4.8.3 Project elements

The Western Harbour Tunnel project within the Artarmon precinct comprises:

- + Motorway control centre adjacent to Waltham Street, in proximity to the Gore Hill Freeway. The motorway control centre would comprise a building with an area of about 2500 square metres and a height of about five metres. It would be continuously staffed and used to monitor, and if necessary respond to, conditions in the project tunnels and on surface road connections (refer Figure 4.18 and 4.19).

4.8.4 Urban design principles

The following key principles within Table 4.10 have been developed for the Artarmon precinct:

Principle	Project urban design outcome
+ Provide green buffer to lot boundaries where feasible	+ Street tree planting has been proposed along the road edge to assist integration of infrastructure and reduce visual impacts + Ensure CPTED principles are considered during further design development.
+ Integrate motorway control centre into the industrial urban context/road corridor through appropriate selection of materials and screen planting	+ Ensure the motorway control centre is architecturally designed to reduce its perceived scale and utilise a materiality that integrates with the existing precinct context. The building should contribute to the built character of Waltham Street/Gore Hill Freeway + The facility should be subject to ongoing design development during future project design stages + Ensure CPTED principles are considered during further design development. .

TABLE 4.10 - ARTARMON PRECINCT URBAN DESIGN PRINCIPLES



FIGURE 4.19 - ARTARMON PRECINCT - CONCEPT MASTERPLAN



# Artarmon precinct - Landscape character assessment

## 4.8.5 Existing landscape character

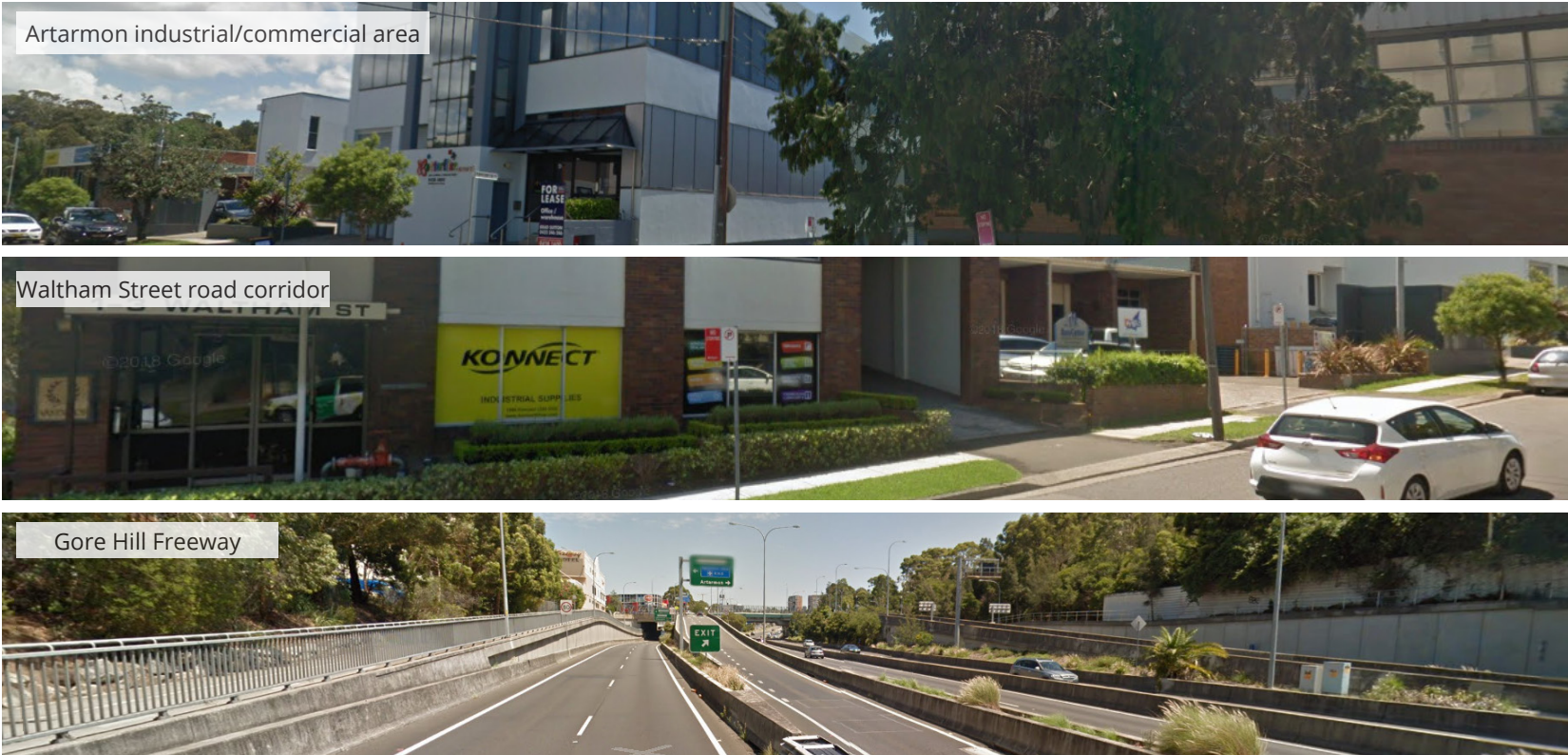
The area surrounding the site of the future motorway control centre comprises large industrial/commercial lots fronting local road corridors. Buildings are a mix of single and double storey heights.

The wider area is dominated by transport infrastructure with the Gore Hill Freeway in close proximity to the site. Despite significant urban development surrounding the road, the Gore Hill Freeway has a discernible green edge.

## 4.8.6 Landscape character zones

The following key LCZs have been identified within the precinct for further analysis (refer Figure 4.20):

- + Artarmon industrial/commercial area
- + Waltham Street road corridor
- + Gore Hill Freeway.





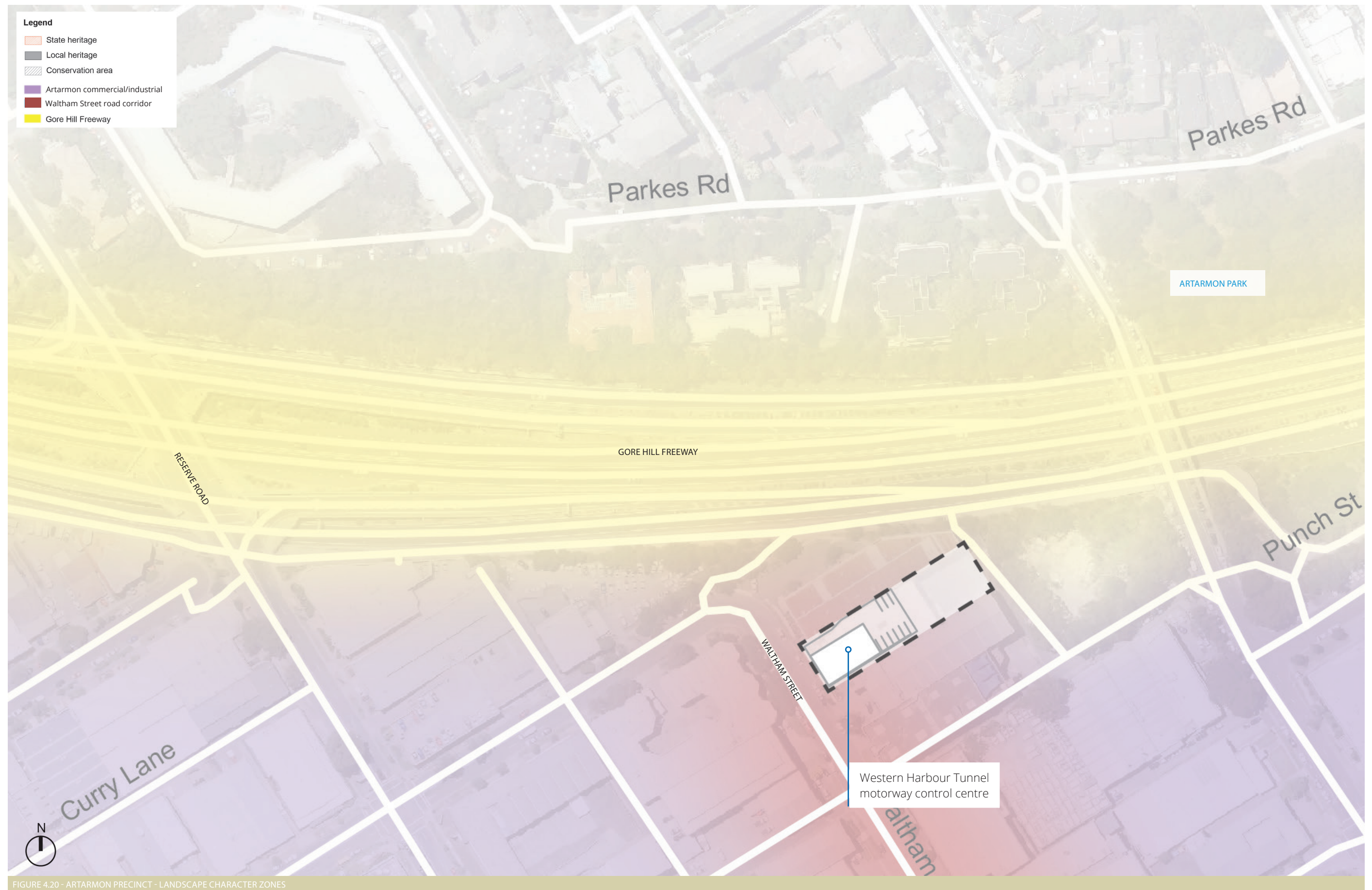


FIGURE 4.20 - ARTARMON PRECINCT - LANDSCAPE CHARACTER ZONES



4.8.7 Artarmon industrial/ commercial area

The southern part of Artarmon between the North Shore Railway and the Pacific Highway developed a strong industrial base from the 1880s, with the initial focus being on brick-making. The LCZ is now characterised by light industrial and commercial uses in large warehouse developments.

The future motorway control centre site is currently occupied by a commercial property. Lot sizes in the area are large and utilitarian with a sizeable set back from the road edge. Buildings are in a mix of architectural styles. Simple planted beds often line the street frontage.

**Heritage**

There are no relevant heritage items within this LCZ.

**Project effects**

The key project effects on the LCZ would be:

- + Demolition of commercial building along eastern side of Waltham Street
- + Construction of motorway control centre and associated car park
- + Removal of some existing vegetation along eastern side of Waltham Street.

Sensitivity	Magnitude (operation phase)	OPERATION PHASE Landscape character impact	CONSTRUCTION PHASE Landscape character impact
<div>The sensitivity of this LCZ to the project is considered to be Low, due to the following:<ul style="list-style-type: none"><li>+ Large scale industrial and commercial plots that generally have a lower landscape value than residential areas</li><li>+ The LCZ has the ability to accommodate change of a similar nature without detrimental impacts to its character.</li></ul></div>	<div>The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following:<ul style="list-style-type: none"><li>+ The motorway control centre would be similar in scale, mass and form to that of existing built elements within the LCZ</li><li>+ While some vegetation removal would likely be required, replacement planting would seek to mitigate this impact over time</li><li>+ The project is not expected to adversely alter the spatial character of the LCZ.</li></ul></div>	<div>Negligible to Beneficial - a considered architectural design of the building may improve the character of the local area.</div>	<div>Magnitude (construction phase): Negligible</div> <div>The construction phase of the project is not expected to lead to increased landscape character impacts on this LCZ.</div>
Low	Negligible	Negligible to Beneficial	Negligible



#### 4.8.8 Gore Hill Freeway

Due to the depressed nature of the corridor, the spatial character of the road is relatively enclosed. The Artarmon industrial area forms a built edge to the southern side of the corridor.

Numerous road infrastructure elements are present including road bridges, the Lane Cove tunnel portals, road signage, gantries and lighting.

##### Heritage

There are no known heritage items located within the road corridor.

##### Project effects

Works adjacent to this LCZ include:

- + Demolition of commercial building
- + Construction of motorway control centre and associated car park.

Sensitivity	Magnitude (operation phase)	OPERATION PHASE Landscape character impact	CONSTRUCTION PHASE Landscape character impact
The sensitivity of this LCZ to the project is considered to be Low, due to the following: <ul style="list-style-type: none"> <li>+ The inherent landscape value of this LCZ is low within the context of its major arterial road function</li> <li>+ As a major road corridor, the Gore Hill Freeway is able to accommodate change without a major impact on its character.</li> </ul>	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following: <ul style="list-style-type: none"> <li>+ Existing vegetation separates the site from the Gore Hill Freeway</li> <li>+ The proposed built form would be similar in scale, mass and form to that of the existing road environment.</li> </ul>	Negligible to Beneficial - a considered architectural design of the building may improve the character of the area.	Magnitude (construction phase): Negligible  The construction phase of the project is not expected to lead to increased landscape character impacts on this LCZ.
Low	Negligible	Negligible to Beneficial	Negligible

#### 4.8.9 Waltham Street road corridor

The streetscape is generally quite wide and relatively well vegetated. Small street trees can be found on the western side of the road. Large double height light industrial/commercial premises front the road including Butterflies child care facility.

##### Heritage

There are no known heritage items located within the road corridor.

##### Project effects

The key project effects within this LCZ would be:

- + Demolition of commercial building along eastern side of Waltham street
- + Construction of motorway control centre and associated car park
- + Removal of existing vegetation along eastern side of Waltham Street.

Sensitivity	Magnitude (operation phase)	OPERATION PHASE Landscape character impact	CONSTRUCTION PHASE Landscape character impact
The sensitivity of this LCZ to the project is considered to be Low, due to the following: <ul style="list-style-type: none"> <li>+ The inherent landscape value of this LCZ is low within the context of its primary transport function</li> <li>+ The road corridor is able to accommodate change without a major impact on its character.</li> </ul>	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following: <ul style="list-style-type: none"> <li>+ The proposed built form within the LCZ would be similar in scale, mass and form to that of the existing road environment</li> <li>+ While some vegetation removal would likely be required, replacement planting would seek to mitigate this impact over time</li> <li>+ The project is not expected to alter the spatial character of the LCZ.</li> </ul>	Negligible to Beneficial - a considered architectural design of the building may improve the character of the area.	Magnitude (construction phase): Low  There may be a temporary greater impact to landscape character during the construction stage due to altered traffic conditions and presence of construction equipment.
Low	Negligible	Negligible to Beneficial	Low



## Artarmon precinct - Visual impact assessment

### 4.8.10 Existing visual environment

The visual character of the precinct is defined by its undulating topography, major roads, industrial land uses and vegetated streetscapes.

Views within the Freeway and associated shared user path are mostly constrained by the topography and dense vegetation either side of the corridor.

Key relevant view corridors within the precinct include:

- + Constrained local views along the Gore Hill Freeway, experienced fleetingly
- + Local views to surrounding development from shared user path along Gore Hill Freeway, often filtered by vegetation
- + Local views along Waltham Street
- + Local views within industrial/commercial areas, constrained by built form.

### 4.8.11 Local planning and policy

[Willoughby LEP \(2012\)](#)

The Willoughby LEP sets the following objective in relation to views:

- + Preserve, enhance or reinforce specific areas of high visual quality, ridgelines and landmark locations, including significant gateways, views and vistas.

[Willoughby Development Control Plan \(2016\)](#)

There are no relevant controls regarding visual amenity of this site within the Willoughby DCP.

### 4.8.12 Selected viewpoints

Following a site visit to ground truth the desktop information, these key viewpoints were selected for further analysis (refer Figure 4.21):

1. Waltham Street (public)
2. Gore Hill Freeway (public)
3. Gore Hill Freeway shared user path (public)



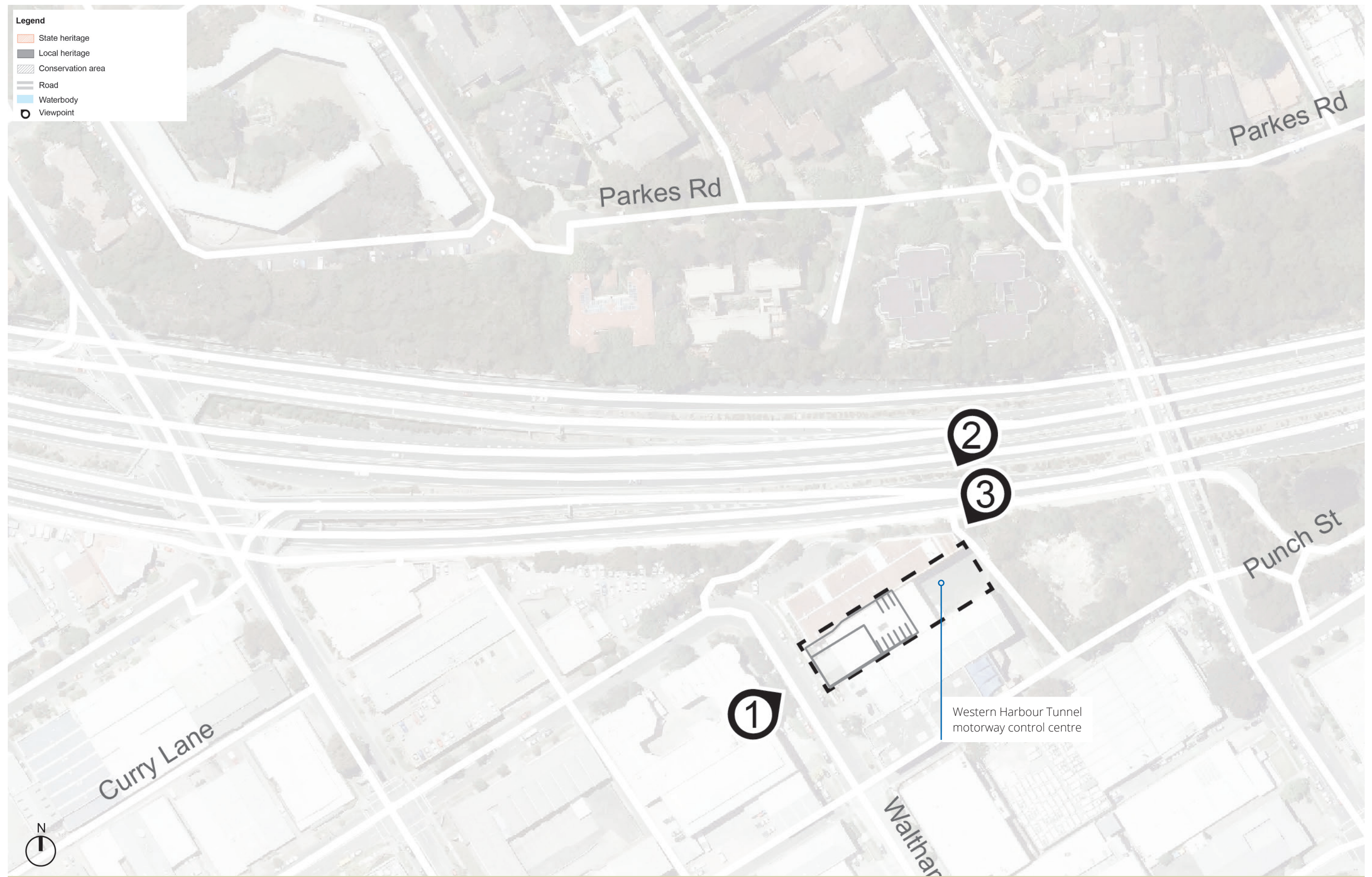


FIGURE 4.21 - ARTARMON PRECINCT - VIEWPOINT LOCATION PLAN



DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 1 Waltham Street <div>Type Public</div> <div>Distance 5m</div> <div>No. of viewers Low</div>	This viewpoint is representative of the view available to motorists and pedestrians on Waltham Street in close proximity to the proposed motorway control centre.  The existing visual environment in this location is one of an industrial area with several brick and rendered buildings flanked by the partially vegetated edge of the Gore Hill Freeway.  Buildings tend to be double height with a utilitarian design. Some landscape planting can be found in the form of street trees and planter beds.	The sensitivity of these receivers to the project is considered to be Low, due to the following:  + Industrial/commercial area with a relatively low visual amenity and an ability to absorb change without detrimental affects on visual character.	The magnitude of impact arising from the project is considered to be Negligible, due to the following:  + The motorway control centre would likely match the existing nearby local buildings in scale, mass and form. The development would be congruous with the existing industrial character.	Overall, a Negligible to Beneficial visual impact is expected on these receivers once the project is operational.  The motorway control centre would be unlikely to cause adverse impacts to this viewpoint's visual amenity although some vegetation removal may be required. A considered architectural design of the building may improve the visual character of the area.	Additional night time visual impacts are not expected in this location.	Magnitude (construction phase): Low  A Low visual impact is expected on these receivers during the construction period.  Site hoardings, construction equipment and increased vehicular movements would likely be visible.
		Low	Negligible	Negligible to Beneficial		Low
Viewpoint 2 Gore Hill Freeway <div>Type Public</div> <div>Distance 40m</div> <div>No. of viewers High</div>	Receivers are motorists traveling in both directions on the Gore Hill Freeway.  The existing visual environment is typical of a large road corridor with associated infrastructure. Local views out from the road are generally constrained by topography and vegetation.  The proposed motorway control centre site is partially screened by existing vegetation..	The sensitivity of these receivers to the project is considered to be Low, due to the following:  + The road environment has an existing industrial visual context and an ability to absorb change without detrimental affects on visual character.	The magnitude of impact arising from the project is considered to be Negligible, due to the following:  + Views towards the site are partially filtered by foreground vegetation + The proposed motorway control centre would be similar in scale to existing built form elements within the current view + Receivers experience this view in a transient manner with a short duration of view.	Overall, a Negligible visual impact is expected on these receivers once the project is operational.  Although the proposed built form may constitute a noticeable element within the viewframe, the project works would generally be congruous with the existing road infrastructure and nearby industrial development.	Additional night time visual impacts are not expected in this location.	Magnitude (construction phase): Low  A Low visual impact is expected on these receivers during the construction period.  Site hoardings, construction equipment and increased vehicular movements would likely be visible.
		Low	Negligible	Negligible		Low
Viewpoint 3 Gore Hill Freeway shared user path <div>Type Public</div> <div>Distance 20m</div> <div>No. of viewers Moderate</div>	Receivers are pedestrians and cyclists using the shared user path that travels east/west adjacent to the Gore Hill Freeway.  The proposed motorway control centre site is partially screened by existing vegetation alongside the shared user path.	The sensitivity of these receivers to the project is considered to be Low, due to the following:  + The shared user path environment has an existing industrial visual context and an ability to absorb change without detrimental affects on visual character.	The magnitude of impact arising from the project is considered to be Negligible, due to the following:  + Views towards the site are partially filtered by foreground vegetation + The proposed motorway control centre would be similar in scale to existing built form elements within the current view.	Overall, a Negligible visual impact is expected on these receivers once the project is operational.  Although the proposed built form may constitute a noticeable element within the viewframe, the project works would generally be congruous with the existing road infrastructure and nearby industrial development.	Additional night time visual impacts are not expected in this location.	Magnitude (construction phase): Low  A Low visual impact is expected on these receivers during the construction period.  Site hoardings, construction equipment and increased vehicular movements would likely be visible.
		Low	Negligible	Negligible		Low



VIEWPOINT 1 - VIEW NORTH FROM WALTHAM ST TOWARDS MOTORWAY CONTROL CENTRE SITE



VIEWPOINT 2 - VIEW SOUTH FROM GORE HILL FREEWAY TOWARDS PROPOSED CONTROL CENTRE



VIEWPOINT 3 - VIEW SOUTH FROM GORE HILL FREEWAY SHARED USER PATH





VIEWPOINT 1 - EXISTING - VIEW NORTH FROM WALTHAM ST TOWARDS MOTORWAY CONTROL CENTRE SITE





VIEWPOINT 1 - PROPOSED (YEAR 10 OF OPERATION) - VIEW NORTH FROM WALTHAM ST TOWARDS MOTORWAY CONTROL CENTRE SITE

Landscape and urban design treatments included for illustrative purposes only and subject to further design development.



Artarmon precinct summary

4.8.13 Key findings

The following key points have been noted within the assessment (refer Table 4.11 and 4.12):

- + Landscape character and visual impacts are limited within the precinct. The presence of light industrial/commercial development and existing large scale road infrastructure has reduced the sensitivity of the landscape and visual receivers to change
- + A well designed motorway control centre would likely be congruous with the existing Gore Hill Freeway road corridor and industrial nature of the precinct. The building has the potential to improve the landscape character and visual amenity of the local area.

4.8.14 Landscape character

Operational Phase

A Negligible landscape character impact rating has been recorded on all LCZs studied.

The adjacent road corridors and industrial/commercial land uses have a high ability to absorb the changes associated with the project and a major impact to their character is not expected. The spatial integrity of the area would be maintained.

Construction Phase

Impacts on landscape character are likely to temporarily increase for Waltham Street due to the presence of construction equipment and increased vehicular movements, leading to a greater exposure to built form and potential temporary reduction in landscape amenity.

4.8.15 Visual impact

Operational Phase

Negligible visual impacts are expected on all viewpoints studied. There may be some discernible removal of vegetation along the eastern road edge of Waltham Street, however, replacement planting fronting the road and a contextually sensitive architectural design of the motorway control centre would assist in mitigating these impacts. A well designed building may enhance the visual character of the street.

The Gore Hill Freeway and associated shared user path are unlikely to be impacted by the new built form.

Night time

Night time visual amenity is unlikely to be adversely affected. The presence of numerous existing light sources within the mostly urbanised precinct ensures that the magnitude of any changes would be Negligible.

Construction Phase

Visual impacts are expected to temporarily increase for the viewpoints studied during the construction phase of the project with views of site hoardings and construction equipment.

4.8.16 Cumulative impact

The Beaches Link project may be constructed before or at a similar time to Western Harbour Tunnel.

The Beaches Link project would consist of a motorway control centre at Reserve Road, motorway facilities and ventilation outlet at Punch Street, tunnel portals and widening within Gore Hill Freeway, as well as a tunnel support facility adjacent to Waltham Street, Artarmon.

The operation of both projects together is unlikely to lead to any cumulative landscape character and visual impacts due to the limited nature of the Western Harbour Tunnel works.

The Western Harbour Tunnel motorway control centre would likely be congruous with the existing industrial context of the precinct and the nearby Beaches Link project components.

DESCRIPTION			LANDSCAPE IMPACT		LANDSCAPE IMPACT
Landscape Character Zone	Sensitivity	Magnitude (operation phase)	OPERATION		CONSTRUCTION
Artarmon industrial/commercial area	Low	Negligible	Negligible to Beneficial		Negligible
Gore Hill Freeway	Low	Negligible	Negligible to Beneficial		Negligible
Waltham Street road corridor	Low	Low	Negligible to Beneficial		Low

TABLE 4.11 - ARTARMON PRECINCT - LANDSCAPE CHARACTER IMPACT SUMMARY TABLE

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT		CONSTRUCTION
1	Waltham Street	Public	Moderate	Negligible	Negligible to Beneficial	Negligible		Low
2	Gore Hill Freeway	Public	Low	Negligible	Negligible	Negligible		Low
3	Gore Hill Freeway shared user path	Public	Low	Negligible	Negligible	Negligible		Low

TABLE 4.12 - ARTARON PRECINCT - VISUAL IMPACT SUMMARY TABLE



# 5. Construction support sites

## 5.1 Approach

This section assesses the landscape character and visual impacts of the project’s temporary stand alone construction support sites, which have not been previously assessed within Chapter 4. These include (refer Figure 5.1):

- + Victoria Road (WHT2)
- + White Bay (WHT3)
- + Yurulbin Point (WHT4)
- + Sydney Harbour south cofferdam (WHT5)
- + Sydney Harbour north cofferdam (WHT6)
- + Berrys Bay (WHT7)
- + Ridge Street north (WHT9)

The methodology used for this assessment is identical to that utilised for the project precincts.

Site layouts are indicative and buildings mentioned in this section, including noise walls, hoarding, fences and acoustic sheds would be confirmed during the further design development phase.

### 5.1.1 Types of works

Visual and landscape character impacts during construction would result from the introduction of construction ancillary facilities into the existing landscape. This would include night lighting at sites that involve tunnelling activities or that support tunnelling activities.

Activities that would take place at the construction support sites are discussed in more detail within each site section. In general, visible construction activities would include (where required):

- + Vegetation removal
- + Noise barriers/hoarding/fencing
- + Heavy and/or light vehicle access potentially 24 hours a day, seven days a week
- + Staff amenities buildings
- + Workshops and storage containers
- + Stockpile and laydown areas

- + Operation of plant and equipment, including cranes
- + Lighting for night-time works
- + Water storage tanks
- + Construction of infrastructure for the operation of the project.

### Dredging

Construction of the immersed tunnel between Yurulbin Point and Balls Head would require dredging activities to be carried out. This would use a closed environmental clamshell - a device to avoid the spread of material into the water column. Any sediments released into the water column through dredging may be visible on the surface as ‘plumes’ and have the potential to cause a limited visual impact.

Such plumes are already common in the harbour during the passage of large vessels and tug boats, but are rarely visible except from elevated positions.

Hydrodynamic modelling completed for the project suggests that the likelihood of such events are relatively low. Any visual impacts would be of a temporary nature.

### Ongoing impacts

While the assumption has been made that all sites would be returned to their pre-existing condition post construction, ongoing impacts may exist where vegetation has been removed and replacement planting is not yet fully matured.

Where the potential for ongoing impacts on a viewpoint or landscape character zone has been identified, a post construction impact range has been given to indicate a possible worst case scenario.

These ongoing impacts are expected to reduce over time as replacement planting matures.

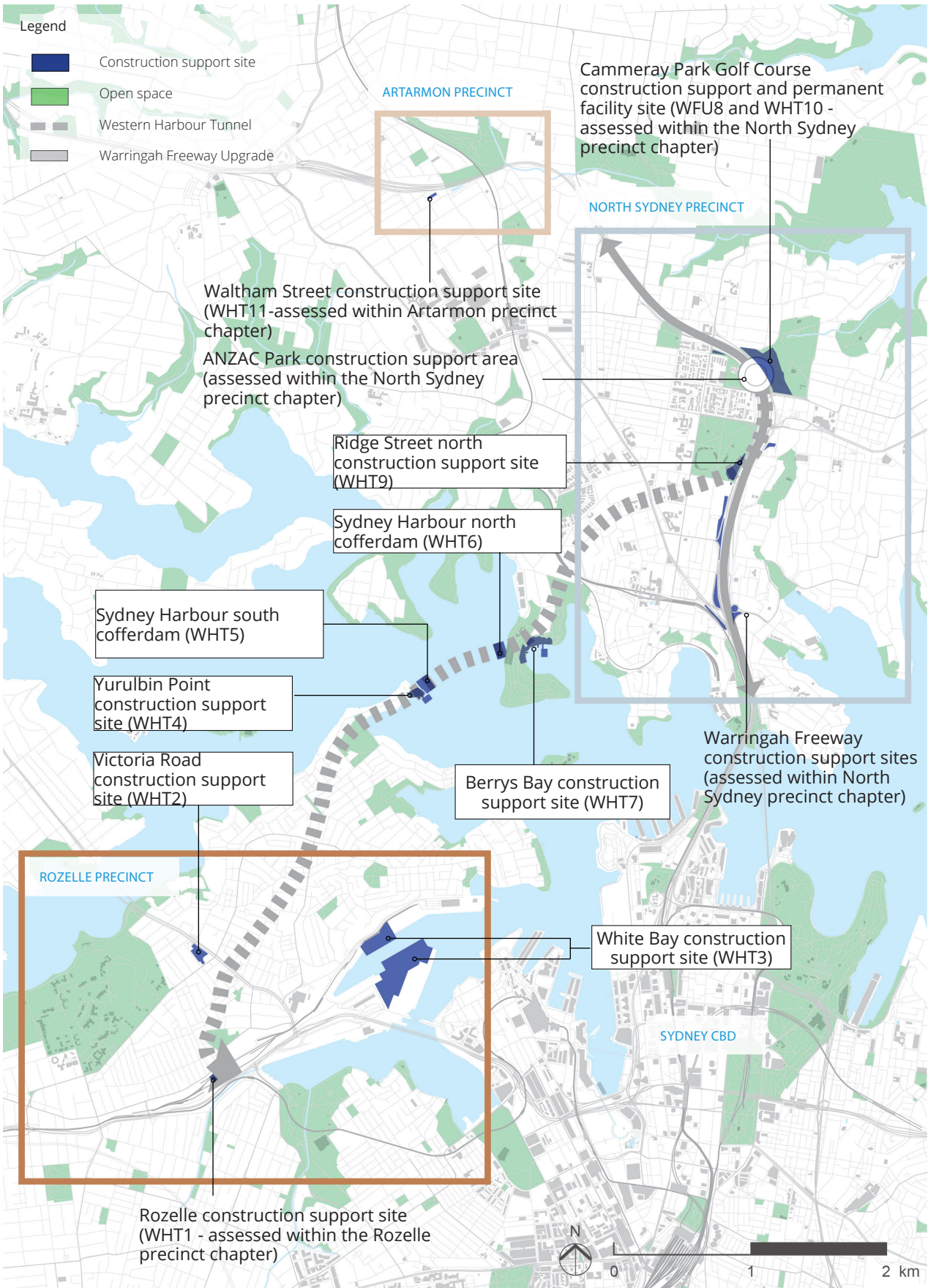
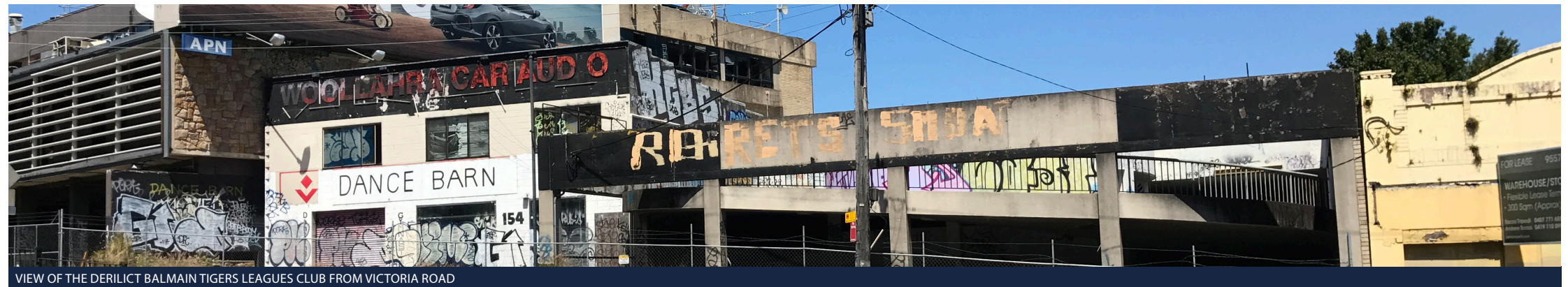


FIGURE 5.1 - LOCATION OF CONSTRUCTION SUPPORT SITES ACROSS PROJECT ALIGNMENT

INTENTIONALLY BLANK



## 5.2 Victoria Road (WHT2)



VIEW OF THE DERELICT BALMAIN TIGERS LEAGUES CLUB FROM VICTORIA ROAD

### 5.2.1 Site context

The land identified for temporary construction use is located in the inner western suburb of Rozelle and comprises 138 - 172 Victoria Road (the site of the former Balmain Leagues Club). The site is currently unoccupied and in a state of disrepair.

The site is bounded by Victoria Road to the north and Waterloo Street to the south. The eastern and western extents of the site border a mixture of commercial and industrial properties.

Residential properties are located to the north over Victoria Road and to the south across Waterloo Street. An off road shared user path runs along the northern and southern edges of Victoria Road.

### 5.2.2 Local policy and planning

The site is covered by the Leichhardt Municipal Council Development Control Plan, 2013. As outlined in the DCP, the relevant desired future character for this area encompasses:

- + Predominant bulk, scale and siting of buildings compatible with adjoining development and the neighbourhood generally
- + Enhanced vibrancy and visual interest on Victoria Road
- + Maintained and enhanced character of the area through retention of original buildings, where appropriate, and new development that is complementary in architectural style, form and materials.

### 5.2.3 Visual environment

There is minimal vegetation within the precinct which combined with the utilitarian road infrastructure, at times degraded built form and high levels of traffic, create an area of low visual amenity.

Visual accessibility to the construction support site is constrained from many locations due to the presence of built form. Views into the site are limited to dwellings and users of Waterloo Street, as well as pedestrians and motorists on Victoria Road.

Views towards the site from Rozelle Public School are screened by vegetation within the school site.

#### Heritage items

The construction support site is adjacent to The Valley heritage conservation area, locally listed within the Leichhardt LEP.

### 5.2.4 Selected viewpoints

Following a site visit, these key viewpoints were selected for further analysis (refer Figure 5.2):

1. Waterloo Street residential (private)
2. Waterloo Street road corridor (public)
3. Victoria Road corridor (public)

### 5.2.5 Project elements

Site establishment works would involve demolition of the existing structures on site and earthworks to level the site in preparation for site work and installation of construction support site facilities.

An indicative site layout for the construction support site is shown in the site layout plan (refer Figure 5.3).

The proposed construction works at the construction support site would include:

- + Excavation of driven mainline tunnels with works being carried out 24 hours a day
- + Tunnel civil and mechanical and electrical fit-out
- + Installation of a spoil shed to attenuate noise impacts to the nearby community
- + Construction of a temporary noise wall at all boundaries of the site.

#### Access

Vehicle access to and from the site would be directly from the northbound lanes of Victoria Road.

#### Post Construction

The construction footprint would likely be remediated and the site fenced off for future development.

### 5.2.6 Urban design requirements

- + Consider patterning or colour on temporary noise wall to provide visual interest and deter graffiti
- + Ensure safety fencing/site hoarding/noise wall is subtle and well integrated with streetscape
- + Ensure verge and path is reinstated to existing condition.





FIGURE 5.2 - VICTORIA ROAD CONSTRUCTION SUPPORT SITE (WHT2) - CONTEXT AND VIEWPOINT LOCATION





- Legend**
- Construction footprint
  - Construction support site
  - Construction site buildings
  - Driven tunnel
  - Access decline
  - Temporary site access
  - Wastewater treatment plant
  - Aboveground substation
  - Indicative temporary noise barrier
  - Site access - in
  - Site access - out

FIGURE 5.3 - VICTORIA ROAD CONSTRUCTION SUPPORT SITE (WHT2) LAYOUT

5.2.7 Landscape character

The character of the surrounding area is typical of an inner suburban city block with a mix of residential, commercial and light industrial premises.

Victoria road forms a major thoroughfare, moving traffic in an east/west direction past the site. Single and double storey dwellings line Waterloo Street, which has several mature street trees along its southern edge.

Darling Street has a commercial strip with a varied selection of businesses. Rozelle Public School is located on a leafy campus to the north of the proposed construction support site.

[Landscape character impact summary](#)

Due to the degraded nature of the existing site, there are not expected to be any major adverse impacts to surrounding landscape character during the construction phase (refer Table 5.1).

The application of appropriate surfacing post construction may lead to beneficial landscape character impacts for surrounding receivers once the project is operational due to the current degraded nature of the site.

Landscape character assessment

Landscape Character Zone	Sensitivity	Magnitude (construction phase)	Construction phase Landscape character impact	Operation phase Landscape character impact
<b>Residential</b>  This LCZ includes the surrounding residential development along Waterloo Street.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following:  + Pleasant and quiet residential street although adjacent to dilapidated building.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following:  + The noise wall would form a major new structural element adjacent to this LCZ although due to the current low quality environment adjacent to this LCZ, a major impact on character is not expected.	Moderate/Low	Negligible to beneficial
	Moderate	Low	Moderate/Low	Negligible to beneficial
<b>Commercial</b>  This LCZ includes the surrounding commercial development along Darling Street, Victoria Road and Waterloo Street.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following:  + Commercial zones have a moderate ability to absorb change without adverse impacts to their character + Part of this LCZ falls within The Valley heritage conservation area.	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following:  + The construction support site is towards the rear of Darling Street and unlikely to alter the spatial character of the wider LCZ.	Negligible	Negligible to beneficial
	Moderate	Negligible	Negligible	Negligible to beneficial
<b>Educational</b>  This LCZ includes the Rozelle Public school campus.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following:  + Well vegetated campus with pleasant environment, mostly screened from surrounding road corridors.	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following:  + The school campus is physically separated from the construction support site by built form and tree planting. No impacts are expected on the character of the campus.	Negligible	Negligible to beneficial
	Moderate	Negligible	Negligible	Negligible to beneficial

TABLE 5.1 - VICTORIA ROAD CONSTRUCTION SUPPORT SITE (WHT2) LANDSCAPE CHARACTER IMPACTS SUMMARY



Visual impact assessment

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 1 Waterloo Street residential  Type Private  Distance 15m  No. of viewers Moderate	Receivers are approximately 15 residential dwellings situated along the southern edge of Waterloo Street. These dwellings are orientated north towards the construction support site, although some views across the road are currently screened by existing mature street tree planting.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following:  + Views from the dwellings are partly screened by existing vegetation  + Existing dilapidated commercial development is located along the northern boundary of the street.	The magnitude of impact arising from the project is considered to be Moderate, due to the following:  + The visual character of the existing site is poor, consisting of dilapidated commercial premises  + The noise wall would form a major new element within the viewframe, reducing the perceived openness of the street  + While the noise wall would present a strong visual edge treatment to the street frontage, it would screen all construction elements located behind  + Foreground vegetation would screen some views from these dwellings, although there would be the discernible removal of some vegetation along the eastern edge of the street.	Overall, a Moderate visual impact is expected on these receivers during the construction period. The noise wall is not expected to cause a major degradation to the existing low quality visual amenity of Waterloo Street created by the current dilapidated site.	Night lighting during the construction period may be in excess of existing light levels and has the potential to impact night time visual amenity for these residents.	Once construction is complete, there are not expected to be any continued visual impacts. Reinstatement of appropriate surfacing to the site may improve visual amenity in this location.
		Moderate	Moderate	Moderate	Moderate	Negligible to Beneficial
Viewpoint 2 Waterloo Street road corridor  Type Public  Distance 15m  No. of viewers Moderate	Receivers are motorists, cyclists and pedestrians traveling along Waterloo Street in both an east and westbound direction.	The sensitivity of these receivers to the project is considered to be Low, due to the following:  + As a minor road with existing large scale commercial development, users would have a reduced sensitivity to change in the visual environment.	The magnitude of impact arising from the project is considered to be Low, due to the following:  + The visual character of the existing site is poor, consisting of dilapidated commercial premises  + The noise wall would form a major new element within the viewframe, reducing the perceived openness of the street  + While the noise wall would present a strong visual edge treatment to the street frontage, it would screen all construction elements located behind  + Short duration of view.	Overall, a Low visual impact is expected on these receivers during the construction period. The noise wall is not expected to cause a major degradation to the existing low quality visual amenity of Waterloo Street created by the current dilapidated site.	Night lighting during the construction period may be in excess of existing light levels, although an impact to motorists and pedestrians is not expected.	Once construction is complete, there are not expected to be any continued visual impacts. Reinstatement of appropriate surfacing may improve the visual amenity of the site.
		Low	Low	Low	Negligible	Negligible to Beneficial
Viewpoint 3 Victoria Road corridor  Type Public  Distance 15m  No. of viewers High	Victoria Road is a major arterial route, fronted by a mix of commercial, light industrial and residential premises.  Receivers in this viewpoint are motorists, pedestrians and cyclists traveling in both an east and westbound direction.	The sensitivity of these receivers to the project is considered to be Low, due to the following:  + As a major road located within an area of existing large scale urban development, the receivers would have a reduced sensitivity to change in the visual environment.	The magnitude of impact arising from the project is considered to be Low, due to the following:  + The visual character of the existing site is poor, consisting of dilapidated commercial premises  + While the noise wall would present a strong visual edge treatment to the street frontage, it would screen all construction elements located behind  + The noise wall is not expected to degrade visual amenity of Victoria Road beyond the existing low quality visual environment of the current site  + Short duration of view.	Overall, a Low visual impact is expected to these receivers during the construction period.	Night lighting during the construction period may be in excess of existing light levels, although an impact to motorists and pedestrians is not expected.	Once construction is complete, there are not expected to be any continued visual impacts. Reinstatement of appropriate surfacing may improve the visual amenity of the site.
		Low	Low	Low	Negligible	Negligible to Beneficial





Waterloo Street

VIEWPOINT 1 - REPRESENTATIVE VIEW FROM DWELLINGS ALONG WATERLOO STREET



Waterloo Street

VIEWPOINT 2 - VIEW WEST ALONG WATERLOO STREET



Victoria Road

VIEWPOINT 3 - VIEW TOWARDS CONSTRUCTION SUPPORT SITE FROM VICTORIA ROAD



CHARACTER OF RESIDENTIAL DWELLINGS ALONG WATERLOO STREET



VEGETATION ON THE NORTHERN SIDE OF WATERLOO STREET MAY REQUIRE REMOVAL



5.3 White Bay (WHT3)



VIEW OVER WHITE BAY FROM BALMAIN

5.3.1 Site context

The land identified for construction is located at White Bay, an industrial maritime area surrounded by the suburbs of Balmain and Rozelle in the Inner West of Sydney. The site is currently occupied by a mixture of commercial and industrial premises.

The site is bound by Johnstons Bay to the east, Jones Bay/Blackwattle Bay to the south and a mixture of industrial and high density residential properties to the north and west.

5.3.2 Local policy and planning

The site is covered by the following planning policies:

- + Sydney Harbour Catchment Regional Environmental Plan (REP) 2005
- + The Sydney Harbour Foreshores Area Development Control Plan (DCP)
- + Sydney Regional Environmental Plan No26 - City West
- + Leichardt municipal council DCP 2013

The Sydney Harbour Catchment REP and Sydney Harbour Foreshore Area DCP do not contain any specific provisions for the site.

Sydney Regional Environmental Plan No26 - City West (SREP 26)

The site is zoned as part of Sydney Regional Environmental Plan No26 - City West. SREP 26 states the planning principles for City West as a whole have effect in accordance with Part 2, in addition to other Regional Environmental Plans, State Environmental Planning Policies and local environmental plans.

The plan states that:

- + The siting and form of development in all areas must consider impacts on views from within the Precinct and to and across the Precinct from surrounding areas.

Leichardt municipal council DCP 2013

An area to the west of the site known as The Valley within Balmain is part of the DCP's 'distinctive neighbourhoods' and forms a heritage conservation area. The desired future character control for this area includes:

- + Preserve view lines from the hill to the south and east.

5.3.3 Visual environment

The site is open in nature with expansive views both into and out of the proposed construction area. Visual accessibility to the site extends to the residential edges of Balmain and Rozelle in the north and west, as well as Pyrmont in the east, including several foreshore parks in this area. Parkland with views towards the site include Pirrama Park and Waterfront Park, which are both backed by residential towers.

When viewed from the west, the site is backed by dramatic views of the Sydney CBD and Harbour Bridge.

It should be noted that the construction support site is likely to be visible from numerous tall residential and commercial towers within Pyrmont and Darling Harbour, as well as from ANZAC Bridge. Due to the limited magnitude of change associated with the construction works, it has not been considered necessary to assess these viewpoints further.

Heritage items

The nearest heritage items to the construction support site include:

- + Glebe Island Bridge, Blackwattle Bay, State listed
- + The Valley heritage conservation area, Local Leichardt Council DCP

These items are not directly impacted by the project works.

5.3.4 Selected viewpoints

Following a site visit, these key viewpoints were selected for further analysis (refer Figure 5.4):

1. Residential dwellings off Roseberry Place (private)
2. Residential dwellings off Batty Street (private)
3. Pirrama Park, Pyrmont (public)





FIGURE 5.4 - WHITE BAY CONSTRUCTION SUPPORT SITE (WHT3) - CONTEXT AND VIEWPOINT LOCATION



5.3.5 Project elements

The White Bay construction support site (WHT3) would be a combined land and water based site and would make use of the existing wharf areas to the north and south of White Bay as well as the berthing facilities.

Site establishment works would involve the installation of site offices, a spoil treatment area, immersed tube tunnel support and fitout areas and site accesses. The proposed construction works at the site would include:

- + Casting facility for the immersed tube tunnel elements
- + Spoil handling area for tunnel spoil and dredged material not suitable for offshore disposal.

An indicative site layout for the construction support site is shown in Figure 5.5.

The construction support site would also handle spoil generated at the Yurulbin Point and Berrys Bay construction support sites as well as dredged materials from the Western Harbour Crossing.

Access

Trucks would enter the spoil handling area from James Craig Road and be loaded at the spoil stockpile. Spoil trucks would then egress the site using James Craig Road before joining City West Link.

Post Construction

The construction footprint would be returned to existing condition as hardstand.

5.3.6 Urban design requirements

- + During construction phase, avoid stockpile heights that break the skyline when viewed from elevated receivers in the west.

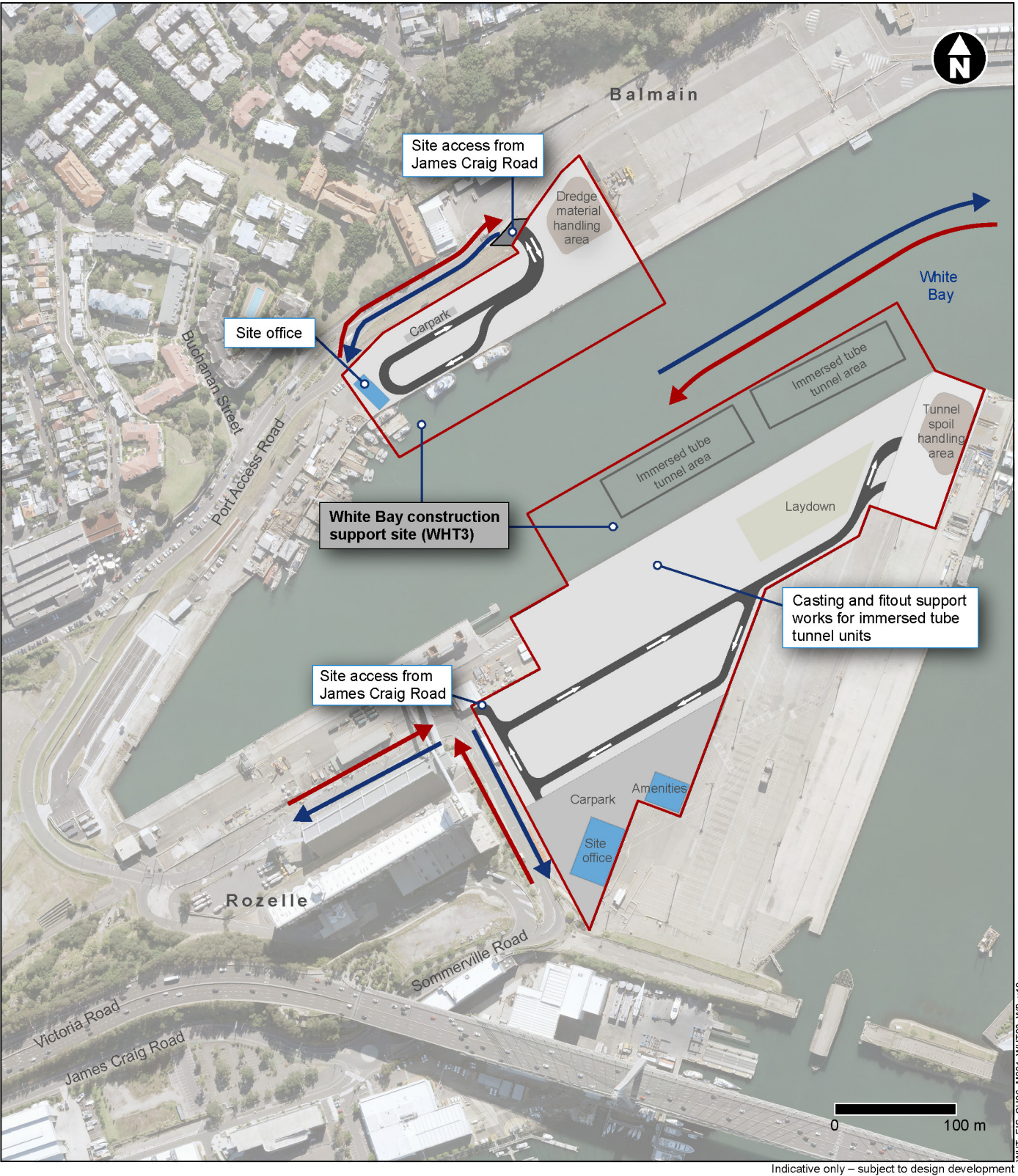


FIGURE 5.5 - WHITE BAY CONSTRUCTION SUPPORT SITE (WHT3) LAYOUT



5.3.7 Landscape character

The character of the area has been defined by industrial development along the shore and commercial development, on the northern ridge above. Residential development covers the majority of the area between the ridge and the harbour.

This construction support site itself is characterised by flat topography and working harbour activities including harbour walls, wharves, jetties and a number of industrial and commercial businesses.

The built form surrounding White Bay is primarily industrial-style buildings up to a height of about 20 metres. There is minimal tree planting with extensive hardstand areas, primarily comprising concrete deck.

Landscape character impact summary

Due to the industrial nature of the existing site and the congruous construction activities proposed, there are not expected to be any adverse impacts to landscape character during the construction phase (refer Table 5.2).

Landscape character assessment

Landscape Character Zone	Sensitivity	Magnitude (construction phase)	Construction phase Landscape character impact	Operation phase Landscape character impact
<b>Industrial</b>  This LCZ includes the surrounding working foreshore areas of White bay and Jones bay on which the construction support site would be located.	The sensitivity of this LCZ to the project is considered to be Low, due to the following:  + Area dominated by industrial land use with the ability to absorb change without detrimental effects to character.	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following:  + The construction works would be congruous with the existing land use and unlikely to impact landscape character.	Negligible	Negligible
	Low	Negligible	Negligible	Negligible
<b>Foreshore public open space</b>  This LCZ includes sections of the surrounding foreshore, including Pirrama Park to the east of the construction support site.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following:  + High quality, well utilised public open space + Presence of industrial land use within current outlook of this LCZ.	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following:  + The construction works would have no direct impacts on this LCZ + While new elements may be introduced into the outlook of the LCZ, they would generally be congruous with current view and an impact on character is not expected.	Negligible	Negligible
	Moderate	Negligible	Negligible	Negligible
<b>Residential</b>  This LCZ includes the suburbs of Rozelle and Balmain to the north of the construction support site.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following:  + Residential development with a high level of spatial integrity + Presence of industrial land use within current outlook of this LCZ.	The magnitude of landscape character change arising from the project is considered to be Negligible, due to the following:  + The construction works would have no direct impacts on this LCZ + While new elements may be introduced into the outlook of the LCZ, they would generally be congruous with the current view and an impact on character is not expected.	Negligible	Negligible
	Moderate	Negligible	Negligible	Negligible

TABLE 5.2 - WHITE BAY CONSTRUCTION SUPPORT SITE (WHT3) LANDSCAPE CHARACTER IMPACTS SUMMARY



Visual impact assessment

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 1 Residential dwellings off Roseberry Place <div>TypePrivate</div> <div>Distance150m</div> <div>No. of viewersModerate</div>	Receivers are residents of a large apartment building in Balmain, situated on an elevated position with expansive views over White Bay towards the Pyrmont and the ANZAC Bridge. The foreground of the view is currently dominated by the hardstand areas associated with the White Bay maritime precinct.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Expansive view corridor to the east</li><li>+ Foreground of viewframe currently dominated by industrial and maritime facilities.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ The construction elements of the project are similar in scale, mass and character to existing elements within the current view</li><li>+ The construction elements would not restrict views towards the Sydney CBD.</li></ul>	Overall, a Moderate/Low visual impact is expected on these receivers during the construction period. There may be an increase in the number of truck and boat movements visible although this is in keeping with the existing busy maritime foreshore activities.	While night lighting would be visible at the construction support site, the presence of existing light sources within the visual scene ensures that additional night time visual impacts are not expected.	Once construction is complete there are not expected to be any ongoing visual impacts.
		Moderate	Low	Moderate/Low	Negligible	Negligible
Viewpoint 2 Residential dwellings off Batty Street <div>TypePrivate</div> <div>Distance100m</div> <div>No. of viewersModerate</div>	Receivers are residents of a large apartment building in Balmain, situated in an elevated position with expansive views over White Bay towards the Sydney CBD and Harbour Bridge. An area of public open space is located to the front of the building. The foreground of the view is currently dominated by the hardstand areas associated with the White Bay maritime precinct.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Expansive and scenic view corridors to the east and south</li><li>+ Foreground of viewframe currently dominated by industrial and maritime facilities.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ The construction elements of the project are similar in scale, mass and character to existing elements within the current view</li><li>+ The construction elements would not restrict views towards the Sydney CBD.</li></ul>	Overall, a Moderate/Low visual impact is expected on these receivers during the construction period. There may be an increase in the number of truck and boat movements visible although this is in keeping with the existing busy maritime foreshore activities.	While night lighting would be visible at the construction support site, the presence of existing light sources within the visual scene ensures that additional night time visual impacts are not expected.	Once construction is complete there are not expected to be any ongoing visual impacts.
		Moderate	Low	Moderate/Low	Negligible	Negligible
Viewpoint 3 Pirrama Park, Pyrmont <div>TypePublic</div> <div>Distance350m</div> <div>No. of viewersHigh</div>	Receivers are users of this area of foreshore public open space. The park consists of turf areas, interspersed with tree and shrub planting. The park currently has sweeping views west across Johnstons Bay towards the Balmain peninsula. This viewpoint is representative of the views available from the foreshore footpath that extends west to ANZAC Bridge, as well as residential development situated to the south of this parkland.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Expansive and scenic view corridors to the west</li><li>+ Foreground of viewframe currently dominated by industrial land uses and maritime facilities.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ The construction elements of the project are similar in scale, mass and character to existing elements within the current view</li><li>+ The construction elements would not restrict views towards the Balmain peninsula.</li></ul>	Overall, a Moderate/Low visual impact is expected to these receivers during the construction period. There may be an increase in the number of truck and boat movements visible although this is in keeping with the existing busy foreshore activities.	While night lighting would be visible at the construction support site, the presence of existing light sources within the visual scene ensures that additional night time visual impacts are not expected.	Once construction is complete there are not expected to be any ongoing visual impacts.
		Moderate	Low	Moderate/Low	Negligible	Negligible





VIEWPOINT 1 - VIEW SOUTH FROM ROSEBERRY PLACE OVER WHITE BAY



VIEWPOINT 2 - VIEW NORTH EAST OVER WHITE BAY FROM DWELLINGS OFF BATTY STREET



VIEWPOINT 3 - VIEW WEST TOWARDS WHITE BAY FROM PIRRAMA PARK



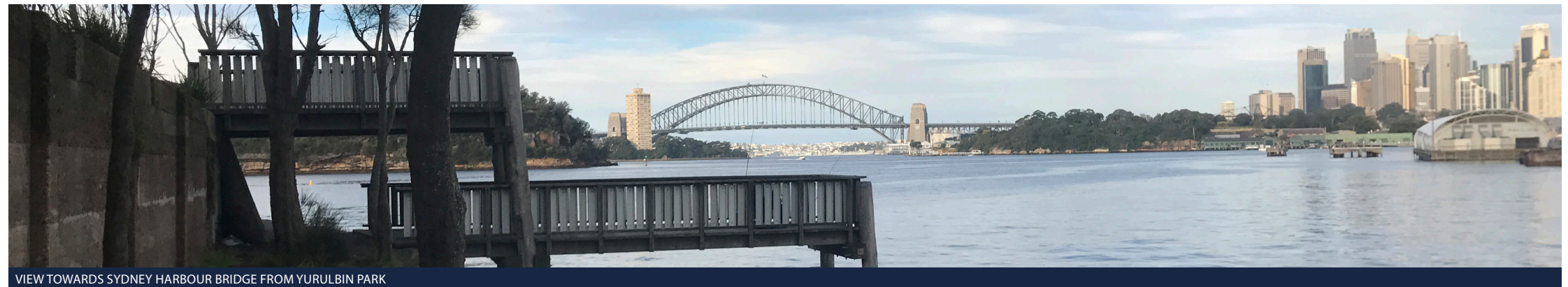
CHARACTER OF DWELLINGS OFF ROSEBERRY PLACE



CHARACTER OF FORESHORE RESIDENTIAL APARTMENTS NEAR PIRRAMA PARK



## 5.4 Yurulbin Point (WHT4) and Sydney Harbour south cofferdam (WHT5)



VIEW TOWARDS SYDNEY HARBOUR BRIDGE FROM YURULBIN PARK

### 5.4.1 Site context

The land identified for construction use is a neighbourhood foreshore park and adjacent waterway which sits at the end of Birchgrove peninsula in a residential area. It is used largely for passive recreation, with a small public car park and access to the Birchgrove ferry wharf.

The area is associated with a number of early local land speculators and developers and early maritime activities of Birchgrove. It is also associated with Bruce Mackenzie and Associates who designed the park and contributed to the formation of a relatively rare cultural landscape that demonstrates landscape philosophies of the 1970s.

The park is of high local historic significance as part of the early subdivision and waterfront development of the local area from the 1860s.

Its development as a public park from the 1970s represents the closing of maritime activities in the area and shift away from industrial to primarily residential and public use of prime waterfront sites. The park retains a sense of the former slipway that remains as a reminder of the former use of the site.

### 5.4.2 Local policy and planning

#### Leichardt Municipal Council DCP (2013)

The site is included within the Birchgrove 'distinctive neighbourhood'. Development controls relevant to visual and landscape amenity include:

- + C3 - Preserve and where practicable, enhance public and private views over Snails Bay and Parramatta River.
- + C4 - Promote a balance of landscape to built form in the view of the neighbourhood when viewed from the water
- + C21 - Development visible from the water is to be designed to preserve the conservation values of the area.

Yurulbin Park forms part of the Louisa Road Sub Area within the Birchgrove distinct neighbourhood, characterised by 'spectacular views over the harbour and Parramatta River'.

Within the DCP's Urban Framework Plans, Yurulbin Park is marked as a natural point to be retained, including maintaining and enhancing 'significant views' to the north and southeast.

#### North Sydney Council DCP (2013)

The DCP covers some of the wider precinct including North Sydney. The DCP lists the following relevant views and vistas that are to be preserved and where possible enhanced:

- + District views to Sydney Harbour.

### 5.4.3 Visual environment

Local views into Yurulbin Park are limited to several residential properties to the northern end of Louisa Road, Louisa Road itself and the footpath alongside the park that provides access to the Birchgrove ferry wharf.

District views to the park extend to the north, east and west, including Balls Head, Manns Point, Balls Head Reserve, Goat Island, Ballast Point Park and residential sections of the Balmain waterfront along Wharf Road.

Views out from waterfront areas within the park itself are extensive and extend southeast across Sydney Harbour to the CBD and north to North Sydney and Balls Head.

#### Heritage items

The entire area of Balmain, Balmain East and Birchgrove is a heritage conservation area.

A waterfront dwelling at 25 Wharf Road known as 'Wyoming' is a state heritage item.

Yurulbin Park is locally heritage listed. The Department of Premier and Cabinet's (Heritage) recommended management strategy for Yurulbin Park includes:

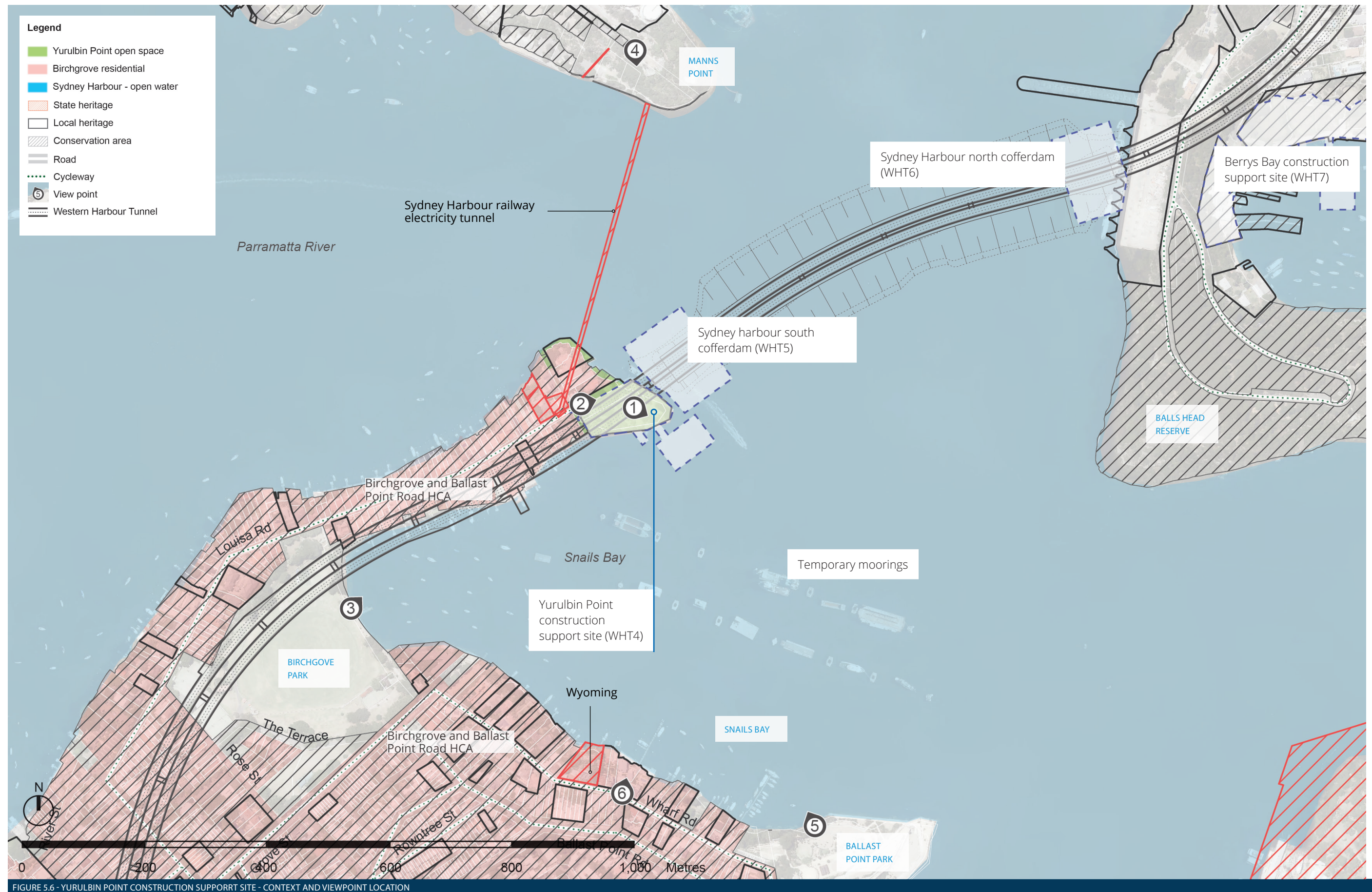
- + The open foreshore park area be retained as open public space
- + Native plantings be retained and maintained and in course replaced with same species and types to maintain a sense of the original design intent.

### 5.4.4 Selected viewpoints

Following a site visit, these key viewpoints were selected for further analysis (refer Figure 5.6):

1. Yurulbin Park (private)
2. Louisa Road dwellings (private)
3. Birchgrove Park (public)
4. Manns Point (public)
5. Ballast Point Park (public)
6. Residential dwellings off Wharf Road (private)







5.4.5 Project elements

The Yurulbin Point construction support site (WHT4) would be a combined land and water based site. Clearing and earthworks would be limited to the minimum required to establish the construction support site

The proposed construction works would include (refer Figure 5.7):

- + Excavation of access shaft
- + Excavation of driven mainline tunnels
- + Tunnel civil and mechanical and electrical fit-out
- + A acoustic shed and barge shed
- + Three-metre-high noise wall along the Louisa Road Boundary
- + A barge shed in the harbour to facilitate barge loading - spoil generated during excavation would be transferred from the acoustic shed over the shaft via a conveyor and loaded onto barges.

A cofferdam would also be constructed offshore from the park to facilitate the installation of the immersed tube tunnel (refer Figure 5.7).

A ferry barge would be used to transport materials from the casting facility in White Bay. A work barge (flat top barge) would support the construction of the interface structures and would be permanently moored parallel to the cofferdam during the installation.

The work barge would support:

- + A crawler crane used to install the cofferdam, pile foundations, lowering of equipment into the cofferdam and removal of excavated rock
- + Concrete mixer trucks
- + Concrete pumps
- + Storage materials.

Access

Heavy vehicle access and deliveries to and from the site would be via the barge delivery wharf. Barges would transport spoil generated on site to White Bay, where it would be transferred to trucks for disposal/reuse.

Louisa Road would be used for emergency access only.

Post construction

Once construction is finished, the park would be reinstated.

5.4.6 Urban design rationale

The redesign of disturbed sections of the park would seek to retain as much of the existing character and original 1970's naturalistic design intent as possible.

A site visit was conducted with Bruce MacKenzie, the original landscape architect of the park. He provided the following requirements to guide the future re-design of the park post construction, as well as a sketch design for the construction and operational phases as seen in Figure 5.8.

This work has informed the plan for establishment of the temporary construction support site to minimise long-term impacts to key features of the site.

Mr MacKenzie has identified a number of areas where the original landscape intent was not delivered due to budget constraints at the time (eg. soil depths and subsurface drainage in some areas are not suitable to support certain species or larger trees long term).

The project intends to address these issues and revitalise areas of the park to improve the site and ensure its longevity as a high value community space.

5.4.7 Urban design requirements

Construction phase

- + Ensure fill zone covers are employed to protect existing sandstone shelf
- + Ensure equipment storage, site offices, first aid and similar facilities are to be stored in the temporary construction support site at the southwest corner of Yurulbin Park
- + Investigate growing large size native trees in advance of installation in Yurulbin Park.

Post construction

- + Explore options to identify the tunnel opening by distinguishing its place and layout. Reference to be made with a potential installation of plaque to recognise the operation and the outcome of the tunnelling process
- + Restore existing trees
- + Replace lost vegetation along the Snails Bay waterfront by new planting with deeper soils in their new location
- + Provide an improved step-free path network that facilitates the walking experience through the park to the ferry wharf.



TRANSPORTATION OF AN IMMERSED TUBE TUNNEL ON A SEMI-SUBMERSIBLE VESSEL



EXAMPLE OF A MARINE WORK BARGE AND CRANE



EXAMPLE OF LAND BASED ACOUSTIC SHED AND BARGE ACCESS  
(SYDNEY METRO BLUES POINT CONSTRUCTION SUPPORT SITE)



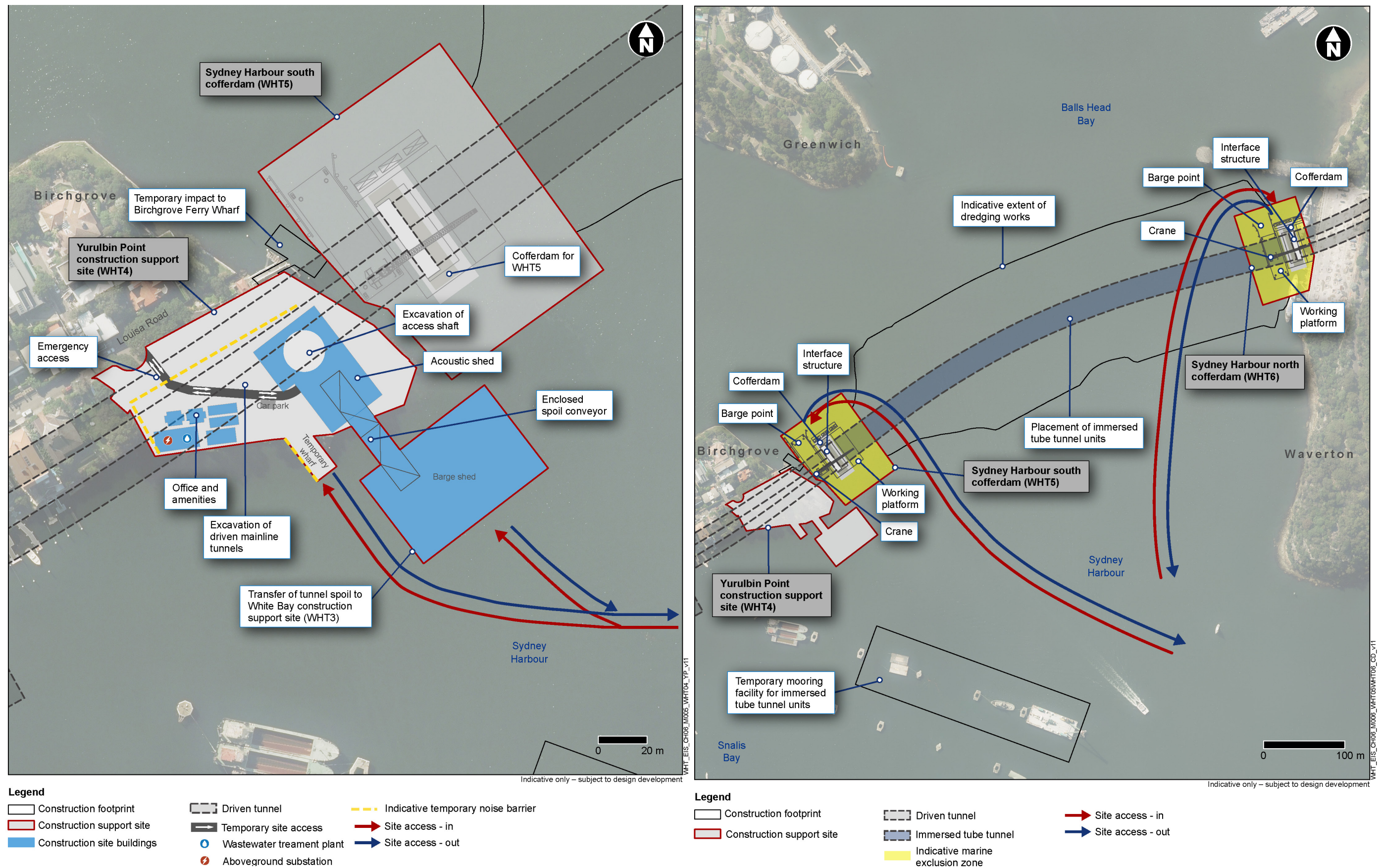
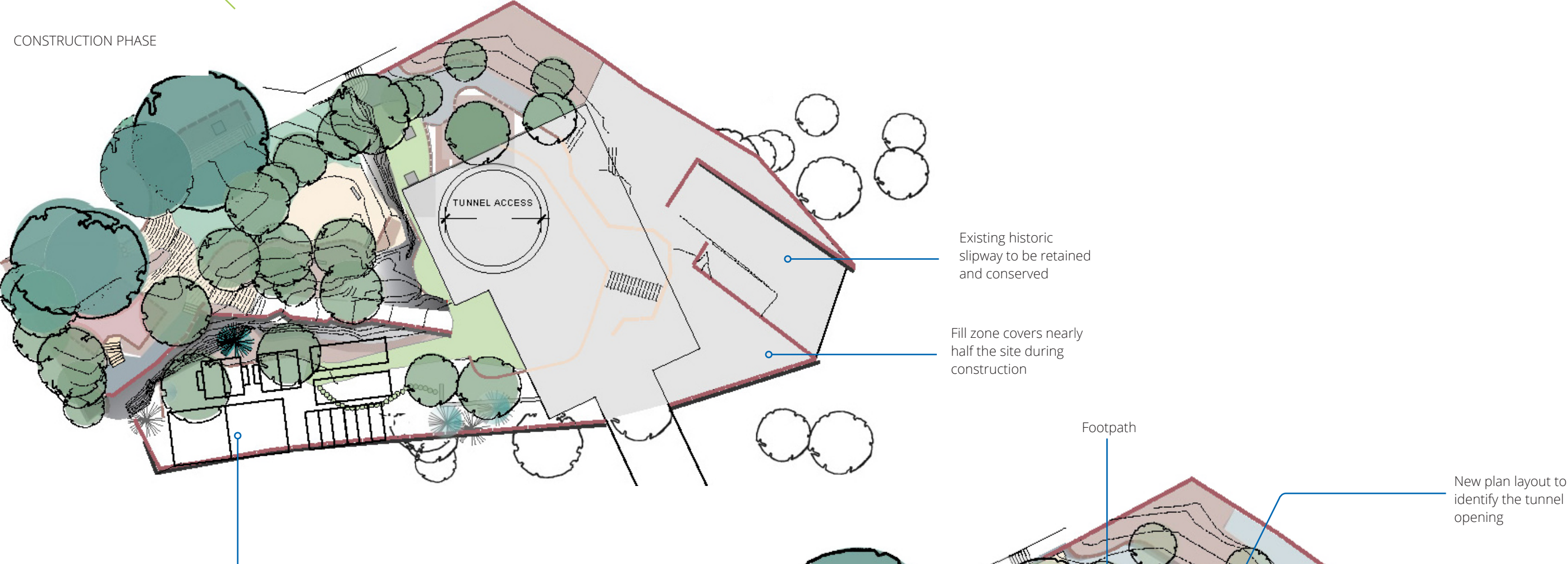


FIGURE 5.7 - YURULBIN POINT (WHT4) AND SYDNEY HARBOUR SOUTH COFFERDAM (WHT5) CONSTRUCTION SUPPORT SITE LAYOUTS



CONSTRUCTION PHASE



OPERATIONAL PHASE



FIGURE 5.8 - YURULBIN PARK UPGRADE SKETCH PLAN (BY BRUCE MACKENZIE)



### 5.4.8 Landscape character

The Birchgrove peninsula is primarily residential in character with built form in the locality a mix of housing styles dating back to Victorian times.

The park itself demonstrates two philosophies that were dominant in landscape design in the 1970s – to design within an ecological framework and to create a ‘natural’ environment and escape in an urban context

Natural and cut rock outcrops form prominent features with planting including mature Fig trees, Casuarinas and other natives generally located around the entry and perimeter of the site.

The northern side of the point also retains a slipway associated with the former use of the site. Historic plaques and interpretive signage has also been added to the park area. Some elements of the park are in poor condition with deteriorating wood, damaged benches and some uneven paving.

The landscape surrounding the park consists of the open water of Sydney Harbour along with various foreshore open space and residential suburbs.

#### Landscape character impact summary

The increase in built form on both water and land, combined with removal of vegetation within the park itself, is likely to temporarily adversely impact the character of the LCZs studied in close proximity to the site (refer Table 5.3)

While the works would be visible from Birchgrove Park and dwellings along Wharf Road, their physical distance from the construction support site reduces the likelihood of any impacts to their landscape character.

The character of the open water surrounding the park is likely to be temporarily Moderately impacted by the increase in built form associated with the construction works. Post-construction, the recorded impacts are expected to reduce to Negligible once the park has been reinstated and replacement vegetation has matured.

### Landscape character assessment

Landscape Character Zone	Sensitivity	Magnitude (construction phase)	Construction phase landscape character impact	Operation phase landscape character impact
<b>Yurulbin Park open space</b>  This LCZ comprises the park itself where the construction support site would be located.	The sensitivity of this LCZ to the project is considered to be High, due to the following:  + High value, local heritage listed public open space with dramatic water outlook and a high level of spatial integrity.	The magnitude of landscape character change arising from the project is considered to be High, due to the following:  + A large section of the park would be inaccessible during construction + The presence of site fencing, noise wall and other built structures would temporarily impact the spatial character of the park + Vegetation removal is likely to adversely impact the park's character.	High	Impact expected to reduce once the park has been reinstated and replacement vegetation has matured.
	High	High	High	Negligible to Low
<b>Birchgrove residential</b>  This LCZ includes dwellings along Louisa Road and Wharf Roads with visual accessibility to the construction support site.	The sensitivity of this LCZ to the project is considered to be High, due to the following:  + Residential development with a high level of spatial integrity and limited non residential built form present.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following:  + The construction works would be in close proximity to several dwellings along Louisa Road + There are likely to be temporary indirect impacts to landscape character with an increase in adjacent built form and reduction in vegetation.	Moderate/High	Impact expected to reduce once the park has been reinstated and replacement vegetation has matured.
	High	Moderate	Moderate/High	Negligible to Low
<b>Sydney Harbour - open water</b>  This LCZ includes the waterway surrounding the park utilised by public ferries and recreational watercraft users.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following:  + Scenic waterway with iconic Harbour views + Large scale and openness of LCZ allows ability to absorb some change without detrimental impacts to character.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following:  + There would be a temporary increase in built form on the waterway in the form of the floating dock and cofferdam structure. This may lead to adverse impacts on the character of the waterway in close proximity to the works.	Moderate	Impact expected to reduce once the park has been reinstated and replacement vegetation has matured.
	Moderate	Moderate	Moderate	Negligible to Low

TABLE 5.3 - YURLBIN POINT (WHT4) AND SYDNEY HARBOUR SOUTH COFFERDAM (WHT5) CONSTRUCTION SUPPORT SITES LANDSCAPE CHARACTER IMPACTS SUMMARY



Visual impact assessment

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 1 Yurulbin Park  Type Public  Distance 0m  No. of viewers Moderate	Neighbourhood foreshore park used largely for passive recreation, with a small public car park and access to the Birchgrove ferry wharf. Expansive views north, east and south available from foreshore edge. Views within the park are partly filtered by mature vegetation and undulating topography. Receivers are park users.	The sensitivity of this LCZ to the project is considered to be High, due to the following:  + High value, local heritage listed public open space with dramatic Harbour views + Iconic views available to Sydney Harbour Bridge and Sydney CBD.	The magnitude of impact arising from the project is considered to be High, due to the following:  + Access would be restricted to the park meaning viewpoints located within the park would not be available to the public during the construction period.	A High visual impact is expected during the construction period. There would be no access to the park, leading to a reduction in visual amenity.	Due to the 24 hour nature of the works, there would be a requirement for night lighting on both the land and water construction elements.  As there would be no park access during the construction period, there would be no receivers within the park to be impacted by night lighting.	Once construction is complete, the level of ongoing impact would depend on the size of replacement vegetation within the park. There may be some reduction in visual amenity until new planting reaches maturity.
		High	High	High	Negligible	Negligible to Moderate
Viewpoint 2 Louisa Road dwellings  Type Private  Distance 10m  No. of viewers Low	A small group of dwellings at the northern end of Louisa Road have direct visual accessibility to Yurulbin Park and the site of the proposed cofferdam. The existing view from these dwellings extends over the park to Sydney Harbour.	The sensitivity of this these receivers to the project is considered to be High, due to the following:  + Residential receivers with scenic existing views east over Yurulbin Park + Limited built form currently visible within the existing viewframe.	The magnitude of impact arising from the project is considered to be High, due to the following:  + Construction works would see the replacement of existing green space with hardstand and buildings + The acoustic shed would be larger in scale and mass than existing built elements currently within the scene + The noise wall would form a strong new urban element within the visual scene + There would be the noticeable removal of vegetation within the park + The cofferdam and crane structure would be visible on the water.	A High visual impact is expected during the construction period. There would be an increase in the amount of built form visible and the reduction of green space and vegetation, leading to a reduction in visual amenity for these receivers.	Due to the minimal sources of current light emittance in the area, the construction phase lighting may be noticeable from these dwellings, leading to a Moderate impact on night time visual amenity.	Once construction is complete, the level of ongoing impact would depend on the size of replacement vegetation within the park. There may be some reduction in visual amenity until new planting reaches maturity.
		High	High	High	Moderate	Negligible to Moderate
Viewpoint 3 Birchgrove Park  Type Public  Distance 410m  No. of viewers Moderate	The receivers are the users of Birchgrove Park, an area of parkland adjacent to the Birchgrove Peninsular. The park includes an oval and tennis courts and has scenic views north over Snails Bay.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following:  + Expansive and scenic view corridors to the north and east + Some floating built form currently visible on the water.	The magnitude of impact arising from the project is considered to be Moderate, due to the following:  + Construction elements including the wharf, floating dock and acoustic shed would be noticeable within the scene + There would be a slight reduction in vegetation currently visible along the Birchgrove peninsula + There is a relatively short viewing distance.	A Moderate visual impact is expected on these receivers during the construction period. There would be an increase in the amount of built form visible and a perceptible decrease in vegetation at the end of the Birchgrove peninsula. There would also be a noticeable increase in the number of boat movements within the bay.	Although perceptible from this viewpoint, a noticeable impact on night time visual amenity is not expected.	Once construction is complete, the level of ongoing impact would depend on the size of replacement vegetation within the park. There may be some reduction in visual amenity until new planting reaches maturity.
		Moderate	Moderate	Moderate	Negligible	Negligible to Low





VIEWPOINT 1 - VIEW FROM CENTRE OF YURULBIN PARK LOOKING EAST TOWARDS THE HARBOUR



VIEWPOINT 2 - REPRESENTATIVE VIEW FROM DWELLINGS OFF LOUISA RD TO YURULBIN PARK



VIEWPOINT 3 - VIEW NORTH TOWARDS NORTH SYDNEY FROM FORESHORE OF BIRCHGROVE PARK

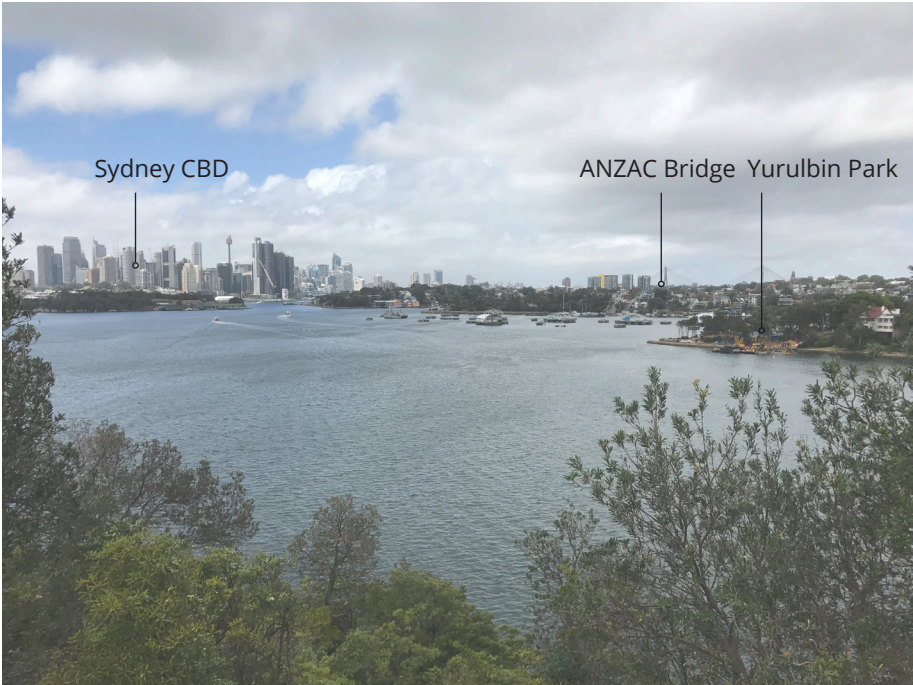


PANORAMIC VIEW FROM YURULBIN PARK OVER BERRYS BAY AND SYDNEY CBD



DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 4 Manns Point <a href="#">Type</a> Public <a href="#">Distance</a> 400m <a href="#">No. of viewers</a> Moderate	Manns Point Park is a grassed waterfront reserve overlooking Parramatta River with panoramic views south to Sydney CBD. There is a walking trail from the upper to lower level. The receivers are park users.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Existing scenic views south over the water to Sydney CBD and Yurulbin Park</li><li>+ Some built form currently visible on the water</li><li>+ Relatively low number of receivers.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ Construction elements including the cofferdam, crane, wharf and acoustic shed would be noticeable, although the panoramic nature of the viewpoint ensures that they would form a small component of the wider scene</li><li>+ There would be a slight reduction in vegetation currently visible along the Birchgrove peninsula.</li></ul>	A Moderate/Low visual impact is expected on these receivers during the construction period. There would be a slight increase in the amount of built form visible and a perceptible decrease in vegetation at the end of the Birchgrove peninsula. There would also be a noticeable increase in the number of boat movements within the bay.	Although lighting would be perceptible from this viewpoint, a noticeable impact on night time visual amenity is not expected.	Once construction is complete, the level of ongoing impact would depend on the size of replacement vegetation within the park. There may be some reduction in visual amenity until new planting reaches maturity.
		Moderate	Low	Moderate/Low	Negligible	Negligible to Low
Viewpoint 5 Ballast Point Park <a href="#">Type</a> Public <a href="#">Distance</a> 590m <a href="#">No. of viewers</a> Moderate	Ballast Point Park is a 2.6 hectare area of public open space located in Birchgrove at the tip of the Balmain Peninsula. The park has an industrial heritage and sweeping views north, east and west over the Harbour. Yurulbin Park is visible to the west. The receivers are park users.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Existing scenic views south over the water to Yurulbin Park</li><li>+ Some built form currently visible on the water</li><li>+ Wide, panoramic viewframe.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ Construction elements including the cofferdam, crane, wharf, floating dock and acoustic shed would be noticeable, although the panoramic nature of the viewpoint ensures that they would form a small component of the wider scene</li><li>+ There would be a slight reduction in vegetation currently visible along the Birchgrove peninsula.</li></ul>	A Moderate/Low visual impact is expected on these receivers during the construction period. There would be a slight increase in the amount of built form visible and a perceptible decrease in vegetation at the end of the Birchgrove peninsula. There would also be a noticeable increase in the number of boat movements within the bay.	Although lighting would be perceptible from this viewpoint, a noticeable impact on night time visual amenity is not expected.	Once construction is complete, the level of ongoing impact would depend on the size of replacement vegetation within the park. There may be some reduction in visual amenity until new planting reaches maturity.
		Moderate	Low	Moderate/Low	Negligible	Negligible to Low
Viewpoint 6 Residential dwellings off Wharf Road <a href="#">Type</a> Private <a href="#">Distance</a> 400m <a href="#">No. of viewers</a> Moderate	The receivers are north facing residential dwellings on both sides of Wharf Road in Balmain.  These properties sit on large blocks of land and have extensive views over Snails Bay towards Yurulbin Park and Balls Head Reserve.  There are also views to the construction support site from two small areas of foreshore public open space located off Wharf Road.	The sensitivity of these receivers to the project is considered to be High, due to the following: <ul style="list-style-type: none"><li>+ Expansive and scenic view corridors to the north and east</li><li>+ Several dwellings along the waterfront are on the local heritage register, with 25 Wharf Road being state listed.</li></ul>	The magnitude of impact arising from the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Construction elements including the cofferdam, crane, wharf, floating dock and acoustic shed would be noticeable within the scene</li><li>+ The presence of existing floating built form currently visible on the water would reduce the magnitude of change associated with the project</li><li>+ There would be a slight reduction in vegetation currently visible along the Birchgrove peninsula</li><li>+ There is a relatively short viewing distance.</li></ul>	A Moderate/High visual impact is expected on these receivers during the construction period. There would be a noticeable increase in the amount of built form visible within the view and a perceptible decrease in vegetation at the end of the Birchgrove peninsula. There would also be a noticeable increase in the number of boat movements within the bay.	Increased lighting may be perceptible from these dwellings, leading to a Low level of night time visual impact. The presence of numerous existing light sources within the viewframe would reduce the magnitude of any change.	Once construction is complete, the level of ongoing impact would depend on the size of replacement vegetation within the park. There may be some reduction in visual amenity until new planting reaches maturity.
		High	Moderate	Moderate/High	Low	Negligible to Low





VIEWPOINT 4 - VIEW SOUTH EAST FROM MANN'S POINT TOWARDS YURULBIN PARK



VIEWPOINT 5 - VIEW NORTH WEST FROM BALLAST POINT TOWARDS YURULBIN PARK



VIEWPOINT 6 - REPRESENTATIVE VIEW FROM DWELLINGS OFF WHARF STREET OVER SNAILS BAY



PANORAMIC VIEW FROM MANN'S POINT OVER SYDNEY HARBOUR



## 5.5 Sydney Harbour north cofferdam (WHT6) and Berrys Bay (WHT7)



VIEW OVER THE COAL LOADER DECK: SOURCE ALPINE NURSERIES



BERRYS BAY AS VIEWED FROM CARRADAH PARK

### 5.5.1 Site context

The Sydney Harbour north cofferdam and Berrys Bay construction support sites are located on the Waverton Peninsula, North Sydney.

#### Sydney Harbour north cofferdam site

The Sydney Harbour north cofferdam site is found on the western side of Waverton peninsula, adjacent to a former industrial area known as the Coal Loader. It operated from the early 1920s to the early 1990s and functioned primarily as a transfer depot for coal from mass carriers to smaller coal-fired vessels.

The Coal Loader was dedicated as public open space in 1997 and formally transferred to North Sydney Council in 2003. Since then the site has been gradually transformed into the Coal Loader Centre for Sustainability. A large publicly accessible green roof space on the old coal-loading platform opened in mid 2018.

#### Berrys Bay

Berrys Bay maritime area comprises the lower section of the former BP oil terminal and Woodleys Shipyard on the western side of the bay. Berrys Bay has a long standing maritime heritage, having been the berthing location for large ships visiting the former BP oil terminal and the site of a busy and historic shipyard. The BP oil terminal site was converted into Carradah Park in 2005.

The Woodleys Shipyard is a complex located on the western edge of the bay, featuring waterfront workshops, slipways and sheds at the waters edge, with a two storey brick administration building behind. The remaining area of the bay has not been remediated or landscaped.

### 5.5.2 Local policy and planning

The two sites are covered by the following planning policies:

- + North Sydney Local Environmental Plan (LEP) 2013
- + North Sydney Development Control Plan (DCP) 2013
- + Sydney Harbour Catchment Regional Environmental Plan (REP) 2005
- + The Sydney Harbour Foreshores Area Development Control Plan (DCP)
- + Waverton Peninsula Strategic Masterplan (1999).

#### North Sydney Council LEP 2013

The LEP contains provisions for guiding development above the mean high water mark. The Berrys Bay site is zoned as IN4 - 'Working Waterfront'. The key relevant objectives of the LEP within this zone are:

- + To ensure that development does not have an adverse impact on the environmental and visual qualities of the foreshore.

The plan stipulates that planning permission would not be granted if the proposed development is likely to have a significantly adverse effect on:

- + Public views and views from surrounding properties
- + Natural features on or adjoining the site, such as cliff lines, bushland and significant trees.

#### North Sydney Council DCP 2013

The DCP lists the following relevant views and vistas that are to be preserved and where possible enhanced:

- + Views from the end of Larkin Street, from the rock outcrop towards the Sydney CBD, Sydney Harbour and Parramatta River
- + Significant public views of Iron Cove and the Parramatta River from Horace Street, Balls Head Road and the cliff top
- + District views to Sydney Harbour
- + Berry Island lookouts.

#### Sydney Harbour Catchment Regional Environmental Plan (REP) 2005

The REP Part 3 Zoning Map indicates that the water-based portion of the Berrys Bay site is located in Zone W1 - Maritime Waters. This zone type covers the main navigation channels, public transport, port and maritime industry activities of the Harbour and permits a wide range of waterway activities and facilities.

The Sydney Harbour north cofferdam on water construction support site sits adjacent to the Coal Loader Strategic Site, identified under the REP. This has limited consequences for visual impact, although the REP calls that any development must demonstrate the 'protection and enhancement of the natural assets of the site and adjoining land'. It also calls for 'heritage conservation, implementing the guidelines set out in any applicable conservation policy or conservation management plan'.

#### Waverton Peninsula Strategic Masterplan (1999)

The masterplan sets out strategies for the future development of the Coal Loader/Caltex and BP ex-industrial sites for public open space and working waterfront land uses.

It outlines the design, planning and management processes for the sites in line with the guiding principles established in NSW Government statutory planning controls.

The provisions under the Masterplan take precedence over the provisions contained within the LEP and DCP. The plan states that:

- + Important viewsheds into and out of the site would need to be protected.

The masterplan includes a visual character map that highlights key views into and out of the Waverton peninsula. These views are summarised below and indicated on the plan opposite. They have been used to guide the selection of viewpoints for the visual impact assessment (refer Figure 5.9).

#### Local views

- + Views from the end of Larkin Street, from the rock outcrop towards the Sydney CBD
- + Views towards Berrys Bay from Balls Head Reserve
- + Views from Coal Loader platform west over harbour.

#### District views

- + Views to Berrys Bay from Sawmillers Reserve
- + Views to Berrys Bay from Blues Point Reserve
- + Long distance view of Coal Loader from the west.



### 5.5.3 Visual environment

The visual environment of the two construction support sites is that of a typical Sydney Harbour bay with areas of public open space, bushland, wharfs, pontoons, remnant working waterfront industrial elements and residential development.

#### Sydney Harbour north cofferdam (WHT6)

Visual accessibility to the site extends to the north, south and west. Visibility from the east is restricted by the elevated topography of the Waverton peninsular with views limited to the Coal Loader Centre for Sustainability and foreshore paths.

The majority of receivers to the north and west comprise foreshore reserves such as Berry Island Reserve and Manns Point. Residential properties off Wondakiah Drive would have limited visibility to the site.

In the south, Yurulbin, Birchgrove and Ballast Point Parks would have visual accessibility to the site, along with several residential properties off Wharf Road. Due to the relatively large viewing distances from these locations and temporary nature of the impacts, these viewpoints have not been studied further within this assessment.

#### Berrys Bay (WHT7)

The visual accessibility of the Berrys Bay construction support site is relatively limited from many locations in the locality due to the enclosed nature of the bay.

The elevated topography and vegetation of Balls Head Reserve and the Waverton Peninsula block the majority of views towards the Berrys Bay site from the west.

The primary view corridors towards Berrys Bay extend from Walsh Bay in the south to parts of McMahon's Point, North Sydney and the Harbour Bridge in the east.

Properties at the southern end of Larkin Street and Balls Head Road are in closest proximity to the site.

Public domain with visual accessibility to the site comprises public parks and reserves of varying sizes. The largest of these is Balls Head Reserve, although visual accessibility to Berrys Bay from the reserve is limited by dense vegetation and undulating topography.

Sections of Carradah Park, Boatbuilders Walk and Sawmillers Reserve have direct views of the Berrys Bay construction support site, looking west across Berrys Bay.

Residential properties extend along the foreshore of Berrys Bay from adjoining Carradah Park in the west to Blues Point Tower in the east. Some of these properties have direct views of the bay, although ground floor views are often filtered or blocked by vegetation.

#### Heritage items

The North Sydney LEP and Sydney Harbour Catchment REP seek to protect heritage items within the harbour by prohibiting certain actions without development control. North Sydney LEP identifies:

- + BP site
- + Quarantine Depot
- + Woodleys Shipyard
- + Balls Head Reserve
- + Berry Island
- + Sawmillers Reserve.

The Woodleys Boatshed is listed by NSW Environment and Heritage as 'historically rare' locally and 'aesthetically rare' regionally. It is not proposed to be impacted by the project.

### 5.5.4 Selected viewpoints

Following a site visit, these key viewpoints were selected for further analysis (refer Figure 5.12):

#### Berrys Bay site

1. Carradah Park (public)
2. Sawmillers Reserve (public)
3. Berrys Bay - on water (public)
4. Larkin Street and Balls Head Road dwellings (private)
5. Boat Builders Walk dwellings and open space (public/private)
6. Dumbarton Street dwellings (private)

#### Sydney Harbour north cofferdam site

7. Berry Island Resere (public)
8. Coal Loader Centre for Sustainability (public)
9. Wondakiah Drive (public)

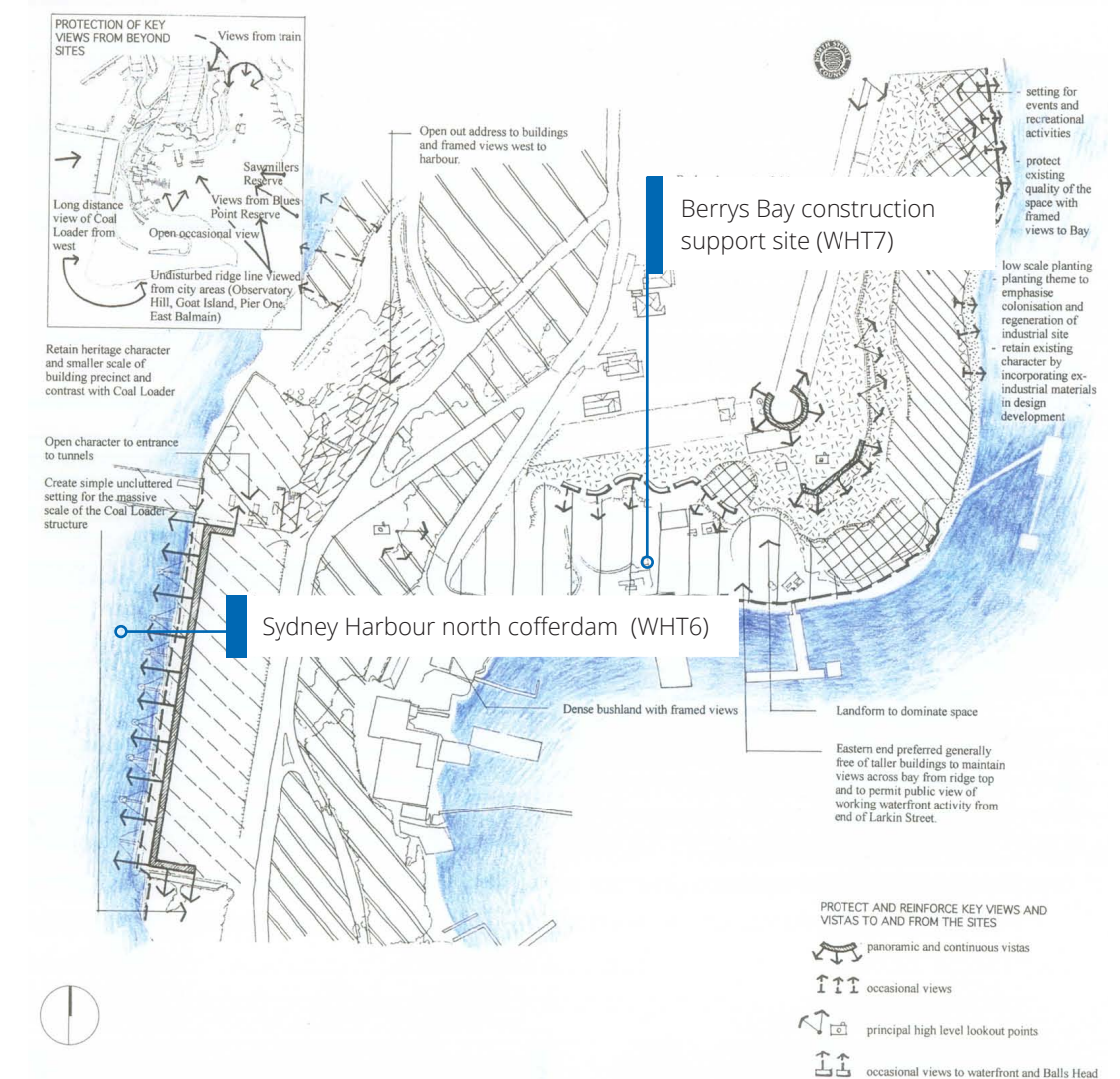


FIGURE 5.9 - EXTRACT FROM WAVERTON MASTERPLAN INDICATING VIEWS TO BE PROTECTED AND ENHANCED



5.5.5 Project elements

Sydney Harbour north cofferdam site

A cofferdam would be constructed near the coal loader platform to facilitate the installation of the immersed modular tunnel. A ferry barge would be used to transport materials from the casting facility in White Bay.

Construction of the immersed tunnel between the Sydney Harbour south and north cofferdam sites would require dredging activities to be carried out.

A work barge (flat top barge) would support the construction of the interface structures and would be permanently moored parallel to the cofferdam during the installation.

The work barge would support: (refer Figure 5.10)

- + Crawler crane used to install the cofferdam, pile foundations, lowering of equipment into the cofferdam and removal of excavated rock.
- + Concrete mixer trucks
- + Concrete pumps
- + Storage materials.

Berrys Bay

The Berrys Bay construction support site would be a combined land and water based site located in Berrys Bay. An indicative site layout for the construction support site is shown opposite.

The proposed construction works at the site would include (refer Figure 5.11):

- + Excavation of driven mainline tunnels
- + Tunnel civil and mechanical and electrical fit-out
- + Underground tunnel excavation continuously for 24 hours per day beneath acoustic shed
- + A spoil shed to attenuate noise impacts to the nearby community
- + A barge shed positioned in the harbour to facilitate barge loading.

Access

There would be limited vehicle access to and from the site during construction as the access down Balls Head Road is narrow and not suitable for sustained heavy vehicle movements.

All major deliveries to and from the site would be via Sydney Harbour with a delivery wharf constructed on the site to accommodate barges. Barges would transport tunnel spoil to White Bay where it would be transferred to road going trucks for appropriate disposal/reuse.

Post Construction

The construction footprint at Berrys Bay would be remediated with a high quality landscape treatment including grasses and shrubs. This would provide for a restored waterfront landscape community of native plants compatible with the original indigenous landscaped foreshore.

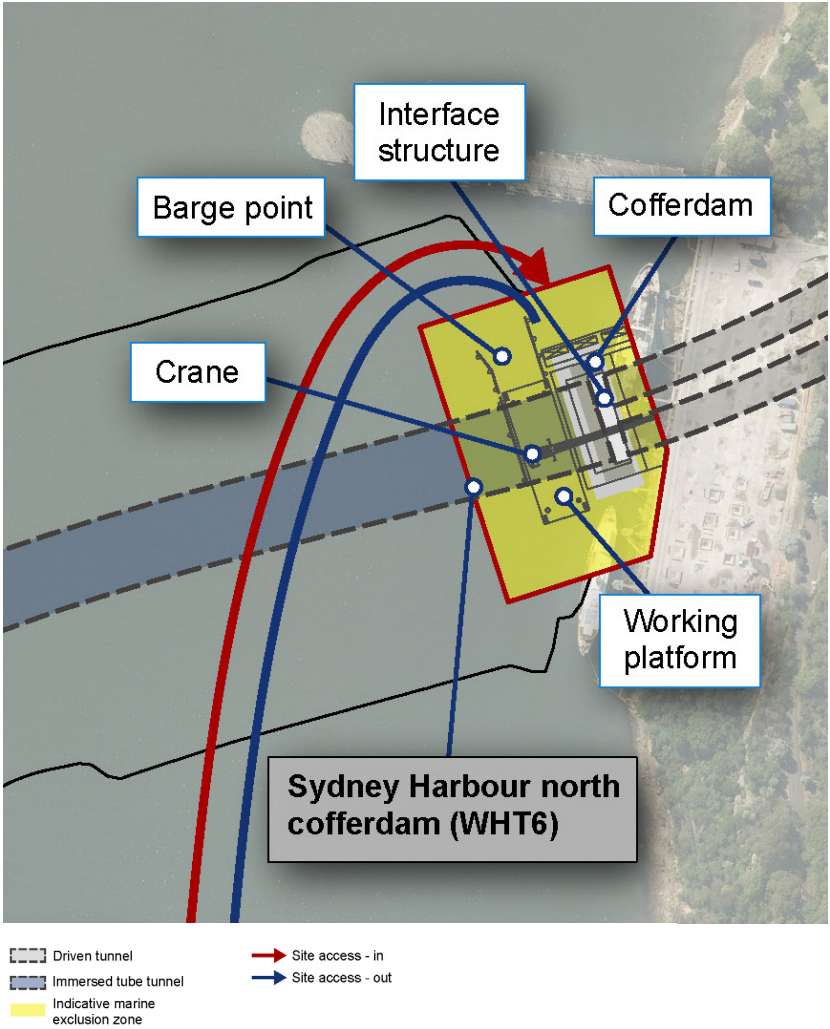


FIGURE 5.10 - SYDNEY HARBOUR NORTH COFFERDAM CONSTRUCTION SUPPORT SITE LAYOUT

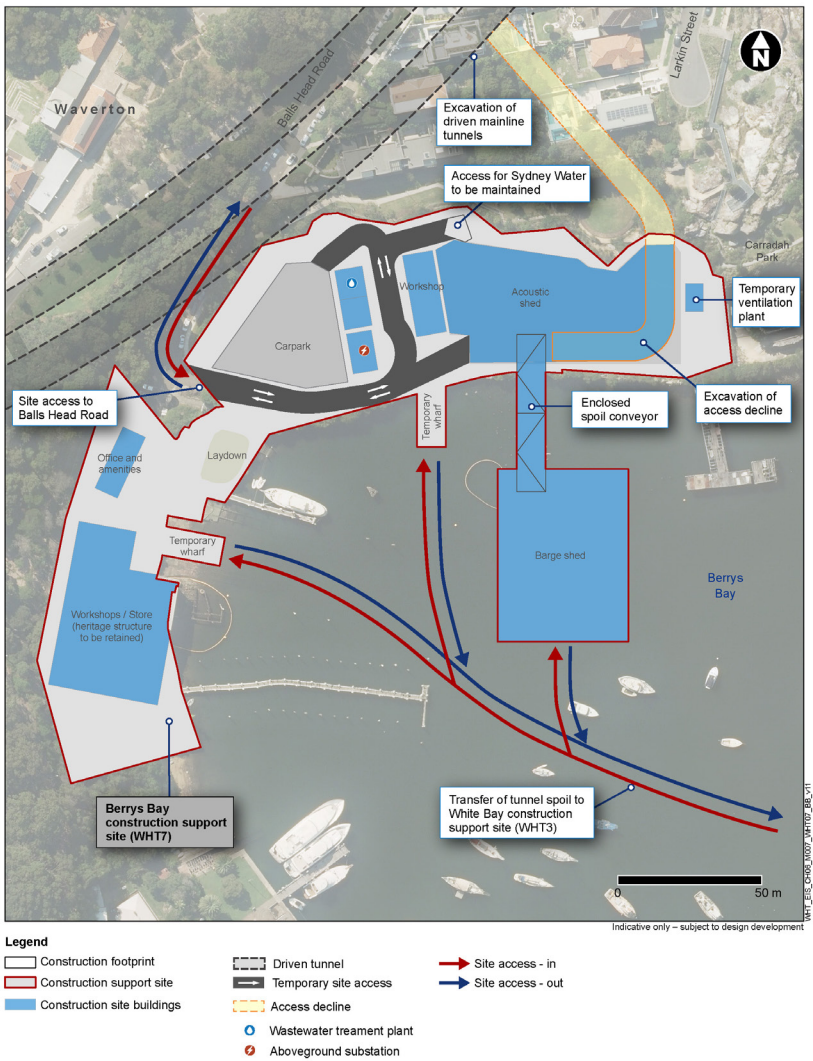


FIGURE 5.11 - BERRYS BAY CONSTRUCTION SUPPORT SITE LAYOUT



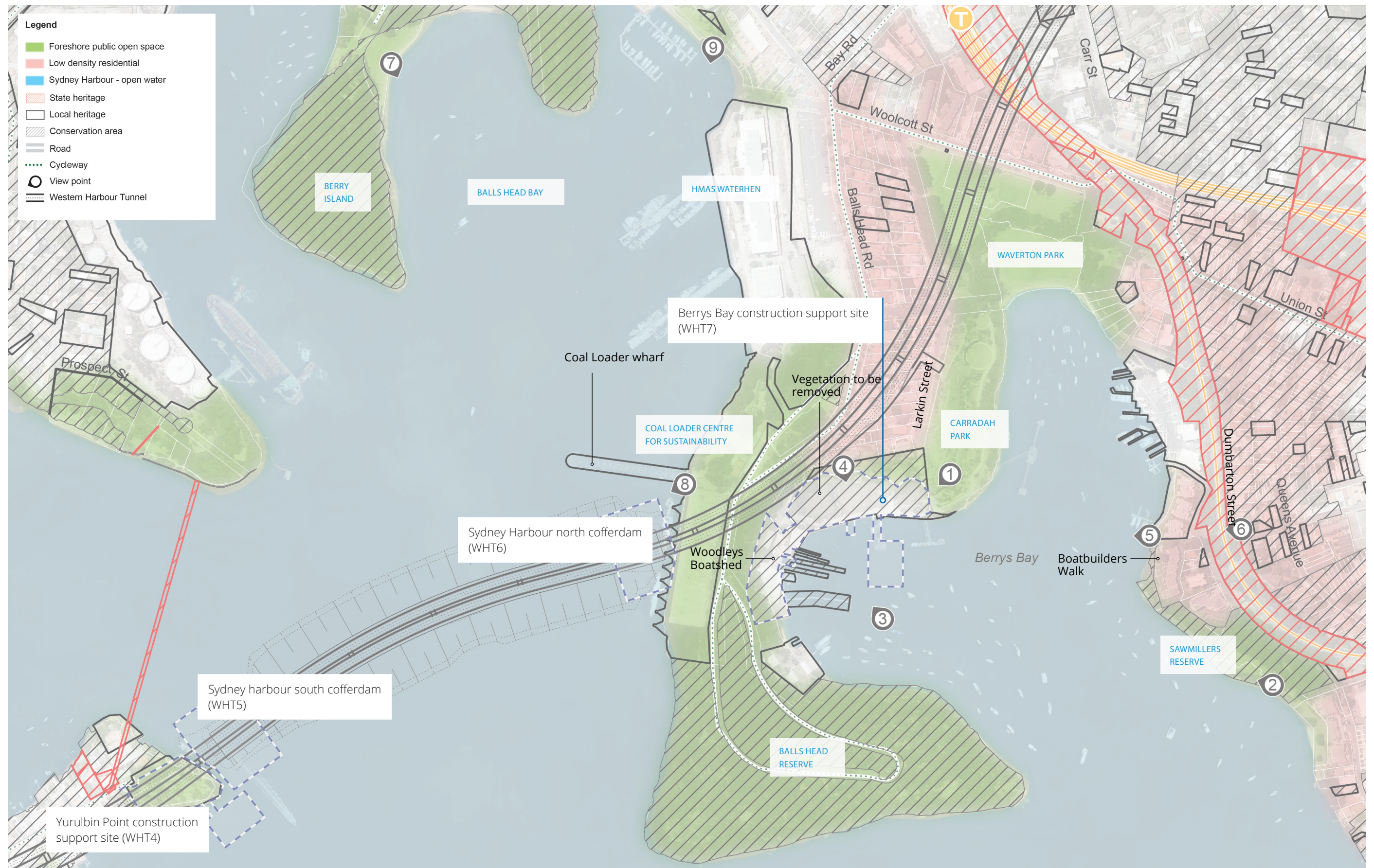


FIGURE 5.12 - WAVERTON PENINSULA - CONTEXT AND VIEWPOINT LOCATION



5.5.6 Berrys Bay urban design requirements

Post construction, the works site at Berrys Bay would be remediated with an appropriate landscape treatment. The following urban design requirements have been identified (refer Figure 5.13):

- + Ensure existing landscape impacted by temporary works is remediated using an appropriate native planting palette
- + Ensure vegetation restoration and landscape improvements are within keeping of local council guidelines and existing landscape character
- + Ensure heritage listed features are protected including bund wall and Woodleys Boatshed
- + Reinstate any disturbed beach/foreshore edges
- + Ensure views across Berrys Bay from nearby dwellings are not impacted post construction.

5.5.7 Opportunities for others

Development of the project at Berrys Bay provides opportunities for Roads and Maritime, North Sydney Council and other relevant stakeholders to investigate the re-purposing/embellishment of the site as an area of high quality recreational open space for the wider community.



FIGURE 5.13 - BERRYS BAY URBAN DESIGN DRIVERS (NOT TO SCALE)



### 5.5.8 Landscape character

The Waverton peninsula is bound by steep sloping topography to the south, east and west, with the open water of Sydney Harbour and associated foreshore forming the eastern and western boundary.

#### Sydney Harbour north cofferdam site

The construction area is adjacent to the Coal Loader Sustainability Centre and consists of open water, currently occupied by several large vessels. The dilapidated old coal loader wharf forms a discernible feature adjacent to the site.

#### Berrys Bay

The portion of the site to be used for construction within Berrys Bay currently comprises unimproved grassland with a scattering of naturally seeded shrub and tree plantings. Vegetation is at its densest along the sandstone cliff to the north of the site. The site is overlooked by low density residential development located along the ridge tops to the north.

As a former industrial site, the area includes several dilapidated buildings, timber wharfs (several boomed off) and cyclone fencing with green netting along the foreshore path.

### Landscape character impact summary

#### Sydney Harbour north cofferdam site

The cofferdam and crane structure may lead to Moderate adverse impacts to the character of the surrounding open water and Coal Loader Sustainability Centre open space due to an increase in visible built form. Once construction is complete, there would be no lasting impact on their landscape character (refer Table 5.4).

#### Berrys Bay

There are likely to be temporary Moderate and Moderate/High landscape impacts on the public open space, residential dwellings and open water surrounding the construction support site. The increase in built form would be incongruous with the existing undeveloped landscape character of the bay.

Once construction is complete, no lasting impacts on landscape character are expected once replacement vegetation has matured (refer Table 5.4).

### Landscape character assessment

Landscape Character Zone	Sensitivity	Magnitude (construction phase)	Construction phase Landscape character impact	Operation phase Landscape character impact
<b>Foreshore public open space</b>  This LCZ includes sections of the surrounding foreshore, including Carradah Park, Balls Head Reserve, Sawmillers Reserve, Berry Island and the Coal Loader Sustainability Centre.	The sensitivity of this LCZ to the project is considered to be High, due to the following: + High quality, well utilised public open spaces with dramatic Harbour views + High level of spatial integrity + Heritage listed open space.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following: + The Berrys Bay and Sydney Harbour north cofferdam construction works would have limited direct impacts on this LCZ. The majority of the construction support site within Berrys Bay is currently publicly inaccessible. + New elements would be introduced into the outlook from some sections of this LCZ (Carradah Park, Sawmillers Reserve and Coal Loader Sustainability Centre) increasing the LCZ's exposure to built form and discernible removal of vegetation.	Moderate/High	Negligible - the impact is expected to negate once the site has been reinstated and replacement vegetation has matured.
	High	Moderate	Moderate/High	Negligible
<b>Low density residential</b>  This LCZ includes dwellings along Larkin Street and Balls Head Road as well as more distant dwellings on Dumbarton Street.	The sensitivity of this LCZ to the project is considered to be High, due to the following: + Residential development with a high level of spatial integrity, scenic views and limited non residential built form present.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following: + The Berrys Bay construction works would be in close proximity to several dwellings along Larkin Street and Balls Head Road + There are likely to be temporary indirect impacts to the landscape character of the residential area with an increase in exposure to adjacent built form and discernible removal of vegetation.	Moderate/High	Negligible - the impact is expected to negate once the site has been reinstated and replacement vegetation has matured.
	High	Moderate	Moderate/High	Negligible
<b>Sydney Harbour - open water</b>  This LCZ includes the waterway surrounding the two sites, utilised by public ferries and recreational watercraft users.	The sensitivity of this LCZ to the project is considered to be Moderate, due to the following: + Scenic waterway with iconic Harbour views + Large scale and openness of LCZ allows ability to absorb some change without detrimental impacts to character.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following: + There would be a temporary increase in built form on the waterway in the form of the cofferdam structure (Balls Head site) and spoil shed (Berrys Bay site) which may lead to adverse impacts on the character of the waterway in close proximity to the works.	Moderate	Negligible
	Moderate	Moderate	Moderate	Negligible

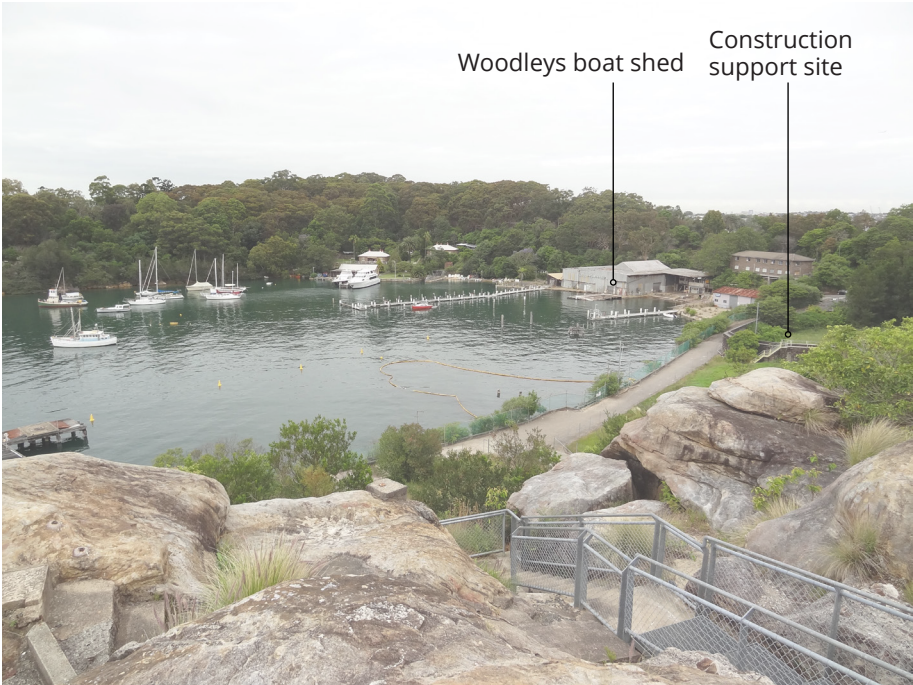
TABLE 5.4 - SYDNEY HARBOUR NORTH COFFERDAM (WHT6) AND BERRYS BAY (WHT7) CONSTRUCTION SUPPORT SITES LANDSCAPE CHARACTER IMPACTS SUMMARY



Berrys Bay (WHT7) - Visual impact assessment

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 1 Carradah Park <div>Type Public</div> <div>Distance 50m</div> <div>No. of viewers High</div>	Carradah Park is a large area of public open space on the north western side of Berrys Bay. The southern most section of the park has visual accessibility to the construction support site from an elevated position. The receivers are users of Carradah Park.	The sensitivity of this LCZ to the project is considered to be High, due to the following: <ul style="list-style-type: none"><li>+ High quality and well used public open space with dramatic Harbour views</li><li>+ Extensive panoramic and unobstructed elevated view corridors to Sydney Harbour Bridge and Sydney CBD</li><li>+ Limited built form currently visible within Berrys Bay.</li></ul>	The magnitude of impact arising from the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Construction works would see the replacement of existing green space with hardstand and buildings</li><li>+ The acoustic shed would be larger in scale and mass than existing elements currently within the scene</li><li>+ A large wharf structure would be located within the bay, reducing the extent of clear water currently visible</li><li>+ There would be an increase in vehicle and boat movements visible within the area, as well as the discernible removal of vegetation.</li></ul>	A Moderate/High visual impact is expected during the construction period. There would be an increase in the amount of built form visible within the area, as well as the number of boat and vehicle movements within the bay area.	Due to the 24 hour nature of the works, there would be a requirement for night lighting.  There are currently minimal sources of lighting in Berrys Bay. The construction lights may be noticeable from the park, although a major impact on night time visual amenity is not expected.	Once construction is complete, there are not expected to be any ongoing visual impacts.
		High	Moderate	Moderate/High	Low	Negligible
Viewpoint 2 Sawmillers Reserve <div>Type Public</div> <div>Distance 60m</div> <div>No. of viewers Moderate</div>	The receivers are the users of Sawmillers Reserve, a long strip of public open space along the foreshore of Berrys Bay. Site of a former sawmill, the reserve includes historic features such as the remains from Eaton's timber yard and the heritage listed wrecked MSB hopper barge on the foreshore. There are sweeping views available south to Pyrmont and Balmain, and west to Balls Head Reserve.	The sensitivity of these receivers to the project is considered to be High, due to the following: <ul style="list-style-type: none"><li>+ Expansive and scenic view corridors to the west and south although construction support site only partially visible due to screening vegetation</li><li>+ Limited built form currently visible within Berrys Bay</li><li>+ Heritage listed open space.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ Tree planting within the reserve would screen the majority of views of the construction support site</li><li>+ Some construction works may still be visible, including parts of the acoustic shed.</li></ul>	A Moderate visual impact is expected on these receivers during the construction period. There would be a small increase in the amount of built form visible, as well as the number of boat and vehicle movements within the bay area.	A noticeable impact on night time visual amenity is not expected due to the reduced number of night time users.	Once construction is complete, there are not expected to be any ongoing visual impacts.
		High	Low	Moderate	Negligible	Negligible
Viewpoint 3 Berrys Bay - on water <div>Type Public</div> <div>Distance 150m</div> <div>No. of viewers Low</div>	This viewpoint looks across the water towards Woodleys Shipyard. The foreground is mostly open water with a low density of swing moored boats. The dense vegetation of Balls Head Reserve forms the background of the view.  The receivers are recreational water users of Berrys Bay including kayakers and recreational boaters.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Scenic views towards Balls Head and Berrys Bay</li><li>+ Limited built form currently visible within Berrys Bay.</li></ul>	The magnitude of impact arising from the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Construction works would see the replacement of existing green space with hardstand and buildings</li><li>+ Acoustic shed would be larger in scale and mass than existing elements currently within the scene</li><li>+ A large wharf structure would be located within the bay, reducing the extent of clear water currently visible</li><li>+ There would be an increase in vehicle and boat movements visible within the area, as well as the discernible removal of vegetation.</li></ul>	A Moderate visual impact is expected on these receivers during the construction period. There would be an increase in the amount of built form visible and number of boat movements within the bay.	A noticeable impact on night time visual amenity is not expected due to the reduced number of night time users.	Once construction is complete, there are not expected to be any ongoing visual impacts.
		Moderate	Moderate	Moderate	Negligible	Negligible





VIEWPOINT 1 - VIEW FROM CARRADAH PARK WEST OVER BERRYS BAY



VIEWPOINT 2 - VIEW WEST OVER BERRYS BAY FROM SAWMILLERS RESERVE



VIEWPOINT 3 - VIEW WEST OVER BERRYS BAY FROM WATER

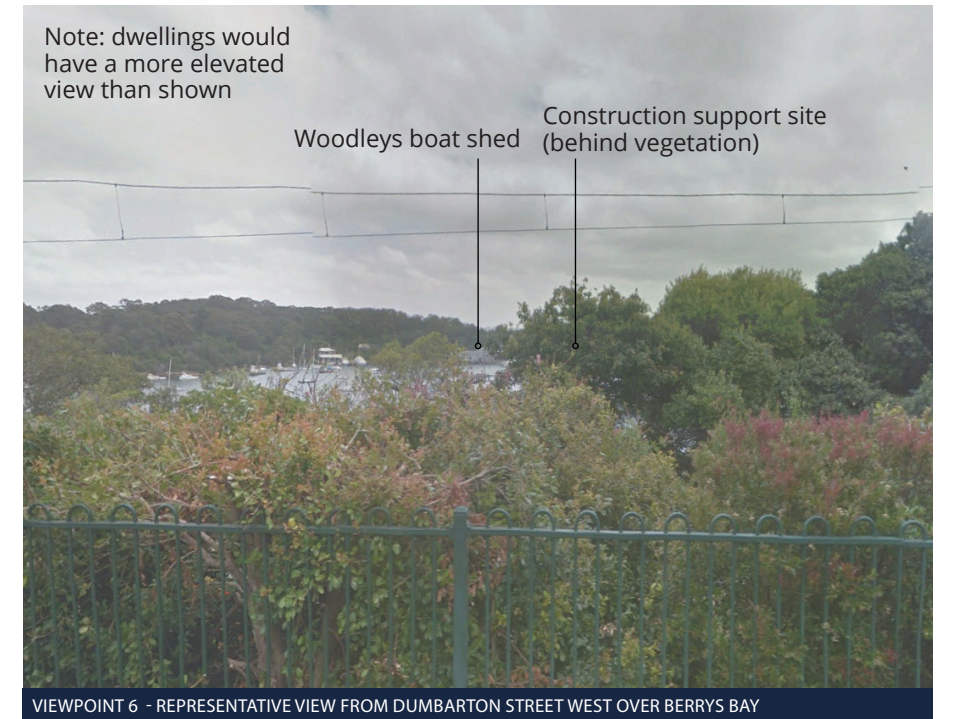
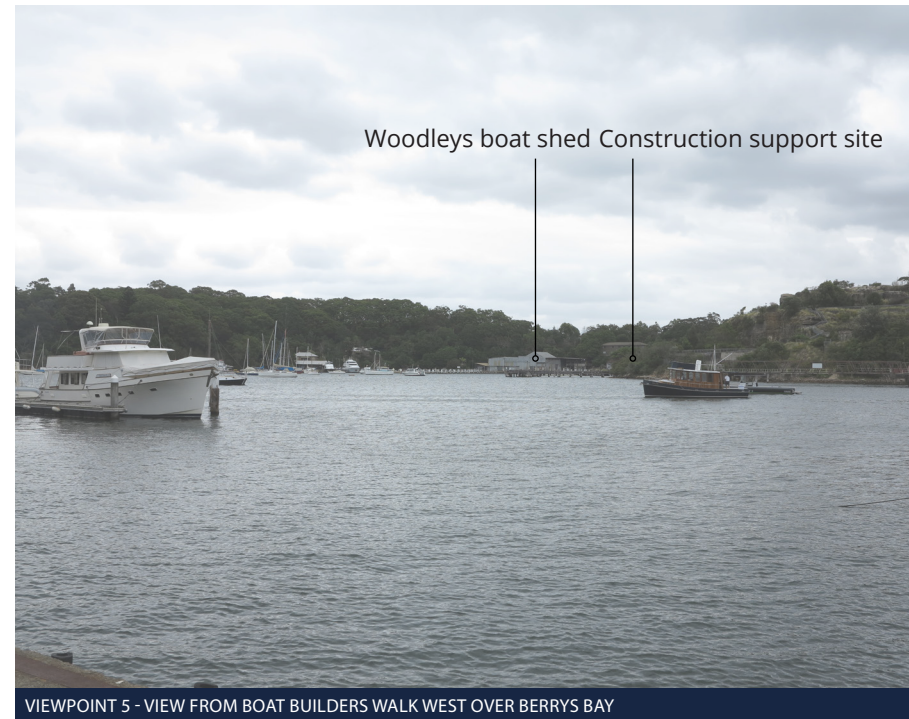


PANORAMIC VIEW FROM CARRADAH PARK OVER BERRYS BAY AND SYDNEY CBD



DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 4 Larkin Street and Balls Head Road dwellings  Type Private  Distance 40m  No. of viewers Low	Several residential properties at the southern end of Larkin Street and Balls Head Road have elevated views south over Berrys Bay towards Balls Head Reserve.	The sensitivity of this these receivers to the project is considered to be High, due to the following: <ul style="list-style-type: none"><li>+ Residential receivers with extensive elevated and scenic view corridors south over Berrys Bay</li><li>+ Limited built form currently visible within the existing viewframe.</li></ul>	The magnitude of impact arising from the project is considered to be Moderate, due to the following: <ul style="list-style-type: none"><li>+ Construction works would see the replacement of existing green space with hardstand and buildings, as well as the discernible removal of vegetation</li><li>+ Acoustic shed would be larger in scale and mass than existing elements currently within the scene</li><li>+ A large wharf structure would be located within the bay, reducing the extent of clear water currently visible</li><li>+ There would be an increase in vehicle and boat movements visible within the area.</li></ul>	A Moderate/High visual impact is expected during the construction period. There would be an increase in the amount of built form visible, as well as the number of boat and vehicle movements within the bay area.	Due to the 24 hour nature of the works, there would be a requirement for night lighting. The lights may be noticeable from these residential dwellings.	Once construction is complete, there are not expected to be any ongoing visual impacts.
		High	Moderate	Moderate/High	Moderate	Negligible
Viewpoint 5 Boat Builders Walk dwellings + open space  Type Public/Private  Distance 350m  No. of viewers Moderate	The receivers are apartment residents off Munro Street and users of Boatbuilders Walk, a strip of public open space linking Munro Street and Sawmillers Reserve. The walk commemorates the significant boat building operations that occurred along this section of shore from the 1800s through much of the 20th century.  The current view from the apartments and foreshore looks west across Berrys Bay.	The sensitivity of this viewpoint to the project is considered to be High, due to the following: <ul style="list-style-type: none"><li>+ Residential and public open space receivers with extensive elevated and scenic view corridors west over Berrys Bay</li><li>+ Limited built form currently visible within the existing viewframe.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ The relatively large viewing distance means that the construction elements of the project are unlikely to dramatically alter the composition of the existing view</li><li>+ The construction elements would not restrict views towards Balls Head Reserve.</li></ul>	A Moderate visual impact is expected on these receivers during the construction period. There would be an increase in the amount of built form visible within the bay, as well as an increase in the number of truck and boat movements.	There are currently minimal sources of lighting in Berrys Bay. The construction lights may be noticeable from this viewpoint, although due to the large viewing distance, a major impact on night time visual amenity is not expected.	Once construction is complete, there are not expected to be any ongoing visual impacts.
		High	Low	Moderate	Low	Negligible
Viewpoint 6 Dumbarton Street dwellings  Type Private  Distance 411m  No. of viewers Low	The receivers are approximately 12 residential properties located on Dumbarton Street, looking west over Berrys Bay from an elevated position.  The foreground view consists of the railway line, with vegetation within the rail corridor, partially filtering views of the bay.	The sensitivity of this these receivers to the project is considered to be High, due to the following: <ul style="list-style-type: none"><li>+ Residential receivers with extensive elevated and scenic view corridors over Berrys Bay</li><li>+ Limited built form currently visible within the existing viewframe.</li></ul>	The magnitude of impact arising from the project is considered to be Low, due to the following: <ul style="list-style-type: none"><li>+ The relatively large viewing distance means that the construction elements of the project are unlikely to dramatically alter the composition of the existing view</li><li>+ The construction elements would not restrict views towards Balls Head Reserve.</li></ul>	A Moderate visual impact is expected on these receivers during the construction period. There would be an increase in the amount of built form visible within the bay, as well as an increase in the number of truck and boat movements.	There are currently minimal sources of lighting in Berrys Bay. The construction lights may be noticeable from this viewpoint, although due to the large viewing distance, a major impact on night time visual amenity is not expected.	Once construction is complete, there are not expected to be any ongoing visual impacts.
		High	Low	Moderate	Low	Negligible







Sydney Harbour north cofferdam (WHT6) - Visual impact assessment

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 7 Berry Island Reserve  Type Public  Distance 700m  No. of viewers Moderate	Berry Island Reserve is a large area of public open space located on Wollstonecraft peninsular. Views from open areas of the reserve extend east and south across Balls Head Bay towards the Waverton peninsula, Balmain and the Sydney CBD.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following:  + Expansive and scenic view corridors to the east and south + Foreground of viewframe currently dominated by open water and well vegetated reserves with limited built form visible.	The magnitude of impact arising from the project is considered to be Low, due to the following:  + While noticeable, the cofferdam and crane structure would form a relatively small part of a wider, panoramic viewframe + Views towards the Sydney CBD would not be obscured.	A Moderate/Low visual impact is expected on these receivers during the construction period. There would be a slight decrease in the amount of clear water visible and the crane would form a new vertical element within the viewframe.	The on water structures would require navigational lighting. Although this may be noticeable from the reserve, the light source would be no brighter than existing sources within the viewframe.	Once construction is complete there are not expected to be any ongoing visual impacts.
		Moderate	Low	Moderate/Low	Negligible	Negligible
Viewpoint 8 Coal Loader Centre  Type Public  Distance 10m  No. of viewers Moderate	The Coal Loader Centre for Sustainability is located on the Waverton peninsula. The foreshore path and public open space located on the coal loader platform have extensive views west across Balls Head Bay towards Birchgrove and Greenwich.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following:  + Expansive and scenic view corridors to the west and south + Foreground of viewframe currently dominated by the open water of the harbour.	The magnitude of impact arising from the project is considered to be Moderate, due to the following:  + The cofferdam and crane structure would be highly visible from this viewpoint.	A Moderate visual impact is expected on these receivers during the construction period. The crane would form a new vertical element within the viewframe and there would be an increase in the amount of built form and boat movements visible within the bay.	The on water structures would require navigational lighting. Although this would be noticeable from the coal loader area, an impact on night time visual amenity is not expected due to the limited number of night time users.	Once construction is complete there are not expected to be any ongoing visual impacts.
		Moderate	Moderate	Moderate	Negligible	Negligible
Viewpoint 9 Wondakiah Drive dwellings  Type Private  Distance 350m  No. of viewers Low	This viewpoint constitutes a large residential development and marina sited along a valley adjacent to Wondakiah Drive in Waverton. Dwellings are orientated west, east and south.  Elevated dwellings have expansive views across Balls Head Bay. Existing views to the coal loader site are partially restricted by the built form of the HMAS Waterhen naval base to the south.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following:  + Expansive and scenic view corridors to the south and east + Foreground of southern viewframe currently dominated by marina and maritime facilities associated with HMAS Waterhen.	The magnitude of impact arising from the project is considered to be Low, due to the following:  + The construction elements of the project are similar in scale, mass and character to existing elements withing the current view + Views to the construction support site would be partially screened by foreground built form.	A Moderate/Low visual impact is expected to these receivers during the construction period. There may be an increase in the number of boat movements visible, although this is in keeping with the existing busy foreshore activities.	The on water structures would require navigational lighting. Although this may be noticeable from some residents, the light source would be no brighter than existing sources within the viewframe.	Once construction is complete there are not expected to be any ongoing visual impacts.
		Moderate	Low	Moderate/Low	Negligible	Negligible





VIEWPOINT 7 - VIEW SOUTH EAST FROM BERRY ISLAND RESERVE TOWARDS BALLS HEAD



VIEWPOINT 8 - VIEW WEST ACROSS COAL LOADER PLATFORM



VIEWPOINT 9 - VIEW SOUTH FROM WONDAKIAH DRIVE SOUTH TOWARDS BALLS HEAD



VIEWPOINT 8 - PANORAMIC VIEW WEST ACROSS COAL LOADER PLATFORM (SOURCE: CLOUSTON ASSOCIATES)



5.6 Ridge Street north (WHT9)



THE SOUTH EASTERN CORNER OF ST LEONARDS PARK, LOOKING SOUTH TOWARDS SYDNEY CBD

5.6.1 Site context

St Leonards Park is a nineteenth century area of parkland that covers approximately 15 hectares. The park is one of North Sydney's largest and oldest parks, established in 1867.

A temporary construction support site associated with Western Harbour Tunnel is proposed to be located in the south eastern corner of the park.

5.6.2 Local policy and planning

**North Sydney Council DCP 2013**

The DCP includes planning and locality areas which have specific outcomes regarding views.

The DCP describes relevant views and vistas that are to be preserved and where possible enhanced, as described in Table 5.5 below.

Heritage Act 1977

As the park is a state heritage item, the Department of Planning, Industry and Environment (Planning and Assessment) lists certain site specific exemptions to work. This includes the following regarding 'works and activities allowing alterations to existing recent development':

- + The proposed works would not incrementally or materially increase the impact of the original development consent on significant elements or characteristics of St Leonards Park, such as (but not limited to) its setting, tree canopy, curtilage, subdivision and ownership patterns, remnant significant fabric, relics, landscape and natural features, current and historic access routes to significant elements, views to and from the item and its significant features, and the capacity for interpretation of its significance.

5.6.3 Visual environment

The south eastern corner of the park has a mostly open character with expansive panoramic views over of the harbour and Sydney CBD.

A band of vegetation along the eastern boundary with the Warringah Freeway spatially separates the park from the road, screening views towards the road infrastructure and associated traffic.

Private domain views into this section of the park are limited to dwellings off Ridge Street within the Walker/Ridge Street conservation area. These views are partially filtered by foreground vegetation.

Heritage

St Leonards Park is of state heritage significance for its historical values as one of the earliest established public parks in NSW.

The Walker/Ridge Street conservation area is located to the south of the construction support site. The area is characterised by intact groups of single and two storey detached and attached dwelling houses in a mix of Victorian Italianate and Federation styles

5.6.4 Selected viewpoints

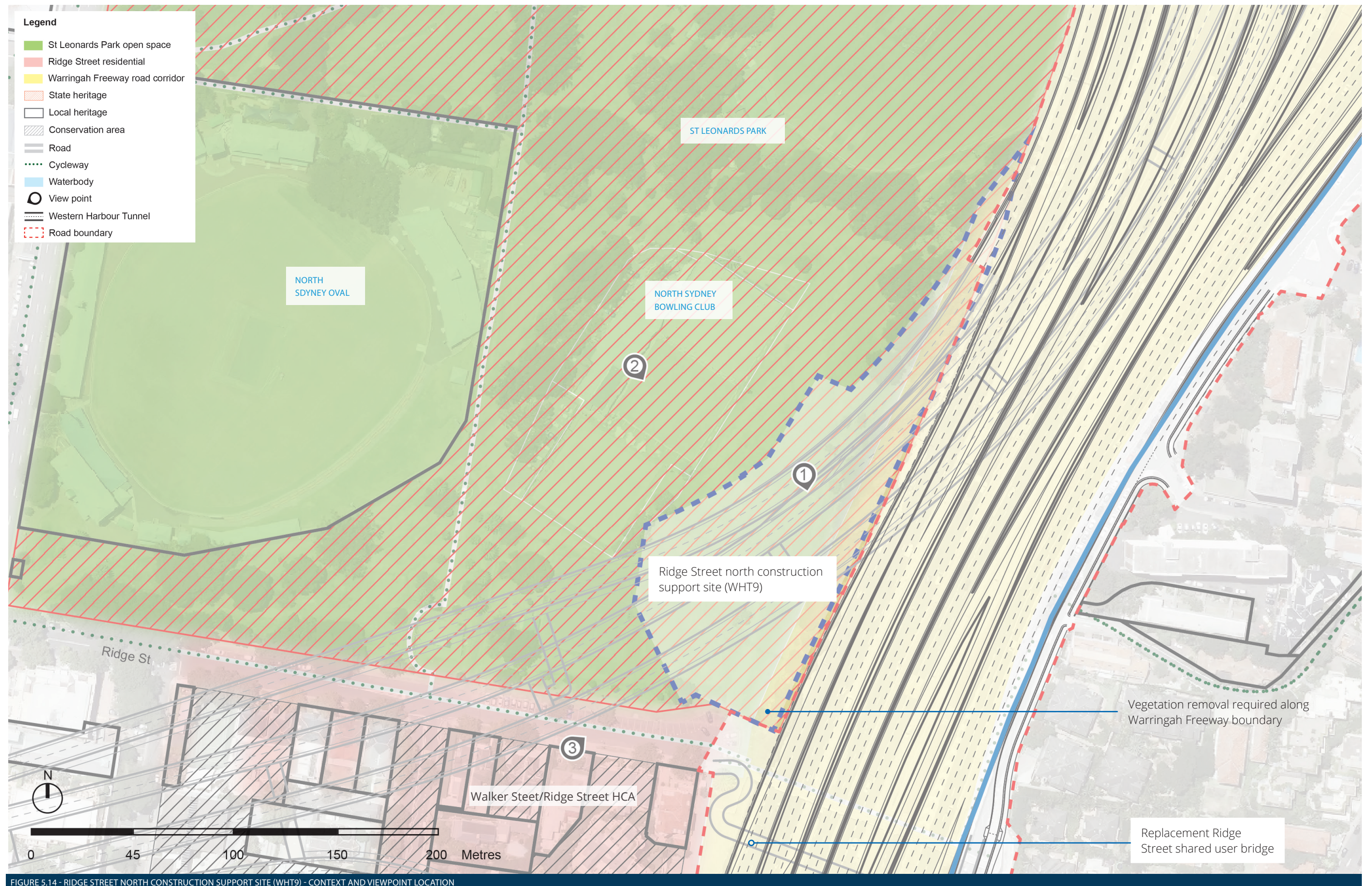
Following a site visit, these key viewpoints were selected for further analysis (refer Figure 5.14):

1. St Leonards Park open space (public)
2. North Sydney Bowling Club (public/private)
3. Dwellings off Ridge Street (private)

Planning area (locality)	Relevant outcomes	Relevant viewpoint within report
North Sydney (Civic Neighbourhood)	+ To Kirribilli and Sydney Harbour from St Leonards Park	Viewpoint 2
North Sydney (Walker/Ridge Street Conservation Area)	+ Warringah Expressway Lookout at the end of Ridge Street	View not impacted by construction support site
	+ Towards St Leonards Park	Viewpoint 3
	+ War Memorial along Walker Street	View not impacted by construction support site

TABLE 5.5 - NORTH SYDNEY COUNCIL DCP VISUAL PLANNING OUTCOMES







5.6.5 Project elements

A section of the south eastern corner of St Leonards Park would be required temporarily for construction of a cut and cover tunnel ramp associated with Western Harbour Tunnel. It is anticipated that this section of the park would be inaccessible during the construction phase.

The project would see the Western Harbour Tunnel ramp buried into the Warringah Freeway embankment with the parkland above re-graded to a mostly level land form, extending over the structure (refer Figure 5.14).

During construction, a temporary noise wall would be put up around the boundary and a temporary car park and site office installed.

Post construction

Post construction, a new retaining wall would be introduced alongside the freeway edge. Native planting would be reinstated to the eastern edge of the park.

5.6.6 Urban design requirements

- + Where feasible, retain and protect existing trees
- + Remediate the parkland post-construction within keeping of its original design using appropriate turf, native shrub and tree planting
- + Provide replacement tree planting along eastern park boundary
- + Use mature size plants to reduce visual impact where feasible
- + Retain dramatic Harbour and CBD views to the south and east post construction
- + Ensure safe and functional connection to St Leonards Park shared user path network and Ridge Street shared user bridge
- + Ensure temporary construction support site hoarding and noise wall, as well as any permanent fencing design is appropriate to the parkland setting, fits sensitively into its surrounding and considers the heritage aspects of the park.

5.6.7 Opportunities for others

Development of the project at St Leonards Park provides opportunities for Roads and Maritime, North Sydney Council and other relevant stakeholders to investigate the re-purposing/embellishment of this corner of the park as an area of high quality recreational open space for the wider community.

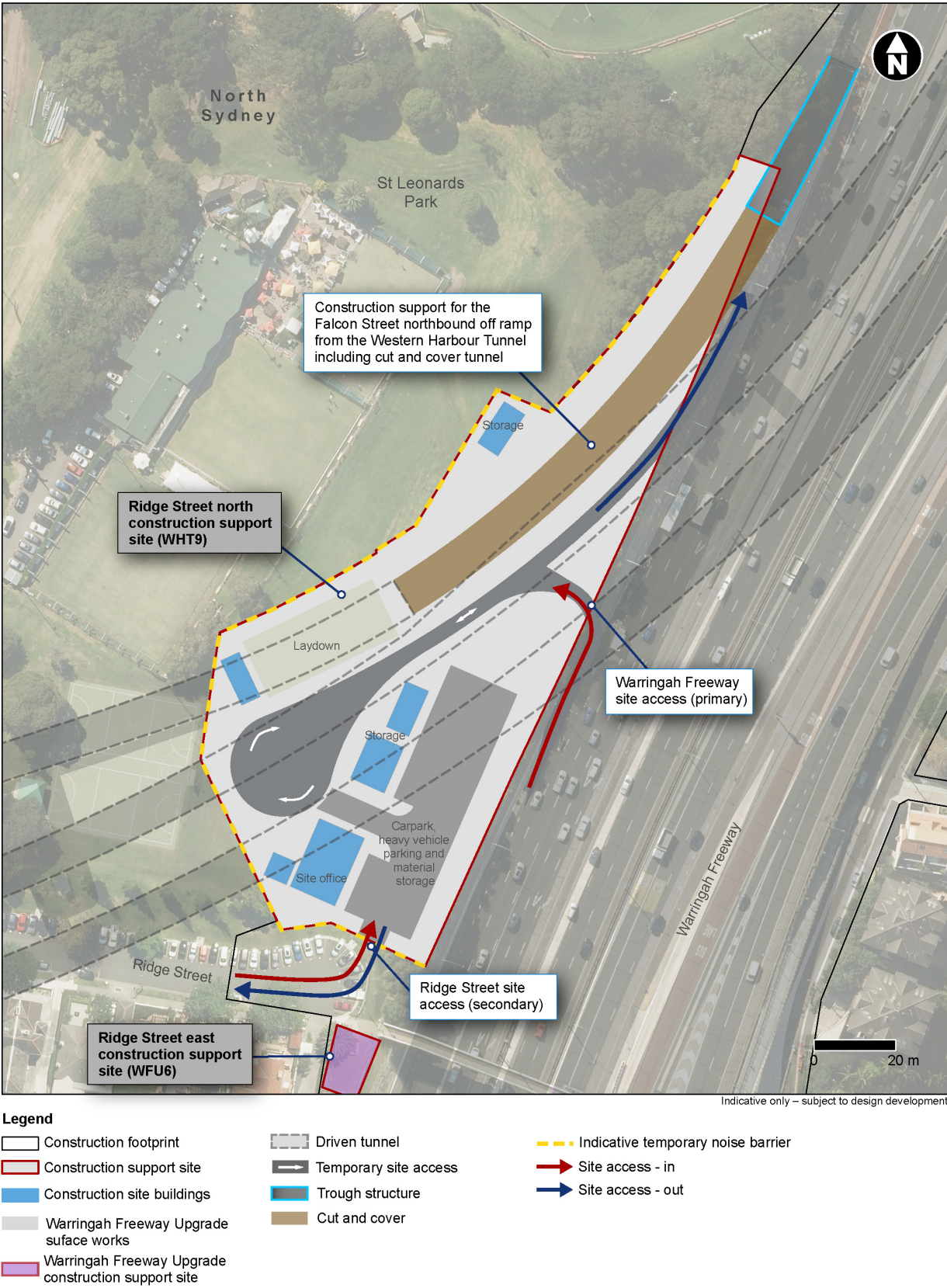


FIGURE 5.15 - RIDGE STREET NORTH CONSTRUCTION SUPPORT SITE (WHT9) LAYOUT



### 5.6.8 Landscape character

St Leonards Park has a varied series of facilities and open spaces. The south eastern corner contains the North Sydney Bowling Club and a section of open space that slopes steeply down towards the Warringah Freeway.

A dense strip of native tree and shrub planting is located along the eastern boundary. Ridge Street runs along the southern edge of the park with an associated on road cycle way, connecting to the existing pedestrian/cycle bridge across the Warringah Freeway. There are limited footpaths within the south-eastern section of St Leonards Park.

#### Landscape character impact summary

There are likely to be temporary landscape impacts on the public open space surrounding the construction support site and adjacent residential dwellings. The increase in built form such as site offices and hoardings would be incongruous within the existing undeveloped landscape character of the park.

Once construction is complete and the site re-vegetated, no lasting impacts on landscape character are expected (refer Table 5.6).

#### Landscape character assessment

Landscape Character Zone	Sensitivity	Magnitude (construction)	Construction phase landscape character impact	Operation phase landscape character impact
<b>St Leonards Park open space</b>  This LCZ comprises the south eastern corner of St Leonards Park where the construction support site would be located.	The sensitivity of this LCZ to the project is considered to be High, due to the following: + Key state heritage listed area of public open space with little built form present.	The magnitude of landscape character change arising from the project is considered to be High, due to the following: + A section of the park would be inaccessible during construction + The presence of site fencing, noise wall, earthworks, built structures and vegetation removal along the eastern boundary would temporarily impact the spatial character of this section of the park, increasing exposure to the adjacent road corridor.	High	Negligible to Low - the impact is expected to negate once the park has been reinstated and replacement vegetation has matured.
	High	High	High	Negligible to Low
<b>Ridge Street residential</b>  This LCZ includes the dwellings along Ridge Street.	The sensitivity of this LCZ to the project is considered to be High, due to the following: + Residential development with a high level of spatial integrity and limited non residential built form present + Part of the Walker/Ridge Street conservation area.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following: + The construction works would be in close proximity to several dwellings along the eastern end of Ridge Street + There are likely to be temporary indirect impacts to landscape character with an increase in adjacent built form and discernible reduction in vegetation	Moderate/High	Negligible to Low - the impact is expected to negate once the park has been reinstated and replacement vegetation has matured.
	High	Moderate	Moderate/High	Negligible to Low
<b>Warringah Freeway road corridor</b>  This LCZ comprises the major road corridor adjacent to the eastern edge of the park.	The sensitivity of this LCZ to the project is considered to be Low, due to the following: + Major road corridor with an ability to absorb change without detrimental impacts to character.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following: + There removal of vegetation along the edge of St Leonards Park may be discernible although a major change to the road's character is not expected.	Low	Negligible to Low - the impact is expected to negate once the park has been reinstated and replacement vegetation has matured.
	Low	Low	Low	Negligible to Low

TABLE 5.6 - RIDGE STREET NORTH CONSTRUCTION SUPPORT SITE (WHT9) LANDSCAPE CHARACTER IMPACTS SUMMARY



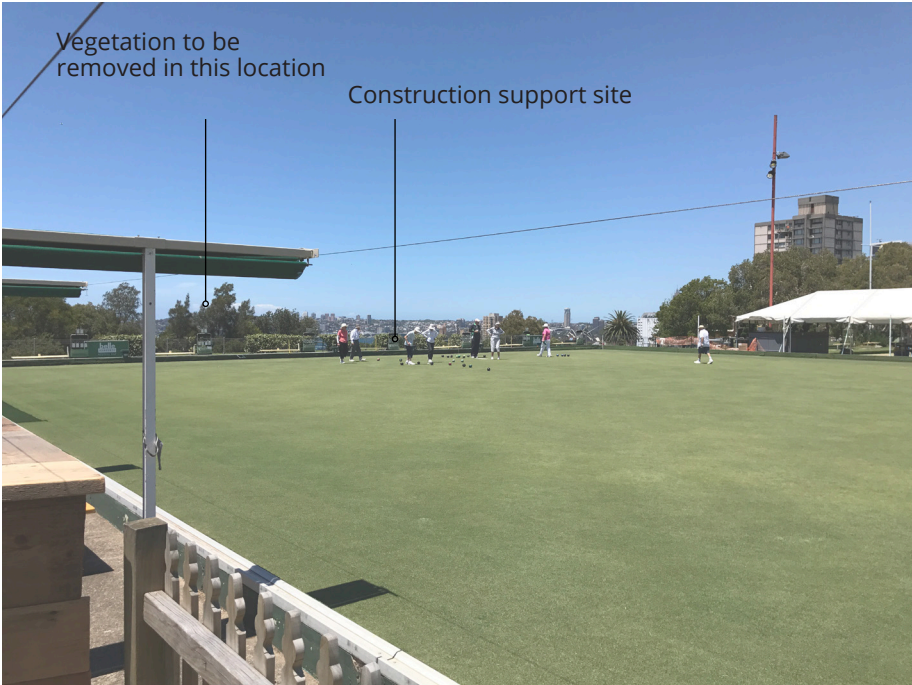
Visual impact assessment

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT	OPERATION
Viewpoint 1 St Leonards Park open space  Type Public  Distance 0m  No. of viewers Moderate	Receivers are users of this south eastern section of St Leonards Park. This area is open in nature although views toward the Warringah Freeway are currently obscured by vegetation. Extensive panoramic views towards the Sydney CBD and Harbour are available to the south and south east.	The sensitivity of these receivers to the project is considered to be High, due to the following:  + Expansive and scenic district view corridors to the south and south east  + St Leonards park is state heritage listed and constitutes a key area of public open space, of which visual amenity is an important factor.	The magnitude of impact arising from the project is considered to be High, due to the following:  + A section of the south east corner of the park would be inaccessible during the construction stage, reducing the availability of district views from this section of the park  + A noise wall/site hoardings around the construction support site would limit local views within the park  + There would be the discernible removal of vegetation along the Warringah Freeway, reducing the visual buffer between the park and this major road corridor.	A High visual impact is expected on these receivers during the construction period.  This area of the park would become inaccessible and views to and from the site would be limited.	There may be a Moderate impact on night time visual amenity of park users due to an increase in light sources as part of the construction works.	Once construction is complete, the park would be returned to pre-existing condition.  Moderate ongoing impacts may remain until replacement vegetation has matured to the size of existing plants, creating visual separation from the Warringah Freeway.
		High	High	High		Negligible to Moderate
Viewpoint 2 North Sydney Bowling Club  Type Public/Private  Distance 20m  No. of viewers High	The North Sydney bowling club is located in the south eastern section of the park and is popular as a food and beverage venue.  The club has extensive views to the south and east over St Leonards Park to Sydney Harbour. Sloping topography and screening vegetation east of the bowling club ensure that the Warringah Freeway is not visible from the club.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following:  + Expansive and scenic view corridors to the east although as an area of public/private open space, sensitivity to change is reduced compared to comparable area of solely public access.	The magnitude of impact arising from the project is considered to be High, due to the following:  + The construction support site would be in close proximity to the eastern boundary of the bowling club. The noise wall/site hoarding would be highly visible and may block views towards the harbour  + There would be the discernible removal of vegetation along the boundary of the Warringah Freeway.	A Moderate/High visual impact is expected on these receivers during the construction period.  Site hoardings/noise wall would be located in close proximity to the club and likely cause adverse impacts on the visual amenity of users.	There may be a Moderate impact on night time visual amenity due to an increase in light sources as part of the construction works.	Once construction is complete, the park would be returned to pre-existing condition.  Moderate ongoing impacts may remain until replacement vegetation has matured to the size of existing plants, creating visual separation from the Warringah Freeway.
		Moderate	High	Moderate/High		Negligible to Moderate
Viewpoint 3 Dwellings off Ridge Street  Type Private  Distance 50m  No. of viewers Low	This viewpoint is representative of the view available from dwellings along Ridge Street, part of the Walker/Ridge Street heritage conservation area.  The existing view north from these dwellings extends across St Leonards Park, partially filtered by foreground vegetation.	The sensitivity of these receivers to the project is considered to be High, due to the following:  + Current scenic leafy outlook onto St Leonards Park  + Part of the Walker/Ridge Street conservation area. View is mentioned as a significant element' within the North Sydney DCP.	The magnitude of impact arising from the project is considered to be Moderate, due to the following:  + Site hoardings/noise wall around the construction support site would limit local views into the park from these dwellings  + There would likely be an increase in vehicle movements visible from these dwellings  + There would the discernible removal of vegetation along the Warringah Freeway, reducing the visual buffer between the dwellings and this major road corridor.	A Moderate/High visual impact is expected on these receivers during the construction period.  The presence of site hoardings/noise wall, construction equipment and additional vehicle movements would be likely to adversely impact residents visual amenity.	There may be a Moderate impact on night time visual amenity due to an increase in light sources as part of the construction works.	Once construction is complete, the park would be returned to pre-existing condition.  Moderate ongoing impacts may remain until replacement vegetation has matured to the size of existing plants, creating visual separation from the Warringah Freeway.
		High	Moderate	Moderate/High		Negligible to Moderate





VIEWPOINT 1 - VIEW SOUTH EAST FROM CORNER OF ST LEONARDS PARK



VIEWPOINT 2 - VIEW SOUTH EAST FROM NORTH SYDNEY BOWLING CLUB



VIEWPOINT 3 - VIEW NORTH FROM DWELLINGS ALONG RIDGE STREET



TYPICAL CHARACTER OF DWELLINGS ALONG RIDGE STREET, PART OF THE WALKER/RIDGE STREET CONSERVATION AREA



## 5.7 Construction support sites - Visual Impact summary

(refer Table 5.7)

### 5.7.1 Victoria Road (WHT2)

- + The visual catchment of the site is restricted by surrounding built form with visibility limited to surrounding roads and several residential receivers
- + The dilapidated nature of the existing site reduces the sensitivity of receivers to change in the visual scene
- + The tall noise wall surrounding the site would form a major new element within the viewframe although is not expected to cause a major degradation to the existing low quality visual amenity of Waterloo Street and Victoria Road
- + Night lighting during the construction period may be in excess of existing light levels and has the potential to slightly impact night time visual amenity for residents along Waterloo Street
- + Post construction, there are unlikely to be any ongoing impacts. The appropriate resurfacing of the site may lead to Beneficial impacts to visual amenity.

### 5.7.2 White Bay (WHT3)

- + Visual accessibility to the site extends to the residential edges of Balmain and Rozelle in the north and west, as well as Pyrmont in the east, including several foreshore parks in this area
- + Parkland with views towards the site includes Pirrama Park and Waterfront Park in Pyrmont, which are both backed by residential towers
- + The industrial nature of the site ensures a reduced magnitude of change. The construction works would likely be in keeping with the existing busy foreshore industrial uses of the site
- + While night lighting would be visible at the construction support site, the presence of existing light sources within the visual scene ensures that additional night time impact is not expected
- + Post construction, there are unlikely to be any ongoing impacts as the site would be returned to existing condition.

### 5.7.3 Yurulbin Point (WHT4) and Sydney Harbour south cofferdam (WHT5)

- + The park has a high sensitivity to visual change due to its heritage listing and dramatic Harbour views
- + Views from waterfront areas within the park are extensive and extend southeast across Sydney Harbour to the CBD and north to North Sydney and Balls Head
- + Local views into the park are limited to several residential properties on Louisa Road, the park itself and the adjacent open water
- + District views to the park extend to the north, east and west, including the open space of Balls Head, Manns Point, Balls Head Reserve, Goat Island, Ballast Point Park and residential sections of the Balmain waterfront along Wharf Road
- + Temporary High visual impacts are expected on park users and nearby residents on Louisa Road as park access is restricted, vegetation removed and site hoardings erected
- + Temporary Moderate/High visual impacts are expected on Wharf Road dwellings, with a visible increase in built form (including the acoustic shed) and reduced vegetation visible within the park
- + Temporary Moderate visual impacts are expected on Birchgrove park
- + Temporary Moderate/Low impacts are expected on more distant public viewpoints around the Harbour, including Ballast Point Park and Manns Point due to the increased viewing distance
- + Temporary Moderate night time impacts are expected on residential receivers in close proximity to the works, while more distant viewpoints are unlikely to be impacted due to the presence of numerous other light sources within the viewframe
- + Post construction, it is expected that Yurulbin Park would be returned to its pre existing condition

- + The loss of vegetation during the construction period is likely to continue to impact the visual amenity of surrounding receivers during the operational phase of the project. This impact would be discernible until replacement vegetation has matured.

### 5.7.4 Sydney Harbour north cofferdam (WHT6) and Berrys Bay (WHT7)

#### Sydney Harbour north cofferdam (WHT6)

- + Visual accessibility to the cofferdam site extends across the water to the north, south and west
- + Visibility from the east is restricted by the elevated topography of the Waverton peninsular
- + The most visible element of the Balls Head construction support site would be the crane structure above the cofferdam
- + A temporary Moderate visual impact is expected on the public space associated with the Coal Loader Centre for Sustainability, which would have direct views of the construction support site
- + Temporary Moderate/Low visual impacts are expected on more distant residential dwellings and the public open space of Berry Island Reserve due to the increased viewing distance
- + Night time impacts to visual amenity are not expected for any receivers
- + Post construction, there would be no ongoing visual impact.

#### Berrys Bay (WHT7)

- + The visual accessibility of the Berrys Bay construction support site is relatively limited from many locations due to the enclosed nature of the bay
- + The acoustic and barge sheds are likely to be the most visible elements at the Berrys Bay construction support site, as well as the discernible removal of vegetation
- + Temporary Moderate/High visual impacts are limited to receivers that would have local views of the site, including Carradah Park and several residential dwellings off Larkin Street and Balls Head Road
- + Temporary Moderate to Moderate/Low impacts on visual amenity are expected from more distant areas of public open space and residential development such as Sawmillers Reserve and Dumbarton Street
- + Temporary Moderate visual impacts are expected on recreational watercraft utilising the Berrys Bay waterway
- + Temporary Moderate night time visual impacts are expected on the residential receivers off Larkin Street and Balls Head Road due to an increase in night time emissions associated with the construction works
- + Negligible visual impacts are expected post construction once the site is reinstated with native planting and this vegetation matures.

### 5.7.5 Ridge Street north construction support site (WHT9)

- + The south eastern corner of the park has a mostly open character with expansive panoramic views of the harbour and Sydney CBD
- + Private domain views into this section of the park are limited to dwellings off Ridge Street within the Walker/Ridge Street heritage conservation area
- + A temporary High level of visual impact is expected on the immediate park area surrounding the construction support site as the area becomes inaccessible and site hoarding is erected, blocking views to the south east
- + A temporary Moderate/High level of visual impact is expected on several dwellings along Ridge Street within the heritage conservation area. These dwellings would have views of site hoardings, increased vehicle movement and a reduction in vegetation along the Warringah Freeway
- + A temporary Moderate/High visual impact is expected on the visual amenity of receivers using the North Sydney Bowling Club. Site hoardings would be located in close proximity to the club, potentially blocking views south and south east
- + All receivers studied may experience Moderate night time visual impacts due to an increase in light sources as part of the construction works.
- + Once construction is complete, the park would be returned to the pre-existing condition
- + Moderate ongoing impacts may remain until replacement vegetation has matured to the size of existing plants, creating visual separation from the Warringah Freeway.



## Victoria Road (WHT2)

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT		OPERATION
1	Waterloo Street residential	Private	Moderate	Moderate	Moderate	Moderate		Negligible to Beneficial
2	Waterloo Street road corridor	Public	Low	Low	Low	Negligible		Negligible to Beneficial
3	Victoria Road corridor	Public	Low	Low	Low	Negligible		Negligible to Beneficial

## White Bay (WHT3)

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT		OPERATION
1	Residential dwellings off Roseberry Place	Private	Moderate	Low	Moderate/Low	Negligible		Negligible
2	Residential dwellings off Batty Street	Private	Moderate	Low	Moderate/Low	Negligible		Negligible
3	Pirrama Park, Pyrmont	Public	Moderate	Low	Moderate/Low	Negligible		Negligible

## Yurulbin Point (WHT4) and Sydney Harbour south cofferdam (WHT5)

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT		OPERATION
1	Yurulbin Park	Public	High	High	High	Negligible		Negligible to Moderate
2	Louisa Road dwellings	Public	High	High	High	Moderate		Negligible to Moderate
3	Birchgrove Park	Public	Moderate	Moderate	Moderate	Negligible		Negligible to Low
4	Manns Point	Public	Moderate	Low	Moderate/Low	Negligible		Negligible to Low
5	Ballast Point Park	Public	Moderate	Low	Moderate/Low	Negligible		Negligible to Low
6	Residential dwellings off Wharf Road	Private	High	Moderate	Moderate/High	Low		Negligible to Low

## Berrys Bay (WHT7)

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT		OPERATION
1	Carradah Park	Public	High	Moderate	Moderate - High	Low		Negligible
2	Sawmillers Reserve	Public	High	Low	Moderate	Negligible		Negligible
3	Berrys Bay - on water	Public	Moderate	Moderate	Moderate	Negligible		Negligible
4	Larkin Street and Balls Head Road dwellings	Private	High	Moderate	Moderate/High	Moderate		Negligible
5	Boat Builders Walk dwellings and open space	Public/Private	High	Low	Moderate	Low		Negligible
6	Dumbarton Street dwellings	Private	High	Low	Moderate	Low		Negligible

## Sydney Harbour north cofferdam (WHT6)

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT		OPERATION
7	Berry Island Reserve	Public	Moderate	Low	Moderate/Low	Negligible		Negligible
8	Coal Loader Centre for Sustainability	Private	Moderate	Moderate	Moderate	Negligible		Negligible
9	Wondakiah Drive dwellings	Private	Moderate	Low	Moderate/Low	Negligible		Negligible

## Ridge Street north construction support site (WHT9)

DESCRIPTION					VISUAL IMPACTS			
No.	Viewpoint	Type	Sensitivity	Magnitude (construction phase)	CONSTRUCTION	CONSTRUCTION - NIGHT		OPERATION
1	St Leonards Park	Public	High	High	High	Moderate		Negligible to Moderate
2	North Sydney Bowling Club	Public/Private	Moderate	High	Moderate/High	Moderate		Negligible to Moderate
3	Dwellings off Ridge Street	Private	High	Moderate	Moderate/High	Moderate		Negligible to Moderate

TABLE 5.7 - CONSTRUCTION SUPPORT SITE VISUAL IMPACT SUMMARY TABLE



## 6. Mitigation strategy

### 6.1 Purpose

The purpose of mitigation is to avoid, reduce or where possible remedy or offset any significant adverse effects on the environment arising from the proposed development.

#### 6.1.1 Mitigation rationale

This landscape and visual impact assessment has taken a conservative approach within the context of the urban design process of the project.

Infrastructure elements and facilities such as the ventilation outlets, vent facilities and motorway control centres are at a conceptual stage of development, and are yet to have a detailed architectural and urban design process applied to them.

Further design development would be carried out in accordance with the Strategic Urban Design Framework and Urban Design Requirements identified within this report.

As the design refines during development stage and progresses to construction, some of the assessment ratings within this report can be expected to be reduced. This would occur as:

- + Mitigation measures are put in place
- + Buildings and infrastructure are architecturally designed and rendered in accordance with the guiding urban design principles identified
- + The project landscape works mature.

Table 6.1 details construction phase specific mitigation measures. All operational phase mitigation measures have been incorporated into the urban design requirments throughout this report.

### 6.2 Construction phase mitigation measures

Built form
+ Ancillary facilities will be developed to minimise visual impacts for adjacent receivers where feasible and reasonable.
+ Storage areas and associated works will be located in cleared or otherwise disturbed areas away from residential areas where feasible and reasonable.
+ Site hoardings will be in neutral colours and designs in proximity to open space to help blend them into surrounding environment.
+ Site hoarding and perimeter site areas will be maintained regularly to include the prompt removal of graffiti.
+ Site lighting will be designed to minimise glare issues and light spillage into adjoining properties and be generally consistent with the requirements of Australian Standard 4282-1997 Control of the obtrusive effects of outdoor lighting.
+ Hoardings and temporary noise walls will be erected as early as possible within the site establishment phase to provide visual screening.
+ High quality fencing suitable for parks and public spaces will be used where construction ancillary facilities are located in close proximity to sensitive residential receivers such as residents and users of recreational space.
Vegetation and landscape
+ Existing trees adjacent to the works will be retained and protected where possible to screen construction support sites, minimising clearing where possible.
+ Where possible, trees will be trimmed rather than removed. Works would be carried out by a qualified arborist.
+ All areas disturbed by construction and not required for operation of the project will be restored to existing condition.
+ Early planting works will be considered to provide a screening buffer that has time to mature before the project is fully operational.
TABLE 6.1 - CONSTRUCTION PHASE MITIGATION MEASURES



