

4.7 North Sydney precinct



WARRINGAH FREEWAY AND NORTH SYDNEY CBD, LOOKING SOUTH FROM RIDGE STREET LOOKOUT

4.7.1 Precinct context

The North Sydney precinct encompasses the project connections between the Western Harbour Tunnel, Warringah Freeway Upgrade, Beaches Link and Gore Hill Freeway Connection project (refer Figure 4.6).

The precinct includes the residential neighbourhoods of Cammeray, Neutral Bay and North Sydney.

The reference design involves the re-alignment of the freeway from the northern end of Sydney Harbour Bridge to Willoughby Road, allowing for connections to/from both the new Western Harbour Tunnel and Beaches Link tunnels.

Adjustments to existing surface ramp connections to and from Warringah Freeway and upgrades to the surrounding local road network are also part of the design, in order to provide operational efficiency to the corridor.

It should be noted that, although shown on the North Sydney precinct plans, all Beaches Link and Gore Hill Freeway Connection project elements have been excluded from this assessment. The Beaches Link works are subject to a separate environmental impact statement process.

Land use

The precinct covers the mixed use North Sydney area, as well as the mostly residential neighbourhoods of Cammeray and Neutral Bay.

The precinct also encompasses St Leonards Park with its heritage listed landscape, as well as the Cammeray Park, ANZAC Park and Jeaffreson Jackson Reserve.

Road connections

Current traffic flows include the major flows to and from the Sydney Harbour Bridge and Sydney Harbour Tunnel and the northern parts of the metropolitan area.

Major entry and exits include Miller Street and Falcon Street as well as Berry Street, High Street, Mount Street and Ernest Street.

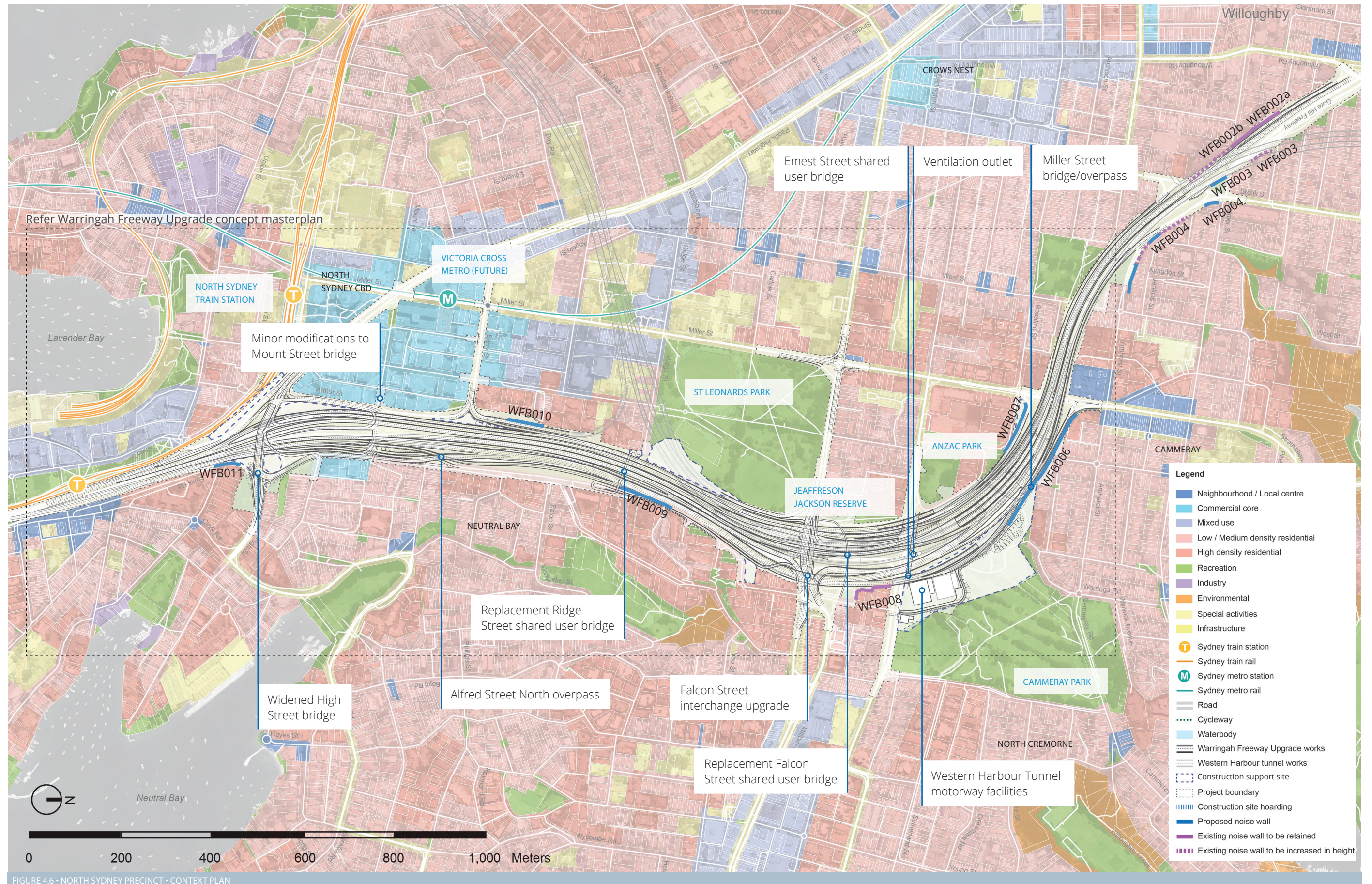
Cycle and pedestrian network

A network of cycle/shared user paths crosses the precinct. There are dedicated pedestrian connections across the Warringah freeway at two points - Ridge Street/Alfred Street and Military Road/Falcon Street.

4.7.2 Local planning and policy

The precinct is covered by the North Sydney LEP and DCP 2013. These documents set relevant objectives in relation to views and amenity of non-residential development.

The North Sydney DCP 2013 includes planning and locality areas which have specific outcomes regarding views. Where relevant, these planning outcomes are discussed within the relevant precinct assessment section.



4.7.5 Project elements

Warringah Freeway Upgrade

Design elements include (refer concept masterplan):

- + Changes to High Street bridge to accommodate new lanes and new northbound High Street on ramp
- + Reconstruction of the High Street and Arthur Street intersection
- + Single lane underpass under Mount Street for southbound Cahill Expressway traffic
- + New bridge structure above the Alfred Street North off ramp from the Warringah Freeway, connecting the southbound carriageways of the Warringah Freeway to the Cahill Expressway, Mount Street and High Street
- + A new underpass beneath Ernest Street as part of a dedicated southbound bus lane and the new Warringah Freeway connection from the Beaches Link and Gore Hill Freeway Connection project
- + Upgrade to the Falcon Street interchange. This would require bridge widening, reconfigured signalisation of the interchange, and replacement/upgrade of active transport provisions
- + A new bridge to connect Miller Street/ Brook Street with the Warringah Freeway, spanning the new dedicated southbound bus lane
- + Improved bus priority infrastructure
- + Local integration works.

It should be noted that the Western Harbour Tunnel component of the project would be responsible for the civil works of the Beaches Link ventilation outlet at the Warringah Freeway, with the fitout of the ventilation outlet carried out under the Beaches Link and Gore Hill Freeway Connection project.

Active Transport Infrastructure

- + A new shared user path along the southern side of the High Street bridge at North Sydney
- + Signalised pedestrian crossings at the intersection of High Street and Alfred Street North at North Sydney

- + Replacement and upgrade of the existing Ridge Street shared user bridge at North Sydney/Neutral Bay with a wider shared user path with dedicated pedestrian footpath and bicycle lanes
- + A new shared user bridge to the north of Ernest Street at Cammeray, to connect the Cammeray Golf Course site with ANZAC Park
- + Upgraded pedestrian crossings at the Falcon Street on and off ramps, at North Sydney/Cammeray/Neutral Bay
- + Replacement of the Falcon Street shared user bridge and removal of the existing pedestrian underpass beneath Falcon Street at Crows Nest
- + Provision of a new pedestrian footpath along the median through the centre of the Falcon Street interchange upgrade
- + A new dedicated bicycle path along the eastern side of the Warringah Freeway between Miller Street at Cammeray and Ernest Street.

It should be noted that the replacement Ridge Street and Falcon Street shared user bridges would be constructed prior to demolition of the existing shared user bridges, apart from potential temporary closures required to tie-in the new structures.

Western Harbour Tunnel

Western Harbour Tunnel design elements include (refer concept masterplan):

- + Surface connections from northbound mainline tunnel to the Warringah Freeway, Warringah Freeway to the southbound mainline tunnel, off ramp from northbound mainline tunnel to Falcon Street and on ramp from Berry Street to southbound mainline tunnel
- + Motorway facilities within Cammeray Golf Course on the eastern side of the Warringah Freeway. Includes ancillary facilities such as a substation, car park and water tanks (refer Cammeray Golf Course concept masterplan and construction layout)
- + Ventilation outlet within the Warringah Freeway road corridor, adjacent to Ernest Street bridge.

Construction

Construction activities would occur across the Warringah Freeway corridor and would cover a greater footprint than the operational phase (refer Figures 4.9A-D). Temporary construction footprints, including a section of Cammeray Golf Course, are indicated on all relevant plans.

The landscape and visual impacts of the temporary construction support site within St Leonards Park is assessed in more detail within Chapter 5 of this report.

Noise walls

The following permanent noise walls would be required within the precinct. Noise wall design and final height would be subject to ongoing modelling and further design development.

- + WFB 002a - existing barrier retained
- + WFB 002b - existing barrier heightened - max 4.5m high
- + WFB 003 - Consistent with existing private barrier height of 4.2 - 6.6m
- + WFB 004 - max 4.5m high
- + WFB 006 - max 4.5m high
- + WFB 007 - max 5m high
- + WFB 008 - southern section of existing barrier retained, northern section proposed
- + WFB 009 - max 5m high
- + WFB 010 - max 5m high
- + WFB 011 - max 4m high.

Cumulative impacts

The North Sydney precinct assessment primarily considers the visual and landscape character impacts of the Western Harbour Tunnel and Warringah Freeway upgrade project components.

The Beaches Link and Gore Hill Freeway Connection project is subject to a separate impact assessment. It should be noted, however, that both projects may be constructed at similar times. The summary section of this North Sydney precinct chapter considers the potential cumulative landscape character and visual impacts if the projects are operational together.

4.7.6 Urban design principles

The following key principles within Table 4.6 and Figure 4.7-4.8 have been identified for the North Sydney precinct and illustrated in Figure 4.10,4.11, Section AA and Section BB:

Principle	Project urban design outcome
+ Provide safe, dedicated pedestrian and cycling infrastructure which caters for the needs of the existing and un-captured community while supporting the aims of the North Shore Link Cycleway (NSLC)	+ Cycleway has been provided along eastern side of Warringah Freeway corridor, supporting the aims of the NSLC.
+ Improve pedestrian and cycle east/west connectivity	+ Upgraded shared user infrastructure has been provided at Ernest Street, Ridge Street, Falcon Street and High Street + The new shared user bridge at Ernest Street would improve connectivity between ANZAC park and Cammeray Park.
+ Capitalise on the precinct's unique sandstone geology and 'city gateway' setting	+ Opportunities have been identified to reference existing sandstone geology within urban design treatment for retaining walls, trough structures, portals and ventilation outlet + Opportunities have been explored to develop motorway facilities and outlet as high quality architectural elements + Opportunities have been identified to retain existing sandstone within the Warringah Freeway road corridor.
+ Ensure panoramic Harbour and Sydney CBD views are retained	+ Opportunities have been identified to develop Ridge Street and Falcon Street shared user bridge to enhance Sydney Harbour views + Footprint of infrastructure has been minimised where feasible.
+ Minimise visual impact of infrastructure within Cammeray Golf Course on sensitive residential and open space receivers	+ Footprint of motorway facilities has been minimised to reduce impact on Cammeray Golf Course + Motorway facilities, outlet and supporting infrastructure have been architecturally designed to reduce their perceived scale. The facilities would be subject to ongoing design development during future project design stages + Landscape treatments have been proposed to screen views from residential and open space receivers surrounding Cammeray Park.
+ Utilise vegetation and landscape treatments to soften infrastructure elements and screen views.	+ Landscape treatments have been proposed to screen views and reduce perceived scale of infrastructure across North Sydney precinct.

TABLE 4.6 - NORTH SYDNEY URBAN DESIGN PRINCIPLES

4.7.7 Urban design requirements

Motorway facilities

The motorway facilities have been developed to reduce the perceived scale of the buildings and aid their integration with the surrounding context. This has been achieved through:

- + Contextual selection of material colour and finish to reflect the local context of Cammeray Park
- + Articulation of building form including elevations and ventilation outlet profile
- + Cladding that breaks up form and provides visual interest through shadow lines and reflection of light
- + Recessive and complimentary design of supporting infrastructure (including substations, water tanks etc.) to ensure they read as part of the main structure
- + Reduction of footprint where feasible to reduce impacts on sensitive nearby receivers.

The ongoing design development of the facility should:

- + Ensure motorway facilities and supporting infrastructure are further architecturally developed as unified elements
- + Ensure motorway control facilities are developed as an integral component of the larger open space composition
- + Use landscape planting to provide increased screening to base of facility where feasible.

Ventilation outlet

The ventilation outlet architectural design has been developed to reduce the perceived scale of the structure and aid its integration with the surrounding context. This has been achieved through the profiling and tapering of the outlet to reduce its perceived bulk, as well as the use of contextual materials for the cladding.

The ongoing design development of the facility should:

- + Ensure ventilation outlet is architecturally designed to reduce perceived height and bulk
- + Ensure outlet is well integrated with the Ernest Street bridge structure including landscape treatment to base of vent.

Ridge Street replacement shared user bridge

- + Design bridge and ramp to maintain views towards Sydney Harbour and CBD from Ridge Street lookout
- + Ensure a considered and coordinated approach to ramps, stairs and tie-ins to reduce visual impacts of the bridge on sensitive nearby residential and public open space receivers
- + Reduce the scale and bulk of the Ridge Street shared user bridge where feasible
- + Ensure CPTED principles are considered during design development.

Falcon Street replacement shared user bridge

- + Consider matching the aesthetics of the existing shared user bridge
- + Ensure a considered and coordinated approach to ramps and tie-ins to reduce visual impacts on sensitive nearby residential and public open space receivers including Jeaffreson Jackson Reserve
- + Ensure CPTED principles are considered during design development.

Ernest Street shared user bridge

- + Provide accessible and usable community public open space along the bridge including consideration of seating, lookouts and lighting
- + Create a durable self-reliant landscape with tree planting that connects to adjacent public space
- + Ensure suitable soil depth to establish landscape treatment
- + Ensure CPTED principles are considered during design development.

Alfred Street North overpass

- + Ensure landscape treatment to residual area beneath and alongside overpass to reduce visual scale of structure
- + Investigate potential activation of area beneath viaduct as an area of local public open space
- + Ensure CPTED principles are considered during design development.

Portal and trough structures

- + Design Western Harbour Tunnel portals with similar design language to ensure a cohesive corridor design
- + Utilise landscape planting above portals within Warringah Freeway corridor and adjacent to St Leonards Park to soften infrastructure and aid integration.

Mainline tunnel

- + Ensure urban design treatment recognises interface between Western Harbour Tunnel and Beaches Link, informing their individuality and aiding wayfinding. This could be implemented through the use of signature patterning, lighting or alterations to cladding colour.

Noise walls

The location of noise walls is a function of noise modelling that has been carried out to identify expected noise impacts on adjacent receivers.

- + Use transparent noise walls where retaining sightlines, view corridors and solar access is important including adjacent to residential receivers along the Warringah Freeway.

Retaining walls

- + Utilise in-situ sandstone within cuts where feasible to match existing Warringah Freeway cuttings
- + Retain existing exposed sandstone within the road corridor where feasible.

Fencing

- + Provide safety fencing that is unobtrusive, discrete and diminishes into the landscape setting
- + Ensure motorway facilities and supporting infrastructure within Cammeray Golf Course are not excessively fenced
- + Ensure access to public open space including Cammeray Golf Course is not restricted
- + Ensure CPTED principles are considered during design development.

Landscape treatment

- + Provide landscape design that maximises an increase of vegetation improvements inside the project disturbance footprint where possible
- + Reinstate vegetation where removed due to construction activity inside the disturbance footprint
- + Provide median planting where possible to soften road infrastructure
- + Retain and protect vegetation along Warringah Freeway where possible
- + Investigate measures to retain the mature trees of high retention value in the following key locations:
 - High Street/Alfred Street North junction
 - Miller Street/Falcon Street intersection
 - Boundary of Cammeray Golf Course (especially along Warringa Road and Park Avenue)
- + Provide screen planting to replace vegetation lost during construction at the key locations mentioned above
- + Ensure vegetation screening is implemented to residential lots along Warringah Freeway
- + Provide a landscape design that maximises an increase of tree canopy cover within Cammeray Park where feasible
- + Ensure CPTED principles are considered during design development.

Legend

- ↔

Active transport link
- ⋯

Existing pedestrian / Cycle links
- ⋯

Landscape improvements
- ⋯

Vegetation screening
- ⋯

Vegetation restoration
- ⋯

Riparian restoration
- ↑↑↑

Permeable park edge
- ⋯

Hydrology flow
- ☀

Key views
- ⌈

Feature urban element
- ⋯

Landscape treatment
- ⋯

Safety fencing
- ↔

Road network
- ⋯

Heritage & protected sites
- ⋯

Future planning precinct
- ⋯

Temporary construction sites

■

Open space

ⓑ

Bus stops

ⓕ

Ferry wharf

Ⓛ

Light rail stops

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Light rail

Ⓣ

Train station

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Train line

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Bus priority lane

Ⓜ

Sydney Metro station

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Sydney Metrol rail

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Commercial water use area

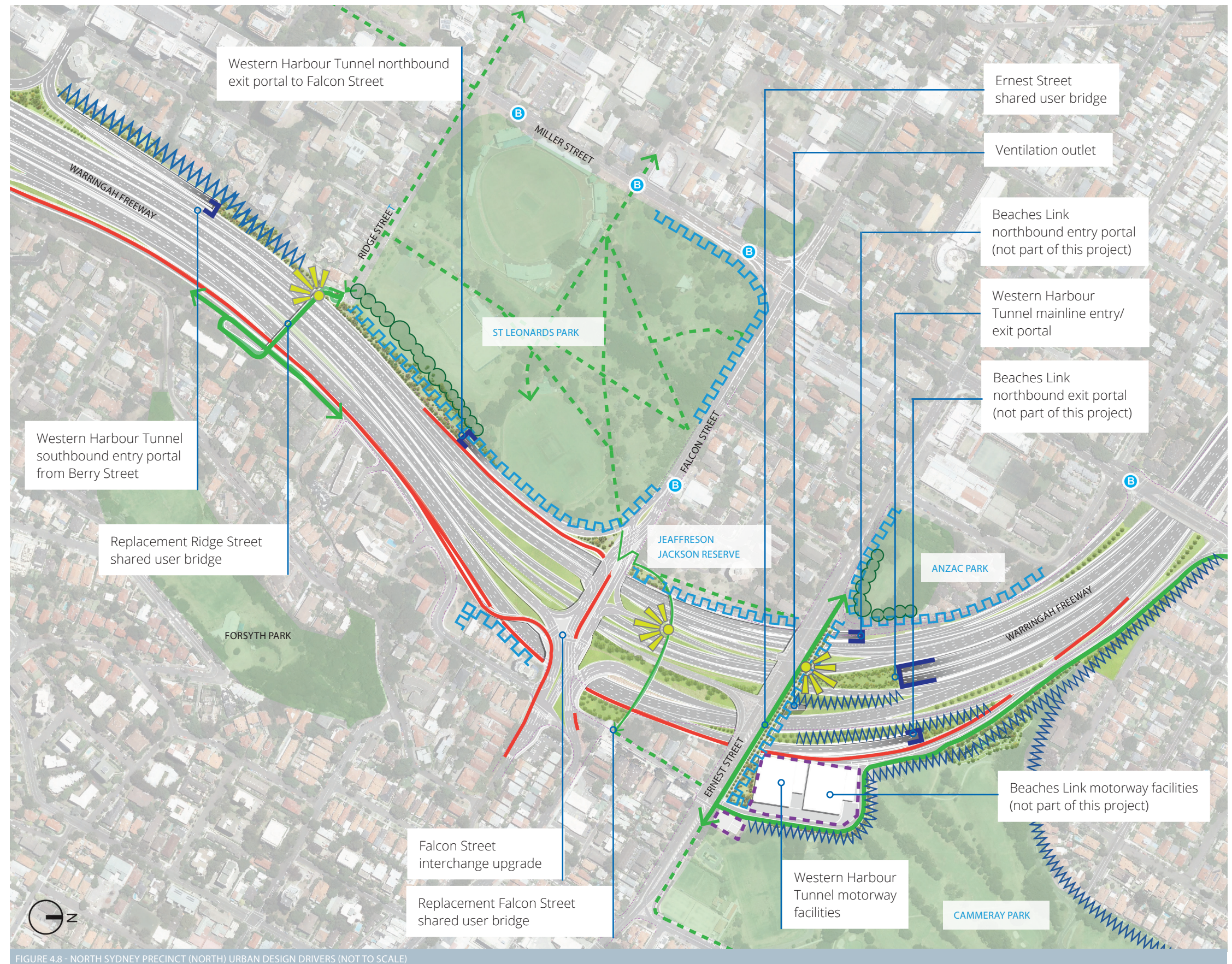
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Recreation water use area

FIGURE 4.7 - NORTH SYDNEY PRECINCT (SOUTH) URBAN DESIGN DRIVERS (NOT TO SCALE)

Legend

- Active transport link
- Existing pedestrian / Cycle links
- Landscape improvements
- Vegetation screening
- Vegetation restoration
- Riparian restoration
- Permeable park edge
- Hydrology flow
- Key views
- Feature urban element
- Landscape treatment
- Safety fencing
- Road network
- Heritage & protected sites
- Future planning precinct
- Temporary construction sites
- Open space
- Bus stops
- Ferry wharf
- Light rail stops
- Light rail
- Train station
- Train line
- Bus priority lane
- Sydney Metro station
- Sydney Metrol rail
- Commercial water use area
- Recreation water use area



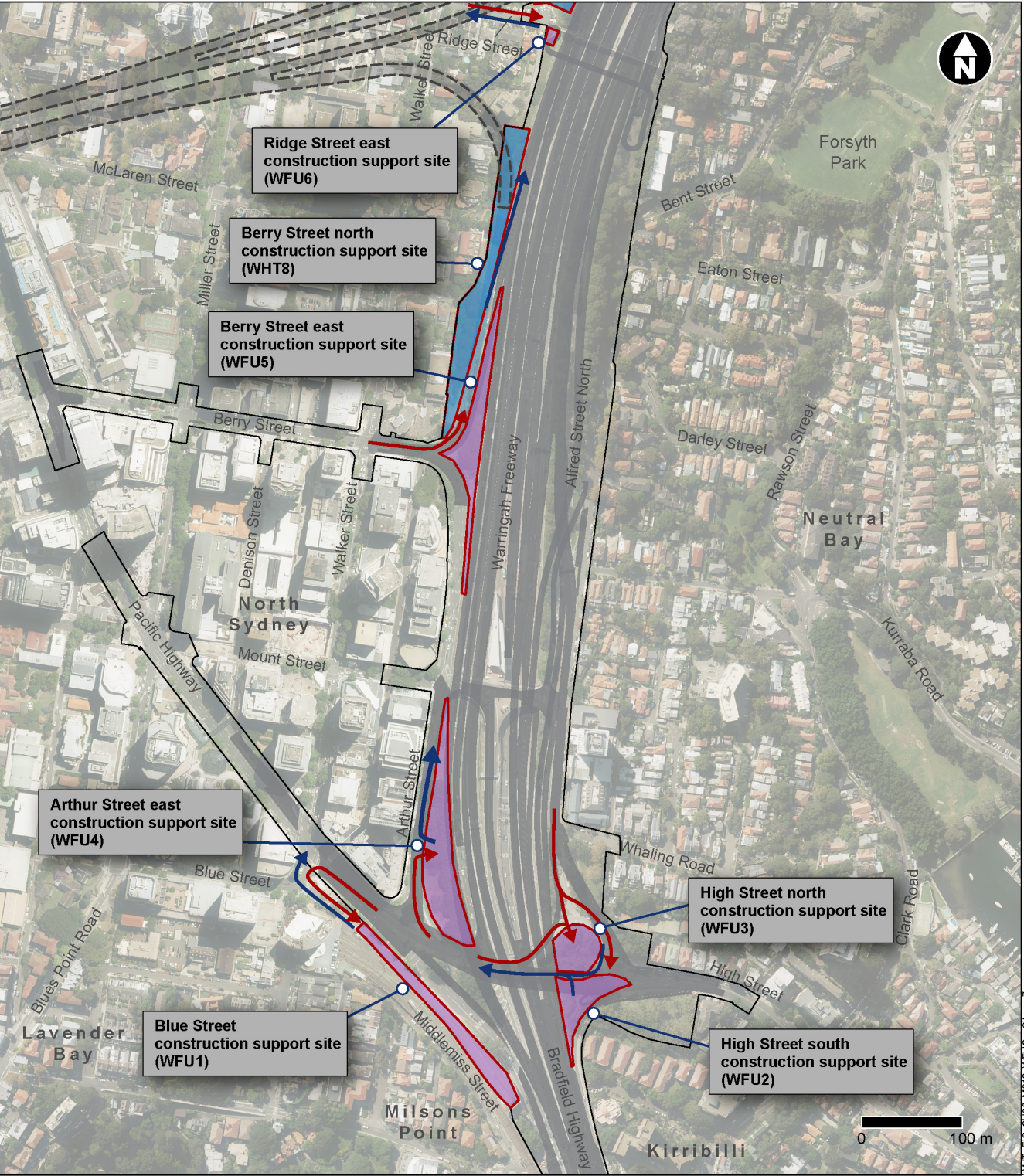


FIGURE 4.9A - WARRINGAH FREEWAY CONSTRUCTION SUPPORT SITE LAYOUTS

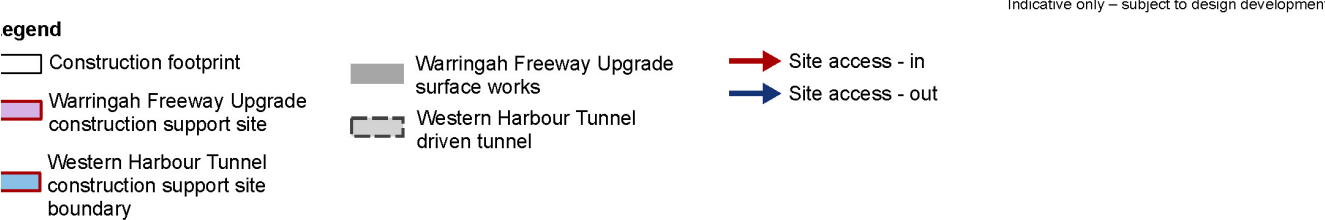
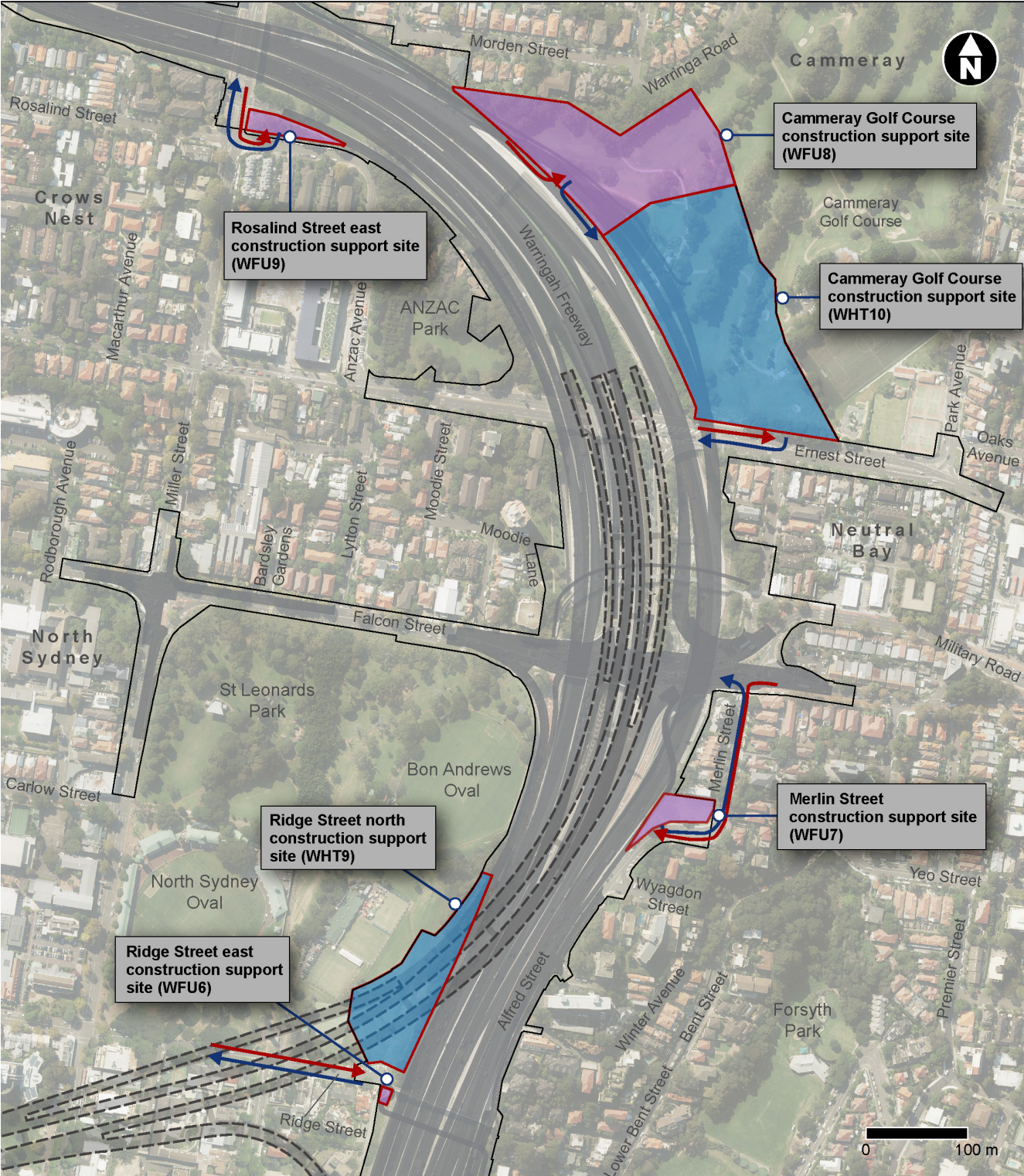
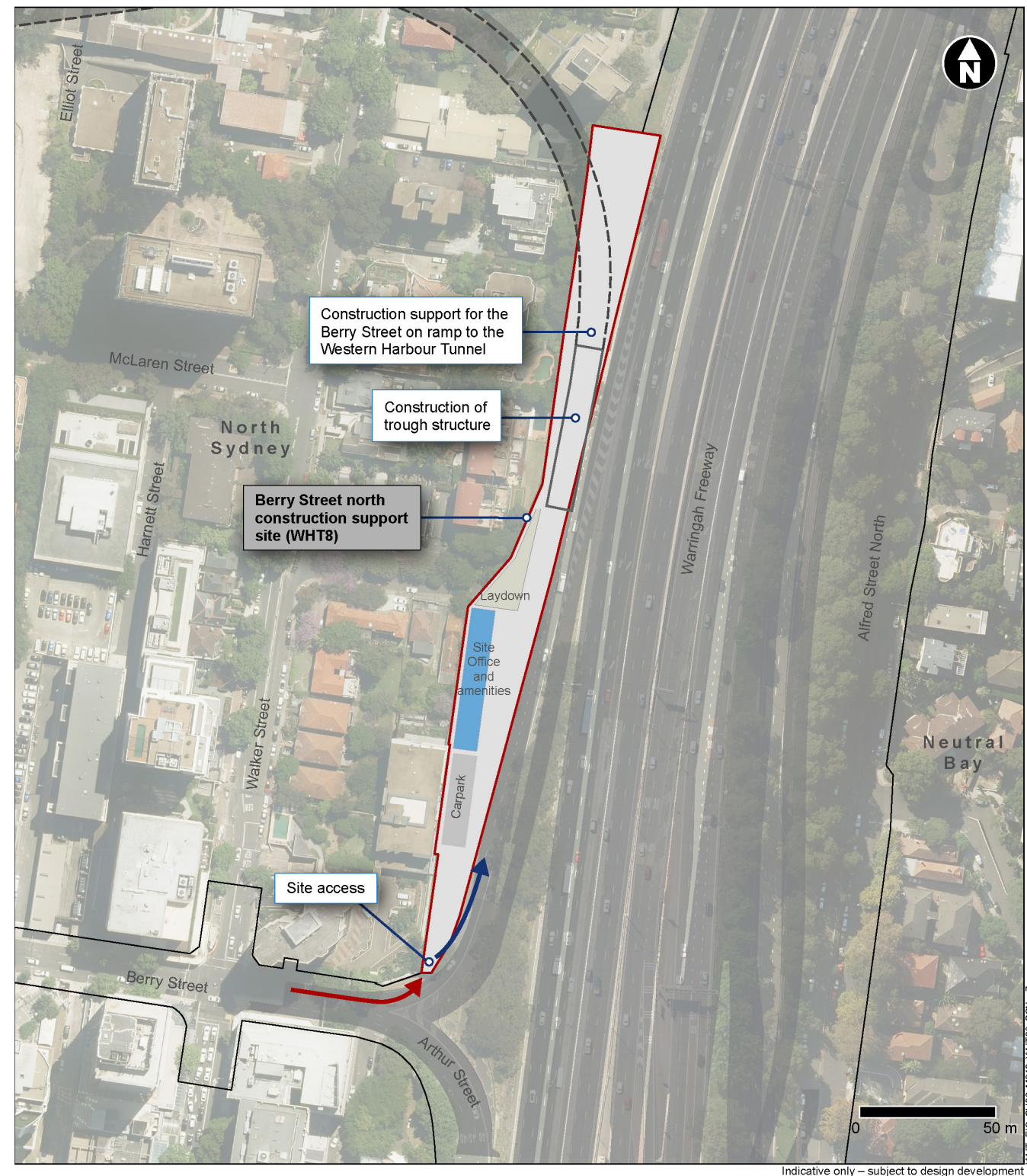


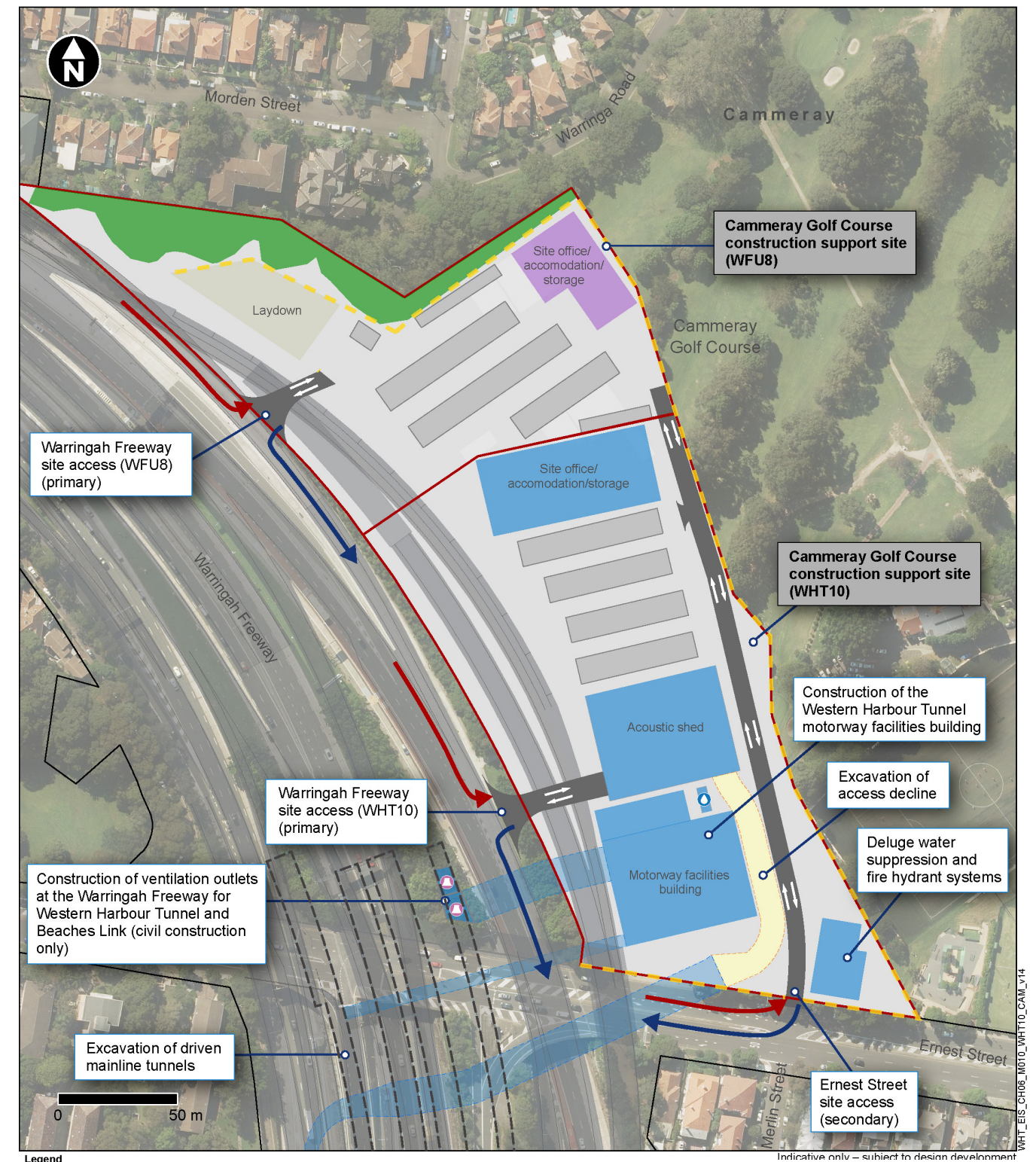
FIGURE 4.9B - WARRINGAH FREEWAY CONSTRUCTION SUPPORT SITE LAYOUTS



Legend

- Construction footprint
- Construction support site
- Driven tunnel
- Warringah Freeway Upgrade surface works
- Construction site buildings
- Site access - in
- Site access - out

FIGURE 4.9C - BERRY STREET NORTH (WHT8) CONSTRUCTION SUPPORT SITE LAYOUT



Legend

- Construction footprint
- Construction support site
- Western Harbour Tunnel ventilation tunnel
- Western Harbour Tunnel construction support site buildings
- Western Harbour Tunnel driven tunnel
- Warringah Freeway Upgrade surface works
- Warringah Freeway Upgrade construction support site buildings
- Access decline
- Temporary site access
- Retained vegetation
- Carpark
- Substation
- Ventilation outlet
- Wastewater treatment plant
- Indicative temporary noise barrier
- Site access - in
- Site access - out

FIGURE 4.9D - CAMMERAY GOLF COURSE CONSTRUCTION SUPPORT SITE (WHT10 AND WFU8) LAYOUT

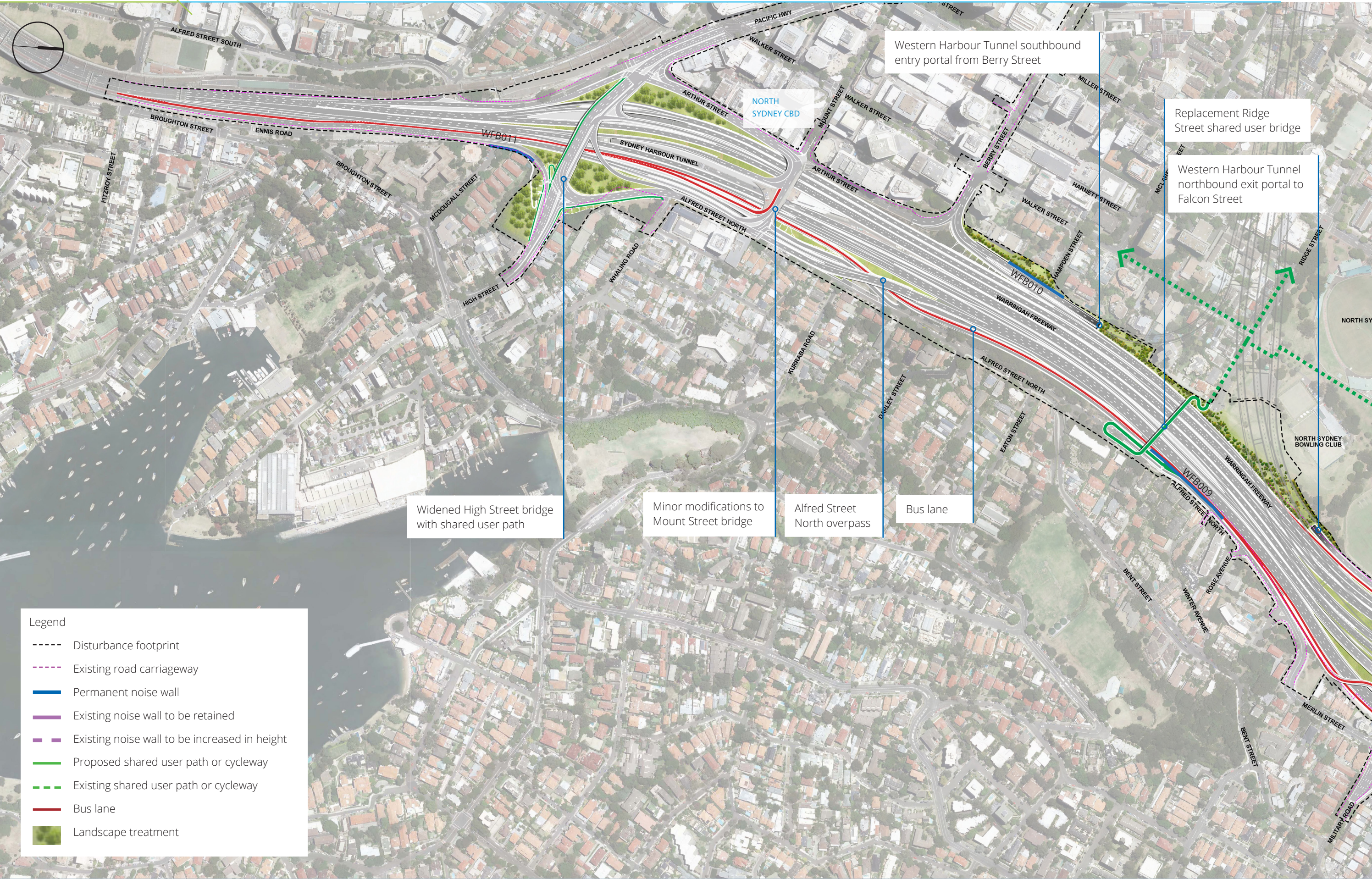


FIGURE 4.10 - WARRINGAH FREEWAY UPGRADE - CONCEPT MASTERPLAN



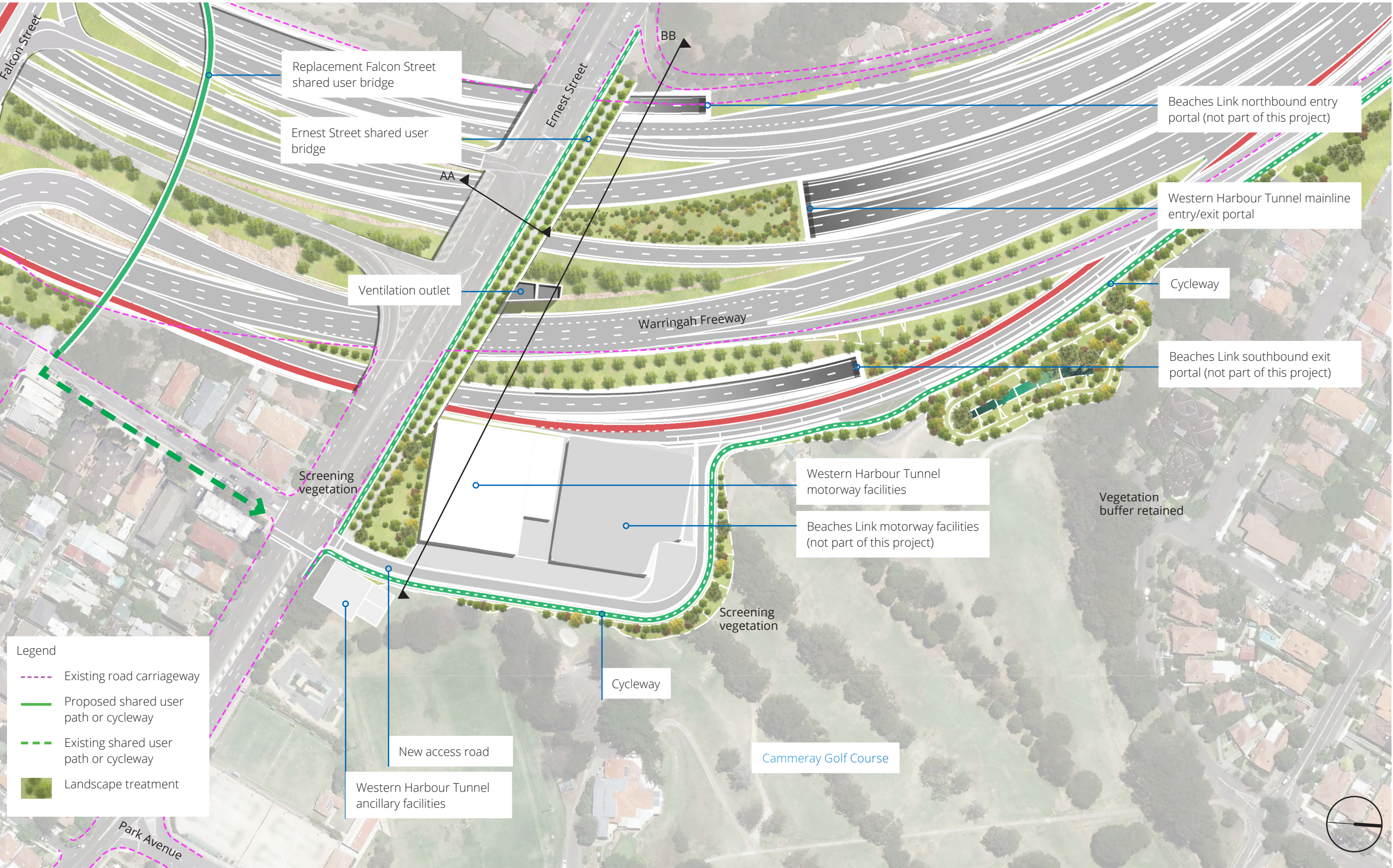
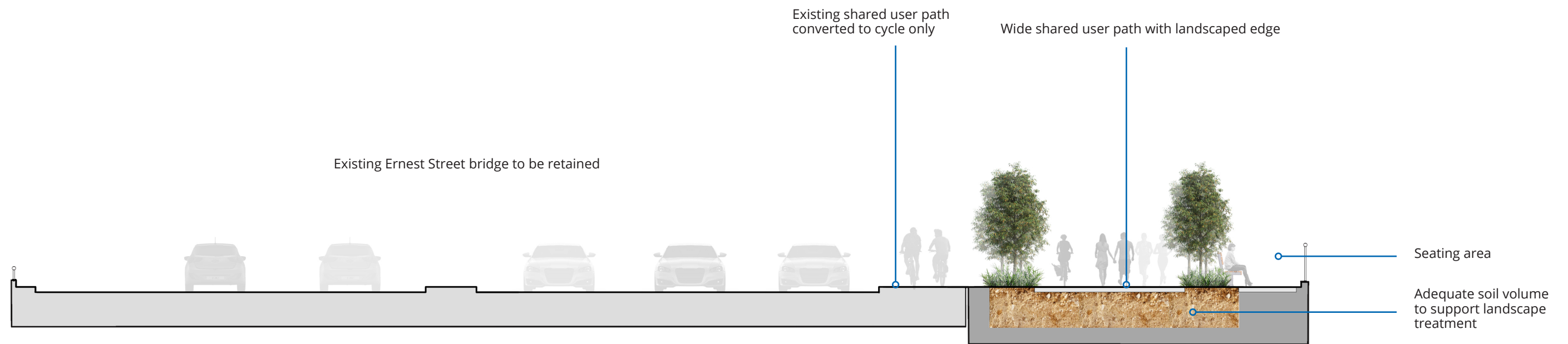


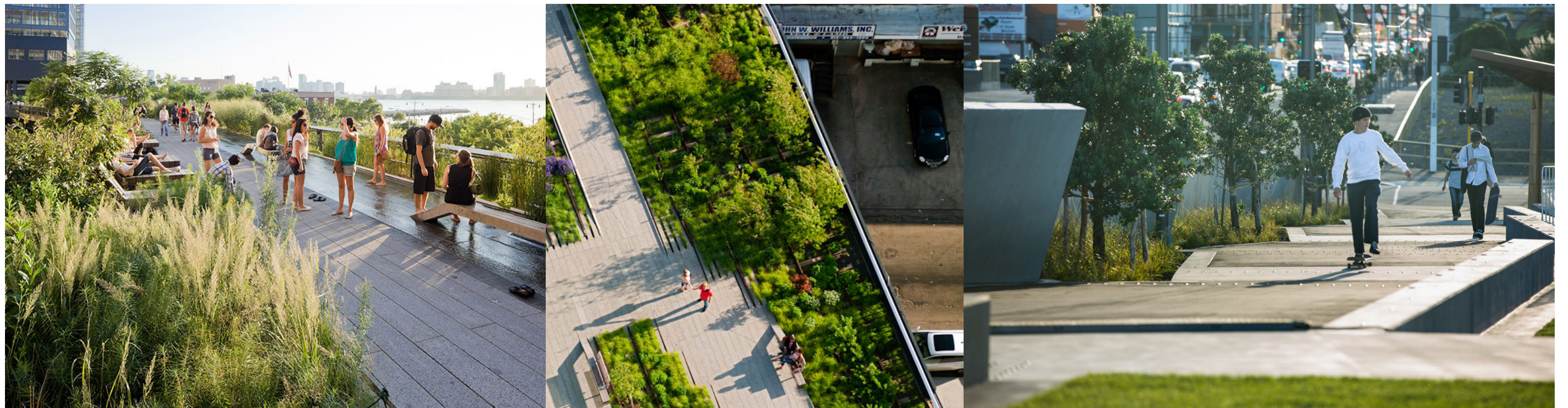
FIGURE 4.11 - CAMMERAY GOLF COURSE - CONCEPT MASTERPLAN

ERNEST STREET BRIDGE

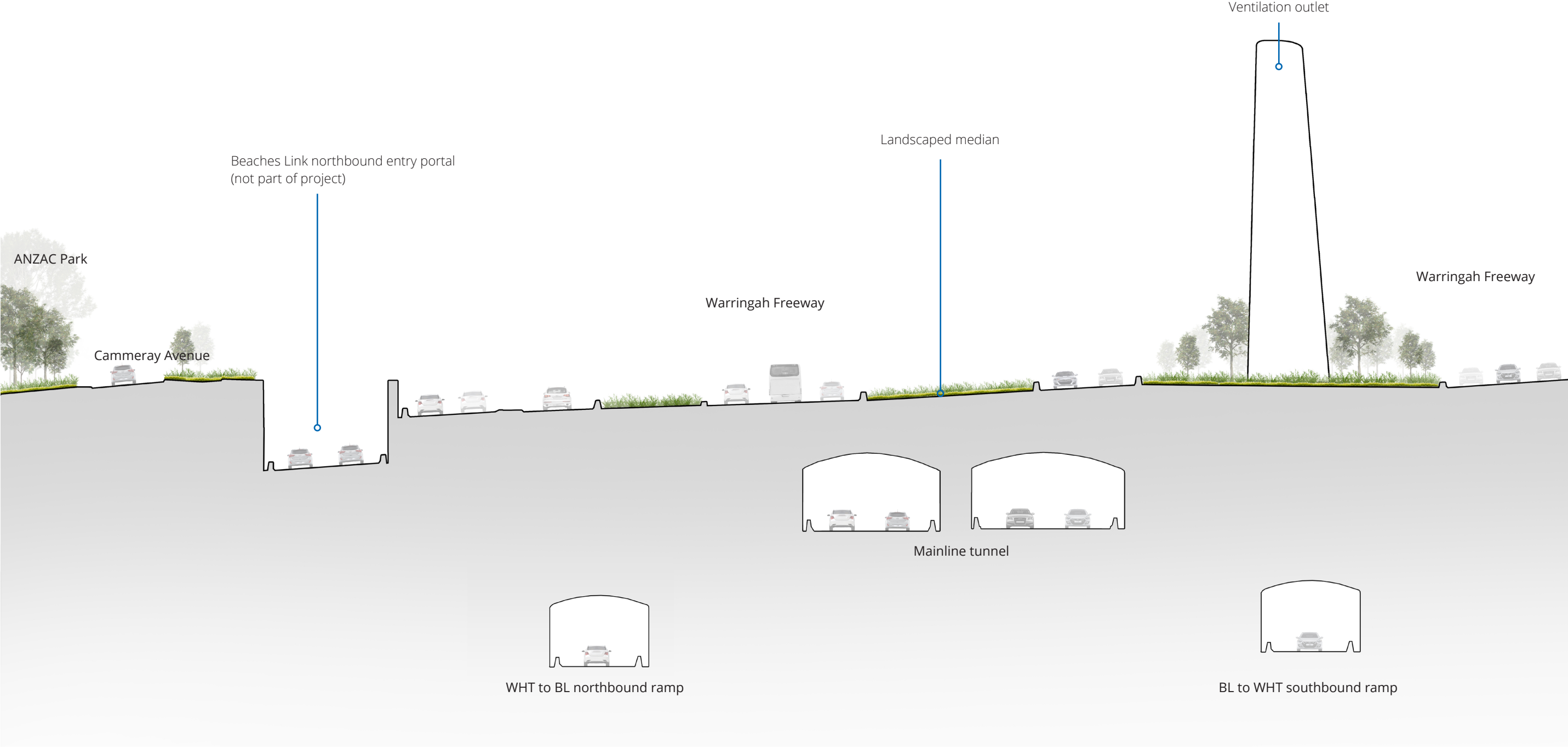
PROPOSED SHARED USER BRIDGE



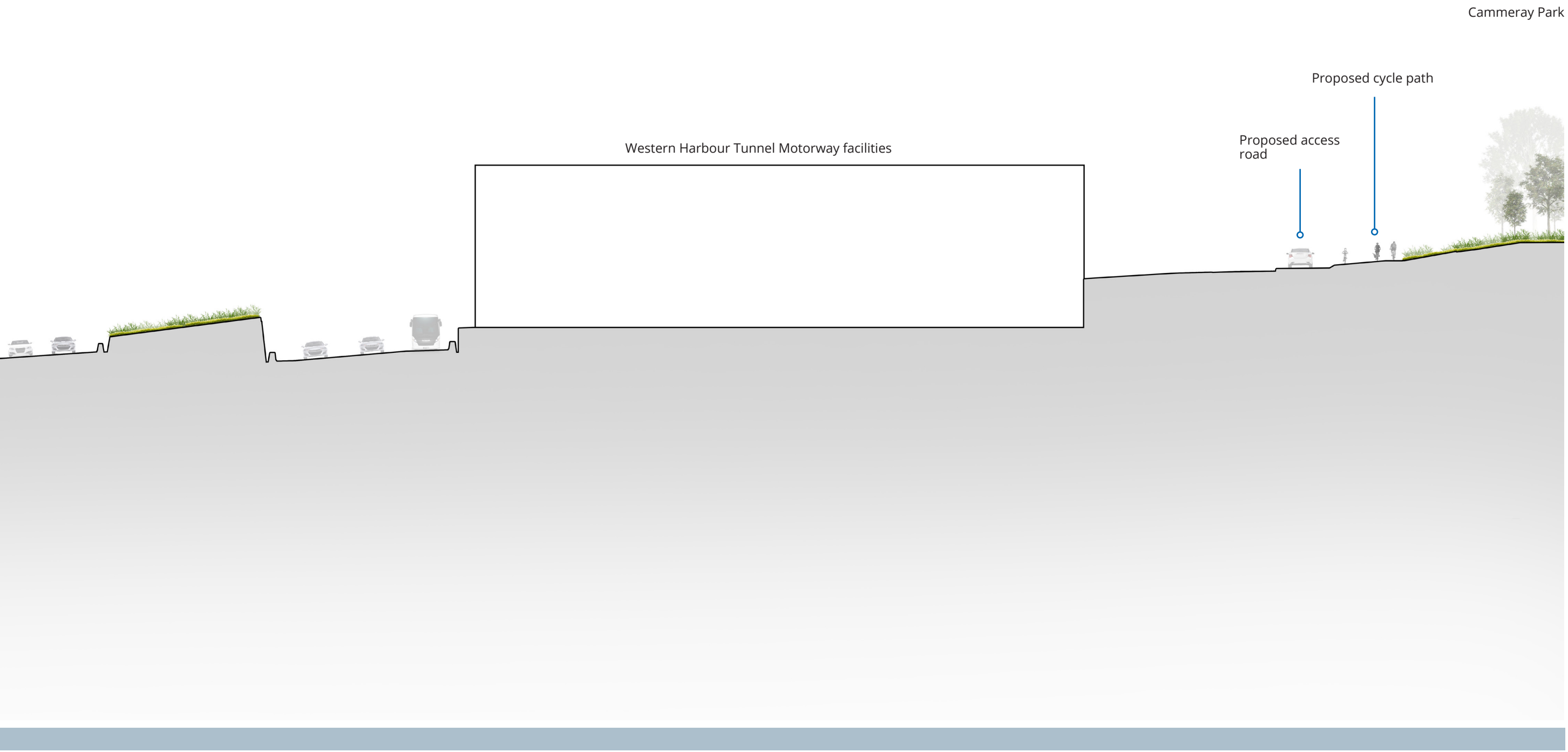
SECTION AA - ERNEST STREET SHARED USER BRIDGE



ERNEST STREET SHARED USER BRIDGE PRECEDENT IMAGES (HIGH LINE - NEW YORK, ARRAS TUNNEL - WELLINGTON)



SECTION BB - CAMMERAY PARK, WARRINGAH FREEWAY AND ANZAC PARK (NOT TO SCALE)



North Sydney precinct - Landscape character assessment

4.7.9 Existing landscape character

Much of the precinct comprises residential land use with leafy suburban streetscapes of mixed styles and densities. Suburbs within the precinct include Cammeray, North Cremorne and Neutral Bay.

The Warringah Freeway forms a major feature of the area, cutting through the landscape and creating east/west separation to the precinct both visually and physically.

The North Sydney CBD forms a notable western edge to the precinct with large towers rising above the Freeway.

The precinct is characterised by high quality but fragmented open space including St Leonards Park, Cammeray Golf Park, ANZAC Park and Jeaffreson Jackson Reserve. These leafy open spaces are in stark contrast to the major road corridors of the Warringah Freeway, Ernest Street and Falcon Street.

4.7.10 Landscape character zones

The following key LCZs have been identified within the precinct for further analysis (refer Figure 4.12):

- + Warringah Freeway corridor
- + North Sydney CBD
- + North Sydney residential
- + St Leonards Park and Walker/Ridge Street residential
- + Cammeray residential (including nearby open space)
- + North Cremorne and Neutral Bay residential
- + Cammeray Park open space



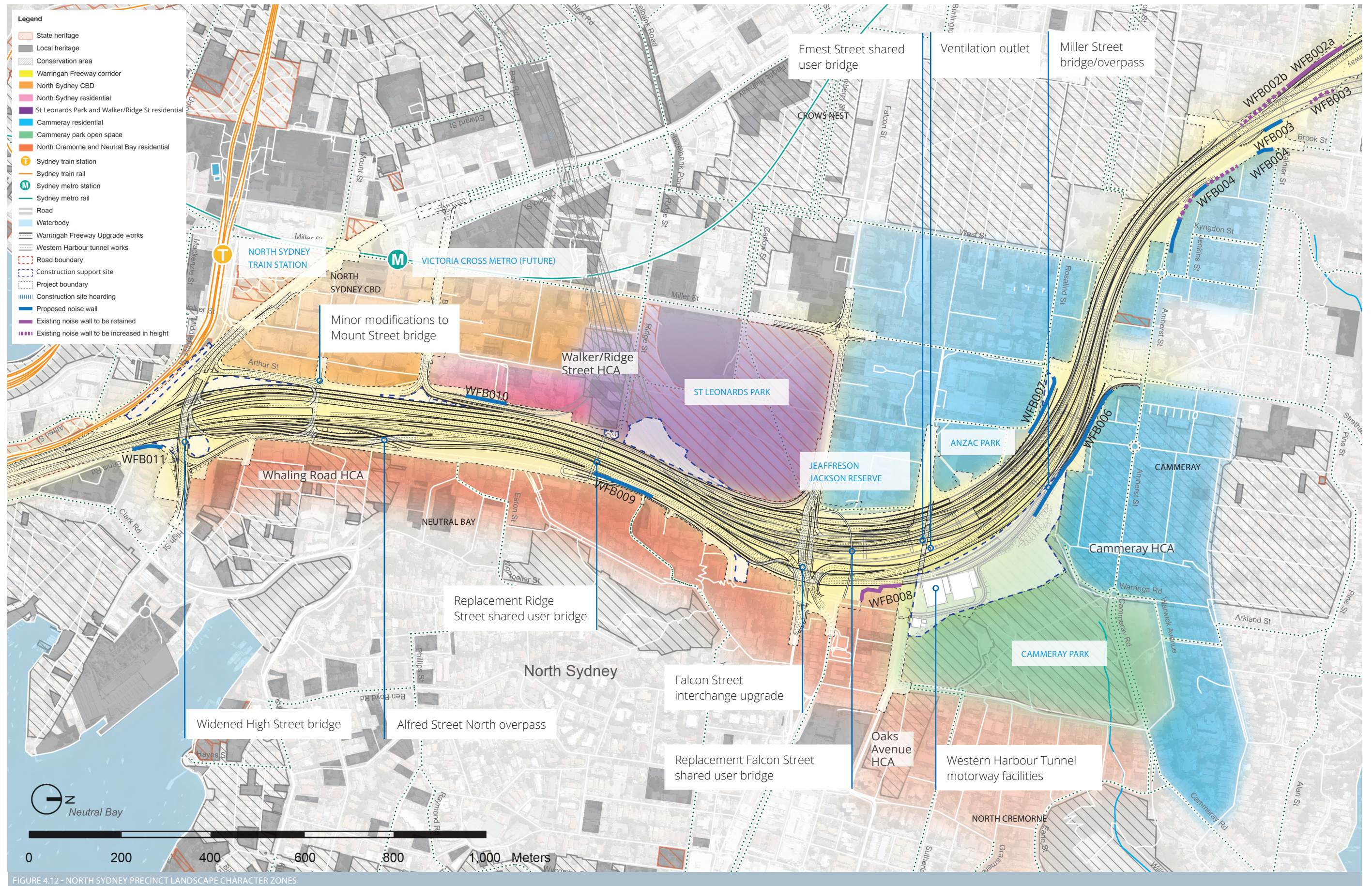
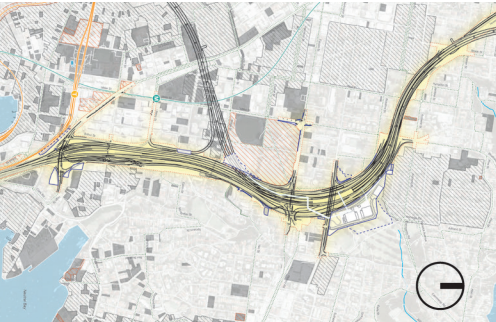


FIGURE 4.12 - NORTH SYDNEY PRECINCT LANDSCAPE CHARACTER ZONES



Key plan

4.7.11 Warringah Freeway corridor

The Warringah Freeway road corridor runs through the North Sydney precinct creating physical east/west separation to the region.

Heading north, the road increases in elevation, cutting into the North Sydney ridge line with an associated exposure of the sandstone geology either side of the carriageway.

Due to the width of the corridor, the spatial character of the road is relatively open, especially in a southbound direction, where expansive views of the Harbour and Sydney CBD are available.

North Sydney CBD forms a strong built form edge to the western side of the corridor, while St Leonards Park and Cammerary Parks provide a green buffer to the road.

Numerous infrastructure elements are present including portals for the Harbour tunnel, signage, gantries and lighting. Several road and pedestrian bridges cross the corridor, providing east/west connectivity.

Heritage

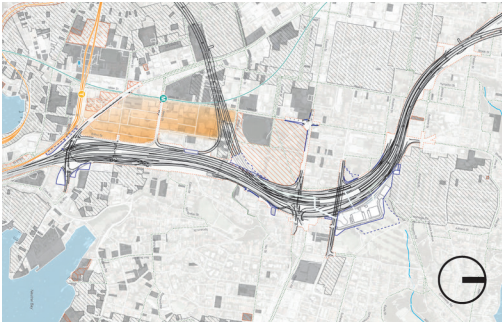
The Sydney Harbour Bridge approach viaducts, arches and bays under the Warringah Freeway are heritage listed, however these areas are not impacted by the Warringah Freeway Upgrade project works.

- Project effects**

The reference design involves the following within the LCZ:

 - + Widened bridge at High Street
 - + New bridge structure above the Alfred Street North off ramp from the Warringah Freeway, connecting the southbound carriageways of the Warringah Freeway to the Cahill Expressway, Mount Street and High Street
 - + Replacement Ridge Street and Falcon Street shared user bridge
 - + Reconstruction of the High Street and Arthur Street intersection
 - + Single lane underpass under Mount Street for southbound Cahill Expressway traffic
 - + New ramp to Western Harbour Tunnel southbound entry portal
 - + Upgrade to the Falcon Street interchange
 - + New Ernest Street shared user bridge
- + Improved bus priority infrastructure
 - + Three tunnel portals
 - + Proposed and heightened existing noise walls
 - + Western Harbour Tunnel ventilation and motorway facilities on the eastern side of the Warringah Freeway, within the Cammeray Golf Course
 - + Western Harbour Tunnel ventilation outlet within the Warringah Freeway road corridor, adjacent to Ernest Street bridge
 - + A new bridge to connect Miller Street/ Brook Street with the Warringah Freeway, spanning the new dedicated southbound bus lane
 - + Removal and replacement of vegetation within and alongside the road corridor
 - + Temporary construction support sites along the Warringah Freeway.

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: + As a major road corridor, the Warringah Freeway is able to accommodate change without a major impact on its character.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following: + While the proposed built form would be greater in scale and mass compared to that of the existing road environment (including new bridge structures and ventilation outlet within the road corridor), the works would generally be congruous with the character of a busy road + While vegetation removal would be required along some sections of the road edge, a major change to its character is not expected.	Low	Magnitude (construction phase): High There would likely be a greater impact to landscape character during the construction stage due to altered traffic conditions, site hoardings and construction equipment. These impacts would be of a temporary nature.
Low	Low	Low	Moderate



Key plan

4.7.12 North Sydney CBD

This LCZ is located to the west of the project works and bounded by the Warringah Freeway in the east, North Sydney station to the south, Pacific Highway to the west and St Leonards Park to the north.

The North Sydney CBD comprises one of Australia's largest commercial centres, serving the local population and that of the Sydney region. There is a mix of uses and activities although high rise commercial development dominates. There are also several important educational facilities and high rise residential towers.

Miller and Walker Streets are the principal access routes north/south. The topography typically falls from the north to the south towards Sydney Harbour with some natural rock outcrops on Walker Street.

Heritage

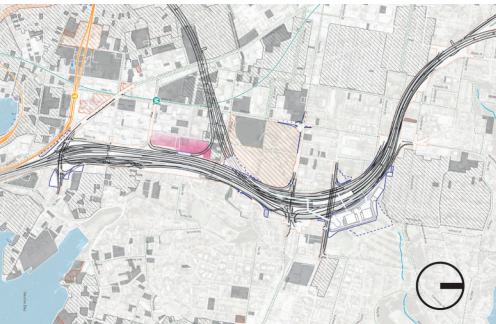
There are several locally listed heritage buildings within the CBD however these are not impacted by the project.

Project effects

The project is located immediately adjacent to the LCZ, within the Warringah Freeway corridor. The key indirect project effects on the North Sydney CBD precinct would be:

- + Changes to the High Street bridge to accommodate new lanes and a new northbound High Street on ramp
- + Reconfiguration of traffic lanes on Pacific Highway between Arthur Street and Miller Street
- + Reconstruction of the High Street and Arthur Street intersection
- + Introduction of new elements within the outlook of this LCZ, including potential distant views to proposed motorway facilities at Cammeray Golf Course and within Warringah Freeway corridor
- + Removal and some replacement of vegetation alongside Warringah Road corridor
- + Temporary construction support sites along the Warringah Freeway.

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 Moderate, due to the following: + The works do not directly impact the majority of this LCZ + Mostly commercial and high rise residential land uses, with the ability to accommodate some alterations without detrimental impact to their character + The presence of existing large infrastructure corridor along the boundary of the LCZ, reducing its sensitivity to change.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following: + Despite the proposed adjacent infrastructure and vegetation removal, the spatial character of the North Sydney CBD is unlikely to be adversely impacted by the project + The proposed built form would be mostly congruous with the existing road environment + While the proposed motorway facilities and outlet may be visible from some sections of this LCZ, a major impact on the CBD's character is not expected due to the large separation distance.	Moderate/Low	Magnitude (construction phase): Moderate There may be a greater impact to landscape character during the construction stage due to altered traffic conditions and construction equipment. These impacts would be of a temporary nature.
Moderate	Low	Moderate/Low	Moderate



Key plan

4.7.13 North Sydney residential

This LCZ is located to the north and east of the CBD, bounded by the Walker/Ridge Street heritage conservation area to the north, Warringah Freeway to the east and Walker Street to the west.

The LCZ is residential in character and consists of a mix of styles including high density apartment buildings alongside the Warringah Freeway and detached dwellings and terraces fronting Walker Street.

The topography of the LCZ generally falls to the south from Ridge Street, with steep falls to the east from Walker Street to the Warringah Freeway.

The Warringah Freeway forms a major physical boundary to the eastern side of this LCZ, limiting east/west connectivity.

Heritage

There are several locally listed heritage buildings within the LCZ however these are not impacted by the project.

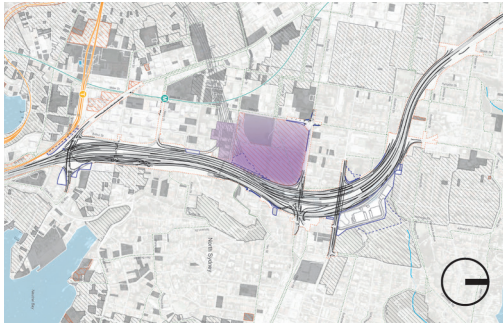
Project effects

The project is located immediately adjacent to the LCZ within the Warringah Freeway corridor.

The key project effects on the North Sydney residential development precinct would be:

- + Introduction of new elements within the outlook of this LCZ, comprising construction support sites and potential distant views to proposed ventilation outlet within Warringah Freeway corridor.

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 Moderate, due to the following: + Residential land use adjacent to existing large infrastructure corridor with the ability to accommodate some change without detrimental impacts to its character + Much of the residential dwellings along Walker Street are isolated from the project by existing built form.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following: + Vegetation removal along the Warringah Freeway corridor would be the most discernible aspect of the project, slightly increasing the exposure of these dwellings to the road corridor. The presence of the existing road corridor, however, reduces the magnitude of change associated with the project + Adjacent proposed built form in the landscape would be similar in scale, mass and form to that of the existing road corridor + The spatial character of dwellings fronting Walker Street residential area would not be adversely impacted by project works.	Moderate/Low	Magnitude (construction phase): Moderate There may be a greater impact to landscape character during the construction stage due to the presence of construction equipment within the Warringah Freeway corridor, associated with the Berry Street north construction support site.
Moderate	Low	Moderate/Low	Moderate



Key plan

4.7.14 St Leonards Park and Walker/Ridge Street residential

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.

St Leonards Park has a varied series of facilities and open green spaces including the North Sydney Bowling Club and various ovals.

The park is bordered by mature planting, including a statement row of palm trees in the north west corner at the Falcon/Miller Street intersection.

The adjoining Walker/Ridge Street heritage conservation area includes the eastern end of Ridge Street and the sloping, northern portion of Walker Street. It is bounded by St Leonards Park to the north, Elliot Street to the west and the Warringah Freeway to the east.

The topography of the LCZ generally falls to the south from Ridge Street, with steep falls to the east from Walker Street to the Warringah Freeway.

The Warringah Freeway forms a major physical boundary to the eastern side of this LCZ, limiting east/west connectivity.

Heritage

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

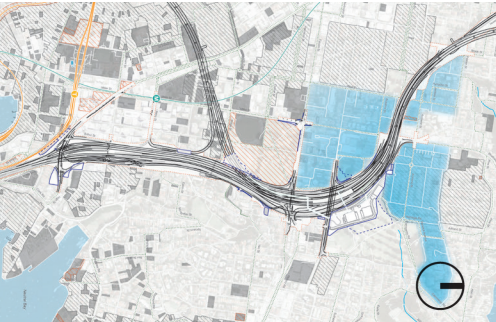
The Walker/Ridge Street heritage conservation area is characterised by intact groups of single and two storey detached and attached dwelling houses in a mix of Victorian Italianate and Federation styles.

Project effects

The project involves the following within and adjacent to the LCZ:

- + Temporary construction impacts within St Leonards Park south east corner - removal and some reinstatement of vegetation adjacent to Warringah Freeway corridor along eastern park boundary for the Western Harbour Tunnel off ramp
- + Temporary noise wall around construction support site within eastern section of park
- + Replacement of Ridge Street shared user bridge
- + Temporary construction support site alongside the Warringah Freeway north of Berry Street
- + Potential introduction of new elements within the outlook of this LCZ, comprising views to proposed infrastructure within Warringah Freeway corridor.

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 High, due to the following: + St Leonards Park is a key area of state heritage listed public open space + Walker/Ridge Street is part of a heritage conservation area with a limited ability to accommodate change without detrimental impact to its character.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following: + Vegetation removal along the eastern St Leonards park boundary would likely slightly impact the character of this park section, increasing the exposure of park users to surrounding road infrastructure + There are unlikely to be any adverse impacts on the character of the Walker/Ridge street heritage conservation area.	Moderate - limited to the south east corner of St Leonards park where vegetation removal would be discernible. It should be noted that this impact is likely to reduce as replacement planting matures.	Magnitude (construction phase): Moderate There may be a greater impact to landscape character during the construction stage due to the presence of reduced park accessibility, and site hoardings within St Leonards Park and the construction support site alongside the Warringah Freeway north of Berry Street. Post-construction, vegetation would (where feasible) be replaced along the Warringah Freeway boundary within St Leonards Park, likely mitigating impacts to this part of the LCZ.
High	Low	Moderate	Moderate/High



Key plan

4.7.15 Cammeray residential

This LCZ is bisected by the Warringah Freeway corridor and is bounded to the north by Tunks Park and St Leonards Park to the south.

The LCZ is primarily residential with a diverse mix of dwellings. The density of residential development generally reduces further away from Miller and Falcon Streets.

In the northern section of the LCZ, topography generally falls from the ridge along Carter Street and Cammeray Road down to the foreshores of Long Bay and Willoughby Bay. The southern section of the LCZ falls from Miller Street eastwards towards the Warringah Freeway.

Open space in the southern section of the LCZ includes ANZAC Park and Jeaffreson Jackson Reserve. The Freeway forms a major physical boundary across the LCZ, limiting east/west connectivity to several bridges.

Heritage

The Cammeray heritage conservation area is located in close proximity to the project works. It is bounded by Carter Street and the Warringah Freeway to the south, Warringa Road to the east and Miller Street properties to the west.

The subdivision pattern is a regular grid that overlays the topography. The characteristic buildings of the area are typically later Federation and Edwardian Queen Anne, reflecting the predominant period of development. Buildings are typically single storey.

Project effects

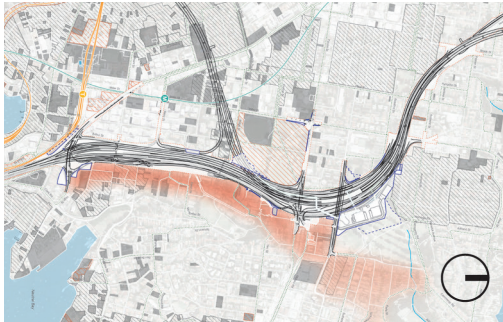
The project is located immediately adjacent to the LCZ, with works concentrated within the Warringah Freeway corridor and adjacent Cammeray Golf Course.

The key project effects on this LCZ would be:

- + Temporary construction support sites along the Warringah Freeway including ANZAC Park
- + Proposed and heightened existing noise walls along the Warringah Freeway corridor

- + Removal and some replacement of vegetation alongside Warringah Freeway corridor
- + Introduction of new elements within the outlook of this LCZ, including views to proposed infrastructure facilities at Cammeray Golf Course, ventilation outlet within Warringah Freeway corridor, Ernest Street shared user bridge and proposed bridge for Brook/Miller Street on ramp.

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 High, due to the following: + Residential land use which has a limited ability to accommodate change without detrimental impacts to its character + Presence of Cammeray heritage conservation area.	The magnitude of landscape character change arising from the project is considered to be Low, due to the following: + The spatial character of the majority of the residential area unlikely to be adversely impacted by the project + Proposed road infrastructure would be mostly congruous with existing road environment. Proposed and heightened noise walls, however, likely to slightly impact residential character adjacent to structures + The ventilation outlet and facility would represent new vertical elements visible from some sections of this LCZ, potentially slightly impacting the character of the LCZ in close proximity to the Warringah Freeway road corridor and Cammeray park.	Moderate - concentrated on residential areas that border Cammeray Park and the Warringah Freeway corridor with exposure to the proposed road and ventilation infrastructure, including proposed and heightened existing noise walls.	Magnitude (construction phase): Moderate There would likely be a greater impact to this LCZ's landscape character during the construction stage due to visible construction equipment, including substantial temporary works within the adjacent Cammeray Park.
High	Low	Moderate	Moderate/High



Key plan

4.7.16 North Cremorne and Neutral Bay residential

This LCZ is located to the east of the Warringah Freeway. Only limited sections would be in proximity to the project works, including the Waters neighbourhood, Oaks Avenue area and Military Road island neighbourhood of North Cremorne and the Forsyth and Whaling Road neighbourhood of Neutral Bay.

The LCZ is primarily residential, providing a diverse range of housing forms. The topography generally falls to the south-east from the ridge along Military Road and from the Warringah Freeway. The Warringah Freeway forms a major boundary to the west of this LCZ, severing east/west connectivity.

Heritage

The Oaks Avenue heritage conservation area sits to the east of Cammeray Park in North Cremorne. The area is a discrete residential neighbourhood that is characterised by small lots and views to Cammeray Park to the west.

Within Neutral Bay, the Whaling Road heritage conservation area was the eastern edge of the North Sydney township prior to the construction of the Warringah Freeway. The area is a discrete residential neighbourhood that is characterised by dwelling houses on small lots.

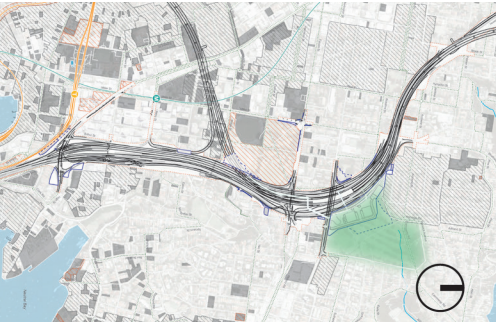
Project effects

The project is located immediately adjacent to the LCZ within the Warringah Freeway corridor. The key project effects in close proximity to the LCZ would be:

- + Widened bridge at High Street
- + Replacement Ridge Street and Falcon Street shared user bridges
- + A new bridge structure above Alfred Street North off ramp from Warringah Freeway
- + Increased off street parking to Alfred Street North
- + Ernest Street shared user bridge
- + Removal and some replacement of vegetation alongside Warringah Freeway corridor

- + Proposed and heightened existing noise walls along the Warringah Freeway corridor
- + Temporary construction support sites along Warringah Freeway
- + Introduction of new elements within the outlook of this LCZ, including views to proposed ventilation outlet within Warringah Freeway corridor and motorway facilities at Cammeray Golf Course.

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 High, due to the following: + Residential land use which has a limited ability to accommodate change in the landscape without detrimental impacts to its character + The presence of the Oaks Avenue and Whaling Road heritage conservation area.	The magnitude of landscape character change arising from the project is considered to be Moderate, due to the following: + The spatial character of some sections of the residential area are likely to be adversely impacted by the large bridge structures proposed, as well as removal of vegetation in proximity to High Street and Arthur Street North + Vegetation removal would reduce the existing vegetative buffer between Warringah Freeway and residential development + The new bridge structure at Alfred Street North would be elevated and therefore of a greater prominence than other at grade project elements + Proposed and heightened noise walls are likely to slightly impact residential character adjacent to structures + The proposed motorway facilities within Cammeray Golf Course and Warringah Freeway would form new elements within the adjacent landscape, potentially impacting the character of the LCZ in close proximity to these areas.	Moderate/High - concentrated on the areas that border the Warringah Freeway and Cammeray Park including Alfred Street North and Ernest Street.	Magnitude (construction phase): High There would likely be a greater impact to this LCZ's landscape character during the construction stage due to visible construction equipment, including substantial temporary works associated with the replacement of the Ridge Street shared user bridge and construction of the overpass at Alfred Street North.
High	Moderate	Moderate/High	High



Key plan

4.7.17 Cammeray Park open space

Located to the north east of the Warringah Freeway, Cammeray Park consists of a golf course and additional sports facilities positioned in the southern corner of the park, known as Cammeray Oval.

Cammeray Park forms a large area of leafy public open space within the precinct, in stark contrast to the adjacent major road corridor of the Warringah Freeway.

The park's highest point is to the southern corner, located on the Cammeray ridge top. The topography gently slopes down to Cammeray Road in the north.

Existing mature trees along the southern, eastern and western boundary of the park currently screen views of the adjacent road corridors and spatially separate the course from the road.

Heritage

Cammeray Park is listed locally within the LEP and is described as historically rare.

Project effects

The Western Harbour Tunnel project requires a construction area within the western section of Cammeray Golf Course, adjacent to Warringah Freeway. Post construction, a portion of this area would be required for permanent Western Harbour Tunnel motorway facilities.

The key project effects on the this LCZ would be:

- + Large temporary construction support site including temporary noise walls
- + Motorway facilities
- + Ancillary facilities including car park, substation and water facilities
- + Access road
- + Cycleway to edge of Warringah Freeway
- + Introduction of new elements within the outlook of this LCZ, including views to proposed ventilation outlet within Warringah Freeway corridor, Ernest Street shared user bridge and proposed bridge for Brook/Miller Street on ramp.

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 Moderate, due to the following: + There is currently limited built form within the park although due to its large size, the park has a moderate ability to absorb some change without detrimental effects to landscape character + As an area of public/private open space, the golf course has a lower sensitivity than a comparable area of purely public open space.	The magnitude of landscape character change arising from the project is considered to be High, due to the following: + Spatial character of the park would likely be adversely impacted by the motorway facilities building + The motorway facilities building is larger in scale and mass than existing built form elements within the park and would reduce the amount of open space available + There would be the requirement to remove a large number of mature trees within the park, including vegetation along the Warringah Freeway boundary, increasing the exposure of the park to the widened road corridor and proposed ventilation outlet.	Moderate/High This impact rating is likely to reduce as replacement planting matures over time and partially screens the facilities.	Magnitude (construction phase): High There would likely be a impact to this LCZ's landscape character during the construction stage due to visible construction equipment and activities.
Moderate	High	Moderate/High	Moderate/High

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North Sydney precinct - Visual impact assessment

4.7.18 Existing visual environment

The visual character of the precinct is defined by its elevated topography, major infrastructure and built form. North Sydney CBD forms a visible western edge to the precinct with large towers rising above the Warringah Freeway.

The elevated nature of the ridge at the centre of the precinct offers spectacular views south towards the Harbour Bridge, Eastern Suburbs and CBD skyline.

These views are available from the Warringah Freeway and eastern sections of St Leonards Park. As southbound motorists crest the ridge, these views provide the first glimpse of central Sydney, creating a memorable arrival experience.

The Warringah Freeway itself sits within a depressed configuration with limited visual connection to surrounding residential areas.

Key relevant view corridors within the precinct include:

- + Panoramic Harbour and Sydney CBD views from Warringah Freeway, Ridge Street lookout, St Leonards Park and towers within North Sydney CBD
- + Leafy district views south and east over Cammeray Park from Cammeray residential area including Morden Street and Carter Street
- + Constrained local views from residential development in close proximity to the road corridor such as Alfred Street North, Cammeray Avenue and Park Avenue. Views often filtered by existing vegetation
- + Elevated district views from residential towers including those backing onto Jeaffreson Jackson Reserve
- + View corridors north and south along the Warringah Freeway
- + Local views within Cammeray Park
- + Local views within St. Leonards Park.

For an assessment of the visual impacts on surrounding receivers from the temporary construction works at St. Leonards park, refer Chapter 5 of this report.

4.7.19 Local planning and policy

North Sydney Council LEP 2013

The North Sydney LEP sets the following relevant objectives in relation to views and amenity of non-residential development:

- + Ensure that non-residential development does not adversely affect the amenity of residential properties and public places, in terms of visual and acoustic privacy, solar access and view sharing.

North Sydney Council DCP 2013

The North Sydney DCP includes planning and locality areas which have specific outcomes regarding views, including:

- + North Sydney
- + Neutral Bay
- + North Cremorne
- + Cammeray

Outcomes relevant to views and vistas within the identified planning areas are indicated in Table 4.7. This list includes views and vistas that have the potential to be impacted by some aspect of the project.

4.7.20 Ventilation outlet - Zone of Visual Influence (ZVI)

A ZVI for the Western Harbour Tunnel ventilation outlet was produced to indicate the theoretical visual envelope of the outlet within the precinct, taking into account topography and built form.

This visual envelope was used to guide the site work and is indicated on the visual impact assessment plans. It should be noted that the ZVI is indicative only and does not take into account vegetation and fences/barriers.

The ventilation outlet would therefore not be visible from locations shown on the ZVI where vegetation would block views.

4.7.21 Selected viewpoints

Following a site visit to ground truth the desktop information, these key viewpoints were selected for further analysis (refer Figures 4.13-4.17):

1. North Sydney commercial (private)
2. High Street residential (private)
3. High Street corridor (public)
4. Ridge Street lookout (public)
5. Alfred Street North residential (private)
6. Warringah Freeway corridor near Ridge street (public)
7. St Leonards Park - Bon Andrews Oval (public)
8. Falcon/Miller Street intersection (public)
9. Jeaffreson Jackson Reserve and nearby residential (public/private)
10. ANZAC Park (public)
11. Cammeray Avenue residential (private)
12. Rosalind Street residential (private)
13. Morden Street residential (private)
14. Warringa Road residential (private)
15. Carter Street lookout (public/private)
16. Green Park open space and Warwick Avenue residential (public/private)
17. Park Avenue residential (private)
18. Cammeray Golf Course club house (public/private)
19. Cammeray Golf Course footpath (public)
20. Cammeray Park sports facilities (public)
21. Warringah Freeway near Ernest Street (public)
22. Ernest Street residential (private)
23. Ernest Street bridge (public)
24. Merlin Street residential (private)
25. Falcon Street shared user bridge
26. Miller Street bridge
27. Kurraba Road/Alfred Street North residential

Planning area (locality)	Relevant outcomes - the following views and vistas are to be preserved and where possible enhanced:	Relevant viewpoint in report
North Sydney (CBD)	+ Views to/between buildings on east side of Miller Street, between Berry and McLaren Streets	View not impacted by project
	+ From Doris Fitton Park (160-166 Arthur Street) to Sydney Harbour and Neutral Bay district	View not impacted by project
North Sydney (Civic Neighbourhood)	+ To Kirribilli and Sydney Harbour from St Leonards Park	Refer Chapter 5
North Sydney (Walker/ Ridge Street Conservation Area)	+ Warringah Expressway Lookout at the end of Ridge Street	Viewpoint 4
	+ Towards St Leonards Park	Refer Chapter 5
	+ War Memorial along Walker Street	View not impacted by project
Neutral Bay (Forsyth Neighbourhood)	+ District views from streets and reserves to Sydney Harbour and beyond	View not impacted by project
North Cremorne (Waters Neighbourhood)	+ Along Park Avenue of Cammeray Park	Viewpoint 17
Cammeray (ANZAC Neighbourhood)	+ District views towards Middle Harbour from the upper levels of some buildings	View not impacted by project
Cammeray (Cammeray Conservation Area)	+ Carter Street lookout	Viewpoint 15
	+ Views from Morden Street to the south	Viewpoint 13

TABLE 4.7 - NORTH SYDNEY COUNCIL DCP VIEW OUTCOMES

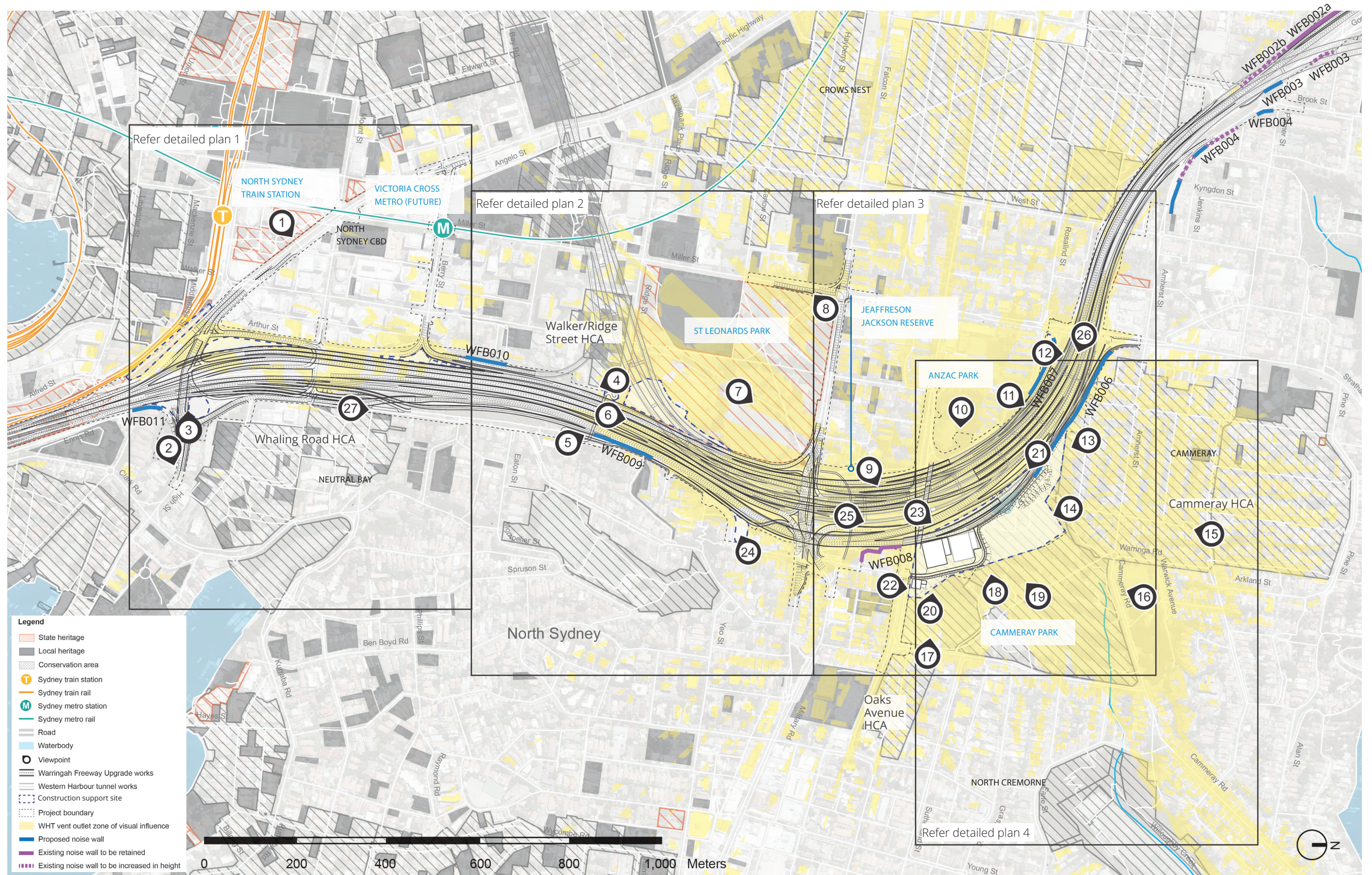


FIGURE 4.13 - NORTH SYDNEY PRECINCT VIEWPOINT LOCATION

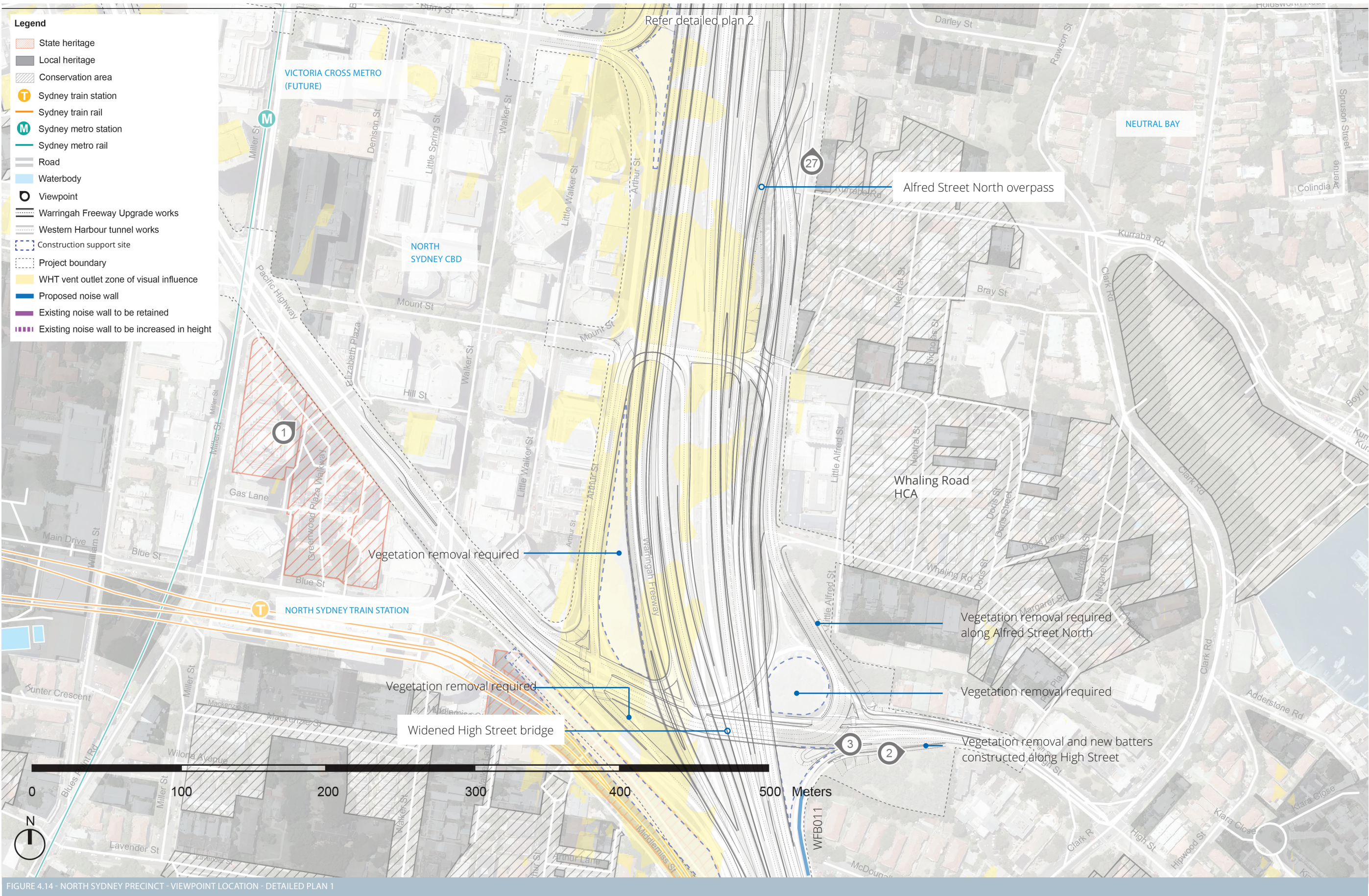


FIGURE 4.14 - NORTH SYDNEY PRECINCT - VIEWPOINT LOCATION - DETAILED PLAN 1

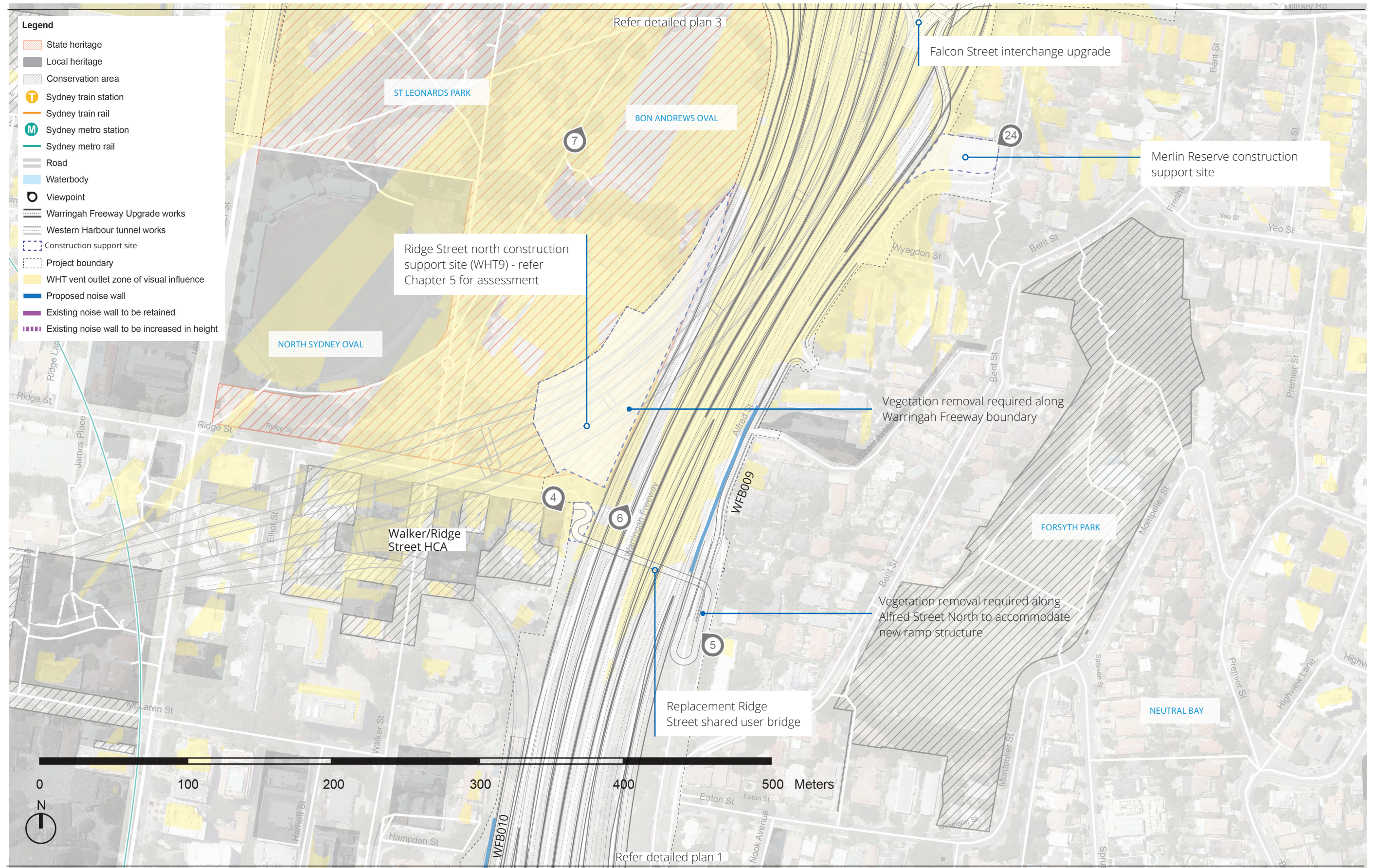


FIGURE 4.15 - NORTH SYDNEY PRECINCT - VIEWPOINT LOCATION - DETAILED PLAN 2

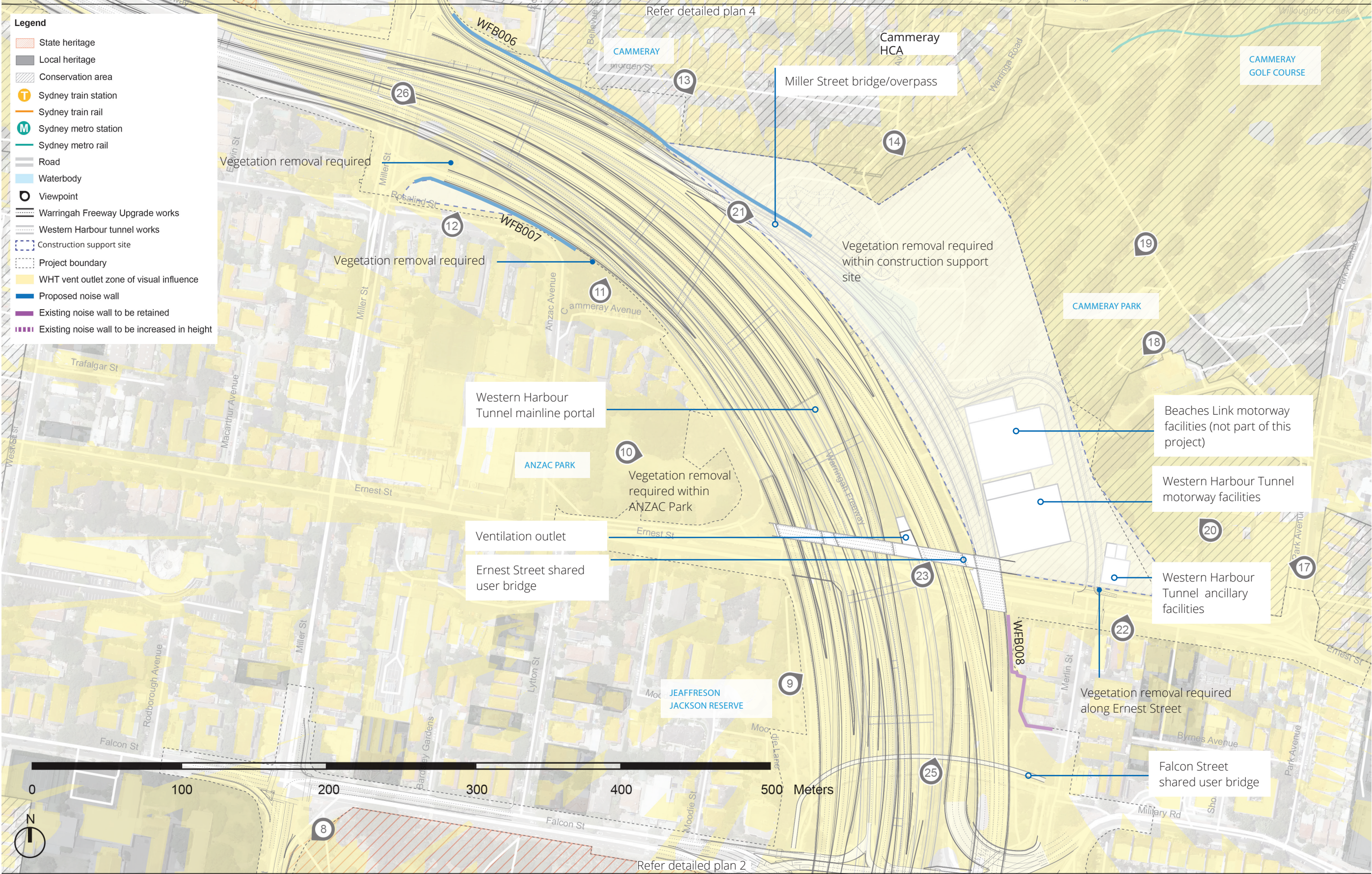


FIGURE 4.16 - NORTH SYDNEY PRECINCT - VIEWPOINT LOCATION - DETAILED PLAN 3

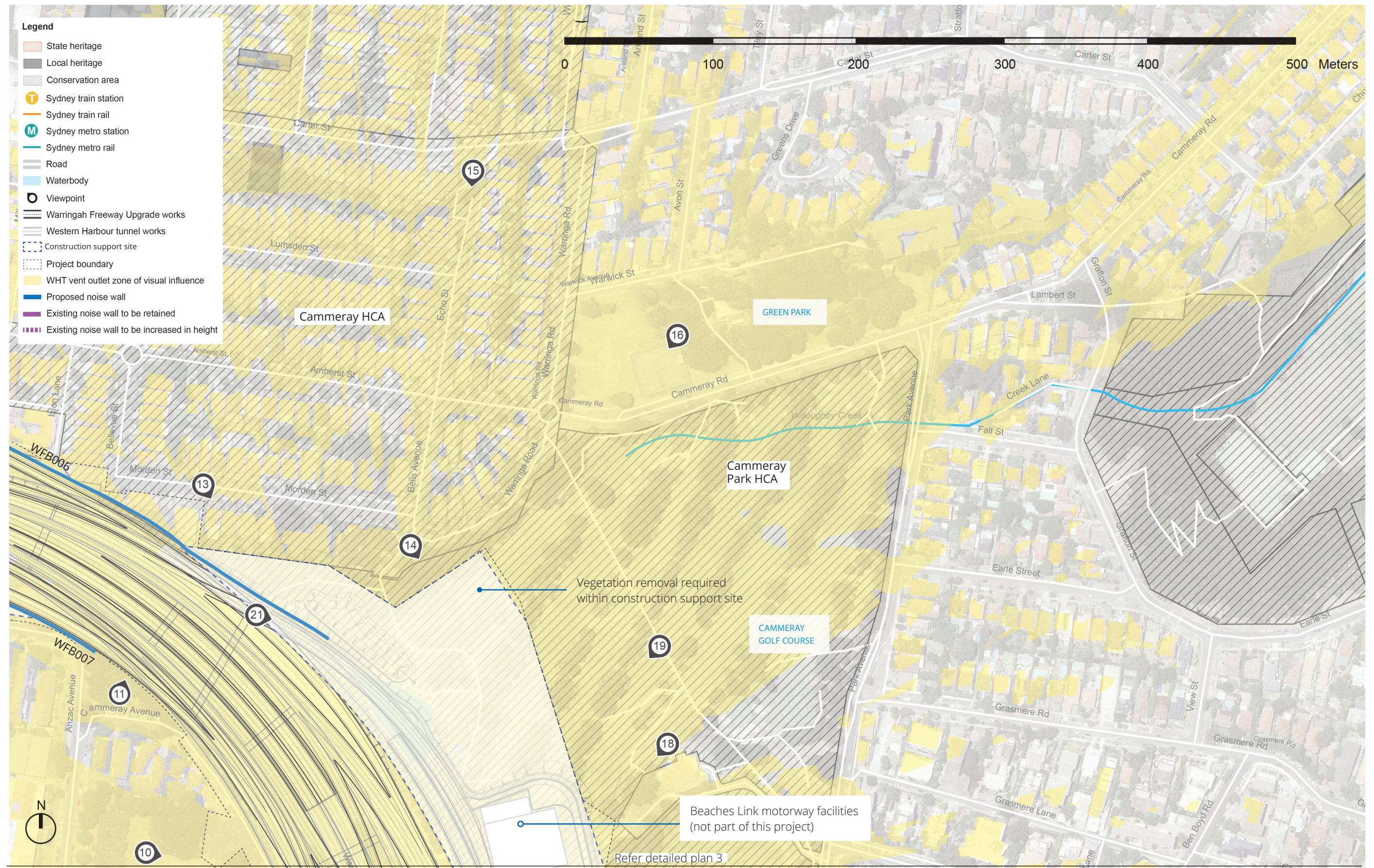
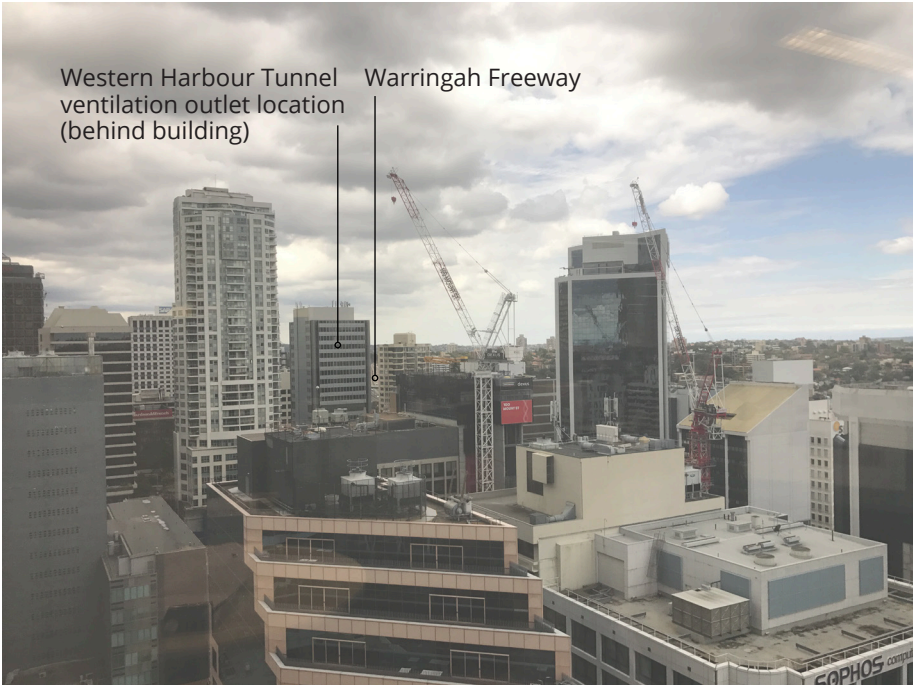


FIGURE 4.17 - NORTH SYDNEY PRECINCT - VIEWPOINT LOCATION - DETAILED PLAN 4

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 1 North Sydney commercial <i>Type</i> Private <i>Distance</i> 270m (1550m to Western Harbour Tunnel ventilation outlet) <i>No. of viewers</i> Moderate	This viewpoint is representative of several high-rise commercial towers located within the North Sydney CBD. Depending on height and orientation, these buildings may have far reaching panoramic views across Sydney including views north and east to Cammeray Park and the Warringah Freeway. Towers in closest proximity to project works are those along Arthur Street.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Where available, views are scenic and expansive + The panoramic, elevated nature of the viewframe increases the capacity of the viewpoint to absorb visual change.	The magnitude of impact arising from the project is considered to be Negligible, due to the following: + The presence of existing large scale road infrastructure and tall built form within the current viewframe + The project works within the Warringah Freeway would mostly form a small part of a much wider panoramic view + While the Western Harbour Tunnel ventilation outlet may be visible from some locations within the CBD, the viewing distance is large.	Overall, a Negligible visual impact is expected during the operation of the project.	While the project may lead to an increase in artificial lighting, night time visual impacts are not expected. The presence of numerous existing light sources within the current view frame ensures any changes would likely be imperceptible.	Despite an increase in visual clutter along the Warringah Freeway during the construction phase, an increased visual impact is not expected due to the elevated nature of the viewpoint and wide field of view.
		Moderate	Negligible	Negligible	Negligible	Negligible
Viewpoint 2 High Street residential <i>Type</i> Private <i>Distance</i> 30m <i>No. of viewers</i> Moderate	This viewpoint is representative of residential dwellings in proximity to High Street bridge. This includes properties to the north/south of High Street and east of Alfred Street, adjacent to several small areas of public open space, as well as the Kirribilli Tennis Centre. These dwellings have filtered views to the surrounding road corridors, although mature tree planting screens the majority of views west towards the Warringah Freeway and North Sydney CBD.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Presence of existing infrastructure development adjacent to these properties.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The reconfiguration of the Alfred Street North/ High Street intersection would require new road pavement, several batters/embankments and the removal of vegetation in proximity to these dwellings + The removal of foreground vegetation would potentially increase the visibility of the road corridor, reducing the existing visual buffer.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The removal of vegetation in this location would increase the visual exposure of these dwellings to surrounding road corridors.	The removal of screening vegetation may lead to an increase in artificial lighting, leading to a small increase in night time visual impacts.	Magnitude (construction phase): High A Moderate/High visual impact is expected on these receivers during the construction period. Site hoarding and construction equipment would be visible from these dwellings, as well as increased vehicular movements.
		Moderate	Moderate	Moderate	Low	Moderate/High
Viewpoint 3 High Street road corridor <i>Type</i> Public <i>Distance</i> 1m <i>No. of viewers</i> High	Receivers are motorists and pedestrians traveling along High Street (east and west of High Street bridge). Traveling westbound, existing vegetation within the road corridor currently screens views of the Warringah Freeway and North Sydney CBD. In the vicinity of Arthur Street, existing tree planting within the road corridor currently softens the urban form, provides shade to pedestrians and provides a green edge to the CBD towers behind.	The sensitivity of these receivers to the project is considered to be Low, due to the following: + As a major road corridor, receivers have a reduced sensitivity to change in the visual scene.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The reconfiguration of the Alfred Street North/ High Street and Arthur Street/High Street intersection would require new road pavement, large batters and the removal of vegetation + The removal of vegetation within the road corridor would increase the perceived scale and bulk of the proposed and existing infrastructure, reducing pedestrian and motorist amenity + The duration of view is relatively short.	Overall, a Moderate/Low visual impact is expected on these receivers once the project is operational. The removal of vegetation either side of the High Street bridge would reduce the current visual buffer and increase visual exposure to the surrounding infrastructure.	While the project may lead to an increase in artificial lighting, a night time visual impact is not expected. The presence of numerous existing light sources within the current view frame ensures any changes would likely be imperceptible.	Magnitude (construction phase): High A Moderate visual impact is expected on these receivers during the construction period. Site hoarding and construction equipment is likely to reduce visual amenity for road users.
		Low	Moderate	Moderate/Low	Negligible	Moderate



VIEWPOINT 1 - REPRESENTATIVE VIEW NORTH EAST FROM 101 MILLER STREET, NORTH SYDNEY CBD



VIEWPOINT 2 - REPRESENTATIVE VIEW FROM DWELLINGS NEAR HIGH ST/ALFRED STREET NORTH



VIEWPOINT 3 - VIEW WEST ALONG HIGH STREET TOWARDS NORTH SYDNEY CBD



VIEWPOINT 3 - PANORAMIC VIEW LOOKING WEST TOWARDS NORTH SYDNEY CBD FROM HIGH STREET/ALFRED STREET NORTH INTERSECTION

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 4 Ridge Street lookout Type Public Distance 5m No. of viewers Moderate	Receivers in this viewpoint are pedestrians and cyclists utilising the viewpoint adjacent to the existing Ridge Street shared user bridge. The current view is expansive and extends south east over the Warringah Freeway towards the Sydney CBD, Harbour Bridge and water of Sydney Harbour. The existing shared user bridge is visible in the foreground.	The sensitivity of these receivers to the project is considered to be High, due to the following: + Panoramic and elevated view corridor across Sydney Harbour + View is noted 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: + Realignment of the Ridge Street bridge would position the structure further south, potentially partially blocking the current view south east + The scale and bulk of the bridge would be slightly larger than the existing bridge, with a ramp structure located on the eastern side of the Warringah Freeway.	Overall, a Moderate/High visual impact is expected on these receivers once the project is operational. The bridge would form a larger structure than the existing bridge within the viewframe, potentially partially blocking views to the south east.	While the bridge might need to be lit, the presence of numerous existing light sources in the current viewframe means any changes would likely be imperceptible.	Magnitude (construction phase): High A High visual impact is expected on these receivers during the construction period, with a likely increase in visual clutter due to site hoarding and construction equipment.
		High	Moderate	Moderate/High	Negligible	High
Viewpoint 5 Alfred Street North residential Type Public Distance 25m No. of viewers Moderate	This viewpoint is representative of several multistory residential dwellings along the eastern side of Alfred Street North. These dwellings sit at a lower elevation to the road corridor. Views west towards the Warringah Freeway are currently heavily screened by foreground vegetation and raised topography located on the western edge of Alfred Street North.	The sensitivity of these receivers to the project is considered to be High, due to the following: + Residential receivers with a limited ability to absorb visual change + The current outlook west from these dwellings is dominated by a narrow and scenic tree lined road corridor and exposed sandstone geology.	The magnitude of impact arising from the project is considered to be High, due to the following: + The bridge would likely require the removal of vegetation along Alfred Street North, reducing the current visual buffer and increasing the exposure to built form elements within the view + The replacement Ridge Street shared user bridge and ramp structure would be a major new built form element within the viewframe + There would potentially be views of the proposed noise wall along the edge of the Warringah Freeway in this location.	Overall, a High visual impact is expected on these receivers once the project is operational. The removal of vegetation in this location would remove the current visual buffer and increase the visual exposure to new built form. Replacement vegetation and high quality urban design of the bridge would likely reduce this impact slightly over time.	The bridge may need to be lit, increasing the light sources visible within the viewframe. Combined with the loss of screening vegetation, this may have a moderately adverse impact on night time visual amenity.	Magnitude (construction phase): High A High visual impact is expected on these receivers during the construction period. Site hoarding, construction equipment and increased vehicular movements would adversely impact the visual amenity of these residents.
		High	High	High	Moderate	High
Viewpoint 6 Warringah Freeway corridor near Ridge Street Type Public Distance 1m No. of viewers High	Receivers are motorists traveling north and southbound on the Warringah Freeway. Existing views are dominated by the wide road corridor. Notable features in this location include exposed sandstone walls, topped by mature tree planting along the western road edge, adjacent to St Leonards Park. Extensive views towards Sydney CBD and Sydney Harbour are available to southbound motorists.	The sensitivity of these receivers to the project is considered to be Low, due to the following: + As a major road corridor, receivers have a reduced sensitivity to change in the visual scene.	The magnitude of impact arising from the project is considered to be Low, due to the following: + The works within this section of the Warringah Freeway would be similar in scale to existing elements, including the replacement of the Ridge Street shared user bridge + There would be the discernible removal of vegetation along the boundary of St Leonards Park and the replacement of the existing sandstone edge with a new retaining wall. + The duration of view is short.	Overall, a Low visual impact is expected on these receivers once the project is operational. The removal of vegetation along St Leonards Park may slightly reduce the visual amenity of the road corridor although replacement planting should mitigate this impact over time.	Additional night time visual impacts are not expected.	Magnitude (construction phase): Moderate A Moderate/Low visual impact is expected on these receivers during the construction period. Site hoarding and construction equipment may lead to slightly increased visual impacts compared to the operational phase.
		Low	Low	Low	Negligible	Moderate/Low



VIEWPOINT 4 - VIEW SOUTH EAST OVER WARRINGAH FREEWAY FROM RIDGE STREET LOOKOUT



VIEWPOINT 5 - VIEW TOWARDS WARRINGAH FREEWAY FROM DWELLINGS ALONG ALFRED ST NORTH



VIEWPOINT 6 - REPRESENTATIVE VIEW NORTH FROM WARRINGAH FREEWAY NEAR RIDGE STREET



PANORAMIC VIEW OF DWELLINGS ALONG ALFRED STREET NORTH IN PROXIMITY TO RIDGE STREET SHARED USER BRIDGE ACROSS WARRINGAH FREEWAY

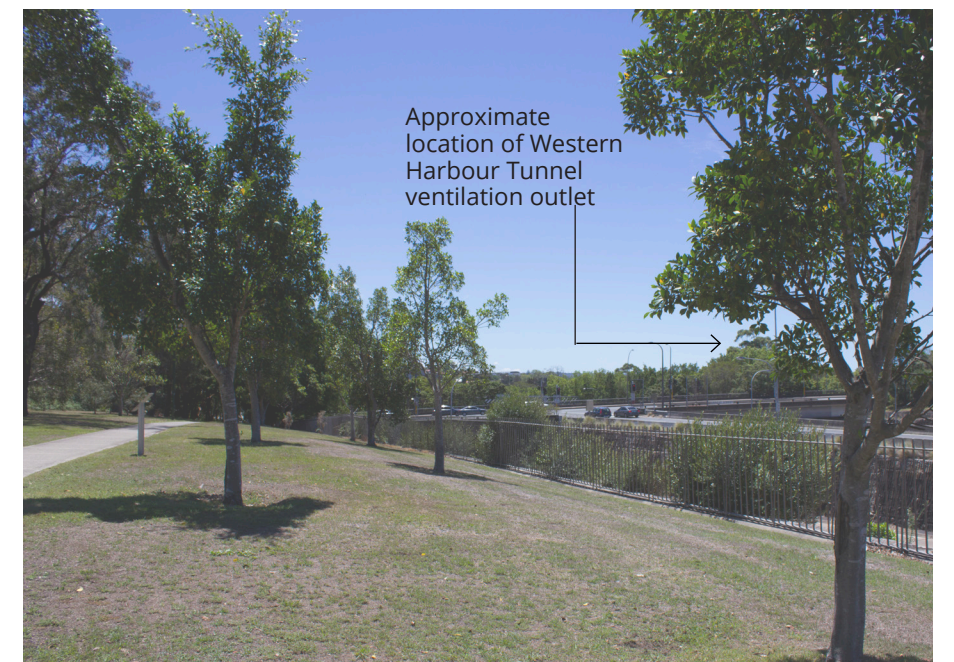
DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 7 St Leonards Park - Bon Andrews Oval Type Public Distance 170m (450m to Western Harbour Tunnel ventilation outlet) No. of viewers High	The receivers are users of the north eastern corner of St Leonards Park, in vicinity to Bon Andrews Oval. The existing view north east from the oval and surrounding footpaths is dominated by the open expanse of the oval, backed by mature tree planting. The North Sydney brick sewer vent is visible in the middle distance, forming a strong vertical element within the viewframe.	The sensitivity of these receivers to the project is considered to be High, due to the following: + St Leonards is a well utilised, state heritage listed area of public open space + The visual and spatial character of the park is key to its heritage value and high visual amenity.	The magnitude of impact arising from the project is considered to be Negligible, due to the following: + The majority of the project works would not be visible from this viewpoint + Very limited views of the Western Harbour Tunnel ventilation outlet may be available from some sections of the park, although these would be mostly screened by foreground vegetation and built form. Where visible, the vent would form a minor new vertical element within the viewframe.	Overall, a Negligible visual impact is expected on these receivers once the project is operational. Where visible, the ventilation outlet would constitute a minor component of new built form within the viewframe.	Additional night time visual impacts are not expected.	Additional construction stage visual impacts are not expected in this location. Note that the impacts of the Ridge Street north construction support site (WHT9) in the south east corner of the park are discussed within Chapter 5.
		High	Negligible	Negligible	Negligible	Negligible
Viewpoint 8 Falcon/ Miller Street intersection Type Public Distance 5m No. of viewers High	The receivers are users of the north western corner of St Leonards Park, as well as pedestrians/motorists in the vicinity of the Falcon Street/ Miller Street intersection. The area around the intersection is characterised by the green edge of St Leonards Park and a row of mature palm trees along Miller Street, forming a gateway feature to North Sydney. North Sydney Boys High School is located to the western side of Miller Street with landscape feature planting fronting the road.	The sensitivity of these receivers to the project is considered to be High, due to the following: + St Leonards is a well utilised, state heritage listed area of public open space + The visual and spatial character of the park is key to its heritage value and high visual amenity + The row of palms along Miller Street form an important visual landmark to the area and gateway feature to North Sydney.	The magnitude of impact arising from the project is considered to be Negligible, due to the following: + The project works would require widening of the intersection in this location, although there are unlikely to be any direct impacts to St. Leonards Park.	Overall, a Negligible visual impact is expected on these receivers once the project is operational.	Additional night time visual impacts are not expected.	Magnitude (construction phase): Low A Moderate visual impact is expected during the construction period. Construction equipment and increased vehicle movements would likely be visible.
		High	Negligible	Negligible	Negligible	Moderate
Viewpoint 9 Jeaffreson Jackson Reserve and nearby residential Type Public/Private Distance 30m (150m to Western Harbour Tunnel ventilation outlet) No. of viewers Moderate	This viewpoint is representative of the view available from Jeaffreson Jackson Reserve, an area of public open space adjacent to the Warringah Freeway, as well as several high rise residential towers next to the reserve. Receivers are park users and tower residents.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Despite large scale road infrastructure currently visible within the existing viewframe from both the park and dwellings, the current view also includes large areas of open space + The extensive, elevated nature of the view from the residential towers would afford visibility of a large section of Cammeray Park which currently contains limited visible built form.	The magnitude of impact arising from the project is considered to be High, due to the following: + The Western Harbour Tunnel ventilation outlet would be clearly visible from the reserve, forming a new vertical element within the viewframe + The motorway facilities within Cammeray Golf Course would be highly visible from mid to upper floors of the residential towers. It would form a discernible new element within the landscape, although would sit within a relatively wide viewframe. There would also be the discernible removal of vegetation within this section of Cammeray Golf Course + The relocated Falcon Street shared user bridge would be visible from this location. Due to its more northerly position, the bridge would be slightly more prominent in the view east from the park and may require some vegetation removal.	Overall, a Moderate/High visual impact is expected on these receivers once the project is operational. The ventilation outlet would constitute major new built form within the viewframe, although the impact would be slightly reduced by the panoramic nature of the existing view. Impacts from the reserve are likely to reduce as replacement planting matures and screens some parts of the proposed built form.	The new built form within Warringah Freeway and Cammeray Golf Course may cause a slight increase in artificial lighting, leading to increased night time visual impacts for residential receivers in this location.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. Equipment associated with the construction of Falcon Street shared user bridge, motorway facilities and outlet are likely to be visible from the reserve and dwellings. Some of the reserve would likely be inaccessible during the construction period.
		Moderate	High	Moderate/High	Low	Moderate/High



VIEWPOINT 7 - VIEW NORTH FROM BON ANDREWS OVAL



VIEWPOINT 8 - VIEW EAST FROM ST LEONARDS PARK TOWARDS FALCON/MILLER ST INTERSECTION



VIEWPOINT 9 - VIEW NORTH EAST OVER WARRINGAH FREEWAY FROM JEAFFRESON JACKSON RESERVE



CHARACTER OF RESIDENTIAL DEVELOPMENT ADJACENT TO JEAFFRESON JACKSON RESERVE



VIEWPOINT 9 - EXISTING - VIEW NORTH EAST OVER WARRINGAH FREEWAY FROM JEAFFRESON JACKSON RESERVE



VIEWPOINT 9 - PROPOSED (DAY 1 OF OPERATION) - VIEW NORTH EAST OVER WARRINGAH FREEWAY FROM JEAFFRESON JACKSON RESERVE

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

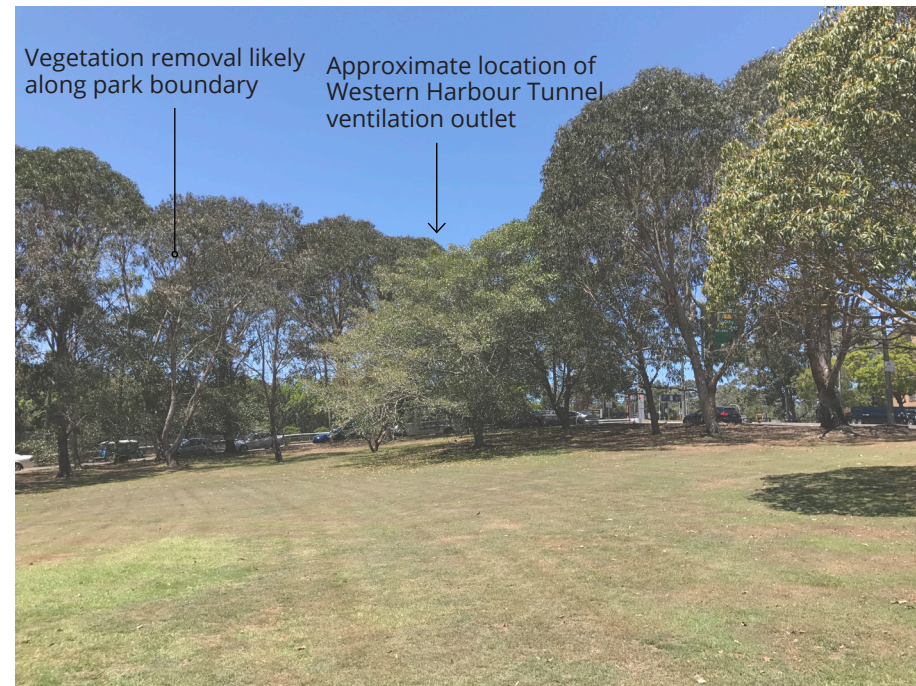


VIEWPOINT 9 - PROPOSED (YEAR 10 OF OPERATION) - VIEW NORTH EAST OVER WARRINGAH FREEWAY FROM JEAFFRESON JACKSON RESERVE

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

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DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 10 ANZAC Park Type Public Distance 1m No. of viewers Low	Receivers are users of this area of open space adjacent to the Warringah Freeway and Ernest Street. The current view east from the park looks over open turf towards mature trees along Cammeray Avenue. Filtered views of Ernest Street bridge are available through the trees.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + The park has a pleasant visual character with vegetation currently providing a visual buffer to the surrounding road corridors.	The magnitude of impact arising from the project is considered to be High, due to the following: + The project works would require the removal of vegetation along the eastern boundary of the park + The Western Harbour Tunnel ventilation outlet would be clearly visible from the reserve, forming a new vertical element within the centre of the viewframe.	Overall, a Moderate/High visual impact is expected on these receivers once the project is operational. The removal of vegetation along the eastern boundary of the park would reduce the current visual buffer, increasing the visual exposure to surrounding road corridors and proposed ventilation outlet. This impact may reduce over time with the planting of screening vegetation.	The park has limited use after dark and additional night time visual impacts are not expected.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. An area of the park is expected to be used for construction works. Part of the park would be inaccessible and site hoarding, construction equipment and increased vehicle movements are likely to be visible.
		Moderate	High	Moderate/High	Negligible	Moderate/High
Viewpoint 11 Camberay Avenue residential Type Private Distance 5m No. of viewers Low	This viewpoint is representative of the view available from residential dwellings along Cammeray Avenue. These dwellings currently have leafy views to the east and north with a well vegetated streetscape screening views of the Warringah Freeway and associated noise wall.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Despite the presence of large scale infrastructure adjacent to these receivers, the current view includes extensive tree planting that screens views of the road corridor.	The magnitude of impact arising from the project is considered to be Moderate due to the following: + The removal of vegetation in this location would increase the visibility of the Warringah Freeway, reducing the current visual buffer.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The removal of vegetation along the eastern boundary of Cammeray Avenue would increase visual exposure to the Warringah Freeway, adversely impacting visual amenity. The magnitude of impact would depend on the quantity of vegetation removal required.	The removal of screening vegetation may lead to an increase in artificial lighting, leading to increased night time visual impacts.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period.
		Moderate	Moderate	Moderate	Low	Moderate/High
Viewpoint 12 Rosalind Street residential Type Private Distance 20m No. of viewers Moderate	This viewpoint is representative of the view available from residential dwellings along Rosalind Street. These dwellings currently have leafy views north, with tree planting filtering views of the Warringah Freeway off ramp and Miller Street bridge.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Despite the presence of large scale infrastructure adjacent to these receivers, the current view includes extensive tree planting that screens views of the road corridor.	The magnitude of impact arising from the project is considered to be Moderate due to the following: + The removal of vegetation in this location would increase the visibility of the Warringah Freeway, reducing the current visual buffer + There would be views towards the proposed noise wall along the edge of the Warringah Freeway in this location.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The removal of vegetation along the boundary of Rosalind Street would reduce the current buffer, increasing the visual exposure to the Warringah Freeway and proposed noise wall, adversely impacting visual amenity The magnitude of impact would depend on the quantity of vegetation removal required.	The removal of screening vegetation may lead to an increase in artificial lighting, leading to increased night time visual impacts.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. A section of open space adjacent to Rosalind Street would be used for construction staging. Site hoarding, construction equipment and increased vehicle movements may be visible.
		Moderate	Moderate	Moderate	Low	Moderate/High



VIEWPOINT 10 - VIEW EAST TOWARDS WARRINGAH FREEWAY FROM ANZAC PARK



VIEWPOINT 11 - VIEW NORTH FROM RESIDENTIAL DWELLINGS ALONG CAMMERAY AVENUE



VIEWPOINT 12 - VIEW NORTH FROM RESIDENTIAL DWELLINGS ALONG ROSALIND STREET



CHARACTER OF RESIDENTIAL DWELLINGS ALONG CAMMERAY AVENUE

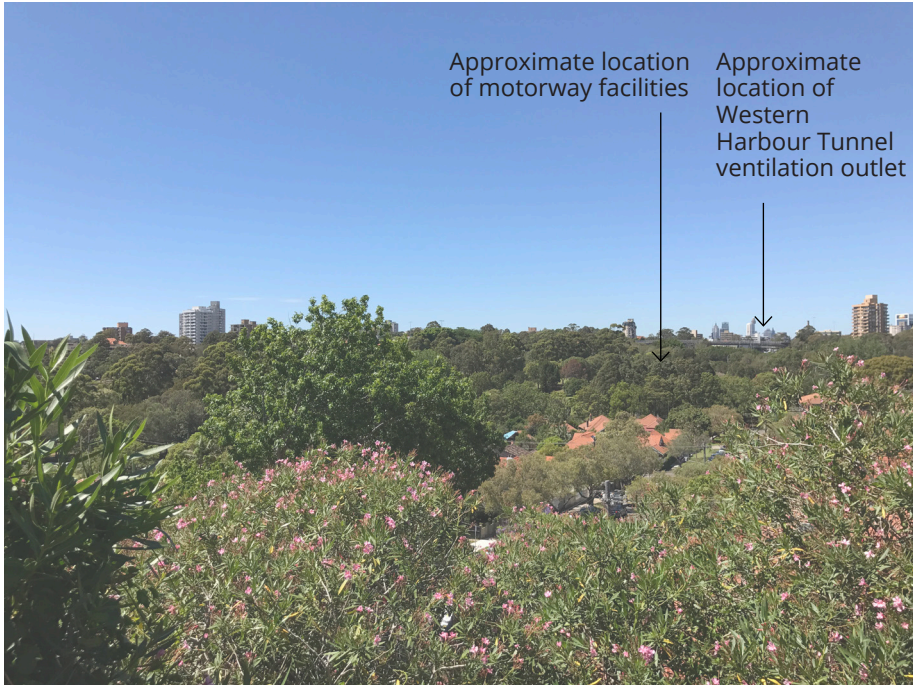
DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 13 Morden Street residential <i>Type</i> Private <i>Distance</i> 360m to Western Harbour Tunnel ventilation outlet <i>No. of viewers</i> Low	This viewpoint is representative of the view from several residential dwellings at the western end of Morden Street, part of the Cammeray heritage conservation area. These dwellings currently have leafy, elevated views south. The fore and middle ground are dominated by a well vegetated streetscape and the open space of Cammeray Golf Course. Towers associated with Neutral Bay are visible in the distance, above the treeline.	The sensitivity of these receivers to the project is considered to be High, due to the following: + Scenic view with little built form visible in the vicinity of Cammeray Golf Course, although some vertical elements present in the distance + View is mentioned as a 'significant element' within the North Sydney DCP as part of the Cammeray heritage conservation Area.	The magnitude of impact arising from the project is considered to be Low, due to the following: + The top of the Western Harbour Tunnel ventilation outlet may be visible, with the rest of the structure screened by foreground vegetation. This would form a new vertical element within the view, although would sit within a relatively wide viewframe + The motorway facilities within Cammeray Golf Course may be visible from upper floors of dwellings. It would form a discernible new element within the landscape although would be partially screened by retained foreground vegetation. + There may be the discernible reduction of vegetation within Cammeray Golf Course.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The ventilation outlet and facility would constitute new built form within the viewframe, although the magnitude of impact is reduced by the panoramic nature of the existing view, screening vegetation and presence of other vertical elements within the current viewframe.	There may be a very slight discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): Moderate A Moderate/High visual impact is expected during the construction period. Equipment associated with the construction of the motorway facilities and outlet may be visible.
		High	Low	Moderate		Moderate/High
Viewpoint 14 Warringa Road residential <i>Type</i> Private <i>Distance</i> 200m <i>No. of viewers</i> Low	This viewpoint is representative of the view available from several residential dwellings to the western end of Warringa Road, adjacent to Cammeray Golf Course. These dwellings currently have leafy views over the road towards the golf course. Long distance views are screened or filtered by dense tree planting along the golf course boundary.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Scenic view with little built form visible in the vicinity of Cammeray Golf Course.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The Western Harbour Tunnel motorway facilities would likely be visible, partially screened by foreground vegetation + There would be the discernible reduction of vegetation visible within Cammeray Golf Course (especially from upper storey windows).	Overall, a Moderate visual impact is expected on these receivers once the project is operational. Where visible, the motorway facilities would constitute new built form within the viewframe.	There may be a discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. Site hoardings, temporary noise walls, increased vehicle movements and equipment associated with the construction of the motorway facilities would likely be visible.
		Moderate	Moderate	Moderate		Moderate/High
Viewpoint 15 Carter Street lookout <i>Type</i> Public/Private <i>Distance</i> 580m to Western Harbour Tunnel ventilation outlet <i>No. of viewers</i> Moderate	This viewpoint is representative of the view available from residential dwellings along the most elevated western end of Carter Street, as well as pedestrians using the lookout. Located on a ridge line, these receivers currently have leafy, panoramic views south. The fore and middle ground views are dominated by a well vegetated streetscape and the open space of Cammeray Golf Course. Towers associated with North Sydney CBD are visible in the distance, above the treeline.	The sensitivity of these receivers to the project is considered to be High, due to the following: + Scenic view with little built form visible in the vicinity of Cammeray Golf Course, although some vertical elements present in the distance + View is mentioned as a 'significant element' within the North Sydney DCP as part of the Cammeray heritage conservation area.	The magnitude of impact arising from the project is considered to be Low, due to the following: + The Western Harbour Tunnel ventilation outlet may be visible partially screened by foreground vegetation. This would form a new vertical element within the view, although would sit within a relatively wide viewframe + The motorway facilities are likely to be visible from upper floors of the residential buildings, partially screened by foreground vegetation. They would form a discernible new element within the landscape although would sit within a relatively wide viewframe + There would likely be the discernible reduction of vegetation visible within Cammeray Golf Course.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The ventilation outlet would constitute new vertical built form within the viewframe. The magnitude of the impact would be reduced by the panoramic nature of the existing view and the presence of other vertical elements within the current viewframe.	There may be a very slight discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): Low A Moderate visual impact is expected during the construction period. Cranes and other equipment associated with the construction of the motorway facilities would likely be visible.
		High	Low	Moderate		Moderate



VIEWPOINT 13 - VIEW SOUTH FROM DWELLINGS ALONG WESTERN END OF MORDEN STREET



VIEWPOINT 14 - VIEW SOUTH FROM DWELLINGS ALONG WESTERN END OF WARRINGAH ROAD

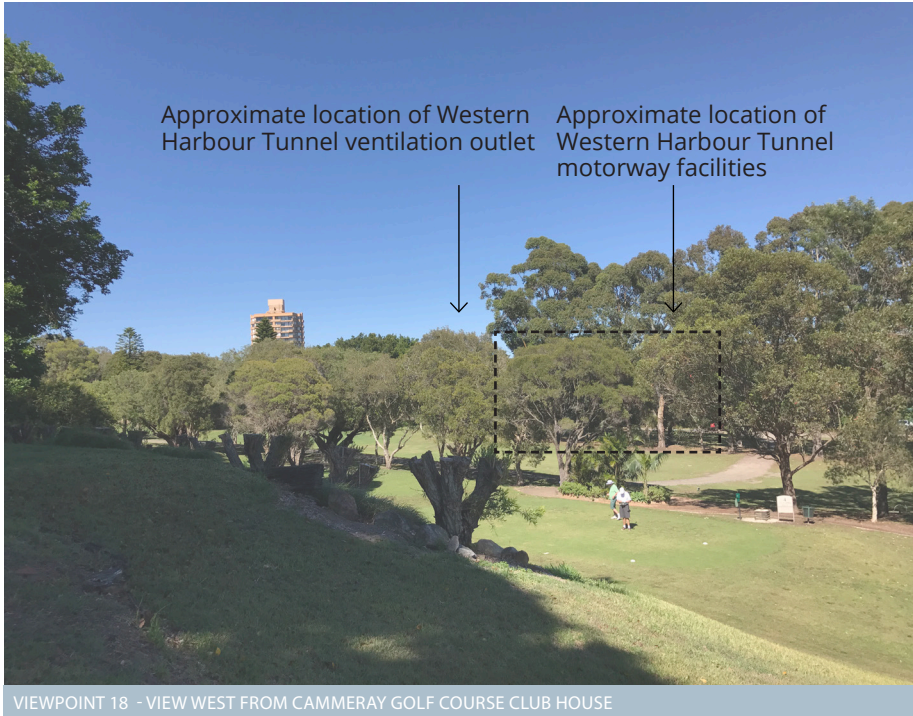


VIEWPOINT 15 - VIEW SOUTH TOWARDS CAMMERAY GOLF COURSE FROM CARTER STREET



VIEWPOINT 15 - PANORAMIC VIEW SOUTH OVER CAMMERAY PARK FROM CARTER STREET LOOKOUT

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 16 Green Park open space + Warwick Avenue residential Type Public/Private Distance 550m to Western Harbour Tunnel ventilation outlet No. of viewers Moderate	This viewpoint is representative of the view available from the open space of Green Park and residential dwellings along Warwick Avenue to the north of the park. The dwellings and open space users currently have leafy, elevated views south across Green Park towards the well vegetated expanse of Cammeray Golf Course.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Scenic view with little built form visible in the vicinity of Cammeray Golf Course, although some vertical elements visible in the distance.	The magnitude of impact arising from the project is considered to be Low, due to the following: + The upper portion of the Western Harbour Tunnel ventilation outlet would likely be visible, with the rest of the structure screened by foreground vegetation. This would form a new vertical element within the viewframe + There may be the discernible reduction of vegetation within Cammeray Golf Course to facilitate the construction of the motorway facilities.	Overall, a Moderate/Low visual impact is expected on these receivers once the project is operational. The ventilation outlet would constitute new vertical built form within the view, although the impact would be reduced by the screening effect of foreground vegetation.	There may be a slight discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): Moderate A Moderate visual impact is expected during the construction period. Equipment associated with the construction of the motorway facilities may be visible.
		Moderate	Low	Moderate/Low	Low	Moderate
Viewpoint 17 Park Avenue residential Type Private Distance 360m to Western Harbour Tunnel ventilation outlet No. of viewers Moderate	This viewpoint is representative of the view available from residential dwellings along the southern end of Park Avenue, adjacent to the eastern edge of Cammeray Golf Course. These dwellings currently have views over the road towards the Cammeray Park sports facilities, with vegetation associated with the golf course behind. Dwellings further north on Park Avenue have leafy views into the golf course, with the majority of long distance views screened or filtered by dense tree planting along the course boundary.	The sensitivity of these receivers to the project is considered to be High, due to the following: + View is mentioned as a 'significant element' within the North Sydney DCP.	The magnitude of impact arising from the project is considered to be Negligible, due to the following: + While the Western Harbour Tunnel ventilation outlet would be located in relatively close proximity to these receivers, foreground vegetation and built form would likely screen the majority of views towards the lower portions of the outlet. The upper sections of the ventilation outlet may be visible above the treeline, although a major visual impact is not expected + There may be a slight discernible reduction of vegetation within Cammeray Golf Course.	Overall, a Negligible visual impact is expected on residential receivers along Park Avenue. Where visible, the ventilation outlet would constitute a small quantum of new built form within the viewframe, although would be mostly congruous with existing vertical elements visible. The retention of vegetation along the golf course boundary would assist in screening views.	There may be a slight discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Additional construction stage visual impacts are not expected in this location.
		High	Negligible	Negligible	Low	Negligible
Viewpoint 18 Cammeray Golf Course club house Type Public/Private Distance 270m to Western Harbour Tunnel ventilation outlet No. of viewers Moderate	Receivers are users of the Cammeray Golf Course club house, which includes a golf shop, bistro and bar. The club house also caters for functions such as weddings. The club house is double storey and currently has elevated views across the golf course to the north and north west.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Current scenic view with little built form visible in the foreground + As an area of public/private open space, the golf course has a lower sensitivity to change compared to an area of purely public open space.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The Western Harbour Tunnel motorway facilities and ventilation outlet are in close proximity to the club house and are likely to be visible, partially screened by retained trees + There would be the discernible reduction of vegetation within Cammeray Golf Course + The potential operation of Beaches Link and Western Harbour Tunnel motorway facilities in Cammeray Golf Course would increase the scale of development visible from this viewpoint. Cumulative visual impacts are likely - refer summary section of chapter for more detail.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The motorway facilities would constitute a new built form within the view, adversely impacting the visual amenity of club users.	There may be a discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. Site hoardings, temporary noise walls, increased vehicle movements and equipment associated with the construction of the motorway facilities would be visible.
		Moderate	Moderate	Moderate	Moderate	Moderate/High



DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 19 Cammeray Golf Course footpath Type Public Distance 100m to Western Harbour Tunnel motorway facilities No. of viewers Moderate	Receivers are users of the public footpath that runs in a north/south direction through Cammeray Golf Course. The path currently has scenic views across the golf course with little built form visible in the viewframe. The majority of long distance views are screened or filtered by dense tree planting within the golf course.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Current scenic view with little built form visible in foreground.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The Western Harbour Tunnel motorway facilities is likely to be clearly visible from the footpath + There would be the discernible reduction of vegetation within Cammeray Golf Course + The potential operation of Beaches Link and Western Harbour Tunnel motorway facilities in Cammeray Golf Course would increase the scale of development visible from this viewpoint. Cumulative visual impacts are likely - refer summary section of chapter for more detail.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The motorway facilities would constitute a new built form component within the view, adversely impacting the visual amenity of footpath users.	There may be a discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. Site hoardings, temporary noise walls, increased vehicle movements and equipment associated with the construction of the motorway facilities would be visible.
		Moderate		Moderate	Moderate	Moderate/High
Viewpoint 20 Cammeray Park sports facilities Type Public Distance 270m to Western Harbour Tunnel ventilation outlet No. of viewers Moderate	Receivers are users of the varied sports facilities found within the south east corner of Cammeray Park. These include an artificial turf soccer pitch, skate park and Cammeray Tennis Club. Where available, these facilities have elevated views across the golf course to the north and west. The majority of long distance views are screened or filtered by dense tree planting within the golf course.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Current scenic view with little built form visible in the foreground + The facilities are used for active recreation, with a focus on sport. While an important aspect of their character, the visual amenity of the site is less sensitive to change than an area of comparable passive recreation.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The upper portion of the Western Harbour Tunnel ventilation outlet would likely be visible above the treeline + The upper portion of the Western Harbour Tunnel motorway facilities would likely be visible, partially screened by foreground vegetation + There would likely be a discernible reduction of vegetation within Cammeray Golf Course + The potential operation of Beaches Link and Western Harbour Tunnel motorway facilities in Cammeray Golf Course would slightly increase the scale of development visible from this viewpoint. Cumulative visual impacts are unlikely due to the presence of screening vegetation.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The ventilation outlet and facility would constitute new vertical built form within the viewframe, although the impact would be reduced by the retention of screening vegetation along the boundary of the sports facilities.	There may be a slight discernible increase in the number of light sources visible within the viewframe, associated with the motorway facilities.	Magnitude (construction phase): Moderate A Moderate visual impact is expected during the construction period. Equipment associated with the construction of the motorway facilities and outlet would likely be visible.
		Moderate		Moderate	Low	Moderate
Viewpoint 21 Warringah Freeway near Ernest Street Type Public Distance 1m No. of viewers High	Receivers are motorists traveling north and southbound on the Warringah Freeway. Existing views are dominated by the wide road corridor. Both sides of the road are tree lined in this location, with Cammeray Golf Course forming a green edge to the eastern side of the road.	The sensitivity of these receivers to the project is considered to be Low, due to the following: + As a major road corridor, receivers have a reduced sensitivity to change in the visual scene.	The magnitude of impact arising from the project is considered to be High, due to the following: + The Western Harbour Tunnel motorway facilities, ventilation outlet and ancillary structures would be highly visible from the road corridor (although the duration of view is relatively short) + The Miller Street bridge/overpass structure, proposed noise wall and mainline tunnel portal would also be visible + There would be the discernible reduction of vegetation along the boundary of Cammeray Golf Course + The potential operation of Beaches Link and Western Harbour Tunnel motorway facilities in Cammeray Golf Course would increase the scale of development visible from this viewpoint. Cumulative visual impacts are unlikely due to the viewpoints low sensitivity.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The removal of vegetation along Cammeray Golf Course would be discernible, revealing direct views of the new infrastructure behind. The ventilation outlet would also form a new vertical element within the centre of the road corridor. Despite these changes to the character of the view in this location, the new built form would be mostly congruous within the context of a major road corridor.	Additional night time lighting would be visible but is not expected to impact the visual amenity of road users due to the presence of numerous existing light sources.	Magnitude (construction phase): High A Moderate visual impact is expected during the construction period. Equipment associated with the construction of the ventilation outlet, motorway facilities and other road infrastructure would be clearly visible, as well changed traffic conditions.
		Low		Moderate	Negligible	Moderate



VIEWPOINT 19 - VIEW WEST FROM FOOTPATH RUNNING THROUGH CAMMERAY GOLF COURSE



VIEWPOINT 20 - VIEW SOUTH WEST FROM CAMMERAY PARK SPORTS FACILITIES



VIEWPOINT 21 - VIEW SOUTH TOWARDS CAMMERAY GOLF COURSE FROM WARRINGAH FREEWAY



VIEWPOINT 19 - PANORAMIC VIEW LOOKING SOUTH AND WEST FROM PUBLIC FOOTPATH CROSSING CAMMERAY GOLF COURSE

DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 22 Ernest Street residential TypePrivate Distance150m to Western Harbour Tunnel ventilation outlet No. of viewersLow	This viewpoint is representative of the view available from several residential dwellings along the southern side of Ernest Street, adjacent to Cammeray Golf Course. These dwellings currently have views over Ernest Street towards the golf course. The majority of long distance views are currently screened or filtered by dense tree planting along the golf course boundary.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Large road corridor currently visible within the viewframe although little other built form present. Trees along Cammeray Golf Course currently form a scenic backdrop to the road.	The magnitude of impact arising from the project is considered to be High, due to the following: + Works would require the removal of vegetation along the road, revealing views of the new built form behind + The Western Harbour motorway facilities and associated ancillary facilities are likely to be visible from these dwellings + There would likely be oblique views towards the proposed ventilation outlet adjacent to Ernest Street bridge.	Overall, a Moderate/High visual impact is expected on these receivers once the project is operational. The motorway facilities would constitute a new built form component within the view, adversely impacting the visual amenity of residents. Screen planting would likely reduce this impact considerably over time.	Despite the likely increase in light sources within the viewframe, the presence of existing lighting along the road corridor would reduce the magnitude of any change.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. Site hoardings, temporary noise walls, increased vehicle movements and equipment associated with the construction of the motorway facilities would be visible. There would also be the discernible removal of vegetation along the road boundary.
		Moderate	High	Moderate/High	Low	Moderate/High
Viewpoint 23 Ernest Street bridge TypePublic Distance1m to Western Harbour Tunnel ventilation outlet No. of viewersHigh	Receivers are pedestrians and motorists crossing the northern side of Ernest Street road bridge. Existing views north east take in the Warringah Freeway and the well vegetated edge of Cammeray Golf Course.	The sensitivity of these receivers to the project is considered to be Low, due to the following: + Current view includes major road infrastructure.	The magnitude of impact arising from the project is considered to be High, due to the following: + The Western Harbour Tunnel ventilation outlet would be located adjacent to the bridge and form a highly visible vertical element within the road corridor + The motorway facilities would be clearly visible within the adjacent Cammeray Golf Course + There would likely be a discernible reduction of vegetation within Cammeray Golf Course + The potential operation of Beaches Link and Western Harbour Tunnel motorway facilities in Cammeray Golf Course would increase the scale of development visible from this viewpoint. Cumulative visual impacts are unlikely due to the viewpoints low sensitivity.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. This rating is likely to reduce as planting along the replacement Ernest Street bridge matures.	Additional night time lighting is not expected to impact the visual amenity of road users.	Magnitude (construction phase): High Although there would be major construction activities visible from this viewpoint, an increase in visual impact is not expected due to low viewer sensitivity.
		Low	High	Moderate	Negligible	Moderate
Viewpoint 24 Merlin Street residential TypePrivate Distance1m No. of viewersModerate	Receivers are residents of an apartment block on Merlin Street adjacent to the Warringah Freeway. This building is orientated south with existing views over a small area of grassed open space known as Merlin Reserve. Views to the Warringah Freeway are currently screened by vegetation and a noise wall.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + The current view from these dwellings includes an area of open space and adjacent suburban built form.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + The removal of vegetation in this location would increase the visibility of the Warringah Freeway, reducing the current visual buffer.	Overall, a Moderate visual impact is expected on these receivers once the project is operational. The removal of vegetation along the boundary of Warringah Freeway would reduce the current buffer, increasing the visual exposure to the road corridor, adversely impacting visual amenity. Replacement screen planting would likely reduce this impact over time.	Night time lighting associated with the project is not expected to impact the visual amenity of residents.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period as Merlin Reserve would be utilised as a construction support site. Site hoardings, increased vehicular movements and laydown areas would be directly visible.
		Moderate	Moderate	Moderate	Negligible	Moderate/High



VIEWPOINT 22 - VIEW FROM ERNEST STREET DWELLINGS NORTH TO CAMMERAY GOLF COURSE



VIEWPOINT 23 - VIEW FROM ERNEST STREET BRIDGE TOWARDS CAMMERAY GOLF COURSE



VIEWPOINT 24 - REPRESENTATIVE VIEW FROM MERLIN STREET DWELLINGS OVER MERLIN RESERVE



VIEWPOINT 23 - PANORAMIC VIEW FROM ERNEST STREET BRIDGE TOWARDS CAMMERAY GOLF COURSE



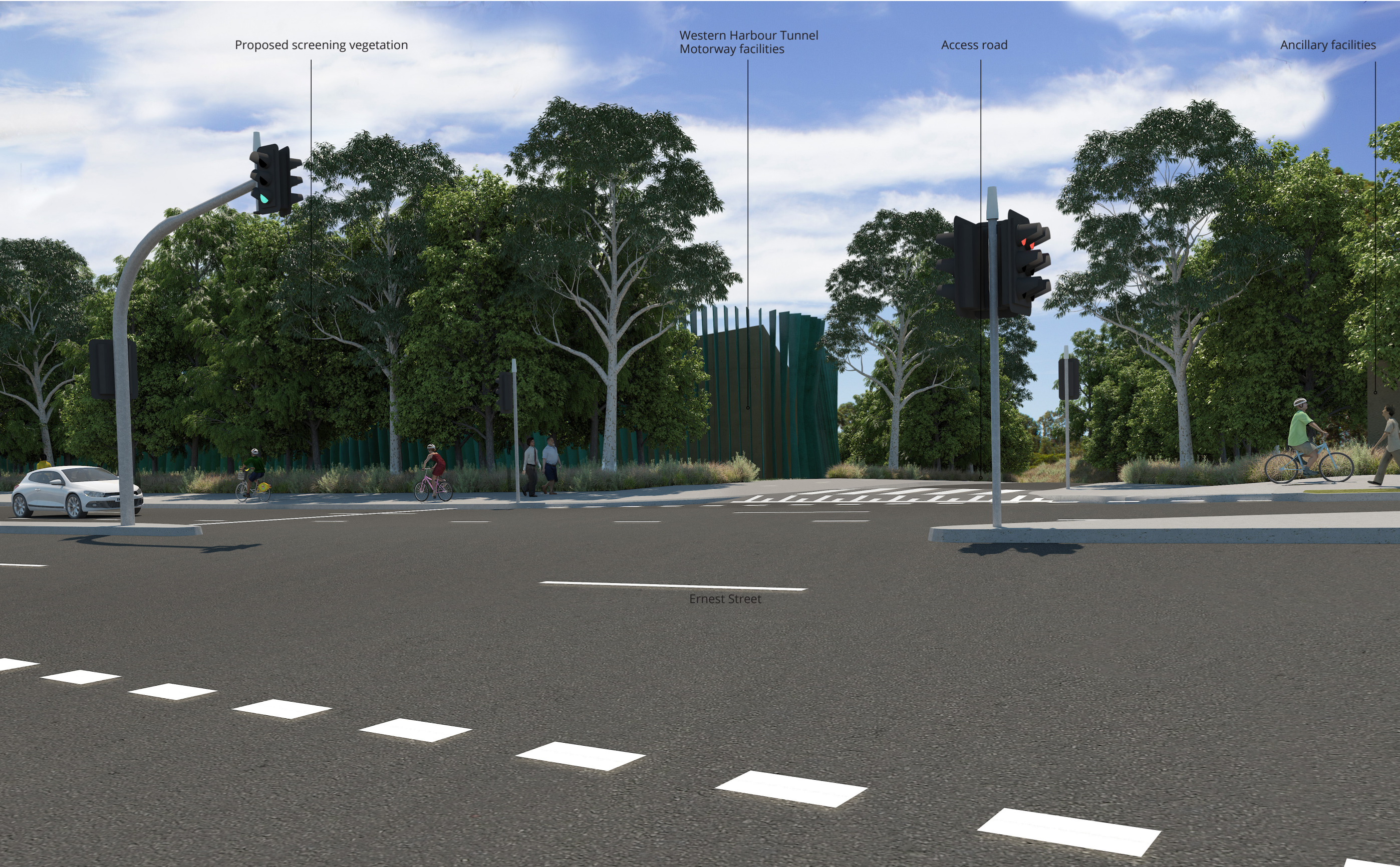
Ernest Street

VIEWPOINT 22 - EXISTING - VIEW FROM ERNEST STREET DWELLINGS NORTH TO CAMMERAY GOLF COURSE



VIEWPOINT 22 - PROPOSED (DAY 1 OF OPERATION) - VIEW FROM ERNEST STREET DWELLINGS NORTH TO CAMMERAY GOLF COURSE

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

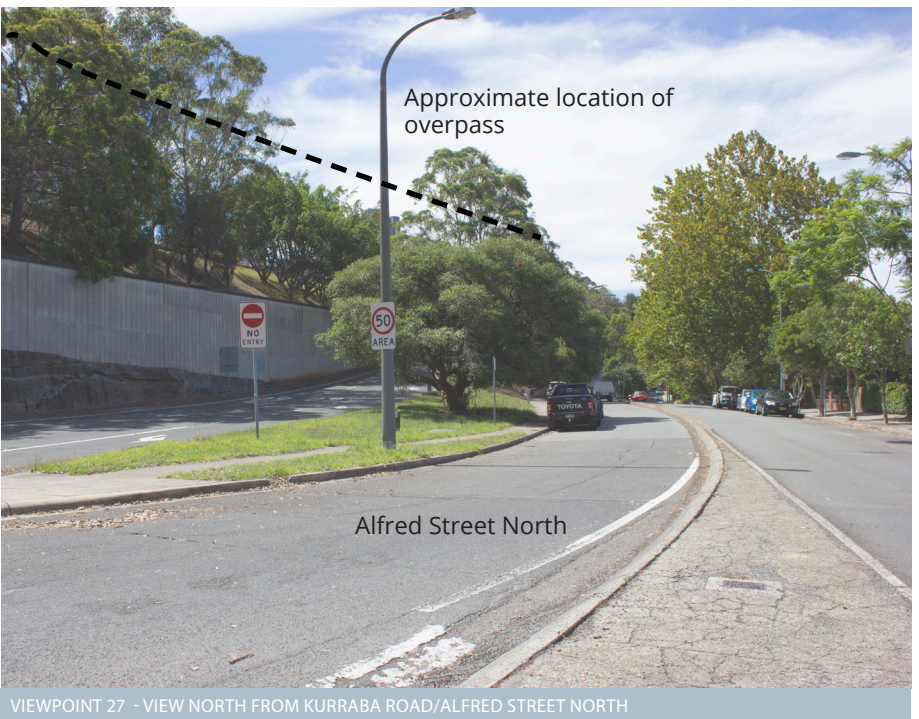
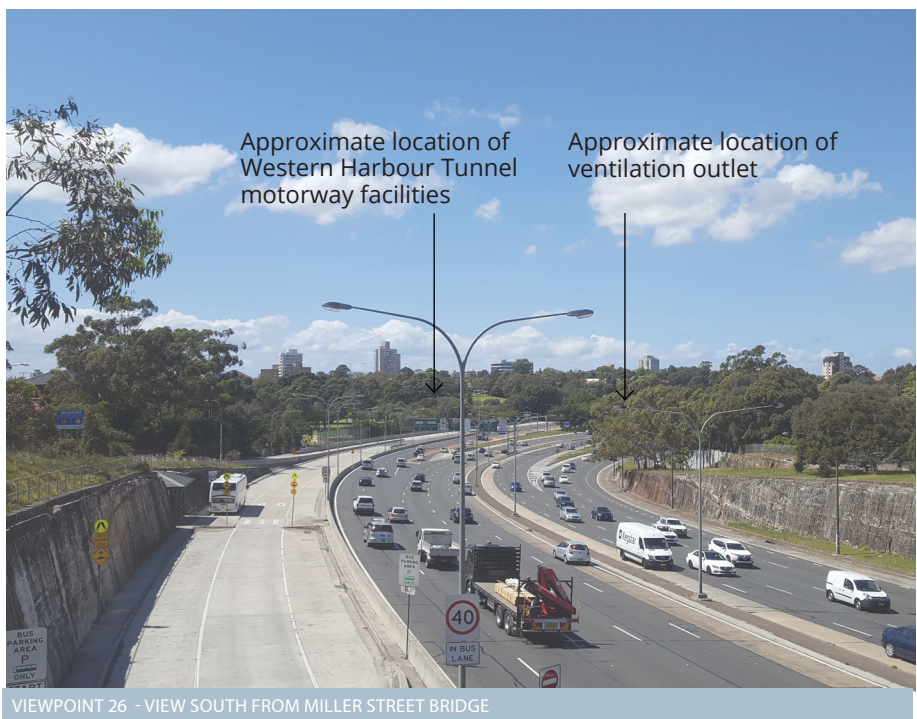
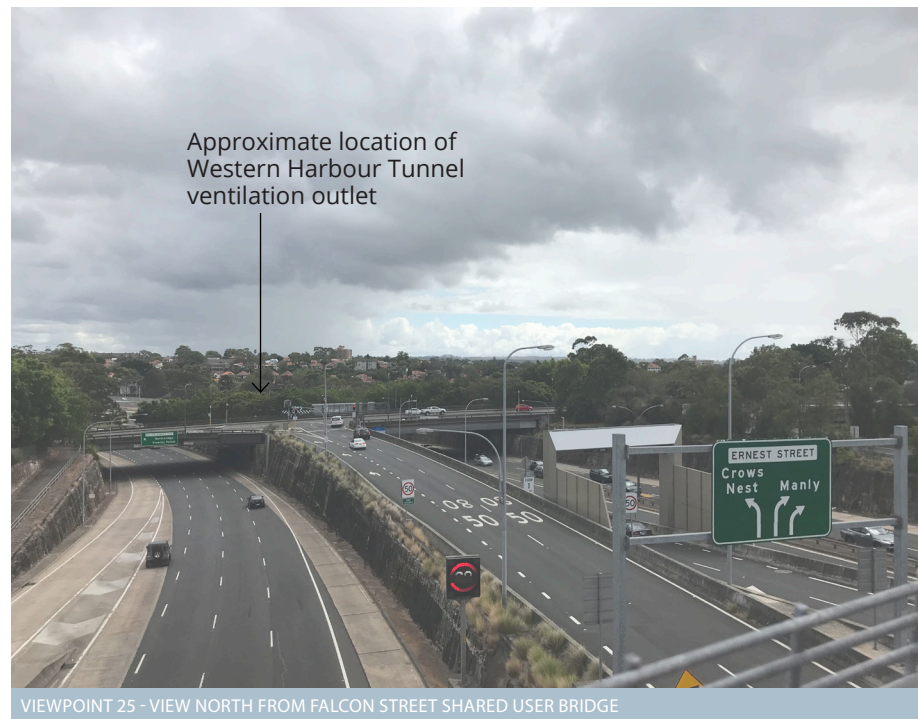


VIEWPOINT 22 - PROPOSED (YEAR 10 OF OPERATION) - VIEW FROM ERNEST STREET DWELLINGS NORTH TO CAMMERAY GOLF COURSE

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

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DESCRIPTION				VISUAL IMPACTS		
Viewpoint	Viewpoint description	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION
Viewpoint 25 Falcon Street shared user bridge Type Public Distance 195m to Western Harbour Tunnel ventilation outlet No. of viewers High	Receivers in this viewpoint are pedestrians and cyclists utilising the Falcon Street shared user bridge. Views are available north and south over the Warringah Freeway. Views north extend across Ernest Street bridge to the vegetated edge of Cammeray Park. The existing bridge would be replaced as part of the project, moving slightly to the north. It is expected that the replacement bridge would be of a similar scale and visual appearance.	The sensitivity of these receivers to the project is considered to be Low, due to the following: + Large road corridor currently visible within the viewframe with view partially obscured by bridge throw screen.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + Views available from the new structure would be very similar to those experienced from the existing bridge + Project works would require the removal of vegetation within Cammeray Golf Course, reducing the green edge currently visible along Warringah Freeway and revealing views of the motorway facilities from the new bridge + The Western Harbour ventilation outlet would be clearly visible from the new bridge and comprise a major new vertical element within the viewframe + The view is experienced in a transient manner.	Overall, a Moderate/Low visual impact is expected on these receivers once the project is operational. Although the proposed works would increase the amount of built form visible, they would generally be congruous with the existing busy road environment.	Additional night time lighting is not expected to impact the visual amenity of bridge users.	Magnitude (construction phase): High A Moderate visual impact is expected during the construction period. Equipment associated with the construction of the ventilation outlet, motorway facilities and Ernest Street shared user bridge would be visible.
		Low	Moderate	Moderate/Low		Moderate
Viewpoint 26 Miller Street bridge Type Public Distance 480m to Western Harbour Tunnel ventilation outlet No. of viewers High	Receivers in this viewpoint are pedestrians, cyclists and motorists utilising the Miller Street bridge. Elevated views are available south over the Warringah Freeway with the densely vegetated edge of Cammeray Golf Course visible in the middle distance.	The sensitivity of these receivers to the project is considered to be Low, due to the following: + Road users with a reduced sensitivity to change in the visual scene + Large road corridor currently visible within the viewframe.	The magnitude of impact arising from the project is considered to be Moderate, due to the following: + Works would require the removal of vegetation within Cammeray Golf Course, reducing the green edge visible along Warringah Freeway + The Western Harbour ventilation outlet and motorway facilities are likely to be clearly visible from the bridge + The Miller Street overpass, proposed noise walls and Western Harbour Tunnel mainline portal structure would be visible within the Warringah Freeway road corridor + View is experienced in a transient manner + The potential operation of Beaches Link and Western Harbour Tunnel motorway facilities in Cammeray Golf Course would increase the scale of development visible from this viewpoint. Cumulative visual impacts are unlikely due to the viewpoints low sensitivity.	Overall, a Moderate/Low visual impact is expected on these receivers once the project is operational. While the view would contain a noticeable increase in built form, the works would be mostly congruous with the existing road environment and a major impact to visual amenity is not expected.	Additional night time lighting is not expected to impact the visual amenity of road users.	Magnitude (construction phase): High A Moderate visual impact is expected during the construction period. Equipment associated with the construction of the ventilation outlet, motorway facilities, portal and Miller Street overpass structure would be visible.
		Low	Moderate	Moderate/Low		Moderate
Viewpoint 27 Kurraba Road/Alfred Street North residential Type Private Distance 10m No. of viewers Moderate	This viewpoint is representative of the view available from dwellings along Alfred Street North in the vicinity of Kurraba Street. These dwellings sit at a slightly lower level than Alfred Street and where available, have views west over the road towards a large retaining wall associated with the Warringah Freeway. The towers of North Sydney are visible behind, partially screened by mature tree planting along the road edge.	The sensitivity of these receivers to the project is considered to be Moderate, due to the following: + Presence of existing large scale infrastructure adjacent to these receivers, although current view softened by mature tree planting along road boundary + It should be noted that fencing, topography and screening vegetation filter or block many views west towards the proposed works.	The magnitude of impact arising on the project is considered to be High, due to the following: + Where visible, the new overpass structure would form a major new elevated element within the viewframe, greater in scale and form than that of the existing road infrastructure + There would be the discernible removal of vegetation alongside the Warringah Freeway corridor, increasing the exposure of this viewpoint to the proposed and existing infrastructure.	Overall, a Moderate/High visual impact is expected on these receivers once the project is operational. Where visible, the overpass would form a major new infrastructure element within the scene. Screening vegetation and high quality urban design of the bridge would likely reduce this impact over time.	Additional night time lighting associated with the overpass may lead to additional night time visual impacts for nearby residential dwellings.	Magnitude (construction phase): High A Moderate/High visual impact is expected during the construction period. Equipment associated with the construction of the overpass would be clearly visible.
		Moderate	High	Moderate/High		Moderate/High





VIEWPOINT 26 - EXISTING - VIEW SOUTH FROM MILLER STREET BRIDGE



VIEWPOINT 26 - PROPOSED (DAY 1 OF OPERATION) - VIEW SOUTH FROM MILLER STREET BRIDGE

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



VIEWPOINT 26 - PROPOSED (YEAR 10 OF OPERATION) - VIEW SOUTH FROM MILLER STREET BRIDGE

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



VIEWPOINT 26 - PROPOSED CUMULATIVE VIEW OF WESTERN HARBOUR TUNNEL AND BEACHES LINK MOTORWAY FACILITIES (YEAR 10 OF OPERATION) - VIEW SOUTH FROM MILLER STREET BRIDGE

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



Alfred Street North

VIEWPOINT 27 - EXISTING - VIEW NORTH FROM KURRABA ROAD/ALFRED STREET NORTH



VIEWPOINT 27 - PROPOSED (DAY 1 OF OPERATION) - VIEW NORTH FROM KURRABA ROAD/ALFRED STREET NORTH

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



VIEWPOINT 27 - PROPOSED (YEAR 10 OF OPERATION) - VIEW NORTH FROM KURRABA ROAD/ALFRED STREET NORTH

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

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North Sydney precinct summary

4.7.22 Key findings

The landscape character and visual impacts of the project on the North Sydney precinct vary across the study area. The following key points have been noted within the assessment (refer Table 4.8 and 4.9):

- + The presence of heritage conservation areas in close proximity to the project works has increased the sensitivity of several viewpoints and LCZs
- + The presence of an existing major infrastructure corridor (Warringah Freeway) within the precinct reduces the magnitude of change associated with some of the project works, as well as the sensitivity of some nearby receivers
- + Landscape character impacts would be largest on directly impacted areas of open space (Camberay Golf Course) as well as residential development in North Cremorne and Neutral Bay that border the proposed infrastructure
- + The Western Harbour Tunnel ventilation outlet and facility would be the most visible elements of the project with visibility above the treeline from several areas within the precinct
- + The largest visual impacts would be experienced by residential and public open space receivers in close proximity to the motorway facilities within Cammeray Golf Course, as well as those that have direct views of the ventilation outlet, motorway facilities and new/replacement bridge structures along Alfred Street North
- + The presence of screening vegetation along the boundary of Cammeray Park assists in filtering or blocking many views of the motorway facilities from street level
- + While the proposed bridge structures and ventilation outlet would be greater in scale and bulk than existing elements within the Warringah Freeway corridor, the majority of works are generally congruous within the context of a major road environment.

4.7.23 Landscape character

Operation Phase

Moderate/High adverse impacts are expected on the landscape character of Cammeray Park, in particular Cammeray Golf Course, due to the introduction of an area of new built form into the park and the consequential reduction in accessible public open space.

Moderate/High impacts are expected on limited sections of the North Cremorne and Neutral Bay residential LCZ that borders the project works. Here the new infrastructure is likely to impact the spatial quality of adjacent streets, especially around the replacement Ridge Street pedestrian bridge and overpass along Alfred Street North.

The project has Moderate and Moderate/Low impacts on the character of limited sections of North Sydney and Cammeray residential areas. The spatial integrity of these LCZs is mostly maintained.

Direct character impacts are limited to the fringes of these LCZs, where vegetation removal would be required, reducing the existing spatial buffer between dwellings and road infrastructure.

Indirect impacts on these LCZs would include views to new built form elements within the surrounding landscape, including the ventilation outlet.

A limited section of St Leonards Park has recorded Moderate impacts due to encroachment on the park by project works and requirement for vegetation removal. Replacement planting would be expected to reduce this impact over time.

The character of the North Sydney CBD and Warringah Freeway corridor are unlikely to be adversely impacted by the project due to their lower sensitivity to change and greater ability to absorb built form without detrimental impact.

Construction Phase

Impacts on landscape character are likely to temporarily increase for the majority of LCZs within the precinct. There would be visibility of construction equipment, altered traffic conditions, increased vehicular movements and construction of major structures such as the proposed bridges, motorway facilities and outlet. These are likely to lead to a temporary greater exposure to built form and reduction in landscape character amenity.

4.7.24 Visual impact

Operation Phase

The largest visual impacts of the project in the North Sydney precinct (High and Moderate/High) are expected on residential and public open space receivers with clear views of project elements. These include:

- + Dwellings along Alfred Street North with direct views of the new Ridge Street shared user bridge ramp and overpass structure (viewpoints 5 and 27)
- + Elevated towers adjacent to Jeaffreson Jackson Reserve (viewpoint 9)
- + Open space receivers with clear views of the ventilation outlet (viewpoints 9 and 10)
- + Residential dwellings along Ernest Street with views towards Cammeray park (viewpoint 22).

The Western Harbour Tunnel motorway facilities and ventilation outlet have the greatest potential for causing adverse visual impacts. This is due to the large magnitude of change (with a current lack of built form in Cammeray Park) and the tall nature of the ventilation outlet.

Although some dwellings along Carter and Morden Streets have elevated view corridors over Cammeray Park, the presence of retained foreground vegetation would likely assist in reducing the amount of proposed built form visible within the park. Views of the upper sections of the motorway facilities and outlet are likely above the treeline.

The impact on these more distant, district views of the ventilation outlet would be somewhat reduced by the panoramic nature of the view and presence of existing vertical elements within the viewframe, including the North Sydney sewer outlet, nearby residential towers and tall CBD buildings.

The presence of existing major infrastructure within the viewframe of many receivers (in the form of the Warringah Freeway) has lowered their visual sensitivity and the magnitude of change associated with the project.

The retention of screening vegetation along the boundary of Cammeray Park would also be crucial in reducing the visual impacts of the proposed built form from street level viewpoints.

Construction Phase

Visual impacts are expected to temporarily increase for the majority of viewpoints during the construction phase of the project.

This is due to the increased project footprint in areas adjacent to the road corridor including Cammeray Park, ANZAC Park, High Street, Cammeray Avenue, Rosalind Street, Merlin Street and Alfred Street North.

There are expected to be views of site hoardings, stockpiles, temporary noise walls, construction equipment and increased vehicular movements as well as prominent night lighting.

Construction of the replacement Ridge Street shared user bridge and ramp would be particularly noticeable from dwellings along Alfred Street North.

The removal of vegetation during the construction phase is likely to increase visibility of both existing and proposed infrastructure such as noise walls. The planting of replacement screening vegetation would be key to reducing these impacts over time.

While construction activities are likely to be visible within the Warringah Freeway itself, major adverse visual impacts are not expected on road users due to the functional nature of the road and the reduced level of receiver sensitivity.

Night lighting

While the project would likely lead to a slight increase in night time light emissions, the majority of receiver's 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 change would be mostly low.

Exceptions include receivers with views into Cammeray Park and residential dwellings with views of the replacement Ridge Street shared user bridge and overpass in the vicinity of Kururaba Road/Alfred Street North.

These areas are likely to be Moderately impacted by an increased light emittance associated with the new infrastructure, in locations with previously low light levels.

4.7.25 Cumulative impact

The Beaches Link and Gore Hill Freeway Connection project may be constructed at a similar time to the Western Harbour Tunnel and Warringah Freeway Upgrade. The operation of both projects together would likely lead to some limited cumulative visual impacts, associated with the increased built form within Cammeray Park.

Impact ratings are expected to increase for viewpoints 18 and 19 (Camberay golf course) which are in close proximity to the buildings.

The Beaches Link motorway facilities would increase the bulk and scale of development within the parklands, discernible to nearby viewpoints including users of Cammeray golf course, as well as motorists on the Warringah Freeway, users of Jeaffreson Jackson Reserve and nearby residential dwellings.

A considered architectural treatment of the Beaches Link motorway facilities to compliment the adjacent Western Harbour Tunnel facilities would ensure that the two buildings form a visually cohesive unit and limit the magnitude of cumulative impacts.

The additional Beaches Link portal and tunnel works within the Warringah Freeway are unlikely to cause cumulative impacts as they would be mostly congruous within the existing busy road environment.

DESCRIPTION			LANDSCAPE IMPACT		LANDSCAPE IMPACT
Landscape Character Zone	Sensitivity	Magnitude (operation phase)	OPERATION		CONSTRUCTION
Warringah Freeway corridor	Low	Low	Low		Moderate
North Sydney CBD	Moderate	Low	Moderate/Low		Moderate
North Sydney residential	Moderate	Low	Moderate/Low		Moderate
St Leonards Park and Walker/Ridge Street residential	High	Low	Moderate		Moderate
Cammeray residential	High	Low	Moderate		Moderate/High
North Cremorne and Neutral Bay residential	High	Moderate	Moderate/High		High
Cammeray Park open space	Moderate	High	Moderate/High		Moderate/High

TABLE 4.8 - NORTH SYDNEY PRECINCT - LANDSCAPE CHARACTER IMPACT SUMMARY TABLE

DESCRIPTION					VISUAL IMPACTS - WESTERN HARBOUR TUNNEL AND WARRINGAH FREEWAY UPGRADE			BEACHES LINK
No.	Viewpoint	Type	Sensitivity	Magnitude (operation phase)	OPERATION	OPERATION - NIGHT	CONSTRUCTION	OPERATION - CUMULATIVE
1	North Sydney commercial	Private	Moderate	Negligible	Negligible	Negligible	Negligible	NA
2	High Street residential	Private	Moderate	Moderate	Moderate	Low	Moderate/High	NA
3	High Street road corridor	Public	Low	Moderate	Moderate/Low	Negligible	Moderate	NA
4	Ridge Street lookout	Public	High	Moderate	Moderate/High	Negligible	High	NA
5	Alfred Street North residential	Private	High	High	High	Moderate	High	NA
6	Warringah Freeway corridor near Ridge Street	Public	Low	Low	Low	Negligible	Moderate/Low	NA
7	St Leonards Park - Bon Andrews Oval	Public Public	High	Negligible	Negligible	Negligible	Negligible	NA
8	Falcon/Miller Street intersection	Public	High	Negligible	Negligible	Negligible	Moderate	NA
9	Jeaffreson Jackson Reserve and nearby residential	Public/Private	Moderate	High	Moderate/High	Low	Moderate/High	NA
10	ANZAC Park	Public	Moderate	High	Moderate/High	Negligible	Moderate/High	NA
11	Cammeray Avenue residential	Private	Moderate	Moderate	Moderate	Low	Moderate/High	NA
12	Rosalind Street residential	Private	Moderate	Moderate	Moderate	Low	Moderate/High	NA
13	Morden Street residential	Private	High	Low	Moderate	Low	Moderate/High	NA
14	Warringa Road residential	Private	Moderate	Moderate	Moderate	Moderate	Moderate/High	NA
15	Carter Street lookout	Public/Private	High	Low	Moderate	Low	Moderate	NA
16	Green Park open space and Warwick Avenue residential	Public/Private	Moderate	Low	Moderate/Low	Low	Moderate	NA
17	Park Avenue residential	Private	High	Negligible	Negligible	Low	Negligible	NA
18	Cammeray Golf Course club house	Public/Private	Moderate	Moderate	Moderate	Moderate	Moderate/High	Moderate/High
19	Cammeray Golf Course footpath	Public	Moderate	Moderate	Moderate	Moderate	Moderate/High	Moderate/High
20	Cammeray Park sports facilities	Public/Private	Moderate	Moderate	Moderate	Low	Moderate	NA
21	Warringah Freeway near Ernest Street	Public	Low	High	Moderate	Negligible	Moderate	NA
22	Ernest Street residential	Private	Moderate	High	Moderate/High	Low	Moderate/High	NA
23	Ernest Street bridge	Public	Low	High	Moderate	Negligible	Moderate	NA
24	Merlin Street residential	Private	Moderate	Moderate	Moderate	Negligible	Moderate/High	NA
25	Falcon Street shared user bridge	Public	Low	Moderate	Moderate/Low	Negligible	Moderate	NA
26	Miller Street bridge	Public	Low	Moderate	Moderate/Low	Negligible	Moderate	NA
27	Kurraba Road/Alfred Street North residential	Public	Moderate	High	Moderate/High	Moderate	Moderate/High	NA

TABLE 4.9 - NORTH SYDNEY PRECINCT - VISUAL IMPACT SUMMARY TABLE

