Chapter 22

Urban design and visual amenity

January 2020

22 Urban design and visual amenity

This chapter provides an assessment of the urban design, landscape character and visual amenity impacts of the project. A detailed urban design, visual and landscape character impact assessment has been prepared for the project and is provided in Appendix V (Technical working paper: Urban design, landscape character and visual impact).

The Secretary's environmental assessment requirements as they relate to urban design, visual amenity and landscape, and where in the environmental impact statement these have been addressed, are detailed in Table 22-1.

The proposed environmental management measures relevant to urban design and visual amenity are included in Section 22.7.

Table 22-1 Secretary's environmental assessment requirements – Urban design, visual amenity and landscape

Secretary's requirement	Where addressed in the EIS
Placemaking and urban design (visual amenity requirements)	
1. The Proponent must identify how functional 'place' outcomes of public benefit would be achieved, including design principles and strategies that: a. Consider areas identified for future urban renewal b. Capitalise on reduced traffic volumes and the reduction of traffic permeation, particularly in and around commercial and community centres c. Avoid location infrastructure, including ancillary facilities adjoining residential areas and other sensitive receivers, and justify where this cannot be achieved d. Achieve high quality landscaping, streetscaping, architecture and design e. Identify urban design strategies and opportunities that would enhance healthy, cohesive and inclusive communities, including in relation to accessibility and connectivity f. Consider resulting residual land treatments, and demonstrate how the proposed hard and soft urban design elements of the proposal would be consistent with the existing and desired future character of the area traversed or affected by the proposal g. Identify opportunities to utilise surplus or residual land, particularly for the provision of community space (passive and recreational) and utilise key structures (such as ventilation outlets) for multiple	**Chapter 22 (Urban design and visual amenity)** provides the high level principles that cover the project's potential as a driver for how functional 'place' outcomes of public benefit would be achieved (in respect to points a – h) and are outlined in **Section 22.3** of this chapter and **Appendix V** (Technical working paper: Urban design, landscape character and visual impact). Justification for the location of ancillary facilities is provided in **Chapter 4** (Project development and alternatives) and Chapter 5 (Project description and alternatives) and **Chapter 5** (Project description).

Secretary's requirement	Where addressed in the EIS
uses (i.e. integration with other structures) h. Explore the use of Crime Prevention Through Environmental Design (CPTED) principles during the design development process, including natural surveillance, lighting, walkways, signage and landscape.	
2. The Proponent must describe the accessibility elements of the proposal including relevant accessibility legislation and guidelines, including: a. Impacts on public transport infrastructure and services; b. Impacts on pedestrian and cyclist access and safety across and adjoining the proposal c. Opportunities to integrate and enhance accessibility including the provisions public and active transport infrastructure as a result of the proposal.	A high-level outline of legislation and guidelines relevant to the project and its possible visual amenity and landscape impacts is presented in **Section 22.1** of this chapter, while accessibility and transport related issues are outlined in **Chapter 8** (Construction traffic and transport) and **Chapter 9** (Operational traffic and transport).
3. The Proponent must assess the visual and landscape impacts of the proposal, including ancillary infrastructure on: a. Views and vistas b. Streetscapes, key sites and buildings c. Landscaping, green spaces and existing tree canopy including an assessment of likely magnitude of impacts to trees and need for removal to be undertaken by an arborist including the provision of measures to minimise and offset impacts d. Heritage items Aboriginal places, environmental heritage and areas of heritage sensitivity e. The local community.	The visual and landscape impacts of the proposal, including associated ancillary infrastructure (in respect to points a, b, d, and e), associated with construction and operation are outlined in **Section 22.5** and **Section 22.6** of this chapter respectively. The potential removal of trees and likely magnitude of impacts to trees is assessed in **Appendix W** (Technical working paper: Arboricultural impact assessment).
4. The Proponent must provide artist impressions and perspective drawings of the proposal from key receiver locations to illustrate the proposal and its visual impacts.	Appropriate impressions and perspective drawings of the proposal from key receiver locations are provided in **Section 22.6**.

22.1 Legislative and policy framework

An urban design framework (refer to Appendix V (Technical working paper: Urban design, landscape character and visual impact)) has been prepared with reference to the urban design principles in *Beyond the Pavement* (Roads and Maritime, 2014b). A design review panel has been established for the project to provide independent review and advice throughout the design development. *Better Placed* (NSW Government Architect, 2017), other Transport for NSW design and biodiversity guidelines and local government planning documents, such as local environmental plans and development control plans, have also been considered in the preparation of the urban design framework.

The landscape character and visual impact assessment has also considered relevant local environment plans, development control plans, and regional planning documents. A full list of the local environment plans, development control plans, regional planning documents, as well as guidelines relating to landscape character and visual impact assessment are provided in Appendix V (Technical working paper: Urban design, landscape character and visual impact).

22.2 Urban design framework

Transport for NSW has developed a strategic urban design framework for the Western Harbour Tunnel and Warringah Freeway Upgrade project to inform the urban design and establish benchmarks for achieving a well-planned and integrated road alignment through a high-quality urban design response. The urban design framework is provided in Appendix V (Technical working paper: Urban design, landscape character and visual impact). The framework has been informed by the urban design policy, *Beyond the Pavement* (Roads and Maritime, 2014b).

22.2.1 Urban design vision and objectives

As outlined in Appendix V (Technical working paper: Urban design, landscape character and visual impact) the urban design vision for the project is to “provide a distinctive motorway experience, through a series of undulating subterranean journeys and to provide an experience that connects across Parramatta River to the urban centre of North Sydney and on towards the northern suburbs. It is a transition between tunnel and surface environments, a connection across the Harbour and a link from the city to the suburbs. It would provide enhanced green connections and allow local places to return to local communities”.

To help achieve this urban design vision, urban design objectives and the desired outcome for each objective have been established to guide the urban design process, provided in Table 22-2.

Table 22-2 Urban design objectives

Objective	Desired outcome
Identity and user experience	Develop a theme that references Sydney’s unique geography and place to provide a user experience that enhances the journey, encourages awareness of the living environment, enables orientation and enhances safety.
Integrated design	Provide an integrated urban design approach to join Western Harbour Tunnel and the Warringah Freeway Upgrade project to surrounding urban and landscape interfaces.
Connectivity and legibility	Provide connectivity between areas beyond the boundaries of the motorway corridor and promote increased legibility of buildings, streets and landmarks.

Objective	Desired outcome
Urban renewal and liveability	Unlock potential for urban regeneration, landscape improvements and active transport upgrades along the project corridor. These urban renewal opportunities would provide high levels of urban amenity and liveability.
Living environments	Ensure the design, planning, construction and management of the project responds to the living environment. Infrastructure interventions would reflect a natural systems approach which is responsive to the environment and promotes the highest levels of sustainability.
Sustainability	Embed sustainability considerations into the design and delivery of the project to minimise environmental and social impacts while delivering positive economic outcomes for the people of NSW.

22.2.2 Urban design requirements

The urban design requirements of the project have been informed by the urban design vision and objectives and encompass the requirements for the spatial and functional design of the urban and public domain, and the built elements of the project. The architectural treatments for the tunnels, surface connections and other operational infrastructure would be guided by the urban design requirements and finalised during further design development of the project.

Experience and function

Good urban design has the ability to connect communities and provide a positive experience for users. Design principles for spatial and functional design of the project, and the relevant urban design objectives that these would address, are provided in the urban design framework in Appendix V (Technical working paper: Urban design, landscape character and visual impact).

Urban elements

The built elements of the project would contribute to creating desirable public spaces by providing a high-quality experience for users. Table 22-3 outlines the principles for designing the urban elements of the project. Further detail, including the proposed approach to achieving these principles, is provided in the urban design framework in Appendix V (Technical working paper: Urban design, landscape character and visual impact). These principles, including specific CPTED principles, would be further developed during the further design development stage of the project.

Table 22-3 Principles for designing urban elements of the project

Urban elements	Design principle	Relevant urban design objective
Earthworks	Visually integrate earthworks into their landscape setting as much as possible, keeping engineered structures to a minimum.	• Urban renewal and liveability • Integrated design • Living environments • Sustainability.
Noise walls	Visually integrate noise walls into the road corridor and urban/landscape setting as part of a coordinated whole-of-corridor design.	• Identity and user experience • Integrated design • Sustainability.

Urban elements	Design principle	Relevant urban design objective
Retaining walls	Visually integrate retaining walls into the road corridor and urban/landscape setting as part of a coordinated whole-of-corridor design.	• Identity and user experience • Integrated design • Connectivity and legibility • Living environments.
Mainline tunnels and ramps	Deliver tunnels that make a positive contribution to the journey experience through intuitive wayfinding and a varied and stimulating driver environment.	• Identity and user experience • Integrated design • Connectivity and legibility.
Tunnel portals and dive structures	Deliver portals and dive structures that are visually appealing, sensitive to their context, reflect the above ground environment and provide a legible, self-explaining journey which enables awareness of location.	• Identity and user experience • Integrated design • Connectivity and legibility • Living environments.
Motorway facilities, vent outlets and motorway control centres	Minimise the physical footprint and visual impact of these structures whilst ensuring they are designed as high quality pieces of well-integrated architecture.	• Identity and user experience • Integrated design • Connectivity and legibility • Sustainability.
Road bridges	Deliver elegant road bridges that integrate all architectural and engineering systems requirements whilst minimising visual impacts.	• Identity and user experience • Urban renewal and liveability • Integrated design • Connectivity and legibility • Sustainability.
Shared use bridges	Deliver well designed and attractive pedestrian bridges that provide safe access for all pedestrians and cyclists.	• Identity and user experience • Urban renewal and liveability • Integrated design • Connectivity and legibility • Sustainability.
Landscape treatments	Provide new and reinstated landscapes that are appropriate to the local conditions, consistent with the existing varied character of the project, provide opportunities to increase canopy cover wherever possible and provides improved public realm amenity.	• Identity and user experience • Urban renewal and liveability • Integrated design • Living environments • Sustainability.
Materials and finishes	Deliver a road corridor and associated infrastructure/public domain that presents a consistent palette of high quality materials representative of the project image and local context.	• Identity and user experience • Urban renewal and liveability • Integrated design • Sustainability.

Urban elements	Design principle	Relevant urban design objective
Safety in design and crime prevention through environmental design (CPTED)	Provide a corridor that allows all users, including motorists, pedestrians, cyclists and maintenance and management people to manage a safe and responsive journey.	• Urban renewal and liveability • Integrated design.

Illustrations of architectural treatments and urban design proposed for surface connections and other operational infrastructure associated with the project have been outlined within concept masterplans as presented below in Figure 22-1 to Figure 22-4 and in Appendix V (Technical working paper: Urban design, landscape character and visual impact).

Figure 22-1 Artarmon precinct – concept masterplan

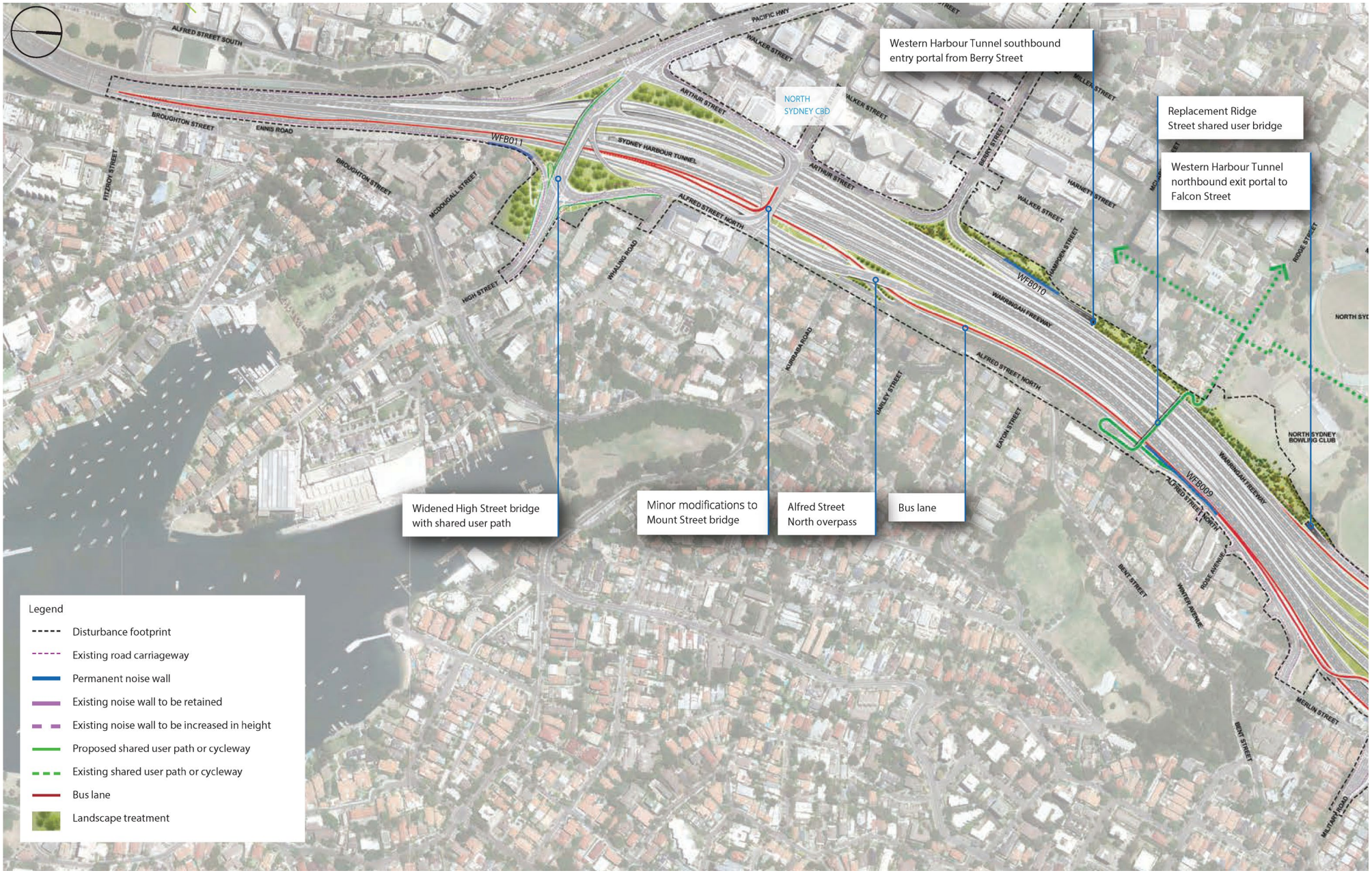


Figure 22-2 Warringah Freeway Upgrade concept masterplan – part one

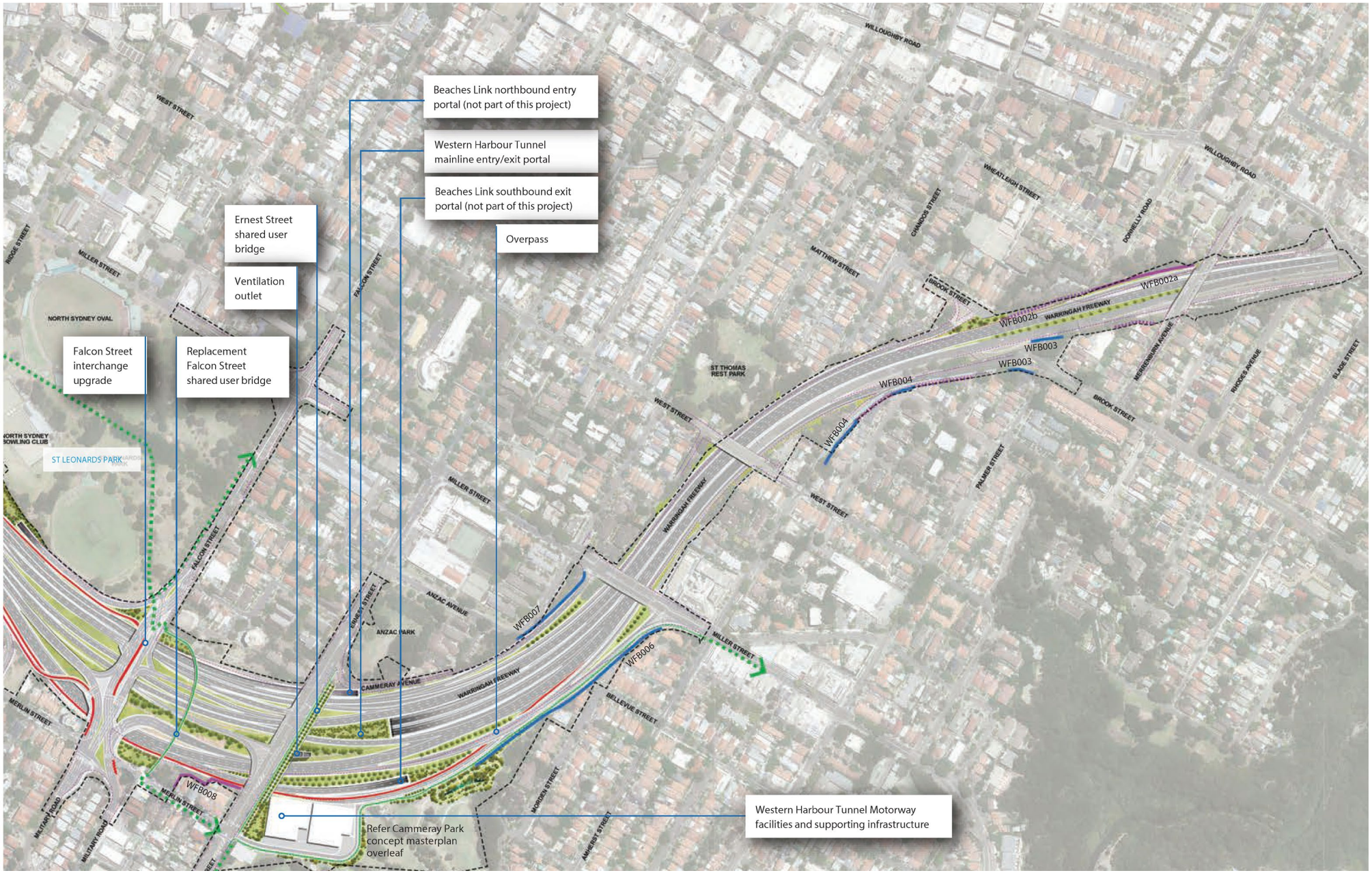


Figure 22-3 Warringah Freeway Upgrade concept masterplan – part two

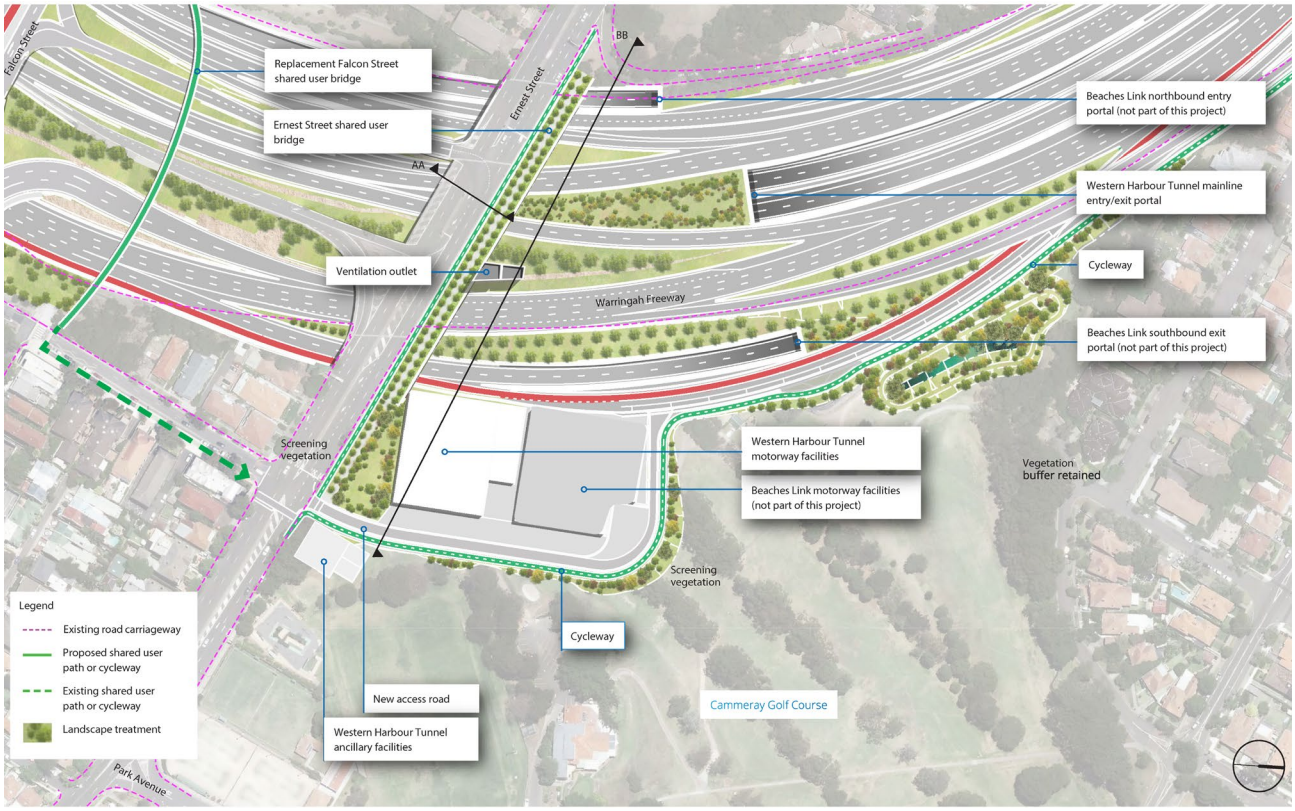


Figure 22-4 Cammeray Park – concept masterplan

22.3 Assessment methodology

The landscape character and visual impact assessment presented in this chapter has been carried out in accordance with Environmental Impact Assessment Practice Note – *Guidelines for Landscape Character and Visual Impact Assessment* (Roads and Maritime, 2013c).

Assessment of the impacts on landscape character involves an understanding of the built, natural and cultural character or sense of place. Assessment of visual impacts relates to the impacts of the project on public and private views on a day to day basis.

The assessment methodology involved:

- A desktop assessment including:
  - Consideration of relevant legislation and policy requirements
  - Review of the landscape context and study area
  - Determination of sensitive receiver locations and potential viewpoints
- Surveys of the study area to confirm significant landforms and potential viewpoints
- Assessment of potential landscape character and visual impacts (including cumulative impacts)
- Identification of environmental management measures to mitigate potential impacts.

22.3.1 Landscape character impact assessment

To assess the impacts on landscape character, landscape character zones (LCZ) were determined for the study area, particularly within the distinct precincts that have been identified within the study area (see Section 22.4 for more information). Landscape character zones are defined as areas having a distinct, recognisable and consistent pattern of elements, including natural elements (eg soil, vegetation, landform) and/or human built form, making one landscape different from another.

22.3.2 Visual impact assessment

Representative viewpoints with the potential to be visually impacted by elements of the project were identified for further analysis. Viewpoints were selected to show:

- A range of receptor types including public and private domain views (including residents, motorists and users of public open space)
- A range of view types including elevated, panoramic and filtered views
- A range of viewing distance from the project
- Key or protected views identified in planning documents.

Viewpoints have been assessed for both the construction and operational stages of the project, as well as potential night time impacts.

As part of the operational visual impact assessment, the zone of visual influence of proposed ventilation outlets has been assessed to identify areas from which these built form elements of the project would be potentially visible. This assessment takes into account topography and built form but excludes natural landscape features above ground level that would affect visibility such as trees, hedgerows or fences. Therefore, the zone of visual influence included as part of this assessment provides a worst-case scenario.

22.3.3 Landscape character and visual impact rating

Landscape character and visual impacts were measured by completing a sensitivity analysis of existing landscape character zones and views, and assessing the magnitude of change on those zones and views.

Sensitivity and magnitude ratings are applied according to the landscape character and visual impact rating matrix specified in the Environmental Impact Assessment Practice Note – *Guidelines for Landscape Character and Visual Impact Assessment* (Roads and Maritime, 2013c), shown in Table 22-4.

Table 22-4 Landscape character and visual impact rating matrix

Landscape character and visual impact	**Magnitude of change**				
		High	**Moderate**	**Low**	**Negligible**
Sensitivity of receivers	**High**	High	High – moderate	Moderate	Negligible
	Moderate	High – moderate	Moderate	Moderate–low	Negligible
	Low	Moderate	Moderate–low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Source: Roads and Maritime (2013c)

Landscape character and visual impact ratings represent the potential impact of the project before the environmental management measures outlined in Section 22.7 have been applied. Potential landscape character and visual impact would be reduced by the application of environmental management measures.

22.3.4 Night lighting impact assessment

A broad assessment of the impacts of night lighting during both the construction and operation of the project was carried out by applying the methodology for assessment of visual impacts as described in Section 22.3.2 above. Key visual receivers have been separately assessed and include neighbouring residential properties, users of recreational space and motorists in local streets.

The assessment of night lighting impacts is based on assumptions as to the types and extent of lighting likely to be installed for both the construction and operation phases consistent with applicable guidelines.

22.4 Existing environment

Visibility of the project would largely be determined by the surrounding topography, vegetation and the existing built environment. The project crosses areas with varied local context, differing built form elements, unique natural characteristics and various land use zones.

Three distinct precincts have been identified, which have associated surface connections, operational facilities and a number of construction support sites, as described further in Section 22.4.1 below:

- Rozelle precinct
- North Sydney precinct
- Artarmon precinct.

Additionally, there are six construction support sites outside of the three precincts which form part of the analysis:

- Victoria Road construction support site (WHT2)
- White Bay construction support site (WHT3)
- Yurulbin Park construction support site (WHT4)
- Sydney Harbour south cofferdam (WHT5)
- Sydney Harbour north cofferdam (WHT6)
- Berrys Bay construction support site (WHT7)
- Ridge Street north construction support site (WHT9).

The landscape character and existing visual environment of the project within each of the precincts and construction support sites are discussed below.

22.4.1 Precincts

Rozelle precinct

Landscape character

The Rozelle precinct has an industrial character associated with working maritime foreshore activities to the east and the abandoned White Bay Power Station to the west. This area is planned for future redevelopment as part of the Bays Precinct.

Residential developments are located to the north and south of the project and include a mixture of housing types.

Rozelle Bay is a major element within the precinct and provides a foreshore edge with an open character to much of the eastern and southern sections of the precinct.

Despite the large-scale infrastructure and industrial land uses within the area, the precinct also has some well vegetated streetscapes, including mature tree plantings along both edges of Victoria Road and The Crescent.

Landscape character zones identified within the Rozelle precinct are shown in Figure 22-5 and comprise the following:

- LCZ 1 – Easton Park residential
- LCZ 2 – Rozelle Rail Yards
- LCZ 3 – Transport corridors.

Visual environment

The Rozelle precinct is dominated by major transport infrastructure including the corridors of City West Link and The Crescent.

Rozelle Bay forms a highly visible element of the eastern side of the precinct with extensive views from the road corridor across the water towards the city skyline. Travelling north, the ANZAC Bridge forms an iconic gateway marker to the city.

In addition to Rozelle Bay, the visual environment of the rest of the precinct comprises concentrated residential (Easton Park residential) or commercial/industrial (Rozelle Rail Yards) development which offer little in the way of visual amenity.

Viewpoints selected for the Rozelle precinct are shown in Figure 22-5 below and comprise the following:

- Viewpoint 1 – Easton Park
- Viewpoint 2 – Dwellings off Lilyfield Road
- Viewpoint 3 – The Crescent
- Viewpoint 4 – The Crescent/City West Link intersection.

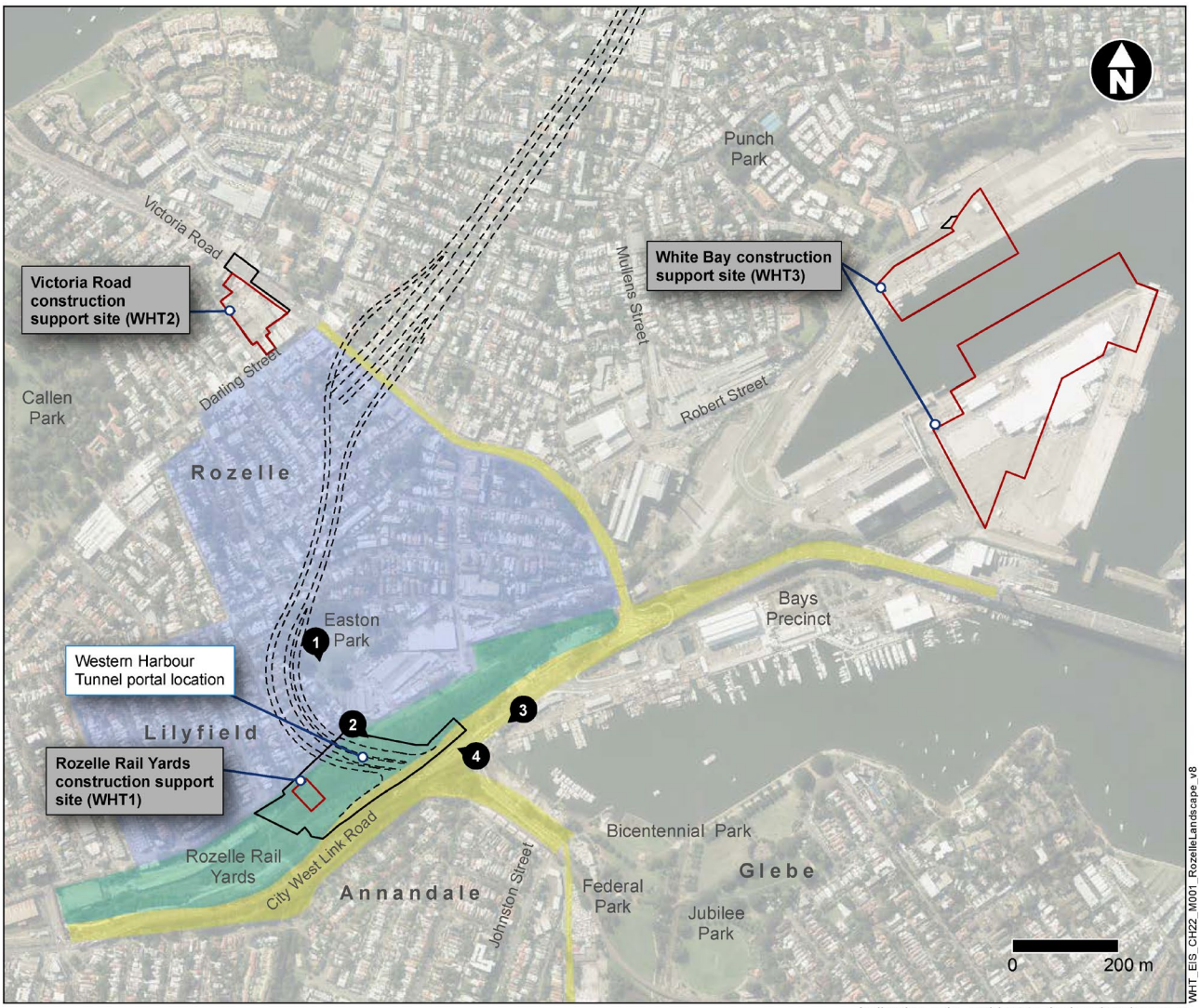


Figure 22-5 Rozelle precinct landscape character zones and viewpoints

North Sydney precinct

Landscape character

The North Sydney precinct is centred around the North Sydney CBD commercial hub, interspersed with a mix of residential land uses and areas of open space.

The precinct is located on the ridge of the Mosman peninsula, with steep slopes to the waterfront to the north and south respectively.

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

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

The precinct also contains high quality but fragmented open space, including St Leonards Park with its heritage listed landscape and oval, Cammeray Golf Course and nearby oval, ANZAC Park

and Jeaffreson Jackson Reserve. These open, leafy parkland areas provide green spaces along the Warringah Freeway road corridor, Ernest Street and Falcon Street.

Landscape character zones identified within the North Sydney precinct are shown in Figure 22-6 and comprise the following:

- LCZ 1 – Warringah Freeway corridor
- LCZ 2 – North Sydney CBD
- LCZ 3 – North Sydney residential
- LCZ 4 – St Leonards Park and Walker/Ridge Street residential
- LCZ 5 – Cammeray residential (including nearby open space)
- LCZ 6 – North Cremorne and Neutral Bay residential
- LCZ 7 – Cammeray Park open space.

Visual environment

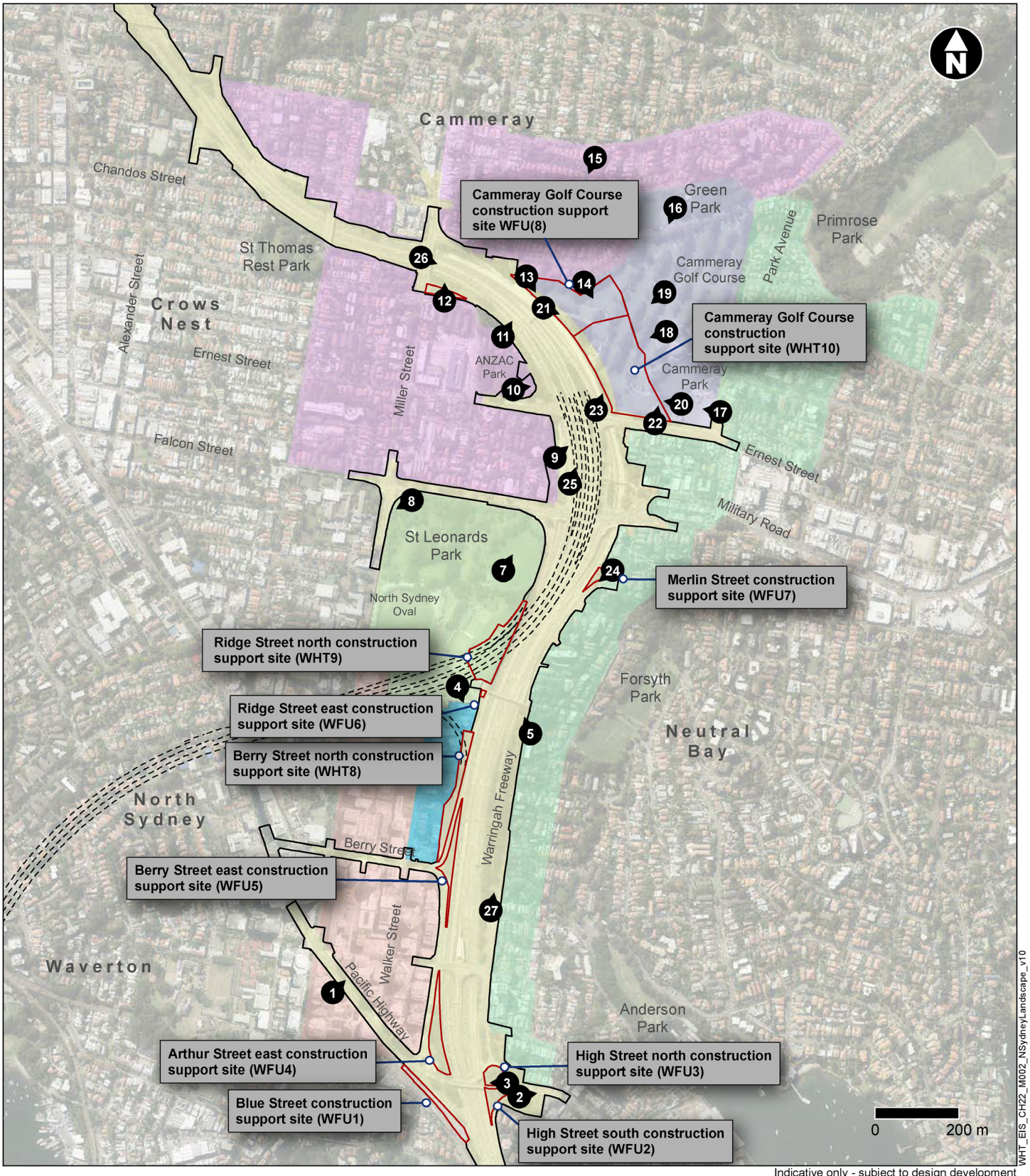
The visual character of North Sydney precinct is defined by its elevated topography, major infrastructure and built form. North Sydney CBD forms a visible western edge to the precinct with large towers rising above the Warringah Freeway.

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 creating a memorable arrival experience for southbound motorists.

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

Twenty seven viewpoints have been selected for the North Sydney precinct and are shown in Figure 22-6 below.



Indicative only - subject to design development

Legend

Construction features

- Construction footprint
- Construction support site
- Tunnel section

Landscape character zones

- Cammeray Park open space
- Cammeray residential
- North Cremorne and Neutral Bay residential
- North Sydney CBD
- North Sydney residential
- St Leonards Park and Walker/Ridge Street residential
- Warringah Freeway corridor
- Viewpoint and direction

Figure 22-6 North Sydney landscape character zones and viewpoints

Artarmon precinct

Landscape character

The Artarmon precinct is divided by the Gore Hill Freeway which cuts through the precinct in an east/west direction. Despite significant urban development surrounding the road, the Gore Hill Freeway has a noticeable green edge.

Northern sections of the precinct are comprised mostly of residential streetscapes with a well-vegetated character including numerous mature street trees.

The south of the precinct comprises large industrial lots with a mix of single and double storey warehouses, including a portion of the Artarmon/St Leonards industrial area.

The undulating topography of the precinct is a distinctive feature of the area. Densely vegetated valleys and gullies traverse the precinct, including Bicentennial Reserve and Artarmon Reserve.

Landscape character zones identified within the Artarmon precinct are shown in Figure 22-7 below and comprise the following:

- LCZ 1 – Artarmon industrial/commercial area
- LCZ 2 – Waltham Street road corridor
- LCZ 3 – Gore Hill Freeway.

Visual environment

The visual character of the Artarmon precinct is defined by its undulating topography, major roads, mix of land uses, well vegetated streetscapes and dense bushland reserves.

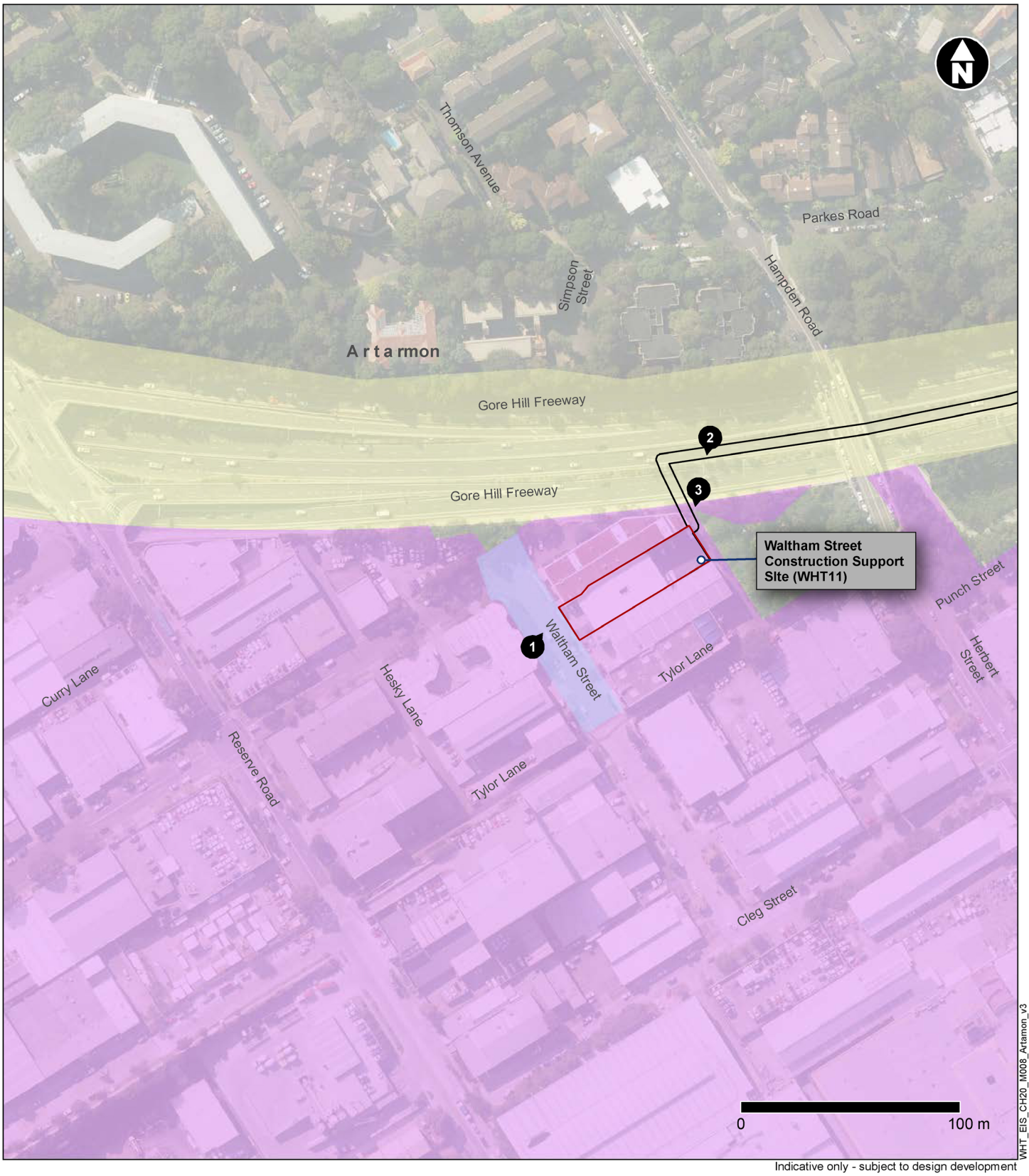
The elevated nature of the topography north of the Gore Hill Freeway offers this residential area some long distance views over the precinct, with some views filtered by tree planting.

Due to its position within the landscape, the Gore Hill Freeway allows visual connectivity across the road. Views within the Freeway are mostly constrained by the topography and dense vegetation either side of the road corridor.

Two transmission towers are located in the precinct, one to the east of Artarmon Reserve and another to the west of Artarmon Station. Where visible, these form strong vertical landmarks in the area.

Viewpoints selected for the Artarmon precinct are shown in Figure 22-7 and comprise the following:

- Viewpoint 1 – Waltham Street
- Viewpoint 2 – Gore Hill Freeway
- Viewpoint 3 – Gore Hill Freeway shared user path.



Legend

Construction features

- Construction footprint
- Construction support site

Landscape character zones

- Artarmon heritage conservation area
- Artarmon industrial area
- Artarmon Reserve
- Waltham Street road corridor

Viewpoint and direction

Figure 22-7 Artarmon landscape character zones and viewpoints

22.4.2 Construction support sites

Victoria Road

Landscape character

Victoria Road is located in the inner western suburb of Rozelle. The Victoria Road construction support site (WHT2) is currently the location of 138–172 Victoria Road (the site of the former Balmain Leagues club) which is currently abandoned and in a state of disrepair. The site is bounded by Victoria Road to the north and Waterloo Street to the south. The eastern and western extents of the construction support site border a mixture of commercial and industrial properties.

The character of the surrounding area is typical of an inner suburban city block with a mix of residential, commercial and light industrial premises. Victoria Road forms a major thoroughfare moving traffic in an east/west direction past the site. Single and double story dwellings line Waterloo Street, which has several mature street trees along its southern edge. Darling Street has a commercial strip with a varied selection of businesses. Rozelle Public School is located on a leafy campus to the north of the construction support site, on the other side of Victoria Road.

Landscape character zones identified close to the Victoria Road construction support site (WHT2) are shown in Figure 22-8 and comprise the following:

- Residential – development along Waterloo Street
- Commercial – development along Darling Street, Victoria Road and Waterloo Street
- Educational – Rozelle Public school campus.

Visual environment

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

Visual accessibility to the Victoria Road construction support site (WHT2) is constrained from many locations due to the presence of built form. Views into the Victoria Road construction support site (WHT2) are limited to dwellings and users of Waterloo Street, as well as pedestrians and motorists on Victoria Road. Views towards the site from Rozelle Public School are screened by vegetation within the school site.

Viewpoints for the Victoria Road construction support site (WHT2) are shown in Figure 22-8 and comprise the following:

- Viewpoint 1 – Waterloo Street residential
- Viewpoint 2 – Waterloo Street road corridor
- Viewpoint 3 – Victoria Road corridor.

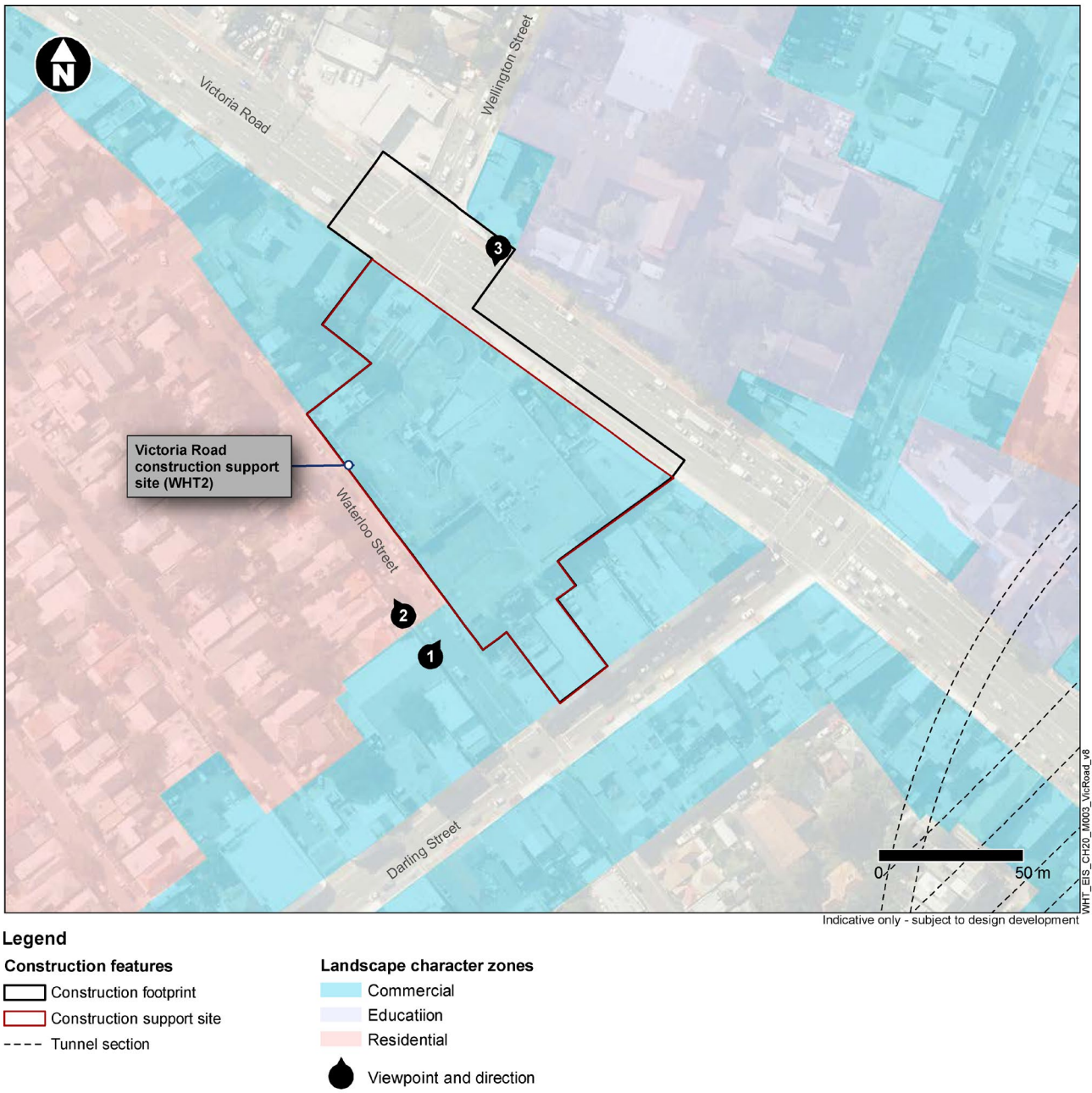


Figure 22-8 Victoria Road construction support site landscape character zones and viewpoints

White Bay

Landscape character

White Bay is an industrial maritime area surrounded by the suburbs of Balmain and Rozelle in the inner west of Sydney. The White Bay construction support site (WHT3) is bound by Johnstons Bay to the east, Jones Bay/Blackwattle Bay to the south and a mixture of industrial and high density residential properties to the north and west.

The character of the area has been defined by industrial development along the shore and commercial development on the northern ridge. Residential development covers the majority of the area between the ridge and the harbour. The White Bay construction support site (WHT3) is characterised by flat topography and working harbour activities including harbour walls, wharves, jetties and a number of industrial and commercial businesses. There are minimal trees with hardstand areas dominating.

Landscape character zones identified close to the White Bay construction support site (WHT3) are shown in Figure 22-9 and comprise the following:

- Residential – suburbs of Rozelle and Balmain to the north
- Industrial – working foreshore areas of White Bay and Jones Bay
- Foreshore public open space – surrounding foreshore including Pirrama Park to the east.

Visual environment

The White Bay construction support site (WHT3) is open in nature. Visual accessibility to the White Bay construction support site extends to the residential edges of Balmain and Rozelle in the north and west, as well as Pyrmont in the east, including several foreshore parks in this area (including Pirrama Park and Waterfront Park). When viewed from the west, the site is backed by dramatic views of Sydney CBD and the Harbour Bridge.

The White Bay construction support site (WHT3) is likely to be visible from numerous tall residential and commercial towers within Pyrmont and Darling Harbour, as well as from ANZAC Bridge.

Viewpoints for the White Bay construction support site (WHT3) are shown in Figure 22-9 and comprise of the following:

- Viewpoint 1 – Residential dwellings off Roseberry Place
- Viewpoint 2 – Residential dwellings off Batty Street
- Viewpoint 3 – Pirrama Park, Pyrmont.

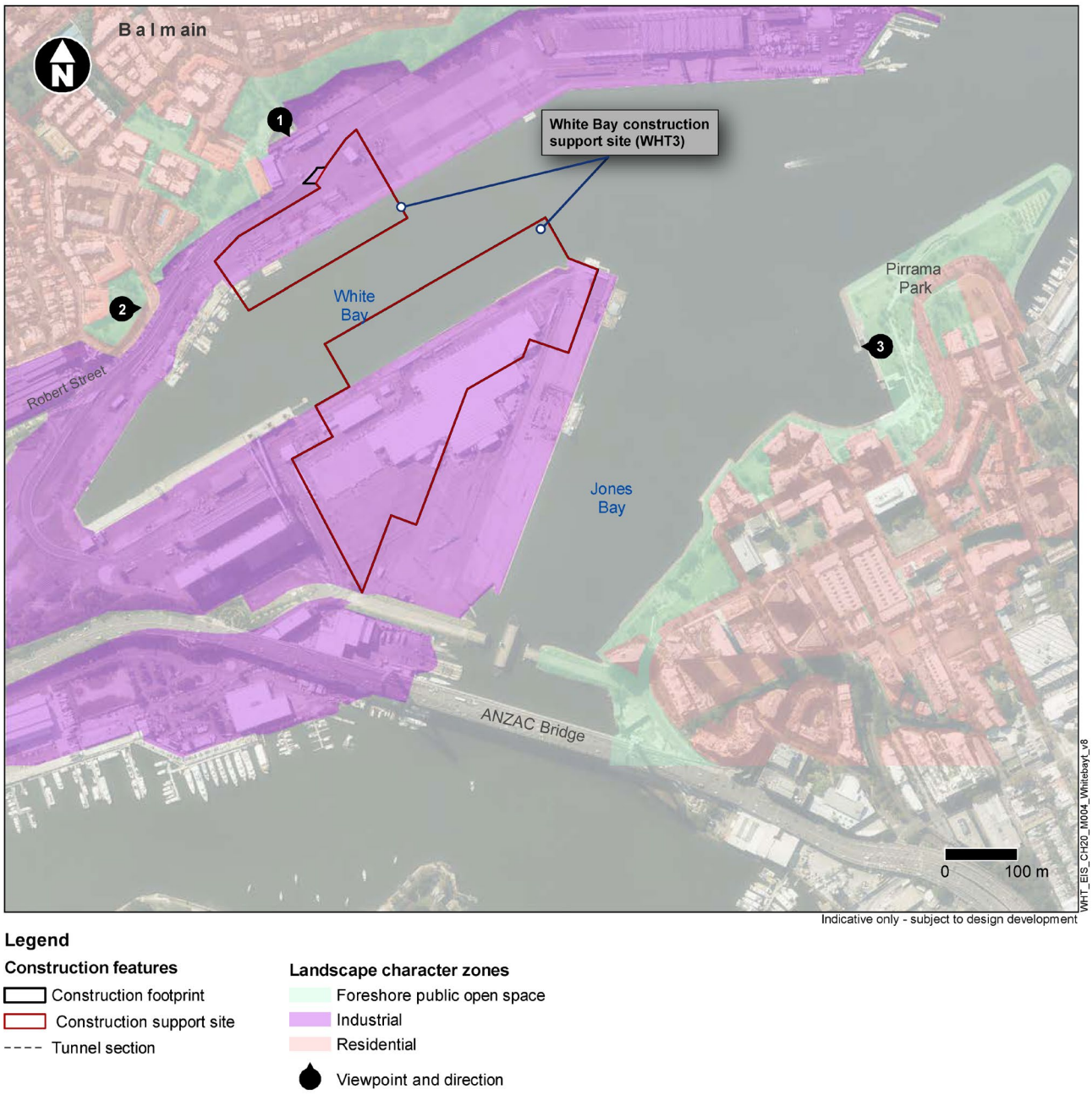


Figure 22-9 White Bay construction support site landscape character zones and viewpoints

Yurulbin Park and Sydney Harbour south cofferdam

Landscape character

Yurulbin Park construction support site (WHT4) and Sydney Harbour south cofferdam (WHT5) are within a neighbourhood foreshore park which sits at the end of Birchgrove peninsula in a residential area.

The Birchgrove peninsula is primarily residential in character with a mix of housing styles dating back to the Victorian times. Natural and cut rock outcrops form prominent features with planting including mature fig trees, casuarinas and other natives generally located around the entry and perimeter on the construction support site.

The landscape surrounding Yurulbin Park consists of the open water of Sydney Harbour along with various foreshore open spaces and residential suburbs.

Landscape character zones identified close to the Yurulbin Park construction support site (WHT4) are shown in Figure 22-10 and comprise the following:

- Birchgrove residential – dwellings along Louisa Road and Wharf Roads
- Yurulbin Park open space – where the construction support site would be located
- Sydney Harbour – open water.

Visual environment

Local views into Yurulbin Park are limited to several residential properties to the northern end of Louisa Road, Louisa Road itself, and the footpath alongside the park that provides access to the Birchgrove ferry wharf. Distinct views to the park extend to the north, east and west, including Balls Head, Manns Point, Balls Head Reserve, Goat Island, Ballast Point Park and residential sections of the Balmain waterfront.

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

Viewpoints for the Yurulbin Park construction support site (WHT4) and Sydney Harbour south cofferdam (WHT5) are shown in Figure 22-10 and comprise the following:

- Viewpoint 1 – Yurulbin Park
- Viewpoint 2 – Louisa Road dwellings
- Viewpoint 3 – Birchgrove Park
- Viewpoint 4 – Manns Point
- Viewpoint 5 – Ballast Point Park
- Viewpoint 6 – Residential dwellings off Wharf Road.

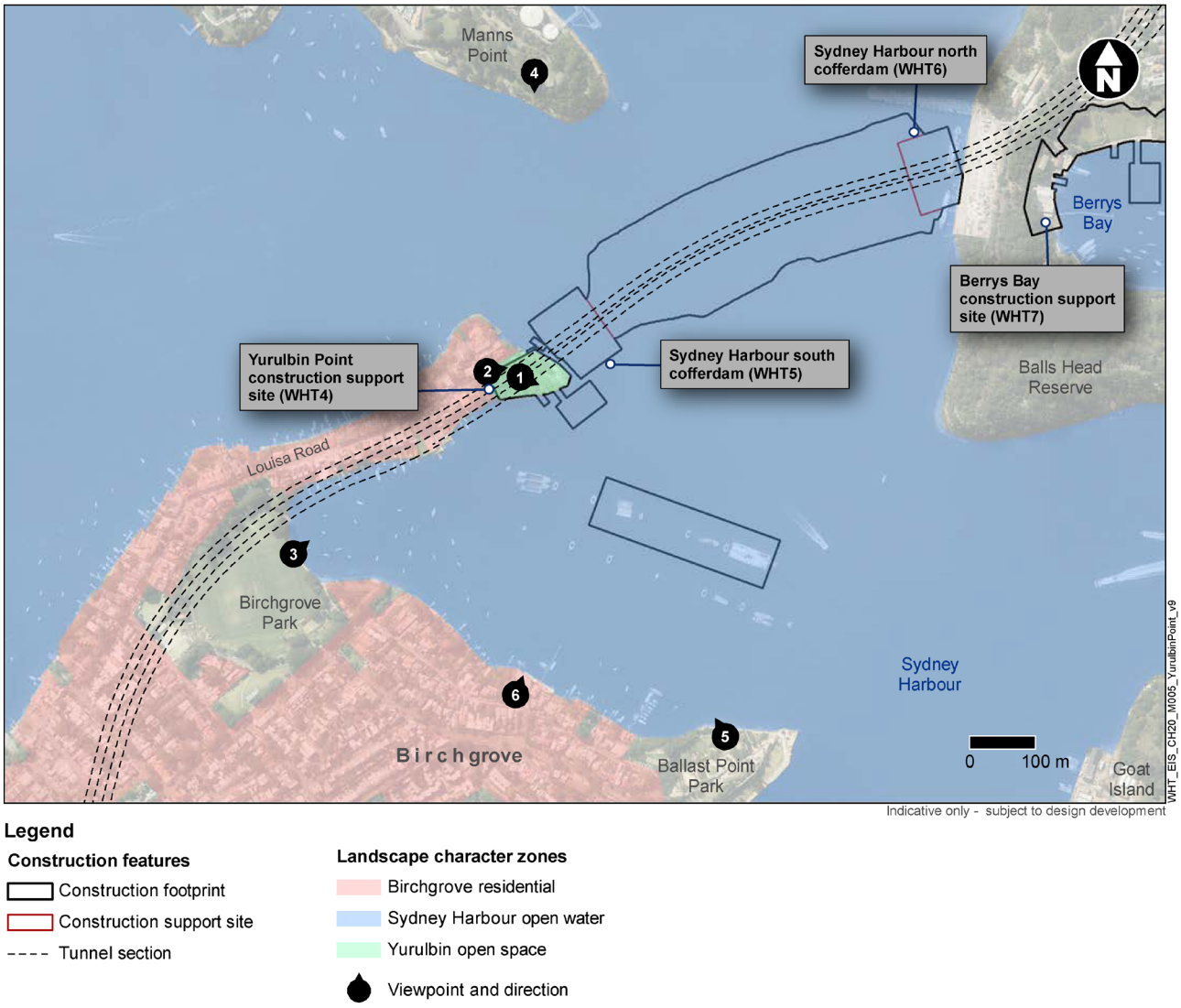


Figure 22-10 Yurulbin Park construction support site landscape character zones and viewpoints

Berrys Bay and Sydney Harbour north cofferdam

Landscape character

Berrys Bay construction support site (WHT7) and Balls Head (location of the Sydney Harbour north cofferdam (WHT6) construction support site) are located on the Waverton peninsula in North Sydney. The area surrounding these construction support sites comprises a diverse residential neighbourhood and areas of foreshore public open space. The Waverton peninsula is bound by steep sloping topography to the south, east and west, with the open water of Sydney Harbour and associated foreshore forming the eastern and western boundary. The shoreline typically consists of rock rubble and scarce shrubs.

The Berrys Bay construction support site (WHT7) comprises unimproved grassland with a scattering of naturally seeded shrub and tree plantings. This construction support site is overlooked by low density residential development located along the ridge tops to the north. The Sydney Harbour north cofferdam construction support site is adjacent to the Coal Loader Sustainability Centre and consists of open water, currently occupied by the *MV Cape Don* and *Baragoola*.

Landscape character zones identified close to both construction support sites are shown in Figure 22-11 and comprise the following:

- Low density residential – along Larkin Street and Balls Head Road as well as more distant dwellings on Dumbarton Street
- Foreshore public open space – surrounding foreshore
- Sydney Harbour – open water utilised by public ferries and recreational watercraft users.

Visual environment

Both the Berrys Bay construction support site (WHT7) and the Sydney Harbour north cofferdam (WHT6) have the visual environment of a typical Sydney Harbour Bay with areas of public open space, bushland, wharves, pontoons, remnant working waterfront industrial elements and residential development.

This visual accessibility of the Berrys Bay construction support site (WHT7) is relatively limited from many locations in the locality due to the enclosed nature of the bay. The visual accessibility of the Sydney Harbour north cofferdam (WHT6) extends to the north, south and west. Visibility from the east is restricted by the elevated topography of the Waverton peninsula with views limited to the Coal Loader Centre for Sustainability and foreshore paths.

Viewpoints for both construction sites are shown in Figure 22-11 and comprise the following:

Berrys Bay construction support site (WHT7):

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

Sydney Harbour north cofferdam (WHT6):

- Viewpoint 7 – Berry Island Reserve
- Viewpoint 8 – Coal Loader Centre for Sustainability
- Viewpoint 9 – Wondakiah Drive.

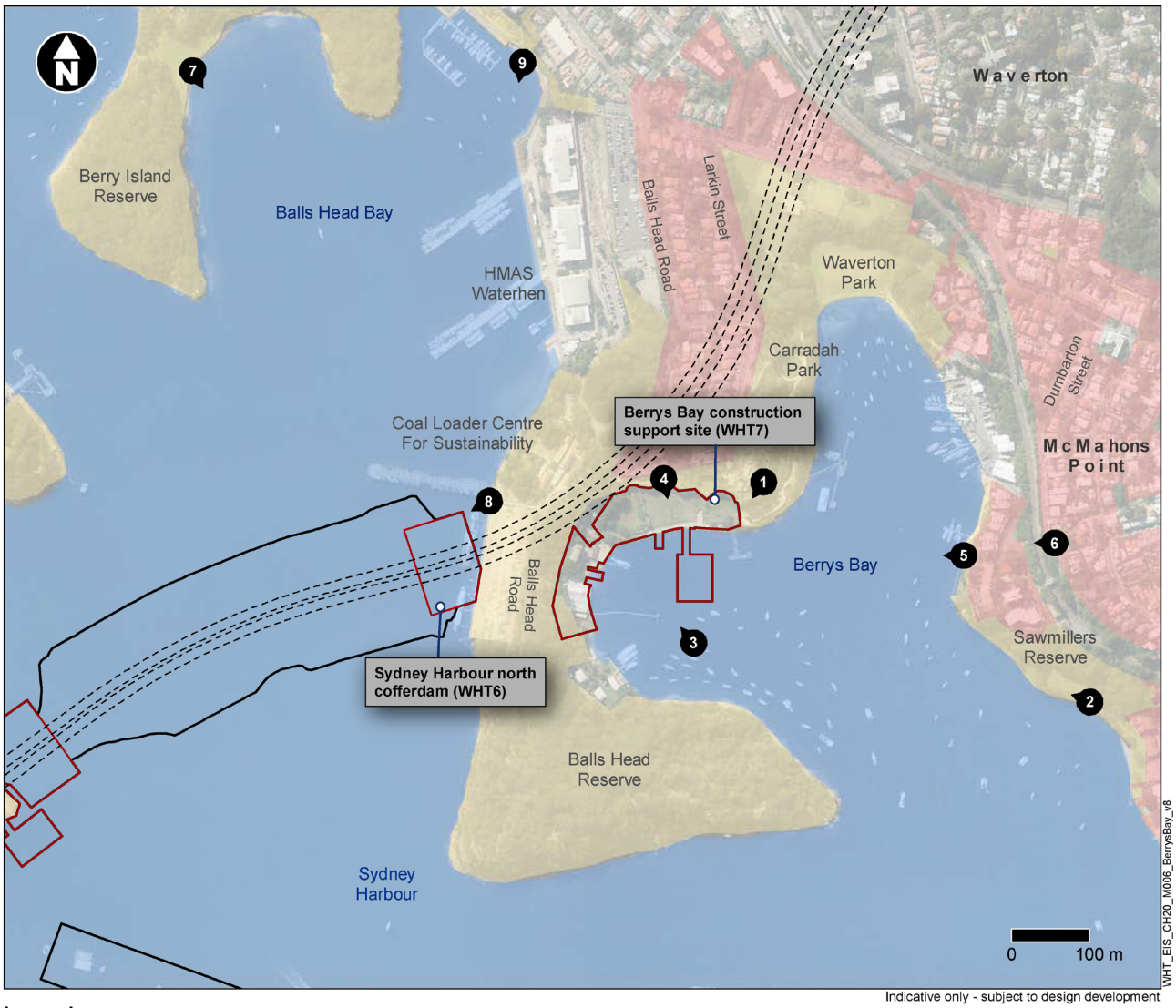


Figure 22-11 Berrys Bay and Sydney Harbour north cofferdam construction support site landscape character zones and viewpoints

Ridge Street north

Landscape character

St Leonards Park, immediately adjacent to Ridge Street north construction support site (WHT9), has a varied series of facilities and open spaces. The south-eastern corner contains the North Sydney Bowling Club and a selection of open space that slopes steeply down towards the Warringah Freeway.

A dense strip of native tree and shrub planting is located along the eastern boundary. Ridge Street runs along the southern edge of the park with an associated cycleway, connecting to the existing pedestrian/cycle bridge across the Warringah Freeway. There are limited footpaths within the south-eastern section of the park where the Ridge Street north construction support site (WHT9) is proposed.

Landscape character zones identified close to St Leonards Park are shown in Figure 22-12 and comprises the following:

- St Leonards Park open space – south-eastern corner where the construction support site would be located
- Ridge Street residential – dwellings along Ridge Street
- Warringah Freeway road corridor – adjacent to the eastern edge of the park.

Visual environment

The south-eastern corner of St Leonards Park has a mostly open character with expansive panoramic views over the harbour and Sydney CBD. A band of vegetation along the eastern boundary with the Warringah Freeway spatially separates the park from the road, screening views towards the road infrastructure and associated traffic.

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

Viewpoints for the Ridge Street north construction support site (WHT9) are shown in Figure 22-12 and comprise the following:

- Viewpoint 1 – St Leonards Park open space
- Viewpoint 2 – North Sydney Bowling Club
- Viewpoint 3 – Dwellings off Ridge Street.

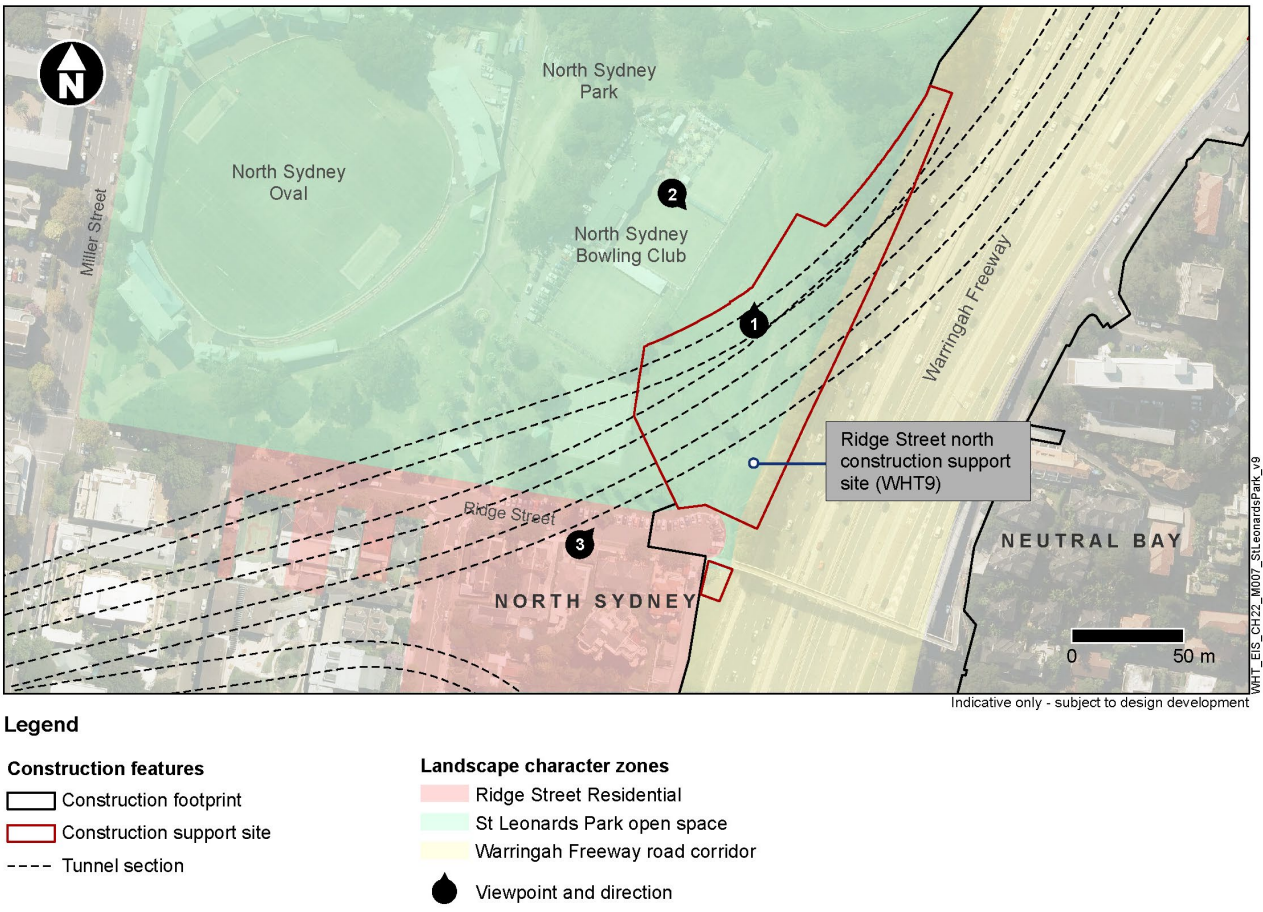


Figure 22-12 Ridge Street north construction support site landscape character zones and viewpoints

22.5 Assessment of potential construction impacts

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

Receivers who are likely to be impacted include:

- Residents that adjoin and/or have views of the construction support sites
- Workers in commercial properties that adjoin and/or have views of the project
- Road users and pedestrians
- Users of recreation areas/reserves with views of the project.

Construction activities that would take place at the construction support sites are discussed in Chapter 6 (Construction work). In general, visible construction activities and equipment would include (where required):

- Vegetation removal
- Noise barriers/hoarding/fencing
- Heavy and/or light vehicle access
- Staff amenities buildings
- Workshops and storage containers

- Stockpile and laydown areas
- The operation of plant and equipment, including cranes
- Lighting for night-time works
- Water storage tanks
- Cofferdam works
- The construction of infrastructure for the operation of the project.

In general, potential construction impacts would be temporary in nature and localised to the area subject to construction activities. Potential impacts would be managed through the implementation of appropriate environmental management measures, as outlined in Section 22.7.

22.5.1 Landscape character impacts at precincts during construction

Rozelle precinct

The Rozelle Rail Yards construction support site (WHT1) would be located within the Rozelle precinct.

Construction equipment and increased vehicular movements would be visible within the landscape, leading to a greater exposure to built form and a potential reduction in landscape amenity. However, such changes are expected to be a 'low' magnitude of change, resulting in a 'moderate-low' impact overall.

A summary of the landscape character impacts during construction for each landscape character zone within the Rozelle precinct is provided in Table 22-5.

Table 22-5 Landscape character impacts during construction – Rozelle precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Easton Park residential	Moderate	Low	Moderate-low
LCZ 2 – Rozelle Rail Yards	Moderate	Low	Moderate-low
LCZ 3 – Transport corridors	Low	Low	Low

North Sydney precinct

The Berry Street north construction support site (WHT8) and Cammeray Golf Course construction support sites (WHT10 and WFU8) would be located within this precinct.

Construction equipment and activities, including substantial temporary works would be visible within the landscape. There would be a number of moderate to high impacts in this precinct given the extent of changes (LCZ 4, 5 and 7). North Cremorne and Neutral Bay residential landscape character zone would have a high impact due to the high sensitivity and magnitude of change associated with the temporary presence and proximity of construction equipment, removal of existing vegetation, the replacement of the nearby Ridge Street shared use bridge and construction of the overpass at Alfred Street North.

While potential impacts of 'high' and 'moderate–high' ratings are anticipated on landscape character zones within the North Sydney precinct, such impacts are expected to be temporary in nature and localised to the specific areas in which they are likely to occur. Furthermore, these

impact ratings may reduce as replacement planting matures over the duration of the construction period.

A summary of the landscape character impacts during construction within the North Sydney precinct is provided in Table 22-6.

Table 22-6 Landscape character impacts during construction – North Sydney precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Warringah Freeway corridor	Low	High	Moderate
LCZ 2 – North Sydney CBD	Moderate	Moderate	Moderate
LCZ 3 – North Sydney residential	Moderate	Moderate	Moderate
LCZ 4 – St Leonards Park and Walker/Ridge Street residential	High	Moderate	**Moderate–high**
LCZ 5 – Cammeray residential	High	Moderate	**Moderate–high**
LCZ 6 – North Cremorne and Neutral Bay residential	High	High	**High**
LCZ 7 – Cammeray Park open space	Moderate	High	**Moderate–high**

Artarmon precinct

Given the location and the relatively small construction footprint of the proposed motorway control centre adjacent to Waltham Street, in proximity to the Gore Hill Freeway, landscape character zones within the Artarmon precinct are anticipated to be only marginally impacted during construction.

A summary of the landscape character impact during construction within the Artarmon precinct is provided in Table 22-7.

Table 22-7 Landscape character impacts during construction – Artarmon precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Artarmon commercial/industrial area	Low	Negligible	Negligible
LCZ 2 – Waltham Street road corridor	Low	Low	Low
LCZ 3 – Gore Hill Freeway	Low	Negligible	Negligible

22.5.2 Landscape character impacts at construction support sites

Victoria Road

Due to the degraded nature of the existing site, there are not expected to be major landscape character impacts during construction.

A summary of the landscape character impacts during construction at Victoria Road construction support site (WHT2) is provided in Table 22-8.

Table 22-8 Landscape character impacts during construction – Victoria Road construction support site (WHT2)

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Residential – development along Waterloo Street	Moderate	Low	Moderate–low
LCZ 2 – Commercial – development along Darling Street, Victoria Road and Waterloo Street	Moderate	Negligible	Negligible
LCZ 3 – Educational – Rozelle Public School	Moderate	Negligible	Negligible

White Bay

Due to the industrial nature of the existing site and the congruous construction activities proposed, there are not expected to be adverse impacts during construction.

A summary of the landscape character impacts during construction at White Bay construction support site (WHT3) is provided in Table 22-9.

Table 22-9 Landscape character impacts during construction – White Bay construction support site (WHT3)

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Residential – suburbs of Rozelle and Balmain to the north	Moderate	Negligible	Negligible
LCZ 2 – Industrial – working foreshore areas of White Bay and Jones Bay	Low	Negligible	Negligible
LCZ 3 – Foreshore public open space – surrounding foreshore including Pirrama Park to the east	Moderate	Negligible	Negligible

Yurulbin Park and Sydney Harbour south cofferdam

Sydney Harbour south cofferdam (WHT5) would be located adjacent to Yurulbin Park construction support site (WHT4).

Impacts on the Yurulbin Park open space area are assessed as high due to the increase in built form on both water and land, combined with the removal of vegetation within the park itself, likely to temporarily adversely impact the landscape character of the landscape character zone. Construction works would also be visible from Birchgrove Park and residential dwellings along Louisa and Wharf Road, likely having a moderate to high temporary impact given the presence and proximity of construction works and the removal of vegetation. The landscape character of Sydney Harbour is expected to be moderately impacted during construction as a result of the temporary presence of additional built form by way of a floating dock and cofferdam structure within the harbour.

Impacts of 'high' and 'moderate–high' are anticipated on landscape character zones close to Yurulbin Park and Sydney Harbour south cofferdam. These impacts are considered to be temporary in nature and localised to the specific areas in which they are expected to occur. Furthermore, these ratings take cognisance of the project's attempt to reduce potential impacts on the Park through consultation with Bruce MacKenzie (the original designer of the park), and replacement planting is also proposed which may result in these impacts reducing over the duration of the construction period.

A summary of the landscape character impacts during construction at Yurulbin Park is provided in Table 22-10.

Table 22-10 Landscape character impacts during construction – Yurulbin Park construction support site (WHT5) and Sydney Harbour south cofferdam (WHT5)

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Birchgrove residential – dwellings along Louisa Road and Wharf Roads	High	Moderate	**Moderate–high**
LCZ 2 – Yurulbin Park open space – where the construction support site would be located	High	High	**High**
LCZ 3 – Sydney Harbour – open water	Moderate	Moderate	Moderate

Berrys Bay and Sydney Harbour north cofferdam

As a result of construction activities and removal of vegetation at the Berrys Bay construction support site (WHT7) and Sydney Harbour north cofferdam (WHT6), there are likely to be temporary and localised landscape character impacts on the public open space, residential dwellings and open water surrounding the construction support site. The increase in built form would be congruous with the existing undeveloped landscape character of the bay.

The Sydney Harbour north cofferdam (WHT6) and crane structure may lead to temporary and localised adverse impacts to the character of the surrounding open water and Coal Loader Sustainability Centre open space due to an increase in visible built form as reflected in Table 22-11.

A summary of the landscape character impacts during construction at Berrys Bay and Sydney Harbour north cofferdam is provided in Table 22-11.

Table 22-11 Landscape character impacts during construction – Berrys Bay construction support site (WHT7) and Sydney Harbour north cofferdam (WHT6)

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Low density residential – along Larkin Street and Balls Head Road and more distant dwellings on Dumbarton Street	High	Moderate	**Moderate–high**
LCZ 2 – Foreshore public open space – surrounding foreshore	High	Moderate	**Moderate–high**
LCZ 3 – Sydney Harbour – open water utilised by public ferries and recreational watercraft users	Moderate	Moderate	Moderate

Ridge Street north

There are likely to be considerable temporary and localised landscape impacts on the public open space surrounding the Ridge Street north construction support site (WHT9) and adjacent residential dwellings.

In respect to LCZ 1 – St Leonards Park open space, landscape impacts were assessed as 'High' given that a section of the park would be temporarily inaccessible during this period, while there would also be the presence of fencing, noise wall, earthworks, built structures, in addition to the removal of vegetation in proximity to the park. This impact may reduce over time with the maturing of replacement planting throughout the construction period.

The landscape character zone along Ridge Street (LCZ 2) is expected to be impacted to a 'moderate–high' degree as a result of construction works taking place in proximity to several dwellings, while there is also likely to be the requirement for temporary built structures and vegetation removal. Similar to above, this impact may reduce over time with the maturing of replacement planting throughout the construction period.

The 'Low' sensitivity and magnitude of change rating in respect to LCZ 3 – Warringah Freeway road corridor indicates that this landscape character zone is not expected to be significantly impacted as a result of the Ridge Street north construction support site (WHT9).

A summary of the landscape character impacts during construction at the Ridge Street north construction support site is provided in Table 22-12.

Table 22-12 Landscape character impacts during construction – Ridge Street north construction support site (WHT9)

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – St Leonards Park open space – south-eastern corner where the construction support site would be located	High	High	**High**
LCZ 2 – Ridge Street residential – dwellings along Ridge Street	High	Moderate	**Moderate–high**
LCZ 3 – Warringah Freeway road corridor – adjacent to the eastern edge of the park	Low	Low	Low

22.5.3 Visual impacts at precincts during construction

Visual impacts on representative receiver locations during construction are summarised below for each precinct. The location of viewpoints for each precinct is shown in Section 22.4. Visual impacts at construction support sites are discussed in Section 22.5.4.

Appendix V (Technical working paper: Urban design, landscape character and visual impact) provides further detail on the sensitivity, magnitude of change and overall impact rating for each viewpoint.

Rozelle precinct

The activities, equipment and structures, particularly vehicular movements, cranes and site buildings, associated construction phase of the project would likely have a negative impact on all viewpoints with the Rozelle precinct, although not to a level that is considered significant. The detail of such negative impacts on the selected viewpoints are outlined in Table 22-13.

Table 22-13 Visual impacts during construction – Rozelle precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Easton Park	Moderate	Low	Moderate-low
Viewpoint 2 – Dwellings off Lilyfield Road	Moderate	Low	Moderate-low
Viewpoint 3 – The Crescent	Low	Low	Low
Viewpoint 4 – The Crescent/City West Link intersection	Low	Low	Low

North Sydney precinct

Visual impacts of a negative and temporary nature are expected for the majority of viewpoints during the construction phase of the project in the North Sydney precinct. This is largely as a result of the construction footprint of the project in areas adjacent to the road corridor including ANZAC Park, High Street, Cammeray Avenue, Rosalind Street and Alfred Street North. While construction activities are likely to be most visible within the Warringah Freeway itself, major adverse visual impacts are not expected on road users due to the functional nature of the existing environment and therefore lower receptor sensitivity.

As shown in Table 22-14 below, of the 27 North Sydney precinct viewpoints, two are expected to have an overall impact rating of 'high', 12 of 'moderate–high', and 13 of 'moderate' or lower. Negligible visual impacts are anticipated for receivers at North Sydney commercial properties; receivers at St Leonards Park Bon Andrews Oval; and residential receivers at Park Avenue (viewpoints 1, 7 and 17 respectively).

'High' visual impacts are expected for receivers at Ridge Street lookout (viewpoint 4) and for residential receivers at Alfred Street North (viewpoint 5) due to the temporary presence of site hoarding and construction equipment. 'Moderate to high' visual impacts are predominantly expected as a result of the construction of the motorway facilities, Ernest Street bridge works, or other construction activities. Impacts expected to be moderate or below are anticipated as result of increased vehicular movements, construction activities or the presence of site hoardings.

These potential impacts of 'high' and 'moderate-high' on viewpoints within the North Sydney precinct are expected to be temporary and localised in nature and may improve over the duration of the construction period.

Table 22-14 Visual impacts during construction – North Sydney precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – North Sydney commercial	Moderate	Negligible	Negligible
Viewpoint 2 – High Street residential	Moderate	High	**Moderate–high**
Viewpoint 3 – High Street corridor	Low	High	Moderate
Viewpoint 4 – Ridge Street lookout	High	High	**High**
Viewpoint 5 – Alfred Street North	High	High	**High**

Viewpoint	Sensitivity	Magnitude	Overall impact rating
residential			
Viewpoint 6 – Warringah Freeway corridor near Ridge street	Low	Moderate	Moderate–low
Viewpoint 7 – St Leonards Park	High	Negligible	Negligible
Viewpoint 8 – Falcon/Miller Street intersection	High	Low	Moderate
Viewpoint 9 – Jeaffreson Jackson Reserve and nearby residential	Moderate	High	**Moderate–high**
Viewpoint 10 – ANZAC Park	Moderate	High	**Moderate–high**
Viewpoint 11 – Cammeray Avenue residential	Moderate	High	**Moderate–high**
Viewpoint 12 – Rosalind Street residential	Moderate	High	**Moderate–high**
Viewpoint 13 – Morden Street residential	High	Moderate	**Moderate–high**
Viewpoint 14 – Warringa Road residential	Moderate	High	**Moderate–high**
Viewpoint 15 – Carter Street lookout	High	Low	Moderate
Viewpoint 16 – Green Park open space and Warwick Avenue residential	Moderate	Moderate	Moderate
Viewpoint 17 – Park Avenue residential	High	Negligible	Negligible
Viewpoint 18 – Cammeray Golf Course club house	Moderate	High	**Moderate–high**
Viewpoint 19 – Cammeray Golf Course footpath	Moderate	High	**Moderate–high**
Viewpoint 20 – Cammeray Park sports facilities	Moderate	Moderate	Moderate
Viewpoint 21 – Warringah Freeway near Ernest Street	Low	High	Moderate
Viewpoint 22 – Ernest Street residential	Moderate	High	**Moderate–high**

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 23 – Ernest Street bridge	Low	High	Moderate
Viewpoint 24 – Merlin Street residential	Moderate	High	**Moderate–high**
Viewpoint 25 – Falcon Street shared user bridge	Low	High	Moderate
Viewpoint 26 – Miller Street bridge	Low	High	Moderate
Viewpoint 27 – Kurraba Road/Alfred Street North residential	Moderate	High	**Moderate–high**

Artarmon precinct

In line with the landscape character impacts reported above for the Artarmon precinct (Table 22-7) the selected viewpoints are only anticipated to be marginally impacted during construction. This is due to the location and relatively small construction footprint of the proposed motorway control centre adjacent to Waltham Street, in proximity to the Gore Hill Freeway, and the nature of the existing visual environment and building form. The anticipated visual impacts on the selected viewpoints within Artarmon precinct are outlined in Table 22-15.

Table 22-15 Viewpoint impacts during construction – Artarmon precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Waltham Street	Low	Low	Low
Viewpoint 2 – Gore Hill Freeway	Low	Low	Low
Viewpoint 3 – Gore Hill Freeway shared user path	Low	Low	Low

22.5.4 Visual impacts at construction support sites

Visual impacts on representative receiver locations during construction are summarised below for construction support sites that have been considered in addition to the broader precinct assessment. The location of viewpoints for each construction support site is shown in Section 22.4.

Victoria Road

The Victoria Road construction support site (WHT2) would be a tunnelling support site.

Due to the level of dilapidation at 138–172 Victoria Road (the site of former Balmain Leagues club), the proposed temporary noise wall around the Victoria Road construction support site (WHT2) is not expected to cause significant degradation to the existing visual amenity at Waterloo Street. A moderate visual impact is expected for residential receivers at Waterloo Street (viewpoint 1) and low visual impact for receivers within the Waterloo Street road corridor (viewpoint 2).

Receivers looking onto the Victoria Road construction support site (WHT2) from the Victoria Road corridor (viewpoint 3) are expected to experience a low visual impact.

A moderate visual impact at night is anticipated for residential receivers at Waterloo Street (viewpoint 1) as the light levels have the potential to impact nearby residential receivers. For receivers within the Waterloo Street road corridor (viewpoint 2) and the Victoria Road corridor (viewpoint 3), night lighting during the construction period may be in excess of existing light levels, although the impact to motorists and pedestrians is expected to be negligible. A summary of the anticipated visual impacts during construction at Victoria Road construction support site (WHT2) is provided in Table 22-16.

Table 22-16 Viewpoint impacts during construction – Victoria Road construction support site (WHT2)

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Waterloo Street residential	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Moderate
Viewpoint 2 – Waterloo Street road corridor	Low	Low	Day-time hours: Low
			Night-time hours: Negligible
Viewpoint 3 – Victoria Road corridor	Low	Low	Day-time hours: Low
			Night-time hours: Negligible

White Bay

The White Bay construction support site (WHT3) would include both land and water-based construction activities.

A moderate to low visual impact is anticipated for all viewpoints. This is due to a potential increase in the number of truck and boat movements visible, although this is in keeping with the existing busy maritime foreshore activities.

While night lighting would be visible at the construction support site for all viewpoints assessed, the presence of existing light sources within the visual scene means that additional night time visual impacts are not expected.

A summary of the anticipated visual impacts during construction at White Bay construction support site (WHT3) is provided in Table 22-17.

Table 22-17 Viewpoint impacts during construction – White Bay construction support site (WHT3)

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Residential dwellings off Roseberry Place	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible
Viewpoint 2 – Residential dwellings off Batty Street	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible
Viewpoint 3 – Pirrama Park, Pyrmont.	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible

Yurulbin Park and Sydney Harbour south cofferdam

The Yurulbin Park construction support site (WHT4) would include both land and water-based construction activities while the Sydney Harbour south cofferdam (WHT5) would be located adjacent to Yurulbin Park construction support site (WHT4), therefore similar visual impacts are anticipated for each site.

There would be an increase in the amount of built form visible and a perceptible decrease in vegetation and the availability of green space at the end of the Birchgrove peninsula, with high temporary visual impacts expected for users of Yurulbin Park (there is expected to be no access to the park during construction) and residential receivers at Louisa Road (viewpoints 1 and 2). There would also be a noticeable increase in the number of boat movements within the bay with moderate to high visual impacts expected for Wharf Road residential area (viewpoint 6).

Views for other receivers south of the construction support site at Birchgrove Park (viewpoint 3) and Ballast Point Park (viewpoint 5) are expected to be of moderate and moderate to low impact respectively.

Views for receivers from the north at Manns Point (viewpoint 4) are also expected to experience moderate to low impacts also due to the increase in the built form visible and perceptible decrease in vegetation.

Night lighting impacts are expected to be negligible for all viewpoints except at viewpoint 2 (moderate impact) and viewpoint 6 (low impact) due to the expected increase in light emittance compared to the existing environment.

In line with anticipated potential impacts on landscape character zones around Yurulbin Park, these potential impacts of 'high' and 'moderate-high' on viewpoints within the area are expected to be temporary and localised in nature and may improve over the duration of the construction period.

A summary of the anticipated visual impacts during construction at Yurulbin Park construction support site (WHT4) and Sydney Harbour south cofferdam (WHT5) is provided in Table 22-18.

Table 22-18 Viewpoint impacts during construction – Yurulbin Park construction support site (WHT4) and Sydney Harbour south cofferdam (WHT5)

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Yurulbin Park	High	High	Day-time hours: **High**
			Night-time hours: Negligible
Viewpoint 2 – Louisa Road dwellings	High	High	Day-time hours: **High**
			Night-time hours: Moderate
Viewpoint 3 – Birchgrove Park	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 4 – Manns Point	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible
Viewpoint 5 – Ballast Point Park	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 6 – Residential dwellings off Wharf Road	High	Moderate	Day-time hours: **Moderate–high**
			Night-time hours: Low

Berrys Bay and Sydney Harbour north cofferdam

The Berrys Bay construction support site (WHT7) would facilitate both land and water-based construction activities. The Sydney Harbour north cofferdam (WHT6) is located close to Berrys Bay construction support site (WHT7) and therefore similar temporary and localised visual impacts are anticipated for each site.

For receivers closest to the construction support sites, there would temporarily be a noticeable increase in the amount of built form visible within the area, as well as an increase in the number of boat and vehicle movements within the bay area. A moderate to high temporary visual impact is expected for receivers at Carradah Park and Larkin Street and Balls Head Road dwellings) (viewpoints 1 and 4). Moderate visual impacts are expected from Sawmillers Reserve, Berrys Bay (on water), Boat Builders Walk dwellings and open space area, Dumbarton Street dwellings and the Coal Loader Centre (viewpoints 2, 3, 5, 6 and 8).

Moderate to low impacts are expected for receiver views from the north from viewpoint 7 (Berry Island Reserve) and viewpoint 9 (Wondakiah Drive dwellings) due to visible cranes and increased boat movements respectively.

Night time visual impacts are expected to be moderate for residential receivers at Larkin Street and Balls Head Road (viewpoint 4) due to the proximity of the lighting and the 24 hours per day working. At all other viewpoints the night time visual impacts are expected to be low or negligible.

A summary of the anticipated visual impacts during construction at Berrys Bay construction support site (WHT7) and Sydney Harbour north cofferdam (WHT6) is provided in Table 22-19.

Table 22-19 Viewpoint impacts during construction – Berrys Bay construction support site (WHT7) and Sydney Harbour north cofferdam (WHT6)

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Berrys Bay construction support site:			
Viewpoint 1 – Carradah Park	High	Moderate	Day-time hours: **Moderate–high**
			Night-time hours: Low
Viewpoint 2 – Sawmillers Reserve	High	Low	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 3 – Berrys Bay – on water	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 4 – Larkin Street and Balls Head Road dwellings	High	Moderate	Day-time hours: **Moderate–high**
			Night-time hours: Moderate

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 5 – Boat Builders Walk dwellings and open space	High	Low	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 6 – Dumbarton Street dwellings.	High	Low	Day-time hours: Moderate
			Night-time hours: Low
Sydney Harbour north cofferdam construction support site:			
Viewpoint 7 – Berry Island Reserve	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible
Viewpoint 8 – Coal Loader Centre for Sustainability	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 9 – Wondakiah Drive.	Moderate	Low	Day-time hours: Moderate–low
			Night-time hours: Negligible

Ridge Street north

The Ridge Street north construction support site (WHT9) would occupy the south-eastern corner of the St Leonards Park. A high temporary and localised visual impact is expected on the immediate park area surrounding the construction support site (viewpoint 1) due to this area of the park becoming inaccessible and views to and from the site being limited.

A moderate to high visual impact is expected from North Sydney Bowling Club and dwellings on Ridge Street (viewpoints 2 and 3) due to the presence of temporary site hoardings, construction equipment and additional vehicle movements.

'High' to 'moderate–high' impacts are likely to reduce overtime with the imposition of environmental management measures, particularly in respect to the maturing of replacement planting during the construction period.

A moderate impact on night time visual amenity could be expected for St Leonards Park and North Sydney Bowling Club users, and receivers at Ridge Street dwellings due to an increase in light sources as part of the construction works.

Upon the completion of works, the area affected during construction would be returned to its pre-existing condition.

A summary of the anticipated visual impacts during construction at Ridge Street north construction support site (WHT9) is provided in Table 22-20.

Table 22-20 Viewpoint impacts during construction – Ridge Street north construction support site (WHT9)

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – St Leonards Park open space	High	High	Day-time hours: **High**
			Night-time hours: Moderate
Viewpoint 2 – North Sydney Bowling Club	Moderate	High	Day-time hours: **Moderate–high**
			Night-time hours: Moderate
Viewpoint 3 – Dwellings off Ridge Street	High	Moderate	Day-time hours: **Moderate–high**
			Night-time hours: Moderate

22.6 Assessment of potential operational impacts

The operational landscape character and visual impacts (including impacts on landscape character, views and night lighting) for the Rozelle, North Sydney and Artarmon precincts have been assessed and are outlined below.

The majority of construction support sites and other sites utilised during construction would be rehabilitated following the completion of construction works as no operational infrastructure is proposed at these locations post-construction. As such, there would be no permanent landscape character or visual impacts.

It should be noted that no specific environmental management measures are outlined in Section 22.7 in respect to operational impacts as the mitigation of such impacts would be considered through the Strategic Urban Design Framework (see Section 22.2 and Appendix V (Technical working paper: Urban design, landscape character and visual impact). Nevertheless, it can be expected that the landscape character and visual impact assessment ratings derived below (considered to be day 1 of operation) would improve when project landscape works mature, buildings and other infrastructure associated with the project (designed in accordance with the Strategic Urban Design Framework) blend into the surrounding environment over time.

Photomontages for key project views impacted by operational infrastructure are provided in Section 22.6.2. Further photomontages are provided in Appendix V (Technical working paper: Urban design, landscape character and visual impact).

22.6.1 Landscape character impacts during operation

Rozelle precinct

The landscape character impact assessment did not identify any ‘high’ landscape character impacts during the operational phase in the Rozelle precinct. Given the nature of the existing environment and the nature of the project during the operational phase the precinct is expected to be negligibly impacted.

A summary of the landscape character impacts during operation of the project within the Rozelle precinct are provided in Table 22-21.

Table 22-21 Landscape character impacts during operation – Rozelle precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Easton Park residential	Moderate	Negligible	Negligible
LCZ 2 – Rozelle Rail Yards	Moderate	Negligible	Negligible
LCZ 3 – Transport corridors	Low	Negligible	Negligible

North Sydney precinct

The landscape character impact assessment for the North Sydney precinct identified the potential for a moderate to high landscape character impact for North Cremorne and Neutral Bay residential (LCZ 6) and Cammeray Park open space (LCZ 7). This is due to vegetation removal and new project elements being introduced near, but not encroaching, residential and public open space receptors.

The residential landscape character zones (LCZ 3, 4, 5 and 6) have a high to moderate sensitivity to change due to the importance of maintaining their spatial integrity. However, the project has a limited magnitude of impact within these areas, apart from at LCZ 6 where a moderate to high magnitude of change has been identified. Direct character impacts would be limited to the fringes of these character zones where vegetation removal would be required, reducing the existing spatial buffer between dwellings and road.

The character of the Warringah Freeway corridor (LCZ 1) and the North Sydney CBD (LCZ 2) are unlikely to be considerably impacted by the project due to their lower sensitivity to change and greater ability to absorb the proposed operational structural elements of the project.

A summary of the landscape character impacts during the operation of the project within the North Sydney precinct are provided in Table 22-22.

Table 22-22 Landscape character impacts during operation – North Sydney precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Warringah Freeway corridor	Low	Low	Low
LCZ 2 – North Sydney CBD	Moderate	Low	Moderate–low
LCZ 3 – North Sydney residential	Moderate	Low	Moderate–low
LCZ 4 – St Leonards Park and Walker/Ridge Street residential	High	Low	Moderate
LCZ 5 – Cammeray residential	High	Low	Moderate
LCZ 6 – North Cremorne and Neutral Bay residential	High	Moderate	**Moderate–high**
LCZ 7 – Cammeray Park open space	Moderate	High	**Moderate–high**

Artarmon precinct

All landscape character zones within the Artarmon precinct are expected to be negligibly impacted during the operation of the project. The adjacent road corridors and industrial/commercial land uses have a high ability to absorb the changes associated with the project and a major impact to their character is not expected. There are also expected to be some landscape benefits to the Artarmon precinct as a result of project elements that are responsive to the Strategic Urban Design Framework.

A summary of the landscape character impacts during the operation of the project within the Artarmon precinct are provided in Table 22-23 below.

Table 22-23 Landscape character impacts during operation – Artarmon precinct

Landscape character zone	Sensitivity	Magnitude of change	Overall impact rating
LCZ 1 – Artarmon commercial/industrial area	Low	Negligible	Negligible to beneficial
LCZ 2 – Waltham Street road corridor	Low	Low	Negligible to beneficial
LCZ 3 – Gore Hill Freeway	Low	Negligible	Negligible to beneficial

22.6.2 Visual impacts during operation

Visual impacts on selected viewpoints during operation are summarised below in respect to the precincts of Rozelle, North Sydney and Artarmon.

Rozelle precinct

As shown in Table 22-24, all viewpoints within the Rozelle precinct would be negligibly impacted during the operation of the project, including during both day-time and night-time hours, with project components being consistent with that of the existing environment.

Table 22-24 Visual impacts during operation – Rozelle precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Easton Park	Moderate	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 2 – Dwellings off Lilyfield Road	Moderate	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 3 – The Crescent	Low	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 4 – The Crescent/City West Link intersection	Low	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible

The existing view from The Crescent towards City West Link (viewpoint 4) is shown in Figure 22-13. The proposed, indicative Day 1 and Year 10 operational views at viewpoint 4 are shown in Figure 22-14 and Figure 22-15 respectively. The design of the project elements, as shown below, are indicative and have been informed by the M4-M5 Link environmental impact statement. It is expected that any redesign of these project elements during further design development would have cognisance with and be complimentary of the design of M4-M5 Link project. The proposed, indicative operational views from viewpoint 4 would be constructed by the M4-M5 project, in accordance with the approved M4-M5 Link project design. The Western Harbour Tunnel component of the project would carry out some finishing works (tunnel fitout and line marking adjustments).

Figure 22-13 Existing view south-west from corner of The Crescent and City West Link

Figure 22-14 Proposed view (Day 1 of operation) of the Western Harbour Tunnel portal at Rozelle, looking north from the intersection of The Crescent and City West Link

Figure 22-15 Proposed view (Year 10 of operation) of the Western Harbour Tunnel portal at Rozelle, looking north from the intersection of The Crescent and City West Link

North Sydney precinct

The greatest visual impacts of the project in the North Sydney precinct are expected for residential and public open space receptors with clear views of project elements. The motorway facility has the greatest potential for adverse visual impact. This is due to a large magnitude of change (with a current lack of built form in this area) and the tall nature of the ventilation outlet. Table 22-25 outlines the expected visual impacts for the selected viewpoints within the North Sydney precinct.

One viewpoint (Viewpoint 5) was anticipated to have an impact that was 'high' during daytime hours, while five others (Viewpoints 4, 9, 10, 22 and 27) recorded an expected impact of 'moderate–high'. All other anticipated impacts during daytime hours were not expected to be significant.

The visual impact assessment did not identify the potential for 'high' night lighting impacts for any receiver locations within the North Sydney precinct. This is as a result of numerous existing night time light sources within the area.

Table 22-25 Visual impacts during operation – North Sydney precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – North Sydney commercial	Moderate	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 2 – High Street residential	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 3 – High Street corridor	Low	Moderate	Day-time hours: Moderate/Low
			Night-time hours: Negligible

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 4 – Ridge Street lookout	High	Moderate	Day-time hours: **Moderate–high**
			Night-time hours: Negligible
Viewpoint 5 – Alfred Street North residential	High	High	Day-time hours: **High**
			Night-time hours: Moderate
Viewpoint 6 – Warringah Freeway corridor near Ridge street	Low	Low	Day-time hours: Low
			Night-time hours: Negligible
Viewpoint 7 – St Leonards Park	High	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 8 – Falcon/ Miller Street intersection	High	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 9 – Jeaffreson Jackson Reserve and nearby residential	Moderate	High	Day-time hours: **Moderate–high**
			Night-time hours: Low
Viewpoint 10 – ANZAC Park	Moderate	High	Day-time hours: **Moderate–high**
			Night-time hours: Negligible
Viewpoint 11 – Cammeray Avenue residential	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 12 – Rosalind Street residential	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 13 – Morden Street residential	High	Low	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 14 – Warringa Road residential	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Moderate
Viewpoint 15 – Carter Street lookout	High	Low	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 16 – Green	Moderate	Low	Day-time hours: Moderate–low

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Park open space and Warwick Avenue residential			Night-time hours: Low
Viewpoint 17 – Park Avenue residential	High	Negligible	Day-time hours: Negligible
			Night-time hours: Low
Viewpoint 18 – Cammeray Golf Course club house	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Moderate
Viewpoint 19 – Cammeray Golf Course footpath	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Moderate
Viewpoint 20 – Cammeray Park sports facilities	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Low
Viewpoint 21 – Warringah Freeway near Ernest Street	Low	High	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 22 – Ernest Street residential	Moderate	High	Day-time hours: **Moderate–high**
			Night-time hours: Low
Viewpoint 23 – Ernest Street bridge	Low	High	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 24 – Merlin Street residential	Moderate	Moderate	Day-time hours: Moderate
			Night-time hours: Negligible
Viewpoint 25 – Falcon Street shared user bridge	Low	Moderate	Day-time hours: Moderate–low
			Night-time hours: Negligible
Viewpoint 26 – Miller Street bridge	Low	Moderate	Day-time hours: Moderate–low
			Night-time hours: Negligible
Viewpoint 27 – Kurraba Road/Alfred Street North residential	Moderate	High	Day-time hours: **Moderate–high**
			Night-time hours: Moderate

Existing and proposed views from Miller Street Bridge south (viewpoint 8) are shown in Figure 22-16 to Figure 22-18.

Figure 22-16 Existing view south from Miller Street Bridge

Figure 22-17 Proposed view (Day 1 of operation) south from Miller Street Bridge

Figure 22-18 Proposed view (Year 10 of operation) south from Miller Street Bridge

Existing and proposed views over Warringah Freeway from Jeaffreson Jackson Reserve (viewpoint 9) are shown in Figure 22-19 to Figure 22-21.

Figure 22-19 Existing view north-east over Warringah Freeway from Jeaffreson Jackson Reserve

Figure 22-20 Proposed view (Day 1 of operation) north-east over Warringah Freeway from Jeaffreson Jackson Reserve

Figure 22-21 Proposed view (Year 10 of operation) north-east over Warringah Freeway from Jeaffreson Jackson Reserve

Existing and proposed views from Ernest Street dwellings north to Cammeray Golf Course (viewpoint 22) are shown in Figure 22-22 to Figure 22-24.

Figure 22-22 Existing view from Ernest Street dwellings north to Cammeray Golf Course

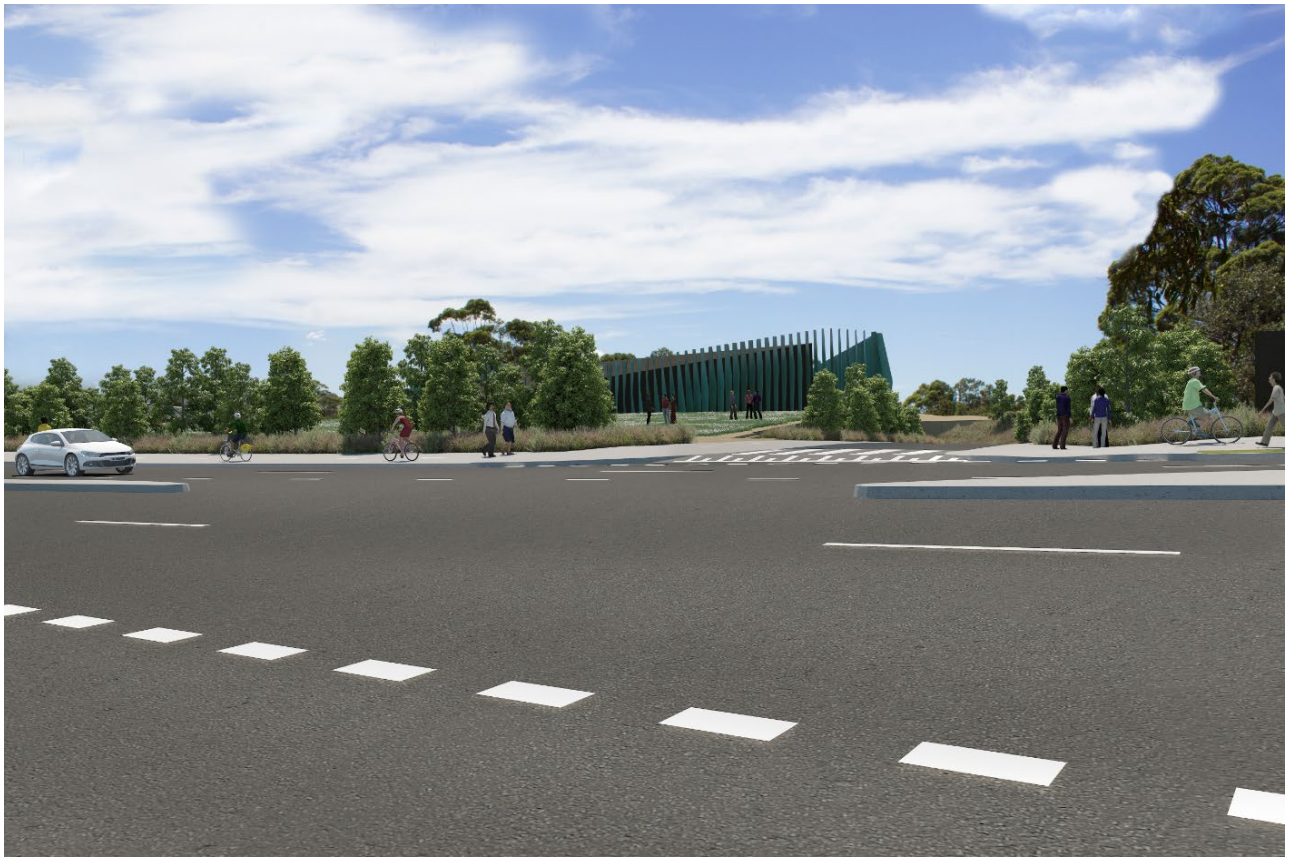


Figure 22-23 Proposed view (Day 1 of operation) from Ernest Street dwellings north to Cammeray Golf Course

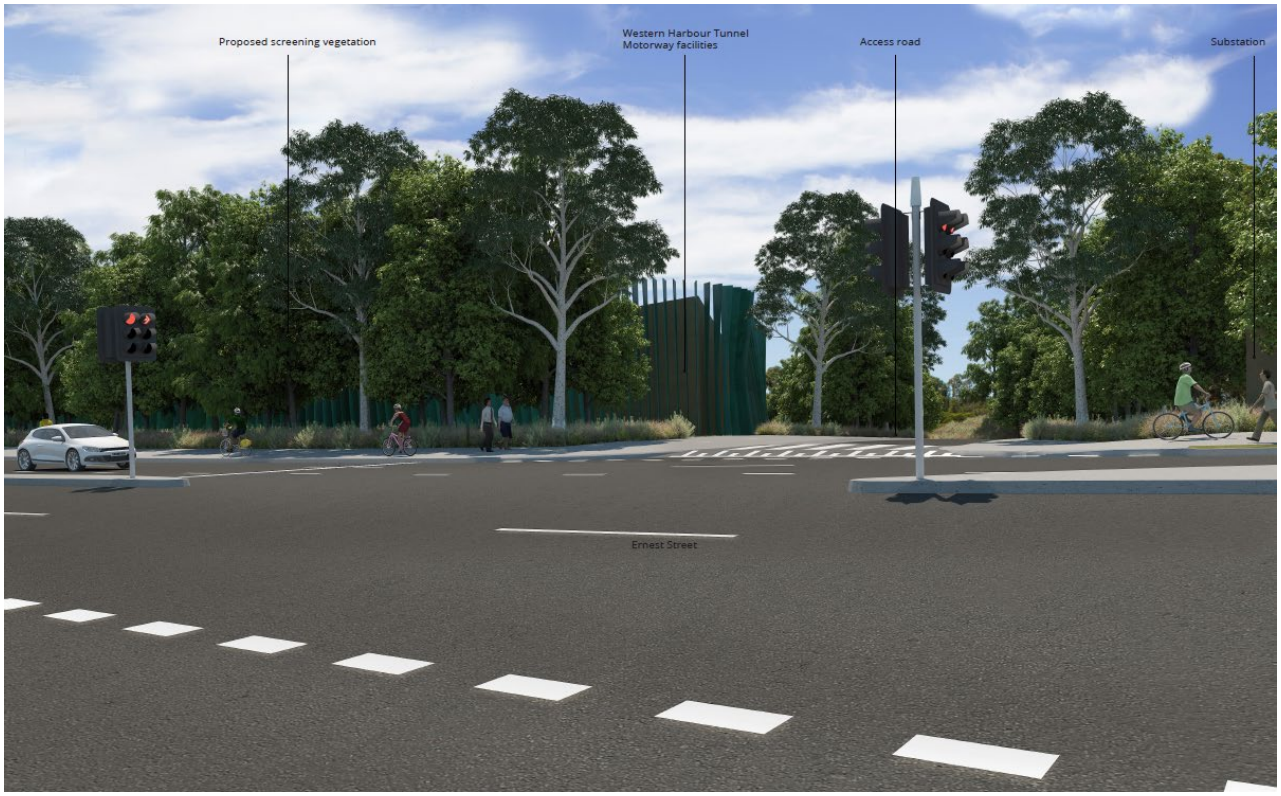


Figure 22-24 Proposed view (Year 10 of operation) from Ernest Street Dwellings north to Cammeray Golf Course

Existing and proposed views from Kurraba Road/Alfred Street North (viewpoint 27) are shown in Figure 22-25 to Figure 22-27.

Figure 22-25 Existing view north from Kurraba Road/Alfred Street north

Figure 22-26 Proposed view (Day 1 of operation) north from Kurraba Road/Alfred Street north

Figure 22-27 Proposed view (Year 10 of operation) north from Kurraba Road/Alfred Street north

Artarmon precinct

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

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

Table 22-26 Viewpoint impacts during construction – Artarmon precinct

Viewpoint	Sensitivity	Magnitude	Overall impact rating
Viewpoint 1 – Waltham Street	Low	Negligible	Day-time hours: Negligible to beneficial
			Night-time hours: Negligible
Viewpoint 2 – Gore Hill Freeway	Low	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible
Viewpoint 3 – Gore Hill Freeway shared user path	Low	Negligible	Day-time hours: Negligible
			Night-time hours: Negligible

22.7 Environmental management measures

The project has aimed to limit its visual impact by situating project elements within or adjacent to major transport corridors and built-up urban areas. Project elements have been designed with consideration of the surrounding areas and landscape treatments have been proposed to reduce the visual impacts of new infrastructure.

Environmental management measures have been developed with the aim of avoiding significant visual impacts and where impacts are unavoidable, to effectively reduce and alleviate impacts. Environmental management measures relating to landscape character and visual impacts during construction are outlined in Table 22-27 below.

As noted previously, no environmental management measures are outlined in this section in respect to potential operational impacts as the mitigation of such potential impacts would be considered through the Strategic Urban Design Framework (see Section 22.2.2 and Appendix V (Technical working paper: Urban design, landscape character and visual impact)).

Table 22-27 Environmental management measures – Landscape character and visual amenity

Ref	Phase	Impact	Environmental management measure	Location
V1	Construction	Built form	Construction support sites will be developed to minimise visual impacts for adjacent receivers where feasible and reasonable.	WHT/WFU
V2	Construction		Storage areas and associated works will be located in cleared and otherwise disturbed areas away from residential areas where feasible and reasonable.	WHT/WFU
V3	Construction		Site hoardings will be in neutral colours and designs in proximity to open space to help blend them into the surrounding environment.	WHT/WFU
V4	Construction		Site hoarding and perimeter site areas will be maintained regularly to include the prompt removal of graffiti.	WHT/WFU
V5	Construction		Site lighting will be designed to minimise glare issues and light spillage into adjoining properties and be generally consistent with the requirements of Australian Standards and Guidelines 4282 – 1997 Control of the obtrusive effects of outdoor lighting.	WHT/WFU
V6	Construction		Hoardings and temporary noise walls will be erected as early as possible within the site establishment phase to provide visual screening.	WHT/WFU

Ref	Phase	Impact	Environmental management measure	Location
V7	Construction		High quality fencing suitable for parks and public spaces will be used where construction support sites are located in close proximity to sensitive residential receivers such as residents and users of recreational space.	WHT/WFU
V8	Construction	Vegetation/ landscaping	Existing trees adjacent to the works will be retained and protected where possible to screen construction support sites, minimising clearing where possible.	WHT/WFU
V9	Construction		Where possible, trees will be trimmed rather than removed. Works will be carried out by a qualified arborist.	WHT/WFU
V10	Construction		All areas disturbed by construction and not required for operation of the project will be restored to existing condition.	WHT/WFU
V11	Construction		Early planting works will be considered to provide a screening buffer that has time to mature before the project is fully operational.	WHT/WFU

Western Harbour Tunnel = WHT, Warringah Freeway Upgrade = WFU

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