CHATSWOOD TO SYDENHAM

ENVIRONMENTAL IMPACT STATEMENT

MAY 2016

TECHNICAL PAPER 6:
LANDSCAPE & VISUAL IMPACT ASSESSMENT

Sydney Metro, City and Southwest

Chatswood to Sydenham

Technical Paper No. 6
Landscape & Visual Impact Assessment

April, 2016

for the NSW Government | Transport for NSW

Document No. NWRLSRT-JRH-SC-PL-REP-000013

IRIS Visual Planning + Design

CONTENTS

EXECUTIVE SUMMARY

Project overview

Project overview

Sydney Metro is a new standalone rail network identified in Sydney's Rail Future. The Sydney Metro network consists of Sydney Metro City & Southwest and Sydney Metro Northwest.

The proposed Sydney Metro City & Southwest comprises two core components:

- The Chatswood to Sydenham project (the project), the subject of this technical paper, would involve construction and operation of an underground rail line between Chatswood and Sydenham
- The Sydenham to Bankstown upgrade would involve the conversion of the 13.5 kilometre Bankstown line to metro standards and upgrade of existing stations between Sydenham and Bankstown.

The Sydenham to Bankstown upgrade will be subject to a separate environmental impact assessment.

Investigations have started on the possible extension of Sydney Metro from Bankstown to Liverpool. The potential extension would support growth in Sydney's south west by connecting communities, businesses, jobs and services as well as improving access between the south west and Sydney's CBD. It would also reduce growth pressure on road infrastructure and the rail network, including the potential to relieve crowding on the T1 Western Line, T2 South Line and T2 Airport Line.

The Sydney Metro Chatswood to Sydenham project (the project) involves the construction and operation of a metro rail line. The project would be mainly located underground in twin tunnels extending from Chatswood on Sydney's north shore, crossing under Sydney Harbour, and continue to Sydenham.

The key components of the project would include:

- About 15.5 kilometres of twin rail tunnels (that is, two tunnels located side-by-side) between Mowbray Road, Chatswood and north of Sydenham Station (near Bedwin Road, Marrickville)
- Realignment of the existing T1 North Shore Line surface track within the existing rail corridor between Chatswood Station and in the vicinity of Brand Street, Artarmon, including a new bridge for a section of the 'down' (northbound) track to pass over the proposed northern dive structure
- About 250 metres of aboveground metro tracks between Chatswood Station and the Chatswood dive structure
- A dive structure (about 400 metres long) and tunnel portal south of Chatswood Station and north of Mowbray Road, Chatswood (the Chatswood dive structure)
- A substation (for traction power supply) at Artarmon
- Metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo; and new underground platforms at Central Station
- A dive structure (about 400 metres long) and tunnel portal between Sydenham Station and Bedwin Road, Marrickville (the Marrickville dive structure)
- A services facility (for traction power supply and an operational water treatment plant) adjacent to the Marrickville dive structure.

The project would also include a number of ancillary components, including new overhead wiring and alterations to existing overhead wiring, signalling, access tracks / paths, rail corridor fencing, noise walls, fresh air ventilation equipment, temporary and permanent alterations to the road network, facilities for pedestrians, and other construction related works.

Approach to landscape and visual assessment

This assessment considers the expected impact of the project on each surface works site in terms of:

- Landscape quality, and
- Visual amenity

The assessment identifies the landscape and visual impact during construction and operation, and during the day and at night.

The scope of the surface works at the eight station sites is limited to the construction and operation of the ground floor level entry and structural elements to provision for future above station development. Any above station development would not be undertaken as part of this project and has not been considered in this assessment.

Overview of potential impact

The following section summarises the potential landscape and visual impact which are expected to be experienced at the eleven surface works sites.

Chatswood dive site (northern) & Northern surface works

Landscape impact

Construction of the project would result in a **moderate adverse landscape impact** on the Frank Channon Walk. This would be primarily due to the direct impact of construction upon the path, and its closure during some stages of construction. Although the Frank Channon Walk would be reopened during project operation, the loss of trees, scale of adjacent retaining structure and noise walls, and overshadowing impact would result in a **minor adverse landscape impact**.

There would be indirect impact on Chatswood Park during the construction and operation of the project, however, this would result in a **negligible landscape impact**.

Visual impact

There would be **minor** and **moderate adverse visual impact** created by the project during construction. These impact are primarily due to the scale and extent of the works, including the removal of vegetation along the rail corridor between Nelson Street and Mowbray Road, introduction of larger noise walls, and the scale of works occurring at the dive site. These impact are experienced in particular from Nelson Street, Gilham Street, Mowbray Road and the residential properties to the east of the existing rail corridor.

There would also be **minor adverse visual impact** experienced from elevated residences to the west of the Frank Channon Walk. In these views, the removal of vegetation within the rail corridor, and the introduction and augmentation of noise walls, would open up views to the existing corridor as well as change the character of views to include the rail corridor and construction of the new Metro line.

During operation, there would be **minor** to **moderate adverse visual impact** experienced in views to the site from residential properties to the west of Frank Channon Walk, residential properties and streets between Nelson Street and Mowbray Road, and residential properties between Mowbray and Hawkins Street. The removal of vegetation within the rail corridor would result in some unfiltered views of the corridor works and dive structure. Adverse effects to adjacent residential areas would also be caused by the provision of additional, relocated, and increasing the height of noise walls in some locations along the rail corridor.

At night there would be a **moderate adverse visual impact** during construction due to the requirement for vehicle deliveries and haulage after hours. During operation, however, there would be a **negligible visual impact** as the works would be visually absorbed into the existing character of the rail corridor and surrounding area of E3: Medium district brightness.

EXECUTIVE SUMMARY

Overview of potential impact

Artarmon substation

Landscape impact

The landscape impact of the project both during construction and operation are expected to be **negligible** at the Artarmon substation site. This is due to the containment of works within the project site, and minor requirement for haulage and deliveries.

Views to this the are predominantly neighbourhood sensitivity views from adjacent residential streets and properties. There are expected to be **negligible visual impact** experienced in views to the project during both construction and operation. This is due to the change from views of a temporary school buildings, to less visually intensive activities.

After-hours works are not required for the construction of the project at this site.

At night, during operation, there would be **negligible visual impact** during both construction and operation of the project. This is due to the surrounding **E3: Medium district brightness area** and minimal lighting required to undertake the works and operate the facility.

Crows Nest Station

Landscape impact

During construction the project would result in a **minor adverse landscape impact** on the surrounding streets of Oxley, Hume and Clarke Streets and the Pacific Highway in the vicinity of the project site. This is primarily due to the direct impact on pedestrian movement and the loss of mature street trees.

During operation, there would be **minor beneficial landscape impact** experienced on these surrounding streets and Clarke Place Park. These benefits relate to the improved access to public transport and additional pedestrian crossings which would improve overall accessibility and permeability of the entire precinct.

Visual impact

There would be a range of adverse visual impact created by the project during construction including **minor** and **moderate adverse visual impact**. These impact are primarily due to the extent of demolition works, and the scale of the acoustic enclosures and construction sites. The range of impact levels reflect the scale and proximity of the works to the viewing location. Generally impact are more substantial in the vicinity of Hume Street where the construction site works would be more complex and have a larger footprint.

There would be a **negligible visual impact** experienced in views to the site during operation of the project. In particular, the views would be restored and somewhat improved at the corner of Hume and Clarke Street where the new station entry and streetscape upgrades would be seen.

At night there would be **negligible visual impact** during construction due to the context of **E4: High district brightness area**. During operation there would also be a **negligible** visual impact as the station and associated development would be visually absorbed into the surrounding brightly lit context.

Victoria Cross Station

Landscape impact

During construction there would be a **moderate adverse landscape impact** on the Harbour cycles sculpture as it would be removed to make way for the construction site. There would also be a **minor adverse landscape impact** on Berry and Miller Streets in the vicinity of the project sites, primarily due to the direct impact on pedestrian movement and the loss of mature street trees.

During operation there would be **moderate beneficial landscape** impact experienced on these surrounding streets. These benefits relate to the improved access to public transport, footpath widening and the

creation of a plaza which would improve overall accessibility and permeability around the entire precinct. There would be **negligible landscape impact** on the surrounding landscapes of the Monte Sant' Angelo Mercy College, the MLC Building sculpture garden and Brett Whiteley Place.

Visual impact

There would be a range of adverse visual impact created by the project during construction including **minor** and **moderate adverse visual impact** from surrounding streets. These impact are primarily due to the demolition of buildings, the establishment of acoustic enclosures and construction vehicles accessing the site. The range of impact levels reflect the sensitivity of the view and proximity to the site. The site would be viewed from footpaths directly adjacent to the construction site as well as from locations up and down Miller Street as far away as the Pacific Highway intersection in the south.

During operations, the introduction of a services facility at the northern site would have a **minor adverse visual impact** on views due to the loss of visual interest and reduced compatibility with surrounding built form.

At the southern site there would be **minor beneficial visual impact** experienced in during the operation of the project. These benefits are created by the uncluttering of views to the site and the introduction of a broad open plaza space, street trees, and a prominent station entry.

At night, in both locations, there would be **negligible visual impact** during construction, despite the requirement for vehicle deliveries and haulage at night. During operation, there would also be a **negligible visual impact** as the station lighting would be in character with the **E4: High district brightness** setting.

Blues Point temporary construction site

Landscape impact

During construction the project would result in a **high adverse landscape impact** on the Blues Point Reserve as a consequence of the direct loss of harbour foreshore open space.

These impact are temporary, and there would be no landscape impact during operation as there are no activities proposed for this site.

Visual impact

There would be a range of visual impact created by the project during construction. In views from areas around Blues and McMahons Point there would be **high adverse visual impact**. These impact are created by the obstruction of views to the open water of the harbour and incongruent character of the project works within these views.

In views from the Harbour Bridge and the Ives stairs, there would be **moderate adverse visual impact** during construction. This is due to the disruption of the green foreshore edge seen from across the harbour.

The highly sensitive viewing location of the Sydney Opera House and forecourt is expected to experience **negligible visual impact** as a result of the project during construction. Although the site would be clearly visible, the distance and visual absorption capacity of the surrounding urban environment would result in no perceived change in the amenity of views from this location.

N**egligible visual impact** would be experienced from the Barangaroo Reserve during construction, where distance and intervening elements would limit the visibility of the site.

These impact are temporary, and there would be no visual impact during operation as there are no activities proposed for this site.

At night there would be **minor adverse visual impact** expected during construction. This is due to the night works that would be required at the site, particularly 24 hour deliveries and TBM retrieval activities.

EXECUTIVE SUMMARY

Overview of potential impact

Harbour ground improvement works

Landscape impact

During construction the landscape impact of the project would result in a **negligible landscape impact** due to the absorption capacity of the surrounding busy harbour.

These impact are temporary, and there would be no landscape impact during operation as there are no activities proposed for this site.

Visual impact

There would, however, be **negligible, minor** and **moderate adverse visual** impact experienced due to the Harbour Works during construction. In distant views, it is expected that the project works would be visually absorbed into the busy waters of this section of the harbour, resulting in **negligible visual impact** from the Sydney Opera House and Waverton Peninsular Reserve during construction. In views where the site is seen at a closer proximity, and where both sites would be seen there are **minor** and **moderate adverse visual** impact. This includes views from Blues Point Reserve, Milsons Point Wharf, Balmain East Ferry Wharf and Barangaroo Reserve.

These impact are temporary, there are no visual impact during operation as there are no activities proposed for this site.

Barangaroo Station

Landscape impact

During construction the project would result in a **minor adverse landscape impact** on Hickson Road in the vicinity of the project sites, primarily due to the direct impact on vehicular and pedestrian movement and the loss of mature street trees.

During operation, however, there would be **minor beneficial landscape impact** experienced at Hickson Road and Central Barangaroo, and **moderate beneficial landscape impact** at the Barangaroo Reserve. These benefits are due to improved access of public transport and public realm enhancements which would increase the overall accessibility and permeability around this precinct.

Visual impact

There would be a range of visual impact created by the project during construction including **minor** and **moderate adverse visual impact**. These impact are the result of a balance between the mitigating effect of the existing surrounding context of construction activity on the adjacent Central Barangaroo site, and the high sensitivity of surrounding visual receptors. Greater impact would be experienced in locations of higher visual sensitivity, and where construction of the project is seen extending into new areas, such as the Millers Point cliff wall in views from the Munn Street Bridge, which would result in a **moderate adverse visual impact**.

In addition, there would be temporary **minor adverse visual impact** experienced during the power upgrade works on Hickson Road, Sussex, Shelley, Lime and Erskine Streets.

During the operation of the project **negligible visual impact** are expected from most assessed viewing locations, due to the integration of the project into the surrounding Central Barangaroo development. There is a **moderate adverse visual impact** expected from views at the North Cove plaza (in Barangaroo Reserve), where the service facilities would be located adjacent to the Millers Point cliff wall, and become a prominent element in streetscape views.

At night there would be **negligible impact** expected during construction and operation. This is due to the existing construction activity, experienced in views from the west, and containing effect of the Millers Point cliff wall to viewing locations to the east.

Martin Place Station

Landscape impact

During construction the project would result in a **minor adverse landscape impact** on Hunter, Castlereagh and Elizabeth Streets in the vicinity of the project sites. Furthermore, the removal of the P&O Fountain would result in a **moderate adverse landscape impact**.

There would be a **very high adverse landscape impact** on Martin Place during construction due to the diversion of pedestrian movement on these streets and a portion of Martin Place during construction, as well as the loss of trees and plaza space for community use.

During operation there would be a **minor beneficial landscape impact** on Hunter, Castlereagh and Elizabeth Streets where they surround the project site. The improvements to Martin Place would create a **high beneficial landscape impact** due to the integration of the station with Martin Place, and improvements to legibility and accessibility in particular.

Visual impact

There would be a range of visual impact experienced during construction. This would include adverse impact on views from the surrounding streets and public squares, including: **minor adverse** impact in views from Richard John Square, **moderate adverse** impact from Chifley Square, and **very high adverse visual impact** from Martin Place.

The impact during construction are primarily derived from the demolition of buildings and the establishment of acoustic enclosures. The highly sensitive nature of views within this precinct result in higher visual impact. There would also be temporary **minor adverse visual impact** experienced during the power upgrade works on Hunter, Margaret, George and Napoleon Streets.

During operation there would be **high beneficial impact** on views in the vicinity of Martin Place, as the design offers an improvement to the current views in this area.

At night there would be **negligible visual impact** during construction and operation. This is due to the enclosure of light within the acoustic enclosures and the surrounding setting of **E4: High district brightness** environment.

Pitt Street Station

Landscape impact

During construction the project would result in a **minor adverse landscape impact**, and a **minor beneficial** impact. These impact are primarily a consequence of the street level impact of construction on pedestrian movement. During operation, the existing highly urban environment would be improved by street level activation and legible public transport access points.

Visual impact

There would be a **minor adverse visual impact** experienced in most views in the vicinity of the project during construction. These impact are derived primarily from the demolition of buildings, however, the mixed character of this precinct would largely absorb this visual change. A **moderate adverse** visual impact is expected from Hyde Park in the view along Park Street. This is due to the higher visual sensitivity of this location.

There would also be temporary **minor adverse visual impact** experienced during the power upgrade works on the Surry Hills substation connection option, and **minor** to **moderate adverse visual impact** would be experienced on the Pyrmont substation connection option due to the sensitivity of views to Town Hall, the QVB, and Cockle Bay.

During operation there would be **negligible** visual impact created by the project due to the visual absorption capacity of the surrounding urban environment.

At night, there would be **negligible visual impact** during construction and operation.

EXECUTIVE SUMMARY

Overview of potential impact

This is due to the enclosure of light within the acoustic enclosures and the surrounding setting of **E4: High district brightness** environment.

Central Station

Landscape impact

During construction there would be a **moderate adverse landscape impact** experienced at the northern concourse due to impact on pedestrian connectivity, legibility of the station entry from the north, and the reduced activation and comfort of the entry plaza created by the loss of retail tenancies, trees and construction activity.

During operation, however, there would be **negligible landscape impact** experienced due to the reinstatement of impacted public realm areas.

Visual impact

There would be a range of visual impact created by the project during construction including **minor** and **moderate adverse visual impact**. These impact are due primarily to the sensitivity of views and the scale of works. In particular, the scale of the new built elements, including the temporary pedestrian bridge between Platforms 1 and 23, and the Sydney Yards access bridge between Regent Street and the Sydney Yards laydown site.

During operations there would be mainly **negligible visual impact** as the temporary bridge would be removed and the station platforms reinstated. However, there would be **moderate adverse visual impact** at Regent Street and from trains within the corridor where the Sydney Yards access bridge would be seen as it and continue to be used for access to the Yards and at the Station as the services building at the southern end of the proposed Metro platform alters views.

At night there would be **negligible visual impact** during construction and operation of the project due to the existing lit context of **E4: High district brightness**.

Waterloo Station

Landscape impact

During construction the project would result in **negligible** to **minor adverse landscape impact**. These impact are primarily a consequence of the street level effects of construction on pedestrian movement and the reduced shade due to removal of buildings with awnings and street trees.

During operation there would be a **minor beneficial landscape impact** experienced at the site. This would be due to the combined effect of localised footpath improvements, the introduction of a legible public transport node.

Visual impact

There would be a **negligible** to **minor adverse visual impact** on most views in the vicinity of the project during construction. These impact are primarily derived from the demolition of existing buildings. There would also be a **moderate adverse impact** in views from Botany Road where the setting of the heritage listed church is altered.

There would also be temporary **minor adverse visual impact** experienced during the power upgrade works on Cope, Wellington and George Streets to connect with the Zetland substation.

During operation there would be **negligible visual impact** as the precinct would readily absorb the visual change due to the existing eclectic mix of character and future urban renewal project (subject to separate assessment).

At night the project would result in **minor adverse visual impact** during construction, due to the requirement for vehicle deliveries and haulage at night. During operation, however, there would be a largely **negligible impact** experienced due to the existing area of **E3: Medium district brightness**, and precedent of commercial development.

Marrickville dive site (southern)

Landscape impact

There would be a **minor adverse landscape impact** on the Marrickville Flood Storage Reserve during construction. Although there would be no direct impact on the reserve, the loss of warehousing that is located directly adjacent would alter the landscape character of its setting. There would also be a **minor adverse landscape impact** on the street art precinct within the industrial areas of Marrickville during construction due to the removal of industrial buildings which include graffiti.

During operation there are expected to be **negligible** landscape impact as the site would be returned to light industrial use.

Visual impact

As a result of the project there would be mainly **negligible visual impact** during both construction and operation. This is primarily due to the consistency in character between the existing light industrial landscape and the proposed construction site works and operational site features, as well as the relatively low sensitivity of surrounding viewing locations. There would be a **minor adverse visual impact** on views from the rail corridor due to the scale and increased sensitivity of these views which are seen by large number of viewers.

During construction there would be temporary **minor adverse visual impact** experienced during the power upgrade works on Lord, John, Council May Streets and the Princes Highway to Sydney Park.

During both construction and operation there would be a **minor adverse visual impact** on views from the rail corridor due to the scale and increased sensitivity of these views which are seen by large number of viewers.

Similarly, at night there is expected to be a **negligible visual impact** during construction and operation. This is due to the relatively low sensitivity of surrounding viewing areas and absorption of the change into the surrounding **E3: Medium District Brightness** area. Although this activity would potentially create a slight reduction in the amenity of these views, the overall impact is not substantial.

Summary of mitigation response

In summary, the following mitigation measures are proposed to avoid, reduce and manage the identified potential adverse operational and construction landscape and visual impact.

During construction, proposed mitigation measures include:

- Where feasible and reasonable, the elements within construction sites would be located to minimise visual impact, for example materials and machinery would be stored behind fencing.
- Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites and Adjoining Properties.
- Lighting of compounds and construction sites would be oriented to minimise glare and light spill impact on adjacent receivers.
- Visual mitigation would be implemented as soon as feasible and reasonable after the commencement of construction, and remain for the duration of the construction period.
- Opportunities for the retention and protection of existing street trees would be identified during detailed construction planning.
- The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impact, including the prompt removal of graffiti. Public art opportunities would be considered.
- The selection of materials and colours for acoustic sheds would aim to minimise their visual prominence.
- Tunnel boring machine retrieval works at the Blues Point temporary site would be timed to avoid key harbour viewing events.
- Benching would be used where feasible and reasonable at Blues Point temporary site to minimise visual amenity impact.

During operation, proposed mitigation measures include:

- Cut off and direct light fittings (or similar technologies) would be used to minimise glare and light spill onto private property.
- Where feasible and reasonable, vegetation would be provided to screen and visually integrate sites with the surrounding area.
- Identify and implement appropriate landscape treatments for Frank Channon Walk.
- The architectural treatment of Artarmon substation would minimise visual amenity and landscape character impact.
- The Harbour Cycles sculpture at North Sydney would be reinstated at a location determined in consultation with North Sydney Council.
- The P&O Fountain at 55 Hunter St would be reinstated at a location determined in consultation with City of Sydney Council.
- Opportunities would be investigated to provide a permanent wall for street art at Marrickville dive site in consultation with Marrickville Council.
- Noise walls would be transparent where they are augmenting existing transparent noise walls.

01 INTRODUCTION

The project

Sydney Metro is a new standalone rail network identified in Sydney's Rail Future. The Sydney Metro network consists of Sydney Metro City & Southwest and Sydney Metro Northwest.

The proposed Sydney Metro City & Southwest comprises two core components:

- The Chatswood to Sydenham project (the project), the subject of this technical paper, would involve construction and operation of an underground rail line between Chatswood and Sydenham
- The Sydenham to Bankstown upgrade would involve the conversion of the 13.5 kilometre Bankstown line to metro standards and upgrade of existing stations between Sydenham and Bankstown.

Both components are subject to assessment and approval by the Minister for Planning under Part 5.1 of the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). The Sydenham to Bankstown upgrade will be subject to a separate environmental impact assessment.

Sydney Metro Northwest (formerly the North West Rail Link) is currently under construction, services will start in the first half of 2019. This includes a new metro rail line between Rouse Hill and Epping and conversion of the existing rail line between Epping and Chatswood to metro standards.

Investigations have started on the possible extension of Sydney Metro from Bankstown to Liverpool. The potential extension would support growth in Sydney's south west by connecting communities, businesses, jobs and services as well as improving access between the south west and Sydney's CBD. It would also reduce growth pressure on road infrastructure and the rail network, including the potential to relieve crowding on the T1 Western Line, T2 South Line and T2 Airport Line.

The Sydney Metro Delivery Office has been established as part of Transport for NSW to manage the planning, procurement and delivery of the Sydney Metro network.

The Sydney Metro rail network is shown in Figure 1 1.

1.1 The Sydney Metro network

The customer experience underpins how Sydney Metro is being planned and designed. The customer experience incorporates all aspects of travel associated with the transport network, service and project including:

- The decision on how to travel
- The travel information available
- The speed and comfort of the journey
- The range and quantity of services available at stations, interchanges and within station precincts.

A high quality 'door to door' transport product is critical to attract and retain customers and also to meet broader transport and land use objectives. This includes providing a system that is inherently safe for customers on trains, at stations and at the interface with the public domain; providing direct, comfortable, legible and safe routes for customers between transport modes; and provide a clean, pleasant and comfortable environment for customers at stations and on trains.

Key features of the metro product include:

- Comfortable carriages with space for customers to sit or stand
- A 'turn-up-and-go' service, with high frequency trains, reduced journey times with faster trains, and new underground routes through the Sydney CBD
- Increased capacity to safely and reliably carry more customers per hour due to the increased frequency of trains
- Reduced dwell times at stations as each carriage would be single-deck with three doors, allowing customers to board and alight more quickly than they can with double-deck carriages.

The Chatswood to Sydenham project would have the capacity to run up to 30 trains per hour through the Sydney CBD in each direction, which would provide the foundation for delivering a 60 per cent increase in the number of trains operating in peak periods, and cater for an extra 100,000 customers per hour.

1.2 Overview of the project

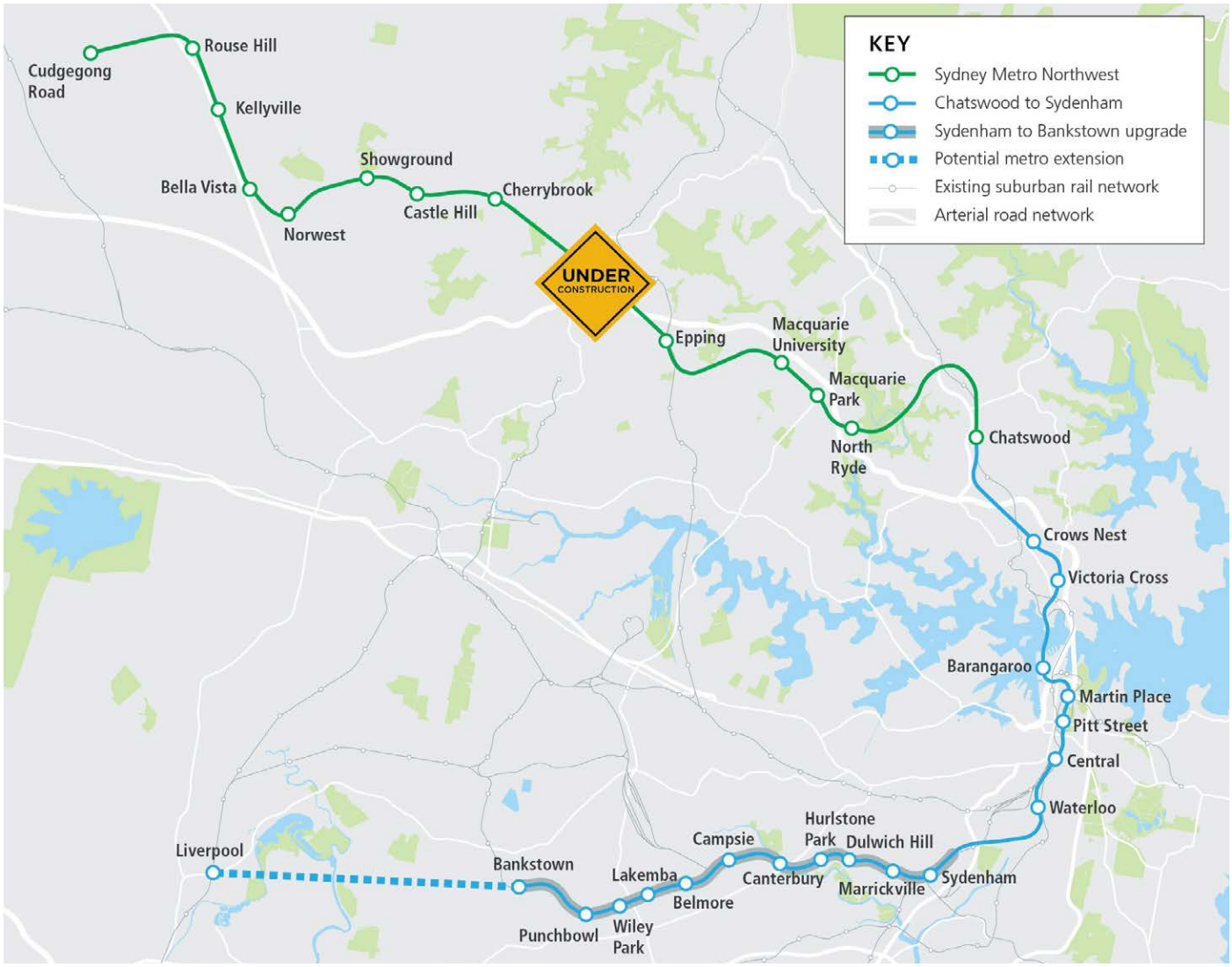
1.2.1 Location

The Sydney Metro Chatswood to Sydenham project (the project) involves the construction and operation of a metro rail line. The project would be mainly located underground in twin tunnels extending from Chatswood on Sydney's north shore, crossing under Sydney Harbour, and continue to Sydenham Station.

1.2.2 Key features

The proposed alignment and key operational features of the project are shown in Figure 1 2 and would include:

- Realignment of T1 North Shore Line surface track within the existing rail corridor between Chatswood Station and Brand Street, Artarmon, including a new bridge for a section of the 'down' (northbound) track to pass over the proposed northern dive structure
- About 250 metres of aboveground metro tracks between Chatswood Station and the Chatswood dive structure
- A dive structure (about 400 metres long) and tunnel portal south of Chatswood Station and north of Mowbray Road, Chatswood (the Chatswood dive structure)
- About 15.5 kilometres of twin rail tunnels (that is, two tunnels located side-by-side) between Mowbray Road, Chatswood and Bedwin Road, Marrickville. The tunnel corridor would extend about 30 metres either side of each tunnel centre line and around all stations

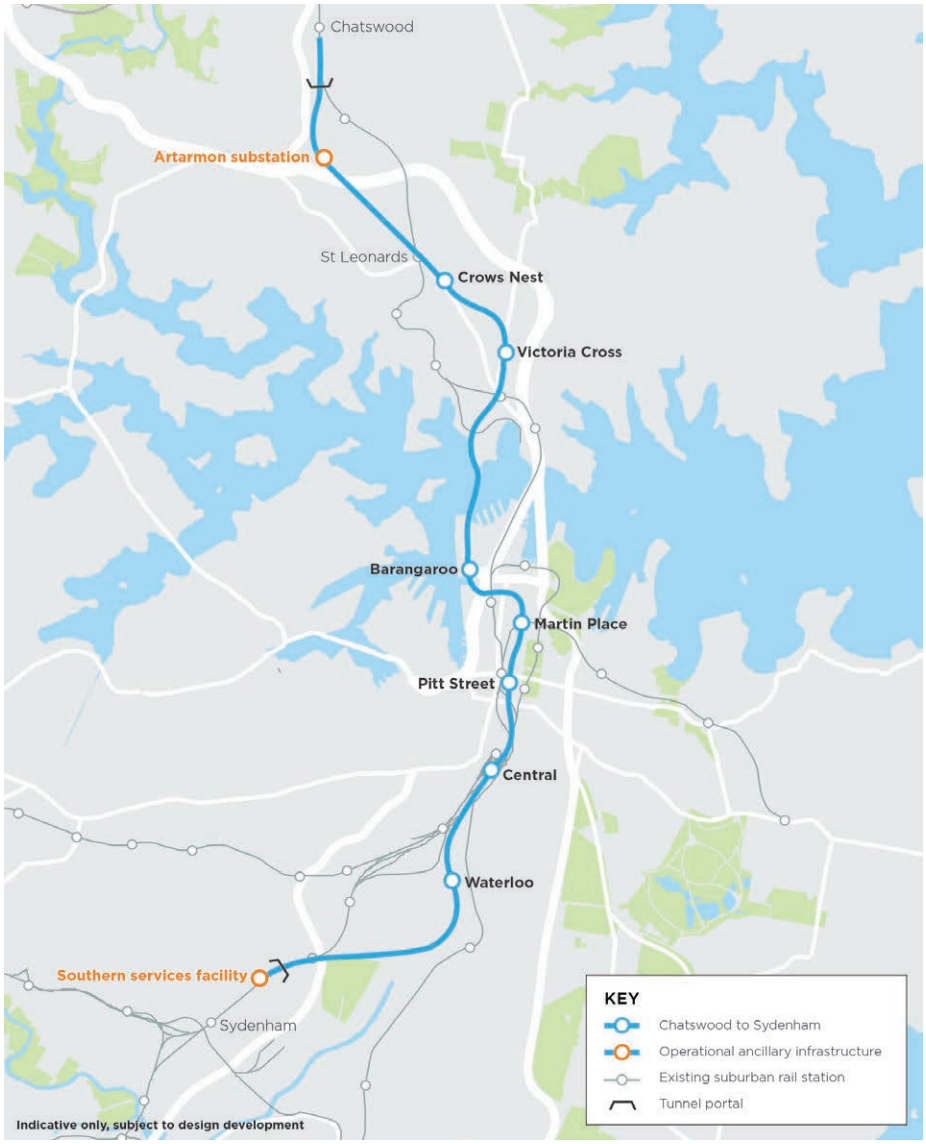


1-1 THE SYDNEY METRO NETWORK

- A substation (for traction power supply) in Artarmon, next to the Gore Hill Freeway, between the proposed Crows Nest Station and the Chatswood tunnel portal
- Metro stations at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street and Waterloo; and new underground platforms at Central Station
- A dive structure (about 400 metres long) and tunnel portal between Sydenham Station and Bedwin Road, Marrickville (the Marrickville dive structure)

01 INTRODUCTION

The project



1-2 THE PROJECT

- A services facility beside the Marrickville dive structure and tunnel portal, including a tunnel water treatment plant and a substation (for traction power supply).

The project would also include:

- Permanent closure of the road bridge at Nelson Street, Chatswood, and provision of double right-turn lanes from the Pacific Highway (southbound) into Mowbray Road (westbound)
- Changes to arrangements for maintenance access from Hopetoun Avenue and Albert Avenue, Chatswood as well as a new access point from Brand Street, Artarmon
- Underground pedestrian links at some stations and connections to other modes of transport (such as the existing suburban rail network) and surrounding land uses
- Alterations to pedestrian and traffic arrangements and public transport infrastructure (where required) around the new stations and surrounding Central Station
- Installation and modification of existing Sydney Trains rail systems including overhead wiring, signalling, rail corridor fencing and noise walls, within surface sections at the northern end of the project
- Noise walls (where required) and other environmental protection measures.

The proposed construction activities for the project broadly include:

- Demolishing buildings and structures at the station sites and other construction sites
- Constructing tunnels, dive structures and tunnel portals
- Excavating, constructing and fitting out metro stations, fitting out tunnel rail systems and testing and commissioning of stations, tunnels, ancillary infrastructure, rail systems and trains
- Excavating shafts, carrying out structural work and fitting out ancillary infrastructure at Artarmon and Marrickville.

A number of construction sites would be required to construct the project. These include locations for tunnel equipment and tunnel boring machine support at Chatswood, Barangaroo and Marrickville as well as at station sites; a casting yard and segment storage facility at Marrickville and

a temporary tunnel boring machine retrieval site at Blues Point.

1.3 Purpose and scope of this report

The project has been declared State significant infrastructure and critical State significant infrastructure and therefore requires assessment and approval by the Minister for Planning under Part 5.1 of the EP&A Act, including preparation of an environmental impact statement (EIS).

This technical paper, Technical Paper 6: Landscape and Visual Impact Assessment, is one of a number of technical documents that forms part of the EIS. The purpose of this technical paper is to identify and assess the Urban Design and Visual impact of the project during both construction and operation. In doing so it responds directly to the Secretary's Environmental Assessment Requirements (SEARs) outlined in Section 1.4.

The Urban Design requirements in the SEARS relate to *'visual amenity', 'character'* and *'quality'* of the surrounding environment as well as '*accessibility*' and '*connectivity*' of communities. These requirements will be addressed in a 'Landscape assessment' which incorporates all of these considerations and uses terminology which is consistent with the relevant industry assessment guidelines. (Refer section 02 Methodology)

This technical paper considers the construction and operational impact of the project on the urban landscape and visual setting of the project, and includes:

- A review of the relevant planning context
- Identification of the existing environmental conditions
- Identification of the landscape and visual sensitivity of key receptors
- An assessment of landscape impact during construction and operation
- An assessment of the daytime visual impact during construction and operation
- A general assessment of night time visual impact during construction and operation
- Identification of mitigation measures.

1.4 Secretary's environmental assessment requirements

The Secretary's environmental assessment requirements relating to Urban Design and Visual Amenity, and where these requirements are addressed in this technical paper, are outlined in Table 1 1.

TABLE 1.1 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Secretary's environmental assessment requirements	Where addressed
<u>14. Urban design</u> The project design complements the visual amenity, character and quality of the surrounding environment. The project contributes to the accessibility and connectivity of communities. 1. The Proponent must: (a) identify the urban design and landscaping aspects of the project and its components; (b) include consideration of urban design principles adopted by each council or within each station precinct; (c) assess the impact of the project on the urban, rural and natural fabric; (d) explore the use of Crime Prevention Through Environmental Design (CPTED) principles during the design development process, including natural surveillance, lighting, walkways, signage and landscape; and (e) identify urban design strategies and opportunities to enhance healthy, cohesive and inclusive communities.	(a), (b), (c) are addressed in sections 03 - 16 (d) and (e) are addressed in the EIS Chapter 6 Project Description - Operation
<u>15. Visual Amenity</u> The project minimises adverse impact on the visual amenity of the built and natural environment (including public open space) and capitalises on opportunities to improve visual amenity. 1. The Proponent must assess the visual impact of the project and any ancillary infrastructure on: (a) views and vistas; (b) streetscapes, key sites and buildings; (c) the local community. 2. The Proponent must provide artist impressions and perspective drawings of the project to illustrate how the project has responded to the visual impact through urban design and landscaping.	Sections 03 - 16

02 METHODOLOGY

Guidance for landscape and visual impact assessment

Methodology

Guidance for landscape and visual impact assessment

A range of guidance is available for the assessment of landscape and visual impact. In New South Wales the following are typically referred to:

- RMS Guidance note EIA-N04 Guidelines for Landscape Character and Visual Impact Assessment, 2013.
- The Guidance for Landscape and Visual Impact Assessment, Third Edition, prepared by the Landscape Institute and Institute of Environmental Management & Assessment, UK, 2013.
- The US Forestry Service, Scenic Management System as described in the publication 'Landscape Aesthetics: A Handbook of Scenery Management', US Forestry Service, 1996.

The methodology used for this project is described in Section 2, and conforms generally with the direction offered by these documents.

Methodology

The following Landscape and Visual Impact Assessment includes for each site:

- A review of the relevant planning context
- Identification of the existing environmental conditions
- Identification of the landscape and visual sensitivity of key receptors
- An assessment of landscape impact during construction and operation
- An assessment of the daytime visual impact during construction and operation
- A general assessment of night time visual impact during construction and operation
- Identification of mitigation measures

Planning context

The planning context for each site has been outlined by detailing relevant clauses that identify the value of the landscape and visual conditions of the project site.

This includes International Agency, Federal, State, and Local Government planning guidance for the landscape and visual values of the project site. Additionally, where master plans and guidance documents identify the ambitions for the site or study area, the relevant clauses have been recorded and their relevance to this assessment explained.

Existing environment

The existing environment has been described in terms of the key landscape and visual features of each site and study area. Site visits were undertaken and the existing character, landscape elements and views were recorded through observations and photographs.

Where relevant, the future character and conditions of each site have been anticipated. As landscape and visual conditions evolve and change over time some future projects may redefine land use, development density and the character of the study area. This includes projects which are under construction, and projects with development approval. It is likely that these projects will contribute to the character and conditions of the site when construction and operation of this project would occur. Examples of future relevant projects include: Central Barangaroo which is being planned for the areas surrounding the proposed Barangaroo Station site; '177 Pacific' an office building currently under construction in North Sydney to the west of the station site; and the CBD and South East Light Rail project which is likely to be constructed alongside this project in the vicinity of Central Station.

To a lesser extent, the intent of master plans and precinct strategies has also been considered in the baseline condition, where there is a level of certainty that these plans will be implemented over time.

Landscape impact assessment

Landscape in the urban context refers to the overall character and function of a place; it includes all elements within the public realm and the interrelationship between these elements and the people who use it. This landscape impact assessment will address the issues identified in the SEARS at 14. Urban Design.

There are a range of landscape elements that may be directly or indirectly impacted by the project. In order to address these impact, an assessment was undertaken by identifying the sensitivity of the element, magnitude of change expected as a result of the project, and then making an overall assessment of the level of impact.

The elements that were assessed in each precinct typically include public plazas, parks and streetscapes. The assessment of modification was based on the extent of change expected and considered a range of urban design factors including those found in the guidance from the National Urban Design Protocol, Designing Places for People (2011), which has been endorsed by the NSW Government.

Landscape sensitivity

Landscape sensitivity refers to the value placed on a landscape element or urban place, and the level of service it provides to the community. The sensitivity of a landscape may reflect the frequency and volume of users in a CBD location, but may also be valued for other characteristics such as tranquility, visual relief, and contribution to microclimate. The value of landscapes is often described in council and state government master plans and planning guidance documents, reflecting the importance of landscape resources to the local, regional and the state-wide community.

The sensitivity of landscape features is therefore considered in the broadest context of possible landscapes, from those of national importance through to those considered to have a neighbourhood landscape importance (Table 2-1).

In this table, the terms 'state' and 'regional' landscape sensitivity are intended to describe the value placed on the landscape by the community. Any landscape features which are afforded legislative protection will be specifically identified in the policy context section of the assessment.

TABLE 2-1 LANDSCAPE SENSITIVITY LEVELS

Landscape sensitivity	Description
National	Landscape feature protected with national or international legislation, e.g. the Sydney Opera House World Heritage Listed Building and its surrounding public realm.
State	Landscape feature or urban place that is heavily used and is iconic to the State, e.g. Martin Place and Hyde Park.
Regional	Landscape feature that is heavily used and valued by residents of a major portion of a city or a non-metropolitan region, e.g. Blues Point Reserve and the foreshores of Barangaroo.
Local	Landscape feature valued and experienced by concentrations of residents, and/or local recreational users. Provides a considerable service to the community. For example, it provides a place for local gathering, recreation, sport, street use by cafes and / or shade and shelter in an exposed environment e.g. Richard Johnson Square on Hunter Street and Willoughby Road in Crows Nest.
Neighbourhood	Landscape feature valued and appreciated primarily by a small number of local residents e.g. street trees in a local street. Provides a noticeable service to the community. For example, it provides a seat or resting place, passive recreation, and / or some shade and shelter in a local street e.g. Unwins Bridge Road in Marrickville and Drake Street in Chatswood.

02 METHODOLOGY

Landscape impact assessment

TABLE 2-2 LANDSCAPE MODIFICATION LEVELS

Landscape modification	Description
Considerable reduction or improvement	Substantial portion of the landscape is changed. This may include substantial changes to parkland function, footpath continuity, building access, permeability of local streets, and / or street tree cover for example. Substantial changes to the level of comfort, vibrancy, safety and walkability, enhancement, connectivity, diversity, and enduring legacy of the public realm.
Noticeable reduction or improvement	A portion of the landscape is changed. This may include the alteration of parkland function, footpath continuity, building access, permeability of local streets, and / or street tree cover for example. Some alteration to the level of comfort, vibrancy, safety and walkability, enhancement, connectivity, diversity, and enduring legacy of the public realm.
No perceived reduction or improvement	Either the landscape quality is unchanged or if it is, it is largely mitigated by proposed public realm improvements. Does not alter or not noticeably alter the level of comfort, vibrancy, safety and walkability, enhancement, connectivity, diversity, and enduring legacy of the public realm.

Landscape modification

Landscape modification refers to the change to the landscape that would occur as a result of the project. This includes direct impact such as the removal of trees or parkland, but also indirect impact, such as the functional change of an area of open space due to changing land use and access for example. Landscape modification can be adverse or beneficial. Table 2-2 lists the terminology used to describe the level of landscape modification.

The levels described in Table 2-2 have been informed by the National Urban Design Protocol (2011) principles of good urban places, which include: enhancing; connected; diverse; enduring; comfortable; vibrant; safe; and walkable. In addition, specific note has been made of considerations such as the functioning of footpaths; built edges; feature trees and avenues; visual and physical connections; and the types of activities supported in the public realm.

Visual impact assessment

This visual impact assessment considers visual amenity as experienced by the users of the site and surrounds. It aims to identify the range of views to the site which may be impacted, including views from residential, offices, parks and streets. This visual impact assessment will address the issues identified in the SEARS at 15. Visual Amenity.

In order to address impact on visual amenity, an assessment was undertaken by identifying the existing visual conditions, views that are representative of these conditions, the sensitivity of the view, magnitude of change expected as a result of the project, and then making an overall assessment of the level of impact.

Identification of existing visual conditions

A number of viewpoints have been selected to illustrate the visual influence of the site. These views represent publicly accessible viewpoints from a range of locations and viewing situations. Particular attention was paid to views from places where viewers are expected to congregate such as plazas, parks, public transport nodes and commercial areas, as well as views to and from heritage items.

Visual sensitivity

Visual sensitivity refers to the nature and duration of views. Locations from which a view would potentially be seen for a longer duration, where there are higher numbers of potential viewers and where visual amenity is important to viewers can be regarded as having a higher visual sensitivity. In addition, any views recognised by local, state or federal planning regulations would, by nature of their recognition in these documents, increase the sensitivity level of the view.

The sensitivity of a viewpoint is considered in the broadest context of possible views, from those of national importance through to those considered to have a neighbourhood visual importance (Table 2-3).

02 METHODOLOGY

Landscape impact assessment

TABLE 2-2 LANDSCAPE MODIFICATION LEVELS

Landscape modification	Description
Considerable reduction or improvement	Substantial portion of the landscape is changed. This may include substantial changes to parkland function, footpath continuity, building access, permeability of local streets, and / or street tree cover for example. Substantial changes to the level of comfort, vibrancy, safety and walkability, enhancement, connectivity, diversity, and enduring legacy of the public realm.
Noticeable reduction or improvement	A portion of the landscape is changed. This may include the alteration of parkland function, footpath continuity, building access, permeability of local streets, and / or street tree cover for example. Some alteration to the level of comfort, vibrancy, safety and walkability, enhancement, connectivity, diversity, and enduring legacy of the public realm.
No perceived reduction or improvement	Either the landscape quality is unchanged or if it is, it is largely mitigated by proposed public realm improvements. Does not alter or not noticeably alter the level of comfort, vibrancy, safety and walkability, enhancement, connectivity, diversity, and enduring legacy of the public realm.

Landscape modification

Landscape modification refers to the change to the landscape that would occur as a result of the project. This includes direct impact such as the removal of trees or parkland, but also indirect impact, such as the functional change of an area of open space due to changing land use and access for example. Landscape modification can be adverse or beneficial. Table 2-2 lists the terminology used to describe the level of landscape modification.

The levels described in Table 2-2 have been informed by the National Urban Design Protocol (2011) principles of good urban places, which include: enhancing; connected; diverse; enduring; comfortable; vibrant; safe; and walkable. In addition, specific note has been made of considerations such as the functioning of footpaths; built edges; feature trees and avenues; visual and physical connections; and the types of activities supported in the public realm.

Visual impact assessment

This visual impact assessment considers visual amenity as experienced by the users of the site and surrounds. It aims to identify the range of views to the site which may be impacted, including views from residential, offices, parks and streets. This visual impact assessment will address the issues identified in the SEARS at 15. Visual Amenity.

In order to address impact on visual amenity, an assessment was undertaken by identifying the existing visual conditions, views that are representative of these conditions, the sensitivity of the view, magnitude of change expected as a result of the project, and then making an overall assessment of the level of impact.

Identification of existing visual conditions

A number of viewpoints have been selected to illustrate the visual influence of the site. These views represent publicly accessible viewpoints from a range of locations and viewing situations. Particular attention was paid to views from places where viewers are expected to congregate such as plazas, parks, public transport nodes and commercial areas, as well as views to and from heritage items.

Visual sensitivity

Visual sensitivity refers to the nature and duration of views. Locations from which a view would potentially be seen for a longer duration, where there are higher numbers of potential viewers and where visual amenity is important to viewers can be regarded as having a higher visual sensitivity. In addition, any views recognised by local, state or federal planning regulations would, by nature of their recognition in these documents, increase the sensitivity level of the view.

The sensitivity of a viewpoint is considered in the broadest context of possible views, from those of national importance through to those considered to have a neighbourhood visual importance (Table 2-3).

Visual modification

Visual modification describes the extent of change resulting from the project and the visual compatibility of these new elements with the surrounding landscape. There are some general principles which determine the level of visual modification; these include elements relating to the view itself such as distance, landform, backdrop, enclosure and contrast. There are also characteristics of the project itself which are: scale, form, line and alignment. Visual modification can result in an improvement or reduction in visual amenity.

A high degree of visual modification would result if the project contrasts strongly with the existing landscape. A low degree of visual modification occurs if there is minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture between the development and the environment in which it is located.

In some circumstances there may be a visible change to a view which does not alter the amenity of the view. This would be due to the visual absorption capacity of the surrounding landscape and / or the compatibility of the project with the surrounding visual context. Table 2-4 lists the terminology used to describe the level of visual modification.

TABLE 2-3 VISUAL SENSITIVITY LEVELS

Visual sensitivity	Description
National	Heavily experienced view to a national icon, e.g. view to Sydney Opera House from Circular Quay or Lady Macquarie's Chair, or a view to Parliament House Canberra along Anzac Parade.
State	Heavily experienced view to a feature or landscape that is iconic to the State, e.g. view along the main avenue in Hyde Park, or a view to Sydney Harbour from Observatory Hill.
Regional	Heavily experienced view to a feature or landscape that is iconic to a major portion of a city or a non-metropolitan region, or an important view from an area of regional open space, e.g. Views to the Sydney Town Hall from George Street, a Sydney CBD skyline view from Centennial Park, or views from Blues Point Reserve to Sydney Harbour.
Local	High quality view experienced by concentrations of residents and / or local recreational users, local commercial areas, and / or large numbers of road or rail users e.g. view from Chatswood Park or Chifley Square.
Neighbourhood	Views where visual amenity is not particularly valued by the wider community such as views from local streets, pocket parks and small groups of residences.

TABLE 2-4 VISUAL MODIFICATION LEVELS

Visual modification	Description
Considerable reduction or improvement	Substantial part of the view is altered. The project contrasts substantially with surrounding landscape.
Noticeable reduction or improvement	Alteration to the view is clearly visible. The project contrasts with surrounding landscape.
No perceived reduction or improvement	Either the view is unchanged or if it is, the change in the view is generally unlikely to be perceived by viewers. The project does not contrast with the surrounding landscape.

02 METHODOLOGY

Visual impact assessment

Assessment of night time visual impact

The assessment of night time impact has been undertaken with a similar methodology to the daytime assessment. However, this assessment draws upon the guidance of the Institution of Lighting Engineers (UK), and their *Guidance for the reduction of obtrusive light* (2005) and with reference to AS4282 Control of the obtrusive effects of outdoor lighting (1997).

AS4282 excludes 'public lighting', which is defined as *'lighting for the provision of all-night safety and security on public roads, cycle paths, footpaths, and pedestrian movement areas*'. However, this Standard offers some useful terminology and principles that have been incorporated into this method. Firstly, it identifies three potential effects of lighting, at 2.4 Potential effects of outdoor lighting, including:

"(i) Changes to the amenity of an area due to the intrusion of spill light into otherwise dark areas, both outdoors and indoors, and to the direct view of bright luminaires.

(ii) A reduction in the ability of transport system users to see essential details of the route ahead, including signalling systems, due to glare from bright luminaires.

(iii) Changes to night time viewing conditions due to a general luminous glow, i.e. skyglow, caused by the scattering of light in the atmosphere."

This study will address potential effect (i), changes to the amenity of an area, with a focus on the outdoors. This standard also notes the potential visual intrusion caused by the daytime appearance of outdoor lighting systems. This potential impact has been addressed in the daytime assessment of this assessment.

AS4282 refers public spaces to AS1158 Lighting for Roads and Public Spaces which is a design guide that prioritises safety for vehicle and pedestrian users within the public realm.

The Guidance from the Institution of Lighting Engineers (UK) identifies environmental zones, useful for the categorising of night time landscape settings. This broader approach to the assessment of obtrusive light is consistent with the detail available at planning approval application stage of the project and is therefore the basis for the method applied to the night time visual assessment contained within this report.

This guidance document defines a number of features of these environmental zones at night, including sky glow, glare and light trespass. The method for night time visual assessment is as follows.

TABLE 2-5 ENVIRONMENTAL ZONE SENSITIVITY - NIGHT TIME

Environmental Zone	Description of Sensitivity
E1: Intrinsically dark landscapes	Very high sensitivity visual settings at night including national parks, state forests etc.
E2: Low district brightness areas	Highly sensitive visual settings at night including rural, small village, or relatively dark urban locations.
E3: Medium district brightness area	Moderately sensitive visual settings at night including small town centres or urban locations.
E4: High district brightness areas	Low sensitivity visual settings at night including town/city centres with high levels of nighttime activity.

TABLE 2-6 VISUAL MODIFICATION LEVELS - NIGHT TIME

Visual modification	Description
Considerable reduction or improvement	Substantial change to the level of skyglow, glare or light trespass would be expected. The lighting of the project contrasts substantially with surrounding landscape at night.
Noticeable reduction or improvement	Alteration to the level of skyglow, glare or light trespass would be clearly visible. The lighting of the project contrasts with surrounding landscape at night.
No perceived reduction or improvement	Either the level of skyglow, glare and light trespass is unchanged or if it is altered, the change is generally unlikely to be perceived by viewers. The project does not contrast with the surrounding landscape at night.

Visual sensitivity - night time

The environmental zone which best describes the existing night time visual condition for each site would be selected. These zones are typical night time settings and reflect the predominant light levels of each site. Each environmental zone has an inherent level of sensitivity as described in Table 2-5.

Visual modification - night time

The level of modification that would be expected within the setting of the project site is then identified. These changes are described, as relevant, in terms of:

- Sky glow – the brightening of the night sky above our towns, cities and countryside.
- Glare – the uncomfortable brightness of a light source when viewed against a dark background.
- Light trespass – the spilling of light beyond the boundary of the property or area being lit.

Table 2-6 lists the terminology used to describe the level of visual modification at night.

Assigning impact levels

Assessment of landscape impact has been made by combining the landscape sensitivity and landscape modification levels for a landscape element and assigning an impact level (Table 2-7).

Assessment of day time visual impact has been made by combining the visual sensitivity and visual modification levels for an individual view and assigning an impact level (Table 2-8).

Assessment of night time visual impact has been made by combining the visual sensitivity of the environmental zone with the night time visual modification for each site generally and assigning an impact level (Table 2-9).

TABLE 2-7 LANDSCAPE IMPACT LEVELS

		Landscape sensitivity				
		National	**State**	**Regional**	**Local**	**Neighbourhood**
Landscape modification	**Considerable reduction**	Very high adverse	Very high adverse	High adverse	Moderate adverse	Minor adverse
	Noticeable reduction	Very high adverse	High adverse	Moderate adverse	Minor adverse	Negligible
	No perceived change	Negligible	Negligible	Negligible	Negligible	Negligible
	Noticeable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial	Negligible
	Considerable improvement	Very high beneficial	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

TABLE 2-8 DAY TIME VISUAL IMPACT LEVELS

		Visual sensitivity				
		National	**State**	**Regional**	**Local**	**Neighbourhood**
Visual modification	**Considerable reduction**	Very high adverse	Very high adverse	High adverse	Moderate adverse	Minor adverse
	Noticeable reduction	Very high adverse	High adverse	Moderate adverse	Minor adverse	Negligible
	No perceived change	Negligible	Negligible	Negligible	Negligible	Negligible
	Noticeable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial	Negligible
	Considerable improvement	Very high beneficial	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

TABLE 2-9 NIGHT TIME VISUAL IMPACT LEVELS

		Visual sensitivity			
		E1: Intrinsically dark landscapes	**E2: Low district brightness**	**E3: Medium district brightness**	**E4: High district brightness**
Visual modification	**Considerable reduction**	Very high adverse	High adverse	Moderate adverse	Minor adverse
	Noticeable reduction	High adverse	Moderate adverse	Minor adverse	Negligible
	No perceived change	Negligible	Negligible	Negligible	Negligible
	Noticeable improvement	High beneficial	Moderate beneficial	Minor beneficial	Negligible
	Considerable improvement	Very high beneficial	High beneficial	Moderate beneficial	Minor beneficial

02 METHODOLOGY

Mitigation Measures

Limitations and assumptions

Mitigation measures

Through the assessment there has been an acknowledgment of the inherent mitigation and the integrating effects of urban design treatments contained within the design.

Following the assessment of landscape and visual impact, measures to further mitigate these impact have been identified. These measures include opportunities for mitigation on and off site, during construction and operation of the project, day and night.

Limitations and assumptions

The following technical limitations were experienced in the course of undertaking this study.

In relation to methodology:

- Numerous site visits were undertaken between May and December of 2015, during which key landscape features and views were photographed. This assessment is based on the landscape and visual conditions at this time.
- The night time assessment is based on assumptions from daytime field work.

In relation to design:

- This assessment has been based on the following assumptions in relation to Station Architecture:
    - Stations would have an architectural style which reflects their importance as public transport nodes, and reinforce the system wide identity. Depending upon the location, station entries would either be integrated into above station development (not part of this project), a freestanding building, or accessed via a vertical transport portal set within the surrounding public realm (street, park or plaza).
    - **Station entry, integrated into above station development** – would typically include decorative glazing and canopy structures to identify it from the street, the entry would include identifying signage, ticket gates, ticket offices, vending machines, lifts and escalator entries.
    - **Station entry, freestanding building** - would typically include decorative glazing and canopy structures to identify it from the street, the entry would include identifying signage, ticket gates, ticket offices, and vending machines, lifts and escalators.

- **Station entry, vertical transport portal** – would typically include decorative glazing and canopy structures to identify it from the street, the entry would include identifying signage, lift structures and escalators.
- **Active frontage** - integrated and freestanding stations may have areas identified as active frontage. An active frontage would typically be a commercial frontage such as a café, retail or concession stand which creates some permeability to the built edge, and variety in the treatment of the ground floor building frontage.
- **Services** – Stations may also include mechanical, electrical, ventilation, signalling and communications systems contained within plant rooms and cabinets and may be visible at street level. These services would typically be located out of the main pedestrian thoroughfare and be a 'back of house' element. Services facilities require secure enclosures and limit public access. They may be cabinets or locked rooms. If located on the street they would typically have a utilitarian and blank façade.

- Construction site layouts are indicative only. The layout, scale and combination of equipment would be refined during detailed design.
- Vegetation located fully or partly within the project construction site footprint is likely to be removed.

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Planning context

The Chatswood dive site (northern) and Northern surface works is located within and adjacent to the T1 North Shore Line between Albert Avenue in the north, and Brand Street in the south. It extends west to the Pacific Highway between Nelson Street in the north, and Mowbray Road in the south. The site is currently occupied by Ausgrid and the Sydney Trains Network.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the Chatswood dive site (northern) and Northern surface works.

Willoughby Local Environmental Plan Willoughby City Council, 2012 (WLEP)

This plan identifies a number of aims that are relevant to the landscape and visual amenity values of the site. In particular:

For urban design (Part 1, Clause 1.2 d):

"(*i) to ensure development embraces the principles of quality urban design … and*

(iv) to preserve, enhance or reinforce specific areas of high visual quality, ridgelines and landmark locations, including significant gateways, views and vistas"

For amenity (Part 1, Clause 1.2 d):

"(i) to maintain and enhance the existing amenity of the local community, and

(ii) to reduce adverse impact from development on adjoining or nearby residential properties"

The site includes areas within a number of Land Use Zones. The relevant objectives of each of these zones are as follows:

Zone R2 – Low Density Residential: *"To accommodate development that is compatible with the scale and character of the surrounding residential development.*

To retain and enhance residential amenity, including views, solar access, aural and visual privacy, and landscape quality."

Zone R3 – Medium Density Residential: *"to accommodate development that is compatible with the scale and character of the surrounding residential development ... [and] To encourage innovative design in providing a comfortable and sustainable living environment that also has regard to solar access, privacy, noise, views, vehicular access, parking and landscaping".*

Zone RE1- Public Recreation Zone: *"To maintain and provide visual open space links to a diversity of public and private spaces and facilities as an integral part of the open space system".*

Zone RE2 - Private Recreation: *"to minimise the potential for adverse effects from new development on the amenity of the locality".* (Part 2, Clause 2.3)

Relevant objectives of Clause 4.3 (Heights of Buildings) include:

"(a) to ensure that new development is in harmony with the bulk and scale of surrounding buildings and the streetscape,

(b) to minimise the impact of new development on adjoining or nearby properties from disruption of views, loss of privacy, overshadowing or visual intrusion,

(c) to ensure a high visual quality of the development when viewed from adjoining properties, the street, waterways, public reserves or foreshores,

(d) to minimise disruption to existing views or to achieve reasonable view sharing from adjacent developments or from public open spaces with the height and bulk of the development".

This range of objectives have been used to inform the assessment of both landscape and visual impact.

Within the context of the proposed site of the Northern Dive there are several listed Heritage items as follows: (I96) Mowbray House (339 Mowbray Road), (I4) Chatswood Zone Substation No 80 (348 Mowbray Road, (I15 x 2) Chatswood Reservoirs (348 Mowbray Road), (I105) House (2 Orchard Road), and (I68) House (4 Chapman Avenue). The Garden of Remembrance also has a local landscape heritage listing.

There are two conservation areas within the vicinity of the site. The Chatswood South Conservation Area is located to the east

of the site, extending across Chatswood Park and Mowbray Road in the south. The Artarmon Conservation Area extends south from Mowbray Road to include Raleigh Street, east of the project site, and the Artarmon Station area to the south of the project site, as well as areas further to the east.

The WLEP includes the objective *"to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views"* (Clause 5.10 (b)).

These heritage values have been considered in relation to the landscape and visual sensitivity of landscapes and views.

Willoughby Development Control Plan Willoughby City Council, 2006

This Development Control Plan (DCP) encourages development that is *"compatible with the urban scale and character of adjoining neighbourhoods… [and] contributes positively to the streetscape"*. It also aims to *"preserve and enhance the character and amenity of the residential zones and to ensure that future development within those zones is compatible in scale and character with existing development".*

In addition, Clause F.3.6 (Landscaping) of the DCP requires that the *"visual impact of large expanses of walls must be reduced in scale by architectural treatment."* These requirements have been considered in the mitigation section of this landscape character and visual assessment.

These requirements have been considered in the mitigation section of this landscape character and visual assessment.

Existing environment

The project site comprises a length of railway corridor extending approximately 800m from Brand Street at Artarmon to Albert Avenue in Chatswood. The landform of the project site is largely undulating with a ridgeline running generally across the corridor in the vicinity of Mowbray Road and Nelson Streets.

In the south, the existing rail corridor is elevated as it passes over Brand Street, and then begins to descend so that it meets the surrounding ground level, and then dives into a deep cutting in the vicinity of Mowbray Road and Nelson Streets. Continuing north, the existing rail corridor becomes elevated again as it passes Chatswood Park and approaches the Chatswood Station and town centre. The high-rise skyline of Chatswood is prominent in northerly views along the corridor, framed by the steep cuttings and surrounding vegetation.

The edges of the corridor include a mix of treatments including rocky, vegetated cuttings adjacent to the Mowbray Road bridge, and between Mowbray Road to Nelson Street. To the north of Nelson Street, the corridor is bounded by concrete-lined cuttings and walls. Traveling north, the railway infrastructure widens from two parallel sets of tracks to four sets of tracks near Albert Avenue. The tracks are set on ballast, with overhead lines and supporting frames.

To the west of the rail corridor, the landform rises towards Mowbray Road which runs generally east west. Between the rail corridor and Hampden Road, is a predominantly residential precinct with a mix of brick detached houses and two to three storey unit blocks. A television tower sits prominently on an elevated location at Hampden Road on the corner of Mowbray Road. This tower is a local visual landmark, and seen from surrounding residential and commercial areas.

Between Mowbray Road and Nelson Street, and west of the rail corridor towards the Pacific Highway, is an Ausgrid compound with a larger grain of built form including a mix of light industrial buildings and institutional style office buildings. The area between Nelson Street and Albert Avenue, is a residential precinct characterised by a mix of two and three storey brick unit complexes, six to eight storey mid-rise residential towers, and stepping up to high-rise along

01 HAWKINS STREET FROM ELIZABETH STREET

02 MOWBRAY ROAD

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Character and components of the project

01 CHATSWOOD OVAL
02 DETACHED HOUSING ON ORCHARD ROAD

the Pacific Highway. Within this precinct is the Chatswood Bowls Club and the 'Frank Channon Walk', a wide multi-use footpath which runs alongside the railway corridor. This pathway connects the Chatswood Station precinct at Albert Avenue with Nelson Street.

To the east of the corridor, the land rises towards Elizabeth Street, and forms a ridgeline generally at Nelson Street. Between the railway corridor, Elizabeth Street and Orchard Road is a residential precinct defined by a fine grain low scale residential area including mainly early 20th century single and double storey detached brick houses, with a consistent palette of materials and details. A number of narrow cul-de-sacs terminate at the railway corridor, lined by low garden fences, mature street trees, lawns and narrow footpaths. Views to the site are typically glimpsed through vegetation, along local streets, and from properties directly adjacent to the corridor. The level differences in the vicinity of Mowbray Road and Nelson Street result in a limited visibility of the corridor from within the adjacent residential precinct. Views towards the Chatswood town centre high-rises are prominent in views along Orchard Road and glimpsed from within the surrounding areas.

At the northernmost end of Orchard Road, Chatswood Park and Oval, is located within the setting of multi-storey residential and high-rise commercial buildings at the Chatswood town centre. This parkland includes a mature framework of trees and a manicured sports oval with formal gardens and a number of small scale recreational buildings. Views to the railway corridor, which is elevated above the park, are filtered through trees which line the corridor.
The Chatswood Station, rail bridge over Albert Avenue, and adjacent Garden of Remembrance, create a gateway into the Chatswood CBD precinct.

Character and components of the project

The following describes the construction and operation phases of the project.

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Demolition of the following buildings:
  - 337 Mowbray Road and 14 Nelson Street (Ausgrid)
  - 591 Pacific Highway
  - 5-7 Bryson Street
  - 357 Mowbray Road
  - 4 Bryson Street
  - 575 Pacific Highway
  - 8 Bryson Street
  - 569-571 Pacific Highway
  - 3-6 Mowbray Road
- Demolition of the Nelson Street bridge including footpath connection between Nelson Street and Orchard Road
- Clearing of all vegetation within the site which includes the rail corridor between Nelson Street and Brand Street
- Clearing of vegetation adjacent to Chatswood Park to accommodate the rail corridor widening and access from Albert Avenue
- Removal of street trees impacted by the site and for site access including approximately:
  - 6 trees on the Pacific Highway
  - 1 tree on Nelson Street
  - 2 trees on Mowbray Road
- Open trench construction within the existing road reserve along Hampden and Mowbray Roads (Approximately 100m) for a power supply upgrade

- Establishment of the site compound including site fencing and hoarding, site offices, amenities, workshops, material and plant storage areas, laydown area, tunnel and segment storage and dive works facility area
- Temporary closure of Frank Channon Walk (the shared path linking Chatswood Station to Nelson Street)
- Widening of the rail corridor for upside tracks and construction of a retaining wall (approx. 3-5m high)
- A new viaduct structure to accommodate the existing T1 North Shore Line northbound track to allow access between the support site and the TBM launch area
- Re-alignment of existing tracks and laying of two new tracks with associated cross-overs
- Provision of dual right-turn lanes from Pacific Highway (southbound) to Mowbray Road (westbound), including local widening of the Pacific Highway to the east and into the construction site
- Provision of traffic signals at Mowbray Road and Hampden Road
- Metal clad acoustic enclosure (approximately 15m in height)
- Car parking area
- Oversize deliveries supporting TBM launch and support works
- Mobile cranes, excavators, concrete pumps, piling rigs and other construction equipment
- Construction vehicle movement and access via Pacific Highway, Mowbray Road, and Nelson Street, Drake and Brand Streets
- New Sydney Trains access to be provided to the west of the rail corridor at Brand Street
- Existing Hopetoun access would be closed
- Equipment and materials storage within the rail corridor between Chatswood and Artarmon.

The duration of the construction at this location would be approximately 2 years.

It is expected that construction at this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

Operation phase

The following elements and activities are likely to be experienced during operation:

- 250 metres of widened rail corridor, accommodating the new Metro line, north of Mowbray Road including tracks, side walls and associated operational infrastructure
- 400 metres of dive structure and tunnel portal between Nelson Street and Mowbray Road
- The existing T1 North Shore Line northbound track further to the west on a new viaduct structure
- Traffic signals at Mowbray Road and Hampden Road
- Increased frequency of trains viewed within the above ground section of the Metro line
- Safety fences along Mowbray Road and along the rail corridor
- Fencing and noise walls at Nelson Street in the location of the former bridge
- An increase in the height (to four metres) of the noise wall:
    - between Chapman Avenue and Nelson Street on the eastern side of the rail line
    - between the Frank Channon Walk pedestrian underpass and Albert Avenue on the western side the rail line
    - between Nelson Street and Gordon Avenue on the western side the rail line
- A two metre high noise wall to the south of Mowbray Road on the western side of the rail line.
- Modification (including protection) of the road bridge at Mowbray Road to accommodate the reconfigured T1 North Shore Line track arrangement
- Reconfiguration of the Mowbray Road and Pacific Highway intersection
- Reinstated footpaths, roadways and street trees along streets impacted by construction.

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Sensitivity levels

GARDEN OF REMEMBRANCE

Sensitivity levels

The following list summarises the landscape and visual sensitivity associated with this site.

Hampden Road, Mowbray Roads and Brand Street

Hampden Road is the main route between St Leonards and Chatswood, and provides access to Artarmon Station and the local high street via Brand Street. Mowbray Road is the main route between Willoughby and Lane Cove and provides access to commercial and residential areas across this precinct. Both streets are used by concentrations of residents from the local area. Due to the number of road users and the key facilities along these routes, the landscape and views from these streets are considered to be of **local sensitivity**.

Orchard Road, Nelson, Gilham, Raleigh, Drake, and Hawkins Streets

These local residential streets provide access to a small number of homes and units. These areas are included within the Chatswood South and Artarmon heritage Conservation Areas. Due to the small number of local users and residences, the landscape and views from these streets are considered to be of **neighbourhood sensitivity.**

Pacific Highway

The Pacific Highway is a major traffic and pedestrian artery. In the vicinity of the site it includes some locally important heritage buildings including the Great Northern Hotel and reservoirs on Mowbray Road, which increase the value placed on this streetscape. The Pacific Highway also provides access to commercial and retail centres from Chatswood to St Leonards. The landscape and views from the Highway are therefore considered to be of **local sensitivity.**

Chatswood Park and Oval

Chatswood Park and Oval is a large open space containing sportsgrounds and passive recreational facilities and sits wholly within the Chatswood South Conservation Area. It offers both passive and active recreational areas and includes many built and landscape elements including a fenced playground, grandstand, public toilets, mature shade trees, sandstone entry pillars and pathways. The park and facilities are well used by local residents and workers from nearby offices. The landscape and views from the Chatswood Park and Oval are therefore considered to be of **local sensitivity.**

Garden of Remembrance

This garden and memorial area is situated directly adjacent the Chatswood Station on Albert Avenue. It has a local heritage listing and contains war veteran memorials, commemorative gardens, paths, walls and stairways access to adjacent residential and office towers. It is used by large concentrations of local workers and the community. This landscape and views from it are highly valued by the community of Chatswood. The landscape and views of the Garden of Remembrance have **local sensitivity.**

Chatswood Bowls Club and Chatswood Croquet Club

These two membership based sporting club facilities are located between the Pacific Highway and the T1 North Shore Line corridor. They function as local meeting places, sport and recreation areas and are used by concentrations of local residents. These landscapes and their views are therefore of **local sensitivity.**

Frank Channon Walk

Frank Channon Walk is a wide pedestrian and cycle path connecting Albert Avenue at Chatswood Railway Station in the north, to Nelson Street in the south, providing access to Chatswood Park and Oval, the croquet and bowling greens. Named to commemorate a local WW1 Veteran, it is a direct route for some 300-400m and is well used by local residents. The landscape and views of the Frank Channon Walk are therefore considered to be of **local sensitivity.**

Rail corridor

The T1 North Shore Line corridor in this area connects the urban centres of St Leonards and Chatswood, and is used by trains containing large concentrations of commuters from across the city. The experience of traveling along the rail corridor includes open and filtered views to surrounding areas as well as rail related infrastructure. This landscape, and views from it, are valued by the community as an important entry route to Artarmon and Chatswood. The landscape and views of the rail corridor therefore are of **local sensitivity.**

Assessment of landscape impact

In the vicinity of the project, the following places have been identified as potentially being impacted by the project:

- Chatswood Park and Oval, and
- Frank Channon Walk.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Chatswood Park and Oval

Construction: The rail corridor cuttings would be cleared of vegetation in areas adjacent to the park. A Sydney Trains access road would be constructed to the east of the rail corridor and connecting to Albert Avenue. Some trees would be trimmed and vegetation cleared to accommodate this access, altering the character of this corner of the park somewhat. This work would require the temporary diversion of footpaths within the park at times. However, overall the pedestrian connectivity and legibility within the park would not be noticeably reduced.

It is expected that there would not be a perceived change in the landscape quality of this park which is of local sensitivity. This results in a **negligible landscape impact** during construction.

FRANK CHANNON WALK

Operation: The project site access, off Albert Avenue, would create an additional vehicle crossing of the footpath along the northern boundary of the park, adjacent to the existing park service vehicle access. This would not impact noticeably upon the functioning of this parkland. It is expected that there would not be a perceived change in the landscape quality of this parkland which is of local sensitivity. This results in a **negligible landscape impact** during operation.

Frank Channon Walk

Construction: The Frank Channon Walk would be required as part of the construction site and would be temporarily closed for some time during the construction program. This work would include the removal of vegetation along the rail corridor, and replacement of the rail corridor retaining wall, which would rise to the full height of the corridor. The temporary closure of this footpath, and the underpass connection to Chatswood Oval, would impact adversely upon pedestrian connectivity within this precinct, reducing the walkability, connectivity and legibility of the local area.

It is expected that there would be a considerable reduction in the landscape quality of the Frank Channon Walk which is of local sensitivity. This results in a **moderate adverse landscape impact** during construction.

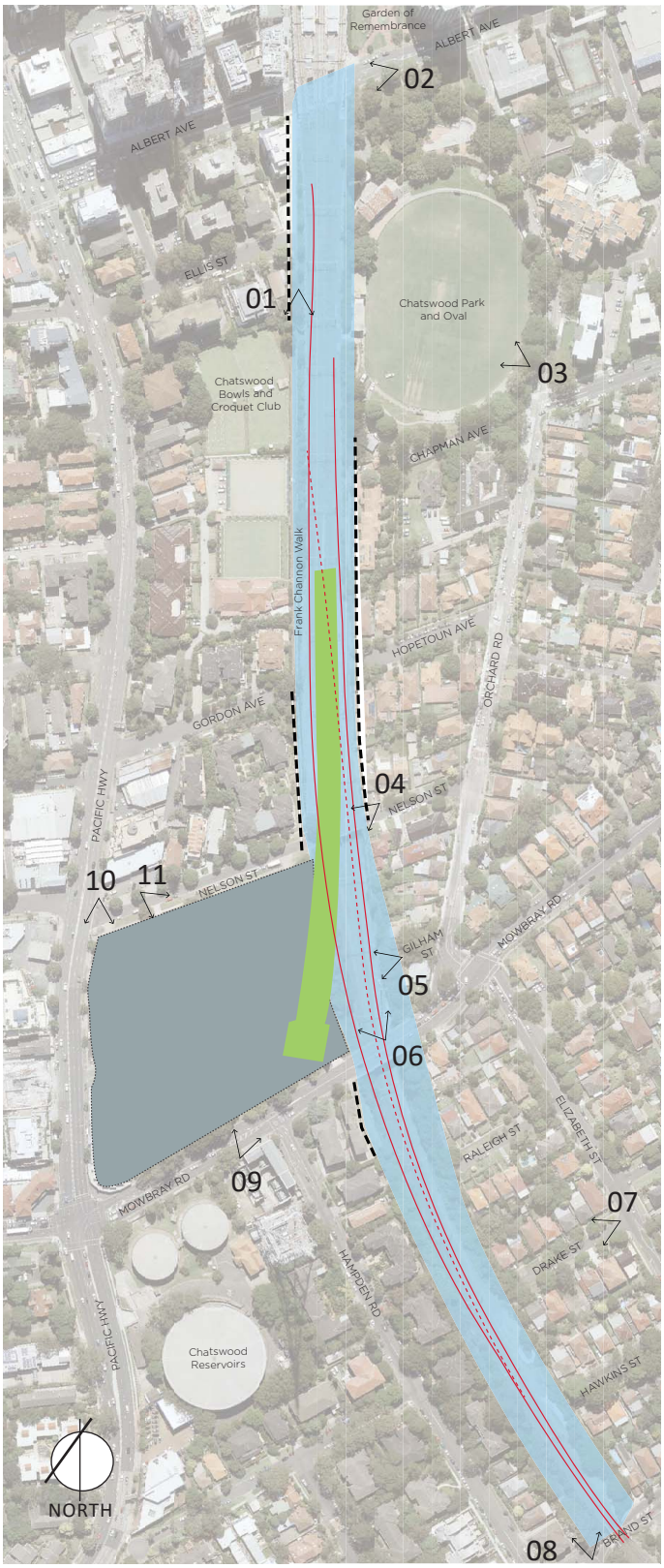
Operation: The Frank Channon Walk would be reinstated, restoring north south pedestrian connectivity along the corridor. There would, however, be adverse impact as the path would lead to the location of the Nelson Street Bridge which would now be closed, and the path would lead exclusively to pathways linking west to the Pacific Highway, reducing its catchment from areas in the south. This change would reduce the walkability, connectivity and legibility of the local area.

Furthermore, the removal of trees adjacent to the pathway, would reduce the shade cover and alter the character and comfort for users. The increase in the wall height would also create overshadowing of the path, and create a less pedestrian scale corridor.

It is expected that there would be a noticeable reduction in the landscape quality of the Frank Channon Walk, which is of local sensitivity. This results in a **minor adverse landscape impact** during operation.

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Assessment of daytime visual impact



Assessment of daytime visual impact

The following viewing locations were selected as representative of the range of views to the site and the project.

- Viewpoint 1: View south along Frank Channon Walk
- Residential areas to the west of Frank Channon Walk
- Viewpoint 2: View southwest along Albert Avenue
- Viewpoint 3: View northwest across Chatswood Oval
- Residential areas between Chapman Avenue and Nelson Street
- Viewpoint 4: View southwest along Nelson Street
- Viewpoint 5: View west from Gilham Street
- Viewpoint 6: View north from Mowbray Road bridge
- Viewpoint 7: View southwest along Drake Street
- Viewpoint 8: View north from Brand Street
- Viewpoint 9: View northeast along Mowbray Road
- Views from residential properties on Mowbray Road
- Viewpoint 10: View south along the Pacific Highway
- Viewpoint 11: View southeast from Nelson Street
- Views from the rail corridor

VIEWPOINT LOCATION PLAN

KEY

- Viewpoint location
- Proposed up MSW/down MNW
- Proposed up/down shores
- Dive structure
- Proposed augmented / new noise wall
- Rail corridor construction
- Construction area

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Viewpoint 1: View south along Frank Channon Walk

This viewpoint provides a direct view south along the Frank Channon Walk. The Frank Channon Walk is a wide footpath heavily enclosed to the east (left of view) by a retaining wall and with vegetation within the rail corridor shading the path. To the west (right of view) mid-rise residential units overlook the path and railway corridor, and green space of the Chatswood Bowls Club beyond.

Construction: This view would be fully obstructed at times as the path is closed so that construction on the adjacent rail corridor can occur. Times when the footpath remains open, the view would change considerably as the rail corridor is expanded to occupy the full width of the Sydney Trains land and vegetation is removed to the east (left of view).

It is expected that the project would create a considerable reduction in the amenity of this view, which is of local sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: In this view the footpath itself would be reinstated, however, to the east (left of view) there would be a tall retaining structure creating a strong vertical edge to the corridor. There would be a less leafy character to this view overall. It is expected that the project would create a noticeable reduction in the amenity of this view, resulting in a **minor adverse visual impact** during operation.

01

01 Existing view south along Frank Channon Walk

Residential areas to the west of Frank Channon Walk

From elevated windows and balconies in residential areas, to the west of Frank Channon Walk, there are direct views east and southeast across the Frank Channon Walk to the existing rail corridor. The proposed noise walls along the rail corridor would be seen clearly and largely unfiltered by vegetation along the western embankment of the rail corridor.

Construction: Views to the railway corridor would be opened up as the vegetation is removed from the western embankment and works are undertaken to construct the retaining structure along the Frank Channon Walk. The works required to add the Metro track to the existing corridor, on the newly created platform, would also be seen unfiltered by vegetation.

It is expected that the project would create a considerable reduction in the visual amenity of views from these residential areas, which are of neighbourhood visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: Similarly, during operation there would be an overall less leafy character to views from these elevated residential properties. Views would be unfiltered to noise walls, and from elevated locations, over these walls to the existing and operational Metro lines infrastructure. It is expected that the project would create a considerable reduction in the amenity of these views, resulting in a **minor adverse visual impact** during operation.

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Assessment of daytime visual impact

02

03

02 EXISTING VIEW SOUTHWEST ALONG ALBERT AVENUE

03 VIEW NORTHWEST ACROSS CHATSWOOD PARK AND OVAL

Viewpoint 2: View southwest along Albert Avenue

This view is from the footpath on Albert Avenue, west towards the existing rail corridor. In the foreground of the view, the decorative curved brick walls of the park entry can be seen, as can the vehicular access route connecting the service areas of the grandstand to Albert Avenue. The rail corridor is visible in the middle ground of this view, filtered by intervening mature trees.

Construction: The removal of vegetation, trimming of trees and the construction of the site access would be seen in the middle ground of the view. It is expected that some mature trees would remain between the site and viewer, filtering the view to these works.

The project would create a noticeable reduction in the visual amenity of this view which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be a widened area of the rail corridor visible in the middle ground of the view, somewhat filtered by intervening vegetation. The character of this site access would be consistent with the adjacent rail corridor, and be seen alongside the service entry to the park. It is expected that the project would create a noticeable reduction in the amenity of this view, resulting in a **minor adverse visual impact** during operation.

Viewpoint 3: View northwest across Chatswood Oval

This view across the oval shows the rail corridor in the background of the view, with vegetation along its eastern embankment largely obstructing views to the existing rail infrastructure. Parts of the corridor are also obstructed by the grandstands which are aligned along the western edge of the oval.

Construction: The removal of vegetation within the rail corridor would open up views to the existing infrastructure as well as works to widen the rail corridor platform in the background of the view. This would

include elements rising above the corridor to construct the retaining structure.

It is expected that the project would create a noticeable reduction in the visual amenity of views from this open space, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be a widened area of the rail corridor seen in the background of the view, partly obstructed by the grandstands but otherwise visible, with moving trains seen on the corridor.

It is expected that the project would create a noticeable reduction in the amenity of this view, resulting in a **minor adverse visual impact** during operation.

Residential areas between Chapman Avenue and Nelson Street

From properties directly adjacent to the rail corridor, noise walls would be upgraded to include an increased in height. These noise walls would obstruct most views to the existing rail corridor and proposed Metro lines infrastructure from adjacent properties.

Construction: Views to the removal of existing noise walls, associated vegetation, and the construction of new noise walls would be seen from adjacent properties.

It is expected that the project would create a noticeable reduction in the visual amenity of views from these residential areas, which are of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: During operation the establishment of noise walls of approximately four metres in height would be prominent in views from adjacent residences and create some overshadowing. It is expected that the project would therefore create a considerable reduction in the amenity of these views, resulting in a **minor adverse visual impact** during operation.

04

04 VIEW SOUTHWEST ALONG NELSON STREET

Viewpoint 4: View southwest along Nelson Street

This view shows the Nelson Street bridge in the middle ground of the view, as seen from the northern pedestrian footpath. The bridge is a two lane street with handrails, tall throw screens and fences returning along the rail corridor. This view is framed by residential properties. The vegetated rail corridor cuttings and site create a leafy background to the view with glimpses to development beyond.

Construction: The removal of the bridge and trees within the rail corridor and on the Ausgrid site would be seen. This would open up views into the existing rail corridor and to the northbound T1 North Shore Line track that would be relocated onto a new viaduct structure. An acoustic enclosure would be located on the site, set back from the existing rail corridor, and would rise to approximately 15m or equivalent to a 5-6 storey building.

Due to the scale of works, it is expected that the project would create a considerable reduction in the amenity of views from this location, which is of neighbourhood sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be an open view across the rail corridor, including views to the T1 North Shore Line track, on a new viaduct structure, as well as glimpses to the additional Metro line with dive structure walls and tunnel entry.

It is expected that the project would create a considerable reduction in the amenity of this view, resulting in a **minor adverse visual impact** during operation.

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Assessment of daytime visual impact

05

05 VIEW WEST FROM GILHAM STREET

Viewpoint 5: View west from Gilham Street

This view from a local street, shows the existing rail corridor in the middle ground of the view, and the Ausgrid site beyond. The western most track, with overhead lines, can be seen unobstructed. A vegetated cutting rises steeply and the buildings on the Ausgrid site are glimpsed through trees.

This view represents the views expected from residential properties between Nelson Street and Mowbray Road to the west of the corridor.

Construction: The removal of the vegetation on the cutting and within the Ausgrid site would be clearly seen. The relocation of the T1 North Shore Line onto viaduct would be visible at a higher level than the existing tracks, crossing the view. Beyond this would be the excavation, soldier pile works, TBM launch and support works within an acoustic enclosure rising approximately 15m above the level of the site, and extending across much of this view.

Due to the scale and extent of works visible, it is expected that the project would create a considerable reduction in the visual amenity of views from this location, which is of neighbourhood visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be an open view across the rail corridor, including views to the T1 North Shore Line track, on a new viaduct structure, as well as the new Metro line moving away from the view, and descending into the dive structure, with dive structure walls and tunnel entry.

It is expected that the project would create a considerable reduction in the amenity of this view, resulting in a **minor adverse visual impact** during operation.

Viewpoint 6: View north from Mowbray Road bridge

This view, from the northern footpath on the Mowbray Road bridge, shows the railway corridor leading north, directed towards the skyline of Chatswood which is a visual feature and focal point in this view. The view is framed by the steep and vegetated cuttings which screen views to the Ausgrid site to the west (left of view) and residential properties to the east (right of view). The rail corridor includes two tracks with overhead lines and supporting structures.

Construction: The removal of the vegetation on the cuttings and widening of the corridor, would open up views to the Ausgrid site in the west (left of view) with features including a deep excavation and an acoustic enclosure extending along much of the visible length of the site, set back from the rail corridor and rising to approximately 15m above the existing ground level. The relocation of the T1 North Shore Line onto viaduct would be seen rising above the surrounding tracks, and the Metro tracks would be visible in the distance and approaching the view, constructed to the west of the corridor. In the middle ground of the view, the Nelson Street bridge would be removed.

Due to the scale of works, and extent visible, it is expected that the project would create a considerable reduction in the visual amenity of views from this location, which is of local visual sensitivity. This would result in a **moderate adverse visual impact** during construction.

Operation: There would be an open view across the rail corridor, including a widened corridor with little remaining vegetation, the T1 North Shore Line track would be seen on a new viaduct structure, and the new Metro line would be seen disappearing into a dive structure, with deep dive structure walls.

It is expected that the project would create a considerable reduction in the amenity of this view, resulting in a **moderate adverse visual impact** during operation.

06

06 VIEW NORTH FROM MOWBRAY ROAD BRIDGE

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Assessment of daytime visual impact

07

07 EXISTING VIEW SOUTHWEST ALONG DRAKE STREET

Viewpoint 7: View southwest along Drake Street

This view from a local street, shows the existing rail corridor in the background of the view with an access gate, security fence and public footpath along the perimeter of the corridor. Existing trees within the corridor, filter views to the track, trains and overhead lines. A vegetated embankment rises up slightly in the distance, and glimpses to residential properties on Hampden Street can be seen beyond the track.

This view represents the views expected from residential properties between Raleigh, Drake and Hawkins Street to the east of the corridor.

Construction: The removal of the vegetation within the corridor would open up views to the corridor. In the background of the view, the relocation of T1 North Shore Line onto viaduct would be seen being constructed to the west of the corridor. In the middle ground of the view, the area to the east of the existing the rail corridor would be used for storage and visible filtered through trees.

It is expected that the project would create a considerable reduction in the visual amenity of views from this location, which is of neighbourhood visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be more views across the rail corridor, including to the relocated the T1 North Shore Line track, which rises up towards a new viaduct structure, and new Metro within the existing corridor.

It is expected that the project would create a considerable reduction in the amenity of this view, resulting in a **minor adverse visual impact** during operation.

Viewpoint 08: View north from Brand Street

This view is oriented towards the existing rail corridor, and rail bridge over Brand Street. The rail land to the west of the rail corridor is currently densely vegetated with mature eucalypts, an advertising billboard is set within the site and it is enclosed by security fencing. The Brand Street overbridge has an enclosed bridge structure, with brick-lined underpass and advertising panels. The rail corridor is elevated on embankment in this view. To the west (left of view) the rear gardens of residential properties and unit developments can be seen with the television tower on Hampden and Mowbray Roads, visible in the background.

Construction: The vegetation to the west of the rail corridor (left of view) would be removed and a new Sydney Trains corridor access would be constructed in the centre, middle ground of this view. The access road would run parallel to the rail corridor and away from the view, opening up views to the existing rail corridor and reducing the leafy character of the Brand Street.

The project would therefore create a noticeable reduction in the visual amenity of views from this location, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: The Sydney Trains access road would remain during operation of the project for maintenance access. There would continue to be a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during operation.

08 EXISTING VIEW NORTH FROM BRAND STREET

08

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Assessment of daytime visual impact

09

10

09 VIEW EAST ALONG MOWBRAY ROAD
10 EXISTING VIEW ALONG THE PACIFIC HIGHWAY

Viewpoint 9: View northeast along Mowbray Road

This view, from the southern footpath on Mowbray Road, shows the Ausgrid site with the heritage listed Mowbray House in the centre of the view and Mowbray Road rail bridge beyond. This is a leafy view, and views to the large brick buildings of the Ausgrid site are filtered by street trees and vegetation within the site.

This view also represents northerly views from residential properties on Mowbray Road, between the bridge and Hampden Road, which overlook the site. These residential properties are generally three storeys in height.

Construction: The vegetation and buildings within the site, excluding the heritage listed Mowbray House, would be removed. This would open up views to the construction site which would be enclosed by safety fencing and hoarding and include an acoustic enclosure rising to 15m above street level. In the mid to foreground of the view, the construction site would be visible with features including workshops and site offices and surrounded by safety fencing and hoarding as required. Power supply upgrade activities, including the excavation of trenches would be seen within the road reserve with lane and footpath closures as required. Construction vehicles would be seen exiting the site and traveling along Mowbray Road in the foreground of the view at a new signalised intersection. This change would alter the setting of the historic Mowbray House.

It is expected that the project would create a considerable reduction in the visual amenity of views from this location, which is of local visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: The dive, rail corridor and works would be hidden from view, as the remaining street trees would filter views to the heritage listed Mowbray House, and future development (not within the scope of this assessment) on Mowbray Road. The

signalised intersection would remain and be visible in the centre of this view.

Due to the visual absorption capacity of this townscape, it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Views from residential properties on Mowbray Road

Construction: In views from residential properties on Mowbray Road, which include elevated views from the second and third floors, there would be increased visibility across the construction site and views would be obstructed by the visual mass of the of the acoustic enclosure.

Open trench construction, for a power supply upgrade, would be seen for a short duration within the existing road reserve along Hampden and Mowbray Roads.

It is expected that the project would create a considerable reduction in the visual amenity of views from this location, which is of neighbourhood visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: In views from residential properties on Mowbray Road, which include elevated views from the second and third floors, there would be increased visibility across the site. However, it is expected that the dive, rail corridor and works would be largely hidden from view, obstructed by the heritage listed Mowbray House and future development (not within the scope of this assessment) on Mowbray Road.

Noise walls extending south from Mowbray Road would obstruct lower level views to the east and across the existing rail corridor.

It is expected that the project would create no perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 10: View south along the Pacific Highway

This view along the six lane Pacific Highway includes the intersection of Nelson Street and the project site in the middle ground of the view. The view is dominated by the broad highway and traffic. A number of small street trees can be seen in the middle ground of the view, filtering views to the high-rise buildings in the background of the view.

Construction: Two additional lanes would be constructed to the east (left of view) requiring the removal of street trees and extending the highway character over a larger portion of this view. Beyond Nelson Street, in the middle ground of the view, a construction site would be established, including workshops and large plant. Construction vehicles would be seen entering Nelson Street in the foreground of the view.

It is expected that the project would create a noticeable reduction in the amenity of views from this location, which is of local sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: The highway would remain widened in this area, and the street trees would be restored to the east (left of view). The construction site would be redeveloped (not subject to this approval).

Due to the consistency of the project with the existing character of this view, the project would not create a perceived change in the amenity of views from this location, which is of local visual sensitivity, resulting in a **negligible visual impact** during operation.

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Assessment of daytime visual impact

11

11A

11 VIEW SOUTH ALONG NELSON STREET

11A ARTIST'S IMPRESSION SHOWING PROJECT DURING CONSTRUCTION

Viewpoint 11: View southeast from Nelson Street

This view shows the Ausgrid site in the middle ground of the view, enclosed by a tall masonry boundary wall and fencing, and containing a number of two storey brick and masonry buildings, filtered by small trees and gardens. In the centre of the view a gated service entry and site parking can be seen, extending into the site.

This view represents the outlook expected from the residential units located opposite the site, on the northern side of Nelson Street. Views from these predominantly three storey units would be filtered by intervening street trees.

Construction: The removal of buildings and vegetation within the Ausgrid site would be clearly seen in the middle ground of the view. The site boundary fencing and hoarding would be established, and an acoustic enclosure would be seen, set back from the road and rising to approximately 15m in height. The bulk and scale of this enclosure would be larger than the existing industrial use visible on the site and contrast with the finer grain built form of the surrounding residential area. Construction vehicles would be seen entering the site and traveling along Nelson Street in the foreground of the view.

Due to the proximity, scale and extent of works visible, it is expected that the project would create a considerable reduction in the visual amenity of views from this location, which is of neighbourhood visual sensitivity. This would result in a **minor adverse visual impact** during construction.

Operation: The Metro would not be seen from this location. The dive structure, rail corridor and works would be located below the level of Nelson Street, and views across the site would include future development (not within the scope of this assessment) along Nelson Street. It is expected that the project would not create a perceived change in the amenity of this view, which is of neighbourhood sensitivity, resulting in a **negligible visual impact** during operation.

Views from the rail corridor

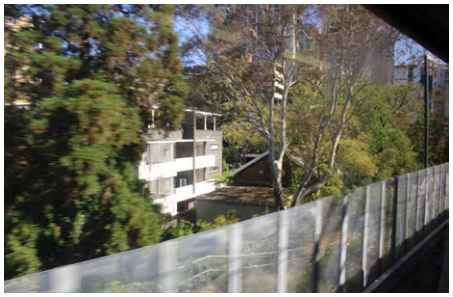
Views north and southbound along the rail corridor include a largely vegetated corridor to the south, with glimpses to residential properties to the south of Mowbray Road. Concrete-lined cuttings enclose the view between Mowbray Road and north of Nelson Street, and then as the embankment reduces and the corridor becomes elevated compared to the surrounding landscape, there are filtered views through trees to residential properties to the west. To the north of the corridor there are filtered views across the Chatswood Park to the east.

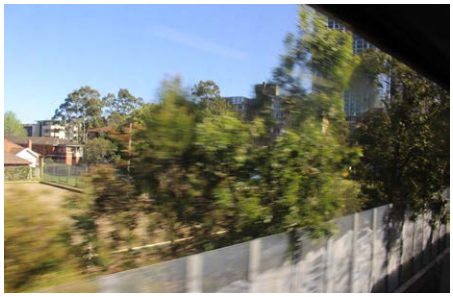
Construction: The removal of the vegetation within the corridor would open up views to surrounding residential development to the south of the site. There may be views to construction material and equipment storage to the east of the corridor and construction of the T1 North Shore Line viaduct to the west of the corridor. The Nelson Street Bridge would be seen being demolished, and construction on the Ausgrid site would be seen to the west of the corridor including an acoustic enclosure rising from the level of excavation to approximately 15m above the adjacent existing street level. North of Nelson Street, construction of the corridor widening would be visible to the west of the corridor. To the north of the site, views to the Chatswood Park would be opened up.

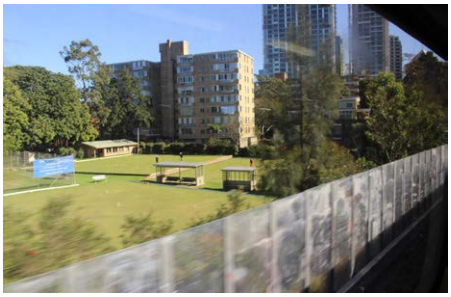
It is expected that the project would create a noticeable reduction in the amenity of views from trains using this corridor, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be an intensification of rail activity seen on the corridor, including an elevated portion of the T1 North Shore Line track on a new viaduct structure, and the new Metro line. There would also be views to noise walls of up to four metres, creating visual enclosure and obstructing views from the rail corridor to the west in vicinity of Frank Channon Walk.

It is expected that the project would create a noticeable reduction in the amenity of views from the rail corridor as local views are obscured, resulting in a **minor adverse visual impact** during operation.







12 VIEWS NORTH FROM THE RAIL CORRIDOR

12

Assessment of night time visual impact

The setting of the Chatswood dive site (northern) and northern surface works is considered to be an area of **E3: Medium district brightness** in the vicinity of the site. This is due to its moderately well-lit location where there is 24 hour activity and lighting from surrounding residential buildings and streets, local and main roads including the Pacific Highway. These places create both direct light sources and a general skyglow around the project site.

Construction: It is likely that there would be night works required at this location during construction, including 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting on Mowbray Road in particular. There would be an acoustic enclosure on the site that would contain much of the light to within the construction site, however, associated offices and workshops would be lit increasing the

03 CHATSWOOD DIVE SITE (NORTHERN) & NORTHERN SURFACE WORKS

Summary of impact

general skyglow around the site. Overall, this would be more brightly lit than the existing setting.

This lighting would create a noticeable reduction in the amenity of views from surrounding streets and potentially from adjacent residential houses and units on Nelson Street and Mowbray Road. It is therefore expected that the project would result in a **moderate adverse visual impact** during evening hours.

Operation: The functioning railway would be set well below the surrounding residential development, visually containing much of the lighting associated with the railway use. This lighting would be consistent with the adjacent existing railway corridor, and surrounding medium district brightness environment. It is expected that there would be no direct light trespass onto adjacent private property.

It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

Summary of impact

Landscape impact

Construction of the project would result in a **moderate adverse landscape impact** on the Frank Channon Walk. This would be primarily due to the direct impact of construction upon the path, and its closure during some stages of construction. Although the Frank Channon Walk would be reopened during project operation, the loss of trees, scale of adjacent retaining structure and noise walls, and overshadowing impact would result in a **minor adverse landscape impact**.

There would be indirect impact on Chatswood Park during the construction and operation of the project, however, this would result in a **negligible landscape impact**.

Visual impact

There would be **minor** and **moderate adverse visual impact** created by the project during construction. These impact are primarily due to the scale and extent of the works, including the removal of vegetation along the rail corridor between Nelson Street and Mowbray Road, introduction of larger noise walls, and the scale of works occurring at the dive site. These impact are experienced in particular from Nelson Street, Gilham Street, Mowbray Road and the residential properties to the east of the existing rail corridor.

There would also be **minor adverse visual impact** experienced from elevated residences to the west of the Frank Channon Walk. In these views, the removal of vegetation within the rail corridor, and the introduction and augmentation of noise walls, would open up views to the existing corridor as well as change the character of views to include the rail corridor and construction of the new Metro line.

During operation, there would be **minor** to **moderate adverse visual impact** experienced in views to the site from residential properties to the west of Frank Channon Walk, residential properties and streets between Nelson Street and Mowbray Road, and residential properties between Mowbray and Hawkins Street. The removal of vegetation within the rail corridor would result in some unfiltered views of the corridor works and dive structure. Adverse effects to adjacent residential areas would also be caused by the provision of additional, relocated, and increasing the height of noise walls in some locations along the rail corridor.

At night there would be a **moderate adverse visual impact** during construction due to the requirement for vehicle deliveries and haulage after hours. During operation, however, there would be a **negligible visual impact** as the works would be visually absorbed into the existing character of the rail corridor and surrounding area of E3: Medium district brightness.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Chatswood Park	Local	No perceived change	Negligible	No perceived change	Negligible
2	Frank Channon Walk	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View south along Frank Channon Walk	Local	Considerable reduction	Moderate adverse	Noticeable reduction	Minor adverse
	Residential areas to the west of Frank Channon Walk	Neighbourhood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
2	View southwest along Albert Avenue	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
3	View northwest across Chatswood Oval	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
	Residential areas between Chapman Avenue and Nelson Street	Neighbourhood	Noticeable reduction	Negligible	Considerable reduction	Minor adverse
4	View southwest along Nelson Street	Neighbourhood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
5	View west from Gilham Street	Neighbourhood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
6	View north from Mowbray Road bridge	Local	Considerable reduction	Moderate adverse	Considerable reduction	Moderate adverse
7	View southwest along Drake Street	Neighbourhood	Considerable reduction	Minor adverse	Considerable reduction	Minor adverse
8	View north from Brand Street	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
9	View northeast along Mowbray Road	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
	Views from residential properties on Mowbray Road	Neighbourhood	Considerable reduction	Minor adverse	No perceived change	Negligible
10	View south along the Pacific Highway	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
11	View southeast from Nelson Street	Neighbourhood	Considerable reduction	Minor adverse	Noticeable reduction	Negligible
	View from the rail corridor	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E3: Medium district brightness	Noticeable reduction	Moderate adverse	No perceived change	Negligible

04 ARTARMON SUBSTATION

Planning context

The Artarmon substation site is located in an area bounded by the Gore Hill Freeway, Barton Street and Milner Road, Artarmon.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the Artarmon substation site.

Willoughby Local Environmental Plan Willoughby City Council, 2012

This plan identifies a number of aims that are relevant to the landscape and visual amenity values of the site. In particular, for urban design (Part 1, Clause 1.2 d):

"*(i) to ensure development embraces the principles of quality urban design" … and*

"(iv) to preserve, enhance or reinforce specific areas of high visual quality, ridgelines and landmark locations, including significant gateways, views and vistas".

For amenity (Part 1, Clause 1.2 d):

"(i) to maintain and enhance the existing amenity of the local community, and

(ii) to reduce adverse impact from development on adjoining or nearby residential properties"

The site is situated within a Medium Density Residential R3 Land Use Zone and directly adjacent the Gore Hill Freeway, zoned SP2 - Infrastructure. The relevant objectives for to the R3 Medium Density Residential zone are: "*to accommodate development that is compatible with the scale and character of the surrounding residential development … [and] To encourage innovative design in providing a comfortable and sustainable living environment that also has regard to solar access, privacy, noise, views, vehicular access, parking and landscaping.".*

Relevant objectives of Clause 4.3 (Height of Buildings) include:

"(a) to ensure that new development is in harmony with the bulk and scale of surrounding buildings and the streetscape,

(b) to minimise the impact of new development on adjoining or nearby properties from disruption of views, loss of privacy, overshadowing or visual intrusion,

(c) to ensure a high visual quality of the development when viewed from adjoining properties, the street, waterways, public reserves or foreshores,

(d) to minimise disruption to existing views or to achieve reasonable view sharing from adjacent developments or from public open spaces with the height and bulk of the development".

Within the context of the project site there are no heritage items and no Conservation Areas to be considered for this assessment.

Willoughby Development Control Plan Willoughby City Council, 2006

The DCP encourages development that is *"compatible with the urban scale and character of adjoining neighbourhoods… [and] contributes positively to the streetscape".* It also aims to *"preserve and enhance the character and amenity of the residential zones and to ensure that future development within those zones is compatible in scale and character with existing development".*

In addition, Clause F.3.6 (Landscaping) of the DCP requires that the *"visual impact of large expanses of walls must be reduced in scale by architectural treatment."* These requirements have been considered in the mitigation section of this landscape character and visual assessment.

Existing Conditions

The project site is located within the suburb of Artarmon, and sits within a triangle of land between the Gore Hill Freeway, and a number of residential streets. It is accessed from Barton Road and shares a boundary with Butchers Lane, which is currently an unsurfaced cul-de-sac, and the Gore Hill Freeway.

The Gore Hill Freeway is approximately 13 lanes wide in this area, and includes the beginnings of the Lane Cove Tunnel dive structure. The Freeway is vertically separated from the site, as it is located in a deep cut in this location. This change in level limits views to the site from the Freeway and from areas to the southwest.

The site is currently occupied by temporary school buildings associated with the nearby Artarmon Public School. A residential area of Artarmon is located to the north, east and south of the site. Its character is defined by a mix of low scale residential, including early 20th century single storey brick houses, and 2-4 storey brick unit blocks.

This site is seen at close proximity, through trees, from the rear of a neighbouring complex of three storey units on Butchers Lane, to the east; and from a three to four storey unit block to the southeast on Barton Road. A two storey unit complex on Barton Road also has filtered views across the site. From these locations there may be elevated views across the site and over the Freeway to the suburbs beyond. The level changes and a tall concrete noise attenuation wall block views to the nearby Freeway from the site and surrounding areas.

There may also be views from properties on Milner Road which have rear gardens directly opposite the project site. The site and temporary school buildings cannot be seen from Milner Road.

01 RESERVE ROAD
02 MILNER ROAD
03 TEMPORARY SCHOOL BUILDINGS ON THE PROJECT SITE
04 BUTCHERS LANE

04 ARTARMON SUBSTATION

Character and components of the project

Assessment of landscape impact

Character and components of the project

This summary describes the construction and operation phases of the project.

Construction

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of the site compound, including hoardings and site fencing, site offices, parking area, amenities, workshops, material and plant storage areas, water treatment plant
- Construction vehicle access via Barton Road
- Excavators, concrete pumps, piling rigs and other construction equipment

The duration of works at this location would be approximately 2 years.

Construction is expected to be undertaken during standard working hours.

Operation

The following elements and activities are likely to be experienced during operation:

- An above ground building containing a traction substation and ancillary equipment (approximately 10 x 40m footprint and approximately 5m in height) and including a loading dock
- Car parking.

Landscape and visual sensitivity levels

The following summarises the landscape and visual sensitivity of the site and main viewing areas across the study area.

Butchers Lane and Barton Road

Butchers Lane and Barton Road are local residential streets, providing access to a small number of homes and units. Due to the small number of local users and residences, the landscape and views from these streets are considered to be of **neighbourhood sensitivity**.

Assessment of landscape impact

In the vicinity of the site, the following places have been identified as potentially being impacted by the project.

- Butchers Lane and Barton Road

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Butchers Lane and Barton Road

Construction: Barton Road would be used by construction vehicles accessing the site. Although this would be a relatively low volume of construction vehicles, it is expected that the increase in heavy vehicle movement on the site would have an impact on the comfort of the small number of pedestrians using Barton Road. These footpaths and street trees are not expected to be impacted. Overall, there would not be a perceived change in the landscape quality of these streets which are of neighbourhood sensitivity. This results in a **negligible landscape impact** during construction.

Operation: The functioning of this precinct during operation would be restored as construction is completed and site access would be reduced to vehicles associated with servicing the facility. It is therefore expected that there would not be a perceived change in the landscape quality of these streets which are of neighbourhood sensitivity. This results in a **negligible landscape impact** during operation.

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the site and the project:

- Viewpoint 1: View southeast from Milner Road
- Viewpoint 2: View southwest along Butchers Lane
- Views southwest from residential units between Barton Road and Butchers Lane
- Viewpoint 3: View west from Barton Road

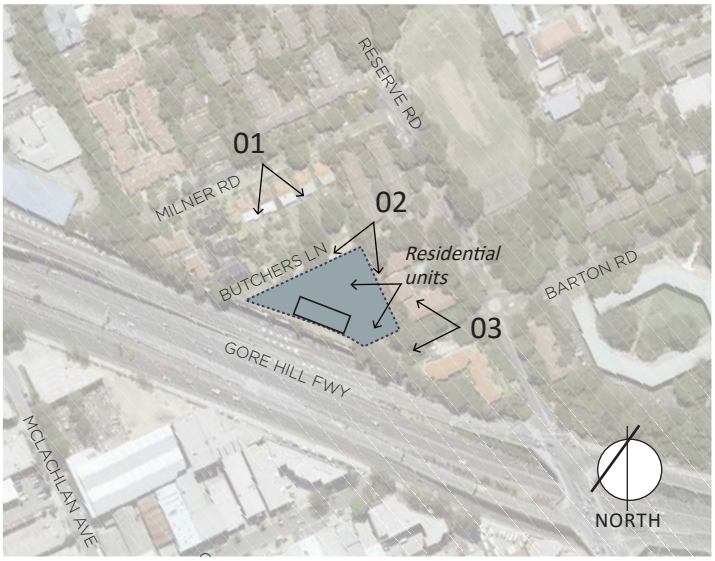
The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Viewpoint 1: View southeast from Milner Road

Milner Road is lined by residential houses and units, and has a leafy character with some character homes and distant views across Artarmon. The site is located to the rear of the residential properties in the middle ground of this view, not visible due to the landform which slopes away from the view towards the site.

Construction: The site is not visible from this location, however some processes would require large plant and equipment that may rise above the intervening residential properties and be seen rising above the site. The project would therefore not create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The traction substation building and shaft entry is not expected to rise above the residential properties seen in the foreground of this view. Therefore the project would not result in a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during operation.



KEY

Viewpoint location

Construction area

VIEWPOINT LOCATION PLAN

04 ARTARMON SUBSTATION

Assessment of daytime visual impact

01

02

01 EXISTING VIEW SOUTHEAST FROM MILNER ROAD

02 EXISTING VIEW SOUTHWEST ALONG BUTCHERS LANE

Viewpoint 2: View southwest along Butchers Lane

In this view the temporary school buildings are seen extending along the lane, unobstructed for much of the length of the northern site boundary. Butchers Lane is an unsurfaced lane with informal parallel parking on the grassy slopes. Rear access is provided to a number of residential properties from this lane, and a wide grassed verge visually softens the laneway. Residential houses and units are located to the north of this viewing location, elevated slightly above the site. This represents the views that may be possible from the rear of these properties on Milner Road.

Construction: A number of structures and activities would be established along Butchers Lane, including workshops and a water treatment plant, and would be seen unfiltered in this view along the south of the lane. Site offices would be located in the centre of the view, at the end of the lane, and adjacent to the rear of properties on Milner Road. Some processes would require large plant and equipment that would be seen within the site, unobstructed from this location. Construction vehicles may be seen within the site but would not use Butchers Lane. Overall, it is expected that the project would create a noticeable change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: In this view the construction site would be replaced with the traction substation building and shaft entry that would be open to view, unfiltered by vegetation. These elements would not be consistent in scale with the surrounding urban grain, but would be set back from the lane reducing its prominence in the view. It is expected that the project would not create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during operation.

Views southwest from residential units between Butchers Lane and Barton Road

It is expected that there would be views from the windows and balconies of the units located adjacent to the eastern boundary of the site between Butchers Lane and Barton Road. Currently these views are filtered by a strip of vegetation including a number of mature eucalypts. The site is currently largely developed with temporary school buildings covering much of the site, and blocking views to the Gore Hill Freeway.

Construction: The existing strip of vegetation between these units and the site would be retained. This vegetation would continue to filter views to the site. There would be construction activity located along Butchers Lane and a number of processes that would require large plant, vehicles and equipment. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: In this view the construction site would be replaced with the traction substation building and shaft entry that would be seen filtered by existing mature vegetation. These elements would contrast with the character and scale of development within the surrounding residential landscape. They would, however, be set back towards the Freeway, reducing their prominence of the substation in the view. It is therefore expected that the project would not create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during operation.

Viewpoint 3: View northwest from Barton Road

This view shows the site in the background of the view, including a number of temporary school buildings which were under construction at the time assessment. The site is enclosed by fencing along the boundary, and a site entry extends from Barton Road

03 EXISTING VIEW NORTHWEST FROM BARTON ROAD

03

providing access for vehicles and pedestrians. In this location, residential units are located to the north (right) of the view, elevated slightly above the site. A strip of vegetation, including a number of mature eucalypts, is located between the site and these units, filtering views to the northern portion of the site.

Construction: This view would again be transformed by construction, however most of the work would be set back from the residential properties on Barton Road. A number of processes would require large plant and equipment that would be visible on the site. Construction vehicles would also be seen in the middle ground of the view accessing the site via Barton Road. Overall, it is expected that the project would create a noticeable reduction in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The traction substation building and shaft entry would be located in the background of this view, aligned along the rear site boundary, adjacent to the existing noise walls. These elements would contrast somewhat with the character of the surrounding leafy residential landscape, due to the scale and light industrial character of the substation building. It would, however, be set back from the residential properties reducing the prominence of this building in this view. It is expected that the project would not create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during operation.

04 ARTARMON SUBSTATION

Assessment of night time impact

Summary of impact

Assessment of night time visual impact

The setting of the Artarmon site is considered to be an area of **E3: Medium district brightness**. This is due to the moderate lighting levels created by surrounding residential streets and development, sky glow created by the Gore Hill Freeway and brightly lit background of streets to the southwest in the commercial areas of Artarmon.

Construction: It is not expected that there would be night works required at this location. There would, however, be some minor security lighting associated with the site offices and workshops for example. Overall there is expected to be no perceived change in the amenity of views in this area at night. This would result in a **negligible visual impact** during evening hours.

Operation: It is expected that there would be some minor security lighting associated with the traction substation and shaft facility. This lighting would be designed so that no direct light would be experienced on adjacent residential properties. This lighting would be visually absorbed into the surrounding area of E3: Medium district brightness, and there would be no perceived change in the amenity of views to the site at night. This would result in a **negligible visual impact** during evening hours.

Summary of impact

Landscape impact

The landscape impact of the project both during construction and operation are expected to be **negligible** at the Artarmon substation site. This is due to the containment of works within the project site, and minor requirement for haulage and deliveries.

Visual impact

Views to this the are predominantly neighbourhood sensitivity views from adjacent residential streets and properties. There are expected to be **negligible visual impact** experienced in views to the project during both construction and operation. This is due to the change from views of a temporary school buildings, to less visually intensive activities.

After-hours works are not required for the construction of the project at this site.

At night, during operation, there would be **negligible visual impact** during both construction and operation of the project. This is due to the surrounding E3: Medium district brightness area and minimal lighting required to undertake the works and operate the facility.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Butchers Lane and Barton Road	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View southeast from Milner Road	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible
2	View southwest along Butchers Lane	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible
	Views southwest from residential units between Barton Road and Butchers Lane	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible
3	View northwest from Barton Road	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible

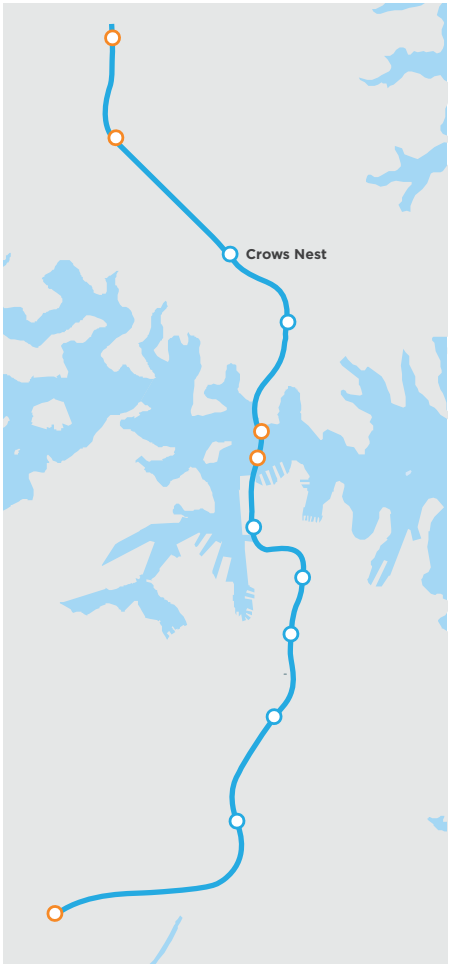
Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E3: Medium district brightness	No perceived change	Negligible	No perceived change	Negligible

05 CROWS NEST STATION

Planning context

The project would occupy a site between the Pacific Highway and Clarke Lane, extending from Oxley Street in the north and across Hume Street in the south. The site also extends to the east of Clarke Lane to include a site on the corner of Hume and Clarke Streets.



SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the proposed Crows Nest station precinct.

North Sydney Local Environmental Plan, North Sydney Council, 2013

The particular aims of this plan in relation to this assessment is: *"to promote development that is appropriate to its context and enhances the amenity of the North Sydney community and environment".*

The Plan also requires new non-residential development to conserve the "*amenity of residential properties and public places*", in terms of "*visual… privacy*" and "*view sharing".*

The project site is in close proximity to several heritage sites including the St Leonards Centre (at 28–34 Clarke Street), Electricity Powerhouse No 187 (23 Albany Street, corner Oxley Street), the Former Marco Building (583 Pacific Highway), Northside Baptist Church (63 Willoughby Road) and the Higgins Buildings (366- 376 Pacific Highway). This assessment will therefore need to consider the "*settings and views*" of these heritage items under the Heritage conservation clause (5.10).

Clause 6.2 (Building heights and massing) promotes scale and massing of new development that provides for "*pedestrian comfort*" in relation to protection "*human scale and visual dominance".*

The site sits within the B4 - High Density Residential Land Use Zone. The relevant objectives of this zone is as follows:

Zone B4 – High Density Residential: *"To encourage the development of sites for high density housing if such development does not compromise the amenity of the surrounding area or the natural or cultural heritage of the area."*

Relevant objectives of Clause 4.3 (Heights of Buildings) include:

"(a) to promote development that conforms to and reflects natural landforms, by stepping development on sloping land to follow the natural gradient,

(b) to promote the retention and, if appropriate, sharing of existing views,

(c) to maintain solar access to existing dwellings, public reserves and streets, and to promote solar access for future development,

(d) to maintain privacy for residents of existing dwellings and to promote privacy for residents of new buildings,

(e) to ensure compatibility between development, particularly at zone boundaries,

(f) to encourage an appropriate scale and density of development that is in accordance with, and promotes the character of, an area.

North Sydney Development Control Plan, North Sydney Council, 2012

The North Sydney DCP identifies a number of Character Areas across the precinct and includes locality statements for areas located within these character areas. In this precinct, the Crows Nest Town Centre Locality Area and St Leonards Town Centre Locality Area, within the St Leonards / Crows Nest Character Area are relevant. The desired future character and relevant supporting principles identified for these localities are summarised in the following paragraphs.

<u>St Leonards Town Centre Locality Area</u>

St Leonards is considered to be a "*busy*" and "*highly urbanised*" centre. The DCP recognises The Forum development and plaza, St Leonards Station and Pacific Highway as key icons in this area. This assessment will consider any views to these icons.

The DCP promotes the preservation and enhancement of "*slot views to the sky and between higher buildings*".

The desired future character of the area includes "*predominantly medium-high rise, mixed commercial and residential development*" with a variety of outdoor and indoor community spaces (e.g. urban plazas, gardens, outdoor and indoor dining areas) and entertainment facilities.

Crows Nest Town Centre Locality

Crows Nest Town Centre is smaller in scale, with 19th Century two storey shopfront facades along Willoughby Road and the Pacific Highway. Key icons in this area include The Crows Nest five ways intersection, formalised outdoor dining areas (on Willoughby Road, Burlington, Ernest and Holtermann Streets), and the Pacific Highway and Falcon Streets. This assessment will consider any views to these icons.

The DCP promotes the preservation and enhancement of the following views and vistas in the Crows Nest Town Centre and St Leonards Town Centre Locality Area:

- Vista north along Willoughby Road and Pacific Highway.
- District views from the upper levels of taller buildings.

The desired future character of the area includes "*medium rise, mixed use development… [with] shops at ground level, non-residential/residential on first floor, residential above".*

St Leonards / Crows Nest Planning Study, North Sydney Council, 2011-2014

This study is being prepared in stages; the project site is located within 'Precinct 1', which was prepared and adopted in 2012. The study outcome has several options for future development within the precinct, including provisions for preferred built form, pedestrian circulation and amenity, open space and views.

Clarke Place Park is located along Clarke Street, opposite the project site, and is considered to be the "*most significant piece of open space*" in Precinct 1.

Principle 2 of the Study (Pedestrian Circulation) identifies the following key opportunities near the project:

- Improved pedestrian flow and amenity along the Pacific Highway, Hume Street and Oxley Street
- Laneway activation along Clarke Lane
- Through site pedestrian link between Clarke Lane and Pacific Highway

Principle 6 of the Study (Views) requires the following management of the views in and around the project area:

- Maintain southerly district views from Clarke Lane to the Pacific Highway;
- Improve views from future "*redevelopment strip*" at corner of Oxley Street, Clarke Lane, and the Pacific Highway.

The St Leonards Centre site, Kelly's Place childcare and Beaurepaires site are identified in this study as potential locations for new open space due to their close proximity to Clarke Place Park, thus potentially allowing for an expansion of the park.

This assessment will consider the desired outcomes for this Precinct in relation to the project.

St Leonards Public Domain Strategy, North Sydney Council, 2003

This Strategy provides a concept to enhance the public places of St. Leonards, including the project site. The desired future character and function of St Leonards will be a "*vibrant and prosperous landmark public transport oriented urban village*" ... [providing a] ... "s*heltered, comfortable, interesting and attractive streetscape at ground level*".

The strategy provides a three-stage approach for upgrading and enhancing public domain places throughout St. Leonards. Key elements of the Stage 3 strategy that relate to the project site include new paving and streetscape planting along Clarke and Oxley Streets, and streetscape upgrade of Clarke Lane.

05 CROWS NEST STATION

Existing environment

01 CLARKE LANE
02 OXLEY STREET

Existing environment

This precinct has a mixture of built form typologies of varying ages, heights, styles, uses and setbacks, and is influenced by a recent influx of high-rise and mid-rise office and residential tower developments. Low scale highway oriented showroom developments are located along the Pacific Highway, alongside a concentration of 19th century two storey shopfront facades to the south of Hume Street.

Oxley, Hume and Clarke Streets are lined with a mixture of office and apartment buildings (up to ten storeys), as well as other uses such as an indoor sports complex, child care centre, community centre, post office and a historic substation. As Clarke Street rises to Willoughby Road, the street narrows, and is lined with double storey Victorian terraces with ground level retail.

The St Leonards Centre, located adjacent to the project site at the corner of Oxley and Clarke Streets, is a local visual landmark. Council's heritage data sheet describes the Centre as a '*dramatically assertive building… a well-made and crafted building designed in the late twentieth century brutalist style'*.

The mature London planetrees along the Pacific Highway, Oxley Street and Clarke Street soften views and provide a unifying element along an otherwise eclectic and architecturally disjointed urban streetscape.

Willoughby Road is a nearby retail and restaurant precinct, and the heart of the Crows Nest village. It includes over 400m of single and double storey, mostly Victorian, shopfronts functioning as a 'high street' between the Pacific Highway in the south and Albany Street in the north. The streetscape is narrow and prioritises pedestrian movement. London planetrees, podium planting and planter boxes soften the street and create a sheltered environment for alfresco dining. Views north along Willoughby Road feature the spire of St Leonards Catholic Church as a quaint local focal point.

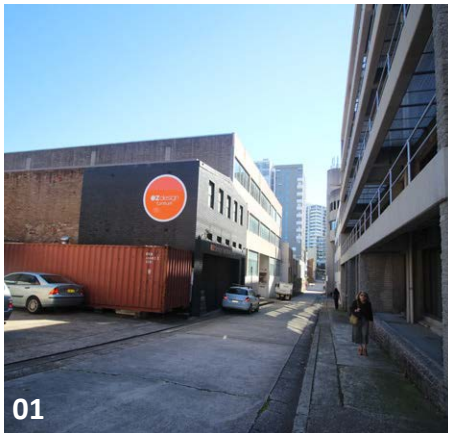
The St Leonards station precinct, and Crows Nest town centre, including the Willoughby Road retail and restaurant precinct, are the two main sources of pedestrian movement in the immediate surrounds of the project. The long unbroken street block on the western side of Willoughby Road prevents more direct movement between St Leonards Station and Willoughby Road, resulting in a pedestrian desire line between Clarke Place Park and Willoughby Road, to the east of the project.

Laneways such as Clarke Lane facilitate vehicular movement and provide rear lane access to commercial properties along the Pacific Highway and Clarke Street. These lanes have a 'back-of-house' character and are not largely used by pedestrians.

Clarke Place Park provides the only local green space in the vicinity of the project site. It is located opposite the project on Clarke Street and consists of a mounded grassy area with shade trees and paved pathways. Paths provide access to both the North Sydney Indoor Sports Centre and Kelly's Place childcare centre. The location of these facilities separates the park from the surrounding area which makes direct access difficult. The steeply sloping lawns and level change across the park results in "*limited utility to the community*" (St Leonards / Crows Nest Planning Study).

Several high-rise apartment buildings have been recently built and are being constructed in the vicinity, to support the growing population and emerging role of St Leonards Town Centre as a 'Specialist Centre' in the LEP. This includes the building currently under construction on the corner of Oxley and Albany Streets. There is also a Development Application in place to increase the maximum allowable height to 42m so as to allow an 11 storey apartment building on the northern part of the project site, at the corner of Oxley Street and the Pacific Highway (521 Pacific Highway), which is currently vacant.

Important views within this precinct include local views from Clarke Street to the Pacific Highway, vistas north along the Pacific Highway, and district views from the upper levels of taller buildings.



01 CLARKE LANE
02 WILLOUGHBY ROAD RESTAURANT PRECINCT
03 BEAUREPAIRES, CLARKE STREET AND THE CLARKE PLACE PARK
04 HERITAGE LISTED 'ST LEONARDS CENTRE' BUILDING

05 CROWS NEST STATION

Character and components of the project

Character and components of the project

This summary describes the construction and operation phases of the project.

Construction

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of construction compound including demolition of:
  - 539-477 Pacific Highway through to Clarke Lane (including the Post Office on the corner of Hume Street and the Pacific Highway)
  - 14-16 Clarke Street (corner of Hume and Clarke Streets)
- Removal of street trees impacted by the site and for site access including approximately:
  - 10 trees on the Pacific Highway
  - 6 trees on Hume Street
  - 1 tree on Clarke Street
  - 2 trees on Oxley Street
- Open trench construction within the existing road reserve along Clarke Lane (Approximately 30m) for a power supply upgrade
- Metal clad acoustic enclosures (approximately 15m in height) located:
  - Corner Hume and the Pacific Highway
  - Pacific Highway located centrally between Hume and Oxley Streets
- Hoardings and site fencing surrounding the remaining areas of the construction site
- Establishment of site offices, parking area, amenities, workshops, material / plant storage areas, and water treatment plant
- Temporary closure of Hume Street with pedestrian access maintained by temporary structures on working platforms
- Footpaths on Hume Street and the Pacific Highway adjacent to hoarding would be reduced in width
- Closure of southern end of Clarke Lane
- Vehicle access during construction via Pacific Highway, Oxley, Clarke and Hume Streets
- Traffic and pedestrian management signage and structures around the perimeter of site as required
- Cranes and large plant (e.g. excavators) working on street and above ground level construction platforms

The duration of construction works at this location would be approximately 5-6 years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

Operation

The following elements and activities are likely to be experienced during operation:

- Station entry at the northern corner of Hume and Clarke Streets, and at the corner of Pacific Highway and Oxley Street.
- Location of an active street frontage along the Pacific Highway and Hume Street, between the Highway and Clarke Lane
- Metro services located on Clarke Lane to the north of the site, and between Clarke Lane and the Pacific Highway at the southeast corner of the site
- Reinstated areas of Clarke and Hume Streets impacted by construction
- Reinstated street trees on Clarke Street and Hume Street
- New pedestrian crossings across Clarke Street to the northeast and Hume Street to the south
- Signalized pedestrian crossing of the Pacific Highway and Oxley Street.

Sensitivity levels

The following list summarises the landscape and visual sensitivity for the project and main viewing areas across the study area.

Pacific Highway

The Pacific Highway is a major traffic and pedestrian artery through the northern suburbs of Sydney. This streetscape attracts large numbers of vehicles and pedestrians, and includes some locally important heritage buildings, including the State heritage listed former Marco Building at 583 and the Higgins building group at 366 to 377 Pacific Highway, which increase the value placed on this streetscape. The landscape and views from the Pacific Highway are therefore considered to be of **local sensitivity**.

Oxley, Hume and Clarke Streets

Oxley, Hume and Clarke Streets are well used by residents, acting as a thoroughfare between the St Leonards Station, the Pacific Highway and the Willoughby Road restaurant precinct. These landscapes and views are therefore considered to be of **local sensitivity**.

Willoughby Road Restaurant Precinct

Willoughby Road is an important street for the Crows Nest community. It is the local 'high street' with shopping, restaurants and cafes that attract visitors from across the North Shore. The landscape and views of Willoughby Road high street are considered to be of **local sensitivity**.

Clarke Place Park

Although Clarke Place Park is a small and awkward public park, with limited connectivity to Willoughby Road (a key attractor in the local area), it is considered to be the "*most significant piece of open space*" in the Crows Nest area (St Leonards / Crows Nest Planning Study, 2012). It functions as a local meeting place and therefore the landscape and views are of **local sensitivity**.

01 WILLOUGHBY ROAD RESTAURANT PRECINCT
02 PACIFIC HIGHWAY
03 CLARKE PLACE PARK

05 CROWS NEST STATION

Assessment of landscape impact

Assessment of landscape impact

In the vicinity of the project, the following places have been identified as potentially being impacted by the project:

- Willoughby Road restaurant precinct
- Oxley, Hume and Clarke Streets
- Pacific Highway
- Clarke Place Park

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Willoughby Road restaurant precinct

Construction: There would be no direct impact on the Willoughby Road restaurant precinct during construction. However, there is likely to be some minor changes in the availability of parking and pedestrian accessibility on nearby streets. Overall, the project would not create a perceived change in the landscape quality of the Willoughby Road restaurant precinct during project construction. As this precinct is of local sensitivity this would result in a **negligible landscape impact**.

Operation: There would be no direct changes to the Willoughby Road restaurant precinct. However, the location of a new station a short walk to the heart of Crows Nest, replacing a less complementary commercial activity, and improvements to the pedestrian environment would increase the accessibility of Willoughby Road. This complements the planned improvements to the connections between residential areas to the west, and this precinct.

Overall it is expected that there would not be a perceived change in the landscape quality of The Willoughby Road restaurant precinct, which is of local sensitivity, resulting in a **negligible landscape impact** during operation.

Oxley, Hume and Clarke Streets

Construction: Parts of Oxley, Hume and Clarke Street would be required as part of the construction site and for construction vehicle access. This work would include the reduction of footpath width and the diversion of footpaths, particularly Hume Street, during some periods of construction. It is likely that pedestrian connectivity within this precinct would be reduced at times and local connectivity and legibility may be impacted. A number of street trees on Oxley, Clarke and Hume Streets would be removed, reducing the shade cover and altering the amenity of these streets somewhat.

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct during operation, however, would be improved at street level as footpaths on Clarke and Hume Streets would be reinstated and a broad station entry forecourt would be created on the corner of Clarke and Hume Streets and at the corner of Oxley Street and the Pacific Highway. There would also be a number of additional pedestrian crossings.

It is expected that there would be a noticeable improvement in the landscape quality of these streetscapes which are of local sensitivity. This results in a **minor beneficial landscape impact** during operation.

Pacific Highway

Construction: Parts of the Pacific Highway would be required for the construction site. This work would include the reduction of footpath width and the diversion of footpaths during some periods of construction. It is likely that pedestrian movement along the Pacific Highway would be restricted at times and connectivity and legibility in this area would be impacted. A number of street trees would be removed, reducing the shade cover and altering the amenity of this section of the Highway somewhat.

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct during operation would be restored as footpaths and street trees are reinstated. This section of the Highway would be improved with upgraded active street frontages and a station entry located on the corner of Oxley Street and the Pacific Highway. It is expected that there would be a noticeable improvement in the landscape quality of the Pacific Highway which is of local sensitivity. This results in a **minor beneficial landscape impact** during operation.

Clarke Place Park

Construction: There would be no direct impact on Clarke Place Park during construction of the project. However, the impact on footpaths adjacent to the construction site on Clarke Street and Hume Streets, would alter the movement patterns of pedestrians and potentially reduce the accessibility of this park.

Due to the small scale of these indirect changes, however, it is expected that this would not result in a perceived change in the landscape quality of the Clarke Place Park. This park is of local sensitivity and therefore this would result in a **negligible landscape impact** during construction.

Operation: There would be no direct changes to Clarke Place Park. However, the location of a new station opposite to the park, replacing a less complementary commercial activity, and new pedestrian crossings across Clarke Street, would improve the pedestrian environment and increase the accessibility of the park.

Overall it is expected that there would be a noticeable improvement in the landscape quality of Clarke Place Park, resulting in a **minor beneficial landscape impact** during operation.

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the site and the proposed development:

- Viewpoint 1: View east along the Pacific Highway
- Viewpoint 2: View south along Oxley Street
- Viewpoint 3: View west from Clarke Street
- Viewpoint 4: View northwest along Clarke Lane
- Viewpoint 5: View east from corner of Hume Street and Pacific Highway

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

KEY

- Viewpoint location
- Site footprint at street level
- Pedestrian plaza/station lobby
- Proposed signalised pedestrian crossing
- Proposed on road marked cycle route
- Pedestrian crossing
- Metro entry
- Proposed cycle parking
- Services
- Proposed taxi rank
- Proposed kiss-and-ride

VIEWPOINT LOCATION PLAN

05 CROWS NEST STATION

Assessment of daytime visual impact

01

01A

01 EXISTING VIEW EAST ALONG AND THE PACIFIC HIGHWAY

01A ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

Viewpoint 1: View east along the Pacific Highway

This viewpoint provides a direct view to the site in context with the Pacific Highway, a busy six-lane road linking to the North and Central Sydney CBDs. From this point, the heritage listed, 5 storey brutalist style concrete 'St Leonards Centre' (a local landmark) is a prominent feature seen beyond the project site, at the corner of Oxley and Clarke Streets. Beyond this building, the shed-like North Sydney Indoor Sports Centre, is also visible. On the site, in the centre of the view, is a surface car park, raised above a wall which retains an underground car park level, accessed via Clarke Lane, and adjacent 2-3 storey showroom developments which diverge from the predominant building line seen on the Highway further to the south. Mature London planetrees line the Pacific Highway and Oxley Street, softening this view and providing a unifying element in an otherwise eclectic and architecturally disjointed urban streetscape.

This view is representative of views that would be seen from elevated residential apartments to the south and northeast of this location.

Construction: The removal of buildings between Oxley and Hume Street and mature street trees on Oxley Street and the Pacific Highway would be seen. An acoustic enclosure would be established on the site to the south of the intersection (right of view), rising approximately 15m (five storeys). Construction vehicles would be seen on the Highway and Oxley Street. The construction site comprising much of the middle ground of this view would create a noticeable reduction in the visual amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: A station entry would be created on the corner of the Pacific Highway and Oxley Street in the centre of the view. The station would comprise a street level structure which is broad, light and open.

Active frontages would be seen to the south (right of view) addressing the Pacific Highway. The predominant alignment of the existing facades would be restored along the Highway, and street trees reinstated. It is expected that the project would create a noticeable improvement in the amenity of this view, resulting in a **minor beneficial visual** impact during operation.

Viewpoint 2: View south along Oxley Street

This view illustrates the extent of the project site along Oxley Street. The site is framed by the heritage listed, brutalist style concrete 'St Leonards Centre' whose distinctive form creates a prominent local visual feature at the corner of Oxley and Clarke Streets. The site itself includes an underground parking level with a surface car park above. Beyond this, the 4-5 storey glazed and stepped residential apartment building can be seen.

Construction: In this view, the removal of the existing block-work walls and fencing, basement car parking, and street trees along Oxley Street would be seen. An acoustic enclosure would be established on the site, to the south (left of view) and construction vehicles would be seen along Oxley Street and entering Clarke Lane. This activity would be seen in the context of several high-rise apartment building construction sites. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual** impact.

Operation: A station entry point would be visible at the corner of Oxley Street and the Pacific Highway. The station would comprise a street level structure which is broad, light and open. The built form would restore the former alignment of buildings along Oxley Street, enclosing Clarke Lane; and street trees would be reinstated. The project would therefore result in a noticeable improvement in the amenity of this view, which is of local sensitivity, resulting in a **minor beneficial visual impact** during operation.

02

02A

02 EXISTING VIEW SOUTH ALONG OXLEY STREET

02A INDICATIVE EXTENT OF DEMOLITION

05 CROWS NEST STATION

Assessment of daytime visual impact

03

03A

03 EXISTING VIEW WEST FROM CLARKE STREET

03A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 3: View west along Hume Street from Clarke Street

In this view the site is framed by a seven storey commercial buildings with retail street frontages to the south, and six storey office block to the north. The site itself sits prominently on the corner of Hume and Clarke Streets, and is currently occupied by a light industrial land use (Beaurepaires) with associated vehicle circulation areas and single storey commercial frontage. This built form steps down sharply from the surrounding predominant building height of 6-7 storeys. Clarke and Hume streets are visually softened by an informal mix of mature street trees of different ages and species. In the background of this view, the site can be seen extending across Clarke Lane to the Highway as two storey retail showrooms.

Construction: A large extent of this view would change as buildings along the northern side of Hume Street, between Clarke Lane and the Pacific Highway (including the visually prominent Beaurepaires site) are demolished. A number of streets adjacent to the project site on Clarke and Hume Streets would also be removed. Construction traffic would be seen on Clarke Street and at times using Hume Street. The temporary closure and diversion of Hume Street would also be prominent in this view. An acoustic enclosure would be established on the site adjacent to the Pacific Highway, and may be visible to the north west in the background (right of view). Site perimeter hoarding and fencing would be seen enclosing the remainder of the site.

It is expected that the project would create a noticeable reduction in the visual amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: This view would be transformed as a station entry is created on the corner of Hume and Clarke Streets in the centre of the view. The station would comprise a street level structure which is broad, light and open. Footpaths and street trees on Clarke and Hume Streets would be reinstated, creating

a refreshed public realm and softening the view. Beyond the station entry, Clarke Lane would be reinstated and active frontages established between the lane and the Pacific Highway. This would restore the predominant alignment of the existing buildings, and restore the visual enclosure of Clarke Lane.

The project would result in a noticeable improvement in the amenity of this view resulting in a **minor beneficial visual impact** during operation.

Viewpoint 4: View northwest along Clarke Lane

This view along Clarke Lane has a 'back-of-house' character with tall blank walls in the foreground, and a mix of service entries in the background of the view. Clarke Lane is a narrow one-way vehicular laneway, without street trees or defined footpath. Buildings step up from single storey light industrial and two storey showrooms and retail buildings on Hume Street, to high-rise developments in the background, creating a strong sense of visual enclosure to the lane. In the middle ground of the view, the lane is traversed by Hume Street, which includes a mix of street trees, that soften this otherwise highly urban view.

Construction: This view would change considerably due to the removal of an entire block of buildings stretching along Clarke Lane, between Hume Street and Oxley Lane, as well as the Crows Nest post office building, to the west of this view. Trees on Hume Street would be removed. Trenching work for the power upgrade would be seen in Clarke Lane. Construction vehicles would be seen on Clarke Lane and Hume Street visible in the foreground of this view. The site of the Post Office would be replaced with an acoustic enclosure. To the north of the view, between the Pacific Highway and Clarke Lane a second enclosure would be visible rising above the site in the background of the view. Hoarding, fencing and traffic management activities would also be seen across much of this view.

It is expected that the project would create a considerable reduction in the amenity of

04

04A

04 EXISTING VIEW NORTHWEST ALONG CLARKE STREET

04A INDICATIVE EXTENT OF DEMOLITION

05 CROWS NEST STATION

Assessment of daytime visual impact

05

05A

05 EXISTING VIEW EAST FROM CORNER OF THE PACIFIC HIGHWAY AND HUME STREET

05A INDICATIVE EXTENT OF DEMOLITION

this view, which is of local visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: Clarke Lane would be reinstated and would incorporate active frontages between the lane and the Pacific Highway, reinstating the predominant alignment of the existing buildings, and creating a sense of enclosure to Clarke Lane. The footpaths on Hume Street and street trees would be reinstated, creating a refreshed public realm and softening the view.

The project would therefore not result in a perceived change in the amenity of this view during operation, resulting in a **negligible visual impact**.

Viewpoint 5: View northeast from corner of Hume Street and Pacific Highway

This view illustrates the single and double storey commercial buildings, apartment blocks and modern showroom development typical along the Pacific Highway, south of Oxley Street. In the centre of the view is the Crows Nest post office, a low-rise brick and stained glass building. The architecture in this view is unified by a consistent building line with similar building heights, stepping down the sloping highway. This view captures the strong influence of the Pacific Highway on the streetscape; it is a heavily trafficked six-lane road that separates activities on either side of the street. Mature London planetrees line the Pacific Highway, and street trees on Hume Street soften this urban view.

Construction: Buildings stretching along the Pacific Highway, between Hume Street and Oxley Lane, including the Crows Nest post office building would be demolished, as would number of street trees adjacent to the project site. An acoustic enclosure would be established on the site of the post office, extending along the Pacific Highway (right of view). Construction traffic would be seen on the Highway and at times using Hume Street. The temporary closure and diversion of Hume Street would be prominent in this view. Site perimeter hoarding and fencing,

would be seen across much of this view.

It is expected that the project would create a considerable reduction in the visual amenity of this view, which is of local visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: Active street frontage would be seen along the Pacific Highway, restoring the predominant alignment of the existing facades, and street trees would be reinstated. Despite the removal of the visually distinctive post office building, it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Assessment of night time visual impact

The setting of the Crows Nest Station is considered to be an area of **E4: High district brightness**. This is due to its brightly lit location on the Pacific Highway, where there is 24 hour activity and lighting from surrounding buildings and streets creating both direct light sources and a general skyglow around the project site.

Construction: It is likely that there would be night works required at this location during construction, including 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. This would result in the site, as well as adjacent areas extending along Hume and Oxley Streets, being more brightly lit than the existing setting.

This lighting would create a noticeable reduction in the amenity of views in this area of high district brightness, from surrounding streets and potentially from adjacent residential towers on Oxley Street and the Pacific Highway. It is therefore expected that the project would result in a **negligible visual** impact during evening hours.

Operation: The station entry on the corner of Clarke and Hume Streets would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment.

It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

05 CROWS NEST STATION

Summary of impact

Summary of impact

Landscape impact

During construction the project would result in a **minor adverse landscape impact** on the surrounding streets of Oxley, Hume and Clarke Streets and the Pacific Highway in the vicinity of the project site. This is primarily due to the direct impact on pedestrian movement and the loss of mature street trees.

During operation, there would be **minor beneficial landscape impact** experienced on these surrounding streets and Clarke Place Park. These benefits relate to the improved access to public transport and additional pedestrian crossings which would improve overall accessibility and permeability of the entire precinct.

Visual impact

There would be a range of adverse visual impact created by the project during construction including **minor** and **moderate adverse visual impact**. These impact are primarily due to the extent of demolition works, and the scale of the acoustic enclosures and construction sites. The range of impact levels reflect the scale and proximity of the works to the viewing location. Generally impact are more substantial in the vicinity of Hume Street where the construction site works would be more complex and have a larger footprint.

There would be a **negligible visual impact** experienced in views to the site during operation of the project. In particular, the views would be restored and somewhat improved at the corner of Hume and Clarke Street where the new station entry and streetscape upgrades would be seen.

At night there would be **negligible visual impact** during construction due to the context of **E4: High district brightness area**. During operation there would also be a **negligible** visual impact as the station and associated development would be visually absorbed into the surrounding brightly lit context.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Willoughby Road restaurant precinct	Local	No perceived change	Negligible	No perceived change	Negligible
2	Oxley, Hume and Clarke Streets	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
3	Pacific Highway	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
4	Clarke Place Park	Local	No perceived change	Negligible	Noticeable improvement	Minor benefit

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View southeast along the Pacific Highway	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
2	View south along Oxley Street	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
3	View southwest from Clarke Street	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
4	View northwest along Clarke Lane	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
5	View east from corner of Hume Street and Pacific Highway	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible

06 VICTORIA CROSS STATION

Planning context

The project includes two sites for the Victoria Cross Station, both located on Miller Street. The northern site would be located on the western side of Miller Street near the corner of McLaren Street, and the southern site would be located on an 'L' shaped site south of Berry Street between Miller and Denison Streets.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the proposed Victoria Cross station precinct.

North Sydney Local Environmental Plan, North Sydney Council, 2013

The particular aim of this plan, in relation to this assessment, is: "*to promote development that is appropriate to its context and enhances the amenity of the North Sydney community and environment".*

The Plan also requires new non-residential development to conserve the *"amenity of residential properties and public places",* in terms of *"visual… privacy*" and "*view sharing".*

The project site includes the heritage listed Victorian shopfront at 187 Miller Street. It is also in proximity to a number of other heritage sites, including several buildings within Monte Sant' Angelo Mercy College, 'Montrose' (196 Miller Street) which is currently a restaurant, the 'Rag & Famish Hotel' (at 199 Miller Street) and the 'O'Regan' building (at 192 Miller Street). This assessment will therefore need to consider the "*settings and views*" of these heritage items under the Heritage conservation clause (5.10).

The northern site falls within the B4 Mixed Use, and adjacent to R3 Medium Density Residential, and the southern site is located within the B3 Commercial Core Land Use Zone. The relevant objectives of each of these zones are as follows:

Zone B4 – Mixed Use:

"• To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.

- *To create interesting and vibrant mixed use centres with safe, high quality urban environments with residential amenity.*
- *accommodate development that is compatible with the scale and character of the surrounding residential development."*

Zone R3 – Medium Density Residential:

"• To encourage the development of sites for medium density housing if such development does not compromise the amenity of the surrounding area or the natural or cultural heritage of the area.

- *To provide for a suitable visual transition between high density residential areas and lower density residential areas.*
- *To ensure that a high level of residential amenity is achieved and maintained.".*

Zone B3 – Commercial Core:

"• To encourage appropriate employment opportunities in accessible locations.

- *To maximise public transport patronage and encourage walking and cycling. ... [and]*
- *To minimise the adverse effects of development on residents and occupiers of existing and new development."*

Relevant objectives of Clause 6.2 (Building heights and massing) promotes scale and massing of new development that provides for "*pedestrian comfort"* in relation to protection *"human scale and visual dominance".*

North Sydney Development Control Plan, North Sydney Council, 2012The North Sydney DCP identifies a number of Character Areas across the study area and includes locality statements for areas located within these character areas. The project is located within the Central Business District Locality Area, within the North Sydney Character Area. The desired future character and relevant supporting principles identified for this locality are summarized in the following paragraphs.

North Sydney Character Area, Central Business District

The DCP promotes the preservation and enhancement of the following views and vistas in the Central Business District Locality Area:

- *"Views to between buildings on east side of Miller Street, between Berry and McLaren Streets. …*
- *Views along the Pacific Highway to the Post Office on Mount Street from the south-east.*
- *Views along the Pacific Highway to Sydney Harbour from the intersection with Mount Street."*

The streetscape of the area is characterised by wide, fully paved footpaths, active street frontages, irregular awnings and street trees.

Key icons in this area include: Greenwood Plaza, the Post Office and Court House, the MLC Building, Don Bank Museum, Brett Whiteley Place and Monte Sant' Angelo Mercy College. This assessment will consider any views to these icons which may be impacted.

North Sydney Public Domain Strategy, North Sydney Council, 2004

This Strategy provides a framework for upgrading public domain areas to accommodate the increased population growth expected over the next 15 years. The Strategy consists of plans, actions and design principles to guide the future upgrade of the public domain in the North Sydney Centre.

Council has since commissioned a 'Public Domain Review' study which will audit North Sydney Centre's public domain and include advice and recommendations for improving the physical environment and pedestrian experience in the Centre.

North Sydney Centre Traffic and Pedestrian Study, 2014

As part of the *North Sydney Centre Review*, Council commissioned the *North Sydney Centre Traffic and Pedestrian Study*, which reviews the existing pedestrian, cycling, traffic and bus network in central North Sydney. A key objective of the study is to promote pedestrian activity within the centre of North Sydney through improved linkages and amenity, particularly along major streets such as Berry Street, the Pacific Highway, Miller Street and Walker Street.

A key proposition is the creation of a laneway connection through Northpoint to connect the Pacific Highway and Miller Street with retail hub uses. This supports the strong desire line of pedestrians moving between the commercial and education uses west of Pacific Highway and the bus stops on Miller Street. There is also an opportunity to widen the footpath on Denison Street, to improve pedestrian amenity and safety.

06 VICTORIA CROSS STATION

Existing environment

TOWER SQUARE AND SURROUNDING HIGH-RISE TOWERS

Existing environment

The project would occupy two separate sites centred on Miller Street in central North Sydney. These are 194-196a Miller Street in the north (near the corner of McLaren Street), and 155-187 Miller Street in the south (near the corner of Berry Street).

Generally the built character of this area is of a high-rise typology in the south, stepping down to mid-rise and low-rise frontages to the north. This predominantly commercial area is interspersed with schools, tertiary education facilities, restaurants and retail. It includes several heritage buildings and conservation areas. In terms of architectural style, there is a predominance of glazed and rendered concrete office towers juxtaposed with the brick and stone facades of North Sydney's remnant heritage buildings.

The Pacific Highway comprises six lanes in this area, providing a through route to Crows Nest in the north and Milsons Point in the south. Miller Street intersects with the Highway, and is one of the principal north-south access routes through the North Sydney CBD. The intersection of Miller Street and the Pacific Highway forms an important focal point in the centre of North Sydney. The North Sydney Post Office and court house, sits prominently on the corner with its distinctive curved stair and clock tower, alongside a cluster of several other iconic buildings including Northpoint Plaza and the heritage listed MLC building. The public realm in this area generally consists of urban plazas, building entry spaces, courtyards and streetscapes.

Miller Street consist of four lanes, includes a number of bus stops, and rises to the north. Berry Street intersects with Miller Street and has one-way traffic movement. Berry and Miller Streets are flanked by footpaths with intermittent awnings and are heavily used by pedestrians throughout the day. Mature London planetrees, provide a canopy over Miller Street, softening this urban environment.

To the north of the precinct, McLaren Street is located on a local ridgeline with a low to mid-rise built form typology and a mix of heritage and modern buildings. An avenue of mature London planetrees line the street, with grass verges, footpaths, and parallel parking, creating a suburban feel.

The northern site would be located at 194-196a Miller Street. This site is currently occupied by two narrow 2-3 storey office buildings. This site is located adjacent to a double storey heritage listed building 'Montrose' (currently used as a restaurant) at the corner of McLaren and Miller Streets, and the Monte Sant' Angelo Mercy College to the south and west.

The southern site would extend south from Berry Street, along the eastern side of Miller Street. The site is currently occupied by a 7-storey office building at the corner of Miller and Berry Streets, a 13 storey c.1974 office building at 181 Miller Street ('Symantec House'), a remnant heritage listed Victorian shopfront at 187 Miller Street, and the 'Tower Square' retail complex at 155 Miller Street. Tower Square extends to Denison Street and includes a pedestrian bridge across Denison Street to Berry Square. The 'Tower Square' retail complex, has a distinctive Spanish revival style architecture and clock tower, and is a local visual landmark on Miller Street.

Key heritage sites near these sites include the North Sydney Post Office, 'Rag and Famish' hotel, and the Monte Sant' Angelo Mercy College.

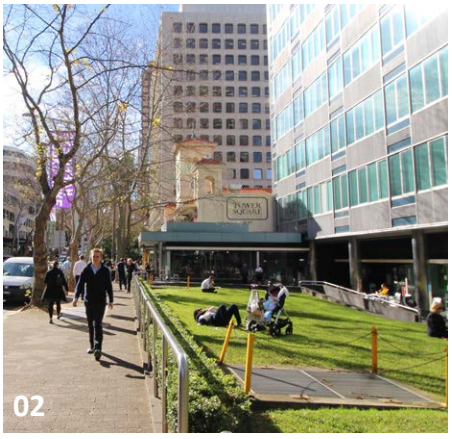
Monte Sant' Angelo Mercy College has a local heritage listing and is noted as one of North Sydney Centre's key 'Identity / Icons' in the DCP. It includes several historic buildings and structures, including the Chapel, Convent, Hall and red brick boundary walls. These walls, and mature London planetrees, are a key feature of the northern portion of Miller Street, and are visible from the northern site.

Brett Whiteley Place is a pedestrianised plaza located at the intersection of Miller,

Pacific Highway and Mount Street. This plaza provides a gathering place with shade trees, seating, a water feature and sculptures. It includes a subway connection to underground shopping areas, safe road crossing and the existing North Sydney Station via the Greenwood shopping precinct.

North Sydney Council is planning to revitalize Brett Whiteley Place. The concept plan extends the existing plaza to include Elizabeth Plaza, as well as portions of the Denison Street and Mount Street shared zones, providing dedicated space for outdoor dining, large and small events, public art and other activities.

The precinct, particularly between Berry Street and the Highway, includes a number of development projects. A commercial and retail development is currently under construction at 177 Pacific Highway, to the west of the site. At 150 Pacific Highway there is approval for a high-rise apartment building ('Polaris') to replace a six storey office building. In addition, at the apex of the Pacific Highway and Miller Street, there is a Development Application to demolish the 1990s retail podium in front of 100 Miller Street (Northpoint), and replace it with a 10 storey hotel building with street level retail.



01 'RAG AND FAMISH' HOTEL AND MODERN HIGH-RISE OFFICE TOWERS
02 MLC BUILDING AND LAWN FORECOURT
03 VIEW NORTH TO THE HISTORIC NORTH SYDNEY GPO, AND NORTHPOINT PLAZA
04 MILLER STREET

06 VICTORIA CROSS STATION

Character and components of the project

01 HERITAGE LISTED 'MONTROSE' BUILDING
02 MONTE SANT' ANGELO MERCY COLLEGE BOUNDARY WALL

Character and components of the project

This summary describes the construction and operation phases of the project.

Northern site

Construction phase

The following structures, equipment and activities are likely to be experienced during construction at the Victoria Cross northern site:

- Establishment of construction site compound including demolition of the following buildings:
  - 3 storey office buildings at 194 Miller Street
- Removal of street trees impacted by the site and for site access including approximately:
  - 2 trees on Miller Street
- Relocation of bus stop outside 194 Miller St
- A metal clad acoustic enclosure (approximately 15m in height)
- Hoarding and site fencing surrounding the remainder of the construction site
- Construction traffic and vehicle access via Miller Street
- Footpaths on Miller Street adjacent to hoardings would be reduced in width
- Mobile cranes and other large plant (e.g. excavators)

Duration of the construction phase for all works at this location would be approximately 4-5 years.

It is expected that this site would require spoil haulage to be undertaken outside of standard working hours.

Operation phase

The following elements and activities are likely to be experienced during the operation of the project:

- 2 storey services building (approximately 11 metres high)

Southern site

Construction phase

The following structures, equipment and activities are likely to be experienced during construction at the Victoria Cross southern site:

- Establishment of construction site compound including demolition of the following buildings:
  - 7 storey commercial and 2 storey heritage retail building at 187 Miller Street
  - 15 storey office building at 181 Miller Street ('Symantec House')
  - 2-3 storey 'Tower Square' retail complex at 155-167 Miller Street (including a pedestrian bridge to Berry Square at Denison Street).
- Removal of street trees impacted by the site and for site access including approximately:
  - 10 trees on Miller Street
  - 2 trees on Berry Street
- Open trench construction within the existing road reserve along Berry Street (Approximately 50m) for a power supply upgrade
- A metal clad acoustic enclosure (approximately 15m in height) on the site extending south along Miller Street from Berry Street
- Hoarding and site fencing surrounding the remainder of the construction site
- Site offices, parking area, amenities, workshops, material and plant storage areas, and water treatment plant

- Construction traffic and vehicle access via Miller, Denison and Berry Streets
- Reduction in width of footpaths on Miller Street adjacent to hoardings
- Diversion of traffic and closure of about 10m length of the eastern side of Miller Street during piling installation works
- Mobile cranes and other large plant (e.g. excavators).

Duration of the construction phase for all works at this location would be approximately 4-5 years.

It is expected that this site would require spoil haulage to be undertaken outside of standard working hours.

Operation Phase

The following elements and activities are likely to be experienced during the operation of the project:

- A large, landscaped plaza would be created between Miller Street and the station entry
- East west pedestrian route through the plaza from Miller to Denison Street
- Station entry in the centre of the site, between Miller and Denison Streets (south of Berry Street) within the plaza
- Active frontages within plaza areas on corner of Berry Street and Miller Street
- Services located to the east of the transit plaza adjacent to the existing building on Denison Street.

06 VICTORIA CROSS STATION

Sensitivity levels

HARBOUR CYCLES SCULPTURE

Sensitivity levels

The following list summarises the landscape and visual sensitivity for the project site and main viewing areas across the study area.

Harbour Cycles Sculpture

This cast aluminum sculpture is located prominently on the southeastern corner of Miller and Berry Streets. This piece, by Sydney Sculptor Richard Byrnes, was commissioned by North Sydney Council and installed in 2009. It references the character of the Harbour Bridge and local maritime activity, and was designed for this specific townscape location. The artist states that ... *"Seeing through the work is an integral part of perceiving it and so the locality provides an active backdrop for the piece."* (North Sydney Council website, Public Art Guide, accessed January, 2016) This sculpture has value as both a local visual landmark and artistic merit. The landscape and views to this artwork are considered to be of **local sensitivity**.

Berry and Miller Streets

These streetscapes attract large numbers of vehicles and pedestrians and include some important heritage buildings, monuments and open spaces including the 'Rag and Famish' Hotel, Monte Sant' Angelo Mercy College, and Brett Whiteley Place. The landscape and views of these streets are therefore considered to be of **local sensitivity**.

Monte Sant' Angelo Mercy College

The Monte Sant' Angelo Mercy College, located opposite the project site on the corner of Berry and Miller Streets, is an important historic landscape within North Sydney. It is a gathering place for large numbers of students, has a local heritage listing, and contributes to the character of this precinct. This school includes a number of visual features including brick walls, ironwork gates, and church buildings on the upper slopes of Miller Street. The landscape and views of the Monte Sant' Angelo Mercy College are therefore considered to be of **local sensitivity**.

MLC Building Sculpture Garden

This remnant of a sculpture garden created by Gerard Lewers in 1957 is located at the entry to the heritage listed MLC Building. Although the planting was replaced in 2009, the original carved rocks are included within the forecourt to the building. (North Sydney Council website, Public Art Guide, accessed January, 2016). This sculptural garden has some remnant artistic and historical value. The landscape and views to this sculpture garden are considered to be of **local sensitivity**.

Brett Whiteley Place

Brett Whiteley Place includes seating, street trees, and access to the underground retail and public transport. It is a gathering place for large numbers of workers during lunchtime and a confluence of pedestrian routes. The landscape and views of Brett Whiteley Place are therefore considered to be of **local sensitivity**.

Assessment of landscape impact

In the vicinity of the project, the following places have been identified as potentially being impacted by the project:

- Harbour Cycles sculpture
- Berry and Miller Streets
- Monte Sant' Angelo Mercy College
- MLC Building sculpture garden, and
- Brett Whiteley Place.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Harbour Cycles sculpture

Construction: The Harbour Cycles sculpture would be removed as a part of the establishment of the construction site. The removal of this artwork would reduce the visual prominence and interest on this local street corner. Therefore it is expected that there would be a considerable reduction in the landscape quality of the Harbour Cycles Sculpture, which is of local sensitivity, resulting in a **moderate adverse landscape impact** during construction.

Operation: The operational impact on the Harbour Cycles sculpture would be dependent on the nature of any relocation of the item (refer to Section 16 Mitigation measures).

Berry and Miller Streets

Construction: Parts of Berry and Miller Streets would be required as part of the construction site and for construction vehicle access. This work would include the closure of footpaths and the roadway during some periods of construction. It is likely that the north south and east west pedestrian connectivity within this precinct would be reduced at times and connectivity and legibility in this part of North Sydney may be impacted due to the scale of the works. A number of street trees on Miller Street would be removed, reducing the shade cover and altering the character of the street somewhat.

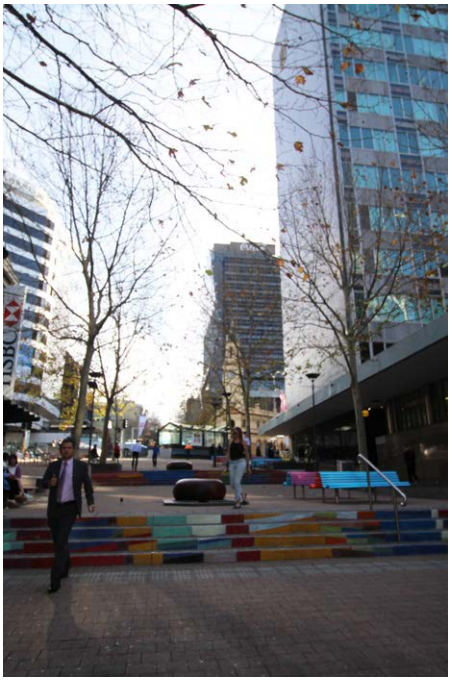
01

02

01 BERRY STREET
02 MILLER STREET

06 VICTORIA CROSS STATION

Assessment of landscape impact



BRETT WHITELEY PLACE

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The footpath on Miller Street would be widened in the vicinity of the station, creating an expanded public realm with additional trees and plaza furnishings. A multiple storey foyer entry to the station on Miller Street would also improve legibility to the station. A new pedestrian plaza extending the full width of the block from Miller to Denison Streets would improve access to the station as well as pedestrian permeability throughout the precinct. Retail frontages at Berry Street and adjacent to the station would activate and increase the vibrancy of this precinct. Views would be opened up along Miller Street, creating a vista between the plaza and the historic 'Rag and Famish' hotel on the corner of Berry Street. The plaza trees and canopy covered station entry would provide shelter and increase the comfort of users.

There would be a considerable improvement in the landscape quality of these streetscapes which are of local sensitivity, this results in a **moderate beneficial landscape** impact during operation.

Monte Sant' Angelo Mercy College

Construction: There would be no direct impact on the Monte Sant' Angelo Mercy College during construction of the project. However, the impact on footpaths adjacent to the construction site at 194 Miller Street, and at the corner of Miller and Berry Streets, would potentially constrain and divert pedestrians, altering the patterns of access to the school grounds. The removal of street trees to accommodate construction at 194 Miller Street, would also have an impact on the quality and comfort of the streetscape.

However, it is expected that these works would not create a perceived change in the landscape quality of the school, which is of local sensitivity, resulting in a **negligible landscape impact** during construction.

Operation: There would be no direct impact to the school. However, upgrades to Miller Street including the expanded public realm, creation of a boulevard, opening up views along Miller Street towards the intersection with Berry Street, as well as the location of a new station opposite the school, would improve pedestrian accessibility and the walkability of this precinct.

Overall, however, this would not result in a perceived change in the landscape quality of the Monte Sant' Angelo Mercy College, which is a place of local sensitivity, resulting in a **negligible landscape impact** during operation.

MLC Building sculpture garden

Construction: There would be no direct impact on the MLC Building sculpture garden during construction of the project. However, the impact on footpaths adjacent to the construction site on Miller Street, would divert pedestrians around the construction site and alter the patterns of access to the MLC Building and experience of this garden.

Overall it is expected that this would not create a perceived change in the landscape quality of the MLC Building sculpture garden, resulting in a **negligible landscape impact** during construction.

Operation: There would be no direct impact on the MLC Building sculpture garden during operations. The project would therefore not create a perceived change in the landscape quality of the MLC sculpture garden, which is place of local sensitivity, resulting in a **negligible landscape impact** during operation.

Brett Whiteley Place

Construction: There would be no direct impact on Brett Whiteley Place during construction of the project. However, the impact on footpaths adjacent to the construction site on Miller Street would divert pedestrians around the construction site and alter the patterns of access to this plaza.

Overall it is expected that this would not create a perceived change in the landscape quality of Brett Whiteley Place, resulting in a **negligible landscape impact** during construction.

Operation: There would be no direct impact to Brett Whiteley Place. However, upgrades to Miller Street to the north of this plaza, including the expansion of the public realm, creation of a boulevard, as well as the location of a new station within a block of this plaza, would improve pedestrian accessibility.

It is therefore expected that this would not create a perceived change in the landscape quality of Brett Whiteley Place, which is place of local sensitivity, resulting in a **negligible landscape impact** during construction.

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the site and the proposed development:

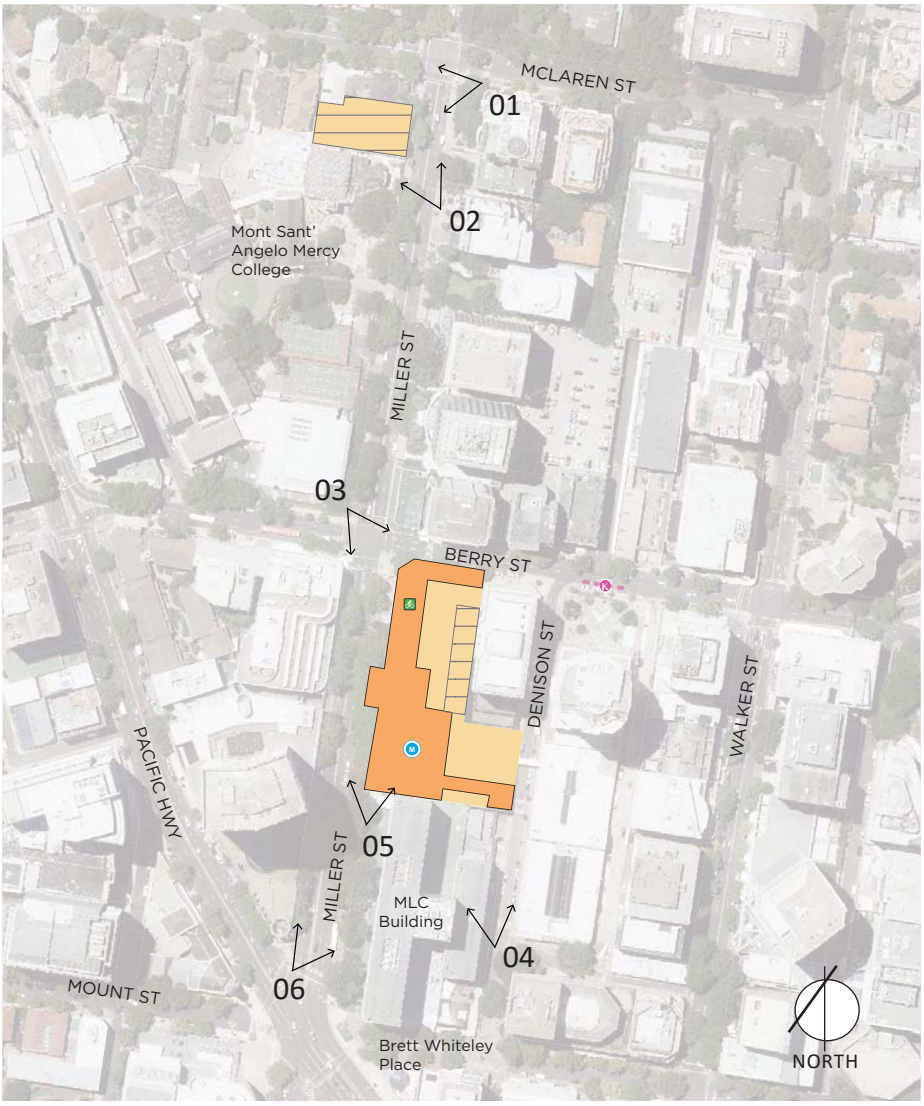
Northern site

- Viewpoint 1: View west from corner of McLaren and Miller Streets
- Viewpoint 2: View northwest along Miller Street

Southern site

- Viewpoint 3: View southeast across the intersection of Berry and Miller Streets
- Viewpoint 4: View north along Denison Street
- Viewpoint 5: View north along Miller Street
- Viewpoint 6: View north at the intersection of the Pacific Highway and Miller Street

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.



VIEWPOINT LOCATION PLAN

06 VICTORIA CROSS STATION

Assessment of daytime visual impact

01

01A

01 EXISTING VIEW WEST FROM CORNER OF MCLAREN AND MILLER STREETS

01A INDICATIVE EXTENT OF DEMOLITION

Northern site

Viewpoint 1: View west from corner of McLaren and Miller Streets

This view is characterised by the surrounding built form of the heritage listed 'Montrose' building on the corner of Miller and McLaren Streets (currently used as a restaurant) with sandstone garden wall. The Monte Sant' Angelo Mercy College, one of North Sydney Character Area's key 'icons' is located to the south (left of view). In the centre of the view are two relatively modern buildings which have been designed to use sympathetic materials and building details, including brickwork and pitched roofline. This view has a leafy and heritage character.

Construction: The demolition of the two modern 2-3 storey buildings along Miller Street would be visible in the centre of the view. An acoustic enclosure would be established on the site, which may rise to approximately 15m, taller than the existing buildings and with less architectural embellishment. Construction vehicles would access the site via Miller Street and would be seen in the foreground of this view.

The project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: In this view a services building would be seen in the centre, middle ground of the view. It would restore the predominant building setback established by the adjacent buildings and boundary wall of the school. This building would have a utilitarian relationship with the street, and not have the architectural detail of the existing buildings. There would be a noticeable reduction in the amenity of this view, which is of local visual sensitivity, creating a **minor adverse visual impact** during operation.

Viewpoint 2: View northwest along Miller Street

This view is defined by the heritage buildings of the Monte Sant' Angelo Mercy College, including white masonry buildings and tall stone and red brick boundary walls. Other nearby historic structures include the stone garden walls of 'Montrose' on the corner of Miller and McLaren Streets (196 Miller Street), and the heritage style bus shelter. These historic features and mature London planetrees on the street, define the character of views in this area. In the centre of the view, two modern buildings sit sympathetically within this streetscape.

Construction: This view would change with the demolition of the two 2-3 storey modern buildings along Miller Street, which would open up views to the southern façade of the heritage building at 196 Miller Street ('Montrose'). An acoustic enclosure would be established on the site, rising to 15m, taller than the existing buildings, and with less architectural embellishment. The bus shelter and London planetrees on the street would also be removed. Construction vehicles would access the site via Miller Street and be seen in the foreground of this view.

The project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: In this view a services building would be seen in the centre, middle ground of the view. This building would restore the predominant building setback established by the adjacent buildings and boundary wall of the school. This building would have a utilitarian relationship with the street, and not have the architectural detail of the existing buildings. There would be a noticeable reduction in the amenity of this view, which is of local visual sensitivity, creating a **minor adverse visual impact** during operation.

02

02A

02 EXISTING VIEW NORTHWEST ALONG MILLER STREET

02A INDICATIVE EXTENT OF DEVELOPMENT

06 VICTORIA CROSS STATION

Assessment of daytime visual impact

03

03A

03 EXISTING VIEW SOUTHEAST ACROSS THE INTERSECTION OF BERRY AND MILLER STREETS

03A INDICATIVE EXTENT OF PROPOSAL SITE

Southern site

Viewpoint 3: View southeast across the intersection of Berry and Miller Streets

The 7-storey glass and steel office building at the corner of Miller and Berry Streets (189 Miller Street) and 13 storey office reinforced concrete and glass office building at 181 Miller Street ('Symantec House') are prominent in this view. Beyond these, and somewhat filtered by London planetrees, are the two storey heritage listed Victorian shopfront at 187 Miller Street, the c.1990s 'Tower Square' retail complex at 155 Miller Street, and in the background, the 14 storey MLC Building at 105–153 Miller Street (c.1957). Miller and Berry Streets are four lanes wide in this location, with fully paved footpaths, and an overhead canopy of mature London planetrees.

Construction: This view would change with the demolition of the two prominent office towers on Miller Street, heritage listed Victorian shopfront and the 'Tower Square' retail complex. This would alter the skyline of this view and open up views to buildings on Denison Street. Furthermore a number of mature London planetrees would be removed, altering the visual character of the Miller Street streetscape. An acoustic enclosure would be established on the site, and construction vehicles would be seen accessing the site via Miller Street and traveling along Miller and Berry Streets in the foreground of this view. Power upgrade works including trenching within Berry Street would also be visible in the middle ground of this view.

It is expected that the project would create a considerable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: In this view a wide landscaped pedestrian plaza would be seen in the middle ground of the view and extending south along Miller Street. This plaza would be framed to the east by retail frontages

03B

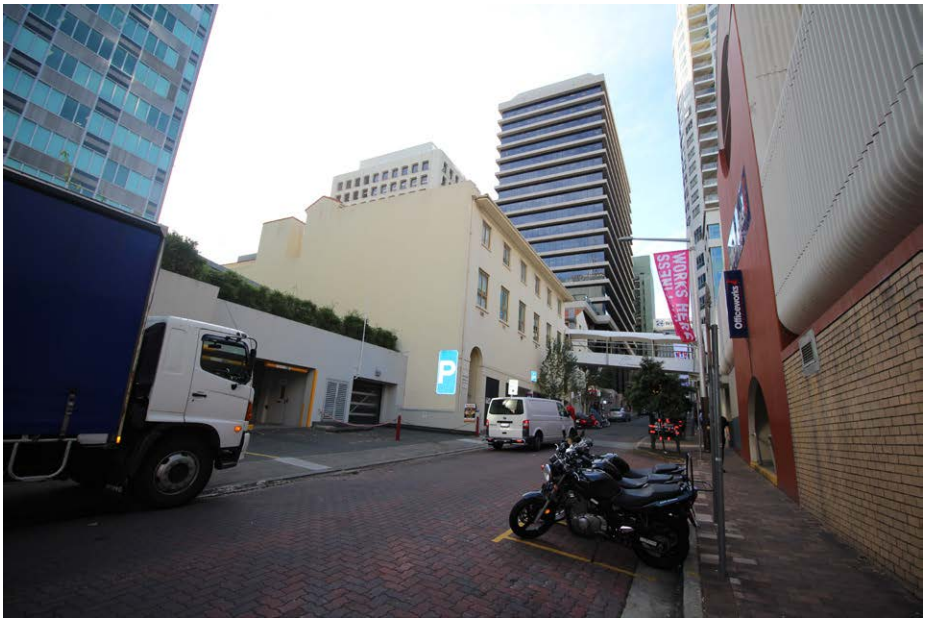
extending from Berry Street. The removal of the historic Victorian shopfront, and replacement of the streetscape planting with an avenue of street trees, would open up views south along Miller Street, creating a view through the plaza to the station entry. Street level development would be set back from the alignment of the adjacent heritage listed MLC building to the south. A plaza space is created and would increase the visual prominence of the station entry.

Overall, this would be a more open view with an architectural treatment that marks the station entry with a light and open structure. It is expected that the project would result in a noticeable improvement in the amenity of this view, resulting in a **minor beneficial visual impact** during operation.

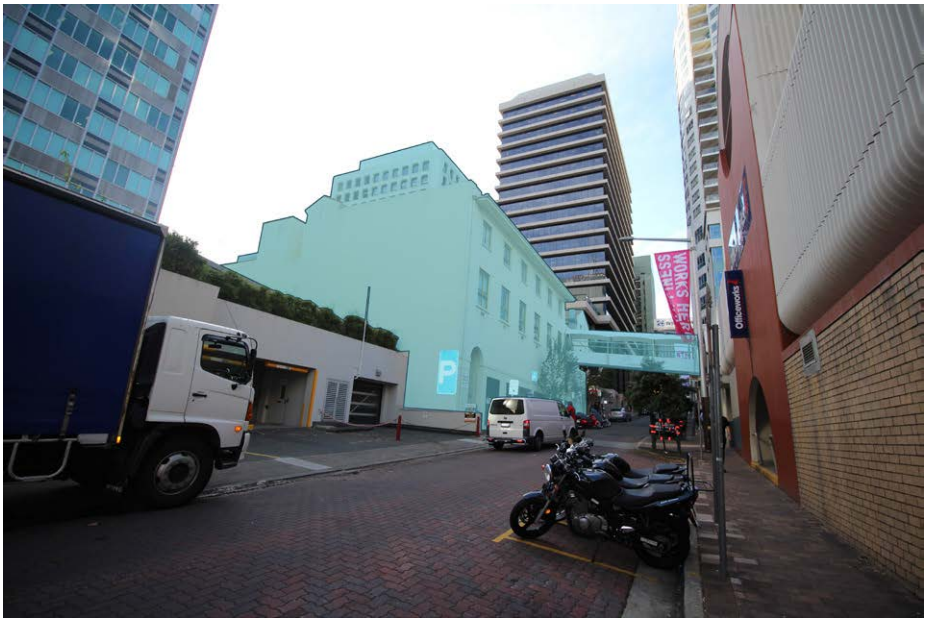
03B ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

06 VICTORIA CROSS STATION

Assessment of daytime visual impact



04



04A

04 EXISTING VIEW NORTH ALONG DENISON STREET

04A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 4: View north along Denison Street

The rear of the Tower Square retail complex and elevated walkway connecting to the 'Berry Square' shopping centre can be seen in the middle ground of this view. This view shows a narrow laneway, which provides rear service access to properties along Miller, Berry and Little Spring Streets. The street is mainly used by service and delivery vehicles, nearby building and apartment tenants, local residents and those visiting Berry Square shopping centre and the Mount Street restaurant precinct.

Construction: This view would change due to the removal of the Tower Square retail complex and adjoining pedestrian bridge, and the 13 storey office reinforced concrete and glass office tower ('Symantec House' at 181 Miller Street) glimpsed beyond. This would alter the skyline of this view and potentially open up views between Denison and Miller Streets. It would also expose views to the southern façade of the modern (c.1986) 18 storey office tower at 65 Berry Street ('The Denison') and its adjacent car park with podium-level courtyard. An acoustic enclosure would be established on the site, adjacent to Miller Street and setback from Denison Street. A construction site with site offices and amenities would be located adjacent to Denison Street.

As this view is considered to be of local visual sensitivity and there would be a noticeable reduction in the amenity of the view, the proposed change would result in a **minor adverse visual impact** during construction.

Operation: A pedestrian connection to the transit plaza would be seen on the southern portion of the site. Ground flood development would be seen beyond this entry, restoring the predominant building setback established by the adjacent buildings. This development would transition this space somewhat from a character of service access to a more public entry space. The project would therefore result in a noticeable improvement in the amenity of

this view, creating a **minor beneficial visual impact** during operation.

Viewpoint 5: View north along Miller Street

The 'Tower Square' retail complex (at 155-167 Miller Street) is visually prominent in the foreground of northerly views along Miller Street. This 2-3 storey development with clock tower and retail frontages, restaurants and offices provide visual relief in this highly urban townscape, and this complex is a local visual landmark on Miller Street. The 13 storey office reinforced concrete and glass office tower building ('Symantec House' at 181 Miller Street) can be seen within the developed the skyline beyond. In this location the streetscape character of Miller Street is four lanes wide with fully paved footpaths and an overhead canopy of mature London planetrees. Vegetation and the heritage shopfront obstruct views further north along Miller Street.

Construction: The demolition of the prominent 'Tower Square' retail complex, adjacent office towers along Miller Street, street trees and vegetation would be seen unobstructed. This would alter the skyline of this view and open up views to Berry Street. The project would also result in the removal of several mature London planetrees, which would change the visual character of the Miller Street streetscape. An acoustic enclosure would be established on the site and rise approximately 15m in the foreground of the view. Construction vehicles would be seen accessing the site via Miller Street and on Miller and Berry Streets.

Therefore the project would result in a considerable reduction in the amenity of this view which is of local visual sensitivity, creating a **moderate adverse visual impact** during construction.

Operation: In this view a wide landscaped pedestrian plaza would be seen in the foreground. Beyond this, in the middle ground of the view, the station entry would be incorporated into a transit plaza with a broad open canopy structure. The removal

05

05 EXISTING VIEW NORTH ALONG MILLER STREET

06 VICTORIA CROSS STATION

Assessment of daytime visual impact

06

06A

06 EXISTING VIEW NORTH AT THE INTERSECTION OF THE PACIFIC HIGHWAY AND MILLER STREET

06A INDICATIVE EXTENT OF DEMOLITION

of the Victorian shopfront and existing streetscape vegetation and furnishings would open up views along Miller Street, creating a vista along the Miller Street plaza to the 'Rag and Famish' hotel on the corner of Berry Street. This view would be framed to the east by retail frontages at Berry Street.

Overall this would be an uncluttered view with an architectural treatment that marks the station entry with a light and open structure. It is expected that the project would result in a noticeable improvement in the amenity of this view, resulting in a **minor beneficial visual impact** during operation.

Viewpoint 6: View north at the intersection of the Pacific Highway and Miller Street

This location provides northerly views to the project site from the junction of the Pacific Highway and Miller Street, one of North Sydney's busiest pedestrian and vehicular intersections. In this location the townscape is defined by several modern and historic landmarks that define North Sydney's CBD, including, from west to east, the historic North Sydney Post Office and courthouse (left and out of view), Northpoint tower (left of view), the heritage listed MLC building (centre) and Brett Whiteley Place (right of view). On the site the 13 storey office building at 181 Miller Street ('Symantec House') is stepped closer to Miller Street, breaking the predominant building setback established by the heritage listed MLC building. The 'Tower Square' complex is also visible on the site, however in this view it is filtered by intervening street trees and urban streetscape elements. The streetscape character of the Pacific Highway and Miller Street is characterised by heavily trafficked four to six lane wide roadways, fully paved footpaths, ground level office tower plazas and foyers with retail space, and an avenue of mature London planetrees along Miller Street.

Construction: The demolition of the retail complex ('Tower Square'), Victorian heritage shopfront and adjacent office towers on Miller Street would be seen in the centre of this view. This would alter the streetscape and skyline of this view, opening up views to Berry Street, Denison Street and the western façade of the modern (c.1986) 18 storey office tower at 65 Berry Street ('The Denison'). The project would also require the removal of several mature London planetrees, which would change the visual character of the Miller Street streetscape. An acoustic enclosure would be established on the site, and construction vehicles would be seen accessing the site via Miller Street and traveling along Miller and Berry Streets, in the mid to background of this view.

The project would result in a noticeable reduction in the amenity of this view, which is of local visual sensitivity, creating a **minor adverse visual impact** during construction.

Operation: In this view the station and ground floor development would be stepped back from the heritage listed MLC building. This would open up a vista to the historic 'Rag and Famish' hotel on the corner of Miller and Berry Streets, in the background of the view. This vista would be seen across a wide landscaped pedestrian plaza established at the station entry. The elevated canopy structure of the station entry would be set forward so that it becomes a focal point at street level, glimpsed and framed by a double avenue of street trees along Miller Street.

It is expected that the project would result in a noticeable improvement in the amenity of this view of local sensitivity, resulting in a **minor beneficial visual impact** during operation.

Assessment of night time visual impact

The setting of the Victoria Cross Station is considered to be an area of **E4: High district brightness**. This is due to its brightly lit CBD location where there is 24 hour activity and lighting from surrounding buildings, urban plazas and streets creating both direct light sources and a general skyglow around the project site.

Victoria Cross northern site

Construction: It is likely that there would be night works required at this location during construction, including 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. This would result in the site, as well as adjacent areas extending along Miller Street being more brightly lit than the existing setting. This lighting would include both static and task illumination and rotating beacon lights mounted on vehicles.

This lighting is expected to create a noticeable reduction in the amenity of views in this area of **E4: high district brightness**, from surrounding streets and potentially from adjacent residential towers on McLaren Street and to the south of Miller Street. It is therefore expected that the project would result in a **negligible visual impact** during evening hours.

Operation: It is expected that there would be minimal lighting required on this site. Some lighting would be required for after hours security, consistent with the level of lighting found on the school grounds and adjacent heritage building, and visually absorbed into the surrounding high district brightness environment.

Therefore, the lighting of the northern site of the project during operation would not create a perceived change in the amenity of this area, resulting in a **negligible visual impact** during evening hours.

Victoria Cross southern site

Construction: It is likely that there would be night works required at the southern site. This would include 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. The site, as well as adjacent areas extending along Miller and possibly McLaren Streets, would be more brightly lit than the existing setting due to this activity. Although there are numerous other existing and proposed construction sites in the vicinity of the site, which also require some level of night time access, the scale and duration of the project works would be greater.

The surrounding developments are predominantly commercial and office towers and there would be few receptor locations at night. However, in views from the surrounding streets, it is expected that this lighting would create a noticeable reduction in visual amenity. As this is an area of high district brightness, this would result in a **negligible visual impact** during evening hours.

Operation: The station entry on Miller Street would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment. It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

06 VICTORIA CROSS STATION

Summary of impact

Summary of impact

Landscape impact

During construction there would be a **moderate adverse landscape impact** on the Harbour cycles sculpture as it would be removed to make way for the construction site. There would also be a **minor adverse landscape impact** on Berry and Miller Streets in the vicinity of the project sites, primarily due to the direct impact on pedestrian movement and the loss of mature street trees.

During operation there would be **moderate beneficial landscape** impact experienced on these surrounding streets. These benefits relate to the improved access to public transport, footpath widening, and the creation of a plaza which would improve overall accessibility and permeability around the entire precinct. There would be **negligible landscape impact** on the surrounding landscapes of the Monte Sant' Angelo Mercy College, the MLC Building sculpture garden and Brett Whiteley Place.

Visual impact

There would be a range of adverse visual impact created by the project during construction including **minor** and **moderate adverse visual impact** from surrounding streets. These impact are primarily due to the demolition of buildings, the establishment of acoustic enclosures and construction vehicles accessing the site. The range of impact levels reflect the sensitivity of the view and proximity to the site. The site would be viewed from footpaths directly adjacent to the construction site as well as from locations up and down Miller Street as far away as the Pacific Highway intersection in the south.

During operations, the introduction of a services facility at the northern site would have a **minor adverse visual impact** on views due to the loss of visual interest and reduced compatibility with surrounding built form.

At the southern site there would be **minor beneficial visual impact** experienced in during the operation of the project. These benefits are created by the uncluttering of views to the site and the introduction of a broad open plaza space, street trees, and a prominent station entry.

At night, in both locations, there would be **negligible visual impact** during construction, despite the requirement for vehicle deliveries and haulage at night. During operation, there would also be a **negligible visual impact** as the station lighting would be in character with the **E4: High district brightness** setting.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Harbour Cycles sculpture	Local	Considerable reduction	Moderate adverse	N/A	N/A
2	Berry and Miller Streets	Local	Noticeable reduction	Minor adverse	Considerable improvement	Moderate beneficial
3	Monte Sant' Angelo Mercy College	Local	No perceived change	Negligible	No perceived change	Negligible
4	MLC Building sculpture garden	Local	No perceived change	Negligible	No perceived change	Negligible
5	Brett Whiteley Place	Local	No perceived change	Negligible	No perceived change	Negligible

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
	Northern site					
1	View west from corner of McLaren and Miller Streets	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
2	View northwest along Miller Street	Local	Noticeable reduction	Minor adverse	Noticeable reduction	Minor adverse
	Southern site					
3	View southeast across the intersection of Berry and Miller Streets	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor benefit
4	View north along Denison Street	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
5	View north along Miller Street	Local	Considerable reduction	Moderate adverse	Noticeable improvement	Minor benefit
6	View north at the intersection of the Pacific Highway and Miller Street	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Northern site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible
2	Southern site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Planning context

The Blues Point temporary construction site would be located within the Blues Point Reserve on the corner of Blues Point Road and Henry Lawson Avenue.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the Blues Point temporary construction site.

Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005

The project area falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005* (SREP SHC, now a deemed SEPP). The principal aim of SREP SHC is to:

"ensure that the catchment, foreshores, waterways and islands of Sydney Harbour are recognised, protected and maintained as an outstanding natural asset and public asset of national and heritage significance for existing and future generations."

Part 2, Clause 14 of the SREP SHC states that for land within the Foreshores and Waterways Area, the following planning principles apply:

"*(d) development along the foreshore and waterways should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands and foreshores"*

Furthermore, Part 3, Division 2 of SREP SHC includes the following matters for consideration:

"Foreshore and waterways scenic quality …

(a) the scale, form, design and siting of any building should be based on an analysis of:

(i) the land on which it is to be erected,

(ii) the adjoining land, and

(iii) the likely future character of the locality.

(b) development should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands, foreshores and tributaries,

(c) the cumulative impact of water-based development should not detract from the character of the waterways and adjoining foreshores."

"Maintenance, protection and enhancement of views …

(a) development should maintain, protect and enhance views (including night views) to and from Sydney Harbour,

(b) development should minimise any adverse impact on views and vistas to and from public places, landmarks and heritage items,

(c) the cumulative impact of development on views should be minimised."

Furthermore, the project site is located within the Sydney Opera House Buffer Zone. Accordingly, Part 5, Division 3A, Clause 58B of the SREP SHC sets out the following matters for consideration when planning development:

"(b) the need for development to preserve views and vistas between the Sydney Opera House and other public places within that zone

(d) the need for development to avoid any diminution of the visual prominence of the Sydney Opera House when viewed from other public places within that zone".

These matters are relevant to the assessment of the project and have been applied to this assessment, particularly in relation to the impact on views to and from the Sydney Opera House.

Sydney Harbour Foreshores and Waterways Area Development Control Plan (DCP), 2005

The Sydney Harbour Foreshores and Waterways Area DCP 2005 applies to land within the Foreshores and Waterways Area pursuant to SREP SHC. Section 3 of the DCP provides for the landscape assessment of such land. Specifically in Section 3.2, the general aims indicate that:

"All developments should aim to:

- *Minimise any significant impact on views and vistas from and to: Public places, Landmarks identified on the maps accompanying the DCP, and Heritage items;*
- *Ensure it complements the scenic character of the area;*
- *Protect the integrity of foreshores with rock outcrops, dramatic topography or distinctive visual features;*
- *Provide a high quality of built and landscape design; and*
- *Contribute to the diverse character of the landscape."*

These aims are relevant to the assessment, particularly in relation to the impact on views from public places and landmarks (identified within the DCP) including: *'Blues Point Tower'; 'Luna Park';* the *'Olympic Pool'* at Milsons Point; the *'Harbour Bridge'* and *'Opera House'*.

The matters raised in the Sydney Harbour Foreshores and Waterways Area DCP have been considered in the following landscape character and visual assessment and corresponding mitigation measures are recommended as appropriate.

North Sydney Local Environmental Plan, (NSLEP), 2013

The site is situated within a Public Recreation (RE1) Land Use Zone. The LEP objectives for this zone include:

"To ensure sufficient public recreation areas are available for the benefit and use of residents of, and visitors to, North Sydney".

Division 2, General Provisions, Clause 6.9 Limited development on foreshore area

(1) The objective of this clause is to ensure that development in the foreshore area will not … affect the significance and amenity of the area. …

(3) Development consent must not be granted under subclause (2) unless the consent authority is satisfied that: …

(b) the appearance of any proposed structure, from both the waterway and adjacent foreshore areas, will be compatible with the surrounding area, and …

(e) opportunities to provide continuous public access along the foreshore and to the waterway will not be compromised, and

(f) any historic, scientific, cultural, social, archaeological, architectural, natural or aesthetic significance of the land on which the development is to be carried out and of surrounding land will be maintained"

Under Clause 4.3, Height of Buildings, the relevant objectives for this area include:

"(a) to promote development that conforms to and reflects natural landforms, by stepping development on sloping land to follow the natural gradient,

(b) to promote the retention and, if appropriate, sharing of existing views,

(c) to maintain solar access to existing dwellings, public reserves and streets, and to promote solar access for future development, ...

(f) to encourage an appropriate scale and density of development that is in accordance with, and promotes the character of, an area".

The site is included within the McMahons Point South Conservation Area. Surrounding the site, the study area also contains numerous heritage items including: the adjacent Blues Point Tower, a row of houses on Warung Street, the former tram turning circle, bus shelter on Henry Lawson Avenue and the McMahons Point ferry wharf.

The site is also within view of several locations of heritage significance such as Luna Park and Milsons Point. This assessment will therefore need to consider the *"settings and views"* of these heritage items under the Heritage conservation clause (5.10).

North Sydney Development Control Plan (DCP), City of Sydney, 2013

The North Sydney DCP identifies a number of Special Character Areas (SCAs). The proposed temporary construction site is located within the Lavender Bay SCA and McMahons Point South Conservation Area.

Key principles for the Lavender Bay SCA relevant to this assessment include:

- *"The conservation of features that positively contribute to the local identity*
- *Public open space is protected from the adverse effects of development – such as…visual impact of structures*
- *Major views from … vantage points are not obscured by structures or landscaping*
- *There is appropriate built form on the foreshore to maintain the significance of Sydney Harbour."*

This assessment will consider whether the project works would adversely impact the surrounding public open spaces, as well as whether major views from any of the public domain within this SCA are impacted.

Within the Lavender Bay SCA, McMahons Point South Conservation Area has a specific statement of significance relating to its history, topography, streetscape and views (Clause 9.8.4).

The project is located in close proximity to several heritage sites. Clause 13.4 (Development in the vicinity of heritage items) of the DCP states:

"development near heritage items is required to consider the potential for new work to impact on the heritage item's setting.

(P1) Respect …the curtilage, setbacks, form, scale, and style of the heritage item in the design and siting of new work.

(P2) Maintain significant public domain views to and from the heritage item".

This assessment will consider potential impact on the setting of, and views to and from heritage sites.

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Existing environment

Foreshore Parks and Reserves Plan of Management (2010), North Sydney City Council

This plan of management identifies the significance of North Sydney's foreshore parks and reserves as a valuable community resource both locally and for the wider community. It states that: *"The foreshore parks and reserves make a significant contribution to the beauty of Sydney Harbour…"* with Blues Point identified as being an important destination for visitors to North Sydney for viewing events and the Sydney skyline and harbour bridge.

Assessment of the project will consider Clause 3.2.1 which states that: *"all new developments in foreshore parks and reserves should take into consideration (both) the desired landscape character of each particular section of the park (and) the potential impact on views out of the parks."*

The assessment will also consider the site works spatial footprint based on the need for *"the optimisation and enhancement of existing open space areas given the comparatively low level of provision in the North Sydney relative to population"* identified in this clause.

North Sydney Foreshore Access Strategy (2007), North Sydney City Council

This report provides the following vision for foreshore access which is relevant to this assessment. *"To promote and improve access links to the North Sydney foreshore for the local and wide community from both the land and the water to continue sustainable use and enjoyment of Sydney Harbour as a unique waterfront environment".* This assessment will determine whether the project will impact on the qualitative values of foreshore access in relation to visual values.

Existing environment

Blues Point Road leads from North Sydney through a predominantly residential area, past the Blues Point Hotel, and onto the Blues Point Tower and Sydney Harbour. Tree-lined along much of its length, and cutting through areas with cottages set on top of sandstone outcrops, the street includes a mix of terrace houses, and unit blocks ranging in age, materials, and character.

The 'Blues Point Tower' sits prominently at the end of Blues Point Road, set within the Blues Point Reserve. This controversial residential tower, designed by Harry Seidler in the early 1960's is a 25 storey residential unit tower. The Blues Point Tower is a local and citywide landmark and offers spectacular, panoramic views of the Harbour Bridge and city beyond.

The Blues Point Reserve includes sandstone cliffs, mature trees, playground equipment and open lawns. This reserve is a popular vantage point for the New Year fireworks and as a place to enjoy the views with a number of seats oriented towards the harbour. The large expanse of roadway and surface car parking at the end of Blues Point Road detracts somewhat from the character of this parkland. The harbour front open space extends to the east, along the water's edge, with Henry Lawson Avenue and a sandstone cliff creating a strong northern edge to this precinct.

To the east of Blues Point Road the landform rises so that homes and units are located on a clifftop above Henry Lawson Avenue. Along the harbour front, four to six storey units, prestigious homes and tower blocks on Warung Street and East Crescent Street have spectacular, panoramic views south and southeast to the Sydney Harbour, Harbour Bridge, Sydney Opera House and the City skyline beyond.

Excluding one waterfront property on Henry Lawson Avenue, harbour front parkland extends from Blues Point to McMahons Point and Lavender Bay in the west. At McMahons Point Henry Lawson Avenue terminates at a Ferry Wharf, bus stop and waterfront restaurant. At this point the foreshore becomes privatised and access to the water's edge ends.

The NSW Government is currently planning an upgrade for the McMahons Point Wharf as part of the Transport Access Program. The wharf would have an increased capacity, and be constructed in 2016.

To the east of McMahons Point, Milsons Point is the location of the northern abutment of the Sydney Harbour Bridge. This location includes a ferry wharf, the iconic Luna Park, Olympic pool and a foreshore pathway.

Important views are those from the site to the Sydney Harbour Bridge and Sydney Opera House. Views from this location are unique in that the Opera House can be seen framed by the Bridge. Conversely, the site is visible from the forecourt of the World Heritage Listed Opera House, from the Sydney Harbour Bridge and from locations across Sydney Harbour.

On the southern shores of the harbour, there are northerly views to the site from the Ives Stairs, under the Harbour Bridge, Hickson Road, the finger wharves at Walsh Bay and from Barangaroo Reserve. The site is seen within the context of important views towards the Sydney Harbour Bridge.

01 WARUNG STREET
02 BLUES POINT TOWER
03 VIEW TO THE SYDNEY OPERA HOUSE AND SYDNEY HARBOUR BRIDGE
04 BLUES POINT ROAD

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Character and components
of the project

Character and components of the project

This summary of the project describes the construction phase requirements at Blues Point. There would be no operations stage works required at this location.

The following structures, equipment and activities are likely to be experienced during construction:

- Site preparation (may include benching) and establishment of a site compound, including concrete barriers, hoardings and site fencing, site offices, parking area, amenities, material and plant storage areas and water treatment plant
- Excavators, cranes, heavy vehicles, rockbreakers, piling rigs and other construction equipment
- An expansion of the site which would be required for TBM retrieval on four occasions
- Construction vehicle access and movement via Blues Point Road and Henry Lawson Drive
- Pedestrian footpaths and foreshore access interrupted during TBM retrieval (four occasions), with a five metre wide path along the foreshore at all other times for public access
- Removal of approximately four car parking spaces during periods of TBM retrieval

The duration of construction works at this site location would be approximately 2 years.

It is expected that the construction of the TBM retrieval shaft would require some after hours crane operation, and heavy plant haulage. TBM dismantling operations would be undertaken on four occasions, for a duration of approximately two weeks each time, and may occur outside of standard working hours. TBM retrieval would involve the closure of Blues Point Road for one night on four occasions.

Upon completion of the construction work the road, car parking, footpaths and parkland space would be reinstated.

Sensitivity levels

The following list summarises the landscape and visual sensitivity of the project site and main viewing areas across the study area.

Blues Point Road

Blues Point Road is an important access road for residents and visitors to McMahons Point and Blues Point Reserve. This road attracts large numbers of pedestrians during special events in addition to local residents, and is a bus route from North Sydney to the McMahons Point Ferry Wharf. These landscapes and views are therefore considered to be of **local sensitivity**.

Blues Point Reserve

This reserve provides an important recreational resource within the Sydney Foreshores network featuring spectacular views of the Harbour Bridge and Opera House across the harbour. It attracts tourists and locals and is a popular vantage point for the New Year's Eve fireworks display. When viewed from the harbour this reserve is characterised by open green grassed area, mature spreading Port Jackson and Moreton Bay Fig trees and the iconic Blues Point Tower. It also contains several State heritage listed items such as sandstone walls and steps. This landscape and views are therefore considered to be of **regional sensitivity**.

Henry Lawson Avenue and McMahons Point

This area is contiguous (apart from one private property) with the Blues Point Reserve. It provides a sweep of green harbour foreshore extending east to the McMahons Point Ferry Terminal and as such has the same characteristic views and features of Blues Point Reserve. The ferry terminal and adjacent bus stop provide access to visitors and local residents. The landscape and views are highly valued as a destination and recreation area and are therefore considered to be of **regional sensitivity**.

Sydney Harbour

This part of the Sydney Harbour falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment) (2005)* and *Sydney Harbour Foreshores and Waterways Area DCP*. These planning instruments identify views to and from the Harbour as having unique visual qualities. The harbour is an important transport and recreational resource for the city. This portion of the Harbour in particular is highly valued by Sydneysiders and visitors to the City for its visual relationship with the Sydney Opera House and Sydney Harbour Bridge. The harbour landscape and views to and from the harbour in this location are considered to be of **state sensitivity**.

Sydney Harbour Bridge

The Sydney Harbour Bridge is an important icon for the city containing many visually significant State heritage listed items including pylons, pedestrian stairs and access roads. It also houses a museum and attracts many international and domestic visitors to cross or climb the bridge where they can experience expansive views across the harbour and surrounding areas. The Sydney Harbour Bridge and views are an important and highly valued part of Sydney's landscape and are therefore considered to be of **state sensitivity**.

Sydney Opera House

The Sydney Opera House is Australia's most recognisable structure and is an icon of creative and technical achievement. Enhanced by its remarkable location on Bennelong Point it functions as a national cultural centre and has had an enduring influence on world architecture. The significant values reflected in this building and its setting are expressed in its inclusion on the National and World Heritage listings. It is visited by large numbers of international and domestic visitors all year as a landscape of high aesthetic and cultural significance. The landscape and views of the Opera House are therefore considered to be of **national sensitivity**.

BLUES POINT RESERVE, NEW YEARS EVE 2015

Barangaroo Reserve

The Barangaroo Reserve is located at the northern end of Barangaroo where it meets Millers Point. This area is a six-hectare harbour foreshore park, and has been designed as a contemporary interpretation of the pre-1836 headland, with bush walks, grassed areas, lookouts, walking and cycle paths. The reserve offers expansive views across the harbour from Darling Harbour in the southwest to the Sydney Harbour Bridge in the northeast. The landscape and views of the Barangaroo Reserve are of **regional sensitivity**.

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Assessment of landscape impact

BLUES POINT RESERVE

Assessment of landscape impact

Within the vicinity of the site, the following places have been identified as potentially being impacted by the project:

- Blues Point Reserve

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Blues Point Reserve

Construction: Much of the Blues Point Reserve would be used as a construction site during the construction of the project. The large, mature fig at the eastern end of the reserve would be retained. Public access would also be maintained along the foreshore and diverted on four occasions when the foreshore is required for TBM retrieval. These changes would reduce access to important foreshore open space and highly valued views to the Harbour Bridge and Opera House. This would be particularly relevant during events such as New Year's Eve. Legibility and walkability of this area would also be impacted somewhat as foreshore access is narrowed. Therefore, it is expected that there would be a considerable reduction in the landscape quality of the Blues Point Reserve, which is of regional sensitivity, resulting in a **high adverse landscape impact** during construction.

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the project site:

- Viewpoint 1: View southeast from the corner of Blues Point Road and Henry Lawson Avenue
- Viewpoint 2: View northeast from Blues Point
- Viewpoint 3: View west from the foreshore park on Henry Lawson Avenue
- Viewpoint 4: View west from the Harbour Bridge
- Viewpoint 5: View northwest from the Sydney Opera House forecourt plaza
- Viewpoint 6: View northwest from the Ives Stairs
- Viewpoint 7: View north from Barangaroo Reserve

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

VIEWPOINT
LOCATION PLAN

KEY

Viewpoint location
Retrieval shaft
Expanded site
Construction area
Site office/
staff amenities

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Assessment of daytime
visual impact

01

01a

01 EXISTING VIEW SOUTHEAST FROM THE CORNER OF BLUES POINT ROAD AND HENRY LAWSON AVENUE

01A ARTIST'S IMPRESSION SHOWING PROJECT DURING CONSTRUCTION

Viewpoint 1: View southeast from the corner of Blues Point Road and Henry Lawson Avenue

This view includes the site in the middle ground of the view, with open waters of the harbour, Sydney Harbour Bridge and Opera House beyond. In this view the Harbour Bridge is aligned across the view. This unique angle of view frames the Sydney Opera House through the Sydney Harbour Bridge. The view is enclosed to the north (left of view) by the mature fig tree and heritage style bus shelter. Surface car parking is located to the west of the view, and overhead power lines cross and obstruct the view somewhat. The reserve itself slopes towards the harbour and is therefore not clearly seen from this location.

Construction: A construction site would be seen in the middle ground of the view, extending across the lawn area between the viewer and harbour foreshore. The site would be enclosed by hoarding and would contain construction related structures and activities including excavators, cranes, piling rig and other construction equipment. It is likely that the activities upon the site would rise above the hoarding at times. Construction vehicles would be seen accessing the site in the middle ground of the view at times via Blues Point Road adjacent to the car parking, and exiting via Henry Lawson Avenue.

These elements would partially obstruct views to the harbour waters, the Harbour Bridge and Opera House.

The prominence of the Harbour Bridge and Opera House would be diminished in views from this location by the context which would have an inconsistent character to the surrounding foreshore landscape. It is expected that the project would create a considerable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **high adverse visual impact** during construction.

Viewpoint 2: View northeast from Blues Point

This view is part of a wider panorama, it includes the site in the middle ground of the view, with residential areas of Blues Point, Lavender Bay and Milsons Point seen in the background. It shows the green foreshore open space in the middle ground, with the mouth of Lavender Bay, a pylon of the heritage listed Harbour Bridge and Luna Park on the foreshore in the background.

From this slightly elevated location, the sloping lawn of the site is clearly visible with a mature fig tree marking its eastern edge. The Henry Lawson Avenue cliff encloses the site to the north, whilst a surface car parking area, power lines and the entry drive to the Blues Point Tower building, comprise the foreground of the view.

Construction: A construction site would be seen in the middle ground of the view, extending across the lawn area between the harbour foreshore, car parking area and Henry Lawson Avenue. The site would be enclosed by hoarding and contain construction related structures and activities including excavators, concrete pumps, piling rigs and other construction equipment. Construction activities within the site would rise above the hoarding.

Construction vehicles would be seen moving along Blues Point Road at times and accessing the site via Blues Point Road adjacent to the car parking area in the centre of this view.

It is therefore expected that the project would create a considerable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **high adverse visual impact** during construction.

02

02a

02 EXISTING VIEW NORTHEAST FROM BLUES POINT

02A INDICATIVE EXTENT OF PROJECT SITE

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Assessment of daytime
visual impact

03

03 EXISTING VIEW WEST FROM THE FORESHORE PARKLAND ON HENRY LAWSON AVENUE

Viewpoint 3: View west from the foreshore park on Henry Lawson Avenue

This view includes the Blues Point headland, aligned across the view and protruding into the harbour. This headland is characterised by a natural rocky cliff edge with mature trees softening this local ridgeline. The heritage listed Blues Point Tower is located prominently on this headland, contrasting starkly with the horizontality of the green headland and foreshore edge. The southern portion of the site is visible in the middle ground of this view, seen as a sloping lawn, with mature vegetation screening the private residence to the eastern edge of the site.

Construction: A construction site would be seen in the middle ground of the view, set back from the harbour foreshore to allow for pedestrian access, and extending across the visible lawn area, and behind intervening vegetation. The site would be enclosed by hoarding and would contain excavators, concrete pumps, piling rigs and other construction equipment. Construction activities upon the site would rise above the hoarding and obstruct views to the lower levels of the Blues Point Tower.

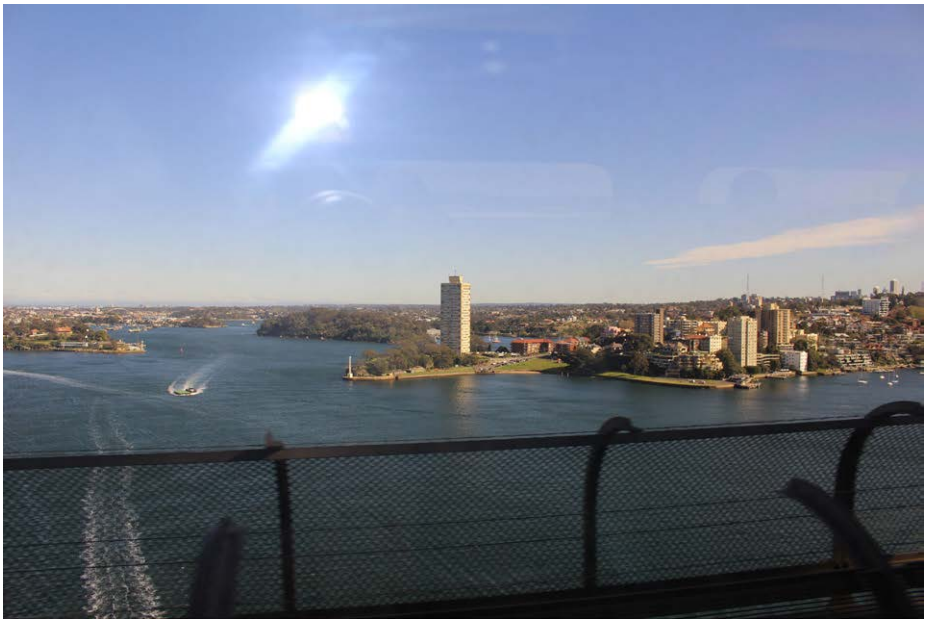
The construction site would interrupt the visual continuity of the green harbour foreshore edge. It is therefore expected that the project would create a considerable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **high adverse visual impact** during construction.

Viewpoint 4: View west from the Harbour Bridge

This distant and glimpsed view can be seen from trains on the Sydney Harbour Bridge, a moving vantage point. This view shows the site seen prominently from this elevated location. This view includes a broad view of the lower north shore and shows a variety of harbour edge treatments in the vicinity of the site. Lavender Bay is in the west (right of view) and has a highly urbanised edge with a mix of over water private and public developments. To the west of Lavender Bay, a sweep of green foreshore open space stretches from McMahons Point to Blues Point (including the project site). Beyond this open space and further west, the vegetated headlands of Blues Point, Waverton Peninsula, Balls Head Reserve and Goat Island can be seen. This variety of harbour edge treatments is an important feature of this view.

The southern portion of the site is visible in the background of this view, seen as a sloping lawn, with mature vegetation at the eastern edge of the site. The site is seen against a backdrop of urban development and the heritage listed Blues Point Tower is located prominently on this headland.

Construction: A construction site would be seen in the background of the view, interrupting the visual continuity of the green harbour foreshore edge in this view. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.



04

04 EXISTING VIEW WEST FROM A TRAIN ON THE HARBOUR BRIDGE

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Assessment of daytime
visual impact

05

05A

05 EXISTING VIEW NORTHWEST FROM THE SYDNEY OPERA HOUSE FORECOURT PLAZA
05A ARTIST'S IMPRESSION SHOWING PROJECT DURING CONSTRUCTION (zoom to equivalent focal length of 60mm)

Viewpoint 5: View northwest from the Sydney Opera House forecourt plaza

In views from the Sydney Opera House and forecourt, the site is framed by the Sydney Harbour Bridge, within a section of the lower north shore and seen in the background of the view.

Although seen at a distance of over a kilometre, the entire site is visible from this angle, set within a sweep of green foreshore open space which stretches from Blues Point Road to McMahons Point. The sloping landform exposes the entire site to views from the harbour, somewhat reducing the foreshortening effect of distance.

This green foreshore edge provides some visual relief within the surrounding highly urban context which comprises a layering of urban developments. In particular, the juxtaposition of the heritage listed Blues Point Tower, located prominently on the Blues Point headland, both detracts from the view and attracts attention.

The waters of Sydney Harbour between Circular Quay and McMahons Point, seen in this view, are frequented by a range of vessels from small boats, yachts and ferries, to cruise ships. Visually this creates a dynamic middle ground to this view.

Construction: At this distance, the construction site would be seen in the background of this view, interrupting the continuous green foreshore edge. This developed character would be visually absorbed into the surrounding highly urban townscape seen beyond.

Although the construction site would break the visual continuity of the green harbour foreshore edge in this view it is seen in the background of the view at a distance in excess of a kilometre. The project would therefore not create a perceived change to the amenity of this view, which is of national visual sensitivity, resulting in a **negligible visual impact** during construction.

Viewpoint 6: View northwest from the Ives Stairs

The site can be seen in the background of this view, along the foreshore of the lower north shore.

The entire site is visible from this angle, seen at a distance of approximately 600 metres, across the open waters of Sydney Harbour. The sloping landform exposes the entire site to views from across the harbour, reducing the foreshortening effect of distance.

The site is seen within a sweep of green foreshore open space extending from the vegetated character of the Blues Point headland to the tip of McMahons Point.

This green foreshore edge provides visual relief within the surrounding highly urban context which steps up and down over the surrounding undulating landform. In particular, the heritage listed Blues Point Tower, is seen prominently on the Blues Point headland, both detracting from and attracting attention to Blues Point.

The waters of Sydney Harbour between Dawes and McMahons Points, comprising much of the middle ground of this view, are frequented by a range of vessels through the day, creating both a visually calming and dynamic effect on this view.

Construction: The construction site would be seen in the background of this view, interrupting the continuous green foreshore edge. This developed character would extend the built character of the surrounding development to the waters edge for nominally two years, and be visually absorbed into the surrounding highly urban townscape seen beyond.

The construction site would break the continuity of the green harbour foreshore edge seen in this view. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of regional visual sensitivity. This would result in a **moderate adverse visual impact** during construction.

06

06 EXISTING VIEW NORTHWEST FROM THE IVES STAIRS

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Assessment of daytime
visual impact

07

07 EXISTING VIEW NORTH FROM THE BARANGAROO RESERVE

Viewpoint 7: View north from Barangaroo Reserve

The foreshore of the Barangaroo Reserve offers spectacular views to the Sydney Harbour Bridge and across the open waters of the harbour and to the lower north shore suburbs of McMahons Point, Lavender Bay and Blues Point. This view is part of a wider panorama including areas of the harbour to the west (left of view).

In views from this location the skyline of the North Sydney CBD and residential high-rise at Milsons Point forms an arc, generally following the landform. The harbour is fringed in this view by vegetated headlands and green open space.

The site is partially obstructed by the Blues Point headland in views from this location. The waters of Sydney Harbour between Barangaroo, Blues Point and McMahons Point, comprising much of the middle ground of this view, are frequented by a range of vessels through the day, creating both a visually calming and dynamic effect on this view.

Construction: In views from this location the site is partially obstructed by the Blues Point headland. The construction site may be visible but would not be prominent in this view and would be visually absorbed into the surrounding highly urban townscape seen beyond.

It is expected that the project would not create a perceived change in the amenity of this view, which is of regional level sensitivity. This would result in a **negligible visual impact** during construction.

Assessment of night time visual impact

The setting of the Blues Point site is considered to be an area of **E3: Medium district brightness**. It is a moderately lit urban area, with lighting from surrounding buildings and streets creating both direct light sources and a general skyglow around the project site.

Construction: It is expected that there would be some night works required at this location during construction, including some 24 hour crane operations and heavy vehicle haulage for TBM retrieval accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. This lighting would be somewhat visually contained by the Henry Lawson Avenue cliff, to the north of the site.

Overall, it is expected that at night the project would create a noticeable reduction in the amenity of views in this area, including adjacent residential properties and streets. It is therefore expected that the project would result in a **minor adverse visual impact** during evening hours.

07 BLUES POINT TEMPORARY CONSTRUCTION SITE

Summary of impact

Summary of impact

Landscape impact

During construction the project would result in a **high adverse landscape impact** on the Blues Point Reserve as a consequence of the direct loss of harbour foreshore open space.

These impact are temporary, and there would be no landscape impact during operation as there are no activities proposed for this site.

Visual impact

There would be a range of visual impact created by the project during construction. In views from areas around Blues and McMahons Point there would be **high adverse visual impact**. These impact are created by the obstruction of views to the open water of the harbour and incongruent character of the project works within these views.

In views from the Harbour Bridge and the Ives stairs, there would be **moderate adverse visual impact** during construction. This is due to the disruption of the green foreshore edge seen from across the harbour.

The highly sensitive viewing location of the Sydney Opera House and forecourt is expected to experience **negligible visual impact** as a result of the project during construction. Although the site would be clearly visible, the distance and visual absorption capacity of the surrounding urban environment would result in no perceived change in the amenity of views from this location.

N**egligible visual impact** would be experienced from the Barangaroo Reserve during construction, where distance and intervening elements would limit the visibility of the site.

These impact are temporary, and there would be no visual impact during operation as there are no activities proposed for this site.

At night there would be **minor adverse visual impact** expected during construction. This is due to the night works that would be required at the site, particularly 24 hour deliveries and TBM retrieval activities.

BLUES POINT RESERVE

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Blues Point Reserve	Regional	Considerable reduction	High adverse	N/A	N/A

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View southeast from the corner of Blues Point Road and Henry Lawson Avenue	Regional	Considerable reduction	High adverse	N/A	N/A
2	View northeast from Blues Point	Regional	Considerable reduction	High adverse	N/A	N/A
3	View west from the foreshore park on Henry Lawson Avenue	Regional	Considerable reduction	High adverse	N/A	N/A
4	View west from the Harbour Bridge	Regional	Noticeable reduction	Moderate adverse	N/A	N/A
5	View northwest from the Sydney Opera House forecourt plaza	National	No perceived change	Negligible	N/A	N/A
6	View northwest from the Ives Stairs	Regional	Noticeable reduction	Moderate adverse	N/A	N/A
7	View north from Barangaroo Reserve	Regional	No perceived change	Negligible	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E3: Medium district brightness	Noticeable reduction	Minor adverse	N/A	N/A

08 HARBOUR GROUND IMPROVEMENT WORKS

Planning context

The Harbour Works temporary construction site would be located within the Sydney Harbour in two locations along the alignment of the tunnel between Blues Point and the Barangaroo Reserve

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the Harbour Works temporary construction site.

Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005

The project area falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005* (SREP SHC, now a deemed SEPP). The principal aim of SREP SHC is to:

"ensure that the catchment, foreshores, waterways and islands of Sydney Harbour are recognised, protected and maintained as an outstanding natural asset and public asset of national and heritage significance for existing and future generations."

Part 2, Clause 14 of the SREP SHC states that for land within the Foreshores and Waterways Area, the following planning principles apply:

"*(d) development along the foreshore and waterways should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands and foreshores"*

Furthermore, Part 3, Division 2 of SREP SHC includes the following matters for consideration:

"Foreshore and waterways scenic quality …

(b) development should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands, foreshores and tributaries,

(c) the cumulative impact of water-based development should not detract from the character of the waterways and adjoining foreshores."

"Maintenance, protection and enhancement of views …

(a) development should maintain, protect and enhance views (including night views) to and from Sydney Harbour,

(b) development should minimise any adverse impact on views and vistas to and from public places, landmarks and heritage items,

(c) the cumulative impact of development on views should be minimised."

Furthermore, part of the project site is located within the Sydney Opera House Buffer Zone. Accordingly, Part 5, Division 3A, Clause 58B of the SREP SHC sets out the following matters for consideration when planning development:

"(b) the need for development to preserve views and vistas between the Sydney Opera House and other public places within that zone

(d) the need for development to avoid any diminution of the visual prominence of the Sydney Opera House when viewed from other public places within that zone".

These matters are relevant to the assessment of the project and have been applied to this assessment, particularly in relation to the impact on views to and from the Sydney Opera House.

Sydney Harbour Foreshores and Waterways Area Development Control Plan (DCP), 2005

The Sydney Harbour Foreshores and Waterways Area DCP 2005 applies to land within the Foreshores and Waterways Area pursuant to SREP SHC. Section 3 of the DCP provides for the landscape assessment of such land. Specifically in Section 3.2, the general aims indicate that:

"All developments should aim to:

- *Minimise any significant impact on views and vistas from and to: Public places, Landmarks identified on the maps accompanying the DCP, and Heritage items;*
- *Ensure it complements the scenic character of the area;*
- *Protect the integrity of foreshores with*

rock outcrops, dramatic topography or distinctive visual features;

- *Provide a high quality of built and landscape design; and*
- *Contribute to the diverse character of the landscape."*

These aims are relevant to the assessment, particularly in relation to the impact on views from public places and landmarks identified in the DCP, including the: *'Blues Point Tower'; 'Luna Park'; 'Olympic Pool'* at Milsons Point; *'Victorian mansion'* on the foreshore at Balmain; and the *'native and exotic vegetation'* on Goat Island, the *'Harbour Bridge'* and *'Opera House'*.

The matters raised in the Sydney Harbour Foreshores and Waterways Area DCP have been considered in the following landscape character and visual assessment and corresponding mitigation measures are recommended as appropriate.

Existing environment

The site is located within a busy area of the Sydney Harbour, surrounded by Blues Point, McMahons Point, Lavender Bay, and Milsons Point in the north, the Sydney Harbour Bridge and Sydney Opera House in the east, Walsh Bay and the Barangaroo Reserve in the south, and Balmain East, Goat Island and the Balls Head in the west.

In particular, views from the Sydney Harbour Bridge and Sydney Opera House, and the site's contribution to the setting of these places is important. In addition, there are numerous other important historic and cultural buildings and landscapes located within view of this area of the harbour. These include the Blues Point Tower, Luna Park, Barangaroo Reserve, a heritage listed Victorian Mansion at Balmain East, and the Goat Island National Park, Balls Head Reserve and Waverton Peninsula Reserve. There are also views from surrounding foreshore and elevated residential areas where views of the harbour are the focal point.

01 CRUISE SHIP IN CIRCULAR QUAY
02 WAVERTON POINT RESERVE
03 LUNA PARK AND THE MILSONS POINT FERRY WHARF
04 BALMAIN EAST

08 HARBOUR GROUND IMPROVEMENT WORKS

Character and components of the project

Sensitivity levels

Although the site comprises the undeveloped, open water of the harbour, this is a busy section of the waterway. It is often frequented by a range of vessels from small boats, yachts and ferries, to tankers and large cruise ships. Visually this creates a dynamic and animated landscape.

Character and components of the project

This summary describes the construction phase requirements of the project within the Sydney Harbour.

In-harbour ground improvement works would occur at the two nominated locations, but not concurrently. At these locations the following structures, equipment and activities are likely to be experienced during construction:

- Grout plant barge with crane and drilling lead moving progressively around the grouting site
- A grout barge, alongside the grout plant barge and returning intermittently to an onshore facility to transport staff and supplies
- Spoil barge, alongside the grout plant barge and returning intermittently to an onshore facility to offload spoil

The location of an onshore facility is not currently known and is not considered within this assessment.

The duration of construction works at this site location would be approximately 12 months.

It is expected that the jet grouting activity would require some after hours operation. This would include lighting on the barges to facilitate a safe working platform for the grouting activity. Lighting would also be seen on barges traveling within the harbour.

Sensitivity levels

The following list summarises the landscape and visual sensitivity of the project site and main viewing areas across the study area.

Sydney Harbour

This part of the Sydney Harbour falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment) (2005)* and *Sydney Harbour Foreshores and Waterways Area DCP*. These planning instruments identify views to and from the Harbour as having unique visual qualities. The harbour is an important transport and recreational resource for the city. This portion of the Harbour in particular is highly valued by Sydneysiders and visitors to the City for its visual relationship with the Sydney Opera House and Sydney Harbour Bridge. The harbour landscape and views to and from the harbour in this location are considered to be of **state sensitivity**.

Sydney Harbour Bridge

The Sydney Harbour Bridge is an important icon for the city containing many visually significant State heritage listed items including pylons, pedestrian stairs and access roads. It also houses a museum and attracts many international and domestic visitors to cross or climb the bridge where they can experience expansive views across the harbour and surrounding areas. The Sydney Harbour Bridge and views are an important and highly valued part of Sydney's landscape and are therefore considered to be of **state sensitivity**.

Sydney Opera House

The Sydney Opera House is Australia's most recognizable structures and is an icon of creative and technical achievement. Enhanced by its remarkable location on Bennelong Point it functions as a national cultural centre has had an enduring influence on architecture. The significant values reflected in this building and its setting are expressed in its inclusion on the National

and World Heritage listings. It is visited by large numbers of international and domestic visitors all year as a landscape of high aesthetic and cultural significance. The landscape and views of the Opera House are therefore considered to be of **national sensitivity**.

Blues Point Reserve

This reserve provides an important recreational resource within the Sydney Foreshores network featuring spectacular views of the Harbour Bridge and Opera House across the harbour. It attracts tourists and locals and is a popular vantage point for the New Year's Eve fireworks display. When viewed from the harbour this reserve is characterised by open green grassed area, mature spreading Port Jackson and Moreton Bay Fig trees and the iconic Blues Point Tower. It also contains several local heritage listed items such as sandstone walls and steps. This landscape and views are therefore considered to be of **regional sensitivity**.

Waverton Peninsular Reserve

This reserve provides an important recreational resource within the Sydney Foreshores network featuring spectacular views of the Sydney Bridge across the harbour. It attracts mainly local residents and is a popular vantage point for the New Year's Eve fireworks display. This former industrial site is characterised by the restored natural vegetation along the harbour edge and headland vegetation, with circular lawns enclosed by curved sandstone walls elevated footpaths and viewing platforms. This landscape and views are therefore considered to be of **local sensitivity**.

Barangaroo Reserve

The Barangaroo Reserve is located at the northern end of Barangaroo where it meets Millers Point. This area is a six-hectare harbour foreshore park, and has been designed as a contemporary interpretation of the pre-1836 headland, with bush walks, grassed areas, lookouts, walking and cycle paths. The reserve offers expansive views

WAVERTON PENINSULAR RESERVE

across the harbour from Darling Harbour in the southwest to the Sydney Harbour Bridge in the northeast. The landscape and views of the Barangaroo Reserve are of **regional** landscape visual sensitivity.

08 HARBOUR GROUND IMPROVEMENT WORKS

Assessment of landscape impact

Assessment of landscape impact

Within the vicinity of the site, the following places have been identified as potentially being impacted by the project:

- Sydney Harbour

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Sydney Harbour

Construction: Two areas within Sydney Harbour, along the alignment of the harbour crossing tunnel, would be required for jet grouting as a part of the construction of the project. During this time a number of barges would be both moored within the harbour and moving between the site and shore to haul supplies, staff and remove spoil. This equipment would be moved to obstruct access to large ships as required and not impact on ferry or recreational boating activity. Due to the dynamic and busy nature of this section of the harbour it is expected that there would not be a perceived change in the landscape quality of this portion of the Sydney Harbour, which is of regional sensitivity, resulting in a **negligible landscape impact**.

VIEWPOINT LOCATION PLAN

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the project site:

- Viewpoint 1: View southeast from Waverton Peninsular Reserve
- Viewpoint 2: View southeast from Blues Point Reserve
- Viewpoint 3: View southwest from Milsons Point Wharf
- Viewpoint 4: View northwest from the Sydney Opera House forecourt plaza
- Viewpoint 5: View north from Barangaroo Reserve
- Viewpoint 6: View northeast from Balmain East Ferry Wharf

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Viewpoint 1: View southeast from Waverton Peninsular Reserve

This view includes the southern site in the background of the view, seen over Berrys Bay and with the Sydney Harbour Bridge and CBD skyline beyond. The view is framed by the Blues Point and Balls Head peninsulas.

The waters of Sydney Harbour between Blues Point and Barangaroo Reserve, seen in this view, are activated by a range of vessels including small boats, yachts, ferries and cruise ships. This creates a dynamic background to this view, which contrasts somewhat to the Berrys Bay where yachts and small boats are moored, fringing the foreshore.

Construction: Both the southern and northern sites would be visible between Blues Point Reserve and Barangaroo Reserve. Each site would comprise three barges, two of which would be moving across the harbour to an onshore facility at times during the day.

These barges and barge mounted crane would be seen within the context of other ships, boats and ferries, which regularly pass through the harbour between Blues Point and Barangaroo Headland. They would also be seen against the developed shoreline of Walsh Bay and with the City skyline beyond.

Although the harbour crossing construction site would be seen in this view, the absorption capacity of the surrounding landscape and distance mitigate the potential visual impact. It is therefore expected that the project would not change the amenity of this view, which is of local visual sensitivity, resulting in a **negligible visual impact** during construction.

01

01 VIEW SOUTHEAST FROM WAVERTON PENINSULAR RESERVE

08 HARBOUR GROUND IMPROVEMENT WORKS

Assessment of daytime
visual impact

02

03

02 VIEW SOUTHEAST FROM BLUES POINT RESERVE

03 VIEW SOUTHWEST MILSONS POINT WHARF

Viewpoint 2: View southeast from Blues Point Reserve

This view includes the northern site in the background of the view. It is seen over the harbour and within a panoramic view to the Sydney Harbour Bridge, Sydney Opera House and CBD skyline. This view extends from the bridge around Walsh Bay, and is filtered by mature trees within the Blues Point Reserve.

The waters of Sydney Harbour between Blues Point and Walsh Bay, are activated by a range of vessels from small boats, yachts and ferries, to cruise ships. This creates an active and dynamic character to the harbour, which varies throughout the day, week and year, and during different events such as at New Years eve.

Construction: Three barges would be seen in the middle ground of this view, at the northern site, with two of these barges moving across the harbour at times during the day. These barges and barge mounted crane would be seen within the context of other ships, boats and ferries, which regularly pass through this area of the harbour. They would also be seen against the developed shoreline of Walsh Bay and with the CBD skyline beyond.

Although the harbour crossing construction site would be seen in the middle ground of this view, the absorption capacity of the surrounding landscape would reduce the visual impact somewhat. It is therefore expected that the project would result in a noticeable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Viewpoint 3: View southwest from Milsons Point Wharf

This view includes both the northern and southern construction site areas in the background of the view, seen over the harbour. This view is enclosed by the Barangaroo Reserve, Darling Harbour, Balmain East, Goat Island and Blues Point Reserve in the west. The former harbour

control tower and Blues Point Tower rise dramatically above the surrounding landscape and are visual landmarks in this view.

This view is set within a panoramic view which includes the Sydney Harbour Bridge, Sydney Opera House and CBD skyline to the east (left of view).

The waters of Sydney Harbour between Lavender Bay and Darling Harbour, are activated by a range of vessels included small boats, yachts, ferries, and cruise ships. This creates an active and dynamic character to the harbour, which varies throughout the day.

Construction: Both the northern and southern areas of the construction site would be visible and unobstructed in this view. There are both static and moving elements that would be seen at the southern site, which would be located in the background, and would be visually absorbed into the surrounding active harbour landscape and varied background of Barangaroo and Balmain.

The northern site, however, would be more prominent due to its location in the middle ground of the view, and the static nature of the grout plant barge and barge mounted crane.

The two harbour crossing construction sites would be seen at different times in the background and the middle ground of this view, and the absorption capacity of the surrounding landscape would reduce the visual impact somewhat. It is therefore expected that the project would result in a noticeable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Viewpoint 4: View southwest from the Sydney Opera House forecourt plaza

In views from the Sydney Opera House and forecourt the northern site is seen with the harbour in the background and framed by the Sydney Harbour Bridge. The construction site would be seen at a distance of over a kilometre and seen against the Blues Point headland.

04 VIEW WEST FROM THE SYDNEY OPERA HOUSE FORECOURT

04

The waters of Sydney Harbour between Circular Quay and McMahons Point, seen in this view, are frequented by a range of vessels including small boats, yachts and ferries, and cruise ships. Visually this creates a dynamic middle ground to this view.

Construction: At this distance the construction site would be seen in the background of this view, visually absorbed into the green vegetated headland beyond, and into the surrounding busy stretch of inner city harbour.

The project would therefore not change the amenity of this view, which is of national visual sensitivity, resulting in a **negligible visual impact** during construction.

08 HARBOUR GROUND IMPROVEMENT WORKS

Assessment of daytime
visual impact

05

05A

05 EXISTING VIEW NORTH FROM BARANGAROO RESERVE

05A ARTIST'S IMPRESSION SHOWING PROJECT DURING CONSTRUCTION

Viewpoint 5: View north from the Barangaroo Reserve

The foreshore of the Barangaroo Reserve offers spectacular views to the Sydney Harbour Bridge and across the open waters of the harbour and to the lower north shore suburbs of McMahons Point, Lavender Bay and Blues Point. This view is part of a wider panorama including areas of the harbour to the west (left of view).

Construction: In views from this location the northern and southern sites would be visible. It is expected that the northern site would be visually absorbed into the surrounding busy harbour landscape. The southern site, however, would be more prominent as it is closer to the viewer and seen within the open waters of the harbour.

It is expected that the project would create a noticeable reduction in the amenity of this view, which is of regional level sensitivity. This would result in a **moderate adverse visual impact** during construction.

Viewpoint 6: View northeast from Balmain East Ferry Wharf

Views northeast from the Balmain East Ferry Wharf offer panoramic views across the open waters of the harbour. This includes the Sydney Harbour Bridge in the centre, with Lavender Bay and Blues Point in the north, and Walsh Bay and Barangaroo in the south. This view is part of a wider panorama including Goat Island to the northwest (left of view) and Darling Harbour (right of view).

The waters of Sydney Harbour between Balmain and McMahons Point, seen in this view, are frequented by a range of vessels from small boats, yachts and ferries, to cruise ships. Visually this creates a dynamic middle ground to this view.

Construction: In views from this location, the northern and southern sites would be seen unobstructed within the harbour.

The visual prominence of the northern site would be mitigated by distance, so that it would be visually absorbed into the surrounding harbour landscape, and blend into the urban landscape of the north shore which forms a backdrop.

The southern site, however, would be more prominent as it is closer to the viewer and seen within the open waters of the harbour.

It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local level sensitivity. This would result in a **minor adverse visual impact** during construction.

06

06 VIEW NORTHEAST FROM BALMAIN EAST FERRY WHARF

08 HARBOUR GROUND IMPROVEMENT WORKS

Summary of Impact

Assessment of night time visual impact

The setting of the harbour works site is considered to be an area of **E3: Medium district brightness**. It is an area of the harbour influenced by lighting from buildings and streets on the surrounding urban areas creating a general skyglow around the project site. It also includes use by vessels during night time hours.

Construction: It is expected that there would be some night works required at this location during construction, including lighting to facilitate safe working on the barges within the site and traveling to an onshore facility.

Overall, it is expected that at night the project would create a noticeable reduction in the amenity of views in this area, including views from nearby residential properties and foreshore parkland. It is therefore expected that the project would result in a **minor adverse visual impact** during evening hours.

MCMAHONS POINT FERRY WHARF

Summary of impact

Landscape impact

During construction the landscape impact of the project would result in a **negligible landscape impact** due to the absorption capacity of the surrounding busy harbour.

These impact are temporary, and there would be no landscape impact during operation as there are no activities proposed for this site.

Visual impact

There would, however, be **negligible, minor** and **moderate adverse visual impact** experienced due to the Harbour Works during construction. In distant views, it is expected that the project works would be visually absorbed into the busy waters of this section of the harbour, resulting in **negligible visual impact** from the Sydney Opera House and Waverton Peninsular Reserve during construction. In views where the site is seen at a closer proximity, and where both sites would be seen there are **minor** and **moderate adverse visual** impact. This includes views from Blues Point Reserve, Milsons Point Wharf, Balmain East Ferry Wharf and Barangaroo Reserve.

These impact are temporary, there are no visual impact during operation as there are no activities proposed for this site.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Sydney Harbour	Regional	No perceived change	Negligible	N/A	N/A

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View southeast from Waverton Peninsular Reserve	Local	No perceived change	Negligible	N/A	N/A
2	View southeast from Blues Point Reserve	Regional	Noticeable reduction	Moderate adverse	N/A	N/A
3	View southwest from Milsons Point Wharf	Regional	Noticeable reduction	Moderate adverse	N/A	N/A
4	View southwest from the Sydney Opera House forecourt plaza	National	No perceived change	Negligible	N/A	N/A
5	View north from Barangaroo Reserve	Regional	Noticeable reduction	Moderate adverse	N/A	N/A
6	View northeast from Balmain East Ferry Wharf	Local	Noticeable reduction	Minor adverse	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E3: Medium district brightness	Noticeable reduction	Minor adverse	N/A	N/A

09 BARANGAROO STATION

Planning context

The project site is centred on Hickson Road and extends east to the Millers Point cliff wall and west into the Central Barangaroo site.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the proposed Barangaroo station.

Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005

The project area falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005 (SREP SHC,* now a deemed SEPP). The principal aim of SREP SHC is to:

"ensure that the catchment, foreshores, waterways and islands of Sydney Harbour are recognised, protected and maintained as an outstanding natural asset and public asset of national and heritage significance for existing and future generations."

Part 2, Clause 14 of the SREP SHC states that for land within the Foreshores and Waterways Area, the following planning principles apply:

"(d) development along the foreshore and waterways should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands and foreshores"

Furthermore, Part 3, Division 2 of SREP SHC includes the following matters for consideration:

"Foreshore and waterways scenic quality …

(a) the scale, form, design and siting of any building should be based on an analysis of:

(i) the land on which it is to be erected,

(ii) the adjoining land, and

(iii) the likely future character of the locality.

(b) development should maintain, protect and enhance the unique visual qualities of Sydney Harbour and its islands, foreshores and tributaries,

(c) the cumulative impact of water-based development should not detract from the character of the waterways and adjoining foreshores."

"Maintenance, protection and enhancement of views …

(a) development should maintain, protect and enhance views (including night views) to and from Sydney Harbour,

(b) development should minimise any adverse impact on views and vistas to and from public places, landmarks and heritage items,

(c) the cumulative impact of development on views should be minimised."

The above matters have been considered in the following landscape and visual assessment and corresponding mitigation measures are recommended as appropriate.

Sydney Harbour Foreshores and Waterways Area Development Control Plan (DCP), 2005

This DCP applies to land within the Foreshores and Waterways Area pursuant to SREP SHC. Section 3 of the DCP provides for the landscape assessment of such land. Specifically in Section 3.2, the general aims indicate that:

"All developments should aim to:

- *Minimise any significant impact on views and vistas from and to: Public places, Landmarks identified on the maps accompanying the DCP, and Heritage items;*
- *Ensure it complements the scenic character of the area;*
- *Protect the integrity of foreshores with rock outcrops, dramatic topography or distinctive visual features;*
- *Provide a high quality of built and landscape design; and*
- *Contribute to the diverse character of the landscape."*

These aims are relevant to the assessment, particularly in relation to the impact on views from public places and landmarks,

which include the 'Victorian mansion' on the foreshore at Balmain; and the 'native and exotic vegetation' on Goat Island.

Barangaroo Revised Statement of Commitments, Barangaroo Delivery, 2010

This document outlines an agreement between the Barangaroo Delivery Authority (BDA) and the NSW Government. It includes the following commitments which relate to views and amenity:

"Views from public spaces on opposite foreshores to Observatory Hill Park will be retained. Panoramas from Pyrmont Park around to the Harbour Bridge (from Observatory Hill Park) will also be retained."

Future development within the Barangaroo site is to provide adequate view corridors over and between new built form to maintain the key attributes of views from Millers Point.

The key attributes to be retained are:

- *"views to significant tracts of the water,*
- *the junction of Darling Harbour and the Harbour proper,*
- *the opposite foreshores,*
- *panoramic qualities of existing views and,*
- *the most distinctive views to landmark structures."*

Of particular relevance to this assessment is preserving the panoramic quality of views, such as those from Observatory Hill Park. These recommendations have been considered in the following assessment.

Sydney Local Environmental Plan, City of Sydney, 2012

The project is located in close proximity to several heritage sites of local and state significance, including the Terrace duplex group (at 2-80 High Street), the Lance Kindergarten and its mature London Planetrees (37 High Street), the retaining wall, palisade fence and steps along High Street and High Lane, as well as the Millers Point Conservation Area, an area of state significance. This assessment will therefore need to consider the *"settings and views"* of these heritage items under the Heritage conservation clause (5.10).

Sydney Development Control Plan (DCP), City of Sydney, 2012

The Sydney DCP identifies a number of Special Character Areas (SCAs) that relate to the locality statements and supporting principles for development within the Sydney LEP. The project site is not located within or adjacent to any SCAs.

The project site includes several mature Weeping Hills Fig trees, which are a key feature of the Sussex Street and Hickson Road streetscape. The Sydney DCP considers urban vegetation such as this to be one of the City's *"most important assets".* In accordance with clause 3.5.2, the design should ensure "*tree canopy cover is considered … and provided appropriately".*

09 BARANGAROO STATION

Existing environment

Existing environment

The Barangaroo development is divided into three precincts: Barangaroo Reserve, Central Barangaroo and Barangaroo South. The project is located in Central Barangaroo, in the vicinity of Hickson Road. The following paragraphs give an overview of the current and future form and character of the Barangaroo development, which would provide the context for the Sydney Metro Barangaroo Station project.

Barangaroo Reserve

The Barangaroo Reserve is located at the northern end of Barangaroo where it meets Millers Point. This area is a six-hectare harbour foreshore park, and has been designed as a contemporary interpretation of the pre-1836 headland, with bush walks, grassed areas, lookouts, walking and cycle paths. A plaza has been created at North Cove, marking a southern entry to the Reserve at Hickson Road.

Central Barangaroo

Located to the south of the Reserve, the 5.2 hectare Central Barangaroo precinct is currently being planned. It will be the cultural heart of Barangaroo and the final stage of the Barangaroo development to be constructed. The development is expected to include civic and cultural attractions with recreational, residential, retail and commercial uses. Although the actual building heights, form and massing are not yet known, the planned site development envelopes allow for medium and high density urban form.

Barangaroo South

Barangaroo South, currently under construction, is a major new extension of the Sydney CBD with a number of high-rise buildings and stepping down to mid-rise development along the harbour foreshore. This mixed use precinct will include commercial office buildings, residential apartments, a landmark international hotel, shops, cafes and restaurants. A waterfront promenade has recently been completed, and construction of the Barangaroo Ferry Hub will occur throughout 2016, adjacent to the Barangaroo South precinct.

The Barangaroo South Stage 1A Public Domain document (Form and Oculus, 2014) illustrates the current plans for the public domain areas of the Stage 1A of Barangaroo South. The master plan shows a sequence of arrival spaces, public squares and a waterfront promenade connected to the CBD by a series of pedestrian streets. These streets increase permeability of the site and promote views through the Barangaroo South site to the harbour.

The waterfront promenade has recently been opened to public use, as has a number of pedestrian streets, opening up new views and creating a new, permeable public realm for this precinct.

Hickson Road and High Street

Hickson Road forms the eastern boundary of the Barangaroo development site, extending north from the intersection with Sussex and Napoleon Streets, adjacent to Barangaroo South, to Town Place in the north at Walsh Bay.

Hickson Road is located at the base of a distinctive cliff wall which rises approximately four storeys high. This cliff forms a distinctive local visual feature, with its exposed sandstone rock face and masonry, heritage railings and staircase cut into the stone. This cliff also creates a strong spatial 'edge' to the Barangaroo peninsular between Munn Street and the High Street stairs in the south, and a physical barrier to east-west movement.

South of the High street stairs, there are mixture of contemporary and heritage buildings which align with the line of the wall, addressing the road with a mix of commercial, offices and service entries. In this area, there is a second staircase, providing access to the upper levels of the peninsula along Kent Street.

Hickson Road is currently two lanes with parking and an avenue of mature Fig trees on the western side, and a cluster of Livistona

palms to the east, adjacent to the cliff, marking the stair entry on the eastern side of the road.

High Street runs along the top of the escarpment, offering panoramic, open views across Barangaroo, and the harbour beyond. A row of heritage listed terrace houses ('Terrace duplex group' at 2–80 High Street) line the eastern side of High Street, and are a visual feature in views towards the site, as well as in local streetscape views.

The Barangaroo South and Central precincts will provide activation to the west of Hickson Road, with a high quality public realm incorporating streets, plazas, and parks, as well as active street level frontages, which will be populated by a large number of users from the commercial, civic and residential buildings of Barangaroo. A new pedestrian connection called the 'Sydney Steps' is proposed as a part of the Central Barangaroo precinct, and would connect Barangaroo with Central Sydney CBD, via High Street.

01 HIGH STREET
02 VIEW ALONG SUSSEX STREET
03 VIEW FROM NORTHERN COVE AT BARANGAROO RESERVE
04 VIEW FROM HICKSON ROAD TO THE MILLERS POINT CLIFF WALL

09 BARANGAROO STATION

Character and components of the project

Character and components of the project

This summary describes the construction and operation phases of the project.

Construction Phase

The following structures, equipment and activities are likely to be experienced during construction:

- Removal of street trees impacted by the site and for site access including approximately:
  - 5 Fig trees on Hickson Road
  - 6 Palm trees on Hickson Road
- Establishment of a site compound including site offices, parking area, amenities, workshops, material and plant storage areas, water treatment plant
- Open trench construction within the existing road reserve along Hickson Road, Shelley Street, Lime Street, Erskine Street to the City North substation (Approximately 950m) for a power supply upgrade
- Site hoardings and site fencing to the perimeter of sites
- Two acoustic enclosures adjacent to the Millers Point cliff wall (approximately 15m high)
- Cranes and large plant (e.g. excavators)
- Staged construction along and partial closure of Hickson Road
- Temporary closures of Hickson Road footpath (east and west)
- Laydown area extending north along Hickson Road from North Cove Park to the Dalgety Bridge
- Construction of draft relief risers in front of the Millers Point cliff wall (approximately 5m wide x 8m high)
- Separation plant including silos and tanks (approximately 15m high)
- Construction vehicle access via Hickson Road

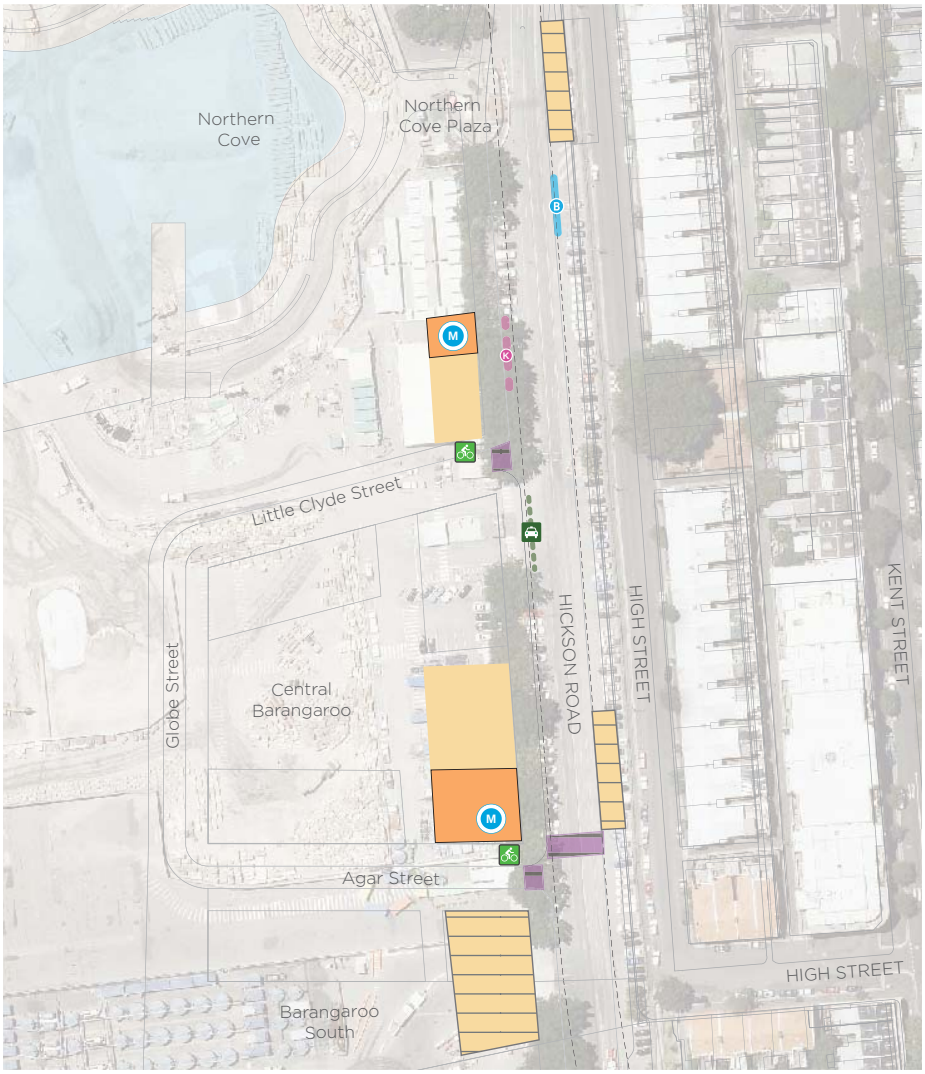
The duration of construction works at this location would be approximately 5-6 years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard work hours.

Operation Phase

The following elements and activities are likely to be experienced during operation:

- Station entry point at Hickson Road within Barangaroo Central Master Plan area and integrated into future above station development (by Barangaroo Delivery Authority)
- Freestanding north station entry within North Cove plaza
- Services (draft relief risers) located in front of the Millers Point cliff wall (within the footpath zone plus one traffic lane, approx. 5 metres wide x 8m high)
- Services (platform ventilation risers) under the Sydney Steps over-bridge facing Hickson Road
- Traction substation building (2 storey)
- Hickson Road and footpaths reinstated

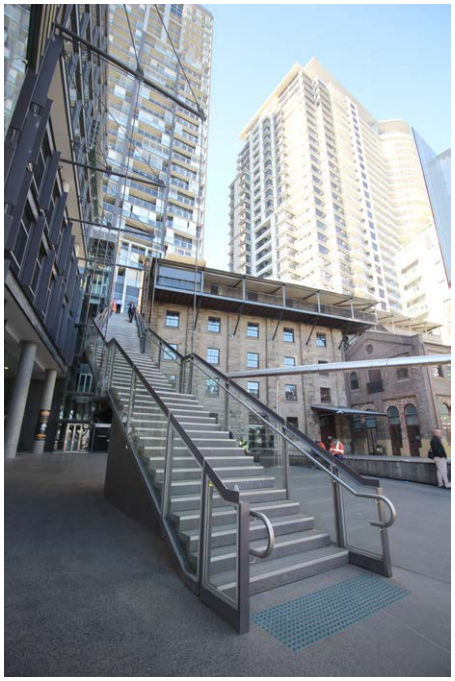


OPERATION PHASE LAYOUT

BARANGAROO STATION ENTRY CONCEPT

09 BARANGAROO STATION

Sensitivity levels



01 DEVELOPMENT ON HICKSON ROAD
02 SANDSTONE CLIFF FACE

Sensitivity levels

The following list summarises the landscape and visual sensitivity for the project site and main viewing areas across the study area.

Barangaroo Reserve

This reserve is a recently developed, six-hectare parkland that provides harbour foreshore access within a short distance to the CBD. It provides a recreation and event space with numerous design features including sandstone walls and sandstone harbour edge, path network and extensive botanical displays of local flora. The reserve has numerous lookout opportunities from the harbour edge as well as at the top of the recreated headland. This reserve is an important resource for Sydneysiders and visitors alike. The landscape and views of the Barangaroo Reserve are therefore considered to be of **regional sensitivity**.

Hickson Road

Hickson Road is part of a scenic Sydney Harbour foreshore route from Hickson Road Reserve (below the Harbour Bridge) to Sussex Street, west of the Sydney CBD. This is a popular pedestrian route for locals and visitors experiencing views into some of Sydney's heritage sites as well as broader harbour water views. Hickson Road, in the vicinity of the site, includes nose in parking, used by workers from the adjacent construction sites, city workers and residents. This landscape and views are therefore considered to be of **local sensitivity**.

High Street

High Street is located in Millers Point overlooking the Barangaroo project site. The street is within a state heritage conservation area and contains a number of terrace house groups listed on the state heritage register. These houses are also visible from many vantage points within Sydney Harbour and contribute to the visual character of this historic precinct and Sydney Harbour in general. This landscape and its views are therefore considered to be of **regional sensitivity.**

Central Barangaroo

The Central Barangaroo precinct is currently being planned. It will be the cultural heart of Barangaroo and the final stage of the Barangaroo development to be constructed. The development is expected to include civic and cultural attractions with recreational, residential, retail and commercial uses. The locality would be used by large concentrations of residents and workers. The landscape and views of this future area are considered to be of **local sensitivity**.

Sydney Harbour & foreshore areas

This part of Sydney Harbour falls within the Foreshores and Waterways Area as defined in *Sydney Regional Environmental Plan (Sydney Harbour Catchment) (2005)* and *Sydney Harbour Foreshores and Waterways Area DCP.* These planning instruments identify views to and from the Harbour as having unique visual qualities. The harbour is an important transport and recreational resource for the city. The harbour to the west of Barangaroo is highly valued by Sydneysiders and visitors to the City. This portion of the harbour is out of view of the iconic Harbour Bridge and Sydney Opera House and, therefore, the harbour landscape and views to and from the harbour in this area are considered to be of **regional sensitivity**.

Observatory Hill

Observatory Hill park and buildings are listed on the state heritage register. The picturesque Italianate character of the Observatory and residence building, set within grassy slopes and framed by a mature Fig tree, is visible from many vantage points across Sydney, and contributes to the visual character of this historic precinct. This landscape and its views are therefore considered to be of **state sensitivity.**

Assessment of landscape impact

Within the vicinity of the site, the following places have been identified as potentially being impacted by the project:

- Barangaroo Reserve
- Hickson Road, and
- Central Barangaroo.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Barangaroo Reserve

Construction: Works to construct a freestanding Metro station entry would be seen within the North Cove plaza to the southern boundary of the Barangaroo Reserve. The impact on footpaths adjacent to the construction site on Hickson Road, would divert pedestrians to surrounding footpaths and alter the patterns of access to the reserve from the south. This activity would be occurring within the context of the continuous development across the Barangaroo peninsular, including works at Central Barangaroo. Overall it is expected that there would be no perceived change in the landscape quality of Barangaroo Reserve, which is of regional sensitivity, resulting in a **negligible landscape impact** during construction.

Operation: There would be improved access to the reserve facilitated by the upgraded footpaths and location of the Metro station adjacent to the reserve entry. It is therefore expected that there would be a noticeable improvement in the landscape quality of Barangaroo Reserve, resulting in a **moderate beneficial landscape impact** during operation.

Hickson Road

Construction: Part of Hickson Road would be required as a construction site and for construction vehicle movement and access. This work would include the closure of both the east and western footpaths during some periods of construction. It is likely that north south pedestrian connectivity within this precinct would be reduced at times. A number of mature fig trees (Ficus sp.) and palms (Livistona sp.) along Hickson Road would be removed, reducing the shade cover and altering the character of the street. This portion of Hickson Road is currently located adjacent to the Central Barangaroo and Barangaroo South construction sites, and the level of comfort and accessibility is already limited somewhat by this activity. There would be a noticeable reduction in the landscape quality of this streetscape, which is of local sensitivity, resulting in a **minor adverse landscape impact** during construction.

Operation: The footpaths on Hickson Road would be restored, widened, and an expanded public realm would be created around the station. The station entry would have an identifiable entry structure creating a legible entry to the station in two locations. Hickson Road would become a major pedestrian and vehicle thoroughfare. It is expected that there would be a noticeable improvement in the landscape quality of this streetscape, resulting in a **minor beneficial landscape impact** during operation.

Central Barangaroo

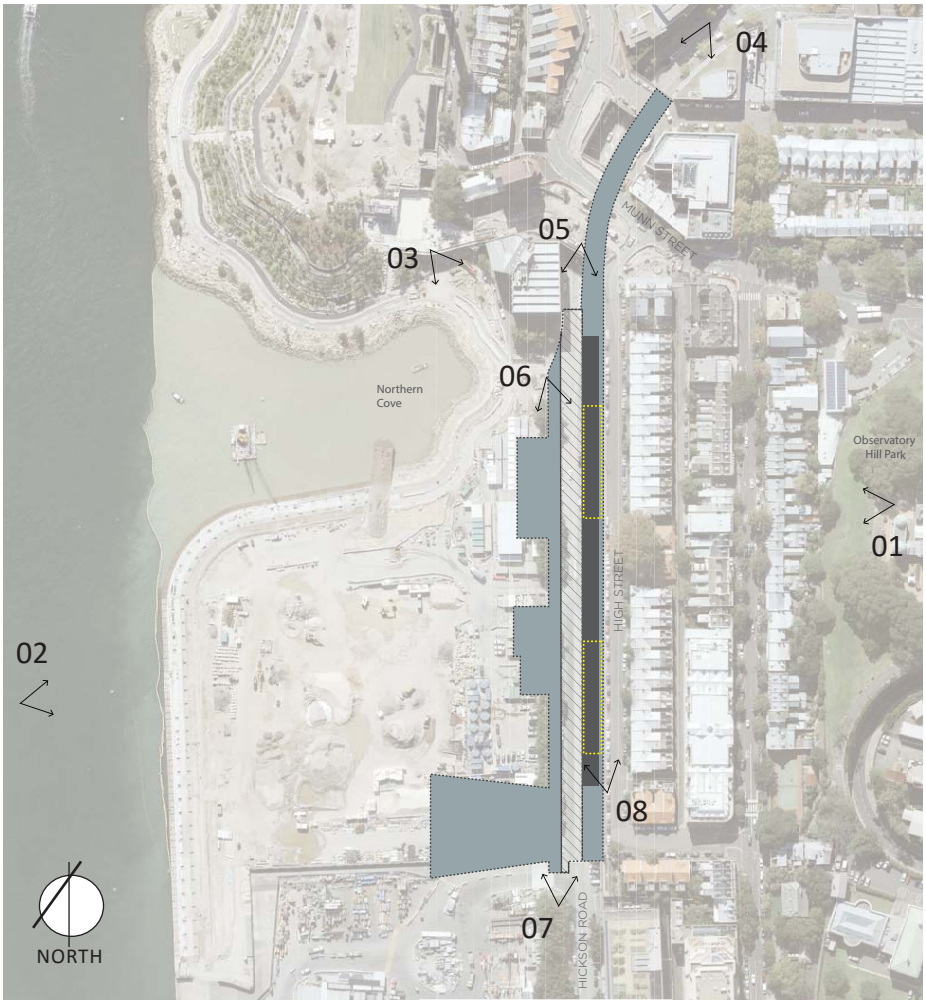
Construction: Central Barangaroo will not be completed during the construction period of the project works. Therefore there would be no impact on this precinct during construction.

Operation: Although the final design and composition of Central Barangaroo is unknown at the time of writing it is expected that the functioning of this future urban precinct would be improved by the integration of a station into the public realm. It is therefore expected that there would be a noticeable improvement in the landscape quality of this precinct, which would be of local sensitivity, resulting in a **minor beneficial landscape impact** during operation.

BARANGAROO RESERVE

09 BARANGAROO STATION

Assessment of daytime visual impact



VIEWPOINT LOCATION PLAN
(SHOWING CONSTRUCTION LAYOUT)

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the project site:

- Viewpoint 1: View west from Observatory Hill
- Viewpoint 2: View east to Barangaroo from Sydney Harbour
- Viewpoint 3: View southeast from Barangaroo Reserve
- Viewpoint 4: View south from Hickson Road at the Windmill Street Bridge
- Viewpoint 5: View south from the Munn Street Bridge
- Viewpoint 6: View southeast from Northern Cove plaza
- Viewpoint 7: View north along Hickson Road
- Viewpoint 8: View north along High Street
- Views to power upgrade temporary works

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Viewpoint 1: View west from Observatory Hill

The views from this State heritage listed site are an important part of its listing, and have been specifically identified for protection within the context of the Barangaroo development. In particular the preservation of panoramas from Observatory Hill Park. This view, west towards the Barangaroo site, includes the harbour and Balmain peninsular in the background, framed by the heritage roofscape of Millers Point.

Construction: In this view, the construction site would not be visible and there would be no perceived change in the amenity of this view, which is of state visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The project would not be seen from this location during operation and therefore there would be no perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 2: View east to Barangaroo from Darling Harbour

This view includes the site in the background of the view, seen across Northern Cove and the future Central Barangaroo construction site. The 'v' shaped sandstone and concrete cliff wall on Hickson Road, and copse of heritage listed mature London planetrees at the Lance Kindergarten, can be seen clearly in the centre of the view. Beyond this, the Observatory and Observatory Hill Park can be seen prominently amongst rows of historic terraces. In the background and to the south, the built form steps up to the visually prominent 'The Langham' hotel and high-rise commercial and office towers of the CBD, which create a strong urban skyline view.

This view will be transformed as Barangaroo South is completed and work continues on the Central Barangaroo development site. It is expected that much of the southern portion of Hickson Road, the cliff face and Millers Point will be obscured to views from this location by the Barangaroo development. However, views to Observatory Hill will be protected as a part of the design of Central Barangaroo, so that a view would be maintained across Northern Cove and to Hickson Road and the cliff beyond.

Construction: This view would change as a construction site is established across a large area of the eastern end of the Central Barangaroo site, adjacent to Hickson Road and extending north into the Northern Cove plaza. A separation facility and site compounds to the west of Hickson Road and two acoustic sheds would be established and potentially visible to the north and southern ends of the site over Hickson Road. These acoustic enclosures would obstruct views to sections of the Millers Point cliff but not rise above the top of the cliff wall.

01

02

01 VIEW WEST FROM OBSERVATORY HILL
02 VIEW NORTHEAST TO BARANGAROO FROM DARLING HARBOUR

09 BARANGAROO STATION

Assessment of daytime visual impact

03

03A

03 VIEW SOUTHEAST FROM BARANGAROO RESERVE

03A ARTIST'S IMPRESSION SHOWING PROJECT DURING CONSTRUCTION

This view is seen in the context of a highly urban backdrop and with development at Barangaroo South (would be complete) and Central Barangaroo (under construction) would intervene, limiting and obstructing visibility of the works. Due to the context of development, it is expected that the project would not create a perceived change in the amenity of this view, which is of regional visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: This view would be transformed during the operation of the project with the development of Central Barangaroo, comprising much of the view (not within the scope of this assessment). The project, however, is not likely to be seen prominently in this view. The services would obstruct views to the Millers Point cliff wall, seen in the background of this view. It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 3: View south from Barangaroo Reserve

This view includes the site in the middle ground, seen across the Barangaroo Reserve and Northern Cove and adjacent to the Central Barangaroo construction site. It is framed to the left of view (north) by the State heritage listed Dalgety's Bond Stores building, and to the south by a continuous backdrop of high-rise commercial and office towers of the CBD and Barangaroo South. The 'v' shaped sandstone and concrete cliff wall, Hickson Road, nearby row of mature Fig trees and groupings of Livistona palms, can be seen clearly in the centre of the view.

To the south of the view, the Barangaroo South construction site (within the Central Barangaroo site) can be seen, surrounded by hoarding and including offices and construction activities including cranes and large plant. This view will continue to change over the coming years as Barangaroo South is completed and work extends towards the viewer (north) at the Central Barangaroo development site.

Construction: This view would change as a construction site is established across a large area of the eastern end of the Central Barangaroo site, adjacent to Hickson Road and extending north into the Northern Cove plaza. A separation facility and site compounds to the west of Hickson Road (right of view) and two acoustic sheds established and potentially visible to the north and southern ends of the site over Hickson Road (left and centre of view). These acoustic enclosures would obstruct views to portions of the Millers Point cliff wall but not rise above the top of the wall.

This view is seen in the context of a highly urban backdrop and middle ground of high intensity development at Barangaroo South (would be complete) and Central Barangaroo (under construction).

Due to the context of construction activity, there would not be a noticeable reduction in the amenity of this view, which is of regional sensitivity. This would result in a **negligible visual impact** during construction.

Operation: This view would be transformed during the operation of the project with the development of Central Barangaroo, comprising much of the view (by Barangaroo Delivery Authority). A freestanding station entry would be seen within the Northern Cove plaza and have a light and open form. On Hickson Road, the service facilities would be visible adjacent to the cliff wall, obstructing views to sections of masonry, and filtered by future streetscape works including street tree planting.

The visible elements of the project are not likely to be seen prominently in this view. It is therefore expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

04

04 VIEW SOUTH FROM HICKSON ROAD AT THE WINDMILL STREET BRIDGE

Viewpoint 4: View south from Hickson Road at the Windmill Street Bridge

Mid-rise contemporary brick and masonry residential and office buildings line this area of Hickson Road. Street trees filter views to the buildings and frame a view to the twin arches of the Dalgety Road and Windmill Street Bridges. These elements are a focal point in the centre, middle ground of this view. Exposed sandstone cliffs and constructed sandstone walls contribute to the character of this streetscape.

Construction: From this location there would be views to a construction site which would include a laydown area located on the eastern side of Hickson Road (left of view), under the Dalgety Road and Windmill Street Bridges. This would include construction site perimeter fencing, hoarding, construction equipment within the construction site, as well as construction vehicles using Hickson Road. These elements would obstruct views to the sandstone cliff walls and change the character of the roadway in this area.

It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity,

09 BARANGAROO STATION

Assessment of daytime visual impact

05

05 VIEW SOUTH FROM THE MUNN STREET BRIDGE

resulting in a **minor adverse visual impact** during construction.

Operation: There would be no part of the project visible from this location during the operation of the project.

Viewpoint 5: View south from the Munn Street Bridge

This dramatic vista is directed along Hickson Road, a wide corridor lined with car parking, mature figs and clusters of palms. From this commanding elevated location, a large area of the road and adjacent construction site can be seen. The cliff wall creates a strong visual edge to this view, and contains the heritage character of the terraces of Millers Point to the east. In contrast, the Central Barangaroo construction site can be seen to the west of Hickson Road, framed to the right of view (west) by the State heritage listed Dalgety's Bond Stores building. When completed, the Barangaroo Central site would transform this portion of the view. A backdrop of high-rise commercial and office towers of the CBD and Barangaroo South, create a skyline which unifies this view.

Construction: This location would offer unobstructed views to the construction site which would be established across Hickson Road and extending into the Central Barangaroo site to the west (right of view). This would require the removal of a number of mature street trees to the west of Hickson Road, the establishment of two acoustic enclosures on Hickson Road, one in the middle ground of the view, and one in the distance. Both enclosures would rise to approximately 15m, which would not exceed the height of the cliff wall. These elements would obstruct views to the sandstone and masonry wall in two locations. There would be temporary closures and construction sites established as well as storage and laydown areas on Hickson Road. Glimpses to the eastern edge of the separation plant are likely to be seen in the background of the view.

This view is seen in the context of a highly urban backdrop and middle ground of high intensity development at Barangaroo South and future construction activity at Central Barangaroo. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: This view would be transformed during the operation of the project with the development of Central Barangaroo, visible to the east (right of view) (by Barangaroo Delivery Authority). The freestanding northern station entry would be visible within the Northern Cove plaza and the services would be seen adjacent to the Millers Point cliff wall.

As much of the change in this view is due to the works at Central Barangaroo, it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 6: View southeast from Northern Cove plaza

This view includes a plaza in the foreground of the view, with a formal grid of trees, asphalt and decomposed granite paving, and lawns beyond. Hickson Road can be seen in the foreground and extending south towards Barangaroo South. The Millers Point cliff wall can be seen to the east (right of view) with heritage terraces and CBD high-rises visible above the wall. The heritage listed London planetrees at the Lance Kindergarten can be seen clearly above the cliff wall, and mature fig trees on Hickson Road, obstruct views to the CBD skyline beyond. To the west (right of view) the future Central Barangaroo development can be seen filtered through plaza trees.

Construction: There would be open, unobstructed views to the works on Hickson Road. This would include an acoustic enclosure on the eastern side of Hickson Road and obstructing views to the cliff wall, partial closures and establishment of construction sites on Hickson Road, surrounded by hoarding, concrete barriers and traffic control devices. Project related work to the west of Hickson Road, within the Central Barangaroo site, would include site offices and construction of the northern station entry point, visible filtered through plaza trees. These elements would be seen within the context of the construction of Central Barangaroo. However, the scale and extent of the works would create a noticeable reduction in the amenity of this view, which is of regional sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: On Hickson Road, the service facilities would be visible adjacent to the cliff wall, obstructing views to the lower sections of masonry. Hickson Road, footpaths and street trees would be reinstated, visually softening this view. Due to the introduction of the service facilities it is expected that the project would create a noticeable reduction in the amenity of this view, resulting in a

06

06

06 EXISTING VIEW SOUTHEAST FROM NORTHERN COVE PLAZA

06A ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

09 BARANGAROO STATION

Assessment of daytime visual impact

07

07 EXISTING VIEW NORTH ALONG HICKSON ROAD

moderate adverse visual impact during operation.

Viewpoint 7: View north along Hickson Road

This view is defined to the east by the 'v' shaped Millers Point cliff wall, which exaggerates the length of Hickson Road as seen from street level. In the middle ground of the view the historic High Street Steps are cut into the sandstone, and a cluster of Livistona palms are silhouetted against the wall, which is topped by the heritage palisade fencing. In this view Hickson Road is seen as a wide road corridor lined with nose-in car parking, and mature figs to the west, directed to the arch of the heritage Munn Street Bridge which is the focal point of this view. The Barangaroo South construction site and site entry is visible to the west, unobstructed. However, to the north, the existing fig trees obstruct views to the eastern portion of the Barangaroo construction site and heritage listed Dalgety's Bond Stores building.

Construction: There would be open, unobstructed views to the works on Hickson Road and adjacent to the Millers Point cliff wall. This would include the establishment of a construction site that would extend across part of Hickson Road, with site boundary hoarding, concrete barriers and traffic control devices. The establishment of two acoustic sheds on the eastern side of Hickson Road, and rising to a height of 15m which would not exceed the height of the cliff wall but would obstruct views to the lower portions of the wall. These elements would be seen in the middle ground and background of the view. To the west (right of view) there would be a separation plant, visible in the foreground.

Although the construction activity would be prominent and expansive in this view, the visual influence of the Barangaroo construction activity to the west (left of view), would reduce the contrast of the project works with the surrounding view. It is therefore expected that construction of the project would create a noticeable reduction in the amenity of this view. Resulting in a

minor adverse visual impact to this view of local sensitivity, during construction.

Operation: The project works are expected to be visually absorbed into the surrounding streetscape. The service facilities would rise above the surrounding street in two locations along Hickson Road and obstruct views to the lower portion of the cliff wall. The roadway, footpaths and street trees would be reinstated and be visually consistent with the public domain of the surrounding Central Barangaroo development. The southern station entry would be visible at street level (left of view), integrated into the above station development (by Barangaroo Delivery Authority). It is therefore expected that the project would not create a perceived change in the amenity of this view, this would result in a **negligible visual impact** during operation.

Viewpoint 8: View north along High Street

This view is from the elevated residential street within the Millers Point Conservation Area, offering panoramic views across the Central Barangaroo site, to the harbour and Balmain peninsula beyond. These views, filtered through the heritage iron railings, are framed by heritage terrace houses to the east. A direct view along High Street includes the former harbour control tower as a prominent skyline element.

Construction: This view would change as the trees on Hickson Road are removed and a construction site is established across Hickson Road a large area of the Central Barangaroo site including a separation plant. There would be acoustic sheds established to the west of the cliff wall which would rise to 15 m and be partially visible. These elements would be seen in the context of the construction of Central Barangaroo to the west (left of view). It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

08

08 VIEW NORTH ALONG HIGH STREET

Operation: This view would be transformed during the operation of the project with the development of Central Barangaroo, comprising much of the view, and obstructing views to the harbour (not within the scope of this assessment). The project, however, is not likely to be seen prominently in this view. Street trees would soften the view along Hickson Road. It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

09 BARANGAROO STATION

Assessment of daytime visual impact

POWER UPGRADE ALIGNMENT

VIEWS ALONG (L-R) HICKSON ROAD, SUSSEX STREET, SHELLEY STREET, SHELLEY STREET, LIME STREET, ERSKINE STREET

Views to power upgrade temporary works

The power upgrade would require temporary works within the road corridor south along Hickson Road and Sussex Street, southwest along Shelley and Lime Streets, and turning east along Erskine Street.

Views along Hickson Road and Sussex Street are influenced by the Barangaroo development which is under construction and nearing completion. Considerable construction works are being undertaken in this area including works within the road corridor.

Barangaroo South (completed areas), Shelly and Lime Streets are characterised by a dense urban development, wide pedestrian footpaths and plazas. Sculptural planter boxes and ventilation structures are visual features within the streetscape. Street trees provide some softening and shading of these otherwise urban views. There are glimpses westward to the harbour in a number of locations.

Construction: Views may include some road and footpath closures to accommodate the temporary trenching works. Existing trees and public artwork would be retained.

It is expected, due to the small scale of these works, that the project would create a noticeable reduction in the visual amenity of views from these streets and adjacent properties. Views along this route are of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.

Assessment of night time visual impact

The setting of the Barangaroo Station is considered to be an area of **E4: High district brightness**. This is due to its brightly lit CBD location and the intensity of the future Barangaroo South and Central Barangaroo where there is 24 hour activity and lighting from surrounding buildings, urban plazas and streets creating both direct light sources and a general skyglow around the project site.

Construction: It is expected that there would be night works required at this location during construction, including 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. This lighting would also include both static construction site and task illumination. The lighting would be largely contained to the east by the cliff wall, and from Central Barangaroo there would be few visual receptors as it would be an unoccupied construction site. Therefore, it is expected that at night the project would not create a perceived change in the amenity of views in this area of high district brightness. It is therefore expected that the project would result in a **negligible visual impact** during evening hours.

Operation: The station entry on Hickson Road would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment created by the surrounding Central Barangaroo development. It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

09 BARANGAROO STATION

Summary of impact

Summary of impact

During construction the project would result in a **minor adverse landscape impact** on Hickson Road in the vicinity of the project sites, primarily due to the direct impact on vehicular and pedestrian movement and the loss of mature street trees.

During operation, however, there would be **minor beneficial landscape impact** experienced at Hickson Road and Central Barangaroo, and **moderate beneficial landscape impact** at the Barangaroo Reserve. These benefits are due to improved access of public transport and public realm enhancements which would increase the overall accessibility and permeability around this precinct.

There would be a range of visual impact created by the project during construction including **minor** and **moderate adverse visual impact**. These impact are the result of a balance between the mitigating effect of the existing surrounding context of construction activity on the adjacent Central Barangaroo site, and the high sensitivity of surrounding visual receptors.

Greater impact would be experienced in locations of higher visual sensitivity, and where construction of the project is seen extending into new areas, such as the Millers Point cliff wall in views from the Munn Street Bridge, which would result in a **moderate adverse visual impact**.

In addition, there would be temporary **minor adverse visual impact** experienced during the power upgrade works on Hickson Road, Sussex, Shelley, Lime and Erskine Streets.

During the operation of the project **negligible visual impact** are expected from most assessed viewing locations, due to the integration of the project into the surrounding Central Barangaroo development. There is a **moderate adverse visual impact** expected from views at the North Cove plaza (in Barangaroo Reserve), where the service facilities would be located adjacent to the Millers Point cliff wall, and become a prominent element in streetscape views.

At night there would be **negligible impact** expected during construction and operation. This is due to the existing construction activity, experienced in views from the west, and containing effect of the Millers Point cliff wall to viewing locations to the east.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Barangaroo Reserve	Regional	No perceived change	Negligible	Noticeable improvement	Moderate benefit
2	Hickson Road	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor benefit
3	Central Barangaroo	Local	N/A	N/A	Noticeable improvement	Minor benefit

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View west from Observatory Hill	State	No perceived change	Negligible	No perceived Change	Negligible
2	View northeast to Barangaroo from Darling Harbour	Regional	No perceived change	Negligible	No perceived change	Negligible
3	View southeast from Barangaroo Reserve	Regional	No perceived change	Negligible	No perceived change	Negligible
4	View south from Hickson Road at the Windmill Street Bridge	Local	Noticeable reduction	Minor adverse	N/A	N/A
5	View south from the Munn Street Bridge	Regional	Noticeable reduction	Moderate adverse	No perceived change	Negligible
6	View southeast from Northern Cove plaza	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse
7	View north along Hickson Road	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
8	View north along High Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
	Views to power upgrade temporary works	Local	Noticeable reduction	Minor adverse	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E4: High district brightness	No perceived change	Negligible	No perceived change	Negligible

10 MARTIN PLACE STATION

Planning context

The project includes two sites for Martin Place Station situated between Castlereagh and Elizabeth Streets. The northern site would be located on Hunter Street, opposite Chifley Square, and the southern site would be located on and to the south of Martin Place.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the proposed Martin Place station.

Sydney Local Environmental Plan, City of Sydney, 2012

The project area includes a number of heritage sites. This includes heritage listed public places such as Martin Place, Richard Johnson Square, and Chifley Square, as well as numerous heritage listed buildings. These include: the Flat building (7 Elizabeth Street), the Commonwealth Bank of Australia (48–50 Martin Place), the former 'City Mutual Life Assurance' building (10 Bligh Street), the former 'Qantas House' building (68–96 Hunter Street), the former 'Australian Provincial Assurance' building (53–63 Martin Place) and the former 'GIO' building (60–70 Elizabeth Street). This assessment will consider the *"settings and views"* of these heritage items under the Heritage conservation clause (5.10) in the LEP.

The site is primarily zoned B8 Metropolitan Centre, the objectives of this zone that are relevant to this assessment include: *"To encourage the use of alternatives to private motor vehicles, such as public transport, walking or cycling. [and] ... To promote uses with active street frontages on main streets and on streets in which buildings are used primarily (at street level) for the purposes of retail premises."*

Martin Place and Chifley Square are zoned RE1 Public Recreation. The relevant objectives of this zone include: *"To provide a range of recreational settings and activities and compatible land uses. ... To provide links between open space areas. [and] ...To retain and promote access by members of the public to areas in the public domain"*

Sydney Development Control Plan (DCP), City of Sydney, 2012

The Sydney DCP identifies a number of Special Character Areas (SCAs). In this precinct, the Martin Place and Chifley Square SCAs are of relevance. The desired future character and relevant supporting principles identified for these SCAs are summarised in the following paragraphs.

Martin Place SCA

The Martin Place SCA is described as a place of "*social, cultural and historic significance"*. It includes various monuments, including a Cenotaph, and has been the setting for many historical events, which has … *"reinforced its image as the civic and ceremonial heart of the City".*

The area is unified by a cohesive built form, particularly to the east of the area. Architectural features of the built form include richly textured stone facades, intricate architectural detailing, and an emphasis on vertical columns and colonnades. The area is characterised by buildings of grand proportions at street level, representative of their function as major public and business institutions.

The built form encloses a linear public space, Martin Place, which stretches from George Street in the west to Macquarie Street in the east. This space creates "*strong vistas terminated to the east and west by significant buildings*". The GPO clock tower is an *"important landmark*" visible from various locations along Martin Place. Beyond Martin Place are a surrounding network of lanes, reminiscent of Victorian Sydney laneways such as Angel Place and Ash Lane.

Key principles for this area, relevant to this assessment, include:

- *"Retain and enhance the urban character, scale and strong linear enclosure of Martin Place;*
- *Protect existing significant vistas to the east and west and ensure new development will not detrimentally affect the silhouette of the GPO clock tower;*

- *Conserve and enhance the heritage significance of the nineteenth and twentieth century institutional and commercial buildings and their settings".*

Chifley Square SCA

The character of the Chifley Square SCA is defined by its semi-circular urban form, first proposed by John Sulman in 1908. This area is characterised by large-scale high-rise tower buildings interspersed with lower scale development, which follow a curved alignment at lower levels, creating a distinct sense of enclosure for the Square. The curved form of the Square, and the Aurora Place building to the east, visible within this setting, create a "*unique urban landscape within Central Sydney and provide a visual relief and break in the intensely built up area of the financial centre".*

Key principles for this area, relevant to this assessment, include:

"*(b) Recognise and enhance Chifley Square as one of the important public open spaces in the heart of the financial centre of the city.*

(c) Promote and encourage the use of the space as a destination and meeting place for people.

(d) Interpret the history of the place and its evolution in the design of both public and private domain and create a distinct sense of place inherent in the character of Chifley Square

(e) Reinforce the urban character and distinct sense of enclosure of Chifley Square by:

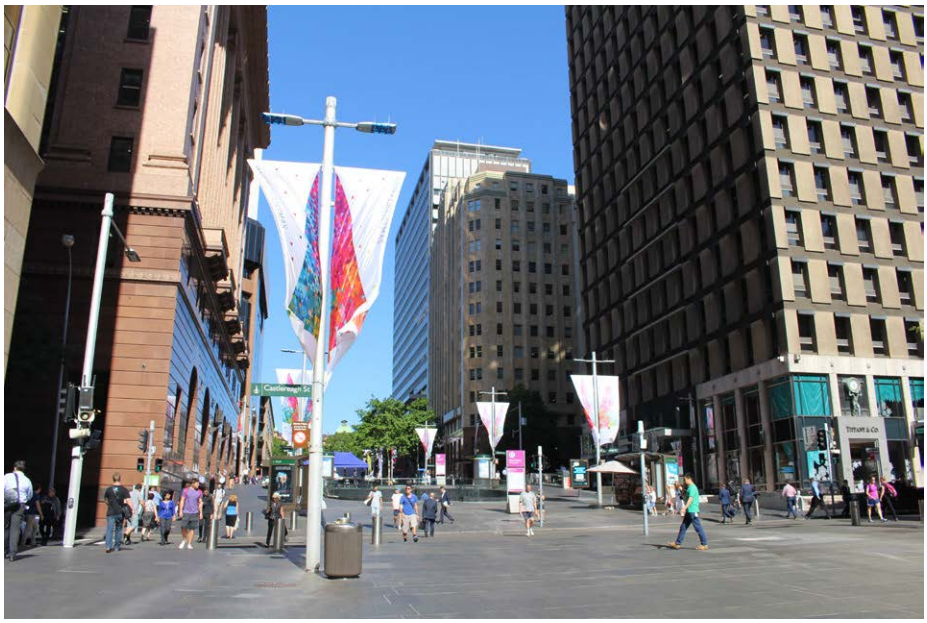
i. emphasising and reinforcing the semi-circular geometry of the space;

ii. requiring new buildings to be integrated with the form of existing buildings; and

iii. limiting the height of new buildings."

In addition, this assessment will consider the general requirements of the DCP. Particularly, this assessment will consider views to and from the public domain, for example, whether the project would *"impede views from the public domain to highly utilised public places …heritage buildings and monuments including public statues, sculptures and art"*.

More specifically, this assessment will consider if the project would *"maximise street life and… avoid interruptions to views and vistas along streets"* (Clause 3.1.3).



MARTIN PLACE

10 MARTIN PLACE STATION

Existing environment

Existing environment

The project would be located in the heart of Sydney's financial district, one of the busiest precincts of the city for vehicular and pedestrian movement. The project site is a short walk from some of Sydney's most prominent landmarks and attractions including Martin Place, Hyde Park, and Circular Quay.

This precinct is influenced by central Sydney's most prominent urban plaza, Martin Place. The precinct is traversed by several important civic streets of central Sydney, including Elizabeth, Castlereagh and Hunter Streets, which are lined by office towers, and intermittent mature trees, creating important streetscape vistas.

Castlereagh and Elizabeth Streets run north to south within the central grid of the CBD. Elizabeth Street includes up to six lanes of traffic, including a dedicated bus lane. Castlereagh Street has three lanes of traffic in the vicinity of the site, and wider paved footpaths.

The project occupies two sites located between Pitt and Castlereagh Streets.

Northern site

The northernmost site is located on Hunter Street, diagonally opposite Chifley Square. There is currently a fifteen storey office tower on the site with an entry level plaza and retail frontages. The 'P&O Fountain', by acclaimed local sculptor Tom Bass, is integrated into a granite clad landscape wall along the 55 Hunter building. Although not prominent within local views, this fountain adds detail and interest to the streetscape.

In this location the setting of the project is characterised by the unique and historic semi-circular urban form of Chifley Square, including the former Qantas House and Chifley Tower, which follow a curved alignment. These buildings create a distinct sense of enclosure for the Square and this corner of the CBD.

Chifley Square is a heritage asset, listed in the Sydney LEP 2012 as an early 20th Century exercise in city planning to create a new public open space, named after J. B. Chifley, Australia's prominent wartime Prime Minister. The construction of the heritage-listed 1957 former Qantas House at 68-96 Hunter Street was integral to the creation of Chifley Square, and adds to the historical and aesthetic significance of the Square.

Chifley Square itself is enclosed at street level by stairs leading into the colonnaded entrance to Chifley Plaza building. It includes a visually distinctive grid of palms (Livistona australis) which extend across the plaza, along the median on Elizabeth Street and across the street to the forecourt of Qantas House. The plaza includes seating, a café, and features an oversized silhouette-like statue of J. B. Chifley.

Richard Johnson Square, located at the corner of Bligh and Hunter Streets, is a historically and culturally important example of 20th century civic planning. The square is a triangular shape space with a couple of trees, a monument and plinth (heritage assets in the Sydney LEP 2012) located on the corner.

Important views in this area include those to and from Chifley Square, views to the curved façade of the former Qantas House, and glimpses to the Sydney Tower which feature in the skyline southward from Elizabeth Street.

Southern site

At the southern site the project would be located on Martin Place, between Castlereagh Street and Elizabeth Street, opposite the historic Commonwealth Bank of Australia building, and extend south to include the office tower at 39 Martin Place. This building is approximately 20 storeys high with an entry level plaza, stairs and retail space.

The built form of Martin Place is marked by numerous iconic and identifiable buildings which attract attention and create numerous important vistas.

The heritage listed Sydney Hospital group of buildings on Macquarie Street and the Reserve Bank building are features in eastward views along Martin Place. The original General Post Office and clock tower, feature in views westward. The heritage listed former Commonwealth Bank of Australia building and MLC building are located to the north of the project site. The modernist MLC Centre and 'mushroom-shaped' Commercial Traveller's' Association building, designed by Harry Seidler, are both located to the southwest of the project site. Each of these distinctive buildings are visual features within Martin Place. This visual interest creates a grand and stimulating urban environment, reflected in Martin Place's heritage status in the DCP and LEP.

The Cenotaph (war memorial), sculptures, fountains and seating are provided within the public realm, and attract large numbers of people to the plaza. The existing underground railway station is located at the eastern end of Martin Place, accessed via lift and stair structures within the plaza.

A number of London planetrees line Elizabeth, Castlereagh and Hunter Streets, as well as some parts of Martin Place, helping to soften this intensely urban environment.

The contemporary high-rise character of buildings which surround the heritage buildings will be reinforced by a new 33-storey commercial building at 58-60 Martin Place, intended to replace the 1960s Westpac building at the eastern end of Martin Place. Demolition is planned to begin in early 2016.

01 VIEW TO SYDNEY TOWER ALONG ELIZABETH STREET
02 RICHARD JOHNSON SQUARE
03 CURVED FACADE OF QANTAS HOUSE
04 COMMONWEALTH BANK OF AUSTRALIA BUILDING FROM MARTIN PLACE
05 MARTIN PLACE AT 39 MARTIN PLACE

10 MARTIN PLACE STATION

Character and components of the project

Character and components of the project

This summary describes the construction and operation phases of the project.

Northern site

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site compound including demolition of the following buildings:
  - 13 storey building at 5 Elizabeth Street and 4-8 Castlereagh Street (Chifley Arcade)
  - 10 storey residential building at 7 Elizabeth Street
  - 17 storey building at 55 Hunter Street
  - 12 storey building at 12 Castlereagh Street
- Removal of the P&O fountain at 55 Hunter Street
- Removal of street trees impacted by the site and for site access including approximately:
  - 3 trees on Hunter Street
  - 3 trees on Castlereagh Street
  - 3 trees on Elizabeth Street
- Open trench construction within the existing road reserve along Hunter Street, Margaret Street, and Napoleon Street to the City North substation (Approximately 1.3km) for a power supply upgrade
- A metal clad acoustic enclosure (approximately 15m in height)
- Hoardings and site fencing surrounding the remaining areas of the construction site
- Possible above ground level construction platforms
- Pedestrian management structures and signage installed to redirect pedestrian flows
- Construction traffic and vehicle access via Hunter and Castlereagh Streets, Elizabeth and Hunter Streets
- Cranes and large plant (e.g. excavators)

Duration of the works at this location would be approximately 5 five years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

Operation phase

The following elements and activities are likely to be experienced during the operation of the project.

- Station entries at the corner of Hunter and Castlereagh Streets, and at the corner of Hunter and Elizabeth Streets
- Widened public realm and multiple storey foyer entry would create a broad station entry forecourt on Hunter and Castlereagh Streets
- Active frontages (including future retail tenancies) on Castlereagh Street
- Services located on Elizabeth Street
- Reinstated areas of Castlereagh, Hunter and Elizabeth Streets impacted by the construction

Southern site

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site compound including demolition of the following buildings:
  - 22 storey office tower at 28-42 Castlereagh Street (39 Martin Place)
- Removal of street trees impacted by the site and for site access including

approximately:

- 1 tree on Castlereagh Street
- 1 tree on Elizabeth Street

- Metal clad acoustic enclosure (approximately 15m in height)
- Cranes and large plant (e.g. excavators)
- Possible above ground level construction platforms
- Construction vehicle access via Hunter, Castlereagh and Elizabeth Streets
- Reinstatement of former building site as a temporary pedestrian plaza
- Diversion of pedestrian traffic to the south of Martin Place, across the temporary pedestrian plaza
- Temporary closure, and demolition of Martin Place, between Elizabeth and Castlereagh Streets, including the existing pedestrian underground connection between Castlereagh and Elizabeth Streets
- Reduced width of footpaths on Castlereagh and Elizabeth Streets adjacent to hoardings
- Pedestrian management structures and signage installed to redirect pedestrians.

The duration of construction works at this location would be approximately 5 years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

Operation phase

The following elements and activities are likely to be experienced during operation:

- Station entries at the corner of Castlereagh Street and Martin Place, and on Elizabeth Street integrated into future above station development (not within the scope of this assessment)
- Reinstated Martin Place where impacted by construction
- Widened public realm would create a broad station entry forecourt on the corner of Martin Place and Castlereagh Street
- Services located on Elizabeth Street
- Active frontages (including future retail tenancies) on Martin Place and to the south of the site on Castlereagh Street

CHIFLEY SQUARE

10 MARTIN PLACE STATION

Sensitivity levels

Sensitivity levels

The following list summarises the landscape and visual sensitivity for the project site and main viewing areas across the study area.

Richard Johnson Square

Richard Johnson Square is used as a local meeting place and includes trees, seating and a heritage listed monument and plinth. The monument was constructed in the mid-1920s to commemorate the site of the first church erected in Australia and is named after its chaplain, Reverend Richard Johnson. The monument provides visual interest within the surrounding urban townscape. The landscape and views from this square are considered to be of **local sensitivity**.

P&O Fountain

This brass sculptural fountain was created by the acclaimed local sculptor Tom Bass in the 1960s. It was the subject of a controversial obscenity trial when it featured on the cover of a satirical magazine pretending to be used as a urinal. This sculpture has both artistic and modern historic value, although it is not well known or noticed by local users. The landscape and views to this artwork are considered to be of **local sensitivity**.

Chifley Square

Chifley Square has historical and aesthetic significance. It is a unique semi-circular urban plaza and provides a public realm function and visual relief in the intensely urban townscape of the financial district of the Sydney CBD. The landscape and views of Chifley Square are considered to be of **regional sensitivity**.

Castlereagh, Hunter and Elizabeth Streets, north of Martin Place

Castlereagh and Elizabeth Streets are two major north to south aligned streets in the CBD grid. They are intersected by Hunter Street which runs generally east to west. In this location, these streets are predominantly lined by the office towers with retail space, restaurants and cafés at street level. Mature trees, mostly London planetrees, provide some shade to the street, visually softening this intensely urban environment. These streets are used well used by vehicles and pedestrians, and this landscape and views are considered to be of **local sensitivity**.

Martin Place

Martin Place is a wide urban plaza that connects numerous important civic and financial buildings. It is heavily used by locals, and visitors to the city of Sydney, for events and as a gathering place. It contains numerous historic buildings and monuments, and is a key public transport hub. Due to the heritage significance, high number of users, and value placed on Martin Place by the community, the landscape of this plaza are considered to be of **state sensitivity**. The views from Martin Place, however, can be categorised as primary and secondary views and vistas. Those and along Martin Place and to historic and iconic landmarks are considered to be of **state visual sensitivity**, whereas secondary and incidental views to and around Martin Place are considered to be of **regional visual sensitivity**.

Assessment of landscape impact

Within the vicinity of the site, the following places have been identified as potentially being impacted by the project:

- Richard Johnson Square
- Chifley Square
- P&O Fountain
- Castlereagh, Hunter and Elizabeth Streets
- Martin Place, and
- Castlereagh and Elizabeth Streets at Martin Place.

The following section summarises the impact identified by the assessment and site observations, including impact during construction and operation.

Richard Johnson Square

Construction: There would be no direct impact on Richard Johnson Square during construction of the project. However, the impact on footpaths adjacent to the construction site on Castlereagh and Hunter Streets would divert pedestrians to surrounding footpaths and alter the patterns of access to and movement through the Square which is of local sensitivity. Overall it is expected that there would be no perceived change in the landscape quality of Richard Johnson Square, resulting in a **negligible landscape impact** during construction.

Operation: There would be no direct impact on Richard Johnson Square. However, the introduction of a new station in this location would attract pedestrians to surrounding footpaths and alter the patterns of access to and movement through the Square. Overall it is expected that there would be no perceived change in the landscape quality of Richard Johnson Square, resulting in a **negligible landscape impact** during operation.

Chifley Square

Construction: There would be no direct impact on Chifley Square during construction of the project. The demolition of buildings on the project site and impact on footpaths adjacent to the construction site on Hunter and Elizabeth Streets, however, would divert pedestrians to surrounding footpaths and alter the patterns of access to and movement through Chifley Square. This would not result in a noticeable reduction in the pedestrian accessibility of the square.

Therefore it is expected that there would be no perceived change in the landscape quality of Chifley Square, which is of regional sensitivity, resulting in a **negligible landscape impact** during construction.

Operation: There would be no direct impact on Chifley Square. The proposed station entry would be designed to complement and not detract from the semicircular plaza of Chifley Square. Pedestrian movement between the station and Chifley Square would be reinstated and future above station development (not within the scope of this assessment) would restore the sense of enclosure which is important to the form of this heritage place. A new station in this location would attract pedestrians to surrounding footpaths and potentially alter the patterns of access to and movement through the Square.

Overall, it is expected that the project would not result in a perceived change in the landscape quality of Chifley Square, which is of regional sensitivity resulting in a **negligible landscape impact** during operation.

P&O Fountain

Construction: The P&O fountain would be removed as a part of the demolition of 55 Hunter Street building. The (at least temporary) loss of this artwork would reduce the interest on this streetscape and a local modern historical item of interest would be temporarily lost to the public. Therefore it is expected that there would be a considerable reduction in the landscape quality of the P&O Fountain, which is of local sensitivity, resulting in a **moderate adverse landscape impact** during construction.

Operation: The operational impact on the P&O Fountain would be dependent on the nature of any relocation of the item (refer to Section 16 Mitigation measures).

Castlereagh, Hunter and Elizabeth Streets

Construction: Parts of Castlereagh, Hunter and Elizabeth Streets would be required as part of the construction sites and for construction vehicle access. This work would include the closure of footpaths during some periods of construction. It is likely that north south and east west pedestrian connectivity within this precinct would be reduced at times and connectivity and legibility in this part of the CBD may be impacted. A number of street trees on Castlereagh and Elizabeth Streets would be removed, reducing the shade cover and altering the character of the street somewhat.

01 CHIFLEY SQUARE
02 P&O FOUNTAIN

10 MARTIN PLACE STATION

Assessment of landscape impact

01 RICHARD JOHNSON SQUARE
02 HUNTER STREET

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct during operation, however, would be improved at street level as a multiple storey foyer entry would create a broad station entry forecourt and expanded public realm on Hunter and Castlereagh Streets. It is expected that there would be a noticeable improvement in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor beneficial landscape impact** during operation.

Martin Place

Construction: Martin Place, between Castlereagh and Elizabeth Streets, would be required as a construction site. This work would include the diversion of all east west pedestrian movement away from this important pedestrian plaza. It would also require the removal of the underground pedestrian subway route at Martin Place between Castlereagh and Elizabeth Streets. This would both impact the east west pedestrian connectivity within this precinct, reduce connectivity between the existing Martin Place railway station and areas to the west, and diminish the legibility of this part of the CBD. There would also be a reduced access to open space, as Martin Place is an important civic space. It is expected that there would be a considerable reduction in the landscape quality of this precinct which is of state sensitivity. This results in a **very high adverse landscape impact** during construction.

Operation: At this location the station entry would be integrated into the street level of future above station development (not within the scope of this assessment), with a broad and open entry plaza integrated into the reinstated Martin Place.

The existing building at 39 Martin Place does not contribute positively to the public realm of Martin Place. Although it includes some retail frontages at street level, a series of stepped entries and walls create a barrier to pedestrian movement and access. The replacement of this poorly designed building, and public realm interface, with one that includes improved active frontages on Martin Place, and a broad and open station entry is expected to improve the permeability, vibrancy and activation of this precinct.

The improved visibility of the station, which would be seen at street level rather than hidden in a below ground concourse, would improve the legibility, connectivity and walkability of this precinct.

Below ground, the pedestrian subways would be reinstated to connect the station with surrounding commercial precincts including restoring the subway which leads from Castlereagh and Elizabeth Streets, connecting with the existing Martin Place Station.

Overall it is expected that there would be a noticeable improvement in the landscape quality of Martin Place which is of state sensitivity, resulting in a **high beneficial landscape impact** during operation.

Castlereagh and Elizabeth Streets

Construction: Parts of Castlereagh, Hunter and Elizabeth Streets would be required as part of the construction sites and for construction vehicle access. This work would include the closure of footpaths during some periods of construction. It is likely that north south and east west pedestrian connectivity within this precinct would be reduced at times and connectivity and legibility in this part of the CBD may be impacted. A number of street trees on Castlereagh and Elizabeth Streets would be removed, reducing the shade cover and altering the character of the street somewhat.

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct would be improved at street level as footpaths on Castlereagh and Elizabeth Streets would address an expanded public realm and a multiple storey foyer entry would create a broad station entry forecourt on Martin Place and Castlereagh Streets. It is expected that there would be a noticeable improvement in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor beneficial landscape** impact during operation.

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the project site.

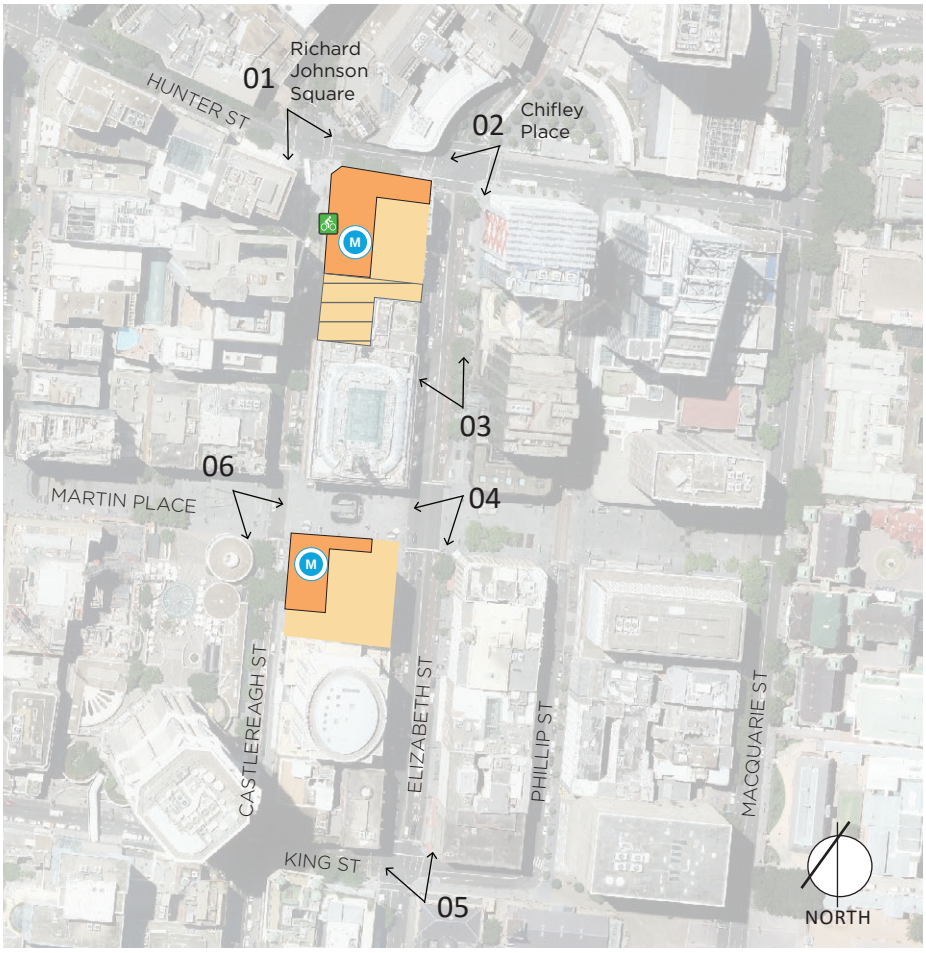
Northern site

- Viewpoint 1: View southeast from Richard Johnson Square
- Viewpoint 2: View southwest from Chifley Square
- Viewpoint 3: View northwest along Elizabeth Street

Southern site

- Viewpoint 4: View southwest towards Martin Place from Elizabeth Street
- Viewpoint 5: View northwest from corner of Elizabeth and King Streets
- Viewpoint 6: View south from Martin Place at Castlereagh Street
- View to power upgrade temporary works

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.



VIEWPOINT LOCATION PLAN

10 MARTIN PLACE STATION

Assessment of daytime visual impact

01

01A

01 EXISTING VIEW SOUTHEAST FROM RICHARD JOHNSON SQUARE

01A INDICATIVE EXTENT OF DEMOLITION

Northern site

Viewpoint 1: View southeast from Richard Johnson Square

Views from this location are enclosed by modern office towers along Hunter and Castlereagh Streets. At street level, building entries and street trees visually break-up the strong vertical line of the surrounding architecture. The historic sandstone façade of the Commonwealth Bank of Australia building is visible in the background, as is a glimpse to Martin Place to the south (centre, right of view).

Construction: The demolition of a number of high-rise buildings including the 17 storey building at 55 Hunter Street, in the centre of this view, and removal of existing street trees would alter the character of this view. An acoustic enclosure would be established upon the site, visible unobstructed in this view. Construction vehicles would be seen on Hunter and Castlereagh Streets. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: A station entry point would be seen at the corner of Hunter and Castlereagh Streets, visible at street level with future above station development (not within the scope of this assessment). The predominant alignment of the existing facades would be restored along Hunter and Castlereagh Streets, and would not obstruct the glimpsed view of the facade of the historic Commonwealth Bank of Australia building. Street trees would visually soften this view. It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 02: View southwest from Chifley Square

Chifley Square is a historically important public open space, enclosed at street level by several heritage buildings and shaded by a visually distinctive grid of palms which extend across the plaza. This view is defined by modern office towers, comprising a mixture of building ages, styles, heights, scale and use of materials. The curved façade of the former Qantas House building and Wentworth House (both historically important post war buildings) provide a strong sense of enclosure to Chifley Square and frame this view to the project site.

Construction: The demolition of the high-rise buildings and street trees on Elizabeth and Hunter Streets, would be clearly seen in the centre of the view. An acoustic enclosure would be established on the site and construction vehicles would be seen along both Hunter and Elizabeth Streets and accessing the site via Elizabeth Street. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: A station entry would be seen at street level on Elizabeth Street, in the centre of this view. The proposed station entry would not detract from the semicircular plaza of Chifley Square and street trees on Hunter and Elizabeth Streets would restore the sense of enclosure which is important to the character of views from this heritage place. It is expected that the project would not create a perceived change in the amenity of this view, which is of regional sensitivity, resulting in a **negligible visual impact** during operation.

02

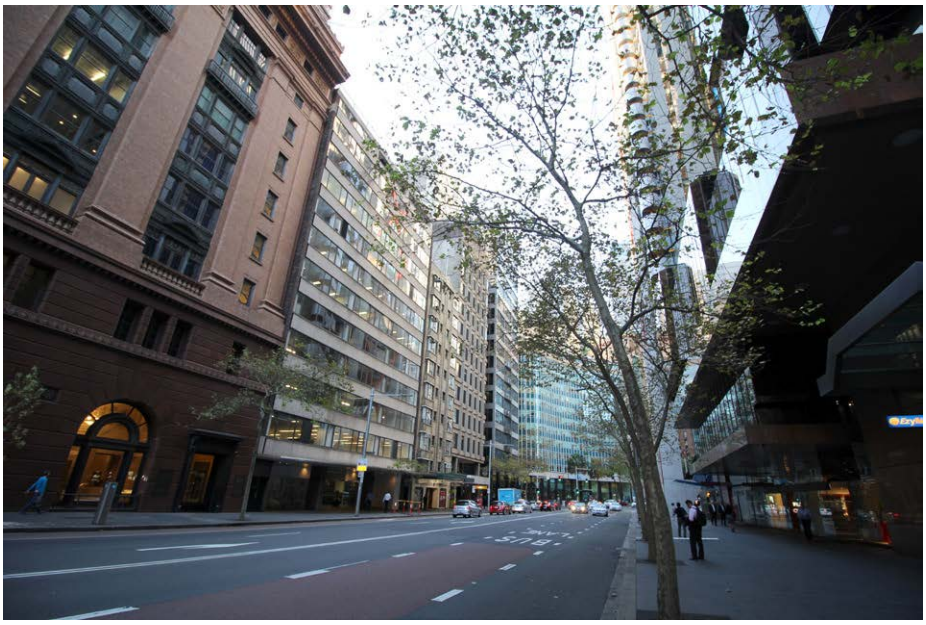
02A

02 EXISTING VIEW SOUTHWEST FROM CHIFLEY SQUARE

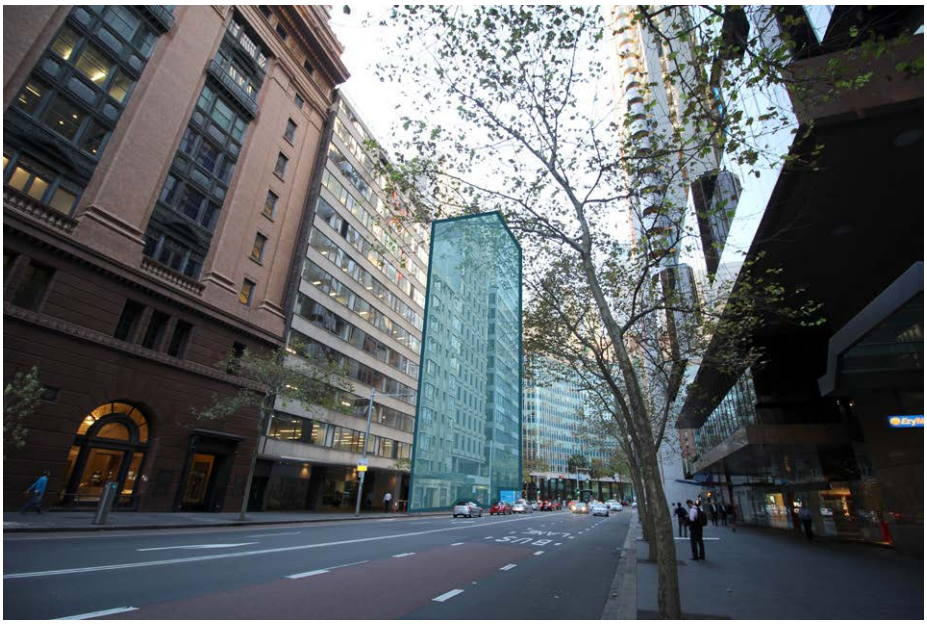
02A ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

10 MARTIN PLACE STATION

Assessment of daytime visual impact



03



03A

03 EXISTING VIEW NORTHWEST ALONG ELIZABETH STREET

03A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 03: View northwest along Elizabeth Street

There is a high level of visual uniformity created by the regular patterning of windows, building setbacks, strong building line and uniform height of the buildings along Elizabeth Street. Decorative historic facades, particularly the sandstone facade of the Commonwealth Bank of Australia building, apartment building at 7 Elizabeth Street, and former Qantas House, contribute to the character of this view. The distinctive curved façade of the former Qantas House terminates this view, drawing the eye towards Chifley Square, that is revealed in views further north on Elizabeth Street. Mature London planetrees provide some softening to this otherwise highly urban view.

Construction: The demolition of three buildings fronting Elizabeth Street would be seen in the middle ground of this view. An acoustic enclosure would be established on the site, seen unobstructed in this view. A construction vehicle entry would be in view on Elizabeth Street and construction vehicles would be seen traveling across this view. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: A station entry would be visible at street level on Elizabeth Street at the corner with Hunter Street. Services and an entry to the above station development (not within the scope of this assessment) would be located between the station entry and existing residential building. The predominant alignment of the existing facades would be restored along Elizabeth Street, matching in with the adjacent buildings and restoring the setting of the former Qantas building. It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Southern site

Viewpoint 04: View southwest towards Martin Place from Elizabeth Street

This viewpoint provides direct views across the project site, which includes Martin Place and the rectilinear prominently located 20 storey office tower at 39 Martin Place. Views from this location are influenced by the verticality of office buildings lining both Martin Place and Elizabeth Street, and include the 'mushroom-shaped' Commercial Traveller's Association building and General Post Office and clock tower, a focal point in the view along Martin Place. Elizabeth Street is aligned across this view, and is a wide, heavily trafficked urban artery visually softened with the occasional street tree. The pedestrianised Martin Place, is wide and open in this view, visually cluttered with two rows of twin flagpole banners, light poles, signage, concession stands, and heavily used by pedestrians.

Construction: The demolition of the 20 storey office tower at 39 Martin Place, which is visually prominent from Martin Place, would be visible in the middle ground of this view. An acoustic enclosure would be established across the construction site, and seen beyond Martin Place. This site would include a construction vehicle access point on Elizabeth Street.

The construction site would then extend across the view, enclosing Martin Place in site perimeter hoarding, seen in the middle ground to foreground of this view. This construction site would include an access point on Elizabeth Street and construction vehicles traveling across the view along Elizabeth Street. This construction site would obstruct views along Martin Place to the GPO clock tower and the 'mushroom' shaped Commercial Traveller's building to the west (right of view).

The construction site would move again to the site of the former 39 Martin Place, so that the view would include the reinstated Martin Place in the foreground, and the construction of the station entry at street level, enclosed by hoarding and with construction vehicle access on Elizabeth Street.

04

As this view is considered to be of state visual sensitivity, and the considerable reduction in visual amenity that would be experienced in views from this location throughout construction, it is expected that there would be a **very high adverse visual impact** during construction.

Operation: A station entry would be seen addressing Martin Place, visible in the middle ground of the view, with future above station development (not within the scope of this assessment). The southern built edge of Martin Place would be restored, with retail frontages seen at the corner of Martin Place and Elizabeth Street. Martin Place itself would be reinstated with an open and uncluttered forecourt that would be visually integrated with the station entry. It is expected that the project would create a noticeable improvement in the amenity of this view, resulting in a **high beneficial visual impact** during operation.

04A

04 EXISTING VIEW TOWARDS MARTIN PLACE FROM ELIZABETH STREET

04A INDICATIVE EXTENT OF DEMOLITION

10 MARTIN PLACE STATION

Assessment of daytime visual impact

05

05A

05 EXISTING VIEW NORTH FROM CORNER OF ELIZABETH AND KING STREETS

05A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 05: View northwest from the corner of Elizabeth and King Streets

In this location the townscape is defined by a mix of historic facades and modern commercial office tower development. There is a high level of visual uniformity created by the regular patterning of windows, building setbacks, footpath width and repetition of street trees. A consistent building line and height of the office towers creates a strong sense of visual enclosure. The decorative historic facades, particularly the sandstone facades (including the former GIO, APA and Commonwealth Bank of Australia buildings), contribute to the character of this precinct. Elizabeth Street is a wide, busy and highly urban streetscape, including five lanes of two-directional traffic.

From this location the project site is clearly visible, partly obstructed by the BNP Paribas Centre building (at 60 Castlereagh Street) in the middle ground of this view. The project's northern site, at Hunter Street, is also visible, glimpsed in the background of this view, beyond the Commonwealth Bank of Australia building.

Construction: The demolition of the building at 39 Martin Place and adjacent street trees would be clearly seen in this view. An acoustic enclosure would be established on the site incorporating a site access point on Elizabeth Street. Construction vehicles would be seen accessing the site via Elizabeth Street in the middle ground of the view. Demolition and establishment of an acoustic enclosure on the northern site would be visible in the far background of the view. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: In the middle ground of this view a small glimpse to the retail on Martin Place and services would be seen, filtered by street trees along Elizabeth Street. It is possible that glimpses to the project at Elizabeth Street would be visible in the distant background,

blending into the surrounding townscape. It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 06: View south from Martin Place at Castlereagh Street

This view includes the project site in the fore and middle ground of the view. The rectilinear 20 storey office tower at 39 Martin Place can be seen with retail and stairs at its base. Views from this location are influenced by the verticality of office buildings lining both Martin Place and Castlereagh Street, and visual landmarks including the 'mushroom-shaped' Commercial Traveller's Association building and MLC Centre building. Castlereagh Street is aligned across this view, and is a wide, heavily trafficked urban artery visually softened with the occasional street tree. The pedestrianised Martin Place is wide and open in this view, including some furnishings including twin flagpole banners, light poles, signage, concession stands, and the below ground retail entry. A number of London planetrees line Castlereagh Street, softening this intensely urban townscape.

Construction: A construction site would be established and the prominent 20 storey office tower at 39 Martin Place would be demolished. The work would extend across the view and be seen unobstructed across Martin Place.

An acoustic enclosure would be established on the site, rising approximately 15 metres in height. Construction vehicles would be seen accessing the site and traveling via Castlereagh Street in the middle ground of this view.

The construction site would then extend across the middle ground of this view, enclosing Martin Place. This construction site would be surrounded in hoarding and include a construction site access point on Castlereagh Street. This construction site would obstruct views across Martin Place.

06

06A

06 EXISTING VIEW SOUTH FROM MARTIN PLACE AT CASTLEREAGH STREET

06A INDICATIVE EXTENT OF DEMOLITION

10 MARTIN PLACE STATION

Assessment of daytime
visual impact

06B

06B ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

The construction site would move again to the site of the former 39 Martin Place, so that the view would include the reinstated Martin Place in the foreground and the construction of the street level station entry, surrounded by hoarding and with construction vehicle access and vehicle movement via Castlereagh Street, seen in the middle ground of the view.

As this view is considered to be of state visual sensitivity, and due to the considerable reduction in visual amenity that would be experienced in views from this location throughout construction, it is expected that there would be a **very high adverse visual impact** during construction.

Operation: A station entry would be seen addressing Martin Place in the middle ground of the view. The southern built edge of Martin Place would be restored, with retail frontages seen to the east (left of the view) at the corner of Martin Place and Elizabeth Street, and the station entry foyer creating a light and open edge to the plaza. Martin Place itself would be reinstated with a coordinated urban design between the plaza and station entry concourse.

It is expected that the project would create a noticeable improvement in the amenity of this view, resulting in a **high beneficial visual impact** during operation.

10 MARTIN PLACE STATION

Assessment of daytime visual impact

POWER UPGRADE ALIGNMENT

POWER UPGRADE ALIGNMENT VIEWS ALONG (L-R) HUNTER STREET, MARGARET STREET, NAPOLEON STREET

Views to power upgrade temporary works, Pyrmont option

The power upgrade would require temporary works within the road corridor leading from the site west along Hunter Street, north along George Street, and west along Margaret and Napoleon Streets.

Hunter, George and Margaret Streets are major vehicular routes through the CBD. These streets include numerous modern high-rise towers and intermittent historic facades, heritage buildings, and monuments. The trees at Wynyard Park and street trees provide visual relief within this highly urban landscape. In a number of locations along the route, cafes with seating adjacent and extending onto the footpath.

Construction: Views may include some road and footpath closures to accommodate the temporary trenching works. The existing parkland and street trees would be retained.

It is expected, due to the scale of these works, that the project would create a noticeable reduction in the visual amenity of views from these streets and adjacent properties. Views along this route are of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.

Assessment of night time visual impact

The setting of the Martin Place Station works is considered to be an area of **E4: High district brightness.** This is due to its brightly lit CBD location where there is 24 hour activity and lighting from surrounding buildings, urban plazas and streets creating both direct light sources and a general skyglow around the project site.

Northern site

Construction: It is expected that there would be night works required at this location during construction. The acoustic enclosure would contain much of the light from within the construction site. However there would be 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. This would result in the site, as well as adjacent areas extending along Castlereagh, Hunter and Elizabeth Streets, being more brightly lit than the existing setting. This lighting would include both static construction site and task illumination and rotating beacon lights mounted on vehicles.

It is expected that this lighting would create a noticeable reduction in the amenity of views in this area of high district brightness, from surrounding streets and potentially from adjacent residential buildings on Elizabeth Street. This impact is due particularly to the rotating beacon lights which have a warning function and would contrast visually with the traffic and building light sources typical of this setting. It is therefore expected that the project would result in a **negligible visual impact** during evening hours.

Operation: The station entry on Hunter, Castlereagh and Elizabeth Streets would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment.

Therefore, it is expected that the lighting of the project during operation would not create a perceived change in the amenity of this areas, resulting in a **negligible visual impact** for this area during evening hours.

Southern site

Construction: It is expected that there would be night works required at this location during construction. The acoustic enclosures would contain much of the light from within the construction site. However, there would be 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. The site, as well as adjacent areas extending along Castlereagh and Elizabeth Streets, would be more brightly lit than the existing site due to this activity. There are other construction sites on Martin Place, which require similar night time access.

It is therefore expected that this lighting would create a noticeable reduction in the amenity of views in this area of high district brightness. This would result in a **negligible visual impact** during evening hours.

Operation: The station entry on Martin Place would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment. It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

10 MARTIN PLACE STATION

Summary of impact

Summary of impact

Landscape impact

During construction the project would result in a **minor adverse landscape impact** on Hunter, Castlereagh and Elizabeth Streets in the vicinity of the project sites. Furthermore, the removal of the P&O Fountain would result in a **moderate adverse landscape impact**.

There would be a **very high adverse landscape impact** on Martin Place during construction due to the diversion of pedestrian movement on these streets and a portion of Martin Place during construction, as well as the loss of trees and plaza space for community use.

During operation there would be a **minor beneficial landscape impact** on Hunter, Castlereagh and Elizabeth Streets where they surround the project site. The improvements to Martin Place would create a **high beneficial landscape impact** due to the integration of the station with Martin Place, and improvements to legibility and accessibility in particular.

Visual impact

There would be a range of visual impact experienced during construction. This would include adverse impact on views from the surrounding streets and public squares, including: **minor adverse** impact in views from Richard John Square, **moderate adverse** impact from Chifley Square, and **very high adverse visual impact** from Martin Place.

The impact during construction are primarily derived from the demolition of buildings and the establishment of acoustic enclosures. The highly sensitive nature of views within this precinct result in higher visual impact.

There would also be temporary **minor adverse visual impact** experienced during the power upgrade works on Hunter, Margaret, George and Napoleon Streets.

During operation there would be **high beneficial impact** on views in the vicinity of Martin Place, as the design offers an improvement to the current views in this area.

At night there would be **negligible visual impact** during construction and operation. This is due to the enclosure of light within the acoustic enclosures and the surrounding setting of **E4: High district brightness** environment.

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Richard Johnson Square	Local	No perceived change	Negligible	No perceived change	Negligible
2	Chifley Square	Regional	No perceived change	Negligible	No perceived change	Negligible
3	P&O Fountain	Local	Considerable reduction	Moderate adverse	N/A	N/A
4	Castlereagh, Hunter and Elizabeth Streets	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
5	Martin Place	State	Considerable reduction	Very high adverse	Noticeable improvement	High beneficial
6	Castlereagh and Elizabeth Street at Martin Place	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
	Northern site					
1	View southeast from Richard John Square	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
2	View southwest from Chifley Square	Regional	Noticeable reduction	Moderate adverse	No perceived change	Negligible
3	View northwest along Elizabeth Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
	Southern site					
4	View southwest towards Martin Place from Elizabeth Street	State	Considerable reduction	Very high adverse	Noticeable improvement	High beneficial
5	View northwest from corner of Elizabeth and King Streets	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
6	View south from Martin Place at Castlereagh Street	State	Considerable reduction	Very high adverse	Noticeable improvement	High beneficial
	Views to power upgrade temporary works	Local	Noticeable reduction	Minor adverse	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Northern site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible
2	Southern site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible

11 PITT STREET STATION

Planning context

The project includes two sites for Pitt Street Station situated between Pitt and Castlereagh Streets. The northern site would be located to the north of Park Street, and the southern site would be located to the south of Bathurst Street.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the proposed Pitt Street station.

Sydney Local Environmental Plan, City of Sydney, 2012

The project area is adjacent to a number of heritage sites including the 'National Building' (248A–250 Pitt Street), the 'Masonic Club' (169–173 Castlereagh Street), Edinburgh Castle Hotel (294–294B Pitt Street) and the Metropolitan Fire Brigade building (211–217 Castlereagh Street). This assessment will therefore need to consider the "*settings and views"* of these heritage items under the Heritage Conservation Clause (5.10).

The site is primarily zoned B8 Metropolitan Centre, the objectives of this zone that are relevant to this assessment include: *"To encourage the use of alternatives to private motor vehicles, such as public transport, walking or cycling. [and] ... To promote uses with active street frontages on main streets and on streets in which buildings are used primarily (at street level) for the purposes of retail premises."*

Hyde Park, to the east, is zoned RE1 Public Recreation. The relevant objectives of this zone include: *"To provide a range of recreational settings and activities and compatible land uses. ... To provide links between open space areas. [and] ...To retain and promote access by members of the public to areas in the public domain"*

Sydney Development Control Plan (DCP), City of Sydney, 2012

The Sydney DCP identifies a number of Special Character Areas (SCAs). Although the project is not located within a SCA, it is located in close proximity to the Sydney Square/Town Hall and St Andrews SCA, College Street/Hyde Park SCA and Pitt Street SCA.

The key principles of these SCAs have been reviewed and as they specifically relate to the area within each SCA, are not relevant to this precinct assessment.

This assessment will however consider views to and from the public domain, for example, whether the project would *"impede views from the public domain to highly utilised public places …heritage buildings and monuments including public statues, sculptures and art".* Furthermore, this assessment will consider if the project would "*maximise street life and… avoid interruptions to views and vistas along streets"* (Clause 3.1.3).

The DCP also considers urban vegetation to be one of the City's "*most important assets"*. The project mitigation strategy will need to ensure "*tree canopy cover is considered … and provided appropriately"*, as required by Clause 3.5.2.

Town Hall Precinct + Square Urban Design Study, for City of Sydney by Tony Caro Architects, 2010

The project is located in close proximity to the proposed Town Hall Square project. This study proposes the creation of a civic square opposite Town Hall with the removal of existing buildings. This new public realm would be continuous across George Street to create a new square opposite the Town Hall, surrounded by retail at street level. This square would extend from George Street along Park Street, with construction works likely to include the removal of buildings on Pitt Street, opposite the project site.

Existing environment

The project is located within the grid of the Sydney CBD, in one of the busiest parts of the city for vehicular and pedestrian movement. The project site is a short walk, and in view of, some of Sydney's most prominent landmarks and attractions. The project occupies two sites located between Pitt and Castlereagh Streets.

Northern site

The northernmost site is located on Park Street. Pitt, Castlereagh and Park Streets link several city landmarks including Hyde Park, Town Hall and the Pitt Street Mall. Park Street is the most heavily trafficked, including six lanes, two of which are dedicated bus lanes.

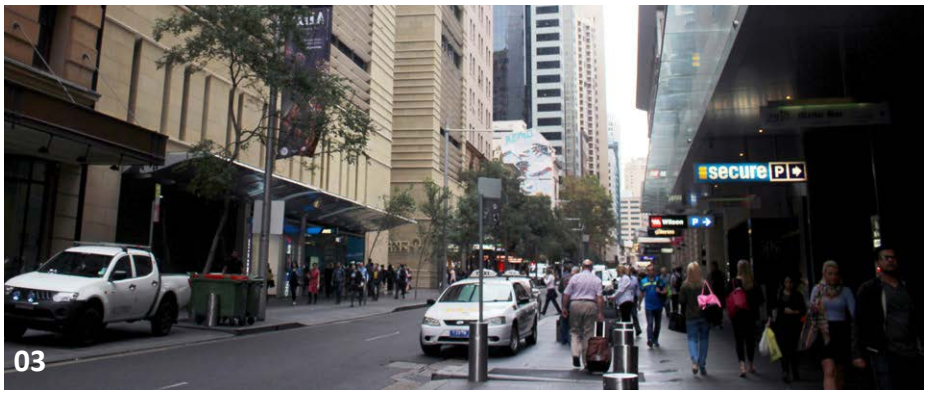
In this area, the streets are lined by a mixture of low and high-rise office, commercial and apartment buildings, of varying ages and styles. They mostly include retail space, restaurants and cafés at street level. At the corner of Pitt and Park Streets, and extending somewhat up Pitt Street, there are a number of 4-6 storey buildings with decorative historic facades. A number of these are constructed from stone, brick and masonry, and in 'Victorian' and 'Art Deco' styles.

These streets are flanked by fully paved footpaths, from building to kerb, with intermittent awnings, and are heavily used by pedestrians throughout the day. To the north of Park Street, the footpaths on Pitt Street widen in lieu of on street parking, to accommodate the large volumes of pedestrians moving north towards the Pitt Street Mall.

Several small mature trees are located on Park and Pitt Streets, which provide some shade and softening to this intensely urban environment.


01


02



03


04


05

01 HISTORIC CRITERION HOTEL
02 PEDESTRIAN LANEWAY OFF PITT STREET
03 PITT STREET
04 CONSTRUCTION SITE ON THE CORNER OF BATHURST AND CASTLEREAGH STREETS
05 THE HYDE PARK OBELISK

11 PITT STREET STATION

Character and components of the project

Important views within this area include those to the east along Park Street to and from Hyde Park, views north along Castlereagh Street to the Sydney Tower, views to the rear of The Great Synagogue, and glimpsed views west along Park Street to Town Hall.

Southern site

In the south, the project site is located at the intersection of Bathurst, Pitt and Castlereagh Streets. Bathurst and Castlereagh Streets include four lanes of traffic, including a dedicated bus lane on Castlereagh Street. Pitt Street includes four lanes of traffic, reducing to two lanes north of Bathurst Street.

In this area the streets are lined by a mixture of low and high-rise office, commercial and apartment buildings of varying ages and styles. There are a scattering of retail, restaurants and cafés at street level, alongside service entries and office building entries. At the corner of Pitt and Bathurst Streets, and scattered along Pitt, Bathurst and Castlereagh Streets, there are a number of 4-6 storey buildings with decorative historic facades. A number of these buildings have stone, brick and masonry facades in the 'Victorian', 'Georgian' and 'Art Deco' styles.

These streets link several city landmarks including St Andrew's Cathedral in the west, Hyde Park to the east, and World Square in the south. In this area the streets are flanked by fully paved footpaths, from building to kerb, with intermittent awnings, and are heavily used by pedestrians throughout the day.

There are no street trees adjacent to the project site, with some trees to the east and west on Bathurst Street, to the north and opposite the project site on Pitt Street.

The Edinburgh Hotel is a local visual feature on the southeastern corner of Pitt and Bathurst Streets. It is a three storey hotel of Inter War Georgian Style and has been trading as a hotel since the 1860s. This building has 'aesthetic significance' due to its contribution as a landmark building.

Important views include those along Bathurst Street to Hyde Park and its Obelisk (identified as a primary vista in the Hyde Park Plan of Management, 2006), views west towards the St Andrew's Cathedral and views to the distinctive historic brick façade of the 'Edinburgh Castle Hotel' on the corner of Pitt and Bathurst Streets.

It is likely that in the future, Council's vision for a new square opposite the Town Hall, between George and Pitt Streets, will be realised. This would strengthen views towards the Town Hall and increase the activation of the surrounding streets as a focal point for the civic life of the City.

A development project in this precinct which is likely to influence the existing visual setting includes the 66-storey 'Greenland Centre' apartment tower proposed at the corner of Pitt and Bathurst Streets, which will be Sydney's tallest residential tower. Similarly, 'The Castlereagh' apartments are currently under construction at the corner of Castlereagh and Bathurst Streets.

Character and components of the project

This summary describes the construction and operation phases of the project.

Northern site

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site compound, including demolition of the following buildings:
    - 14 storey commercial tower at 175 Castlereagh Street
    - 6 storey corner building at 48 Park Street ('The Windsor on the Park')
    - 3 storey terrace buildings at 40-46 Park Street
    - 3-4 storey terrace (Hungry Jack's) 252-254 Pitt Street

- 4 storey building (McDonald's) 256 Pitt Street

- Removal of street trees impacted by the site and for site access including approximately:
  - 4 trees on Pitt Street
  - 6 trees on Park Street
- Open trench construction within the existing road reserve for a power supply upgrade either:
  - Along Park Street, Druitt Street, under the Western Distributor Freeway (through Darling Harbour), and along Pyrmont Street to the Pyrmont substation (Approximately 1.7km)
  - Along Pitt Street, Campbell Street, Mary Street, Albion Street to the Surry Hills substation (Approximately 1.5km)
- A metal clad acoustic enclosure (approximately 15m in height)
- Hoardings surrounding the remaining areas of the construction site
- Footpaths on Pitt and Castlereagh Streets adjacent to hoarding would be reduced in width
- Construction traffic and site access via Castlereagh Street and Pitt Streets
- Mobile cranes and other construction equipment within the site.

The duration of construction works at this location would be approximately 4-5 years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

Operation phase

The following elements and activities are likely to be experienced during the operation of the project:

- Station entry located on Park Street and via retail arcades from Castlereagh and Pitt Streets
- Services located on Pitt Street
- Active frontages (including future retail tenancies) along Pitt, Park and Castlereagh Streets
- Reinstated areas of Pitt, Park and Castlereagh Streets impacted by construction including street trees.

Southern site

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site compound, including demolition of the following buildings:
  - 3 storey commercial building at 131-135 Bathurst Street
  - 8-9 storey commercial building at 125-129 Bathurst Street
  - 8 storey building (Metro Motel) at 296-300 Pitt Street
  - 6 storey building (Druids House) at 302 Pitt Street
- Mobile cranes and other construction equipment within the site
- A metal clad acoustic enclosure (approximately 15m in height) on Pitt Street
- Hoarding surrounding the remaining areas of the construction site
- Footpaths on Pitt and Bathurst Streets adjacent to hoarding would be reduced in width
- Construction traffic and site access via Pitt and Bathurst Streets.

The duration of construction works at this location would be approximately 4-5 years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

EDINBURGH CASTLE HOTEL

Operation phase

The following elements and activities are likely to be experienced during operation:

- Station entry on Bathurst Street
- Services located on Pitt Street
- Reinstated footpaths on Bathurst and Pitt Streets

11 PITT STREET STATION

Sensitivity levels

Hyde Park Plan of Management and Master Plan, City of Sydney, 2006

This document provides a comprehensive plan of management and master plan as the basis on which all future design, planning and management of Hyde Park will be developed.

Parkwide Strategy No.10 *'Views and Vistas within and Outside the Park'* identifies a number of 'primary' and 'secondary' vistas. A 'primary' vista is identified from the park along Bathurst Street, towards the project site; and a 'secondary' vista is identified between Hyde Park and The Great Synagogue on Elizabeth Street, also in the vicinity of the project.

In relation to these vistas, the plan states: *"Maintain unobstructed vistas between the park and significant buildings, monuments and streets on the park's boundaries (e.g. St Mary's Cathedral, the Obelisk, Macquarie Street)"*

Sensitivity levels

The following list summarises the landscape and visual sensitivity for the project site and main viewing areas across the study area.

Pitt, Park, Castlereagh and Bathurst Streets

The project interfaces with four of central Sydney's major pedestrian and traffic arteries. These streetscapes attract large numbers of vehicles and pedestrians. These streets are also influenced by some of Sydney's most important heritage buildings, monuments and open spaces including St Andrews Cathedral, Town Hall, and Hyde Park, which increase the value placed on views and these streetscapes. The landscape and views of Pitt, Park, Castlereagh and Bathurst Streets are therefore considered to be of **local sensitivity**.

Hyde Park

The project is within view of Hyde Park. Hyde Park is an important historic landscape, and recreational resource within the city. It is a gathering place, highly valued by its users, has a State Heritage Listing, and includes many designed views and visual features. The landscape of Hyde Park is considered to be of **state sensitivity**. The views from Hyde Park, however, are identified within the Hyde Park Plan of Management as being categorised as primary and secondary. It is therefore considered that primary views and vistas from and within Hyde Park are of **state visual sensitivity**, whereas secondary and incidental views to and from the park are considered to be of **regional visual sensitivity**.

Assessment of landscape impact

In the vicinity of the project, the following places have been identified as potentially being impacted by the project:

- Pitt, Park and Castlereagh Streets, and
- Pitt and Bathurst Streets.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Pitt, Park and Castlereagh Streets

Construction: Parts of Pitt, Park and Castlereagh Streets would be required as part of the construction site and for construction vehicle access. This work would include the closure of footpaths during some periods of construction. It is likely that north south and east west pedestrian connectivity within this precinct would be reduced at times and connectivity and legibility in this part of the CBD may be impacted. A number of street trees on Park Street, between Pitt and Castlereagh Streets, would be removed, reducing the shade cover and altering the character of the street.

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct during operation, however, would be improved somewhat as at street level there would be reinstated footpaths, increased permeability, street level activation, and clear station entry points.

It is expected that there would be a noticeable improvement in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor beneficial landscape impact** during construction.

Pitt, Bathurst and Castlereagh Streets

Construction: Parts of Pitt, Bathurst and Castlereagh Streets would be required as part of the construction site and for construction vehicle access. This work would require the closure of footpaths during some periods of construction. It is likely that north south and east west connectivity within this precinct would be diverted at times and connectivity and legibility in this part of the CBD may be impacted. A number of street trees between Pitt and Castlereagh Streets would be removed, reducing the shade cover and altering the comfort level for pedestrians somewhat. It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct during operation would, however, be improved as at street level there would be reinstated footpaths, increased permeability, street level activation, and clear station entry points. It is expected that there would be a noticeable improvement in the landscape quality and urban design of this streetscape which is of local sensitivity. This results in a **minor beneficial landscape impact** during operation.

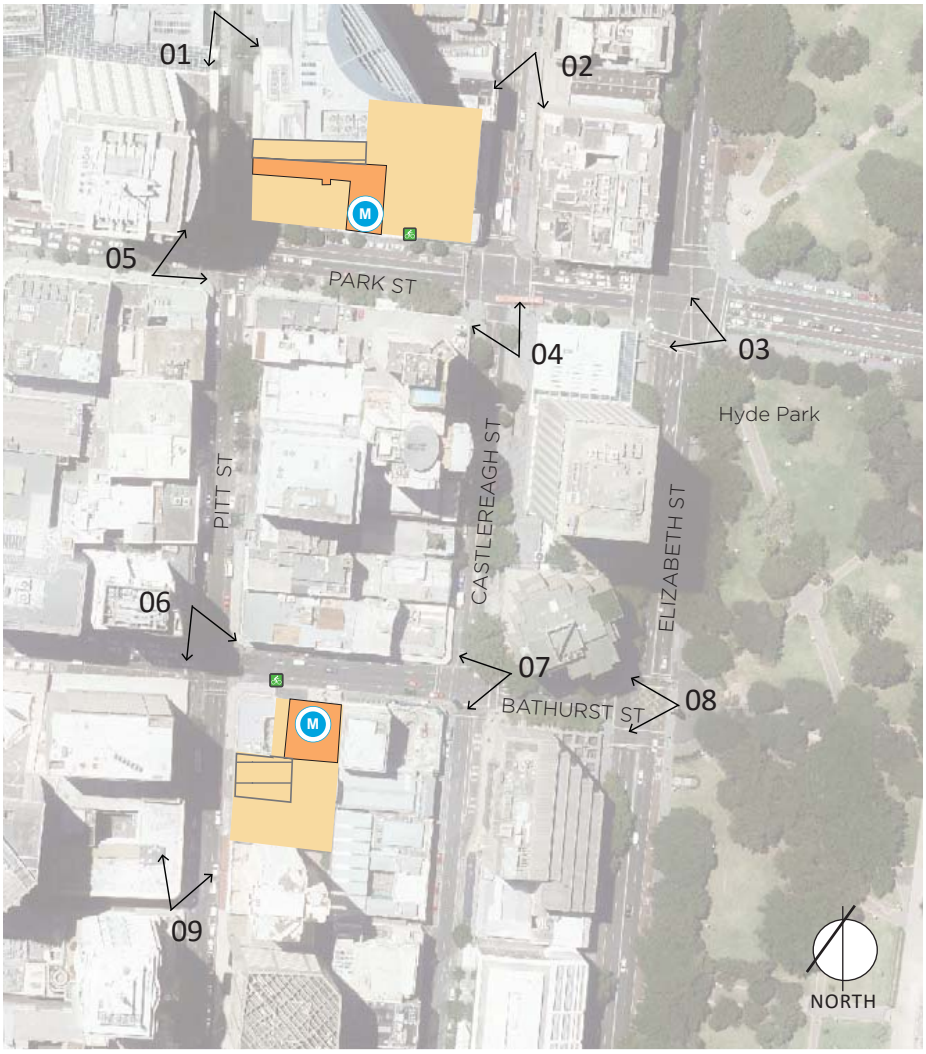
01 PARK STREET VIEW TO TOWN HALL

02 ELIZABETH STREET VIEW TO THE GREAT SYNAGOGUE

02 VIEW ALONG BATHURST STREET TO THE EDINBURGH CASTLE HOTEL AND OBELISK IN HYDE PARK

11 PITT STREET STATION

Assessment of daytime visual impact



KEY

- Viewpoint location
- Site footprint at street level
- Pedestrian plaza/station lobby
- Metro entry
- Proposed cycle parking
- Services

VIEWPOINT LOCATION PLAN

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the site and the proposed development.

Northern site:

- Viewpoint 1: View southeast along Pitt Street
- Viewpoint 2: View south along Castlereagh Street
- Viewpoint 3: View northwest from Hyde Park at the corner of Park and Elizabeth Streets
- Viewpoint 4: View northwest at the corner of Castlereagh and Park Streets
- Viewpoint 5: View northeast at the corner of Park and Pitt Streets

Southern site:

- Viewpoint 6: View southeast along Pitt Street
- Viewpoint 7: View west along Bathurst Street
- Viewpoint 8: View west along Bathurst Street from Hyde Park
- Viewpoint 9: View north along Pitt Street
- Views to power upgrade temporary works, Pyrmont
- Views to power upgrade temporary works, Surry Hills

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Northern site

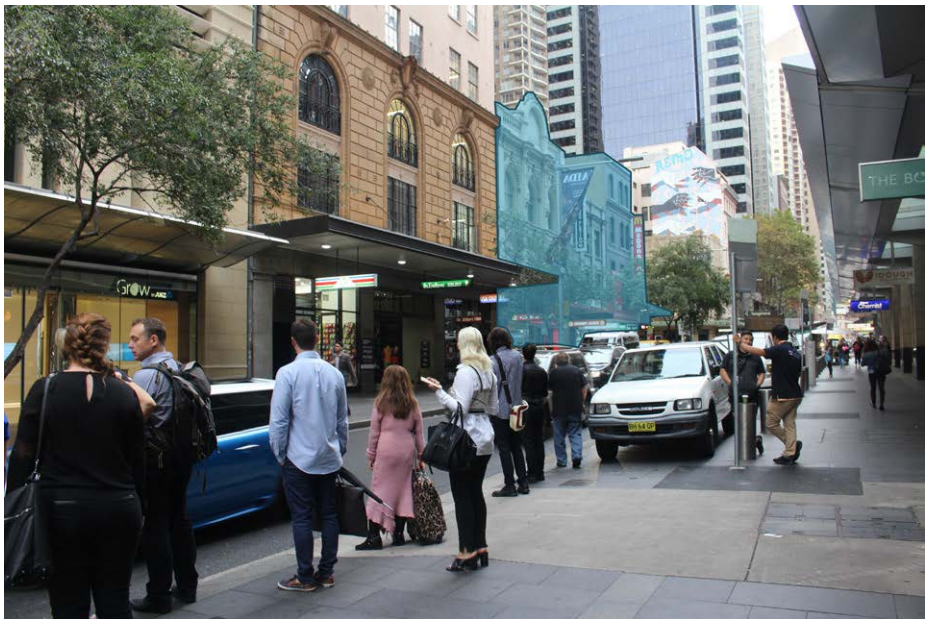
Viewpoint 1: View southeast along Pitt Street

This view includes a mix of historic and contemporary stone and masonry facades rising generally to three levels, with modern glass office, hotel and residential towers above. A mix of awnings, street trees, and widened footpaths visually break up the verticality of the surrounding architecture and create a human scale at street level. The historic facades of the site contribute to the character of this precinct.

Construction: The removal of existing historic buildings and adjacent street trees would be visible in the middle ground of this view. An acoustic enclosure would be established on the site, rising approximately 15m in height. The construction site would be somewhat visually contained by the surrounding built form. Additional construction traffic would be seen, including a site entry. Although the character of construction works would be visually absorbed into this urban setting, the loss of character building facades would have an impact. It is therefore expected that the project would create a noticeable reduction in the visual amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: Service facilities and active frontages would be visible at street level, following the alignment of the existing facades. Street trees and footpaths would be reinstated and be visually consistent with the surrounding streetscape. The project would be visually absorbed into the surrounding urban landscape and there would be no perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

01



01A

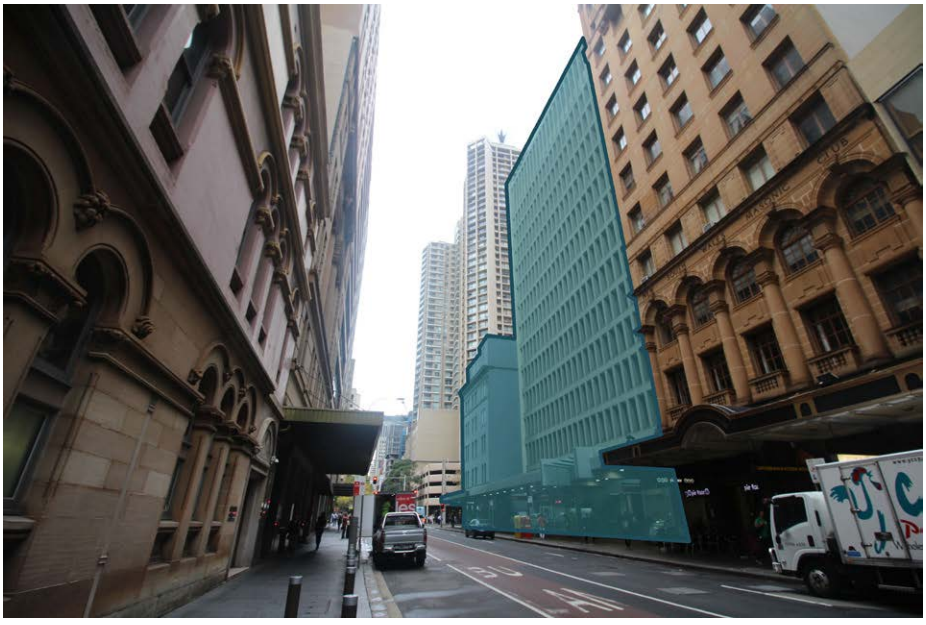
01 EXISTING VIEW SOUTH ALONG PITT STREET

01A INDICATIVE EXTENT OF DEMOLITION

11 PITT STREET STATION

Assessment of daytime visual impact

02



02A

02 EXISTING VIEW SOUTH ALONG CASTLEREAGH STREET

02A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 2: View south along Castlereagh Street

In this location the townscape is defined by a mix of historic facades and modern commercial development. There is a high level of visual uniformity created by the regular patterning of windows and building heights. A strong building line and sense of enclosure is created by the built form. The decorative historic facades, particularly the sandstone facades, contribute to the character of this precinct. This is a highly urban streetscape without street trees and with narrow footpaths and intermittent awnings.

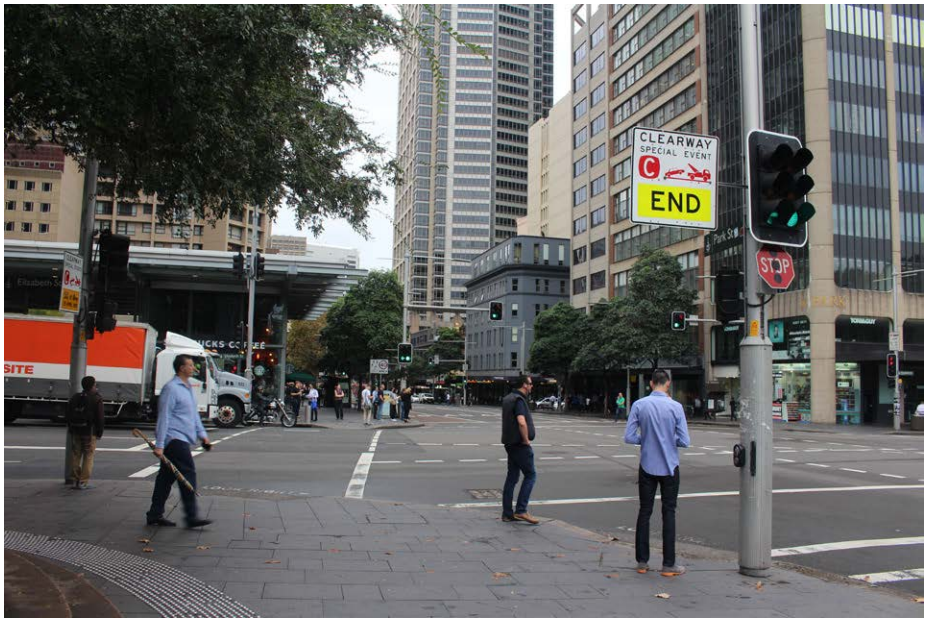
Construction: Two buildings in the centre of the view would be demolished. A construction site would be established on the site including site offices and site boundary hoarding. Views to the construction site would be partly obstructed by the surrounding built form and construction traffic would be seen in the foreground of the view, entering the site via Castlereagh Street. The character of construction works would be somewhat absorbed into this urban setting. The loss of the existing character building would have an impact, however this building does not contribute greatly to views from this area. It is expected that the project would create a noticeable reduction in the visual amenity of this view of local visual sensitivity resulting in a **minor adverse visual impact** during construction.

Operation: In this view active frontages would be seen at street level. The predominant alignment of the existing facades would be restored along Castlereagh Street and the active street frontage would be consistent in character with the surrounding streetscape. It is expected that the project would be absorbed into the highly urban context and there would be no perceived reduction in the visual amenity of this view, resulting in a **negligible visual impact** during operation.

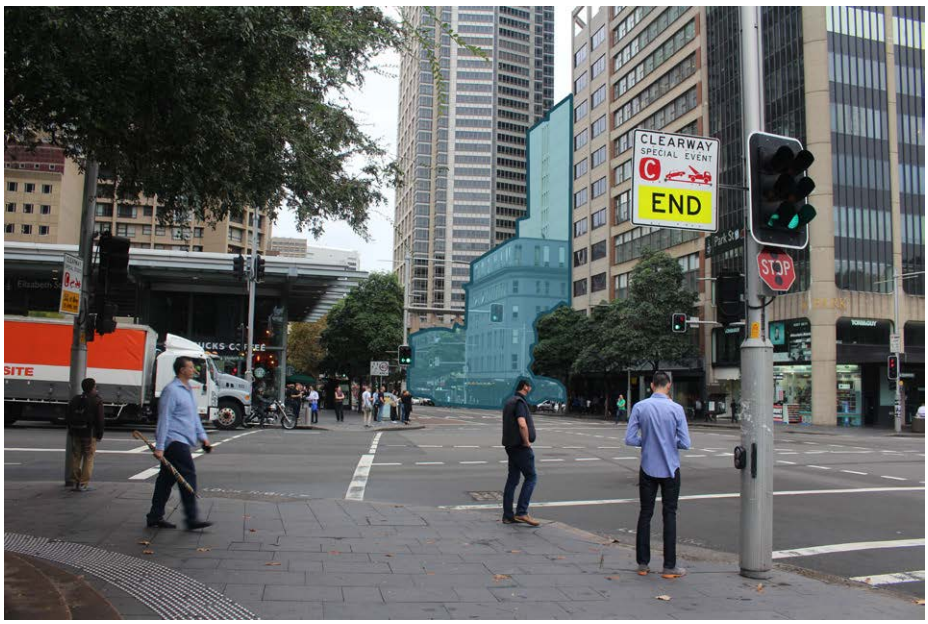
Viewpoint 3: View northwest from Hyde Park at the corner of Park and Elizabeth Streets

This view includes buildings with a mixture of heights, style, scale and age. It includes modern glass and steel high-rise office buildings juxtaposed with the historic sandstone facades. This view is a part of a wider panorama which includes the Former Australian Consolidated Press building (189-197 Elizabeth Street), The Great Synagogue and Sydney Tower. The wide and heavily trafficked streets are lined in places with mature street trees, softening this highly urban environment. The buildings on the project site contribute to the streetscape of Park Street, and protrude from the predominant building line of surrounding buildings.

Construction: The demolition of the buildings between Castlereagh and Pitt Streets would be visible in the middle ground of this view. An acoustic enclosure would be established on the corner of Pitt and Park Street and be seen in the background of the view. Changes in traffic conditions would also influence this view, including construction vehicles seen crossing Park Street at Castlereagh and Pitt Streets. Although the buildings proposed for removal comprise a small portion of the view and would not affect the skyline composition, the proposed construction site extends an entire block would be clearly visible at street level. This view is considered to be of regional visual sensitivity, and it is expected that the project would create a noticeable change in visual amenity that would result in a **moderate adverse visual impact** during construction.



03



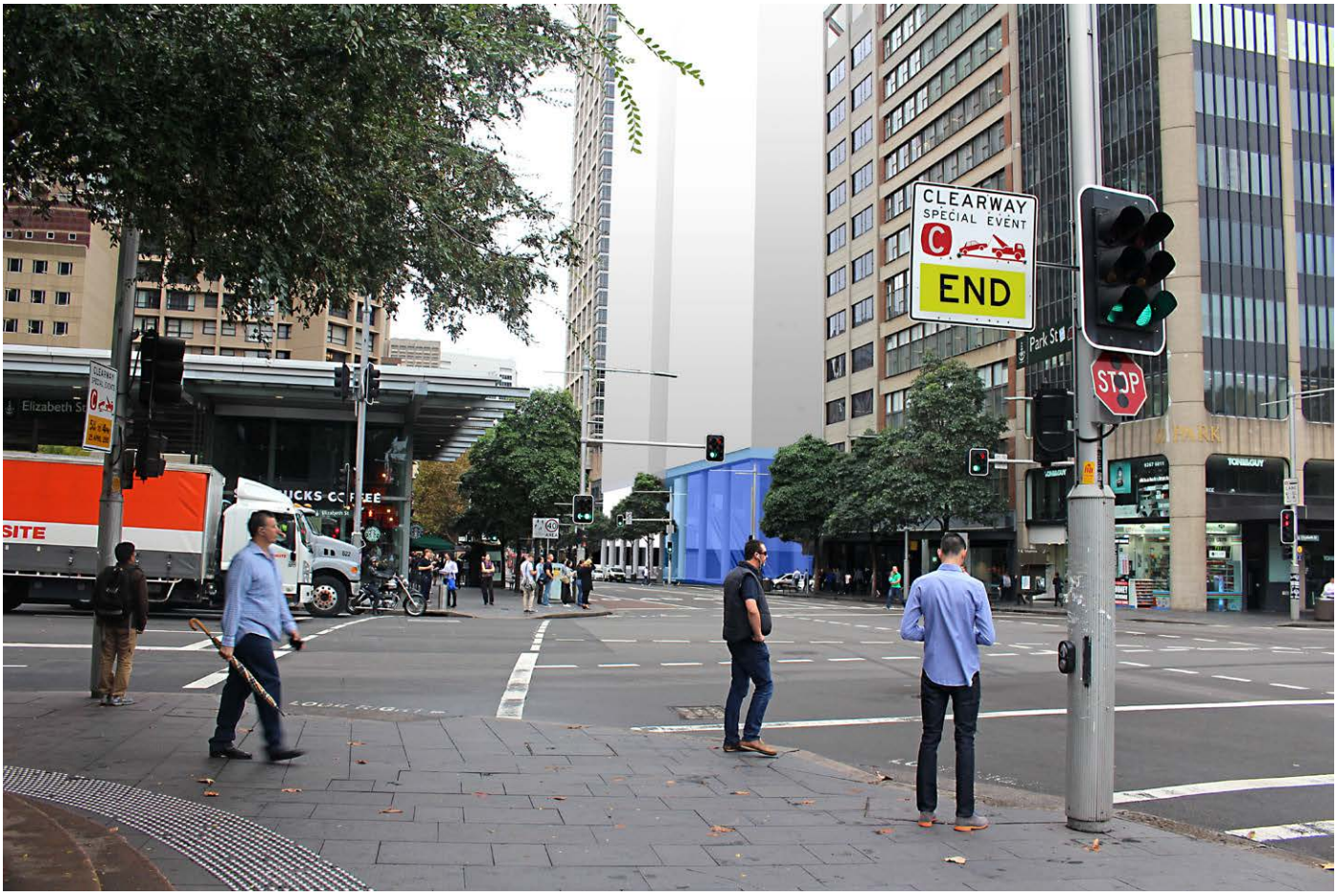
03A

03 EXISTING VIEW NORTHWEST FROM HYDE PARK AT THE CORNER OF PARK AND ELIZABETH STREETS

03A INDICATIVE EXTENT OF DEMOLITION

11 PITT STREET STATION

Assessment of daytime visual impact



03B

03B ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

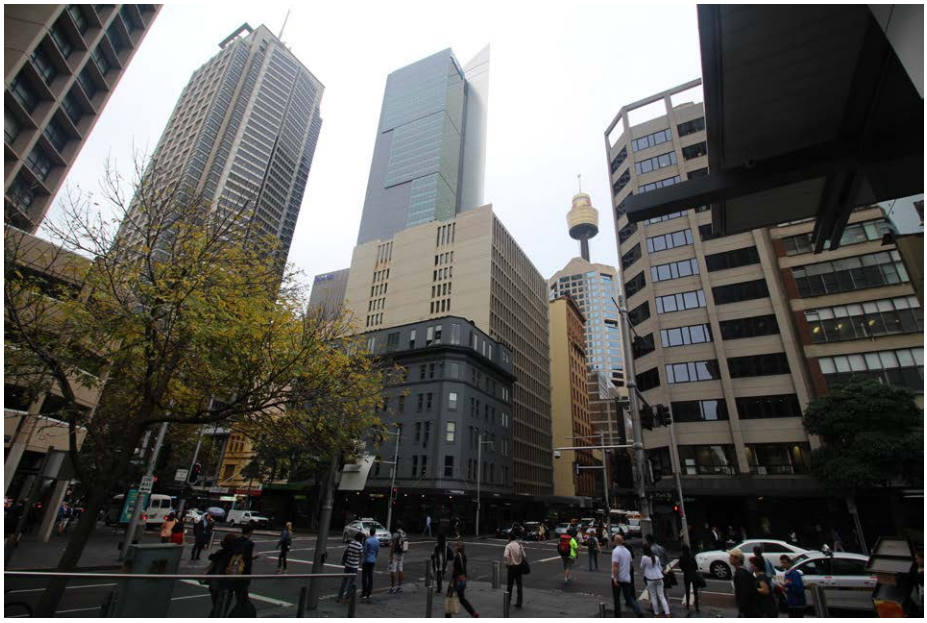
Operation: In this view the new station entry and active frontages would be located at street level creating visual interest and a consistency with the surrounding urban streetscape. The predominant alignment of the existing facades would be restored along Park Street and street trees reinstated. Despite the loss of heritage character it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 4: View northwest at the corner of Castlereagh and Park Streets

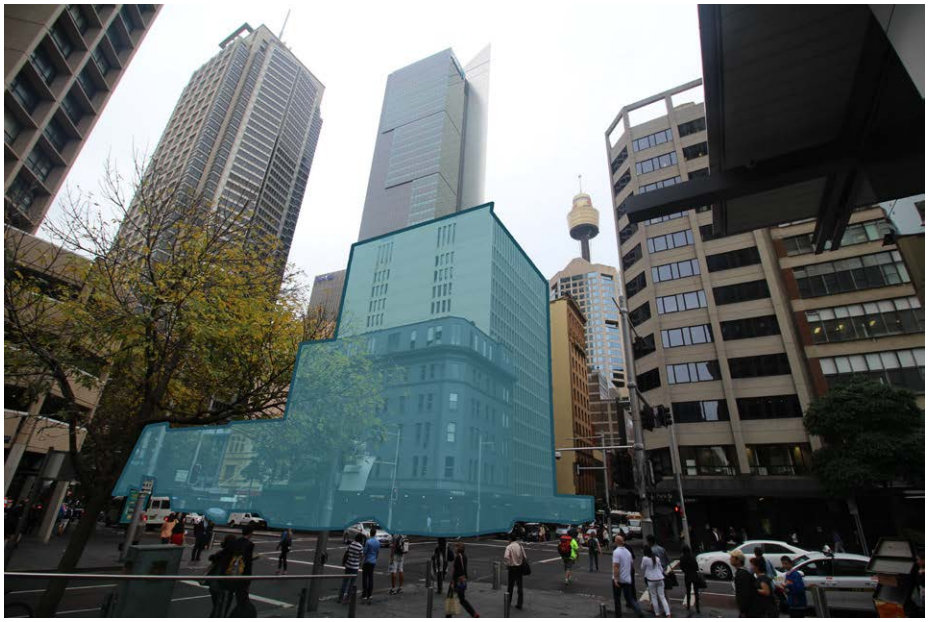
In this location the townscape has a mixture of building height, style, scale and age. This inconsistency is seen both at street level and in the skyline. Glimpses to the distinctive Sydney Tower are seen amongst the varied skyline. The site is located in the centre of this view and with buildings stepping down towards Park Street. The heritage facades contribute to the character of this view. The foreground is dominated by the heavily trafficked streetscape of Park Street with narrow footpaths, intermittent awnings, and occasional street trees providing some visual softening.

Construction: Buildings on the block between Pitt and Castlereagh Streets, including the 6 storey corner building at 48 Park Street ('The Windsor on the Park') which is prominent in this view, would be demolished. A construction site would be established including an acoustic enclosure on the site at the corner of Pitt and Park Street. Additional construction traffic would be seen traveling on and accessing the site via Castlereagh Street. It is therefore expected that the project would create a noticeable reduction in the visual amenity of this view of local visual sensitivity resulting in a **minor adverse visual impact** during construction.

Operation: The new station entry and active frontages would be seen at street level along Park and Castlereagh Streets. The predominant alignment of the existing facades would be restored, and street trees would filter the view. Despite the loss of heritage character, it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.



04



04A

04 EXISTING VIEW NORTHWEST AT THE CORNER OF CASTLEREAGH AND PARK STREETS

04A INDICATIVE EXTENT OF DEMOLITION

11 PITT STREET STATION

Assessment of daytime visual impact

05

05A

05 EXISTING VIEW NORTHEAST AT THE CORNER OF PARK AND PITT STREETS

05A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 5: View northeast at the corner of Park and Pitt Streets

This view includes a mix of historic facades and modern commercial development. Historic buildings create interest and contribute to the streetscape character. The built form steps up from these historic buildings to mid-rise developments, and to tall modern apartment buildings and office towers. Historic buildings punctuate the street corners and mirror a consistent scale and building setback which creates a sense of unity to the streetscape. Park Street, leading to Hyde Park, is lined by narrow fully paved footpaths with intermittent awnings and is heavily used by pedestrians throughout the day. Street trees along Park and Pitt Streets soften this highly urban environment somewhat.

Construction: The demolition of buildings along Park Street, between Castlereagh and Pitt Streets, including the McDonald's building (corner of Pitt and Park Streets) would be seen prominently in this view. An acoustic enclosure would be seen unobstructed on the corner of Pitt and Park Street in the centre, middle ground of this view. Construction traffic would be seen exiting the site on Park Street and traveling along Pitt Street. Due to the scale of surrounding development and visual absorption capacity of this streetscape it is expected that the project would create a noticeable reduction in the visual amenity of this view, which is of local sensitivity, resulting in a **minor adverse visual impact** during operation.

Operation: The station entry would be visible at street level along Park Street, with active frontages along Pitt Street. The predominant alignment of the existing facades would be restored along Pitt and Park Streets, and street trees would be reinstated. Despite the loss of heritage character it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Southern site

Viewpoint 6: View south along Pitt Street

This view includes a mix of low and high-rise office, commercial and apartment buildings, of varying ages and styles. There are a number of 4-6 storey buildings along Pitt Street with decorative historic facades. The historic Edinburgh Castle Hotel, which is prominent in this view, punctuating the corner of Pitt and Bathurst Streets. The busy one-way grid street pattern is typical of central Sydney, including four lanes of traffic along both Bathurst and Pitt Streets. The streets are flanked by fully paved footpaths with intermittent awnings that are heavily used by pedestrians throughout the day. There are no street trees adjacent to the project site.

Construction: Although the historic Edinburgh Castle Hotel would remain a prominent corner feature in this view, the demolition of surrounding buildings on Bathurst and Pitt Streets would be clearly visible, and adversely affect the setting of this historic building. An acoustic enclosure would be established on the site adjacent to Pitt Street and construction site access and vehicles would be seen along both Pitt Street and Bathurst Streets. Due to the scale of surrounding development and visual absorption capacity of this streetscape it is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during operation.

06

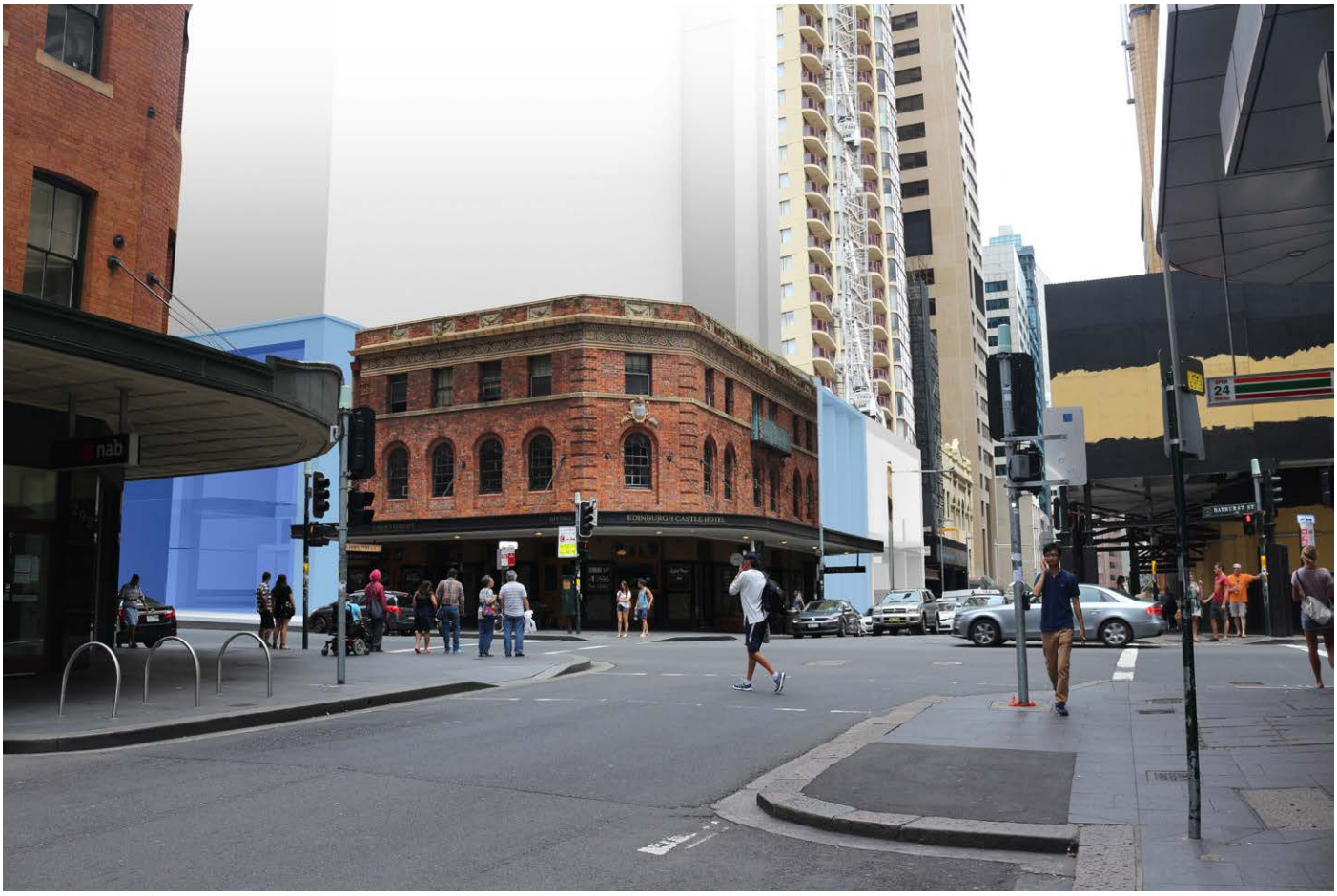
06A

06 EXISTING VIEW SOUTH ALONG PITT STREET

06A INDICATIVE EXTENT OF DEMOLITION

11 PITT STREET STATION

Assessment of daytime
visual impact



06B

06B ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

Operation: A station entry would be visible at street level on Bathurst Street. The visual prominence of the Edinburgh Castle Hotel would be restored and the alignment of the station would restore the strong built edge, aligning with the Hotel. It is expected that the project would not have a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 7: View west along Bathurst Street

This view includes a mix of street level retail, low and high-rise office, commercial and apartment buildings, of varying ages and styles. The historic Edinburgh Castle Hotel, which is glimpsed in the middle ground of the view, and the ornate façade of the 'Chemist' building contribute to a historic character, which is diminished by unsympathetic surrounding buildings. In the foreground, 'The Castlereagh' apartments, are currently under construction. Bathurst Street itself is heavily trafficked and four lanes wide in this location. The street is flanked by fully paved footpaths, sheltered by awnings, which are heavily used by pedestrians throughout the day. There are no street trees in this section of Bathurst Street, creating a highly urban view.

Construction: Although the historic Edinburgh Castle Hotel would remain, the demolition of buildings in the foreground along Bathurst Street would be prominent, and alter the setting of the historic building, particularly in street level views. The movement of construction traffic would also be visible, exiting from the project site along Bathurst Street. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: In this view, a station entry would be visible at street level along Bathurst Street. The former building line would be restored along Pitt and Bathurst Streets, aligning with the Edinburgh Castle Hotel. It is therefore expected that there would be no perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

07

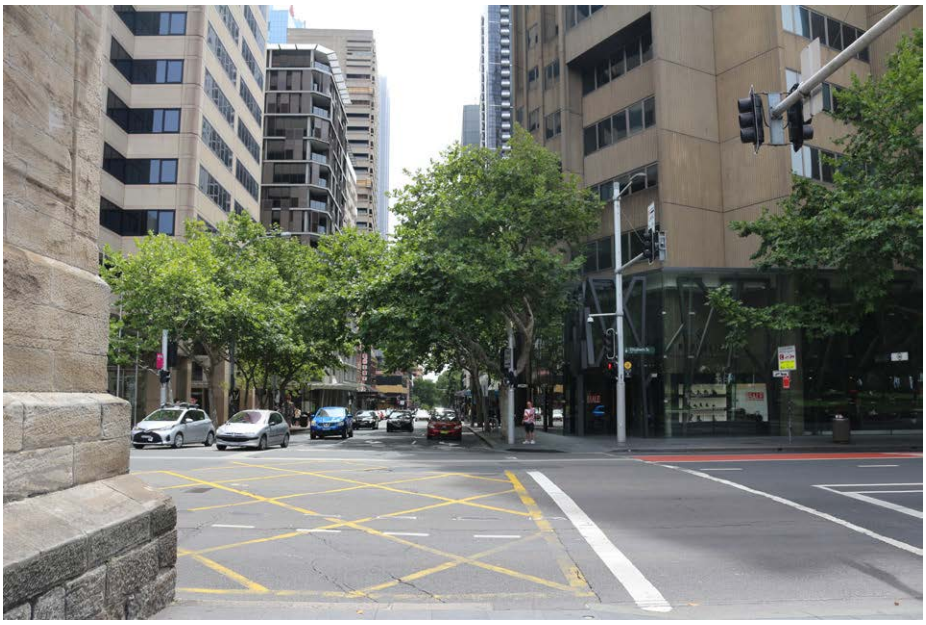
07A

07 EXISTING VIEW WEST ALONG BATHURST STREET

07A INDICATIVE EXTENT OF DEMOLITION

11 PITT STREET STATION

Assessment of daytime visual impact



08

08 VIEW WEST ALONG BATHURST STREET FROM HYDE PARK

Viewpoint 8: View west along Bathurst Street from Hyde Park

The view west along Bathurst Street from Hyde Park is identified as a 'primary' vista in the Hyde Park Plan of Management. In relation to 'primary' views this plan sets the objective to: *"Maintain unobstructed vistas between the park and significant buildings, monuments and streets on the park's boundaries (e.g. St Mary's Cathedral, the Obelisk, Macquarie Street)".* This view is located at the Obelisk.

Bathurst Street is lined by a mixture of low and high-rise office, commercial and apartment buildings of varying ages and styles creating a highly urban setting with a strong sense of visual enclosure.

Street trees filter views to the lower levels of these buildings and to the site, which can be seen in the background of the view. During 2015 there was a construction site on the corner of Bathurst and Castlereagh Streets which obstructed views to the project site somewhat.

Construction: The historic Edinburgh Castle Hotel would remain at the corner of Pitt and Bathurst Streets and be glimpsed in the background of this view. The demolition of buildings on Bathurst Street would also be seen in this view, however this work would not be prominent. The movement of construction vehicles would also be visible, accessing the site and traveling along Bathurst Street. It is expected that the project would not create a perceived change in the amenity of this view, which is of state visual sensitivity, therefore the project would result in a **negligible visual impact** during construction.

Operation: A station entry would be visible at street level on Bathurst Street, adjacent to the Edinburgh Castle Hotel. These elements would be seen in the background of this view and filtered through existing street trees. It is expected that the project would create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 9: View north along Pitt Street

The streets are lined by a mixture of low and high-rise office, commercial and apartment buildings, of varying ages and styles. A number of buildings (mostly 4-8 storeys) with decorative historic facades contribute to the character of this view. Of particular note are the heritage listed Former Sydney Water Head Office building (to the left of the view at 339-341 Pitt Street) and Edinburgh Castle Hotel (centre of the view). Pitt Street is flanked by fully paved footpaths, with intermittent awnings, creating a highly urban setting with a strong sense of visual enclosure.

Construction: The historic Edinburgh Castle Hotel would remain at the corner of Pitt and Bathurst Streets, whilst the demolition of buildings in the foreground along Pitt Street, including the seven storey Metro Hotel and adjacent Druids House, would be clearly visible. An acoustic enclosure would be established on the site and visible unobstructed in the middle ground of this view. The movement of construction vehicles would also be visible accessing the site and traveling along Pitt Street. It is expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, therefore the project would result in a **minor adverse visual impact** during construction.

Operation: Metro plant would be visible between the Edinburgh Castle Hotel and the Princeton Apartments. The existing building line would be reinstated along Pitt Street, matching in with the Edinburgh Castle Hotel. The built form edge would have a service character and not be recognised as part of the station and future works would potentially reinstate an active commercial entry at street level. It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

09

09A

09 EXISTING VIEW NORTH ALONG PITT STREET

09A INDICATIVE EXTENT OF DEMOLITION

11 PITT STREET STATION

Assessment of daytime visual impact

VIEWS ALONG (L-R) PARK STREET, DRUITT STREET, COCKLE BAY WHARF, WESTERN DISTRIBUTOR, PYRMONT STREET, PYRMONT SUBSTATION

Views to power upgrade temporary works, Pyrmont option

The power upgrade, connecting to the Pyrmont substation, would require temporary works within the road corridor west along Park Street, between Town Hall and the Queen Victoria Building, Druitt Street, under the Western Distributor, along the Cockle Bay wharf in the Darling Harbour precinct, along Union Street and north via Pyrmont Street.

Town Hall, the Queen Victoria Building and statue are important visual landmarks seen within this tree-lined section of Park and Druitt Streets.

The Western Distributor is elevated on viaduct and creates a vertical layering of streets and highway, which obstruct views between the city and Darling Harbour.

Views within the Darling Harbour precinct include important harbour views from the Cockle Bay wharf, views to harbourside restaurants, entertainment precinct and parkland. The Western distributor hovers above this public realm.

To the west of Darling Harbour the Western distributor and multiple exit ramps are elevated above Darling Drive and the light rail corridor. Pyrmont Street is a treelined street which includes a mix of modern and historic character buildings, including warehouses, terraces and 8-10 storey residential buildings, street cafes, commercial frontages and the Star Casino complex.

Construction: Views may include some road, footpath and plaza closures to accommodate the temporary trenching works. The existing trees would be retained.

It is expected, due to the minor scale of these works, that the project would create a noticeable reduction in the visual amenity of views from these streets and adjacent properties. Views along Park and Druitt Streets, in the vicinity of Town Hall and the QVB, and the route through Darling Harbour are of regional sensitivity. Views along the remainder of this route are of local

sensitivity. This would result in a **minor to moderate visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.

Views to power upgrade temporary works, Surry Hills

The power upgrade would require temporary works within the road corridor south along Pitt Street, east along Campbell Street, south along Mary Street, east along Albion Street and north along Riley Street to connect with the Surry Hills substation.

Pitt Street is a busy vehicular and pedestrian route. Views south along Pitt Street, south from Goulburn Street, include framed views to the Central Station clocktower.

Campbell Street extends under the rail corridor, via a single span sandstone arched bridge, into Surry Hills. This area of Surry Hills is characterised by two and three storey historic facades. With cafes and retail at street level, shaded by street trees.

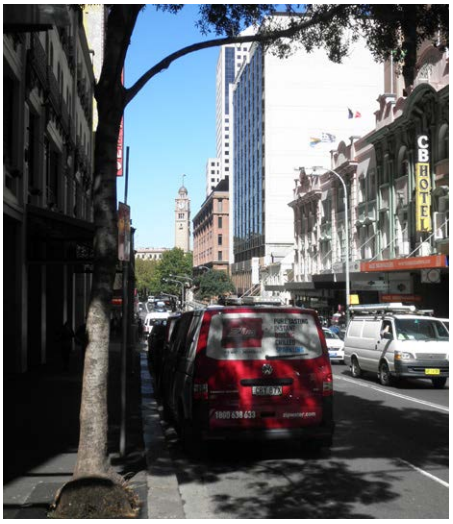
Mary Street is a narrow, two lane roadway, with mainly warehousing and residential units. At the intersection with Reservoir Street, and again at Albion Street, historic character corner buildings mark a commercial and cafe precinct.

Albion Street rises to the west, and includes a finer grain of built form with predominantly historic character terraces. A large park and a dense canopy of street trees add to the character of this street.

Construction: Views may include some road and footpath closures to accommodate temporary trenching works. Existing street trees within this corridor would be retained.

It is expected, due to the minor scale of these works, that the project would create a noticeable reduction in the amenity of views from these streets and adjacent properties. Views along this route are of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.



VIEWS ALONG (L-R) PITT STREET, CAMPBELL STREET, MARY STREET, MARY STREET, ALBION STREET, ALBION STREET, RILEY STREET TO SURRY HILLS SUBSTATION

11 PITT STREET STATION

Summary of impact

Assessment of night time visual impact

The setting of the Pitt Street Station works is considered to be an area of **E4: High district brightness**. This is due to its brightly lit CBD location where there is 24 hour activity and lighting from buildings and streets creating both direct light sources and a general skyglow around the project site.

Northern site

Construction: It is expected that there would be night works required at this location. The acoustic enclosure would contain much of the light from within the construction site. However, there would also be 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. This would result in the site, as well as adjacent areas extending along Pitt and Castlereagh Streets, being more brightly lit than the existing setting. This lighting would include both static construction site and task illumination and rotating beacon lights mounted on vehicles.

It is expected that this lighting would create a noticeable reduction in the amenity of views in this area of high district brightness, from surrounding streets and potentially from adjacent residential buildings. This impact is due particularly to the rotating beacon lights which have a warning function and would contrast visually with the traffic and building light sources typical of this setting. It is therefore expected that the project would result in a **negligible visual impact** during evening hours.

Operation: The station entry on Park Street would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment. Therefore, it is expected that the lighting of the project during operation would not create a change in the amenity of this areas, resulting in a **negligible visual impact** for this area during evening hours.

Southern site

Construction: Similarly, there would be night works required at the Pitt Street southern site, including 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting. The acoustic enclosure would contain much of the light from within the construction site. However adjacent areas extending along Pitt and Bathurst Streets would be more brightly lit than the existing site due to this activity. Although there are other construction sites in the vicinity of the project site, which would require similar night time access, the scale and duration of this work would be greater.

It is therefore expected that this lighting would create a noticeable reduction in the amenity of views in this area of high district brightness, from surrounding streets and potentially from adjacent residential buildings, resulting in a **negligible visual impact** during evening hours.

Operation: The station entry on Bathurst Street would be brightly lit 24 hours a day to accommodate station activities and for security after hours. This lighting would be consistent with the surrounding high district brightness environment. It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

Summary of impact

Landscape impact

During construction the project would result in a **minor adverse landscape impact**, and a **minor beneficial** impact. These impact are primarily a consequence of the street level impact of construction on pedestrian movement. During operation, the existing highly urban environment would be improved by street level activation and legible public transport access points.

Visual impact

There would be a **minor adverse visual impact** experienced in most views in the vicinity of the project during construction. These impact are derived primarily from the demolition of buildings, however, the mixed character of this precinct would largely absorb this visual change.

A **moderate adverse** visual impact is expected from Hyde Park in the view along Park Street. This is due to the higher visual sensitivity of this location.

There would also be temporary **minor adverse visual impact** experienced during the power upgrade works on the Surry Hills substation connection option, and **minor** to **moderate adverse visual impact** would be experienced on the Pyrmont substation connection option due to the sensitivity of views to Town Hall, the QVB, and Cockle Bay.

During operation there would be **negligible** visual impact created by the project due to the visual absorption capacity of the surrounding urban environment.

At night, there would be **negligible visual impact** during construction and operation. This is due to the enclosure of light within the acoustic enclosures and the surrounding setting of **E4: High district brightness** environment.

The following tables summarise the impact of the project.

Landscape Impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Pitt, Park and Castlereagh Streets	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
2	Pitt, Bathurst and Castlereagh Streets	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
	Northern site					
1	View southeast along Pitt Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
2	View south along Castlereagh Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
3	View northwest from Hyde Park at the corner of Park and Elizabeth Streets	Regional	Noticeable reduction	Moderate adverse	No perceived change	Negligible
4	View northwest at the corner of Castlereagh and Park Streets	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
5	View northeast at the corner of Park and Pitt Streets	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
	Southern site					
6	View southeast along Pitt Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
7	View west along Bathurst Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
8	View west along Bathurst Street from Hyde Park	State	No perceived change	Negligible	No perceived change	Negligible
9	View north along Pitt Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
	Views to power upgrade temporary works, Pyrmont	Local / Regional	Noticeable reduction	Minor adverse / Moderate adverse	N/A	N/A
	Views to power upgrade temporary works, Surry Hills	Local	Noticeable reduction	Minor adverse	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Northern site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible
2	Southern site	E4: High district brightness	Noticeable reduction	Negligible	No perceived change	Negligible

12 CENTRAL STATION

Planning context

The project site at Central Station includes works at the northern concourse, platforms 13-15, a portion of platforms 4 to 23, an area within the Sydney Yards, and a site on Regent Street.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the Central Station site.

Sydney Local Environmental Plan, City of Sydney, 2012

The site includes and is in close proximity to several conservation areas and heritage listed buildings, monuments, public open spaces and landscape features such as:

- Central Railway Station group (including buildings, station yard, viaducts and interiors)
- Former Parcels Post Office
- Mortuary Station
- Prince Alfred Park (including fence, tree planting, ground and coronation centre) and adjacent Cleveland Gardens Conservation Area
- Former Co-Masonic Temple, Regent Street.

This assessment will therefore need to consider the *"settings and views"* of these heritage items under the 'Heritage Conservation' clause (5.10).

The site is primarily zoned SP2 - Infrastructure. The objectives of this zone are:

"• To provide for infrastructure and related uses. ... [and] ...

- *To prevent development that is not compatible with or that may detract from the provision of infrastructure."*

There are no specific requirements relating to urban design and visual amenity.

Areas to the west and north of Central station are zoned B8 - Metropolitan Centre, the objectives of this zone that are relevant to this assessment include: *"To encourage the use of alternatives to private motor vehicles, such as public transport, walking or cycling. [and] ... To promote uses with active street frontages on main streets and on streets in which buildings are used primarily (at street level) for the purposes of retail premises."*

To the east, Surry Hills is zoned B4 - Mixed Use, which includes the objective: *"To integrate suitable business, office, residential, retail and other development in accessible locations so as to maximise public transport patronage and encourage walking and cycling.*

To the southeast, Prince Alfred Park is zoned RE1 - Public Recreation. The relevant objectives of this zone include: *"To provide a range of recreational settings and activities and compatible land uses. ... To provide links between open space areas. [and] ...To retain and promote access by members of the public to areas in the public domain"*

Clause 4.3 (Height of buildings) promotes scale and massing of new development that is "*appropriate to the condition of the site and its context…[and] appropriate height transitions between new development and heritage items and buildings in heritage conservation areas".* It does not specify particular heights for the project site.

Sydney Development Control Plan, City of Sydney, 2012

The Sydney DCP identifies a number of Special Character Areas (SCAs) in central Sydney and Neighbourhood Character Areas (NCAs) outside the Sydney CBD. In this precinct, the Railway Square / Central Station SCA and Surry Hills NCA are of relevance. The desired future character and relevant supporting principles identified for these localities are summarised in the following paragraphs.

<u>Railway Square / Central Station Special Character Area</u>

The Railway Square / Central Station area is defined as a "*major visual and functional gateway to the city".* The area is characterized by a "*concentration of low-medium scale (3–7 storeys) heritage buildings and streetscapes, a series of varied interrelated open spaces and a rich mix of*

uses and activities, including commercial, industrial, institutional, residential and hotels".

Key principles for this area in relation to this assessment include:

- *"Maintain and enhance the visual prominence and landmark significance of the clock tower of Central Railway Station in the views and vistas from various points, particularly along Broadway and George Street, when approaching or departing the city;*
- *New development is to maintain and enhance vistas to Central Railway station;*
- *Reinforce the urban character and scale of Railway Square;*
- *Enhance the pedestrian amenity of Railway Square and environs".*

Surry Hills NCA

The project site is located adjacent to the Prince Alfred Park East locality within Surry Hills NCA. Key principles for this area in relation to this assessment include:

- *"Development is to respond to and complement heritage items and contributory buildings within heritage conservation areas, including streetscapes and lanes.*
- *Retain street corridor views along east-west streets to significant parkland and the mature trees of Prince Alfred Park.*
- *Maintain the visual relationship of Cleveland House and Prince Alfred Park, and also from Cleveland House to surrounding open spaces and streets.*
- *Retain the existing street setbacks and alignment in response to the original street grid pattern of the area."*

The following assessment will consider these heritage listings in relation to their landscape and visual sensitivity.

The DCP also identifies urban vegetation as one of the City's "*most important assets".* Under Clause 3.5.2, the mitigation strategy will need to ensure *"tree canopy cover is considered … and provided appropriately".*

It also requires that development should not ... *"impede views from the public domain to highly utilised public places ... heritage buildings and monuments including public statues, sculptures and art."* It also identifies the objective to *"maximise street life and ... avoid interruptions to views and vistas along streets."* (Clause 3.1.3)

These requirements will be considered in the assessment of landscape and visual impact.

Central Station Strategy – Towards 2060, NSW Department of Transport (Rail Corp) and GHD, 2011

GHD and the NSW Department of Transport (Rail Corp) developed a master plan for Central Station as a guiding framework for the development and evolution of Central Station with a focus on the tangible spatial requirements of the future. The vision is *"Planning a World Class Transport Hub"*. The key themes are:

- an emphasis on improving pedestrian connections and quality of pedestrian experience such as legibility, amenity and directness
- using Station redevelopment as a catalyst for improvement of surrounding areas such as street upgrades, pedestrianisation and traffic calming
- retention of historical / heritage features

Key projects contained in the Central Station Strategy relevant to the character of this precinct are:

- expand sheltered concourse at Eddy Square to enhance northern gateway into station, improve pedestrian space and accessibility to station while activating the space with improved retail uses
- redevelopment along southern edge of Eddy Avenue to invigorate precinct and improve streetscape and complement iconic northern façade of station
- widening and improvement of south side of Eddy Avenue footpath to provide attractive and DDA compliant path
- underpass links at Eddy Avenue to Belmore Park, Elizabeth Street to Centennial Plaza and Chalmers Street to Elizabeth Street to accommodate pedestrian crossing and vehicle-pedestrian conflict
- improvement of Chalmers Street Transit Interchange to accommodate increased public transport interchange activities and increase pedestrian safety. This includes bus and proposed light rail and cycling facilities
- development over Central Station on the south end of Chalmers Street to include seven storey commercial building, ground level retail and provide both activated edge and opportunities for private investment
- Rawson Place and Eddy Avenue to be reconfigured for a light rail terminus to allow to adequate and efficient pedestrian interchange facilities and opportunity to activate northwest corner of Central

12 CENTRAL STATION

Existing environment

REGENT STREET

Existing environment

At Central Station the project site is set within a rich and diverse townscape. It is characterized by a concentration of low to medium scale (3–7 storey) heritage buildings and streetscapes juxtaposed with modern and contemporary office and apartment towers, a series of varied interrelated and historic open spaces, and a large mix of uses and activities, including commercial, industrial, institutional, residential and hotels.

Central Railway Station was opened in 1855 and has symbolic importance as the focus of the NSW rail system. The historic station complex was fully completed in 1921 with the addition of the clock tower, which today acts as a landmark contributing strongly to the visual prominence of the station and Railway Square.

Railway Square is the major visual and functional gateway to the city from the west and south. The intersection of George and Pitt Streets is one of Sydney's busiest and largest intersections, which has traditionally dispersed traffic and pedestrians into and out of the city. The Square has functioned for over 150 years as a railway station entry and still acts as a major transport interchange node, allowing change between buses, taxis, private cars and rail. Railway square itself includes sandstone walls and a ramping roadway, which reaches a colonnaded station entry. A parkland occupies the main square, with a wide footpath leading to the station entry flanked by trees, framing views to the main station buildings and clock tower.

Opposite the station on a wedge of land created by Lee and George Streets is a plaza that is also called Railway Square. This plaza is the main bus interchange area for the station and is connected to the station by underground pedestrian tunnels.

The U-shaped Central Station building faces Eddy Avenue and is the location of one of the main station entrances. This includes a ramped entry leading from Eddy Avenue.

The entrance is marked by a mature London planetree. Several shopfronts flank this entry, located both within the ground floor of the former Lost Property building and alongside an elevated sandstone rail bridge. This pedestrian plaza provides a transition from the vehicular dominated Eddy Avenue to the Station entry and northern concourse.

The central part of the project site would require Platforms 13 to15 and a portion of Platforms 4 to 23. These station platforms are seen from adjacent platforms to both the east and west, and are characterised by their Victorian, corrugated iron roof canopies. From the south, views across Platforms 13, 14 and 15, include the main Central Station clock tower and associated sandstone buildings, and the city skyline beyond.

Rail yards are located to the south of the platforms and are surrounded by several railway lines entering Central station from the south and west. This area has an open, working railway character with scattered heritage buildings, stone walls and bridges. This area of the station merges visually with the surrounding railway lines, characterised by corridors of ballast, and a confluence of overhead line and support structures.

To the southeast of the station, along Chalmers Street, is the 'Plaza Iberoamericana', which includes a series of busts of famous Latin American heroes set within a formal row of conifer trees.

Prince Alfred Park is a historic parkland located on the southern side of Central Station, within Surry Hills. This park is bounded by Chalmers Street, Cleveland Street and the rail yards. Trees and elements of the layout from the original 1870 design still exist on the site today including Moreton Bay fig trees arranged as an informal row along the boundaries. The central avenue of London planetrees and Brush box date from the inter-war period, as do the Washington Palms and Canary Island Date Palms. The park includes tennis and basketball courts, childrens play areas and a swimming pool complex with cafe.

Regent Street is a wide, heavily trafficked five lane road, located along the western side of Central Station. It connects Chippendale to the Pitt and George Street intersection. The project includes a site currently occupied by five double storey terrace houses, located between Regent Street and the Central Station railway land. These terrace houses are located alongside a two storey service station building to the south, and a Masonic Temple, contemporary three storey residential building, and historic Mortuary Railway Station building to the north. The historic Mortuary Railway Station building and associated gardens, are a local visual landmark.

These buildings largely obstruct views to the railway from the commercial and residential buildings on the western side of Regent Street, and from the pubs and cafes of Meagher Street, opposite.

This area is currently undergoing gentrification as new investment modernizes rundown buildings and large commercial and residential tower developments are developed within Chippendale to the west.

The urban setting of the Central Station is continually changing. The Sydney CBD and South East Light Rail project (CSELR), currently under construction, would extend from George Street along Eddy Avenue, to Central Station, and to Surry Hills via Chalmers Street and Devonshire Street. It includes major interchanges with heavy rail and bus services at Central Station, on Eddy Avenue and Chalmers Streets, as well as public domain improvements including possible new public spaces, paving, trees, lighting and street furniture.

Another key development project in this precinct, which would substantially affect the existing visual setting, includes the proposed Central to Eveleigh Transformation Program. This is a 30-year project that aims to gradually transform 80 hectares of largely under-used government owned land in and around the rail corridor from Central to Macdonaldtown and Erskineville stations. It involves the development of land to provide thousands of additional homes and jobs and new open space.

01


02

01 CENTRAL STATION SUBURBAN PLATFORM 16
02 PRINCE ALFRED PARK
03 MAIN STATION BUILDING, VIEW FROM BELMORE PARK


03

12 CENTRAL STATION

Character and components of the project

Character and components of the project

At Central Station the project comprises a number of interconnected sites that would be used across a staged construction program. The project would cover areas within the existing station footprint and in adjoining areas. The surface works components of the project site are the:

- Northern concourse, and
- Sydney Yard and platforms.

This summary describes the construction and operation phases of the project at these two locations.

Northern concourse

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Demolition of buildings flanking the eastern side of the northern concourse and station entry
- Removal of street trees impacted by the site and for site access including approximately:
  - 1 London planetree on Eddy Avenue
  - 2 trees within the Northern concourse plaza
- Establishment of a site compound including site perimeter hoardings and site fencing
- Construction site access via Platform 15 access ramp

Operation phase

The following elements and activities are likely to be experienced during operation:

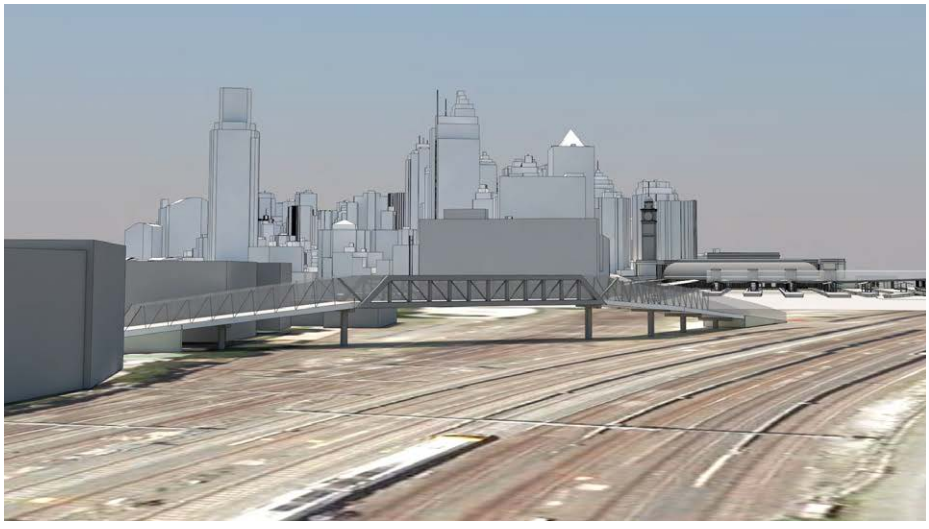
- Platform 15 access ramp
- Active frontages along the Eddy Avenue concourse

Sydney Yards and platforms

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site at Platforms 13-15, within the Sydney Rail yards, and at Regent Street, including demolition of:
  - existing platforms 13, 14 and 15 and associated track, and overhead wiring gantries
  - 2 storey terraces at 56-62 Regent Street to provide an access point to the Sydney Yards
- Site offices, amenities, laydown area, workshop, material and plant storage areas
- Removal of street trees impacted by the site and for site access including approximately:
  - 2 trees on Regent Street Mobile cranes and other large plant (e.g. excavators)



SYDNEY YARDS ACCESS BRIDGE CONCEPT

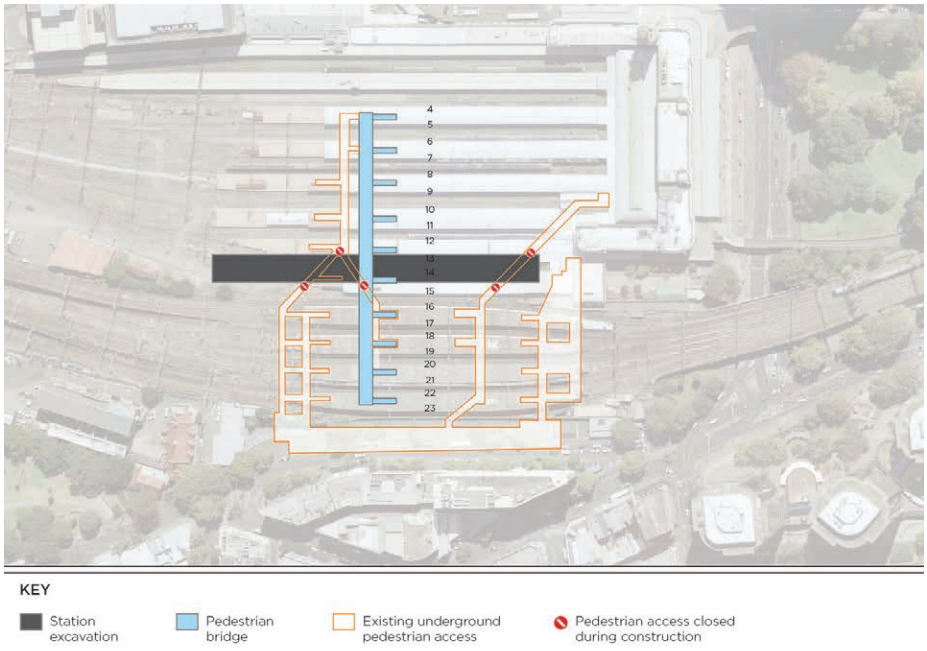
- Construction of a temporary pedestrian overbridge between platforms 4 and 23. This temporary structure would include:
  - support piers located on remaining platforms
  - pedestrian concourse positioned above the existing platform canopy structures
  - new stair connections on each platform
  - removal of some existing canopy sections
  - hoardings on station platforms to enclose bridge construction works
- Temporary closure of the Devonshire Street pedestrian tunnel
- Construction of bridge to access Sydney Yards and platforms from Regent Street
- Construction vehicle access via Regent Street

TEMPORARY PEDESTRIAN BRIDGE CONCEPT

Operation phase

The following elements and activities are likely to be experienced during operation:

- Reinstated platforms 13, 14 and 15 including track and overhead wiring gantries
- Services building (approximately 7m in height) at the southern end of the platform
- Reinstated station canopies and platform surface on all other platforms
- Sydney Yards access bridge with maintenance vehicle access via Regent Street



TEMPORARY PEDESTRIAN BRIDGE LOCATION

Power upgrade

- Open trench construction within the existing road reserve along Eddy Avenue, Elisabeth Street and Hay Street to the Belmore Park substation (Approximately 600m)

12 CENTRAL STATION

Sensitivity levels

Sensitivity levels

The following list summarises the landscape and visual sensitivity for the project site and main viewing areas across the study area.

Northern concourse

The northern concourse provides a pedestrian plaza and retail space, framing the northern entry to the station. Central to this space is the former Lost Property Building, and colonnaded retail within the heritage Central Station group of buildings. This concourse is heavily used by a large number of pedestrians. This landscape and views are therefore considered to be of **regional sensitivity.**

Central Station

Central Station has numerous State heritage listed buildings including the clock tower, which today acts as a landmark contributing strongly to the visual prominence of the station and Railway Square. It is one of the busiest stations on the network and attracts commuters and visitors from across the state and interstate. The landscape and views of the main heritage listed buildings are considered to be of **state sensitivity**, whereas the landscape and views from moving trains and the station platforms and to associated heritage buildings, such as the Mortuary Station, are considered to be of **regional sensitivity.**

Pitt Street and Eddy Avenue

These streets frame the colonnaded sandstone architecture of the Central Station Railway Station Group (State heritage listed). They are the focus of busy vehicle and passenger activity with kiss and ride zones, active arcaded street frontages and entrances to Central Station. The location is heavily used by locals and visitors and is lined in this area by a mix of commercial, retail, hotel and hostel accommodation. The landscape and views of these streets are considered to be of **local sensitivity.**

Belmore Park

Belmore Park is one of Sydney's earliest gazetted parks and is an important historic landscape, and recreational resource within the city. The park forms a forecourt to the landmark Central Station building and a recreational space within this highly urban area of the city. Belmore Park has a State heritage listing and includes many designed landscape and built features, including treed avenues and a bandstand. The landscape and views of Belmore Park are considered to be of **regional level sensitivity.**

Chalmers Street

Chalmers Street, between Rutland and Bedford Streets, has an esplanade frontage to Prince Alfred Park, and is lined with mature Fig trees and a number of State heritage listed buildings. This is a busy one-way thoroughfare between Sydney's inner southern suburbs and the central business district via Elizabeth Street. It is also a well-used corridor for pedestrians accessing Central Station from the east, it contains a bus interchange and has a direct entry to the heavily utilised Devonshire Street pedestrian tunnel. The landscape of Chalmers Street and its views are considered to be of **local sensitivity.**

Prince Alfred Park

Prince Alfred Park is an important recreational resource within the southern part of the CBD and has both historical and aesthetic value to the local community. It is a gathering place, highly valued by residents and visitors to the area. This park has a state heritage listing, and a noteworthy framework of mature vegetation (London planetrees, Oaks, Brush box, Phoenix palms, Moreton Bay figs, Kauri pines) which date to the original c.1869 landscape design. The landscape and views of Prince Alfred Park are considered to be of **regional level sensitivity.**

Regent Street

Regent Street is a busy four lane thoroughfare between the city and the inner south, Botany and the airport. In the vicinity of the site, there is a mix of two and three storey character residential buildings and businesses including a garage and petrol station. This area is experiencing inner city urban renewal and has a mixed character with both rundown and newly renovated buildings. The street is primarily a vehicular route with a few street trees. This streetscape and its views are considered to be of **local sensitivity.**

Assessment of landscape impact

In the vicinity of the project, the Northern concourse has been identified as potentially being impacted by the project.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Northern concourse

Construction: The eastern edge of the northern concourse would be required for construction site access. This work would require the removal of some retail fronting the concourse and diversion of footpaths around the works during some periods of construction. It is likely that pedestrian connectivity within this precinct would be impacted at times, and the legibility of the station entry from the north, may be adversely impacted. A number of street and plaza trees may be removed to accommodate the works, reducing the shade cover and reducing the comfort level for pedestrians somewhat.

It is expected that there would be a noticeable reduction in the landscape quality of this urban plaza which is of regional sensitivity. This results in a **moderate adverse landscape impact** during construction.

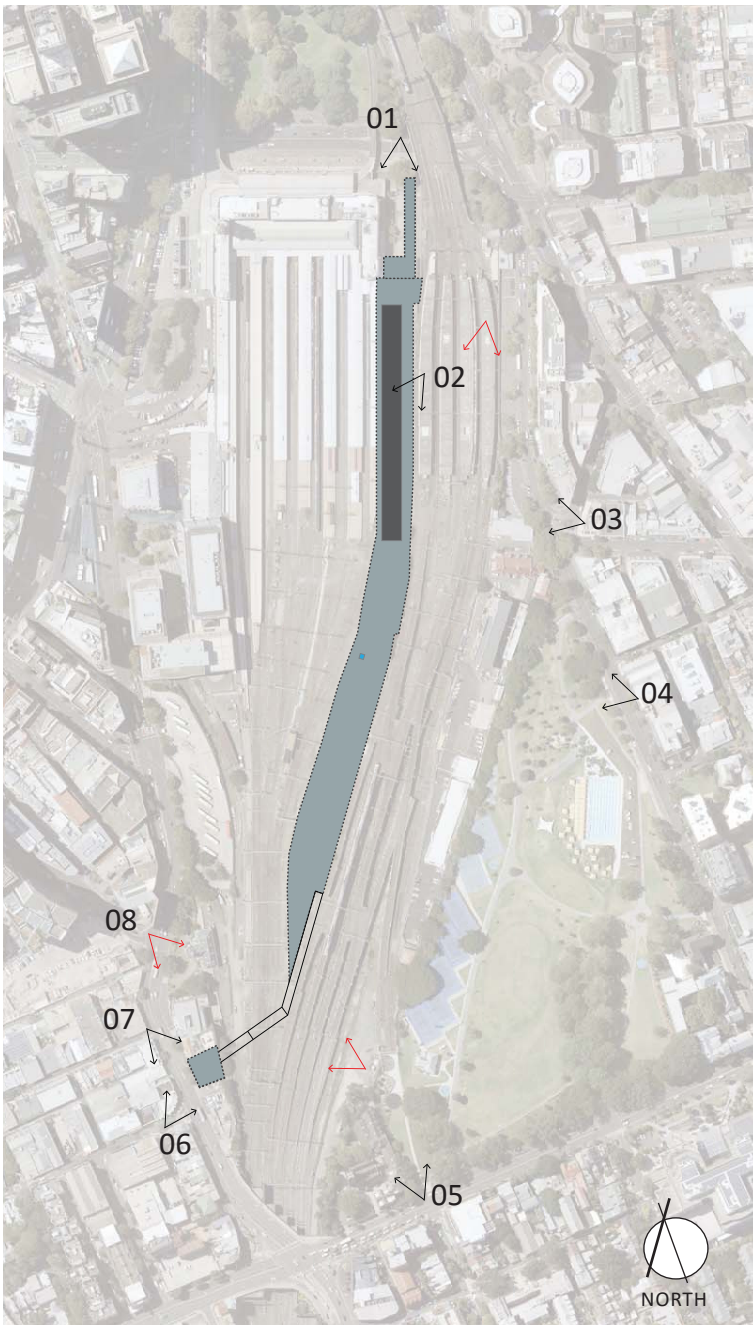
NORTHERN CONCOURSE

Operation: The functioning of this precinct during operation would be restored as at street level there would be reinstated footpaths, street level activation, and clear station entry.

It is expected that there would be no perceived change in the landscape quality of this streetscape which is of regional sensitivity. This results in a **negligible landscape impact** during operation.

12 CENTRAL STATION

Assessment of daytime visual impact



KEY

Viewpoint location

Construction area

Artists impression

Open shaft

VIEWPOINT LOCATION PLAN

Assessment of Daytime Visual Impact

The following viewpoints were selected as representative of the range of views to the site and the proposed development.

- Viewpoint 1: View south from Eddy Avenue to the northern concourse
- Viewpoint 2: View south from platform 16
- Viewpoint 3: View west from Chalmers and Devonshire Streets
- Viewpoint 4: View west from Chalmers Street
- Views from the rail corridor
- Viewpoint 5: View west from Prince Alfred Park
- Views from the rail corridor
- Viewpoint 6: View northeast from Regent Street
- Viewpoint 7: View southeast from Meagher Street
- Viewpoint 8: View east from Regent Street to Mortuary Station
- Views to power upgrade temporary works

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Viewpoint 1: View south from Eddy Avenue to the northern concourse

This view, across the heavily trafficked Eddy Avenue, includes the sandstone Central Station buildings and bridges framing the northern concourse. This concourse directs the view to the northern station entry in the background. The view is partly filtered by a mature London planetree in the foreground on Eddy Avenue. The historic facades of the site contribute to the character of this precinct.

Construction: The demolition of part of the northern concourse, including shopfronts to the southeast (left of view), would be seen in the middle ground of the view. Site fencing and hoarding would be used while a site access to the Sydney Yard would be established. It is expected that the project would create a noticeable reduction in visual amenity of this view, which is of local sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: The northern concourse would be reinstated and a permanent maintenance access to the Sydney Yards would remain. It is expected, therefore, that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

01

01 VIEW SOUTH FROM EDDY AVENUE TO THE NORTHERN CONCOURSE

12 CENTRAL STATION

Assessment of daytime visual impact

02

02A

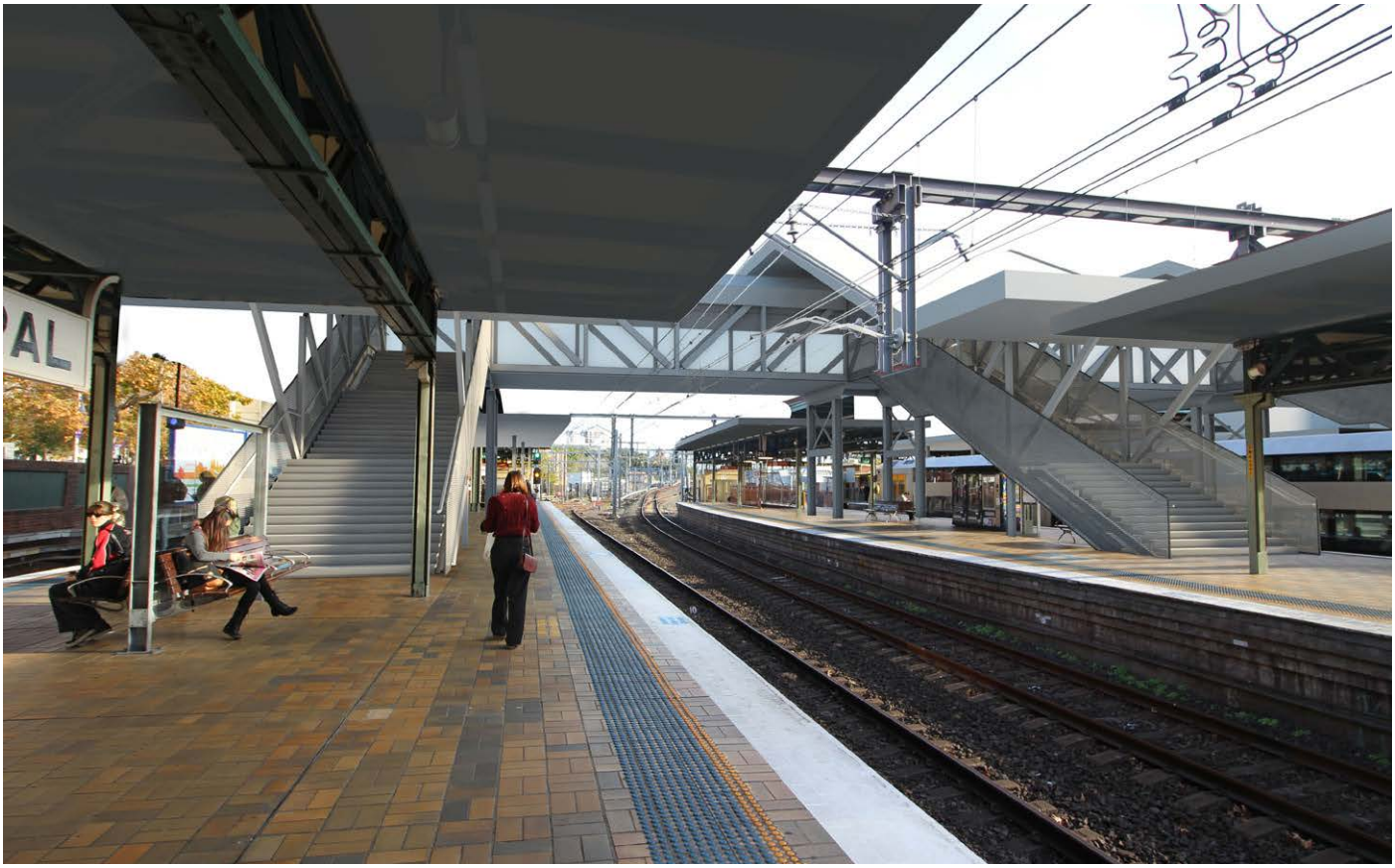
02 VIEW SOUTH FROM PLATFORM 16
02A VIEW SOUTH FROM PLATFORM 22

Viewpoint 2: View south from platform 16

This view from platform 16 shows the adjacent regional platforms and Sydney Yards in the middle to background of the view. A collection of heritage buildings and trees, within the rail yards, partly obstruct views to the Yards from this location. The platforms and platform shelters, trains and overhead line infrastructure create a visually diverse and cluttered environment. Despite this clutter this view is unified by the parallel lines of the platform, tracks, overhead lines and gantries. This view is part of a wider panorama, which includes the heritage buildings of the Station, contributing to the overall heritage character of the view.

Construction: This view would change due to the demolition of platforms 13, 14 and 15, and part of the platform canopies and overhead lines in the middle ground of the view. A temporary pedestrian bridge would be seen under construction, including works on the platform itself for supports and stair structures. This temporary bridge would then be seen as it is used, elevated over the site (right of view) and platform 16 (left of view). This element would create some overshadowing of the station platform and partly enclose the view so that the sky and skyline buildings would be less visually prominent. It is also likely that the Sydney Yards access bridge would be visible, being constructed in the background of the view, filtered through overhead line infrastructure.

The project would be somewhat absorbed into the visually cluttered character of the rail yards. The project would therefore create a noticeable reduction in the amenity of this view, which is of regional sensitivity, resulting in a **moderate adverse visual impact** during construction.



02B

02B VIEW FROM PLATFORM 22 - ARTIST'S IMPRESSION SHOWING TEMPORARY PEDESTRIAN BRIDGE

Operation: The platforms would be reinstated and the temporary pedestrian bridge would have been removed. This would restore the character of the existing view, and the prominence of the station platform buildings and skyline features within the view.

It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

12 CENTRAL STATION

Assessment of daytime visual impact

03

03 VIEW NORTHWEST FROM THE CORNER OF DEVONSHIRE AND CHALMERS STREET

Viewpoint 3: View west from the corner of Devonshire and Chalmers Streets

This view includes the western entry to Central Station and the Devonshire Street Tunnel in the middle ground of the view. The heritage Railway Institute building can be seen to the south (left of view) and station platforms are visible to the north (right of view). The Central Station clock tower, an important visual landmark, is visible and seen within a CBD skyline view. Along the eastern edge of the station the trees of the Plaza Iberoamericana obstruct views to the station platforms. This view would be transformed as the CBD and South East Light Rail project (CSELR) introduces a light rail corridor to Devonshire Street which would cross this view as it passes to the north and along Chalmers Street, where a transport interchange will be constructed adjacent to Central Station.

Construction:

It is likely that there would be glimpses to the temporary pedestrian bridge, rising above the station platforms, in the middle to background of this view. This structure would be partly filtered by trees and seen across the construction works of the CSELR project. It would not obstruct views to the clock tower, which would continue to be seen, rising above the station in the background.

Due to the character of construction works associated with the CSELR project, and intervening plaza trees and station elements, it is not expected that the project would create a noticeable reduction in the visual amenity of this view. As this is a view of local sensitivity the project would result in a **minor adverse visual impact** during construction.

Operation: There would be no project works visible from this location during operation. Therefore the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 4: View west from Chalmers Street

This view includes the heavily trafficked Chalmers Street in the foreground of the view. Prince Alfred Park comprises the middle ground and focal point of this view, and there are glimpses to the Sydney Rail yards in the background. This view is indicative of the character of the outlook from residential properties to the eastern side of Chalmers Street. This view is characterised by the mature trees and lawns of Prince Alfred Park and at the Railway Institute building (right of view). The station is largely filtered by this vegetation, and glimpses to the built skyline are visible in the background of the view. To the left of view a landscaped mound hides a pool complex.

Construction: The foreground and middle ground of this view would remain largely unchanged. However, it is likely that within the rail yards the Sydney Rail access bridge would be visible, crossing over the top of existing rail infrastructure. This element would be seen under construction, in the background of this view and filtered through trees within Prince Alfred Park.

Due to the distance, intervening elements and existing visual context of the railyards, it is expected that the project would not create a perceived change in the amenity of this view, which is of local sensitivity, resulting in a **negligible visual impact** during construction.

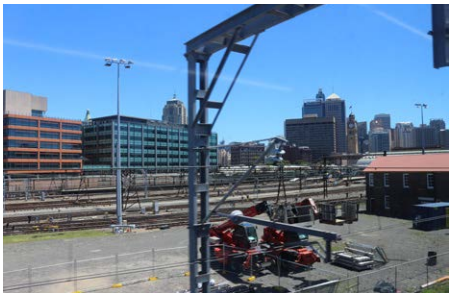
Operation: During the operation the completed Sydney Rail access bridge would be glimpsed in the background of the view. The rail yards would be filtered by vegetation with Prince Alfred Park and seen within the context of existing railyards. It is therefore expected that the project would not create a perceived change in the amenity of views from this location, which has a local visual sensitivity, resulting in a **negligible visual impact** during operation.

04

04 VIEW WEST FROM CHALMERS STREET

12 CENTRAL STATION

Assessment of daytime visual impact



VIEWS FROM THE RAIL CORRIDOR

Views from the rail corridor

In views from trains approaching Central Station from the south, the highly developed and broad rail corridor dominates the foreground. Elements within this corridor include moving trains, rail track and ballast, catenary structures and overhead lines, rail maintenance facilities and equipment. Numerous arched brick bridges raise and lower tracks to varying levels and obstruct some views within the corridor. Beyond the rail corridor, to the northwest there is a densely urban cityscape and to the southwest, is the leafy parkland of Prince Alfred Park, in Surry Hills.

There are a number of heritage building scattered within and surrounding the rail corridor. The focal point of views from approaching trains, however, is the heritage Central Station buildings including the main station building, prominent clocktower and platform canopy structures. A number of other historic buildings can be seen across the corridor, including the Rail Institute building on Chalmers Street, St Andrew's Greek Orthodox Church on Cleveland Street, and Mortuary Station on Regent Street.

Construction: In the vicinity of the Station, the removal of platforms 13, 14 and 15, a number of heritage buildings and vegetation within the corridor, storage of construction material and equipment would be visible from approaching trains. A construction site would be visible at the former location of platforms 13 to 15, enclosed by hoarding and including large plant and equipment. A temporary pedestrian bridge would be seen under construction and in use, elevated above the platform canopy structures, including works on each platform to allow for the construction of supports and stair structures. This temporary bridge would partly obstruct views towards the station platforms and enclose views from the aboveground station platforms.

The Sydney Yards access bridge would be visible, being constructed within the rail corridor to the south of the station

buildings. This would include demolition and construction works that would be seen from most trains travelling to and from the south at ground level. The bridge would be a part of a series of views which create the journey to and from the station and would be seen whilst moving. The bridge would obstruct views within the corridor and to surrounding visual features, including Mortuary Station, St Andrew's Greek Orthodox Church, and the main Central Station building group and clocktower. This element would be seen within a context of bridges, overhead line infrastructure and moving trains.

It is expected that the project would create a noticeable reduction in the amenity of views from trains using this corridor, which is of regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: As a permanent structure, the Sydney yards access bridge would be seen in views from trains as they approach and pass under the bridge. This structure would obstruct some views including glimpsed views to Mortuary Station, St Andrew's Greek Orthodox Church tower, and longer duration views to the main Central Station heritage buildings and clocktower on the southerly approach to the station. From some routes, however, existing bridge structures and level changes obstruct views to these local visual features and would also reduce the visibility of the Sydney yards access bridge.

In views from trains approaching the station from the south, the services building at the southern end of the Metro platform would obstruct views to the station platforms, and from some locations, views to the main Station buildings.

Despite the visual absorption capacity of the rail corridor, due to the large scale of these structures, it is expected that the project would create a noticeable reduction in the amenity of views from the rail corridor. These views are considered in some parts to have a regional visual sensitivity, resulting in a **moderate adverse visual impact** during operation.

EXISTING VIEW ACROSS RAIL CORRIDOR

VIEW ACROSS RAIL CORRIDOR, ARTIST'S IMPRESSION SHOWING SYDNEY YARDS ACCESS BRIDGE

12 CENTRAL STATION

Assessment of daytime visual impact

05

05 VIEW WEST FROM PRINCE ALFRED PARK

Viewpoint 5: View west from Prince Alfred Park

In views from the southwestern corner of Prince Alfred Park, the main Central Station buildings and the clocktower can be seen in the background of this view. This view is glimpsed and framed by trees in the foreground. It is likely that this is a designed view, however, the clocktower blends into the modern backdrop of high-rise CBD buildings, reducing the prominence of this visual feature. There are also a number of intervening elements including the basketball half-court fencing, catenary and overhead lines which obscure this view to the station buildings.

Construction: The temporary pedestrian bridge would be seen being erected and whilst in use, extending across and above the station platforms, obstructing the lower heritage station buildings. Works within the station platform site, including construction of a services building, would also be visible. The western extent of the Sydney Rail access bridge may also be seen, descending to meet the rail yards within the centre of the corridor.

Due to the distance, intervening elements and existing visual context of the railyards, it is expected that the project would not create in a perceived change in the amenity of this view. This view is of regional sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The completed Sydney Rail access bridge would continue to be seen in the background of the view, however, this would be largely visually absorbed into the surrounding rail corridor landscape. At the proposed Metro station platform, there would be a services building rising above the platform level and obstructing views to the station platforms and lower level of the heritage station buildings beyond.

Due to the distance, intervening elements, and retention of the open view to the clocktower, which is the focal point of this view, it is expected that the project would not create a perceived change in the amenity of views from this location. This view has a regional visual sensitivity, resulting in a **negligible visual impact** during operation.

Viewpoint 6: View northeast from Meagher Street

The existing row of terrace houses within the centre of the view have a generally consistent height and building line which creates a sense of enclosure to the street, and a visual edge to this precinct. The built form seen within this view has a heritage character, with the exception of the petrol station (right of view), which creates visual interest within this streetscape.

Construction: The five terrace houses in the centre of the view would be removed, breaking the consistent building line, and opening up views to the rail yards. This gap would align directly with the views from Meagher Street and be framed by the Masonic Temple (centre of view) and petrol station (right of view). The construction site would be created within the footprint of these demolished buildings and surrounded by security fencing. Construction vehicle access would be via Regent Street seen in the centre of the view. The construction of the Sydney Yards access bridge would be seen unobstructed, rising from the level of Regent Street and extending at an elevated level across the Sydney Yards.

These elements would change the character of the view, reducing the visual enclosure of the street and opening up views directly into the rail yards. It is expected that the project would create a considerable reduction in the visual amenity of this view, which is of local sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: The Sydney Yards access bridge would continue to be seen unfiltered in the centre, of this view. The character of the view and visual enclosure of the streetscape would not be restored.

It is therefore expected that the project would create a considerable reduction in the amenity of views from this location, which has a local visual sensitivity, resulting in a **moderate adverse visual impact** during operation.

06

06A

06 EXISTING VIEW NORTHEAST FROM MEAGHER STREET

06A INDICATIVE EXTENT OF DEMOLITION

12 CENTRAL STATION

Assessment of daytime visual impact

07

07A

07 EXISTING VIEW SOUTHEAST FROM REGENT STREET

07A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 7: View southeast from Regent Street

This view across Regent Street shows the Masonic Temple and row of terrace houses aligned generally with a consistent building line and height, and stepping down to a petrol station building, seen beyond. These terraces have a historic character, but are generally run down, with the one closest to the view, being recently renovated. There is a slot view to the Sydney Rail Yards visible between this terrace and the Masonic Temple.

Construction: The five terrace houses in the centre of the view would be removed, creating a gap in the consistent building line, and opening up views to the rail yards and petrol station beyond. The construction site would be seen with site security fencing and vehicle access via Regent Street, in the foreground of the view. The construction of the Sydney Yards access bridge would be seen extending north from Regent Street, rising up and extending at an elevated level across the Sydney Yards.

These elements would change the character of the view, reducing the visual enclosure of the street and opening up views directly into the rail yards. It is therefore expected that the project would create a considerable reduction in the visual amenity of this view, which is of local sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: The Sydney Yards access bridge would continue to be seen in the centre, middle ground of this view. The character of the view and visual enclosure of the streetscape would not be restored. Due to the loss of heritage character and scale of the bridge it is expected that the project would create a considerable reduction in the amenity of views from this location, which has a local visual sensitivity, resulting in a **moderate adverse visual impact** during operation.

Viewpoint 8: View south from Regent Street to Mortuary Station

The existing State heritage listed Mortuary Station building can be seen in the middle ground of the view. The station is located on a mound and set within a fenced landscape area. Mature trees and street trees frame the station to the north and south. To the east of the station the overhead lines of the existing rail corridor can be seen, glimpsed through trees and with a background of vegetation at Prince Alfred Park beyond. To the south of the station (right of view) commercial buildings enclose the street and obstruct views to the rail yards.

Construction: There are likely to be some glimpses to the construction of the Sydney Yards access bridge in the background of this view. These elements would rise above the existing overhead lines and above the vegetated backdrop of Prince Alfred Park. Although this change would comprise a small portion of this view, it is expected that the scale and height of the access bridge would contrast with the existing rail corridor character and visually encroach upon the setting of the heritage building.

The project would create a noticeable reduction in the amenity of this view, which has a regional visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: The Sydney Yards access bridge would continue to be seen in the background of this view. It is therefore expected that the project would create a noticeable reduction in the amenity of views from this location, which has a regional visual sensitivity, resulting in a **moderate adverse visual impact** during operation.

08

08A

08 VIEW SOUTH FROM REGENT STREET TO MORTUARY STATION
08A ARTIST'S IMPRESSION SHOWING PROJECT DURING CONSTRUCTION AND OPERATION (50mm FOCAL LENGTH)

12 CENTRAL STATION

Assessment of daytime visual impact

VIEWS ALONG (L-R) EDDY AVENUE, ELIZABETH STREET SOUTH, ELIZABETH STREET NORTH, HAY STREET, HAY STREET TO THE BELMORE SUBSTATION

Views to power upgrade temporary works

The power upgrade would require temporary works within the road corridor east from the northern concourse and along Eddy Avenue, north along Elizabeth Street, and west along Hay Street to the Belmore Substation.

In this area of Eddy Avenue a range of vehicles including service vehicles are seen using the northern concourse railyards access. Views are contained by the arched sandstone rail bridges, which also frame views towards Elizabeth Street.

Views along Elizabeth Street are defined to the west by the sandstone walls of the rail corridor and mature London planetrees. Elizabeth Street is a six lane thoroughfare with multi-storey office and commercial buildings to the east.

The alignment turns west, under a single arched sandstone bridge, into Hay Street. The State heritage listed Belmore Park is located to the south of Hay Street and the existing Belmore Park Substation is discretely integrated into the built form of the city, to the north. Street trees and trees within the park frame views and shade the street.

Construction: Views may include some road and footpath closures to accommodate the temporary trenching works. Existing trees, including those along Elizabeth Street and within Belmore Park, would not be impacted.

It is expected, due to the minor scale of these works, that the project would create a noticeable reduction in the visual amenity of views from these streets and adjacent properties. Views along this route are of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.

Assessment of night time visual impact

The setting of Central Station is considered to be an area of **E4: High district brightness**. It is a brightly lit urban area, with lighting from the heavily trafficked streets, surrounding buildings, transport interchanges and station creating both direct light sources and a general skyglow around the project site.

Construction: It is expected that there would be night works required at this location during construction, including 24 hour deliveries and spoil haulage accompanied by traffic control crews with lit truck mounted crash attenuator vehicles and lighting.

The construction site would be largely contained within the station and not likely to be overlooked by surrounding streets, residential properties or hotels. This lighting would be generally consistent with the brightly lit station area.

Overall, it is expected that at night the project would not create a perceived change in the amenity of views in this area, which would result in a **negligible visual impact** during evening hours.

Operation: Lighting associated with the project would be consistent with the high district brightness environment of the existing station. Therefore, the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** for this area during evening hours.

12 CENTRAL STATION

Summary of impact

Summary of Impact

Landscape impact

During construction there would be a **moderate adverse landscape impact** experienced at the northern concourse due to impact on pedestrian connectivity, legibility of the station entry from the north, and the reduced activation and comfort of the entry plaza created by the loss of retail tenancies, trees and construction activity.

During operation, however, there would be **negligible landscape impact** experienced due to the reinstatement of impacted public realm areas.

Visual impact

There would be a range of visual impact created by the project during construction including **minor** and **moderate adverse visual impact**. These impact are due primarily to the sensitivity of views and the scale of works. In particular, the scale of the new built elements, including the temporary pedestrian bridge between Platforms 1 and 23, and the Sydney Yards access bridge between Regent Street and the Sydney Yards laydown site.

During operations there would be mainly **negligible visual impact** as the temporary bridge would be removed and the station platforms reinstated. However, there would be **moderate adverse visual impact** at Regent Street and from trains within the corridor where the Sydney Yards access bridge would be seen as it and continue to be used for access to the Yards and at the Station as the services building at the southern end of the proposed Metro platform alters views.

At night there would be **negligible visual impact** during construction and operation of the project due to the existing lit context of **E4: High district brightness**.

LEE AND GEORGE STREETS

The following tables summarise the impact of the project.

Landscape Impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Northern concourse	Regional	Noticeable reduction	Moderate adverse	No perceived change	Negligible

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View southwest from Eddy Avenue to the northern concourse	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
2	View north from platform 16	Regional	Noticeable reduction	Moderate adverse	No perceived change	Negligible
3	View northwest from the corner of Devonshire and Chalmers Streets	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
4	View west from Chalmers Street	Local	No perceived change	Negligible	No perceived change	Negligible
	Views from the rail corridor	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse
5	View west from Prince Alfred Park	Regional	No perceived change	Negligible	No perceived change	Negligible
6	View southeast along Regent Street	Local	Considerable reduction	Moderate adverse	Considerable reduction	Moderate adverse
7	View northeast from Meagher Street	Local	Considerable reduction	Moderate adverse	Considerable reduction	Moderate adverse
8	View east across Regent Street to Mortuary Station	Regional	Noticeable reduction	Moderate adverse	Noticeable reduction	Moderate adverse
	Views to power upgrade temporary works	Local	Noticeable reduction	Minor adverse	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E4: High district brightness	No perceived change	Negligible	No perceived change	Negligible

13 WATERLOO STATION

Existing conditions

The Waterloo Station site is located on one city block bounded by Botany Road to the west, Raglan Street to the north, Cope Street to the east, and Wellington Street to the south.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the proposed works at Waterloo Station.

Sydney Local Environmental Plan, City of Sydney, 2012

The Waterloo Station site is located within South Sydney local area. The project site and surrounding precinct are located within Zone 10 – Mixed Uses (10, 10(a) and 10(b)) zoning controls.

This assessment will need to consider the objectives for the zone 10 under Part 3, Clause 21 in particular, *"to minimise any adverse impact on residential amenity by devising appropriate design assessment criteria and applying specified impact mitigation requirements by the use of development control plans"*. And, in relation to Zone 10(b): "*to ensure non-residential uses are environmentally compatible with residential uses, and do not adversely affect residential amenity, within the zone".*

The project area includes a heritage site, the Congregational Church, located at number 103-105 Botany Road. The site is also adjacent to several other heritage sites including the Cricketers Arms Hotel (56-58 Botany Road), Former CBC Bank (60 Botany Road), Glenroy Hotel (246-250 Botany Road), Cauliflower Hotel (123 Botany Road), Former Waterloo Pre-school (225-227 Cope Street), and Alexandria Park. This assessment will therefore need to consider the *"settings and views"* of these heritage items under the Heritage conservation clause (5.10).

The South Sydney Local Environmental Plan 1998, is referenced within the Sydney LEP and applies specifically to this portion of the City. This document includes several Built Environment Design Principles which address issues of streetscape and locality character, scale and design of the project, public domain and preservation of *"predominant view lines and vistas enjoyed from parks, reserves, roadways, footpaths and other areas of the public domain"*. (Part 4, Division 4, Clause 28)

These heritage values have been considered in relation to landscape and visual sensitivity in terms of their value to character and the community.

Sydney Development Control Plan, City of Sydney, 2012

The Sydney DCP 2012 sets out the design outcomes and requirements for the treatment of the public domain including public open space, landscaping, heritage, transport and access.

This assessment will consider if any of the proposed development protects views within the public domain, specifically:

"*(1) Buildings are not to impede views from the public domain to highly utilised public places, parks, … heritage buildings and monuments including public statues, sculptures and art.*

(2) Development is to improve public views to parks, … heritage buildings and monuments by using buildings to frame views. Low level views of the sky along streets and from locations in parks are to be maintained." (Clause 3.2.1.2 Public views).

The project will be assessed within the context of these existing DCP guidelines.

The DCP also considers urban vegetation to be one of the City's *"most important assets"*. Under Clause 3.5.2, the mitigation strategy will need to ensure *"tree cover is considered…and provided appropriately"* under the clause provisions.

The project is located in close proximity to several heritage items and within local context of heritage areas. In relation to heritage conservation, Clause 3.9.5, Provision 4 (Heritage items) of the DCP:

"Development in the vicinity of a heritage item is to minimise the impact on the setting of the item by:

(a) providing an adequate area around the

building to allow interpretation of the heritage item;

(b) retaining original or significant landscaping (including plantings with direct links or association with the heritage item);

(d) retaining and respecting significant views to and from the heritage item".

These requirements have been considered throughout this assessment and in relation to mitigation measures.

Existing environment

The Waterloo Station site comprises one city block bounded by Botany Road to the west, Raglan Street to the north, Cope Street to the east, and Wellington Street to the south. The site has a strong and consistent building line with a dense coverage of medium grain built form including a mix of commercial, residential, light industrial and warehousing.

Botany Road is a wide road lined by some small street trees, and accommodating predominantly large scale factory outlet retail. To the west of the road, the buildings are set back with 'nose-in' parking creating a vehicular dominant streetscape. To the east, on the project site, the footpath is narrower and the building line is closer to the roadway. To the south of this block the buildings are of recent construction, whereas to the north of this block, are predominantly historic brick warehouses. Within this block is the Waterloo Congregational Church, a local visual landmark.

Raglan Street is characterised by a row of three storey early 20th century brick buildings with retail frontages and residential accommodation above on the upper levels, creating a small shopping precinct. The built form steps up to six storey modern unit buildings in the north. A number of tall high-rise residential blocks can be seen beyond in the northeast. Leafy streets with mature Brush box trees on the corner of Raglan and Cope Street create visual relief from the intensely urban environment of the project area.

Cope Street has a disjointed overall character with an abrupt change in character from east to west. To the west the project site has a strong building line with medium grain, predominantly late 19th and early 20th century warehouses. These buildings are predominately of red brick construction or masonry and with a mix of pitched, stepped, clerestory and flat roofs. A narrow road verge is fully paved and includes numerous large garage doors and service access ways. Power lines run parallel to the road creating a historic, industrial character.

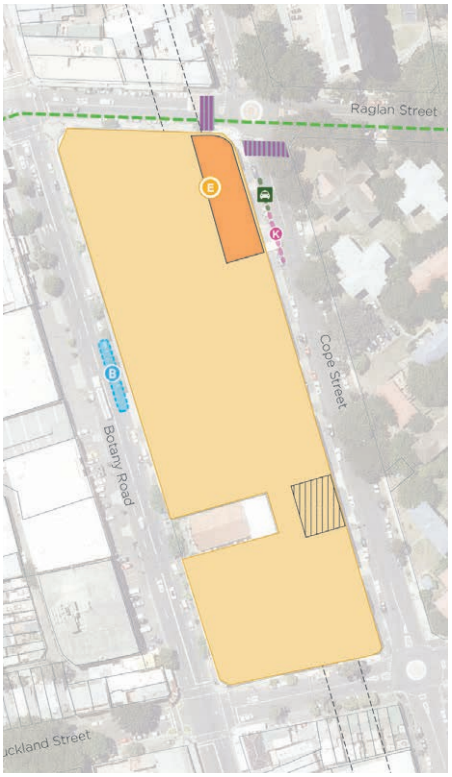
The eastern side of Cope Street is lined by mature street trees and has a more open, suburban feel. The entire block, and stretching for three blocks in total, is a complex of residential buildings, containing a mix of one, two and three storey brick houses and unit blocks. This complex presents a mixed building line to Cope Street with each building aligned at an angle to create a zig zagging effect, set back from the street and creating large triangles of open space between these buildings and the street. This layout contrasts distinctly from the built form line of the site, to the west of Cope Street.

Similarly Wellington Street has disjointed character. To the north, on the project site, the industrial character continues. However to the south is a row of historic double storey brick terraces with a strong line and continuity to this portion of the street. At the intersection with Botany Road, the Cauliflower Hotel is matched on the north and southwestern corners by similar corner buildings which accentuate this intersection.

The NSW State Government has announced their intentions to undertake a transformative urban renewal project for Waterloo based around the removal of the aging social housing estate. This precinct will be transformed over the next 15-20 years with contemporary, high density, mixed use development.

13 WATERLOO STATION

Assessment of daytime visual impact



LAYOUT DURING OPERATION

Character and components of the project

This summary describes the construction and operation phases of the project.

Construction

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site compound including demolition of the following buildings:
  - 3 storey residential and commercial building at 49-51 Botany to 136-134 Raglan Street
  - 4 storey strata residential and retail at 67a Botany Road
  - A mix of 1-2 storey warehouse buildings at 116-168 Cope Street, 63-67, 87-85 and 89-91 Botany Road
  - Waterloo Automotive at 172-174 Cope Street and 129 Wellington Street
  - 2 storey office building at 119 Botany Road
  - 2 storey outlet retail at 107-111 Botany Road
- The heritage listed Congregational Church, located at number 103-105 Botany Road would be retained
- Removal of street trees impacted by the site and for site access including approximately:
  - 2 trees on the Raglan Street
  - 13 trees on Botany Road
  - 3 trees on Wellington Street
- Open trench construction within the existing road reserve along Cope Street, Wellington Street and George Street to the Zetland substation (Approximately 850m) for a power supply upgrade
- A metal clad acoustic enclosure along the length of Cope Street, approximately 6.5m in height to the north and south and rising to 15m in the centre of the block
- Hoardings and site fencing surrounding the remaining area of the site along Botany Road
- Site offices, parking area, amenities, workshops, material and plant storage areas, and water treatment plant
- Cranes and large plant (e.g. excavators)
- Construction vehicle access and movement via Raglan Street and Botany Road
- 2-4 carparks removed on Raglan Street, temporary closure of carparks on Cope and Wellington Streets

The duration of construction works at this location would be approximately 5-6 years.

It is expected that the construction of this site would require spoil haulage and heavy plant deliveries to be undertaken outside of standard working hours.

Operation

The following elements and activities are likely to be experienced during the operation of the project.

- Station entry at the corner of Raglan and Cope Streets
- Services located to the rear of the Congregational Church on Cope Street
- Reinstatement of footpaths impacted by construction on Raglan Street

Sensitivity levels

The following list summarises the landscape and visual sensitivity of the site and main viewing areas across the study area.

Botany Road and Raglan Street

Botany Road is the main high street through Waterloo and continues to Botany and the airport in the south. The site would therefore be viewed by a large number of vehicles and pedestrians. This precinct is largely mixed use including light industry, commercial and medium density residential. The site contains the local heritage listed Congregational Church which is a local visual landmark and increases the value of streetscape views in this context. The existing buildings developed on Botany Road and Raglan Street create a mixed quality public realm, with awnings and street trees on Raglan Street creating a pedestrian scale streetscape. Botany Road includes a number of service entries, narrow footpaths and an avenue of immature street trees. Raglan Street is a local commercial and retail centre and is valued by local residents.

The landscape and views of Botany Road and Raglan Street are therefore considered to be of **local sensitivity**.

Cope and Wellington Streets

Cope and Wellington Streets include a mix of medium to high density residential areas and mixed commercial and light industry uses. These streets are predominantly used by adjacent residents and workers within the precinct. The existing development on Wellington and Cope Streets create a disjointed and constrained public realm. Views are of mixed quality with service entries and residential properties set back from the street, creating a fragmented streetscape character. The landscape and views of Cope and Wellington Streets are therefore considered to be of **neighbourhood sensitivity**.

01 CORNER BOTANY ROAD AND WELLINGTON STREET
02 VIEW SOUTH ALONG BOTANY ROAD
03 CORNER OF BOTANY ROAD AND COPE STREET

13 WATERLOO STATION

Assessment of landscape impact

01

02

03

01 RAGLAN STREET COMMERCIAL PRECINCT
02 COPE STREET
03 BOTANY ROAD

Assessment of landscape impact

In the vicinity of the project the following streetscapes have been identified as potentially being impacted by the project:

- Botany Road and Raglan Street commercial precinct, and
- Cope and Wellington Streets.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Botany Road and Raglan Street commercial precinct

Construction: Parts of Botany Road and Raglan Street adjacent to the site would be required during demolition, site establishment and construction vehicle access. This work would include the closure of footpaths during some periods of construction. It is likely that north south (on Botany Road) and east west (on Raglan Street) pedestrian connectivity would be reduced at times and connectivity and legibility in this part of Waterloo may be impacted. Overhead awnings along Raglan Street and a small number of street trees on both streets would be removed, reducing the shade cover and altering the amenity of the street somewhat.

It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct during operation, however, would be restored as footpaths are reinstated. The functioning of Raglan Street as a local commercial centre would be improved as a station entry attracts pedestrians, and increases the legibility of and connections to public transport network. Future redevelopment of the area (not the subject of this assessment) would be expected to reinstate the active frontages along Raglan Street and extend south along Botany Road.

There would be a noticeable improvement in the landscape quality of these streets which are of local sensitivity. This results in a **minor beneficial landscape impact** during operation.

Cope and Wellington Streets

Construction: Parts of Cope and Wellington Streets may be required during demolition and site establishment. This work may include the closure of footpaths and carparking during some periods of construction. Buildings and a small number of street trees on Wellington Street would be removed, reducing the shade cover and altering the amenity of the street somewhat.

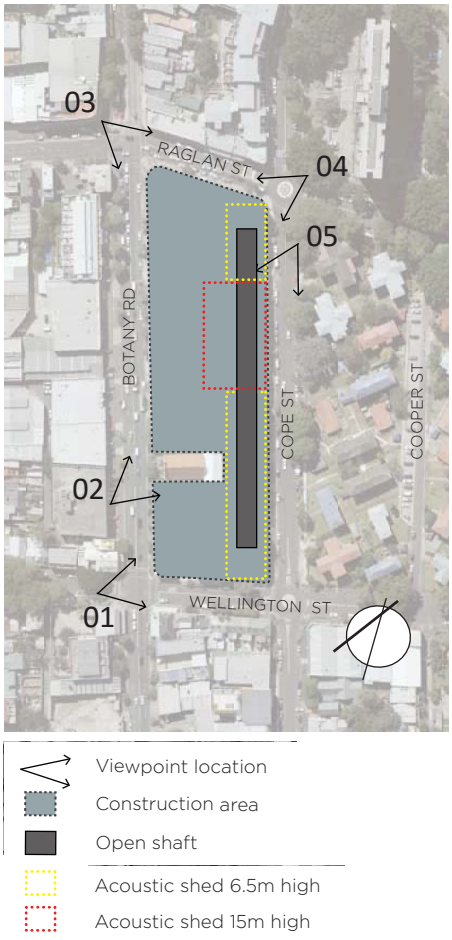
It is expected that there would be a noticeable reduction in the landscape quality of this streetscape which is of neighbourhood sensitivity. This results in **negligible landscape impact** during construction.

Operation: A new station entry would be created on the corner of Raglan and Cope Streets, and footpaths and street trees would be reinstated. The creation of a station entry would improve the legibility, permeability, connectivity and walkability of this precinct.

It is expected that there would be a noticeable improvement in the landscape quality of these streets which are of neighbourhood landscape sensitivity. This results in a **negligible landscape impact** during operation.

13 WATERLOO STATION

Assessment of daytime visual impact



VIEWPOINT LOCATION PLAN

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the site and the proposed development.

- Viewpoint 1: View east from Wellington Street
- Viewpoint 2: View northeast from Botany Road
- Viewpoint 3: View southeast from the intersection of Botany Road and Raglan Street
- Viewpoint 4: View southwest from the corner of Cope and Raglan Street
- Viewpoint 5: View south from Cope Street

The following sections summarise the daytime visual impact identified in the representative viewpoint assessment and site visit observations.

Viewpoint 1: View east from Wellington Street

This view includes a mix of heritage and mid to late 20th century commercial buildings constructed of masonry and brick, and rising to two storeys. Roof lines vary between finials which emphasise the prominence of these corner buildings, to the rectilinear rooflines of modern commercial buildings. A mix of awnings, street trees and streetscape elements create visual interest at street level. The older heritage corner frontages with awnings in this view contribute to the character of this precinct.

Construction: The removal of the existing office and commercial buildings would be prominent in the centre of this view. The construction site would include boundary hoarding and an acoustic enclosure in the middle to background of the view. Construction traffic would also be seen traveling along Botany Road. Although the character of construction works would be visually absorbed into this urban setting, the loss of the unifying built form of the corner building at this intersection would have an adverse impact. It is therefore expected that the project would create a noticeable reduction in the visual amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: It is assumed that future development on the site (not within the scope of this assessment) would reinstate the prominence of the street corner site and be visually compatible with the surrounding urban setting. It is expected that the project would be visually absorbed into the surrounding urban landscape, and not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

01

01A

01 EXISTING VIEW EAST FROM WELLINGTON STREET

01A INDICATIVE EXTENT OF DEMOLITION

13 WATERLOO STATION

Assessment of daytime visual impact

02

02A

02 EXISTING VIEW NORTHEAST FROM BOTANY ROAD

02A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 2: View northeast from Botany Road

The focal point of this view is the heritage listed Waterloo Congregational Church. The architecture of this church sits in contrast to the adjacent heritage inspired commercial development to the south (right of view) and historic industrial warehouse (left of view), which is characterised by a brick façade and corrugated iron double clerestory roofline. This view is seen across the wide Botany Road corridor, which is a visually harsh foreground environment. The two to four storey built form creates a strong building line across this view with distant residential high-rise buildings seen above this streetscape. The mix of styles in this view contributes to the character of this precinct.

Construction: The middle ground of this view would change with removal of all existing buildings surrounding the heritage listed Congregational Church. Site boundary hoarding would visually contain the construction site and construction vehicles would be seen moving along Botany Road and entering the site. Noise attenuation enclosures would be seen, set back from Botany Road, and rising to approximately 6.5m to the south of the church (right of view) and to 15m in the north (left of view). These changes would be prominent, comprise a large portion of the view, and have an adverse effect on the setting of the State heritage listed church. It is therefore expected that the project would create a considerable reduction in the visual amenity of this view, which is of local visual sensitivity, resulting in a **moderate adverse visual impact** during construction.

Operation: This view would be transformed as built form is developed as part of a state led urban renewal project (subject to separate design and assessment process). It is expected that the project would not be visible from this location due to this future development. Despite the loss of warehouse character it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 3: View southeast from the intersection of Botany Road and Raglan Street

The commercial precinct of Raglan Street is seen in the centre, middle ground of this view. This precinct includes a mix of mid to late 20th century buildings constructed of masonry and brick, and rising to two storeys. This includes a three storey brick building which creates a consistent character to the southern side of the block. On the opposite corners, decorative facades with finials emphasise the prominence of these corner buildings. A mix of awnings, street trees, and wide footpaths visually articulate the frontages and create visual interest at street level. The older heritage corner frontages with awnings contribute to the character of this precinct. In the distance, a backdrop of contemporary concrete residential high-rise can be seen. Some scattered street trees visually soften the streetscape in this view.

Construction: The removal of existing buildings would be visually prominent in the middle ground of this view. The site would be contained in site fencing and hoarding, and it is likely that an acoustic enclosure would be seen to the east of the site in the background rising to approximately 6.5m in the north (left of view) and approximately 15m in the south (centre of view). Construction vehicles would be seen traveling along Botany Road and using a site entry in the middle ground of this view. Although the character of construction works would be visually absorbed into this urban setting, the loss of the unifying built form at this intersection would have an adverse effect. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: The new station building would be visually prominent at street level in the middle ground of the view, at the corner of Raglan and Cope Streets. It is expected that the footpaths and street trees would be reinstated and improved, and that the

03

03A

03 EXISTING VIEW SOUTHEAST FROM THE INTERSECTION OF BOTANY ROAD AND RAGLAN STREET

03A INDICATIVE EXTENT OF DEMOLITION

13 WATERLOO STATION

Assessment of daytime visual impact

04

04A

04 EXISTING VIEW SOUTHWEST FROM THE CORNER OF COPE AND RAGLAN STREETS

04A ARTIST'S IMPRESSION SHOWING PROJECT DURING OPERATION

surrounding area would be transformed with the state led urban renewal project (not within the scope of this assessment). This would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 4: View southwest from the corner of Cope and Raglan streets

The commercial precinct of Raglan Street is seen in the centre, middle ground of this view. This precinct includes a mix of mid to late 20th century buildings constructed of masonry and brick, and rising to two and three storeys. The three storey buildings along the southern side of Raglan Street provide a consistent and cohesive built form. The warehousing along Cope Street, and retail in the centre of view and along the northern side of Raglan Street, have a general consistency in height and are visually unified by the use of brick and masonry construction.

Construction: The focal point of this view would be removed as the existing buildings on the site are demolished. An acoustic enclosure and hoarding would be erected upon the site and comprise much of the middle ground of this view rising to approximately 6.5m. Due to the scale of the works, It is expected that the project would create a noticeable reduction in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: A new station entry would be visible in the centre of this view on the corner of Raglan and Cope Streets. This station entry would be set within a refreshed public realm and it is expected that the Raglan Street commercial centre is reestablished as a part of the urban renewal of this precinct (not within the scope of this assessment). Despite the loss of the existing built form, which has a level of architectural cohesion, the project would reinforce the commercial centre as the focal point of this view, with the station forming a local visual landmark at street level. This would not

create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during operation.

Viewpoint 5: View south from Cope Street

This view includes a mix of mid to late 20th century warehouses constructed of brick and masonry, a mix of wide and narrow frontages, and rising to two storeys. There is a strong consistent building line, and the streetscape includes a series of garage doors and driveways, unfiltered by street trees.

To the east (left of view) mature street trees and landscaped gardens offer some visual softening to this view. This vegetation filters views of the mid-rise brick residential buildings, which are located within gardens, and are visually disconnected from the alignment of Cope Street and the urban form opposite.

Construction: The removal of existing warehouse buildings would be seen prominently in the middle ground of this view. An acoustic enclosure and hoarding would enclose the construction site and comprise much of this view stepping up from 6.5m to 15m in this view. The character of construction works would reinforce the visual contrast with the adjacent, leafy residential area. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: There would be a new station building seen prominently in the foreground of the view. Beyond the station It is expected that the project would not be visible due to redevelopment of the site as a part of a state led urban renewal project (not within the scope of this assessment). Despite the loss of warehouse character it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

05

05A

05 EXISTING VIEW SOUTH FROM COPE STREET

05A INDICATIVE EXTENT OF DEMOLITION

13 WATERLOO STATION

Assessment of daytime visual impact

VIEWS ALONG (L-R) COPE STREET, WELLINGTON STREET, GEORGE STREET, GEORGE STREET AT ZETLAND SUBSTATION

Views to power upgrade temporary works

The power upgrade would require temporary works within the road corridor south from Cope Street, along George Street to the Zetland substation.

Cope and Wellington Streets include a mix of light industrial and residential properties with intermittent street trees. George Street includes two lanes of traffic, parallel parking and a designated cycleway, and is shaded by an avenue of mature and semi-mature street trees along much of its length. The surrounding area comprises of predominantly residential unit complexes of around six storeys.

Construction: Views will include temporary trenching works including possible temporary road, cycleway and footpath closures. The existing trees would be retained.

It is expected that due to the relatively small scale of these works there would be a noticeable reduction in the visual amenity of views from these streets and adjacent properties. This route is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.

Assessment of night time visual impact

The setting of the Waterloo Station site is considered to be an area of **E3: Medium district brightness**. This is due to its brightly lit urban city location with a mix of commercial and residential uses. Some areas would experience 24 hour activity and there would be lighting from buildings and streets creating both direct light sources and a general skyglow around the project site. This lighting would be more dispersed within the adjacent residential areas.

Construction: It is expected there would be night works required at this location. A large area of the construction site would be covered by noise attenuation enclosures which would enclose the lighting associated with the construction site. However, there would be lighting on the remaining areas of the site as well as 24 hour deliveries and spoil haulage accompanied by traffic control crews with truck lit mounted crash attenuator vehicles and lighting. This would result in the site, as well as adjacent areas extending along Botany Road, being more brightly lit than the existing setting. This lighting would include both static construction site and task illumination and rotating beacon lights mounted on vehicles.

It is expected that this lighting would create a noticeable reduction in the amenity of views in this area of E3: Medium district brightness, from surrounding streets and potentially from adjacent residential buildings. It is therefore expected that the project would result in a **minor adverse visual impact** during evening hours.

Operation: The station entry on the corner of Raglan and Cope Streets would be brightly lit 24 hours a day to accommodate station activities and for security after hours. The lighting would be consistent with the surrounding medium district brightness environment. As the site is expected to become more brightly lit with the redevelopment of the site as a part of the proposed state led urban renewal project (not within the scope of this assessment).

Overall, it is expected that the lighting of the project during operation would create no perceived change in the amenity of this area, resulting in a **negligible visual impact** during evening hours.

13 WATERLOO STATION

Summary of impact

Summary of impact

Landscape impact

During construction the project would result in **negligible** to **minor adverse landscape impact**. These impact are primarily a consequence of the street level effects of construction on pedestrian movement and the reduced shade due to removal of buildings with awnings and street trees.

During operation there would be a **minor beneficial landscape impact** experienced at the site. This would be due to the combined effect of localised footpath improvements, the introduction of a legible public transport node.

Visual impact

There would be a **negligible** to **minor adverse visual impact** on most views in the vicinity of the project during construction. These impact are primarily derived from the demolition of existing buildings. There would also be a **moderate adverse impact** in views from Botany Road where the setting of the heritage listed church is altered. There would also be temporary **minor adverse visual impact** experienced during the power upgrade works on Cope, Wellington and George Streets to connect with the Zetland substation.

During operation there would be **negligible visual impact** as the precinct would readily absorb the visual change due to the existing eclectic mix of character and future urban renewal project (subject to separate assessment).

At night the project would result in **minor adverse visual impact** during construction, due to the requirement for vehicle deliveries and haulage at night. During operation, however, there would be a largely **negligible impact** experienced due to the existing area of **E3: Medium district brightness**, and precedent of commercial development.

RAGLAN STREET

The following tables summarise the impact of the project.

Landscape Impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Botany Road and Raglan Street commercial precinct	Local	Noticeable reduction	Minor adverse	Noticeable improvement	Minor beneficial
2	Cope and Wellington Streets	Neighbourhood	Noticeable reduction	Negligible	Noticeable improvement	Negligible

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View east from Wellington Street towards Botany Road	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
2	View northeast from Botany Road	Local	Considerable reduction	Moderate adverse	No perceived change	Negligible
3	View southeast from the Intersection of Botany Road and Raglan Street	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
4	View southwest from the corner of Cope and Raglan Street	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible
5	View south from Cope Street	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible
	Views to power upgrade temporary works	Neighbourhood	Noticeable reduction	Negligible	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E3: Medium district brightness	Noticeable reduction	Minor adverse	No perceived change	Negligible

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Planning context

The southern dive site is located in Marrickville to the north of Sydenham Station. The site extends to Edinburgh Road in the north, to Sydney Steel Road in the northwest, to the Sydney Water Marrickville flood storage reserve in the southwest, and to the T2, T3 and T4 rail corridor in the southeast.

SITE LOCATION

Planning context

The following review identifies key documents which provide the planning context for the landscape and visual impact assessment of the proposed Marrickville dive site (southern).

Marrickville Local Environmental Plan, Marrickville Council, 2011

This plan aims to *"promote a high standard of design in the private and public domain".* Clause 4.3 (Height of buildings) promotes scale and massing of new development that ensures consistency with the "*desired future character of an area"* but does not specify particular heights for the project site.

The Marrickville dive site (southern) does not contain any heritage items, heritage conservation areas (HCAs), archaeological sites or Aboriginal heritage that are referenced in the LEP. However, the following heritage places are in close proximity to the site, including: the Marrickville Flood storage reserve and brick drain (Sydenham Pit and Drainage Pumping Station 1); Sydenham Railway Station group (formerly Marrickville Railway Station), also on the State Heritage Register; and the Waugh & Josephson industrial buildings (1-7 Unwins Bridge Road).

The Goodsell Estate Heritage Conservation Area 16 is also located in the vicinity of the site. The key qualities of this conservation area include the street layout, street tree plantings, sandstone block kerbs, high urban density, narrow streets and predominantly attached dwellings creating an intimate streetscape quality.

This assessment will therefore need to consider the "*settings and views*" of these heritage items under the 'Heritage conservation' clause (5.10) of the LEP.

The project site is located largely within the Zone IN1 - General Industrial. The objectives of this zone include: *"To minimise any adverse effect of industry on other land uses."* To the west of the site the rail corridor is zoned SP2 - Rail Infrastructure Facilities, and to the south of the site the Marrickville flood storage reserve and drain is zoned SP2 - Stormwater Management Systems. These zones have the objective of: *"To prevent development that is not compatible with or that may detract from the provision of infrastructure.* There are no objectives specifically relating to urban design or the protection of visual amenity.

To the northeast Camdenville Park is zoned RE1 - Public Recreation. The objectives of this zone include: *"To provide a range of recreational settings and activities and compatible land uses. [and] To protect and enhance the natural environment for recreational purposes."*

Marrickville Development Control Plan Marrickville Council, 2011

Part 9 of the DCP divides the Local Government Area into 47 planning precincts. Each precinct has an existing and desired future character to guide development within the area. The project is located in the 'Sydney Steel Precinct' (Precinct 43) the details of which were not available at the time of writing.

The DCP defines twelve urban design principles that are "*essential for the effective functioning of good public environments*". The DCP states that "*all development applications involving substantial external changes that are visible from or effect public space or have significant land use implications must be consistent with the relevant aspects of the 12 urban design principles that make good public environments".*

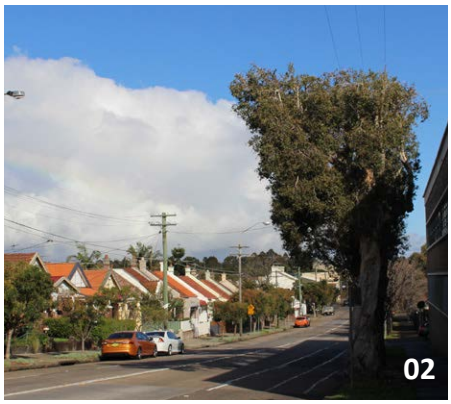
These principles include: structure and connections, accessibility, complementary mix of uses and types, appropriate density, urban form, legibility, activation, fit and adaptable public space, sense of place and character in streetscapes and townscapes, consistency and diversity, continuity and change, sensory pleasure.

These principles will be considered in the landscape and urban design impact assessment of the proposed Marrickville dive site (south) works.

Part 2.6 of the DCP sets out the general provisions for Acoustic and Visual Privacy, which addresses the impact of new developments on the amenity of other land users, particularly residential and other sensitive land uses. A key objective of these provisions is: "*To ensure new development and alterations and additions to existing buildings provide adequate visual … privacy for the residents and users of surrounding buildings."* This assessment will need to consider these requirements during both construction and operation.

Marrickville Urban Strategy Marrickville Council, 2007

This Strategy provides a vision and direction to address a range of planning, community, and environmental issues in the Marrickville Local Government area, and has been used to inform the LEP and DCP. The project site is located on 'Strategic Employment Lands' near Sydenham (defined as a neighbourhood centre), which is considered to have "*comparatively poor quality streetscapes and public domain"*. Particular opportunities listed in relation to this assessment include the improvement of pedestrian and cycling connections to the rail station.



01 RAILWAY CORRIDOR FROM BEDWIN ROAD
02 RESIDENTIAL PROPERTIES ON UNWINS BRIDGE ROAD
03 VIEWS TO THE CBD SKYLINE FROM BURROWS AVENUE

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Existing environment

Existing environment

The project site is located along the northern side of the Illawarra railway line, northeast of Sydenham Station. The topography of the area is flat and low-lying.

The character of the project area is strongly influenced by its industrial history and transport network including the railway, busy main roads and Kingsford-Smith Airport.

The area includes heritage items dating back to its time as an industrial and manufacturing hub during the 19th and early 20th centuries when activities included: steel works; mills; brick making and pottery. In particular, this includes a local heritage listed brick-lined Marrickville flood storage reserve on the corner of Garden Street and Railway Parade.

The area comprises a mix of residential and industrial buildings reflective of its historical development. Land use within the area is mainly light manufacturing with a mix of tertiary uses such as light industry and urban support services, retail, residential, freight and logistics, and office development.

While the surrounding streets of Sydenham Road and the Princes Highway carry large volumes of traffic, the streets adjacent to the project, including Railway Parade, Shirlow and Garden Streets, are narrow with relatively low traffic numbers. The narrowness of streets and high proportion of built development generally contributes to a lack of street trees within the area. An exception is Sydney Steel Road and Murray Street, which include mature native trees intermittently along one side of the street.

Building heights within this area are predominantly single and double storey industrial buildings, intermixed with some three to four storey commercial and industrial buildings. This building typology includes large footprints and wide service vehicle access and parking.

The industrial buildings of Marrickville provide a canvas for both illegal graffiti and commissioned street art. A number of laneways between Shirlow Street, Lilian Fowler Place and Sydney Steel Road include extensive areas of graffiti and street art. Scattered graffiti can also be found on the warehouses along Railway Parade, along the concrete drainage channels within and to the south of the site, and intermittently on buildings and infrastructure within the site, particularly adjacent to the railway corridor. A Sydney Water commissioned work can also be seen on the Sydenham Drainage Pumping Station directly to the south of the site.

To the south, the land use between the railway and Unwins Bridge Road generally consists of large scale light industrial, including the Sydney Trains Sydenham Network Base, constructed in 2013. The character abruptly changes into low density residential to the south of Unwins Bridge Road, including mostly 19th and early 20th century single storey brick terraces, cottages and houses lining the narrow and dense grid street pattern, interspersed with low-rise industrial development and parkland.

Sydenham station (formerly Marrickville Railway Station) is located approximately 500m southwest of the project. Constructed predominantly during the late 19th and early 20th century, the station is of State historical significance, containing several Victorian buildings and structures with unique architectural detailing.

Character and components of the project

This summary describes the construction and operation phases of the project.

Construction phase

The following structures, equipment and activities are likely to be experienced during construction:

- Establishment of a construction site compound including demolition of the all buildings within the site boundary
- Removal of vegetation within the project site footprint including mature trees between the drainage canal and the rail corridor
- Removal of street trees impacted by the site and for site access including approximately:
    - 1 tree on Murray Road
    - 8 trees on Edinburgh Road
    - 4 trees on Edgeware Road
- Open trench construction within the existing road reserve along Edinburgh Road, Lord Street, John Street (under the railway corridor), Council Street, May Street and Princes Highway (Approximately 850m) for a power supply upgrade
- Hoarding, concrete barriers and site fencing, site offices, amenities, workshops, material and plant storage areas, water treatment plant, laydown area, segment storage and dive works facility area
- Car parking area
- Mobile cranes, excavators, concrete pumps, piling rigs and other construction equipment
- Launch and support two tunnel boring machines for the major tunnelling works
- Metal clad acoustic enclosure (approximately 15m in height)
- Concrete and Grout storage silos (approximately 15m in height)
- Shed for manufacture of pre-cast concrete tunnel lining segments and segment storage yard (approximately 15m in height)
- Oversize deliveries for TBM launch and support works
- Construction vehicle access and movement via Bedwin, Edinburgh and Sydney Steel Roads, and Murray Street

The duration of the works in this location would be approximately 7-8 years. The last two years would be testing and commissioning which would contain less visible construction activity.

It is expected that this site would require spoil haulage to be undertaken outside of standard working hours.

Operation phase

The following elements and activities are likely to be experienced during operation:

- Services facility including traction substation and a water treatment plant
- 400 metre dive structure and tunnel portal south of Bedwin Road Bridge
- Throw structures and site exclusion fencing around the perimeter of rail corridor
- Sydney Water stormwater channel enclosed under Metro line infrastructure.

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Sensitivity levels

Sensitivity levels

The following list summarises the landscape and visual sensitivity of the site and main viewing areas across the study area.

Sydenham Station

Sydenham station functions as a suburban railway station and is therefore used by concentrations of local residents; it provides an important transport hub for the local community. It is also a State heritage listed item, increasing its sensitivity as a visual feature within the local area. The landscape and views from Sydenham Station are therefore considered to be of **local sensitivity**.

Marrickville flood storage reserve

The Marrickville flood storage reserve (Sydenham pit and drainage pumping station) includes a constructed, brick-lined waterbody and pumping station building. It has a State heritage listing and is an important landscape feature within this area, however, its function is utilitarian and it does not attract use by the public. This reserve provides some visual interest but does not feature prominently in views. The landscape of this feature and views in the vicinity are therefore considered to be of **local sensitivity**.

Industrial areas of Sydenham and Marrickville

The predominantly industrial areas that surround the rail corridor to the northwest provide a working setting for users. The visual and landscape amenity of this area is not particularly valued by users, therefore, the landscape of this area and views from this location are considered to be of **neighbourhood sensitivity**.

Industrial areas of Sydenham and Marrickville - Street Art precinct

The industrial buildings of Marrickville provide a canvas for both illegal graffiti and commissioned street art. A precinct has emerged in the laneways between Shirlow Street, Lilian Fowler Place and Sydney Steel Road. 'Let it Shine' a commissioned work on the Sydenham Drainage Pumping Station by Sid Tapier. Other known street artists including 'Phibs' and 'Jumbo' have produced works in this precinct, some of which have been painted over by subsequent artists. The colourful and dynamic nature of this precinct creates an interesting and ever changing landscape. This area is identified on the Marrickville Council's Perfect Match program, Walking, Cycling, Bus and Photography Tour program, most recently held in August of 2015. The visual and landscape amenity of this area is valued for its artistic merit, and opportunities for the installation of legal street art. Therefore, the landscape of this area and views from this location are considered to be of **local sensitivity**.

Rail corridor

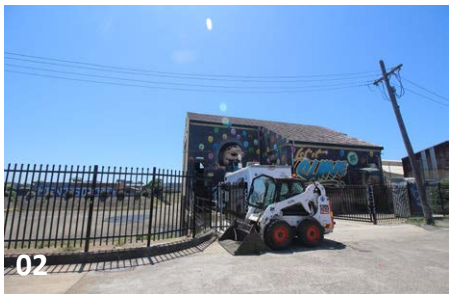
The rail corridor in this area connects the localities of Sydenham and St Peters, and trains using this corridor attract large concentrations of commuters from across the city. The experience of traveling along the rail corridor includes open and filtered views to surrounding industrial areas and rail related infrastructure. This landscape, and views from it, are valued by the community as an important route into the city. The landscape and views of the rail corridor therefore have **local sensitivity**.

Unwins Bridge Road

Unwins Bridge Road is a local collector road, providing access to adjacent residential areas. The visual and landscape amenity of this area is valued by the local communities who use it. The landscape of this area and views from this location are considered to be of **neighbourhood sensitivity**.

Camdenville Park

Camdenville Park, St Peters, is a local park within the Goodsell Estate Heritage Conservation Area (CP16, Marrickville LEP). It includes a sportsground, playground and green open space. It is used by local residents and provides an important recreational and sporting area for the local community. The landscape of this area and views from this location are considered to be of **local sensitivity**.



01 MARRICKVILLE FLOOD STORAGE RESERVE
02 'LET IT SHINE' BY SID TAPIER ON THE SYDNEY WATER PUMPING STATION
03 GRAFFITI WITHIN THE SITE
04 GRAFFITI ON THE SYDNEY WATER CONCRETE LINED DRAIN
05 VIEW NORTHEAST FROM TRAINS ON THE RAIL CORRIDOR

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of landscape impact

NORTHEASTERN BOUNDARY OF THE MARRICKVILLE FLOOD STORAGE RESERVE

Assessment of landscape impact

In the vicinity of the project, the following landscapes and urban places have been identified as potentially being impacted by the project:

- Marrickville flood storage reserve, and
- Industrial areas of Sydenham and Marrickville - Street Art precinct.

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

Marrickville flood storage reserve

Construction: Although there would be no direct impact on this reserve, the visual context would be altered as the warehouses, which are located directly to the northeast, are removed. These warehouses have a varied roofline and reinforce the industrial and heritage character of the reserve.

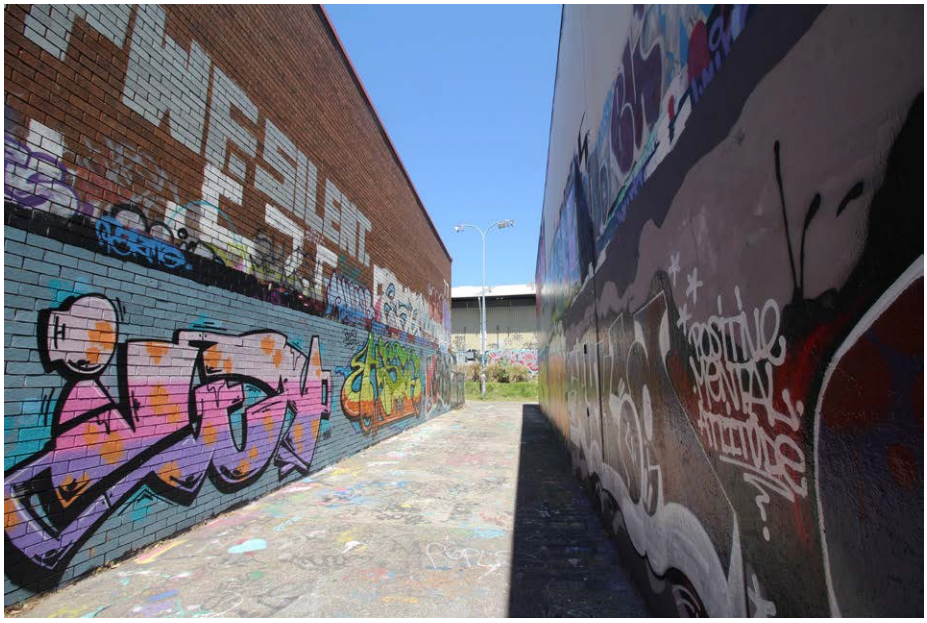
It is expected that there would be a noticeable reduction in the landscape quality of this reserve which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: The functioning of this precinct be restored as this site is returned to light industrial use. Therefore the project would not result in a perceived change in the landscape quality of the Marrickville flood storage reserve, which is of local sensitivity, resulting in a **negligible landscape impact** during operation.

Industrial areas of Sydenham and Marrickville - Street Art precinct

Construction: There would be a direct impact on the walls available for street art with the removal of the buildings within the site. The nature of street art is that it is regularly changing and evolving, and it is expected that the remaining areas of the precinct would continue to be used. There are no direct impact on commissioned artworks, however there would be a reduction in the available wall space. It is therefore expected that there would be a noticeable reduction in the landscape quality of this precinct which is of local sensitivity. This results in a **minor adverse landscape impact** during construction.

Operation: It is likely that during operations new opportunities for street art would emerge as the light industrial landuse is reestablished in this area. It is therefore expected that there would not be a perceived change in the landscape quality of this precinct which is of local sensitivity, resulting in a **negligible landscape impact** during operation.



01

02

01 FOOTPATH BETWEEN SYDNEY STEEL LANE AND LILIAN FOWLER PLACE

02 GRAFFITI AND STREET ART ON THE FOOTPATH BETWEEN SYDNEY STEEL LANE AND SHIRLOW STREET

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of daytime visual impact

Assessment of daytime visual impact

The following viewpoints were selected as representative of the range of views to the site and the project:

- Viewpoint 1: View west from Edgeware Road
- Viewpoint 2: View west from the Bedwin Road Bridge
- Viewpoint 3: View west from Camdenville Park
- Viewpoint 4: View northwest from Unwins Bridge Road
- Viewpoint 5: View north along Bolton Street
- Viewpoint 6: View northeast along Railway Parade
- Viewpoint 7: View southwest from Sydney Steel Road
- Viewpoint 8: View southwest from Sydney Steel Road
- Viewpoint 9: View southeast from the corner of Murray Street and Edinburgh Road
- Views from the rail corridor

The following section summarises the impact identified by the assessment and site observations. This includes impact during construction and operation.

VIEWPOINT LOCATION PLAN

KEY

Viewpoint location

Acoustic enclosure

Construction area

Constructon activity

Viewpoint 1: View west from Edgeware Road

This represents views from the ground floor level of adjacent 2-3 storey residential properties. The site is visible in the background of the view, seen across Edgeware Road and framed through the bridge underpass. The site is characterised by large warehouse buildings and includes graffiti on the warehouses and bridge abutments in the middle ground of the view. In the foreground is the two lane Edgeware Road and an informal area of parking. Some vegetation filters the edge of this view between the rail corridor and viewer.

Construction: The existing warehousing would be replaced with the project construction site. This would include the 15m high acoustic enclosure, which would be visible in the middle ground of the view, seen through the bridge. The character of construction works would generally be absorbed into the surrounding setting of industrial development. It is expected that the project would create a noticeable reduction in the visual amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be replaced with the Metro dive structure which would be seen as a more open industrial character landscape, with throw screens and security fencing on the site boundary, filtering views to the broader existing industrial landscape beyond the project site. Despite this change in use and form it is expected that the project would be visually absorbed into the character of the surrounding industrial area and railway corridor and not create a perceived change in the amenity of this view. This would result in a **negligible visual impact** during operation.

01

01A

01 EXISTING VIEW WEST FROM EDGEWARE ROAD

01A INDICATIVE EXTENT OF DEMOLITION

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of daytime visual impact

02

02A

02 EXISTING VIEW WEST FROM THE BEDWIN ROAD BRIDGE

02A ARTIST'S IMPRESSION SHOWING THE PROJECT DURING CONSTRUCTION

Viewpoint 2: View west from the Bedwin Road Bridge

This view includes a predominantly industrial landscape with large warehouse buildings adjacent to a wide rail corridor. This view includes graffiti covered walls and some vegetation which softens the boundary between the rail and warehousing.

Construction: The existing warehousing would be replaced with the project construction site. Although the project construction site is likely to be more visually prominent in this view, and varied in form, the character of construction works would be visually absorbed into the surrounding setting of light industrial development. It is therefore expected that the project would create no perceived change in the visual amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be replaced with the Metro dive structure and additional track, creating a wider rail corridor. Views would be opened up to the industrial development beyond the project site, to the west of Edinburgh Road. Despite this change in use and form, it is expected that the project would be visually absorbed into the surrounding industrial and railway corridor landscape, and not create a perceived change in the amenity of this view. This would result in a **negligible visual impact** during operation.

Viewpoint 3: View west from Camdenville Park

This view is located within the Goodsell Estate Heritage Conservation Area (CA16, Marrickville LEP) and is characterised by open space with mature trees and wide open grassed fields. The project site is visible in the background of this view, glimpsed over the Bedwin Road Bridge, which forms the southern edge to the park and view.

Construction: A small portion of this view would change as the existing warehousing is replaced with the project construction site. There would also be construction related

traffic using the Bedwin Road Bridge, seen in the background of this view. Despite these minor changes the project would not create a perceived change in the amenity of this view, which is of local visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be replaced with the Metro dive structure, so that it would not rise above the Bedwin Road Bridge in views from this location. It is therefore expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 4: View northwest from Unwins Bridge Road

This view towards the site is representative of views from the residential area of St Peters to the southwest of Unwins Bridge Road. In this view existing site safety fencing with mesh screening obstructs views into the existing Sydney Trains Network System Base, which sits at a lower level than Unwins Bridge Road and the adjacent residential area are elevated above the rail corridor and site. The upper portion of warehouses on the site can be seen in the background of the view, over this fence, and filtered by an avenue of mature street trees.

Construction: A small portion of this view would change with the project construction site located in the background of the view. It is likely that the acoustic enclosures and tall equipment used on the site would be visible, however, this would be seen at a distance and the site works would be visually absorbed into the surrounding industrial landscape. Therefore, it is expected that the project would create no perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be restored to its former use as light industry with an expanded rail corridor that is not visible. It is therefore expected that the

03

04

03 VIEW WEST FROM CAMDENVILLE PARK
04 VIEW NORTHWEST FROM UNWINS BRIDGE ROAD

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of daytime visual impact

05

05A

05 EXISTING VIEW NORTH FROM BOLTON STREET

05A INDICATIVE EXTENT OF DEMOLITION

project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 5: View north from Bolton Street

This view is from an area of light industrial development adjacent to the rail corridor to the north of Sydenham Station. This view is characterised by the surface commuter car park in the foreground and wide rail corridor with overhead lines and support structures. Beyond the rail is a landscape of industrial warehouses. The site can be seen and is currently characterised by industrial warehouses. Some trees can be seen on the site to the northwest of the rail corridor.

Construction: The warehousing and vegetation seen on the site would be removed and replaced with sheds of a similar scale and character to accommodate the precast concrete manufacture plant, as well as grout and concrete silos. There would also be views to construction of the dive structure, TBM launch and support works including acoustic enclosures. This construction activity would be seen in the context of existing light industrial warehousing and would be visually absorbed into this setting.

Although the project would comprise a large area of the background of this view, there would not be a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be replaced with the Metro dive structure, and additional track, creating a wider rail corridor in the background of the view. In the middle ground the construction site would be returned to light industrial landuses. This change would be visually absorbed into the character of the surrounding light industrial and railway corridor landscape. This change would not have a perceived effect on the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 6: View northeast along Railway Parade

This view, oriented along Railway Parade, is bound to the east (right of view) by the railway corridor with overhead lines and support structures. The heritage listed Marrickville flood storage reserve and brick-lined pit is visible to the northwest (left of view), filtered through black palisade security fencing. The Sydney Water pumping station, decorated in street art, can be seen in the centre of the view.

Vegetation and industrial warehouses on the site can be seen in the background of the view, extending west from the rail corridor. Although large scale buildings, there is a varied roofline, which creates interest in this view.

Construction: A large portion of the background of this view would change as much of the visible warehousing and trees would be removed. There would be a large shed established for precast segment manufacture and silos seen along the southwestern boundary of the site.

This construction activity would have a scale similar to the surrounding warehousing built form, which has a high visual absorption capacity. It is expected, however, that the project would create a noticeable reduction in the amenity of this view, which is of neighbourhood sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The visible area of the site to the northwest (left of view) would be returned to its former use for light industry. In the centre of the view, however, it is likely that the widened rail corridor and dive structure would be seen in the background. Due to the consistency of the project with the surrounding rail corridor and industrial landscape, it is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

06

06A

06 EXISTING VIEW NORTHEAST ALONG RAILWAY TERRACE

06A INDICATIVE EXTENT OF DEMOLITION

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of daytime visual impact

07

07A

07 EXISTING VIEW SOUTHWEST FROM SYDNEY STEEL ROAD

07A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 7: View southwest from Sydney Steel Road

In the centre and to the southeast (left of view) large warehouses, with a varied roofline and large doors, dominate this view. The street has a light industrial character with working vehicles, equipment, large skip bins and chainwire security fencing visible.

To the south (right of view) these large warehouses frame a pedestrian footpath which is aligned away from the view. The warehouses create a canvas for both graffiti and the work of street artists. The street art is regularly changing and evolving, attracting the eye along this narrow and brightly coloured corridor.

Construction: The warehouses in the centre of this view, and comprising much of the foreground, would be removed and replaced with sheds of a similar scale and character to accommodate the precast concrete manufacture plant. The street art and graffiti, visible on the warehouse in the centre of view, would be removed. However, the visual enclosure of this pedestrian lane would be reinstated.

It is expected that the character of the project works would be generally consistent with the current character of the site and therefore the project would not create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: In this view the construction site would be restored to its former use as light industry. It is therefore expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

Viewpoint 8: View southwest from the Sydney Steel Road

This view is softened by trees to the west of Sydney Steel Road and a tree lined concrete drain, which can be seen in the middle ground of this view. Filtered by these trees, in the centre of the view, are large warehouses located within the project site. The street has a light industrial character with working vehicles, equipment and chainwire security fencing visible.

Construction: The warehouses in the centre of this view would be removed and replaced with sheds of a similar scale and character to accommodate the precast concrete manufacture plant and segment storage. The site would be enclosed by security fencing and vehicular access would be seen via Sydney Steel Road. Trees within the street and along the drain would filter and visually soften these elements.

It is expected that the character of the project works would be generally consistent with the current character of the site. Therefore the project would not create a perceived change in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be restored to its former use as light industry. It is therefore expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

08

08 VIEW SOUTHWEST FROM SYDNEY STEEL ROAD

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of daytime visual impact

09

09A

09 EXISTING VIEW SOUTHEAST FROM THE CORNER OF MURRAY STREET AND EDINBURGH ROAD

09A INDICATIVE EXTENT OF DEMOLITION

Viewpoint 9: View southeast from the corner of Murray Street and Edinburgh Road

This view includes a predominantly industrial landscape with large brick warehouse buildings. Although this view and the site do not include any heritage items, the age of this warehousing, brick construction and level of detail in the treatment of the facades give this view a historic character. The footprint of these buildings is large with wide roads, narrow footpaths and without street trees, resulting in a highly urbanised view.

Construction: The warehouse in the centre of the view would be demolished and replaced with the construction site. The character of this view would be altered as the sense of visual enclosure and the consistency of building typology would be lost. An acoustic enclosure would be seen in the background of the view, rising to 15m. Construction related traffic would be seen on Edinburgh Road, and turning into Murray Street at the roundabout in the middle ground of the view. Although this change would alter the character of the view somewhat, the character of construction works would be visually absorbed into the setting of light industrial and warehousing. It is therefore expected that the project would create a noticeable reduction in the amenity of this view, which is of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: The construction site would be replaced with the Metro dive structure. It is likely that in this view the rail lines would be in cut and that they would not be visible. The site would include throw structures and security fencing around the perimeter of the dive structure, adjacent to the existing roadway. Views across the site, however, may include the existing at grade rail corridor, the Bedwin Road Bridge and Waugh and Josephson industrial buildings (heritage listed) in the background. Despite this change in use and form, it is expected that the project would be visually absorbed into the character of the surrounding industrial and railway corridor landscape. Overall, the

project would result in a noticeable reduction in the amenity of this view, which is of neighbourhood sensitivity, and a **negligible visual impact** during operation.

Views from the rail corridor

Views north and southbound from the rail corridor include a largely industrial landscape, with some localised filtering through vegetation alongside the corridor.

Construction: The removal of vegetation alongside the rail corridor would open up views to the site. Within the site there would be unobstructed views to the construction site including TBM support works, spoil storage, acoustic enclosures, workshops, site offices, and silos.

It is expected that due to the scale of these works the project would create a noticeable reduction in the visual amenity of views from trains using this corridor, which are of local visual sensitivity, resulting in a **minor adverse visual impact** during construction.

Operation: There would be an intensification of rail activity seen on the corridor, including the new Metro line and dive structure. Beyond the widened rail corridor, the remainder of the site would return to light industrial uses and be consistent in character with the existing view.

It is expected that the project would not create a perceived change in the amenity of this view, resulting in a **negligible visual impact** during operation.

VIEWS FROM THE RAIL CORRIDOR

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Assessment of daytime visual impact

Views to power upgrade temporary works

The power upgrade would require temporary works within the road corridor north from Edinburgh Road, under Bedwin Road and across Railway Parade, along Lord Street, west along John Street, under the rail corridor to Council Street, north along May Street and west along the Princes Highway.

Views in this area Edinburgh Road and Bedwin Road have a predominantly industrial character. Mature fig trees, located at the corner of Edinburgh Road and Railway Parade, create a local visual feature.

Lord Street is a residential street with some two to three storey apartments in the south and mainly historic character duplexes and terraces. Small street trees, front gardens and decorative rooflines create visual interest. At the corner of Lord and John Street the end of the northern terrace house is painted with a community mural, and views to the adjacent railway corridor are obstructed by a group of mature trees.

In views along Council Street the rail corridor is more prominent with a chainwire fence and entry gate. Predominantly two storey terraces are located opposite Camdenville Park. May Street is a wide vehicular corridor and includes a mix of higher density residential, commercial and light industrial buildings and intermittent street trees.

The Princes Highway is a wide road corridor, with views into Sydney Park and the visually prominent heritage listed brick chimneys and kilns of the former Austral brick works.

Construction: Views may include some road and footpath closures to accommodate the temporary trenching works. The existing trees would be retained, particularly adjacent to the rail corridor at John Street.

VIEWS ALONG (L-R) LORD STREET, JOHN STREET, COUNCIL STREET, MAY STREET, PRINCES HIGHWAY

It is expected, due to the scale of these works, that the project would create a noticeable reduction in the visual amenity of views from these streets and adjacent properties. Views along this route are of neighbourhood visual sensitivity, resulting in a **negligible visual impact** during construction.

Operation: There would be no permanent project elements visible along this route.

Assessment of night time visual impact

The setting of the Marrickville dive site (southern) is considered to be an area of **E3: Medium district brightness**. This is due to the moderately lit industrial buildings and streets, lit trains using the adjacent railway corridor, and surrounding densely urban areas. The site includes both direct light sources and a general skyglow.

Construction: It is likely that there would be night works required at this location during construction, including 24 hour spoil haulage. Much of the night works would be contained within the acoustic enclosure and warehouses, however, remaining areas of the site would include security, vehicle and task lighting. This would result in the site, as well as adjacent areas being more brightly lit than the existing setting.

It is not expected that this lighting would create a perceived change in the amenity of views, resulting in a **negligible visual impact** during evening hours.

Operation: The dive structure would be only moderately lit at night due to train headlights and security on associated services buildings. This lighting would be relatively contained by the walls of the dive structure as the trains approach the tunnel entrance in the vicinity of Edgeware Road. This lighting would be generally consistent with the surrounding medium district brightness environment.

It is expected that during operation the lighting of the project would not create a perceived change in visual amenity, resulting in a **negligible visual impact** during evening hours.

14 MARRICKVILLE DIVE SITE (SOUTHERN)

Summary of impact

Summary of impact

Landscape impact

There would be a **minor adverse landscape impact** on the Marrickville Flood Storage Reserve during construction. Although there would be no direct impact on the reserve, the loss of warehousing that is located directly adjacent would alter the landscape character of its setting. There would also be a **minor adverse landscape impact** on the street art precinct within the industrial areas of Marrickville during construction due to the removal of industrial buildings which include graffiti.

During operation there are expected to be **negligible** landscape impact as the site would be returned to light industrial use.

Visual impact

As a result of the project there would be mainly **negligible visual impact** during both construction and operation. This is primarily due to the consistency in character between the existing light industrial landscape and the proposed construction site works and operational site features, as well as the relatively low sensitivity of surrounding viewing locations. Similarly the temporary work required for power upgrades would create a negligible visual impact during construction due to the small scale and neighbourhood sensitivity of the proposed alignment.

During construction there would be temporary **minor adverse visual impact** experienced during the power upgrade works on Lord, John, Council May Streets and the Princes Highway to Sydney Park.

During both construction and operation there would be a **minor adverse visual impact** on views from the rail corridor due to the scale and increased sensitivity of these views which are seen by large number of viewers.

Similarly, at night there is expected to be a **negligible visual impact** during construction and operation. This is due to the relatively low sensitivity of surrounding viewing areas and absorption of the change into the surrounding **E3: Medium District Brightness** area. Although this activity would potentially create a slight reduction in the amenity of these views, the overall impact is not substantial.

VIEW WEST OVER THE SYDNEY TRAINS NETWORK SYSTEM BASE

The following tables summarise the impact of the project.

Landscape impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Marrickville Flood Storage	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
2	Industrial areas of Sydenham and Marrickville - Street Art precinct	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible

Day time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	View west from Edgeware Road	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible
2	View west from the Bedwin Road Bridge	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible
3	View west from Camdenville Park	Local	No perceived change	Negligible	No perceived change	Negligible
4	View northwest from Unwins Bridge Road	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible
5	View north from Bolton Street	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible
6	View northeast along Railway Parade	Neighbourhood	Noticeable reduction	Negligible	No perceived change	Negligible
7	View southwest from Sydney Steel Road	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible
8	View southwest from the Sydney Steel Road	Neighbourhood	No perceived change	Negligible	No perceived change	Negligible
9	View southeast from the corner of Murray Street and Edinburgh Road	Neighbourhood	Noticeable reduction	Negligible	Noticeable reduction	Negligible
	Views from the rail corridor	Local	Noticeable reduction	Minor adverse	No perceived change	Negligible
	Views to power upgrade temporary works	Neighbourhood	Noticeable reduction	Negligible	N/A	N/A

Night time visual impact

			Construction		Operations	
No	**Location**	**Sensitivity**	**Modification**	**Impact**	**Modification**	**Impact**
1	Project site	E3: Medium district brightness	No perceived change	Negligible	No perceived change	Negligible

15 MITIGATION MEASURES

This section addresses the mitigation measures developed to avoid, reduce and manage the identified potential adverse operational and construction landscape and visual impact. Mitigation measures would ultimately form part of the Operational Environmental Management Plan and Construction Environmental Management Plan

ID	Mitigation measure	Applicable Location (s)[1]
	Operation	
LV1	Where feasible and reasonable, the elements within construction sites would be located to minimise visual impact, for example materials and machinery would be stored behind fencing.	All except metro rail tunnels
LV2	Existing trees to be retained would be protected prior to the commencement of construction in accordance with Australian Standard *AS4970 the Australian Standard for Protection of Trees on Development Sites and Adjoining Properties.*	All except metro rail tunnels
LV3	Lighting of construction sites would be oriented to minimise glare and light spill impact on adjacent receivers.	All except metro rail tunnels
LV4	Visual mitigation would be implemented as soon as feasible and reasonable after the commencement of construction, and remain for the duration of the construction period.	All except metro rail tunnels
LV5	Opportunities for the retention and protection of existing street trees would be identified during detailed construction planning.	All except metro rail tunnels
LV6	The design and maintenance of construction site hoardings would aim to minimise visual amenity and landscape character impact, including the prompt removal of graffiti. Public art opportunities would be considered.	All except metro rail tunnels
LV7	The selection of materials and colours for acoustic enclosures would aim to minimise their visual prominence.	CDS, CN, VC, BN, MP, PS, WS, MDS
LV8	TBM retrieval works at the Blues Point temporary site would be timed to avoid key harbour viewing events.	BP`
LV9	Benching would be used where feasible and reasonable at Blues Point temporary site to minimise visual amenity impact.	BP

ID	Mitigation measure	Applicable Location (s)[1]
	Operation	
LV10	Cut off and direct light fittings (or similar technologies) would be used to minimise glare and light spill onto private property.	CDS, AS, MDS
LV11	Where feasible and reasonable, vegetation would be provided to screen and visually integrate sites with the surrounding area.	CDS, AS, MDS
LV12	Identify and implement appropriate landscape treatments for Frank Channon Walk.	STW, CDS
LV13	The architectural treatment of Artarmon substation would minimise visual amenity and landscape character impact.	AS,
LV14	The Harbour Cycles sculpture at North Sydney would be reinstated at a location determined in consultation with North Sydney Council.	VC
LV15	The P&O Fountain at 55 Hunter St would be reinstated at a location determined in consultation with City of Sydney Council.	MP
LV16	Opportunities would be investigated to provide a permanent wall for street art at Marrickville dive site in consultation with Marrickville Council.	MDS
LV17	Noise walls would be transparent where they are augmenting existing transparent noise barriers.	STW

[1] STW: Surface track works; CDS: Chatswood dive site; AS: Artarmon substation; CN: Crows Nest Station; VC: Victoria Cross Station; BP: Blues Point temporary site; GI: Ground improvement works; BN: Barangaroo Station; MP: Martin Place Station; PS: Pitt Street Station; CS: Central Station; WS: Waterloo Station; MDS: Marrickville dive site; Tunnel: Tunnel not related to other sites (e.g. TBM works).

16 REFERENCES

Aspect and Oculus (2014) Barangaroo South Public Domain Stage 1A.

ASSA Invest (2015) Polaris North Sydney; URL: http://www.assainvest.com.au/property/polaris-north-sydney (accessed 25/05/2015).

Cahill, R. J., Irving, T., Radical Sydney: Places, Portraits and Unruly Episodes, UNSW Press, 2010.

CBRE (2015) The Castlereagh, URL: http://www.cbresi.com.au/NewProjects/The-Castlereagh/476.aspx (accessed 30/06/2015).

City of Sydney (2012) Sydney Development Control Plan 2012.

City of Sydney, South Sydney Local Environmental Plan, 1998.

City of Sydney, Sydney Local Environmental Plan, 2012.

City of Sydney (2006) Hyde Park Plan of Management and Masterplan 2006, URL: http://www.cityofsydney.nsw.gov.au/explore/facilities/parks/plans-of-management (accessed 26/05/2015).

City of Sydney Register of Significant Trees http://trees.cityofsydney.nsw.gov.au/location/university-of-sydney-merewether-institute-butlin-avenue-and-maze-crescent/

Cromwell Property Group (2014) 100 Miller Street Development Application, URL: http://masterview.northsydney.nsw.gov.au/Pages/XC.Track/SearchApplication.aspx?id=010.2014.00000443.001 (accessed 13/07/2015).

Greenland Group (2015) Greenland Centre, URL: http://www.greenlandcentre.com.au/apartments/ (accessed 30/06/2015).

City of Sydney Heritage Development Control Plan 2006 http://www.cityofsydney.nsw.gov.au/__data/assets/pdf_file/0018/119511/ApprovedHeritageDCP2006.pdf (accessed 28/08/15).

Landscape Institute, Institute of Environmental Management and Assessment (2013) The Guidance for Landscape and Visual Impact Assessment Third Edition, UK.

Leighton Properties (2015) 177 Pacific Highway North Sydney New South Wales, URL: http://www.leightonproperties.com.au/ourprojects/commercial/177pacifichighway.html (accessed 25/05/2015).

Marrickville Council (2012) Marrickville Development Control Plan 2011.

Marrickville Council (2011) Marrickville Local Environmental Plan 2011.

Marrickville Council (2007) Marrickville Urban Strategy 2007, URL: http://www.marrickville.nsw.gov.au/en/council/forms-and-publications/council-plans/marrickville-urban-strategy/ (accessed 26/05/2015).

NSW Department of Planning and the NSW Maritime Authority (2007) State Environmental Planning Policy (Infrastructure) 2007.

NSW Department of Planning (2005) Sydney Regional Environmental Plan (Sydney Harbour Catchment).

NSW Department of Planning and the NSW Maritime Authority (2007) Sydney Harbour Foreshores and Waterways Area Development Control Plan 2005.

NSW Transport for NSW (August 2015) Sydney Metro – City & Southwest – Technical Services Constructibility Report, Parsons Brinkerhoff, Cox, Hassell, AECOM

Nettleton Tribe Architects (2015) 'Oxley', Crows Nest, URL: http://www.oxleycrowsnest.com.au/ (accessed 23/06/15).

NSW Department of Transport (Rail Corp) and GHD (2011) Central Station Strategy – Towards 2060.

NSW Roads and Maritime Services (2013) Guidance note EIA-N04 Guidelines for Landscape Character and Visual Impact Assessment.

NSW Transport for NSW (2015) Central Station Design Report – Definition Design, Sydney Metro- City & South West Technical Services

North Sydney City Council (2007), Foreshore Access Strategy http://www.northsydney.nsw.gov.au/Council_Meetings/Policies_Plans/Management_Plans/Foreshores_Waterways

North Sydney City Council (2010), Foreshore Parks and Reserves Plan of Management http://www.northsydney.nsw.gov.au/Recreation_Facilities/Parks_Reserves/Parks_Reserves_Management (accessed 25/05/2015 and 10/09/15).

North Sydney Council (2012) North Sydney Development Control Plan 2013.

North Sydney Council (2013) North Sydney Local Environmental Plan 2013.

North Sydney Council (2014) North Sydney Centre Traffic and Pedestrian Study, URL: http://www.northsydney.nsw.gov.au/Building_Development/North_Sydney_Centre/Traffic_Pedestrian_Study (accessed 25/05/2015).

North Sydney Council (2014) North Sydney Open Space Provision Strategy 2009, http://www.northsydney.nsw.gov.au/files/8f090d82-75b2-4a64.../osps.pdf

North Sydney Council (2012) North Sydney Public Art Guide, http://www.northsydney.nsw.gov.au/Community_Services/Arts_Culture/Public_Art/Public_Art_Walking_Guide (accessed 4/01/2016)

North Sydney Council (2011) St Leonards / Crows Nest Planning Study 2011-2014, URL: http://www.northsydney.nsw.gov.au/Building_Development/Strategic_Planning/St_Leonards_Crows_Nest_Planning_Study (accessed 25/05/2015 and 10/09/2015).

North Sydney Council (2011) St Leonards Public Domain Strategy 2003, URL: http://www.northsydney.nsw.gov.au/Projects_Infrastructure/Strategic_Planning_Projects/St_Leonards_Public_Domain_Strategy (accessed 26/05/2015).

Oculus (2015) Brett Whiteley Place, URL: http://www.northsydney.nsw.gov.au/Projects_Infrastructure/Major_Projects/Brett_Whiteley_Place (accessed 13/07/2015).

Sydney Harbour Foreshore Authority (2010) Tree Masterplan for The Rocks and Circular Quay, URL: http://www.shfa.nsw.gov.au/sydney-Resource_centre-Policies_manuals_and_guides.htm (accessed 26/05/2015).

University of Sydney - Abercrombie Precinct http://sydney.edu.au/abercrombie_precinct/ (accessed 01/09/15).

UNESCO World Cultural and Natural Heritage (2015) Operational Guidelines for the Implementation of the World Heritage Convention http://whc.unesco.org/en/guidelines/

University of Sydney Campus Infrastructure and Services (2008) Campus 2020 Masterplan http://sydney.edu.au/ab/about/old/2008/Campus_2020_Masterplan.pdf (accessed 01/09/15)

University of Sydney and URBIS (2014) Campus Improvement Program SSDD13-6123) Environmental Impact Statement https:///2014-01-22 Stage 1 SSDA Campus Improvement Program EIS_FINAL_Jan 2014.pdf (accessed 01/09/15).

University of Sydney (2002) Grounds Conservation Plan http://sydney.edu.au/documents/about/heritage/gcp_vol1.pdf (accessed 01/09/15).

US Forestry Service (1996) Landscape Aesthetics: A Handbook of Scenery Management.

Willoughby City Council (2006) St Leonards Strategy.

Willoughby City Council (2012) Willoughby Local Environmental Plan 2012.

Willoughby City Council (2006) Willoughby Development Control Plan 2006.

Willoughby City Strategy, Community Strategic Plan 2010 – 2025 http://nsroc.com.au/wp-content/uploads/Willoughby-City-Strategy-CSP1.pdf