METRON

METRON

Barangaroo
Station Design & Precinct Plan

SMCSWSBR-MET-SBR-LA-PLN-000001

A joint venture of

ARCADIS Design & Consultancy for natural and built assets

MOTT MACDONALD

Principal sub-consultants

RobertBirdGroup Foster + Partners architectus WT PARTNERSHIP GROUPDLA

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METRON is a joint venture of Arcadis and Mott MacDonald, with principal sub-consultants Robert Bird Group, Foster + Partners, Architectus, WT Partnership and Group DLA

Document No: SMCSWSBR-MET-SBR-LA-PLN-000001

Revision	Date	Suitability Code	TeamBinder Doc. Number	TB Revision
P07	*23.06.2022*	*For Stage Approval*	*SMCSWSBR-MET-SBR-LA-PLN-000638*	*1*

Approval Record

Function	Position	Name	Date
Prepared by	Principal Landscape Architect	Chris Tidswell	23/06/2022
Technical Checker	Principal Landscape Architect	Michael Barnett	23/06/2022
Reviewed by	Design Manager	George Dunstan	23/06/2022
Approved by	Project Manager	David Keogh	23/06/2022

Amendment Record

Changes made to this document sine its last revision, which affect its scope or sense, are marked in the right margin by a vertical bar (|).

Date	Rev	Amendment Description	By
23rd June 2022	07	- Minor updates to 4.3 Station precinct plan - Remove Figure 4.8, 4.9 and 4.10, and replace with received new POD Visualisations - Update- Figure 4.13 Elevation 01: Hickson Road and the service pods with heritage wall in background - Update 4.7.3 Service pods x 2 Pages of images - Update Figure 4.28 Section C-C' - Update Figure 4.29 New plaza and Nawi Cove	Chris Tidswell
22nd June 2022	06	'Final'	Chris Tidswell
2nd June 2020	05	'Final Draft'	Chris Tidswell
23rd April 2020	04	'Draft'	Chris Tidswell
27th February 2020	03	'Lite'	Chris Tidswell
21st February 2020	02	Draft 'Lite'	Chris Tidswell
8th February 2020	01	Draft 'Lite'	Chris Tidswell

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List of Abbreviations

AEO	authorised engineering organisation
AFC	approved for construction
AFFL	above finished floor level
AHU	air handling unit
APAS	Australian Paint Approval Scheme
App	application
AS	Australian Standard
AS/NZS	Joint Australian and New Zealand Standard
ASD	adjacent site development
ASTM ASTM	International (formerly American Society for Testing and Materials)
AWP	aerial work platform
BCA	Building Code of Australia
~~BDA~~	~~Barangaroo Delivery Authority~~ (no longer in operation)
BOH	back-of-house
BMCS	building management control system (contractor)
BR	Barangaroo (Station)
CAOT	computer-aided operational technologies
CBD	central business district
CBTC	communications-based train control (system)
CCAA	Cement, Concrete & Aggregates Australia
CCB	Configuration Control Board
CCD	customer-centred design
CCR	configuration change request
CCTV	closed-circuit television
CFR	Code of Federal Regulations (USA)
CN	Crows Nest (Station)
COS	City of Sydney
CPTED	crime prevention through environmental design
CRAC	computer room air conditioning
CRI	colour rendering index
CSA	customer service assistant
CSELR	CBD and South East Light Rail
CSM	Central Station main works
CSO	customer service officer
DC	direct current
DCP	development control plan
DDA	Disability Discrimination Act 1992 (Commonwealth)
DIN	Deutsches Institut für Normung (German Institute for Standardization)
DRP	design review panel
DRS	draft relief shaft
ECS	environmental control system
EN	European Standard(s)
EPD	environmental product declaration
EVA	emergency vehicle access
FFE	fixtures, fittings & equipment
FOH	front-of-house
FRL	fire-resistance level
FRNSW	Fire and Rescue NSW
FSC	Forest Stewardship Council
GBCA	Green Building Council of Australia
GECA	Good Environmental Choice Australia
GRC	glass(-fibre)-reinforced concrete
HID	high intensity discharge
HV	high voltage
HVAC	heating, ventilation and air conditioning
INSW	Infrastructure New South Wales
ISD	integrated station development
ISO	International Organization for Standardization
JIS	Japanese Industrial Standard
JV	joint venture
KoP	kit of parts
L&E	lifts and escalators (contractor)
LED	light-emitting diode
LV	low voltage
LVL	laminated veneer lumber
LW	line-wide (contractor)
MAFF	Ministry of Agriculture, Forestry and Fisheries (Japan)
MCO	minimum clearance outline
MDF	medium density fibreboard
MEWP	mobile elevating work platform
MP	Martin Place (Station)
NCC	National Construction Code
NSW	New South Wales
OOM	order of magnitude
OSD	over-station development
OTE	over-track exhaust
OWMP	operational waste management plan
PA	public announcement
PEFC	Programme for the Endorsement of Forest Certification
PID	passenger information display
PPE	personal protective equipment
PS	Pitt Street (Station)
PSD	platform screen door
PUWER	Provision and Use of Work Equipment Regulations 1998 (UK)
PVC	polyvinyl chloride
PVD	physical vapour deposition
RMS	Roads and Maritime Services
SA	safety assurance
SFAIRP	so far as is reasonably practicable
SID	safety in design
SPIR	Chatswood to Sydenham Submissions and Preferred Infrastructure Report
SPR	scope and performance requirements
SRI	solar reflectance index
SSC	Southwest Stations and Corridor works
SSJ	Sydenham Station and Junction (works)
SWTC	Scope of Works and Technical Criteria
TES	trackway exhaust system
TSE	tunnel and station excavation (contractor)
TSOM	trains, systems, operations and maintenance (contractor)
TVOC	total volatile organic compounds
TVS	tunnel ventilation system
UPE	under-platform exhaust
UPS	uninterruptible power supply
VC	Victoria Cross (Station)
VOC	volatile organic compounds
WC	water closet
WELS	Water Efficiency Labelling and Standards
WL	Waterloo (Station)

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Introduction

Figure 1.1 Barangaroo Headland Park
Source: http://landezine.com/index.php/2016/07/barangaroo-reserve-by-pwp-landscape-architecture/

1 Introduction
1.1 Project Background

Overview

Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North West with a train every four minutes in the peak. Metro rail will be extended into the CBD and beyond to Bankstown in 2024. There will be new CBD metro railway stations at Martin Place, Pitt Street and Barangaroo and new metro platforms at Central.

In 2024, Sydney will have 31 metro railway stations and a 66 kilometre standalone metro railway system. There will be ultimate capacity for a metro train every two minutes in each direction under the Sydney city centre.

Figure 1.2 Sydney Metro train
Source: https://transportnsw.info/travel-info/ways-to-get-around/metro#/

Sydney Metro is Australia's biggest public transport project.
There are four core components:

Metro North West Line (formerly the 36km North West Rail Link)

Services started in May 2019 in the city's North West between Rouse Hill and Chatswood, with a metro train every four minutes in the peak. The project was delivered on time and $1 billion under budget.

Sydney Metro City & Southwest

The Sydney Metro City & Southwest project includes a new 30 kilometre metro line extending metro rail from the end of the Metro North West Line at Chatswood, under Sydney Harbour, through new CBD stations and southwest to Bankstown. It is due to open in 2024 and will deliver new metro stations at Barangaroo, Crows Nest, Victoria Cross, Martin Place, Pitt Street, Waterloo and new underground metro platforms at Central Station. In addition it will upgrade and convert all 11 stations between Sydenham and Bankstown to metro standards.

Sydney Metro West

Sydney Metro West is a new underground railway connecting Greater Parramatta and the Sydney CBD. This once-in-a-century infrastructure investment will transform Sydney for generations to come, doubling rail capacity between these two key commercial areas, linking new communities to rail services and supporting employment growth and housing supply between the two CBDs.

Sydney Metro West stations have been confirmed at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and the Sydney CBD.

Sydney Metro - Western Sydney Airport

Metro rail will also service Greater Western Sydney and the new Western Sydney International (Nancy Bird Walton) Airport. The new railway line will become the transport spine for the Western Parkland City's growth for generations to come, connecting communities and travellers with the rest of Sydney's public transport system with a fast, safe and easy metro service. Six new stations will be delivered at St Marys, Orchard Hills, Luddenham, Airport Business Park, Airport Terminal and Western Sydney Aerotropolis. The Australian and NSW governments are partners in the delivery of this new railway.

The growing Sydney Metro network is illustrated in Figure 1.3.

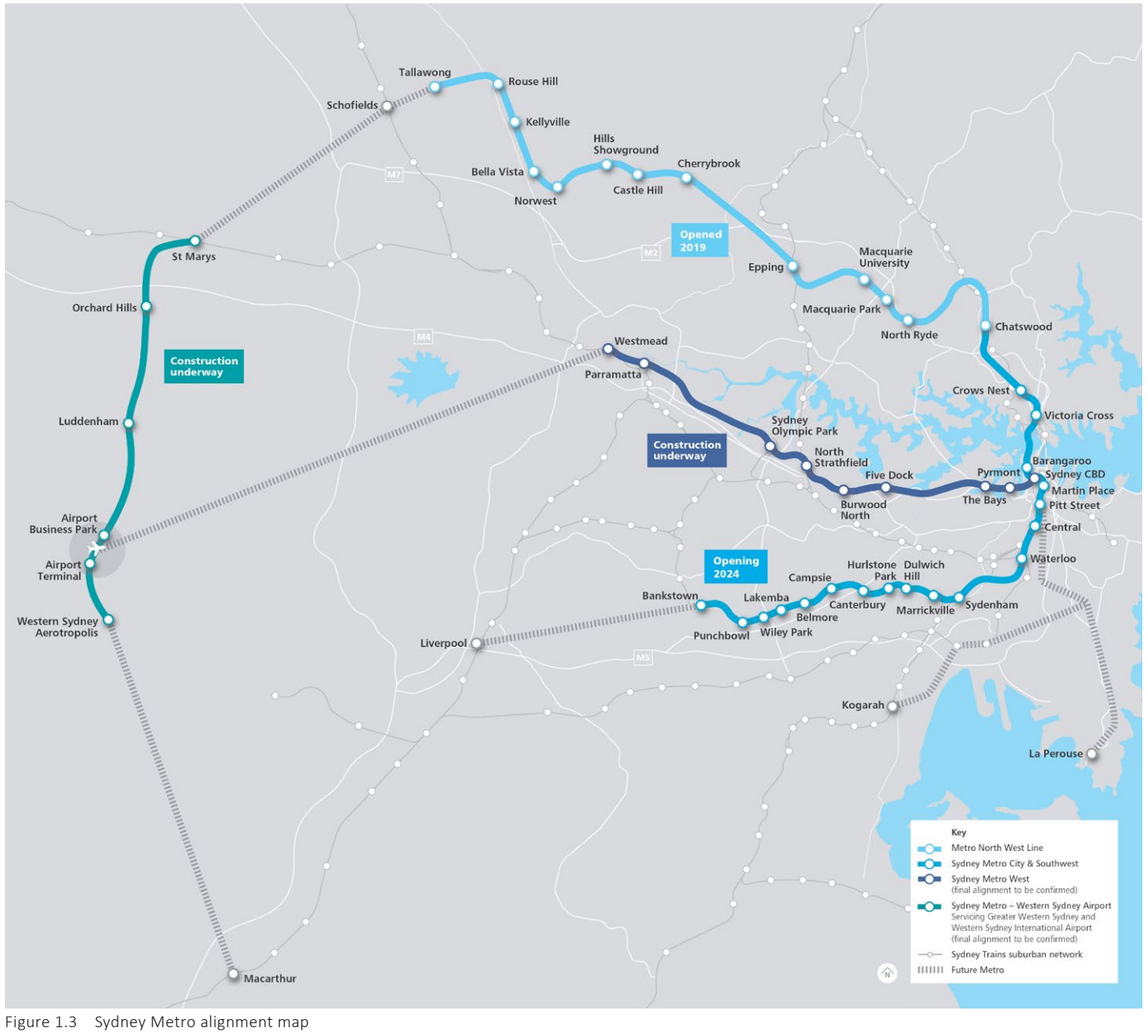


Figure 1.3 Sydney Metro alignment map
Source: Sydney Metro

Purpose

This report has been prepared to document the Station Design and Precinct Plan (SDPP) for the Barangaroo Station component of the Sydney Metro City & Southwest Chatswood to Sydenham project. The plan has been prepared to present an integrated urban and place making outcome to guide the design of the permanent built surface works and landscaping associated with the project.

An integrated urban and place making outcome must be achieved through the consideration of existing and planned public domain and private developments adjacent to the project and effective consultation and collaboration with relevant stakeholders.

The preparation of the SDPP is a requirement of Condition E101 of the Chatswood to Sydenham project approval SSI 15_7400. Condition E101 allows the SDPP to be submitted in stages and, as identified in the Staging Report, the staging of the project is prepared on a precinct basis. Consistent with the requirements of Condition E101, this SDPP:

- Details specific design objectives, principles and standards
- Identifies design opportunities including incorporation of public art and salvaged elements
- Describes the key design features
- Outlines implementation of the plan, including maintenance and monitoring
- Provides evidence of consultation.

As required by Condition E101, the SDPP has been prepared by suitably qualified and experienced person(s):

Chris Tidswell
Principal, Arcadia Landscape Architecture
RAILA #001858
AILA National Director and Company Secretary

Sydney Metro - Design objectives

Sydney Metro City & Southwest has established five high-level Design Objectives which set the direction and framework for infrastructure design and project delivery. It is recognised the Sydney Metro provides opportunity for significant upgrades and activation to the Public Domain and streetscapes in several primary city and local centres.

The urban design vision is to upgrade and strengthen pedestrian and commuter connectivity while revitalising and connecting open space networks within these established local and city precincts to create places, streets and public spaces ‘for people’.

Design objectives applicable to urban realm include guidelines embedded within the following documents and plans:

- Design Guidelines 2016
- City of Sydney DCP 2012
- City of Sydney Street Codes
- Peter Walker Partners Masterplan
- Reference Design: Barangaroo 2017
- Infrastructure New South Wales 2020 Design Refinement Direction

Project scope

This SDPP presents integrated urban, landscape and architectural design outcomes for Barangaroo Station Precinct.

The new precinct will include development opportunities for the following areas:

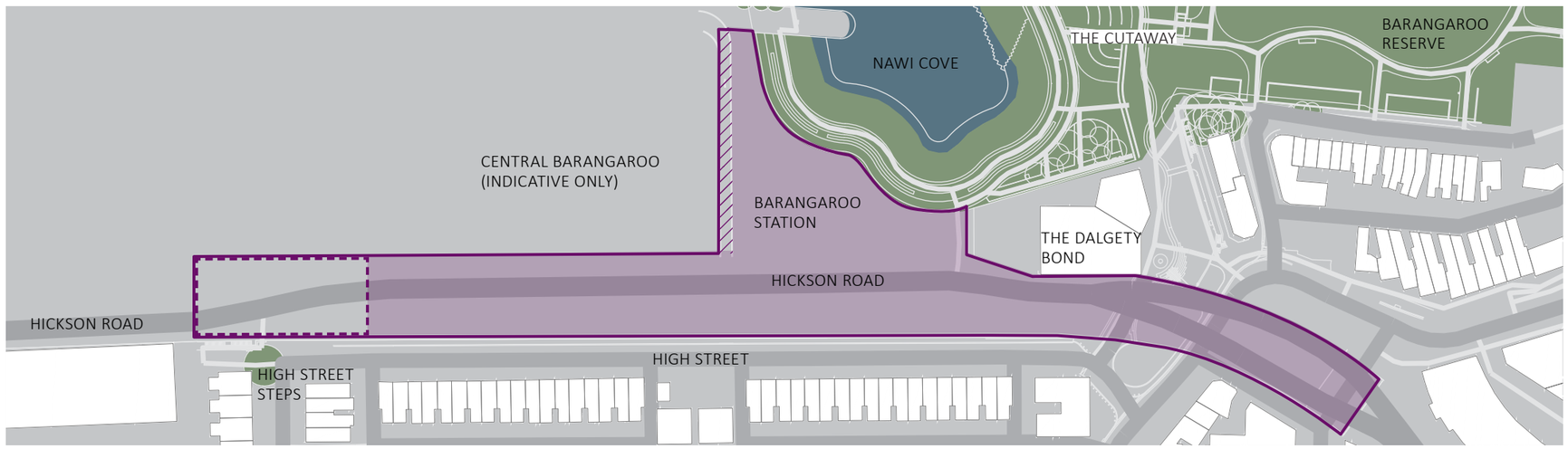
The scope included as part of the new precinct work:
- Hickson Road (from the area below Windmill Street Overbridge) to the High Street steps.
- Station entry between the Dalgety Bond car park to future streets of Barangaroo Central.
- Nawi Cove parkland to the Barangaroo Cutaway Entrance: including Street D of Barangaroo Central.

Developments to Station areas include:
- New northern station entry with escalator and lift.
- New service pods along Hickson Road eastern verge with pedestrian footpath.

Design and delivery coordination is progressing for Hickson Road south of the station box, including coordination between Sydney Metro, Infrastructure NSW, INSW development partners, and City of Sydney.

Below is a diagram that illustrates the project scope.

Hickson Road finishes within the construction limits in the diagram below will be delivered by Sydney Metro by the end of 2023.



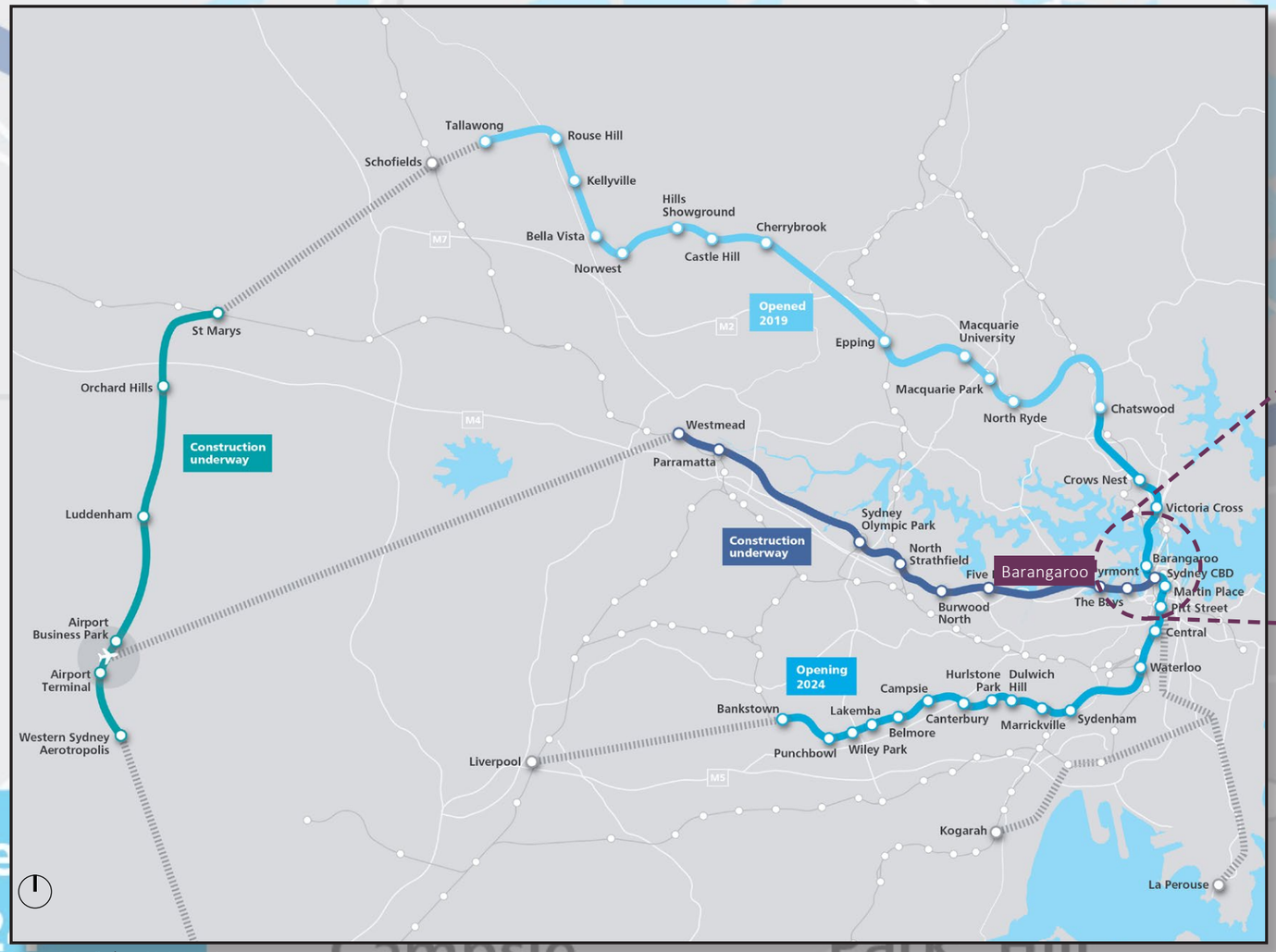


Figure 1.4 Sydney Metro route map
Source: Sydney Metro

Barangaroo Station

Barangaroo Station is located underground beneath the northern end of Hickson Road, south of Munn Street in Millers Point. The station is approximately 25 metres below ground level.

The new station will provide improved access to the Walsh Bay Arts culture precinct. Additional, direct access to commercial and residential zones will further help strengthen economic activity within the entertainment and retail areas as well as providing a connection to the new Ferry Hub.

Residential areas at Millers Point, Walsh Bay and future residents of Barangaroo will benefit from high-quality public transport access to the best attraction destinations in Sydney.

Figure 1.5 Current site photo of Nawi Cove
Source: https://www.barangaroo.com

Figure 1.6 Current site photo of Hickson Road
http://www.visitsydneyaustralia.com.au

Figure 1.7 Barangaroo Station
Source: Nearmap

Background documents

Policies and plans that set the broad strategic direction for the region are:

- Sydney Regional Environmental Plan (Sydney Harbour Catchment), 2005
- Sydney Harbour Foreshores and Waterways Area Development Control Plan (DCP), 2005
- Barangaroo Revised Statement of Commitments, Barangaroo Delivery, 2010
- Sydney Local Environmental Plan, City of Sydney, 2012
- Sydney Development Control Plan (DCP), City of Sydney, 2012
- Greater Sydney Region Plan (Greater Sydney commission), 2018
- NSW Long Term Transport Master Plan, 2012
- A Plan For Growing Sydney, 2014
- Eastern District Plan (GSC), 2018
- The suite of Government Architect NSW (GANSW) documents that promotes design excellence through place outcomes as well as stronger design-led and integrative processes is:
  - Better Placed, 2017
  - Good Urban Design, 2018, draft
  - Greener Places, 2017, draft
  - Sydney Green Grid – Central District, 2017.

Foundation documents (Project-wide)

Relevant plans, policies and guidelines that frame the project's urban and landscape design for all station precincts are:

- City & Southwest Final Business Case, Transport for NSW, October 2016
- Sydney Metro Barangaroo Inter Change Access Plan
- Sydney Metro - Consistency Assessment Approval Form - Protection of the High Street cutting at Barangaroo

Historical (non-statutory) documents

Relevant plans, policies and guidelines that frame the Project urban and landscape design for all station precincts are:

- Chatswood to Sydenham Design Guidelines, 2017
- Sydney Metro Northwest pedestrian-cycle network & facilities strategy, 2015
- 'Fine Grain Public Domain and Station Integration Studies' and Station Precinct Plans (2016) that informed the Sydenham to Bankstown Urban Renewal Corridor Strategy (NSW DPE), revised 2017.

Council plans and initiatives

Relevant plans, policies and guidelines that frame the Project urban and landscape design for all station precincts are:

- Sydney Public Spaces Public Life, Gehl Architects, 2007
- Sydney Streets Design Code, City of Sydney Council, 24 June 2013
- Sydney City Centre, Access Strategy, NSW Government, December 2013
- Sydney Street, City of Sydney, 2019
- City of Sydney 2011 Street Tree Masterplan

Figure 1.8 Birds view of Barangaroo
https://www.barangaroo.com/the-project/infrastructure-nsw/

Conditions of Approval

The Chatswood to Sydenham project was approved under Section 5.19 of the EP&A Act 1979. One of the conditions of approval require the preparation of a SDPP - this SDPP has been prepared to address the requirements of the condition.

The SDPP has been prepared in accordance with the requirements of Schedule 1, Application no. SS1 7400, under Section 5.19 of the Environmental Planning & Assessment Act 1979. It is one component of a suite of reports and notifications required to be provided to the Planning Secretary under the terms of the approval.

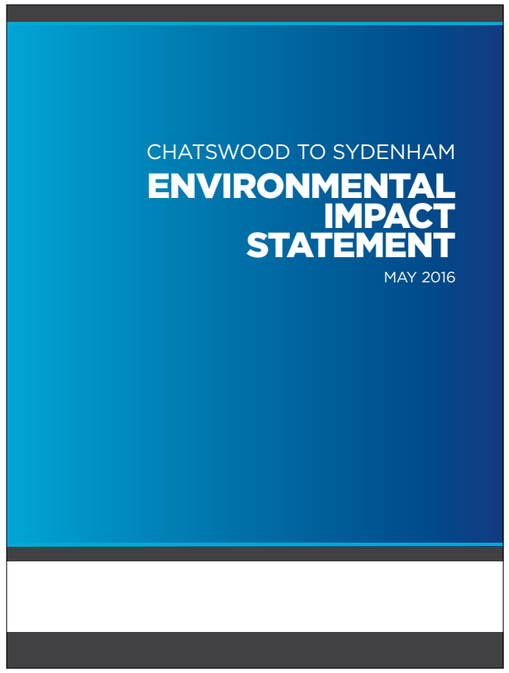


Figure 1.9 Transport for NSW - Sydney Metro Chatswood to Sydneham Environmental Impact Statement

EIS, Submissions Report, and Preferred Infrastructure Report compliance

The Chatswood to Sydenham Environmental Impact Statement (EIS) May 2016 provided a design for Barangaroo station that looked at, as described in Technical Paper 6: Landscape & Visual Impact Assessment the existing environment, Barangaroo Reserve, Central Barangaroo, Barangaroo South, Hickson Road, and High Street.

The character and components of the project consisted of:

- 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

The EIS (EIS Volume 1C Appendix C) required that “The design of Sydney Metro City & Southwest. The report outline three design themes: re-discover, re-connect, re-generate. The intent of the design themes remains relevant to the principles developed for each precinct however the project scope differs from the EIS with the significant changes summarised below:

- Service structures located in front of the Millers Point cliff wall
- Relocation of Traction substation building below ground
- Precinct and landscape treatment to Nawi Cove
- Bi-directional separated cycle lane down Hickson Road

Scope of Works and Technical Criteria (SWTC)

The architectural, urban design and landscape design are required to comply with the Scope of Works and Technical Criteria (SWTC) which is a Sydney Metro Requirement.

Relevant background Information

- Barangaroo Integrated Transport Plan
- Barangaroo South Stage 1, Non-Indigenous Archaeological Assessment, 2010
- Barangaroo South Stage 1, Aboriginal Archaeological and Cultural Heritage Assessment
- Barangaroo South Masterplan
- Barangaroo South Draft Design Guidelines 2015
- Barangaroo South Development Application 2017
- Barangaroo South Stage 1B Public Domain Wayfinding Strategy
- Barangaroo South Stage 1B Crime Prevention Through Environmental Design Report
- Barangaroo Stage 1B - State Significant Development, Environmental Impact Statement, Barangaroo Public Domain (SSD 16_7944)
- Barangaroo Central Waterfront, Promenade and Interim Public Domain, Archaeological Assessment, Oct 2012
- Barangaroo Central - Heritage Interpretation Strategy
- Barangaroo Central – 2015 Request for Bid Document
- Barangaroo Headland Park - Community Plan
- Barangaroo Headland Park Public Art Strategy
- Barangaroo Headland Park Public Domain Sub-Plan, 2010
- Barangaroo Headland Park, Headland Park Main Works Package ESD Report, 2010
- Infrastructure New South Wales Nov 2019 Reference Design

Structure of the SDPP

The SDPP has been formatted to respond to the Urban Design and Visual Amenity Conditions. and the related Revised Environmental Management Measures (REMMs):

- **Part 1: Introduction**
  This section includes the background to the project including the strategic context and the conditions of approval.

- **Part 2: Design Principles**
  This section includes Sydney Metro objectives and related corridor-wide principles, referencing the SSI 7400 (Chatswood to Sydenham) outcomes.

- **Part 3: Context and Form**
  This section includes the station and precinct analysis, covering the strategic context, and the built, natural and community context. It includes constraints, opportunities both for the project and beyond, the design response (in scope), and where the project safeguards future aspirations.

- **Part 4: Design**
  This section communicates the holistic design approach for the station and precinct, including the interface with the surrounding public domain, movement and access network and landscape and built form setting.

- **Part 5: Transport and Access**
  This section references the key outcomes from the walking and cycling strategy, and how the strategy relates to the project design .

- **Part 6: Consultation**
  This section summarises the outcomes of the consultation process, including design response to feedback from stakeholders and the design review panel.

Compliance with the Conditions of Approval

The table below describes where and how the SDPP applied the Conditions of approval is addressed.

All elements covered by the SDPP will be complete before the commencement of the operation of the Sydney Metro paid services.

Condition number	Requirement	How condition is met: refer to relevant section of SDPP
E21	The Proponent must prepare a Heritage Interpretation Plan which identifies and interprets the key Aboriginal and Non-Aboriginal heritage values and stories of heritage items and heritage conservation areas impacted by the CSSI. The Heritage Interpretation Plan must inform the Station Design and Precinct Plan referred to in Condition E101. The Heritage Interpretation Plan must be prepared in accordance with the NSW Heritage Manual, the NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), and the NSW Heritage Council's Heritage Interpretation Policy and include, but not be limited to: (a) a discussion of key interpretive themes, stories and messages proposed to interpret the history and significance of the affected heritage items and sections of heritage conservation areas including, but not limited to the Sydney Terminal and Central Railway Stations Group, Martin Place Station, Sydenham Station and Sydenham Pit and Drainage Pumping Station Precincts; (b) identification and confirmation of interpretive initiatives implemented to mitigate impacts to archaeological Relics, heritage items and conservation areas affected by the CSSI including; i. use of interpretative hoardings during construction ii. community open days iii. community updates iv. station and precinct design; and (c) Aboriginal cultural and heritage values of the project area including the results of any archaeological investigations undertaken.	Refer Section 3.1 Historical context, 4.5 Heritage Design Principles. The below have been prepared in responding to Condition E21: • Heritage Interpretation Plan has been prepared in accordance with NSW Heritage Manual, NSW Heritage Office's Interpreting Heritage Places and Items: Guidelines (August 2005), NSW Heritage Council's Heritage Interpretation Policy • Section 3.1 and 4.5 illustrate how the Heritage Interpretation Plan have informed the Station Design and Precinct Plan
	The Heritage Interpretation Plan must be prepared in consultation with the Heritage Council of NSW (or its delegate), Relevant Councils and Registered Aboriginal Parties, and must be submitted to the Secretary before commencement of construction.	• Heritage Interpretation Plan has been prepared in consultation with the Heritage Council of NSW (or its delegate), Relevant Councils and Registered Aboriginal Parties, and will be submitted to the Secretary before commencement of construction
E93	In developing the Interchange Access Plan(s), the Proponent must consider: (a) traffic and accessibility design requirements; and (b) the Station Design and Precinct Plan(s) required by Condition E101.	Refer Section 3.3.6 and 5.1. The below have been prepared in responding to Condition E93: • Section 3.3.6 and 5.1 illustrate how the Interchange Access Plan(s) implement the traffic and accessibility design requirements and Station Design and Precinct Plan(s)
E6	In the event that tree removal cannot be avoided, then replacement trees are to be planted within, or in close proximity to the CSSI or other location in consultation with the Relevant Councils and agreed by the Secretary. The size of the replacement trees will be determined in consultation with the relevant Council.	Refer Section 4.11 Plaza Landscape Design. Tree removal is required due the utlities design and trees that are being removed will be replaced in exactly the same location. The size of the replacement trees will be discussed with the City of Sydney

Continued. Compliance with the Conditions of Approval

Condition number	Requirement	How condition is met: refer to relevant section of SDPP
E101	Before commencement of permanent built surface works and/or landscaping, the Proponent must prepare Station Design and Precinct Plans (SDPP) for each station. The SDPP must be prepared by a suitably qualified and experienced person(s), in collaboration and consultation with relevant stakeholders including but not limited to relevant council(s), the Department, and the local community. The SDPP(s) must present an integrated urban and place making outcome for each station or end state element. The SDPP(s) must be approved by the Secretary following review by the DRP and before commencement of permanent above ground work.	This document and its contents respond to Condition E101. The SDPP has been prepared by a suitably qualified and experienced person(s) and provides a resent an integrated urban and place making outcome. Section 6 Summarises the Stakeholder Engagement.
E101	Each SDPP must include, but not be limited to: (a) identification of specific design objectives, principles and standards based on- i. the project design objectives as refined by the DRP; ii. maximising the amenity of public spaces and permeability around entrances to stations; iii. local environmental, heritage and place making values; iv. urban design context; v. sustainable design and maintenance; vi. community safety, amenity and privacy, including 'safer by design' principles where relevant; vii. relevant urban design and infrastructure standards and guidelines (including relevant council standards, policies and guidelines); viii. minimising the footprint of the project (including at operational facilities); (b) opportunities for public art;	This document and its contents respond to Condition E101. The below have been prepared in responding to Condition E101: • Refer Section 1 and 2 for the identification of specific design objectives, principles and standards, relevant urban design and infrastructure standards and guidelines (including relevant council standards, policies and guidelines) • Refer Section 4 and 5 for the maximising the amenity of public spaces and permeability around entrances to stations, opportunities for public art • This overall document and its contents respond to Condition E101 local environmental, heritage and place making values, urban design context, sustainable design and maintenance, community safety, amenity and privacy, including 'safer by design' principles where relevant
E101	(c) landscaping and building design opportunities to mitigate the visual impacts of rail infrastructure and operational fixed facilities (including the Chatswood Dive, Marrickville Dive, Sydney Metro Trains Facility South, Artarmon Substation, station structures and services, noise walls etc.); (d) the incorporation of salvaged historic and artistic elements onto the project design, including but not limited to the Tom Bass P&O fountain, the Douglas Annand glass screen (if present), the Douglas Annand wall frieze and heritage fabric from Martin Place Station, unless otherwise agreed by the Secretary; (e) details on the location of existing vegetation and proposed landscaping (including use of endemic and advanced tree species where practicable). Details of species to be replanted/revegetated must be provided, including their appropriateness to the area and habitat for threatened species; (f) a description of the CSSI design features, including graphics such as sections, perspective views and sketches for key elements of the CSSI; (g) the location, design and impacts of operational lighting associated with the CSSI and measures proposed to minimise lighting impacts; (h) details of where and how recommendations from the DRP have been considered in the plan;	This document and its contents respond to Condition E101. The below have been prepared in responding to Condition E101: • Visual Impact Assessment has been prepared to mitigate the visual impacts of rail infrastructure and operational fixed facilities • Heritage Interpretation Plan has been prepared which illustrates the incorporation of salvaged historic and artistic elements onto the project design, Section 3.1 and 4.5 illustrate how the Heritage Interpretation Plan have informed the Station Design and Precinct Plan. The Heritage Interpretation Plan will be submitted to the Secretary before commencement of construction. • Refer Section 4 as it details on the location of existing vegetation and proposed landscaping
E101	(i) the timing for implementation of access, landscaping and public realm initiatives; (j) monitoring and maintenance procedures for vegetation and landscaping (including weed control), performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail; and (k) evidence of consultation with the community, local Councils and agencies in the preparation of on the SDPP(s) and how feedback has been addressed before seeking endorsement by the DRP. Elements covered by SDPP(s) must be complete no later than the commencement of operation of the Sydney Metro to paid services, unless otherwise agreed with the Secretary. Note: The SDPP may be submitted in stages to address the built elements of the CSSI and landscaping aspects of the CSSI.	This document and its contents respond to Condition E101. The below have been prepared in responding to Condition E101: • This overall document and its contents respond to Condition E10, CSSI design features, including graphics such as sections, perspective views and sketches for key elements • Refer Section 4 as it detail the location of existing and proposed vegetation • Refer Section 4 as it illustrates the monitoring and maintenance procedures for vegetation and landscaping • Refer Section 6 for the evidence of consultation with the community and stakeholders
E102	The SDPP must achieve a minimum visual impact rating of at least "Minor Benefit" as defined in the EIS, as amended by the documents listed in A1, for all design elements of the project, where feasible and reasonable. Where it can be demonstrated, to the DRP's satisfaction, that a "Minor Benefit" is not achievable, then a "Negligible" visual impact rating must be achieved as a minimum.	Visual Impact Assessment has been prepared to assess the design elements of the project. The Visual Impact Assessment will be submitted to the Secretary before commencement of construction.

Design process

The design for the project has developed through an iterative & collaborative process. From over-arching objectives and design principles, to context analysis, to the developing design. Consultation with City of Sydney has been a key part of the process & informed the station design & future opportunities to be safeguarded.

In summary, the steps involved were:

- Project understanding
  - Build on Sydney Metro City & Southwest line-wide & specific project design objectives.
  - Test & refine design principles, & share with project team.
  - Establish the structure & draft outline for the SDPP (this document).

- Context analysis
  - Review all EIS supporting documentation including specialist assessments & reports.
  - Update analysis of strategic policy context, environmental & cultural context
  - Develop appreciation of key issues & precinct opportunities.
  - Identify where the project can support precinct opportunities through the design.

- Design
  - Cross-disciplinary workshops & discussions to integrate the work of all disciplines, from engineering through to human factors / client centred design, heritage, landscape, architecture, & urban design.
  - Regular consultation with City of Sydney for feedback on developing design.
  - Design Review Panel regular review.

- Public exhibition
  - Exhibition of the SDPP for public comment.
  - Progress the design based on feedback from the exhibition.
  - Report back to Design Review Panel.
  - Finalise SDPP & submit to the Department of Planning, Industry & Environment for approval.

Condition number	Requirement	How condition is met: refer to relevant section of SDPP
E103	The Proponent must apply reasonable endeavours to negotiate with the Barangaroo Delivery Authority to integrate station ancillary components (i.e. traction substation, ventilation risers and skylights) associated with Barangaroo Station within the Barangaroo development complex. Should an integrated outcome for ancillary components not be achieved, the location and design outcome must be consistent with design objectives and endorsed by the DRP.	The design has been in close and detailed negotiations with the Infrastructure New South Wales (Formerly Barangaroo Delivery Authority) to integrate station ancillary components. Section 6 Summarises the Stakeholder Engagement.
REMM Number	**Requirement**	**How REMM is met: refer to relevant section of SDPP**
T1	Ongoing consultation would be carried out with (as relevant to the location) the CBD Coordination Office, Roads and Maritime Services, Sydney Trains, NSW Trains, the Port Authority of NSW, Barangaroo Delivery Authority, local councils, emergency services and bus operators in order to minimise traffic and transport impacts during construction.	Refer Section 6 Consultation for all consultation that has occurred in preparation of the Station Design Precinct Plan.
T10	Any relocation of bus stops would be carried out by Transport for NSW in consultation with Roads and Maritime Services, the CBD Coordination Office (for relevant locations), the relevant local council and bus operators. Wayfinding and customer information would be provided to notify customers of relocated bus stops.	Refer Section 6 Consultation for all consultation that has occurred in preparation of the Station Design Precinct Plan. Consultation has occurred in the preparation of the Interchange Access Plan. Refer Section 4 as it illustrates connectivity and access within the precinct design.
T11	For special events that require specific traffic measures, those measures would be developed in consultation the CBD Coordination Office (for relevant locations), Roads and Maritime Services, Barangaroo Delivery Authority (for relevant locations) and the organisers of the event.	Refer Section 6 Consultation for all consultation that has occurred in preparation of the Station Design Precinct Plan. Consultation has occurred in the preparation of the Interchange Access Plan. Refer Section 4 as it illustrates connectivity and access within the precinct design.

REMM Number	Requirement	How REMM is met: refer to relevant section of SDPP
OpT4	Transport for NSW would work with local councils to minimise adverse impacts of operation on parking and other kerbside use in local streets, such as loading zones, bus zones, taxi zones and coach zones.	Refer Section 6 Consultation for all consultation that has occurred in preparation of the Station Design Precinct Plan. Consultation has occurred in the preparation of the Interchange Access Plan. Refer Section 4 as it illustrates connectivity and access within the precinct design.
NAH2	The archaeological research design would be implemented. Significant archaeological findings would be considered for inclusion in heritage interpretation (as per NAH8) for the project and be developed in consultation with the relevant local council.	Refer Section 3.1 Historical context, 4.5 Heritage Design Principles. The below have been prepared in responding to Condition NAH2: • Section 3.1 and 4.5 illustrate how the Heritage Interpretation Plan have informed the Station Design and Precinct Plan
NAH3	The project design would be sympathetic to heritage items and, where reasonable and feasible, minimise impacts to the setting of heritage items. The detailed design for Martin Place Station, Central Station, Sydenham Station and the aqueduct over the Sydenham Pit and Drainage Pumping Station would be developed with input from a heritage architect.	Refer Section 3.1 Historical context, 4.5 Heritage Design Principles. The below have been prepared in responding to Condition NAH3: • Section 3.1 and 4.5 illustrate how the Heritage Interpretation Plan have informed the Station Design and Precinct Plan
NAH11	Except for heritage significant elements affected by the project, direct impact on other heritage significant elements forming part of the following items would be avoided: • The Blues Point Waterfront Group (including the former tram turning circle, stone retaining wall, bollards and steps) • The Millers Point and Dawes Point Village Precinct • The existing Martin Place Station • Sydney Terminal and Central Railway Stations group • Sydney Yard (including the Shunters Hut and Prince Alfred Sewer) • The existing Sydenham Station • Brick retaining walls near Sydenham Station.	Refer Section 3.1 Historical context, 4.5 Heritage Design Principles. The below have been prepared in responding to Condition NAH11: • Section 3.1 and 4.5 illustrate how the Heritage Interpretation Plan have informed the Station Design and Precinct Plan

REMM Number	Requirement	How REMM is met: refer to relevant section of SDPP
AH3	Archaeological test excavation (and salvage when required) would be carried out where intact natural soil profiles with the potential to contain significant archaeological deposits are encountered at the Blues Point temporary site, Barangaroo Station, Martin Place Station, Pitt Street Station, Central Station, Waterloo Station and Marrickville dive site. Excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report.	Refer Section 3.1 Historical context, 4.5 Heritage Design Principles and which illustrates how any excavations would be conducted in accordance with the methodology outlined in the Aboriginal cultural heritage assessment report
AH4	Appropriate Aboriginal heritage interpretation would be incorporated into the design for the project in consultation with Aboriginal stakeholders.	Refer Section 3.1 Historical context, 4.5 Heritage Design Principles. The below have been prepared in responding to Condition AH4: • Section 3.1 and 4.5 illustrate how the Heritage Interpretation Plan have informed the Station Design and Precinct Plan

REMM Number	Requirement	How REMM is met: refer to relevant section of SDPP
CU1	Transport for NSW would manage and co-ordinate the interface with projects under construction at the same time. Co-ordination and consultation with the following stakeholders would occur, where required: • CBD Coordination Office • Department of Planning and Environment • Roads and Maritime Services • Sydney Trains • NSW Trains • Sydney Buses • Sydney Water • Port Authority of NSW • Willoughby Council • North Sydney Council • City of Sydney Council • Marrickville Council • Sydney Motorways Corporation • Barangaroo Delivery Authority • Emergency service providers • Utility providers • Construction contractors.	Refer Section 6 Consultation for all consultation that has occurred in preparation of the Station Design Precinct Plan. Consultation has occurred in the preparation of the Interchange Access Plan.
CU1	Co-ordination and consultation with these stakeholders would include: • Provision of regular updates to the detailed construction program, construction sites and haul routes • Identification of key potential conflict points with other construction projects • Developing mitigation strategies in order to manage conflicts. Depending on the nature of the conflict, this could involve: • Adjustments to the Sydney Metro construction program, work activities or haul routes; or adjustments to the program, activities or haul routes of other construction projects • Co-ordination of traffic management arrangements between projects.	Refer Section 6 Consultation for all consultation that has occurred in preparation of the Station Design Precinct Plan. Consultation has occurred in the preparation of the Interchange Access Plan.

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Design principles

2

Figure 2.1 Barangaroo Reserve - the foreshore promenade
Source: http://www.pwpla.com/sites/pwp/images/9945773420A.jpg

2 Design Principles
2.1 Corridor character

Each station precinct is its own place, with its own geology, topography, history and culture. Each has a particular mix of heritage station buildings and later additions. Each is also woven into its immediate context - its precinct - and into the wider neighbourhood in its own way.

Sydney Metro City & Southwest will run through a landscape that has been homogenised by urbanisation. The undulating topography and geology is still legible - particularly as the corridor literally cuts through the contours.

The stories of successive waves of immigrants to Sydney are woven into the fabric of the urban form. While neighbourhoods have changed over time and will continue to change, the metro stations will continue to serve as both destinations and departure points, connecting neighbourhoods and landscapes either side of the corridor.

Two Aboriginal nations, the Eora and Dharug, were the original inhabitants of the area traversed by the project, broadly meeting at the Cooks River. The river – Goolay'yari (pelican) – was a place that brought people together as much as divided them, with its rich harvest of fish and shellfish. The Bediagal clan occupied land to the south; the Wangal to the west, and the Gadigal to the east.

The Barangaroo metro site forms the southern gateway to Barangaroo Headland, originally a part of the area named Coodye by the traditional custodians of the area, the Gadigal People.

Fronting the headwaters of Darling Harbour/Tumbalong, and a stones throw away from the site of first contact between Aboriginal people and British colonisers, Sydney Cove/Warrane, Barangaroo is triangulated by major Australian icons, the Opera House, the Harbour Bridge, and Darling Harbour - places which hold importance in the Australian psyche - Aboriginal and non Indigenous people alike.

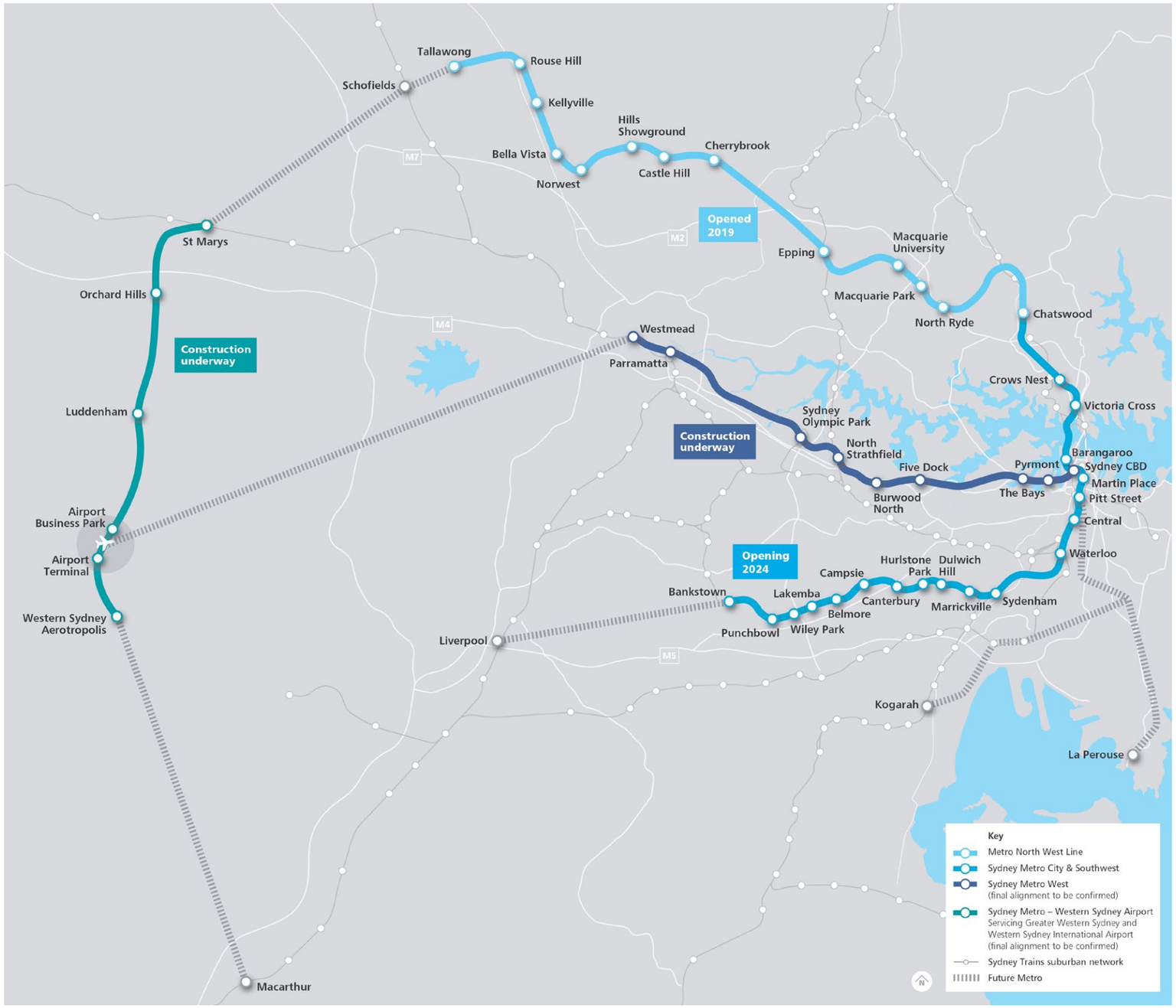


Figure 2.2 Sydney Metro alignment map

Source: Sydney Metro

2 Design Principles
2.1 Corridor character

Urban Analysis

Barangaroo Station is located at the northern tip of a strong commercial spine, which is characterised by its concentration of offices and tall buildings, Barangaroo benefits from ample green and open spaces as well as a prime position on the waterfront.

The immediate vicinity of Barangaroo, defined as a 5-minute walk from the future station (400m radius) shows a drop in both employment densities and building heights. Although located within walking distance of the CBD, Barangaroo is a place of its own.

The local area is defined by a complex mix of uses, including residential, recreational and commercial activities. On the western shore, the Barangaroo regeneration proposal is seizing the opportunity and transforming a former industrial site into a high density mixed use project.

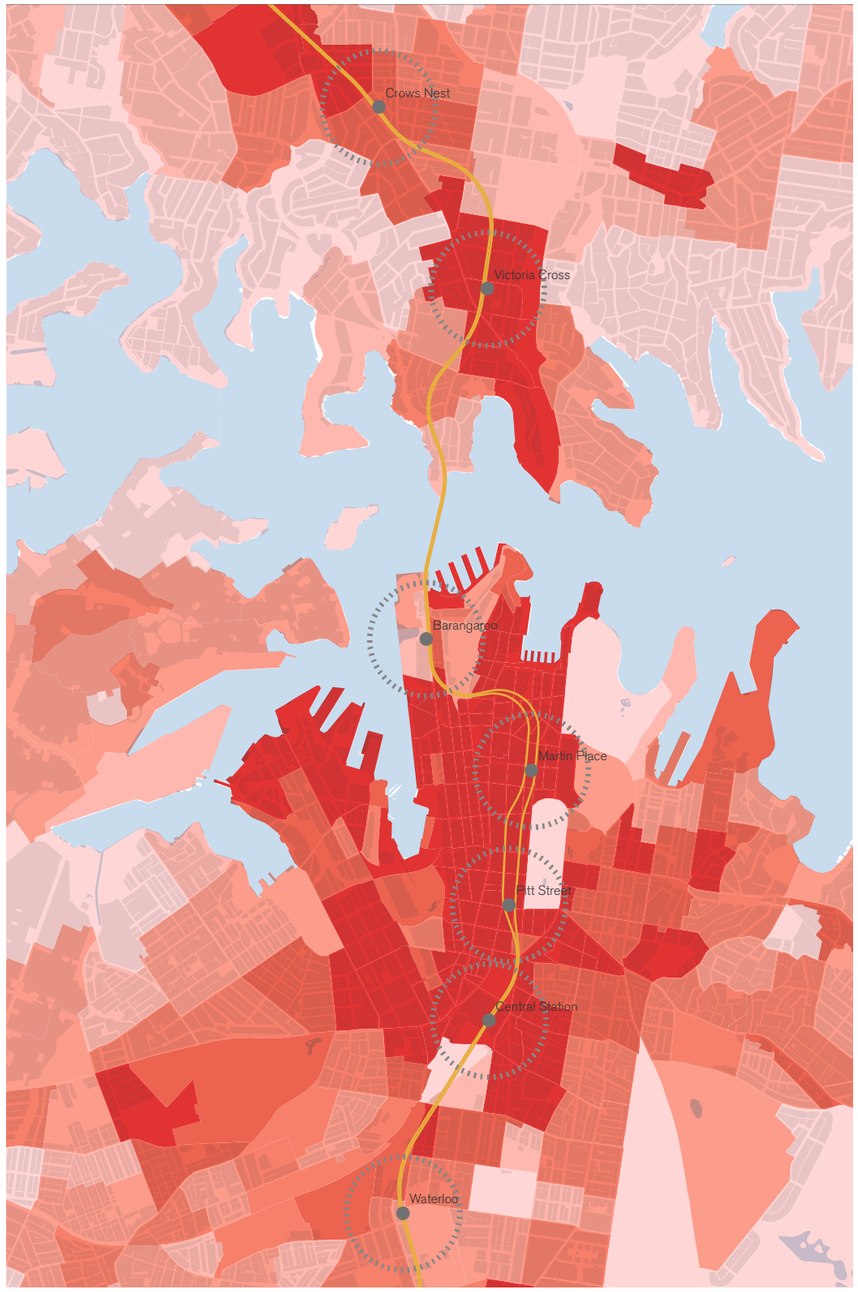


Figure 2.3 Employment density along the Sydney Metro City corridor

Source: Architectus - Architectural Design Report

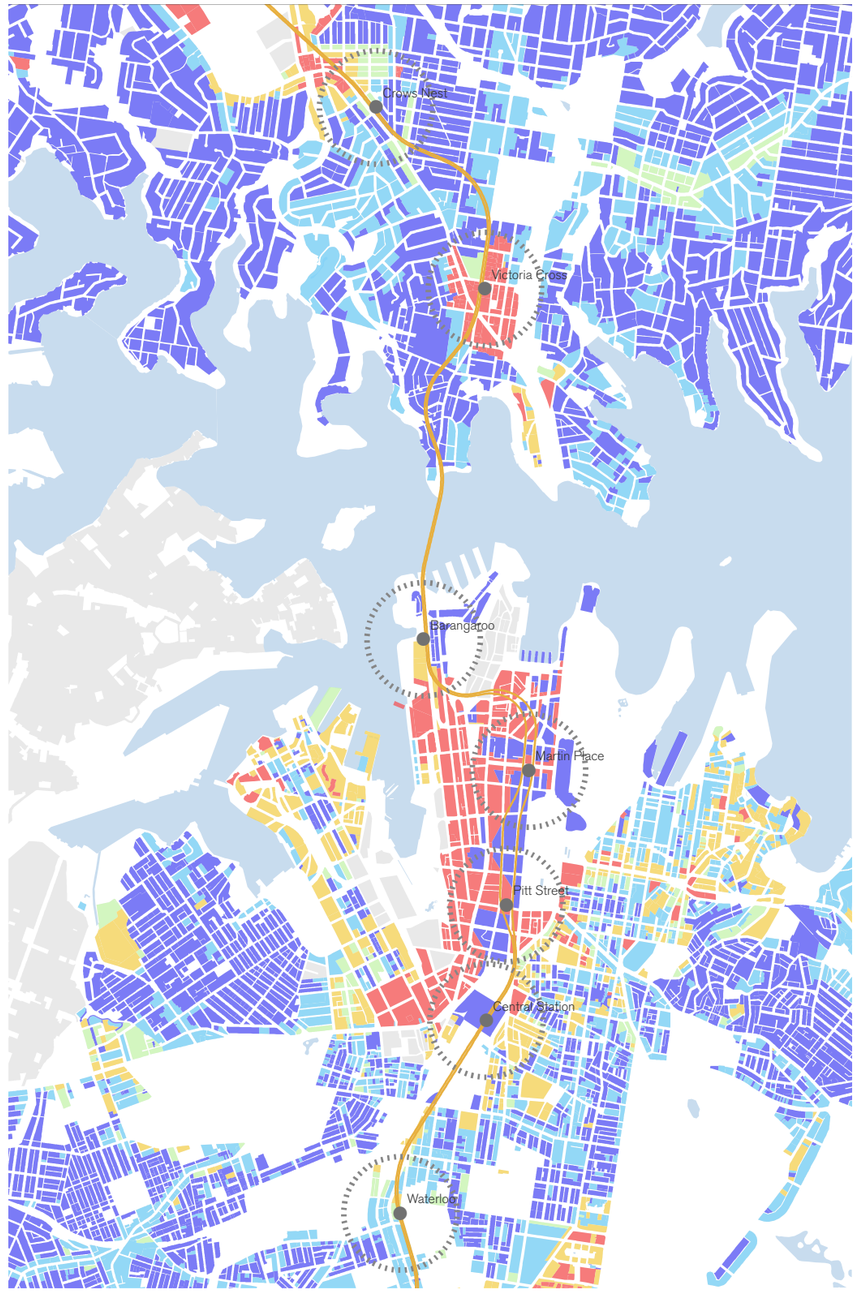


Figure 2.4 Building height along the Sydney Metro City corridor

Source: Architectus - Architectural Design Report

The Chatswood to Sydenham Environmental Impact Statement May 2016 Technical Paper 6: Landscape & Visual Impact Assessment requires the below:

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 - now INSW) 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 Plane trees (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

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"*

2.3.1 Project design objectives

The urban design has been guided by the project design objectives and supporting principles and standards. The principles have been developed to reflect the current Project scope while maintaining continuity with the Sydney Metro City & Southwest Chatswood to Sydenham Design Guidelines (SSI 7400).

The over arching objectives are:

- Ensuring an easy customer experience.
- Being part of a fully integrated transport system.
- Being a catalyst for positive change.
- Being responsive to distinctive contexts and communities.
- Delivering an enduring and sustainable legacy for Sydney.

Sydney Metro City & Southwest Design Objectives	**1. Ensuring an easy customer experience**			**2. Being part of a fully integrated transport system**	**3. Being a catalyst for positive change**	**4. Being responsive to distinct contexts ad communities**	**5. Delivering an enduring and sustainable legacy for Sydney**
Urban Design Objectives	**Safety**	**Customer Centric**	**Access**	**Connectivity**	**Activation**	**Diversity**	**Identity/ Place**
The design of the public domain is based on the following principles:	Create safe, intuitive and uncluttered public realms with regard to crime prevention and public safety (CPTED) principles.	Provide a welcoming and enjoyable arrival and exit to all users.	Provide equitable, direct and legible access for all users into and throughout the public domain.	Enhance and consolidate existing circulation routes throughout the station precinct and surrounding civic nodes.	Create attractive and vibrant urban plazas and streetscapes to be inhabited day and night.	Provide a range of spaces from open to the intimate to cater for community events and overlays.	Create high-quality, benchmark precedents with strong sense of place for a lasting contribution to local and city life.

Source: Sydney Metro City & Southwest Chatswood to Sydenham Design Guidelines

2.3.2 Heritage principles

Objective:
Delivering an enduring and sustainable legacy for Sydney where heritage is integral to the identity of the places.

Principle:
Heritage structures are a valued and positive legacy of rail's contribution to a growing city. Retaining and integrating them with the station design underlines their value now and for future generations.

Design outcomes sought:

- Heritage built fabric is retained, re-used and adapted.
- Contemporary elements are complementary and responsive to heritage scale, form and materials.
- Retain, re-use and adapt existing heritage built fabric
- Existing heritage vistas and views within and around the station are maintained and enhanced .
- New architecture elements are sensitively integrated and sympathetic in scale.
- New services are rationalised, consolidated and concealed as far as possible.

2.3.3 Public domain principles

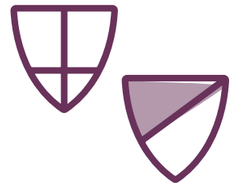
Objective:
- Being responsive to distinct local character of existing contexts and communities. local environmental, heritage and place making values.
- Minimising the footprint of the project (including at operational facilities);

Principle:
- Station forecourts and plazas extend the public domain to contribute to their shared use and enjoyment by metro users and the community
- Maximising the amenity of public spaces and permeability around entrances to stations;
- Ensure sustainable design and maintenance principles are adopted
- Provide design that ensures community safety, amenity and privacy, including 'safer by design' principles

Design outcomes sought:

- Plazas that are active and lively; that encourage pedestrian activity and form a place to stay and stop rather than just a space to walk through.
- Station forecourts that extend seamlessly from adjacent public footpaths and 'read' as fully accessible public spaces.

Neighbourhood Connections



Celebrate the History of Barangaroo

Connect to Ecology

Identity + Destination

Views + Axis

2.3.4 Crime Prevention Through Environmental Design principles (CPTED)

Objective:
Providing a fully integrated transport system design.

Principle:
Movement networks are legible: people can easily see where they are going, with clear and direct lines of sight and minimal spaces for concealment.

Design outcomes sought:

- New connections (including pedestrian overbridges) tie into and support existing and future desire line.
- Landscape planting that softens the corridor while still enabling passive surveillance and good forward sight lines for pedestrians .
- A signage strategy that provides directional details including time and distance to ensure clarity of route for path users.

Objective:
Ensuring an easy customer experience.

Principle:
Stations and their approaches are designed to increase activity and opportunities for casual surveillance.

Design outcomes sought:

- Visual connections between the public domain and station concourse, escalator and platforms.
- Multiple paths of travel through plazas, for movement choice and the ability to exit paths and walkways with long paths of travel.
- Landscape planting that deters vandalism of potentially targeted areas through creating physical and visual barriers to restrict access.
- Lighting that enables the use of such parts of the shared path network that are required after dark and that discourages the use of areas that are not intended to be used; and that provides a consistent level of illumination so as to avoid the creation of pools of light or dark areas of isolation or entrapment.
- Design of retaining walls and fences edging public spaces, shared paths and cycleways to minimise their size and their apparent scale.

2.3.5 Architectural design principles

Objective:
Providing an iconic and memorable station interface to engage in the establishment of Barangaroo as a world class mixed use precinct served by modern, efficient and fully integrated public transport.

Principle:
Ensuring that the architectural design of the station, while memorable is respectful of the existing heritage fabric of the area and well integrated with the new public domain, including Nawi Cove.

Design outcomes sought:

- A legible and clear metro presence on Hickson Road.
- Ensure low visual impact of station structures to maximise sight lines from Hickson Road across to Nawi Cove.
- Provide simple and clear wayfinding strategies to ensure customers move through the station with ease and a minimum of decisions.
- Ensure safe and universal access by the provision of lifts from street to platform.
- Reinforcement of the north entry and plaza as a focal point at the termination of the future Central Barangaroo Development.
- Simplified transport mode changes at street level, incorporating buses, taxis, private vehicles and active transport.
- A memorable station interface with world class transport infrastructure that will serve as a catalyst for development across the entire precinct.

2.3.6 Landscape planting principles

Objective:
Delivering an enduring and sustainable legacy for Sydney.

Principle:
Landscape design and species selection to reinforce Hickson Road streetscape design principles and to continue the Barangaroo Headland Parkland into the Nawi Parkland.

Design outcomes sought:

- Tree and understorey planting design priorritises pedestrian amenity.
- Existing vegetation is protected and retained where possible. Where not possible, identify areas for replacement and new planting that prioritise pedestrian amenity (eg. walking and cycling connectivity, public plazas) .
- Tree planting design creates frames views to the harbour and facilitates future views from adjoining properties.
- Select understorey species to support Heritage Interpretation.
- Environmentally responsive and integrated design and maintenance, for example: protecting adjacent waterways from potential storm water run-off, grading pavements to drain to garden beds, Water Sensitive Urban Design, and robust and low-maintenance species selection.

Objective:
Being responsive to distinct local character of existing contexts and communities.

Principle:
Landscape design and species selection reinforce the local landscape and streetscape character.

Design outcomes sought:

- Use of naturally occurring indigenous species, or species that have a connection to the local community and environment.
- Tree species which relate to the broader City of Sydney species palette and the adjacent Barangaroo precinct.
- Integrated soft and hard landscape that draws on the underlying geology and remnant vegetation communities.

2.3.7 Cultural design principles

Refer to Heritage Design Principles which illustrates cultural design principles. Below are the cultural design principles from Section 3.0 of the Heritage Interpretation Plan:

- Present the area as a locally distinct and representative cultural landscape, the product of numerous phases of land use.
- Incorporate documentary research and graphic material to illustrate and express the historic significance of the site in a clear and engaging manner.
- Identify methods of integrating information on archaeological finds from the site.
- Ensure that interpretive media are physically and conceptually accessible and designed to engage and stimulate interest.
- Collaborate with Traditional Owners/relevant Aboriginal groups to ensure interpretation strategies adhere to the cultural heritage significance of the area.
- Ensure that on-site interpretive media are developed in a way that complements the facility/landscape design of the site and the historical characteristics of the area and surrounding landscape, and are consistent with the style of and approach to surrounding heritage interpretation elements.

Context and Form

3

Figure 3.1 Barangaroo Reserve & Nawi Cove
Source: http://www.pwpla.com/sites/pwp/images/9951/Barangaroo%20Headland%20Park_02.jpg

3 Context and Form
3.1 Historical context

3.1.1 Pre-European landscape

Evidence of Aboriginal occupation in NSW dates back to around 50,000 to 60,000 years at Lake Mungo (in NSW's southwestern region, about 110 kilometres northeast of Mildura) and up to 30,000 years at Parramatta.
Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. The language group spoken across Sydney was known as Darug. The Darug language group is thought to have covered the area south from Port Jackson, north from Botany Bay, and west from Parramatta (Attenbrow, 2010).

Archaeological and historical records indicate that marine and estuarine resources formed an important part of the subsistence activities of the Aboriginal people that inhabited the Port Jackson area. Shellfish not only formed an important subsistence resource, but were also used as fish-hooks, shafted onto spears, used for repairing spears, and for cutting (Attenbrow, 2010). Other locally available raw materials, including quartz, were also favoured for cutting edges (Baker, 2004).

Subsistence resources known to occur in the study area at the time of Aboriginal occupation include tidally influenced mud flats associated with the mouth of the Tank Stream (situated roughly within Circular Quay), and fresh water from the Tank Stream (which flowed through the Sydney CBD in the vicinity of Pitt Street). (EIS Chatswood to Sydneyham, page 613)

Figure 3.2 View of the heads at the entrance of Port Jackson 1824
Source: https://dictionaryofsydney.org/media/1421

3.1.2 European settlement and land use

Development of the Barangaroo Station study area is thought to have occurred from the early 19th century. Occupation of the eastern side of what was to be named Cockle Bay (and later Darling Harbour) was confined to several key land grants to those associated with the military, including the military hospital, military bathing house and the military barracks.

From the early 19th century, the town of Sydney expanded and developed, with an organised layout of streets and construction of a wharf at the base of Market Street to allow for easy transport of produce from the farms on the Hawkesbury River. Over the following decades, numerous shipbuilding and transport wharves were constructed along the eastern shore of Darling Harbour.

From 1908, the Sydney Harbour Trust carried out a number of improvements in north Darling Harbour, including the construction of Hickson Road in the mid-1920s.

The Rocks and Millers Point Archaeological Management Plan (Higginbotham et al, 1991) identifies that the study area is mostly disturbed. However, deep features, such as wells and cesspits, may be present under Hickson Road.

Archaeological investigations were also carried out for the Barangaroo development site (Austral Archaeology, 2010) that assessed the site as having potential to contain archaeological evidence of 19th and 20th century remains of wharves and associated buildings, shoreline modifications such as sea walls, and evidence of trade and industry.

A large sandstone seawall was encountered during roadwork within Hickson Road (McLeod, 2000) and subsequent archaeological investigations have found that reclamation buried, rather than demolished, this earlier evidence of land modification.

During 2018 archaeological investigations for the Barangaroo Station site were undertaken and a preliminary report produced. Finds included the remains of a timber boat (aka Barangaroo Boat), components of a seawall, and foundations of number of buildings including Langford and Cuthbert's boatyards. Artefacts found included ceramics, glass, wood, leather, metal and bricks. The majority of the structures found were recorded and reburied, with photogrammetry and 3D imagery recorded and available for interpretation purposes. Refer to Heritage Interpretation Plan for additional Information.

3.1.3 Geological history

Like Sydney, Barangaroo is characterised by its sandstone. Using over 10,000 blocks of Sydney Sandstone in its creation, Barangaroo used more Sydney Sandstone than any other project in history. An ancient stone formed during the Triassic period - approximately 220 million years ago - sandstone tells a story of sedimentation, compression and erosion.

Sydney sandstone is comprised of sands washed from Broken Hill, laid down about 200 million years ago. The ripple marks from the ancient river that brought the grains of sand are distinctive and easily seen, telling geologists that the sand comes from rocks formed between 500 and 700 million years ago far to the south.

Figure 3.3 Barangaroo in 1929
Source: https://i.pinimg.com/originals/75/55/85/755585c2d573ec7ef9d1ec6504245670.jpg

3.2.1 Sydney Metro C2S Environmental Impact Statement

The Environmental Impact Statement Chapter 6 - Landscape character and visual amenity.

This chapter provides an assessment of the potential impact on landscape character and visual amenity as a result of the project, and identifies mitigation measures to address these impacts.

Barangaroo Station landscape impacts at Barangaroo Reserve, Hickson Road and Central Barangaroo due to improved accessibility to public transport and proposed footpath widening, which would improve overall accessibility and permeability around the entire precinct.

Below is a summary of the Landscape Impact and Visual Amenity Environmental Impact Statement Chapter 6 - Landscape character and visual amenity.

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 become a prominent element in streetscape views.

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.

For further information about the daytime and night time visual amenity impacts for Barangaroo Station, refer to Sydney Metro | Chatswood to Sydenham EIS Chapter 6.

3.2.2 Central Barangaroo Master Plan

The Central Barangaroo development project is positioned between Barangaroo Reserve and the financial and retail hub. Central Barangaroo will be the cultural and civic focal point of Barangaroo - a place for everyone to visit, explore, enjoy and learn.

In January 2013, following a national and international Request for Proposals process, the Barangaroo Delivery Authority selected a consortium.

Since then the selection of a masterplan team and the ownership of the Central Barangaroo land parcel has changed. The design team and the new ownership structure established a series of key considerations:

- Creating a place that is recognised globally and loved locally;
- Always public, accessible, diverse and connected;
- An activated public waterfront that brings the city to the western harbour;
- Integrated with the rest of Barangaroo and adjacent CBD precincts;
- Flexibility for a range of uses to evolve over time;
- Ensuring 50% public space is delivered across the entire Barangaroo site;
- Maintaining the principles of the existing Concept Plan;
- Contributing to the Barangaroo climate positive promise;
- Design excellence; and
- Ensuring maximum public amenity throughout staged delivery.

3.2.3 Infrastructure New South Wales (formerly Barangaroo Development Authority) and Sydney Metro Interface Agreement and Reference Design

Please refer to the Sydney Metro and Infrastructure New South Wales Interface Agreement.

The summary of the Infrastructure New South Wales Reference design consultation can be found under the Consultation Section 6.0.

3.3.1 Community Profile - Barangaroo

Key findings from the Australian Bureau of Statistics' 2016 census show that Barangaroo has:

- A median age of 36, with 10.2% of the population under 15 and 5.3% aged 65 or over
- 78.3% of people born overseas - significantly higher than the national average of 34.5%. Of people born overseas, the top countries of origin (in order) are China (excludes SARs and Taiwan), Japan, England, United States of America and New Zealand
- Almost 30% of people who speak a language other than English at home
- A median weekly personal income of $1,875, higher than the NSW average
- Flats or apartments account for 49% of the dwelling stock, much higher than the NSW average of 19.9%; and renting accounts for 71.4% of tenure
- 83.5% of people who were employed full time, 16.5% employed part-time and 0.0% unemployed
- Professional and managerial occupations dominating, at 35.6% and 30.1% respectively
- A focus on accounting services, advertising services, port and water transport terminal operations, real estate services and labour supply services as employment types.

Source: Australian Bureau of Statistics

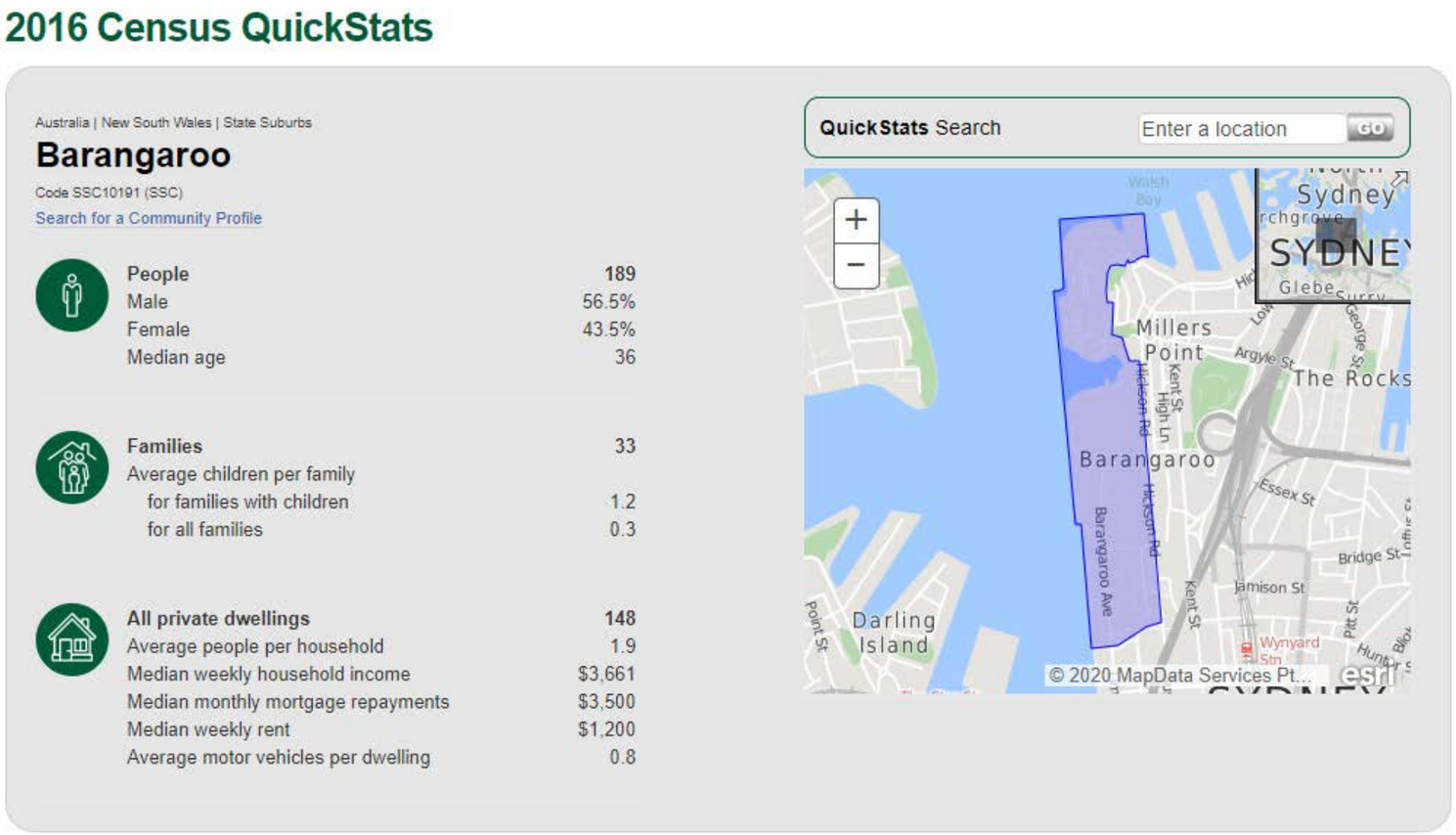


Figure 3.4 2016 Census QuickStats - Barangaroo
Source: https://quickstats.censusdata.abs.gov.au

3.3.1 Community Profile - Millers Point

Key findings from the Australian Bureau of Statistics' 2016 census show that Millers Point has:

- A median age of 47, with 5% of the population under 15 and 18.3% aged 65 or over
- 57.5% of people born overseas - significantly higher than the national average of 33.3%. Of people born overseas, the top countries of origin (in order) are England, China (excludes SARs and Taiwan), Japan, New Zealand and United States of America
- Almost 27% of people who speak a language other than English at home
- A median weekly personal income of $1,525, higher than the NSW average
- Flats or apartments account for 90.7% of the dwelling stock, much higher than the NSW average of 19.9%; and renting accounts for 53.7% of tenure
- 75.1% of people who were employed full time, 17.7% employed part-time and 2.7% unemployed
- Professional and managerial occupations dominating, at 41.8% and 28.2% respectively
- A focus on banking, other auxiliary finance and investment services, legal services, accounting services and computer system design and related services as employment types.

Source: Australian Bureau of Statistics

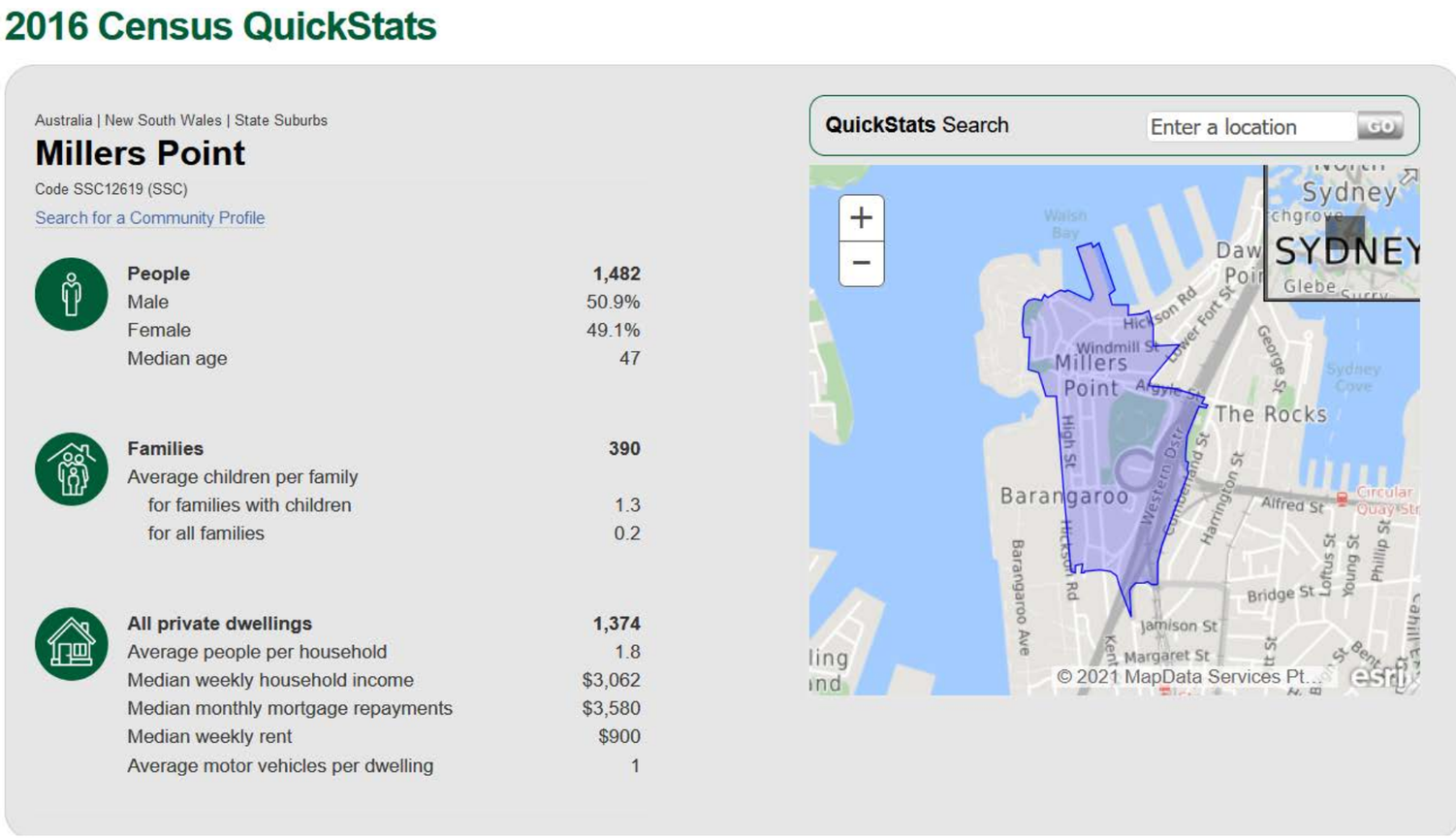


Figure 3.5 2016 Census QuickStats - Millers Point
Source: https://quickstats.censusdata.abs.gov.au

3.3.2 Urban form

Barangaroo is a place of opportunity. Located at the northern tip of a strong commercial spine, which is characterised by its concentration of offices and tall buildings, Barangaroo benefits from ample green and open spaces as well as a prime position on the waterfront.

The local area is defined by a complex mix of uses, including residential, recreational and commercial activities. On the western shore, the Barangaroo regeneration proposal is seizing the opportunity and transforming a former industrial site into a high density mixed use project.

3.3.3 Heritage

The rugged topography initially discouraged European settlement of Millers Point and Darling Harbour. Private ownership and development within Millers Point began with the construction of three private windmills there c1800 - 1810.

By 1870 most of the foreshore between Dawes Point and Darling Harbour had been modified by quarrying, reclamation or the construction of seawalls, and the area was almost entirely occupied by wharves, stores and commercial properties.

By the 1880s a major program of government resumption and redevelopment commenced, which had a profound effect on the character and form of the area. Between 1880 and 1900, most of the wharves and other structures were demolished as part of the government renewal of the area.

By the 1900s the Sydney Harbour Trust (SHT) was established to control and manage the improvement and preservation of the Port of Sydney. SHT's responsibilities included demolition of old wharfage, land reclamation, construction of new port facilities, dredging operations and removal of shipwrecks.

Figure 3.6 Heritage wall along Hickson Road and High Street, 1911
Source: https://millerspointcommunity.com.au/wp-content/uploads/2014/09/highstreet1.jpg

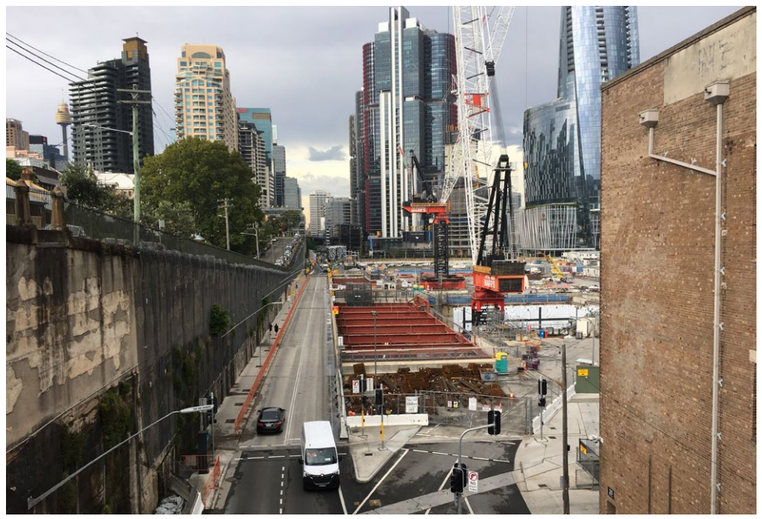


Figure 3.7 Heritage wall along Hickson Road, 2021
Source: Arcadia Landscape Architecture

Figure 3.8 North and South Heads in Port Jackson, New South Wales, c1818
Source: https://www.eorapeople.com.au/people/

Figure 3.9 View from Barangaroo Reserve into Port Jackson, 2019
Source: Arcadia Landscape Architecture

LEGEND

- Project boundary
- 200m radius from proposed station
- Historic sandstone wall - Hickson Road
- State heritage buildings - Milsons Point
- Heritage foreshore

LAND USE

- General residential
- Metropolitan centre
- Low to medium density commercial
- Community facility
- Recreation
- Mixed use

HERITAGE LIST

01 Bridge over Hickson Road
02 Palisade fence and high steps
03 Warehouses/Dalgety's bond store
04 Shops 6, 8 Argyle Place
05 Shops and residences
06 Duplexes High Street, Millers Point

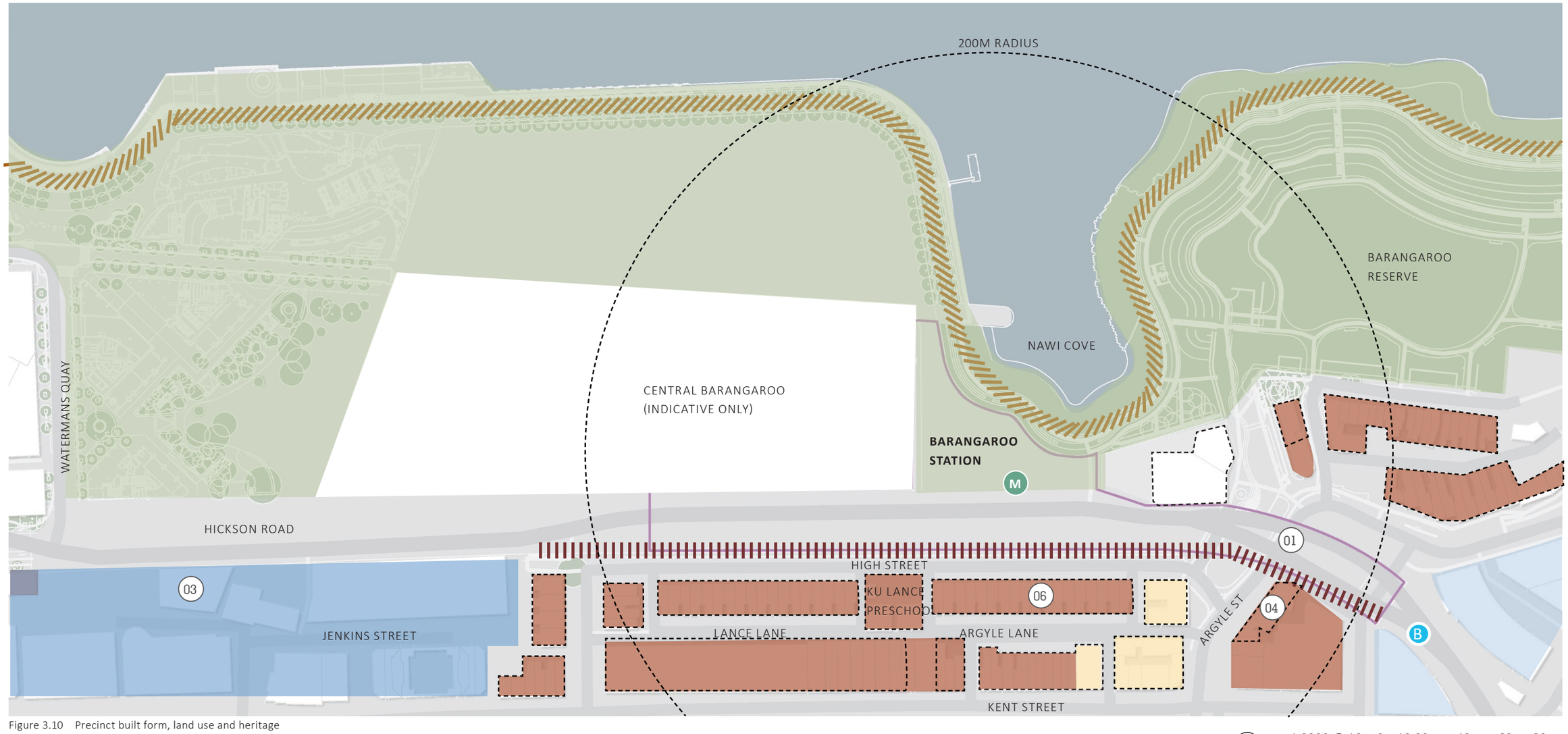


Figure 3.10 Precinct built form, land use and heritage
Source: Arcadia Landscape Architecture

1:2000 @ A3 0 10 20 40 60 80m

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3.3.4 Landscape, vegetation and topography

The previous vegetation of the site was removed during the construction process. It consisted of planted street trees within a highly modified urban context and occasional exotic landscape plantings. On the western side of Hickson Road was a row of planted *Ficus microcarpa var. hillii* (Hills Weeping Fig).

The Barangaroo Reserve is located in close proximity to the new Barangaroo station site to the north 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 cycling paths. A plaza has been created at North Cove, marking a southern entry to the Reserve at Hickson Road.

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 a 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.

(EIS C2S - Tech Paper 6: Landscape and visual Impact Assessment)

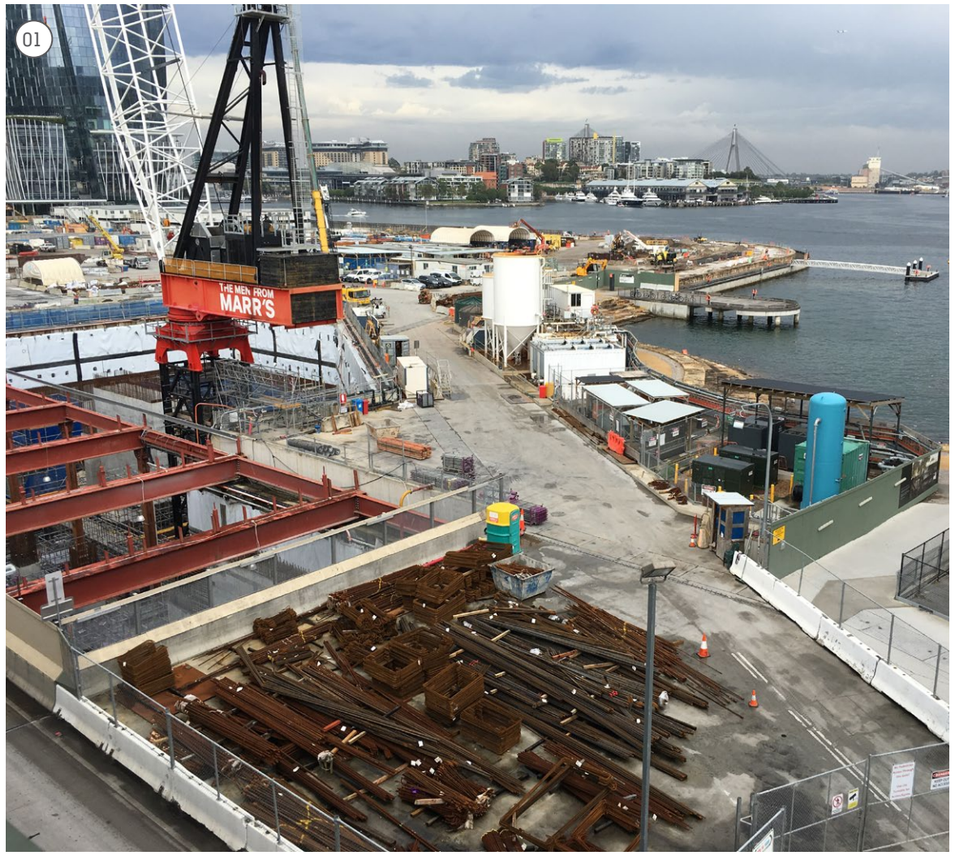

Figure 3.11 Site images
Source (figure 1-5): Arcadia Landscape Architecture; Source (figure 6): https://postcardsydney.com/wp-content/uploads/2015/11/Barangaroo-Reserve-Sydney.jpg

01 Hickson Road boarders the proposed Barangaroo station site. The street scape is framed by a 400m Historic Sandstone wall.

02 View from Dukes Pier.

03 View from High Street towards Barangaroo station site.

04 View from Bridge to Hickson Road

05 View from Barangaroo Reserve towards Nawi Cove.

06 View from water

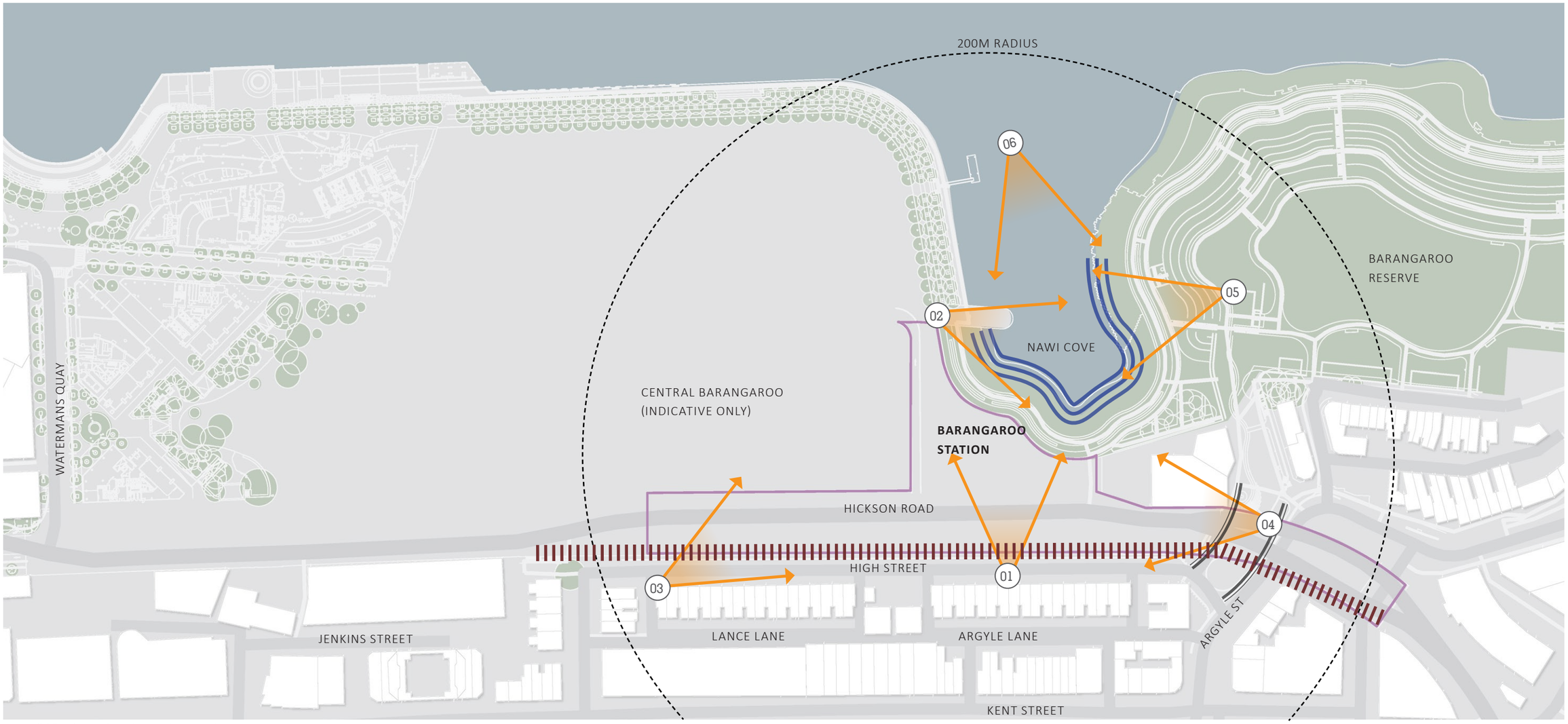

Figure 3.12 Precinct landscape, topography and views
Source: Arcadia Landscape Architecture

3.3.6 Transport and access

Public transport near the proposed metro station currently includes Wynyard Station to the east and Barangaroo Wharf and King Street Wharf to the south. Wynyard Walk (180m long) creates a link between the upgraded Wynyard Station concourse, Kent Street tunnel, Sussex Street pedestrian bridge and the Barangaroo development.

The Barangaroo development alone is expected to take up to 23,000 office workers and attract 33,000 daily visitors.

The local context for transport and access will change as a result of the Project:

- The station will form part of the interchange that provides safe and direct access and further reinforce the Sydney CBD as the anchor of global Sydney and the largest employment centre within Australia.
- The station will serve a growing and evolving concentration of global economic activities located within the heart of the western extension of the Sydney CBD, including international headquarters, financial institutions, law firms, accountants and insurers.
- The broader station catchment will benefit the western corridor of the Sydney CBD, encompassing a vibrant and active precinct of commercial, residential, entertainment, cultural and leisure opportunities.
- The station will provide western access to the city – from Barangaroo Reserve to the north to Darling Harbour in the south – and provide direct connections to the Sydney Metro network, ferry services, suburban rail at Wynyard and light rail on George Street.
- The station – being an interchange with direct access to multiple modes and services to all regions of metropolitan Sydney – will provide the opportunity for the redevelopment of sites nearby.

Figure 3.13 Site images
Source (all image): Arcadia Landscape Architecture

01 Hickson Road along the proposed Barangaroo station site.

02 Key pedestrian connection from Kent Street at the upper level to Hickson road via stair access

03 Access from Argyle Street above Hickson road leads you back through the Headland reserve to step or lift access

04 Public lift at 30 The Bond which connects to Gas Lane and Kent Street

05 Step and Lift accessibility located at the south end of the Headland park

06 Off road cycleway and pedestrian path around Nawi Cove to Barangaroo Headland Reserve

07 Internal Barangaroo Headland Reserve network

LEGEND

- Project boundary
- 200m Radius from proposed station
- Primary connection
- Secondary connection
- Cycle path / Pedestrian connection
- Key intersections
- Steps
- Connection to Wynyard Walk

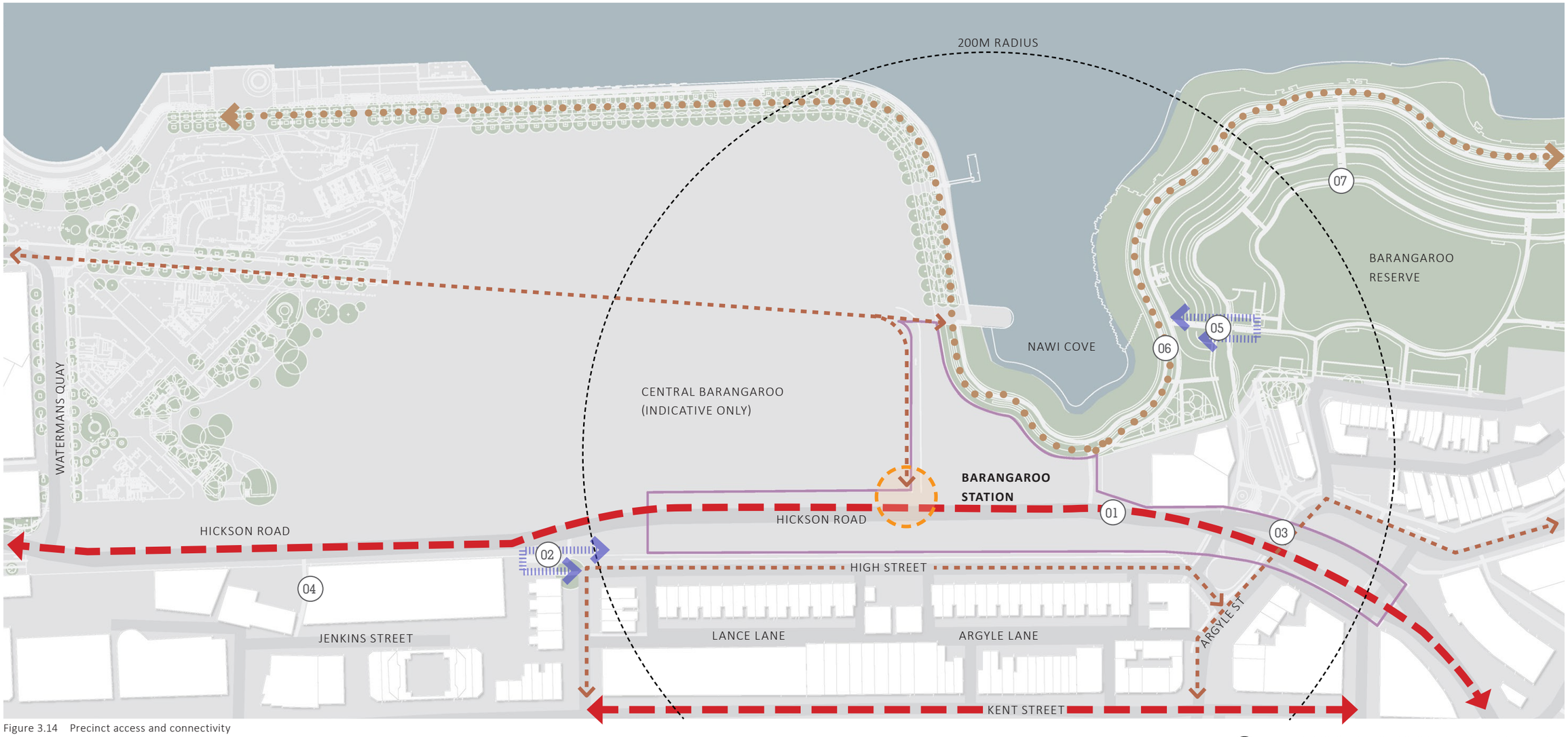

Figure 3.14 Precinct access and connectivity
Source: Arcadia Landscape Architecture

1:2000 @ A3 0 10 20 40 60 80m

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Analysis of the built, natural and community context has highlighted both constraints, and opportunities to enhance the precinct character, amenity and connectivity. This section of the SDPP summarises the key findings from the precinct analysis studies where the project has the greatest potential to influence the wider context.

As many of the issues and opportunities extend beyond the scope of the project, there is a distinction between what is able to be delivered as part of the project ('opportunities delivered') and what is not ('opportunities safeguarded'). The table in Section 3.3 below therefore shows the relationship between opportunities, the project response (within its scope) and those items which are safeguarded for future actions.

Opportunities	Constraints
01 Ensure safe integration of the metro station with the existing road network to facilitate safe transfers to and from the station and passengers' destinations. 02 Ensure legible and direct access to Barangaroo Reserve and surrounding development. 03 Ensure legible and direct access to the Harbour Walk, east along the foreshore towards the key tourist precinct of Circular Quay. 04 Maximise connectivity and legibility within the Barangaroo precinct including the Walsh Bay Arts and Culture precinct. 05 Integrate with the development plans for Barangaroo. 06 Enhance Hickson Road including tree-lined avenue, cycle lanes, pedestrian connections and integrated services. 07 Unless otherwise determined through the Barangaroo Masterplan, provide wide footpaths and new public domain interface around station entry in line with City of Sydney Public Domain guidelines. 08 Enhance heritage elements including sandstone wall. Sydney Metro City & Southwest Interchange Access Plan - Barangaroo	• Integrate services on the eastern side, to protect heritage wall. • Materials to be consistent with City of Sydney palette. Sydney Metro City & Southwest Interchange Access Plan - Barangaroo

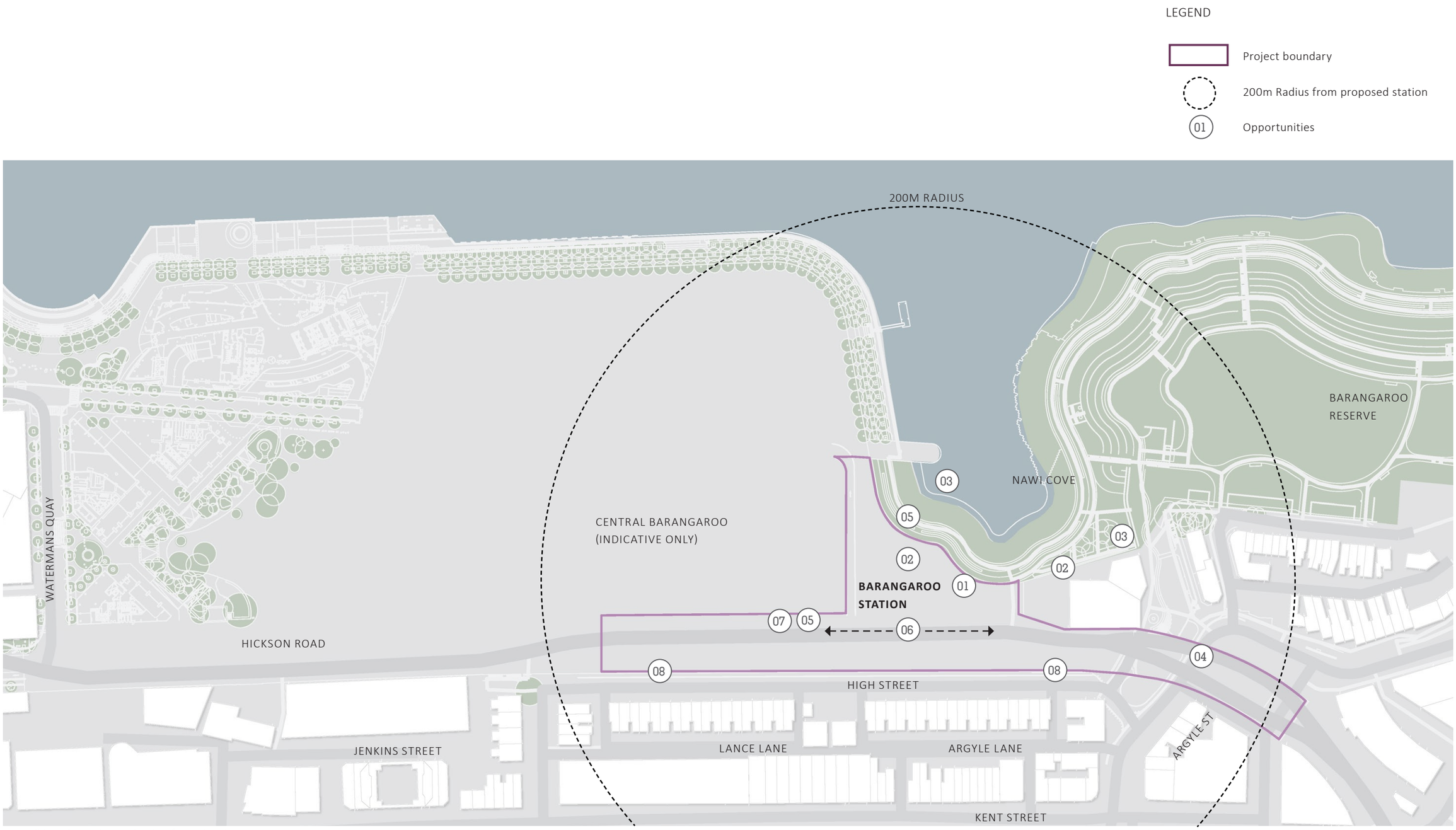

Figure 3.15 Precinct opportunities & constraints
Source: Arcadia Landscape Architecture

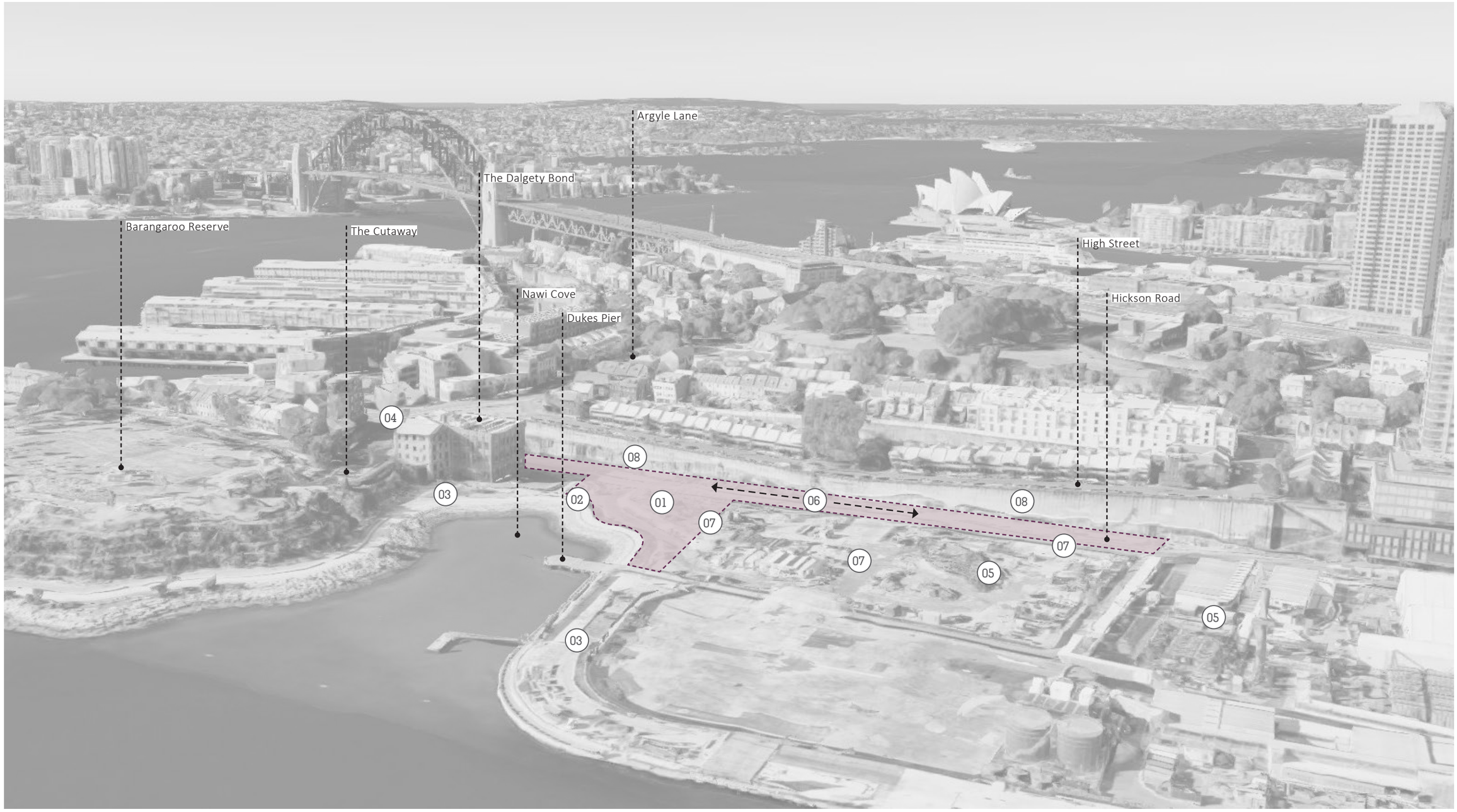

Figure 3.16 Project context
Source: Google Maps

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Design

4

Figure 4.1 View from Barangaroo Reserve into Port Jackson
Source: Arcadia Landscape Architecture

4 Design
4.1 Project design

4.1.1 Design Intent

Sydney Metro is committed to delivering easy, safe and reliable turn-up-and-go services, and active precincts and places. The Project design supports this commitment with a holistic approach that responds to the station context as well as to the line-wide requirements of Sydney Metro.

01
CELEBRATE THE BARANGAROO STATION SETTING AS THE UNIQUE PART OF SYDNEY METRO NETWORK

02
CONNECT THE HEADLAND PARK AS THE CHARACTER OF BARANGAROO STATION PRECINCT

03
PRIORITISE THE HUMAN EXPERIENCE

04
INTERPRET THE SIGNIFICANCE OF THIS PLACE

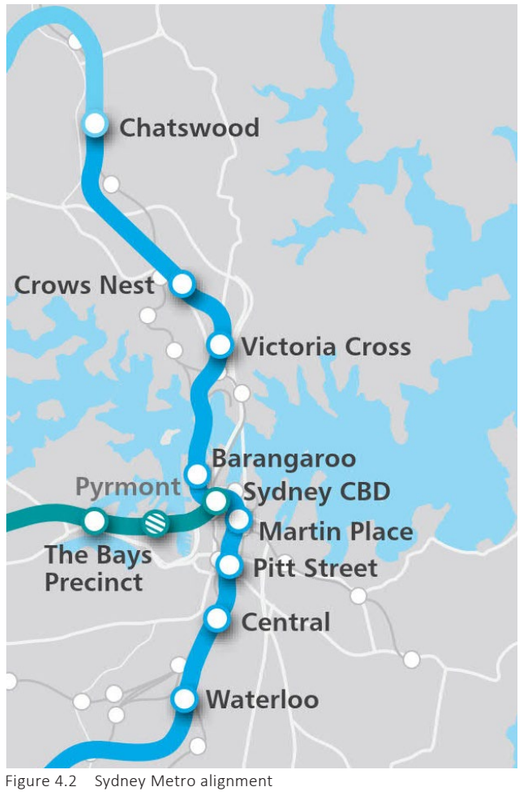

Figure 4.2 Sydney Metro alignment
Source: Sydney Metro

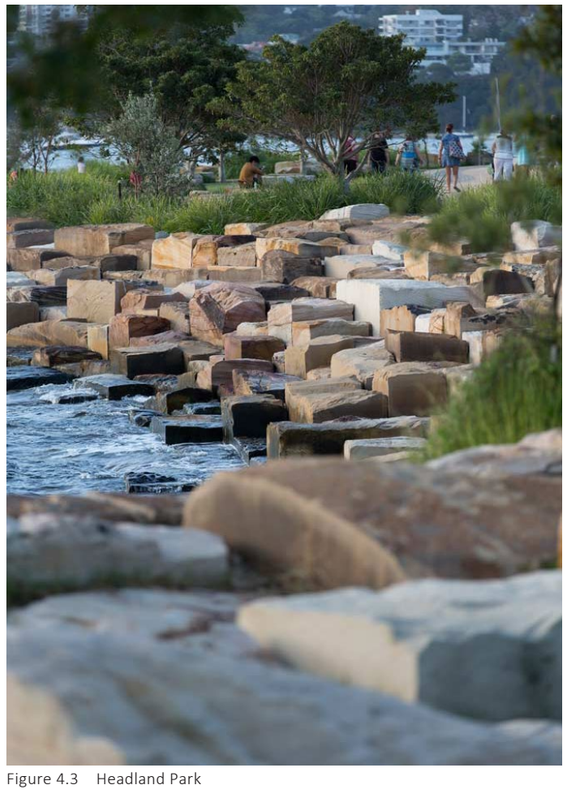

Figure 4.3 Headland Park
Source: http://landezine.com/index.php/2016/07/barangaroo-reserve-by-pwp-landscape-architecture

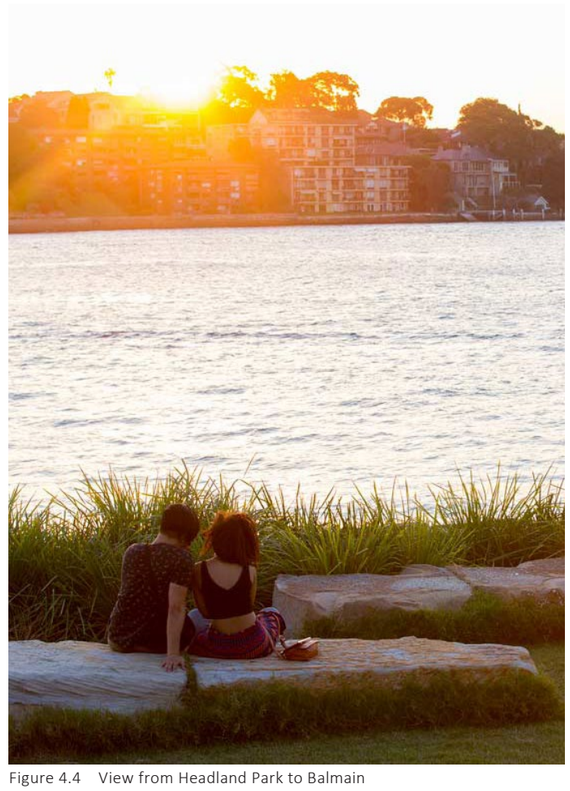

Figure 4.4 View from Headland Park to Balmain
Source: http://landezine.com/index.php/2016/07/barangaroo-reserve-by-pwp-landscape-architecture

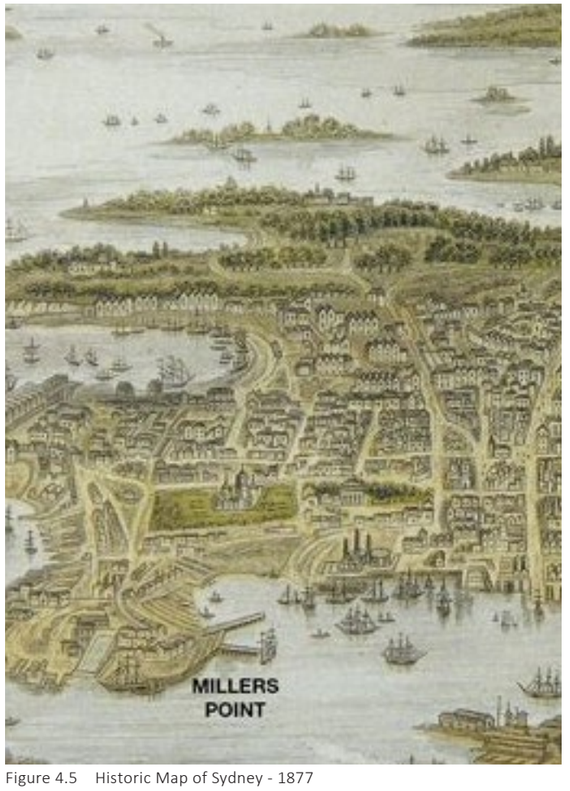

Figure 4.5 Historic Map of Sydney - 1877
Source: http://walshbayhistory.net/stories/mapping-walsh-bay

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4.2.1 Station legibility

The urban character of the precinct is strongly defined by the physical presence of the sandstone heritage wall which defines the eastern edge of the precinct which provides a clear edge and point of disconnection to central Sydney. This edge is reinforced by Hickson Road which provides the only continuous north-south connection through the Barangaroo precinct and is a historically significant in its own right.

More recently, newer development in the form of the Barangaroo South Lend Lease Development, the new Crown and Residential Lend Lease Development and the Barangaroo Headland Parkland have helped shape this part of Sydney into a world class mixed use precinct capable of supporting a range of recreational, commercial, residential and entertainment uses. The station buildings, park and plaza carefully mediate these two competing urban interfaces to provide a carefully considered solution which integrates the two.

4.2.2 Urban character

The station sits at a point of transition between the naturalistic Headland Park to the north and the more urban fabric of Central Barangaroo to the south. Located within the intimate surrounds of the Nawi Cove parkland and flanked by the historic Hickson Road and heritage wall, the station's main buildings will consist of several simple and elegant pavilions positioned within an urban plaza adjacent to the new Nawi Parkland. These buildings will form part of the urban landscape which will be integrated with precinct wide wayfinding signage to will welcome passengers into the station allowing for trouble-free identification of the station entry point from around the precinct.

4.2.3 Built form and scale

The station buildings along with the landscape plaza, park and Hickson Road will all form part of a newly constructed part of the Barangaroo Precinct and are designed to ensure low visual impact to maximise sight lines from Hickson Road across to Nawi Cove. This includes two pavilion buildings within the plaza to facilitate commuter movement which will be no taller than 6 metres in height. A number of service structures are also located on the eastern edge of the precinct between the Heritage Wall and Hickson Road. Arranged in a line, these structures perform a number of service functions and have been designed to integrate with its surroundings and provide a uniform and consistent interface to Hickson Road.

Figure 4.6 Nawi Cove key principles

Source: INSW / BDA

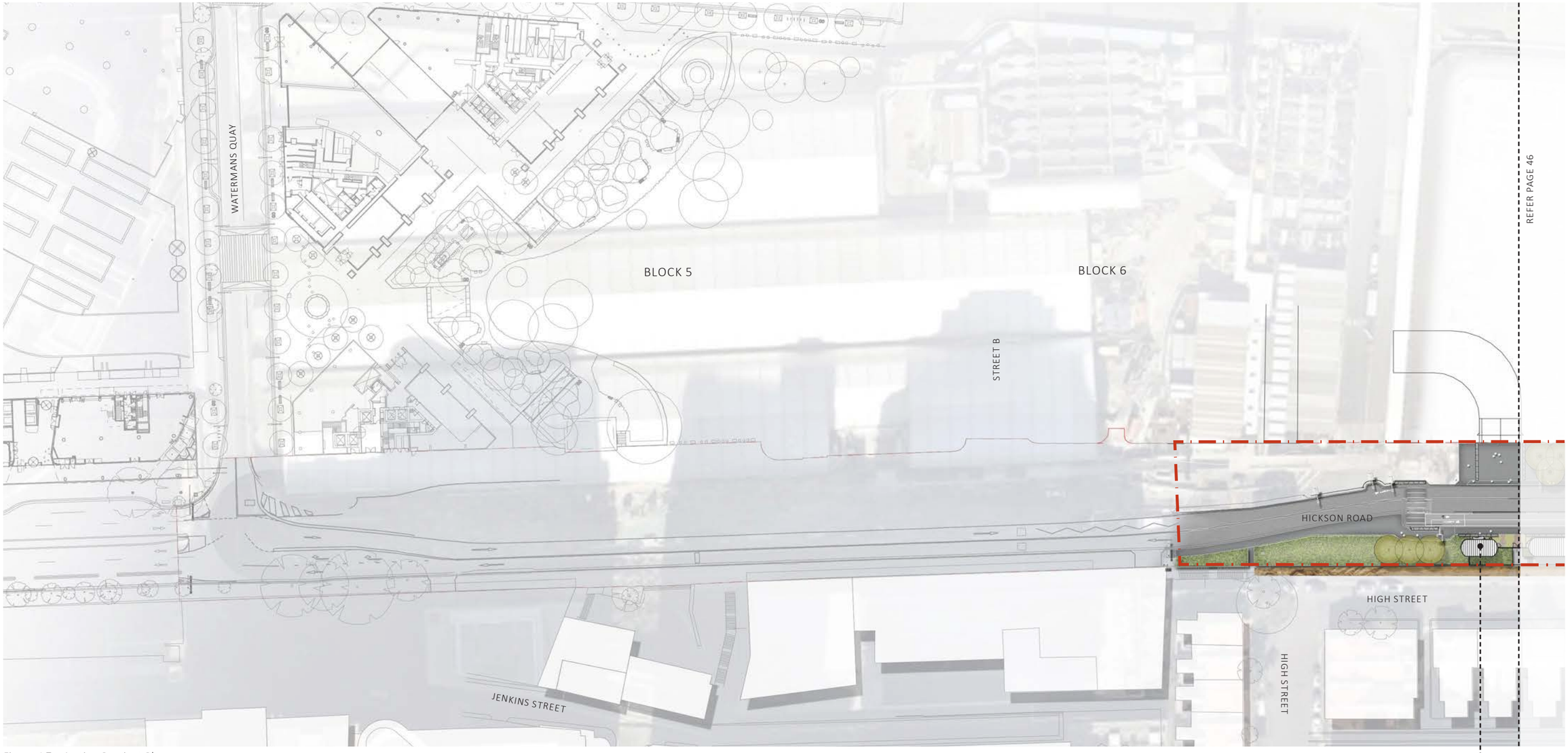

Figure 4.7 Station Precinct Plan
Source: Arcadia Landscape Architecture


New bus stop
Bushtucker walk
Open turf area
REFER PAGE 47
CENTRAL BARANGAROO
(INDICATIVE ONLY)
DUKES PIER
NAWI COVE
Northern Station Entry
- Escalators
THE CUTAWAY
BARANGAROO RESERVE
MERRIMAN STREET
BETTINGTON STREET
MUNN STREET
RHODENS LANE
THE DALGETY BOND
DALGETY ROAD
HICKSON ROAD
STREET D
HICKSON ROAD
HIGH STREET
LANCE LANE
Lift pod
Northern Station
Entrance
ARGYLE PLACE
Egress Stair Pod 1
Ventilation Pod 2
Ventilation Pod 3
Ventilation Pod 4
Ventilation Pod 5
Ventilation Pod 6
Ventilation Pod 7
Egress Stair Pod 2
New bus stop
1:1000 @ A3
0 5 10 20 30 40m

Figure 4.8 Visualization of Station Precinct from Hickson Road looking Northwest

Figure 4.9 Visualization of Long View along Hickson Road Looking Southeast

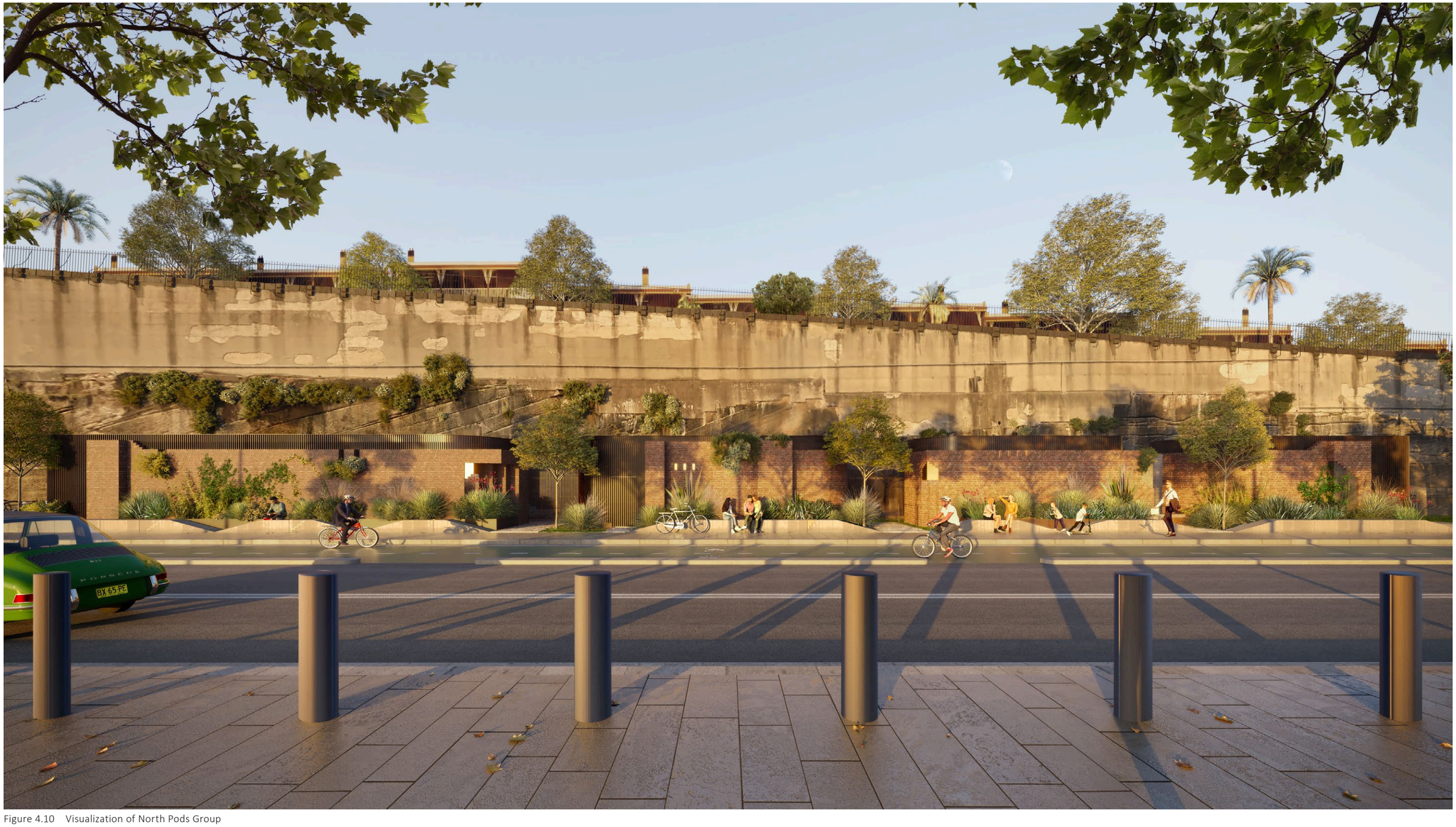

Figure 4.10 Visualization of North Pods Group

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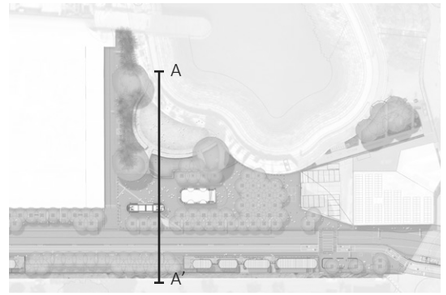
KEY PLAN



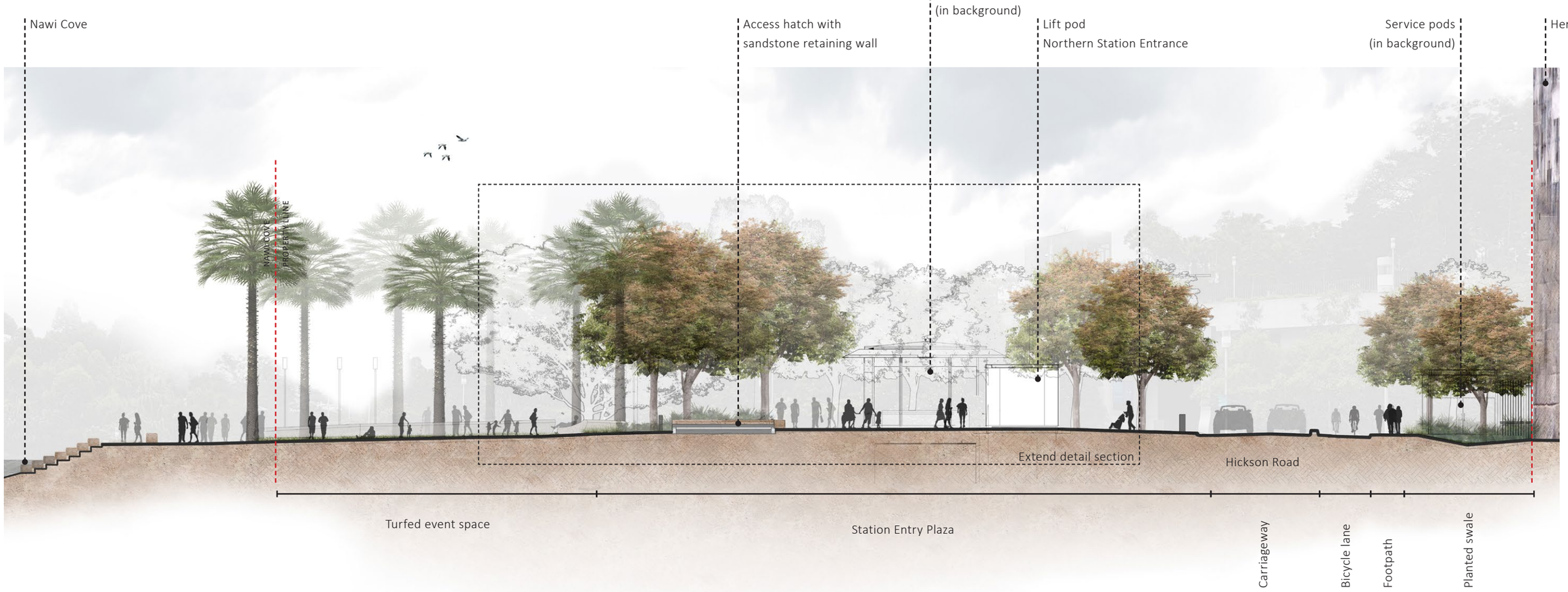


Figure 4.11 Section through Northern Entry Plaza _ A-A' (not to scale)
Source: Arcadia Landscape Architecture

KEY PLAN

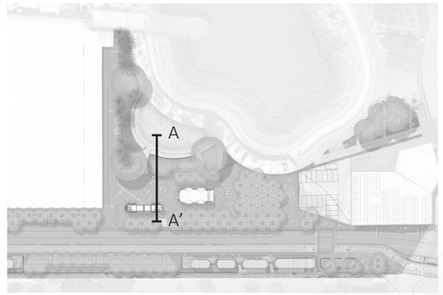
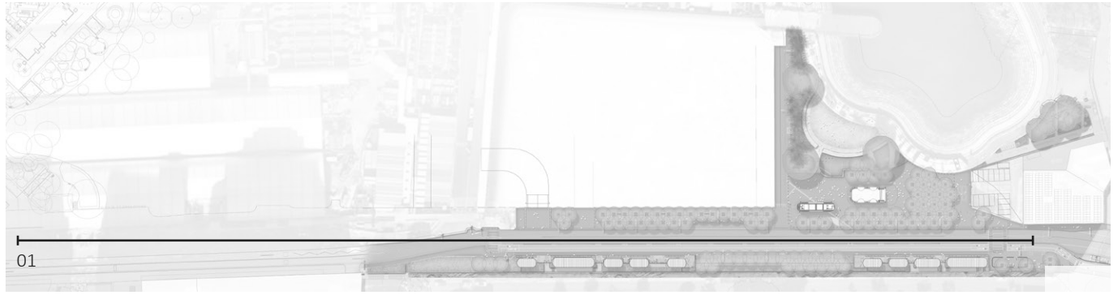


Figure 4.12 Detail section through Northern Entry Plaza _ A-A'

Source: Arcadia Landscape Architecture

1:100 @ A3 0 0.5 1 2 3 4m

KEY PLAN



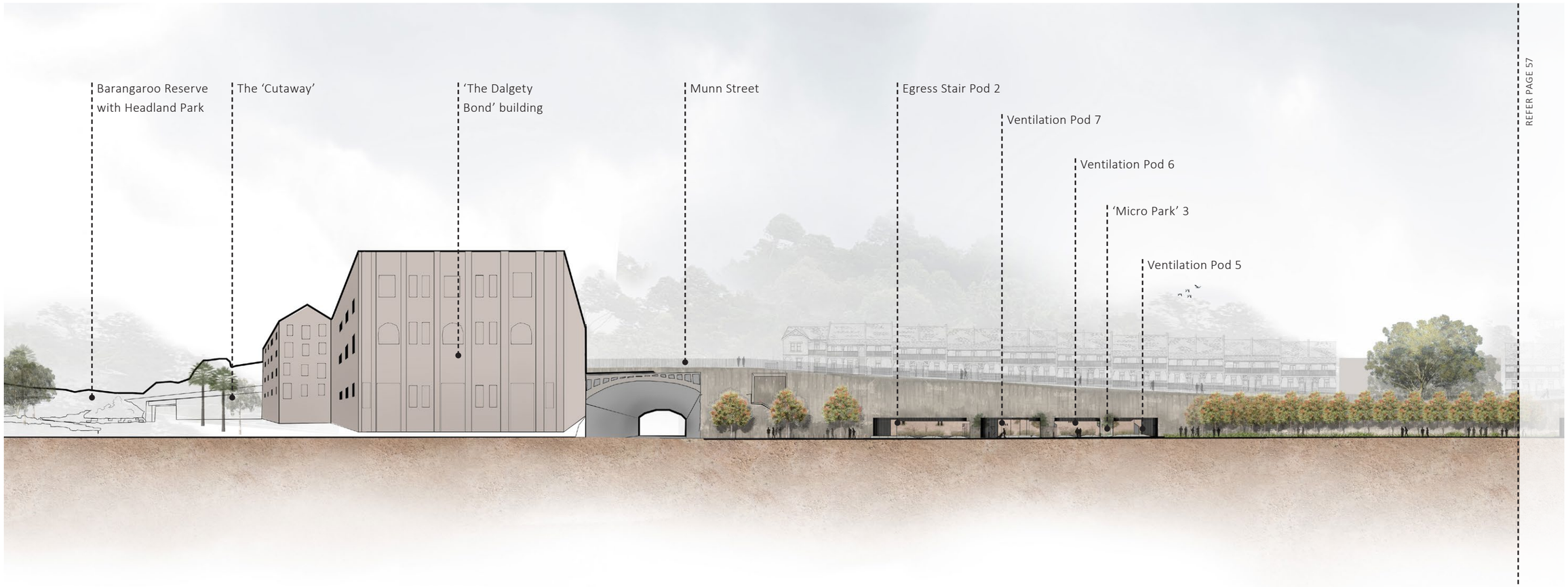
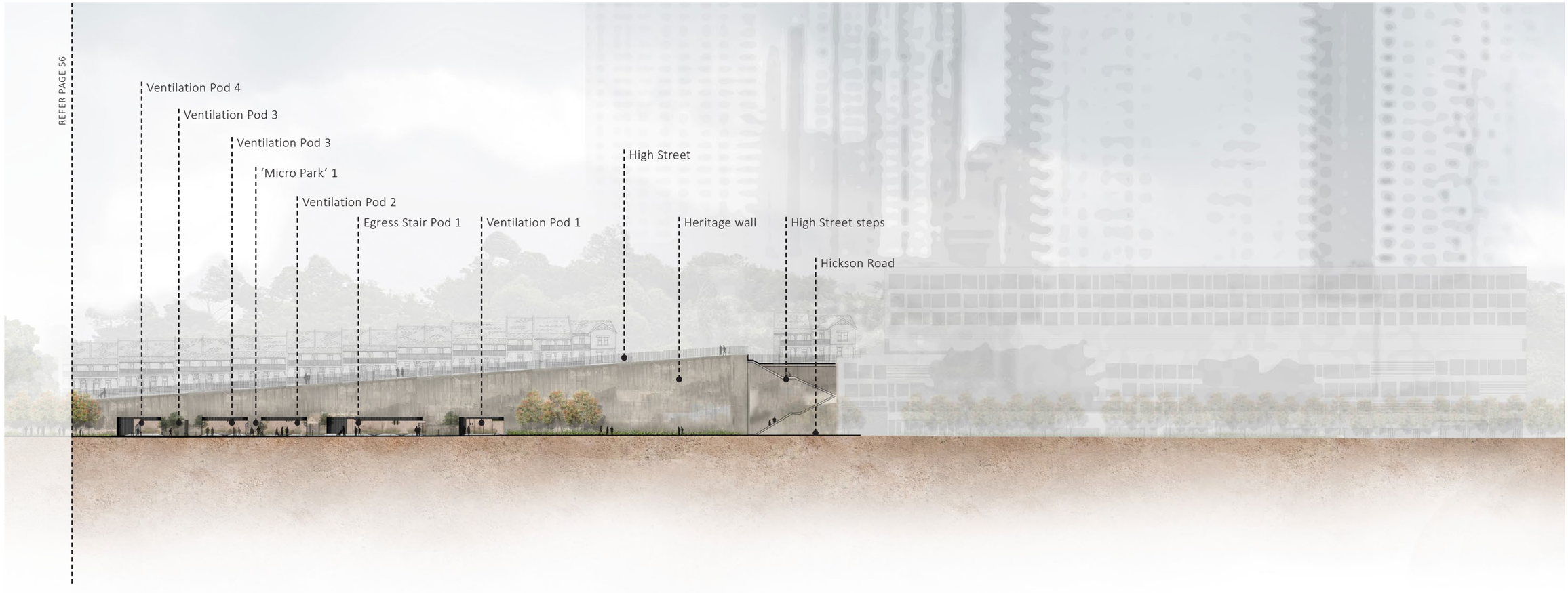


Figure 4.13 Elevation 01: Hickson Road and the service pods with heritage wall in background (not to scale)
Source: Arcadia Landscape Architecture


REFER PAGE 56
Ventilation Pod 4
Ventilation Pod 3
Ventilation Pod 3
'Micro Park' 1
Ventilation Pod 2
Egress Stair Pod 1
Ventilation Pod 1
High Street
Heritage wall
High Street steps
Hickson Road

4.4.1 General

The precinct scope is set by the design requirements in the Scope of Works and Technical Criteria Overview (SWTC) and the Services Brief.

Station buildings

The above ground station building elements comprises of the below:

- escalator entry
- lift pavilion
- service pods

Signage & wayfinding

Design to be compliant with Sydney Metro Design and Wayfinding Guidelines

Public domain & precinct

- Extent is Hickson Road from the area below Windmill Street Overbridge to the High Street steps, Nawi Cove Parkland from Central Barangaroo (South) to Dalgety Bond Building (North) and Barangaroo Cut-a-way (North) extending to the back of the compacted granulitic sand foreshore pathway
- Provide a new a station entry surrounded by a plaza
- Bus stops, taxi and kiss and ride spaces along Hickson Road
- 55 bicycle parking hoops
- Future for a secure bicycle parking enclosure that hold 78 bicycle parks
- New Hickson Road, plaza and foreshore lighting
- Precinct protection from errant vehicles on Hickson Road
- Tree and understorey planting to Hickson Road and plaza

4.5.1 Heritage platform buildings and platform walls

Below are extracts from the Heritage Interpretation.

Barangaroo, after whom the Barangaroo Reserve is named, was an Aboriginal woman who played an important part in early encounters with European settlers. A Cammeraygal woman from the Mosman and North Sydney area, Barangaroo lost her first husband and children to smallpox and remarried Bennelong, a younger man who had been captured and held by Governor Arthur Phillip. Barangaroo did not approve of her husband's association with the colonists and actively resisted adopting their customs and language. She would not dress in European clothing, preferring to wear a slender bone through her nose.

A skilled fisherwoman of high status and deep cultural knowledge, Barangaroo was one of the main food providers for her people alongside other women. Expert swimmers and divers, the women rowed bark canoes called nawi out to sea, often with small children or babies on board. A historical account records Barangaroo's furious reaction to the colonists hauling four thousand fish from Sydney Cove in 1790. Barangaroo railed against the wastefulness of the settlers, and at Bennelong for accepting a gift of forty fish.

Aboriginal fisherwomen fished in the harbour using line made from cabbage trees, Kurrajong or flax plants, and carved hooks (burra or barra) from turban shell. This fishing gear was of great significance and carried associations of power and identity. Upon her death, Barangaroo's ashes were buried alongside her fishing gear in the garden of Government House.

In 2007, the docklands area south of Millers Point was renamed Barangaroo in honour of the courageous fisherwoman and leader.The area was historically part of the Millers Point and the Rocks area. Industries such as quarrying and lime production were in place in the area by the 1820s, with colonists utilising the natural resources including sandstone and shells located around Millers Point. The location of Millers Point at the waterfront meant that private jetties, wharves and storage were quickly erected by the harbour, with merchants establishing the village of Millers Point by the 1830s. The village became a centre of coastal and international trade and shipping. Access to Millers Point at the time was gained through a series of steps hewn from the western edge of the Rocks area.

Sailors, labourers, merchants and craftsmen worked tirelessly to support the maritime industries that boomed throughout the mid-19th century. The Millers Point area remained isolated from the rest of Sydney until the Argyle Cut project helped open the steps area in 1845. Millers Point became an itinerant location, with low-end accommodation and boarding houses dominating the area. In the late 19th century, a decline in international trade and consequential slumps in industry gave the Millers Point location a reputation for being unstable and rough.

An outbreak of the bubonic plague caused the government to seize control of the area in 1900. During this time large-scale demolition and reconstruction changed the face of Millers Point, with large wharves and some worker housing built in the area. The Waterside Workers Federation, a union of dockside workers, was formed in 1902.The collapse of the wheat industry and the Great Depression had a devastating effect on the wharf workers at Millers Point, with scarce employment and constant redundancies in the 1930s. Unemployed workers would line up along Hickson Road, hoping to be chosen by a foreman for a day's work and wages, which resulted in the strip of Hickson Road being called 'The Hungry Mile'. The phenomenon of 'The Hungry Mile' and the growing awareness of workers' rights led to the modernization of the Waterside Workers Foundation in 1937.

Redevelopments occurred in Millers Point throughout the 1960s, 1970s and 1980s, with the Department of Housing repurposing much of the area as public housing. In 1988 the NSW Heritage Council acknowledged the Millers Point Conservation Area as a space of state and national significance.

Figure 4.14 Existing sandstone seawall

Figure 4.15 Cuthberts shipyard boat C.1850

Figure 4.16 Indigenous heritage

Figure 4.17 Pre-European shoreline

Figure 4.11 & 4.12 Source: Sydney Metro City & Southwest - TSE Works, Barangaroo Station, SSI 15-7400
Figure 4.13 Source: http://newenglandhistory.blogspot.com
Figure 4.14 Source: http://therunningwave.blogspot.com/

4.6.1 Public Art

The integration of public art into the Barangaroo Station has been considered within the context of the Barangaroo Public Art and Culture Plan (2015) produced by the Barangaroo Delivery Authority (now INSW) which outlines the long term strategic vision for the cultural life of the precinct. The plan identifies a number of key locations for public art and complementary cultural programs may be delivered as part of the future development of the Barangaroo Precinct. The plan identifies both Nawi Cove and the Hungry Mile as locations for major art projects. SMA will continue to work with INSW to ensure that the delivery of public art within both these locations is in keeping with the objectives laid out in the strategy and works within the new physical context of the Barangaroo Station Precinct.

Inside the station the Artist Khaled Sabsabi has been commissioned by Sydney Metro to develop and install an artwork titled ‘in time we shall’ in the Metro Station Concourse. The artwork will be made of copper and mild steel, and comprises circular bands around the columns and large sculptures fixed to the eastern concourse wall, which is clad in sandstone. The artwork relates to the tree species used in the Barangaroo headland, which are endemic and significant to aboriginal culture. See below the artist’s statement.

IN TIME WE SHALL by KHALED SABSABI for BARANGAROO STATION

My concept titled ‘in time we shall’ is inspired by timeless, universal and cross cultural philosophies relating to and associated with concepts of the trees of life and knowledge. I see the new works as artworks that are grand and beautiful, meaningful yet accessible, simple yet intricate. Additionally I see these works as an artistic opportunity to directly engage with and narrate Sydney’s city’s past, present and future by poetically considering themes of local representation as well as our broader global identity and yet to be imagined futures.

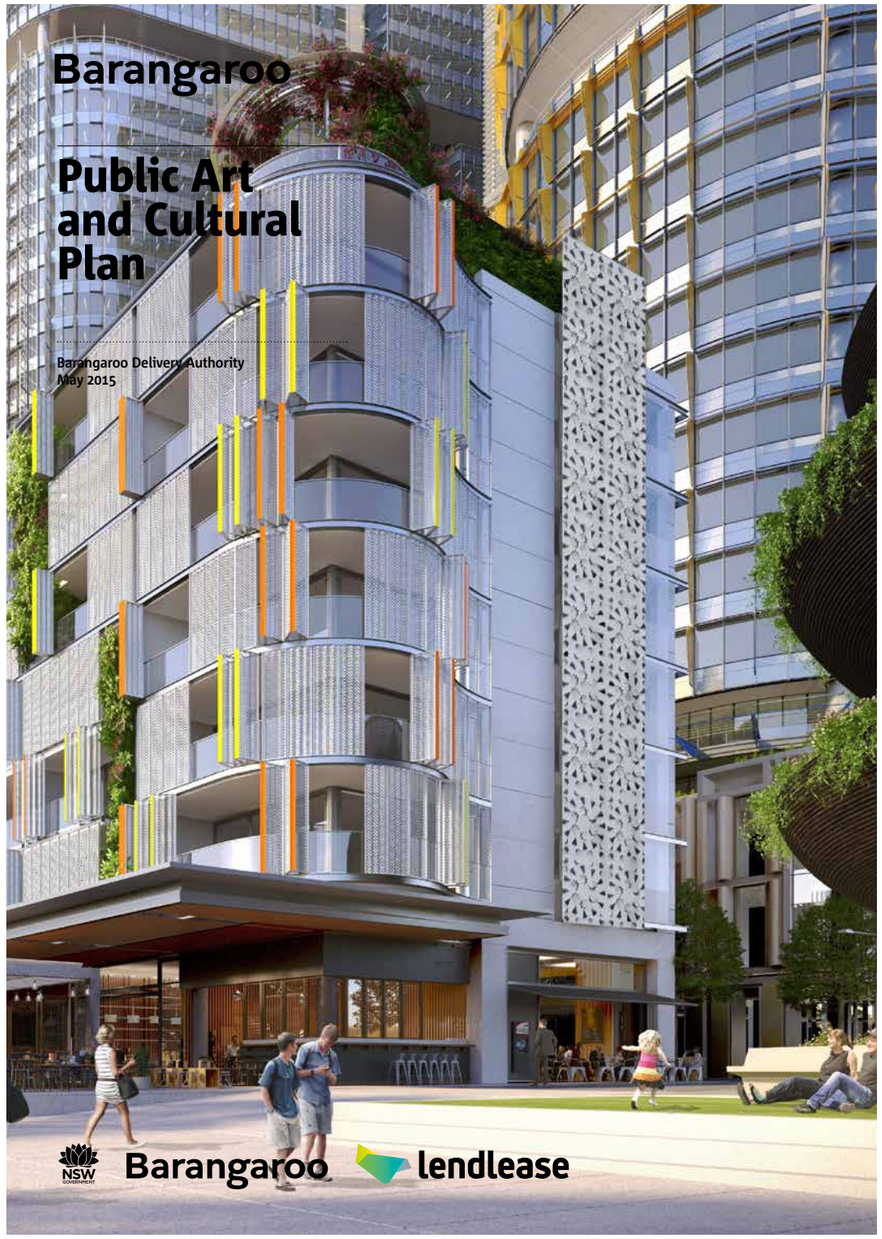
The tree of life and the tree of knowledge are common legends that continue to be relevant across many cultures, maintaining their mystique throughout time and place. It is widely believed that the tree of knowledge, connects the heavens and the earth while the tree of life, connects all life forms and is often related to immortality. In other interpretations they are both regarded as representative cosmic forms that are deeply depicted in diverse sacred teachings, folklore and traditions.

For ‘in time we shall’ artworks utilises copper, bronze and brass as the primary materials. The rationale for usage of materials includes their ageless beauty and durability as well as to work in harmony with the architect’s design and vision for the station. Embracing and considering form, function, and materials that include cut-sandstone blocks and walls, metal finishing, lighting design, polished concrete floors and column casings. I strongly believe that the colour and glow of the chosen metals will beautifully work with the warmness of the sandstone walls for many years to come.

Sydney Metro Art developed a 2-step selection process to select the artist and artworks for the new stations along the city and Southwest line. Expert panels make the selections at both stages.

The first stage for the city stations, was an expression of interest run by Create NSW, and open to all Australian artists with experience in large artworks and/or public art. A panel of art curators, including indigenous representation and a representative from Sydney Metro DRP shortlisted 21 artists, 3 for each of the 7 city stations. Following a specific art brief was prepared for Barangaroo Station, by Sydney Metro in consultation with the station architects and the 3 shortlisted artists; Khaled Sabsabi,(NSW) Louise Paramor, (VICTORIA), and Judy Watson, (QUEENSLAND) were invited to prepare a concept work. Judy Watson advised Sydney Metro that she was withdrawing from the competition, midway through the competition.

The competition was judged by a panel which included art experts, designers, and representation from both City of Sydney and Barangaroo Development Authority. Khaled’s proposal was successful, and was subsequently endorsed by Sydney metro Public Art Working Group. Khaled has been engaged by Sydney Metro to realise the proposal, and has since obtained in principle support of the project from Metro Land Council. Following completion of the final concept drawings, Khaled is currently updating the design to complete the coordination with the internal cladding for the concourse area.


Barangaroo
Public Art and Cultural Plan
Barangaroo Delivery Authority
May 2015
Barangaroo
lendlease

4.7.1 Station northern entry

The northern entrance comprises a bank of escalators covered with a canopy. The span and shape of the canopy is designed to push available technology to produce an iconic yet recognisable structural design.

This canopy structure follows the same materiality and detailing as the lift pavilion (see section 4.6.2) , ensuring a consistent design language across both elements. The design look to mitigate the visual impacts of Station northern entry directly responding to the EIS Condition requirement E101 (c).

A fundamental design aspiration was to express a minimalistic canopy design which enabled lines of sight across the precinct to Nawi Cove and the harbour beyond. The expansive use of glass in these structures enables the structure to integrate more readily with its surrounding landscape. The stainless steel elements together with the seamless soft glazed curves help aid passenger circulation and reduce visual impact. The roof rests gently on the four metre height fins while ensuring compliant shading. Overall, the canopy and the lift pavilion interconnect with Barangaroo's history and landscape, acting as a whole.

4.7.2 Lift pavilion

The lift pavilion's purposeful form and materiality integrates well within the park. The relationship between the lift pavilion and the northern entrance canopy has been carefully considered, ensuring a consistent design approach, which is also continued below grade within the station itself.

The design looks to mitigate the visual impacts of Lift pavilion directly responding to the EIS Condition requirement E101 (c). At night, the glazed lift pavilion will glow like a light box, giving ambient light to the park and its users. The lift pavilion integrates building services and vertical transportation requirements. A similar material palette and soft form has been used such as stainless steel seamless soft curves to help aid passenger circulation and reduce visual impact. The two glass lifts have clear signage and allow passengers to comfortably and safely travel between concourse and street level. Mechanical equipment elements within the pavilion are encased with a patterned, white low-iron back lit glass façade, contributing to the overall glowing effect.

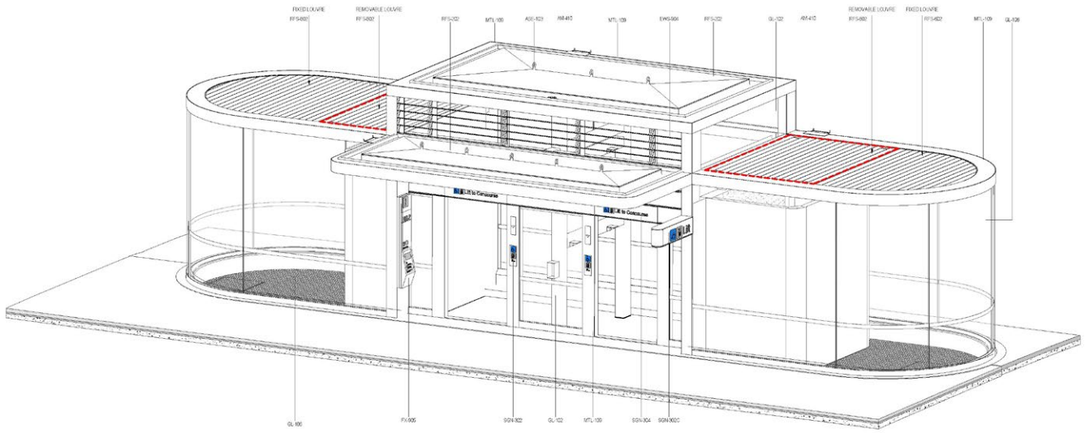


Figure 4.18 Northern entry lift pod - axonometric view
Source: Architectus

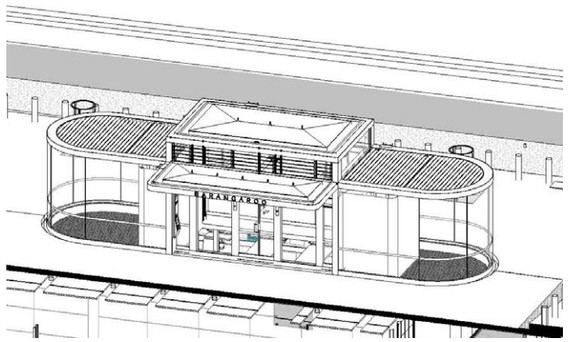


Figure 4.19 Northern entry lift pod - axonometric view
Source: Architectus

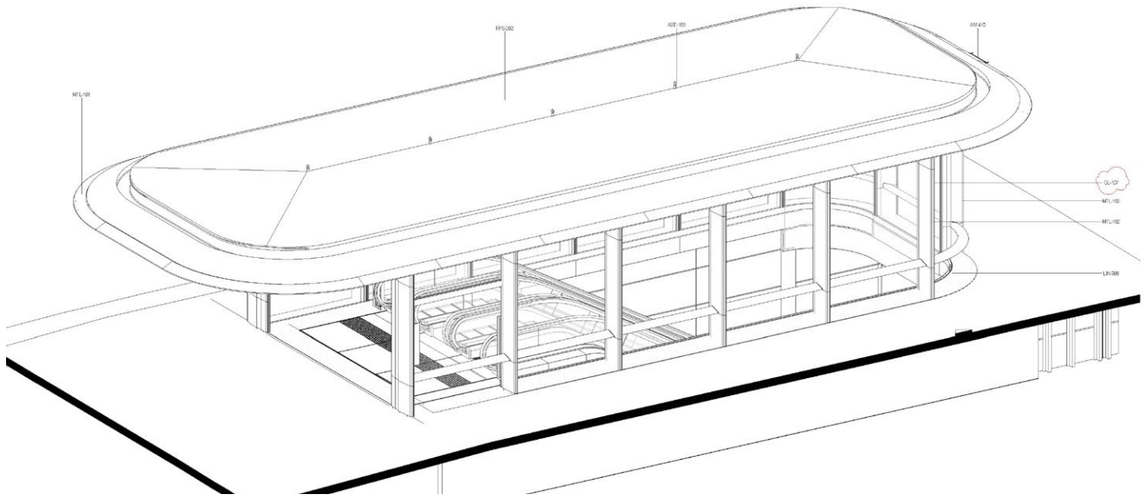


Figure 4.20 Northern entry canopy - axonometric view
Source: Architectus

Figure 4.21 Visualization of Northern Station Entry Lift and Northern Entrance

Figure 4.22 Visualization of Northern Station entry

4.7.3 Service pods

The façade treatment for the service pods will be developed through a limited design competition with input from The City of Sydney, INSW and Sydney Metro Design Review Panel.

The treatment may consist of cladding to each pod or a screening element along Hickson Road.

The design looks to mitigate the visual impacts of service pods directly responding to the EIS Condition requirement E101 (c).

The designs will need to address the following:
- contribute positively to the character of Hickson Road and the cultural significance of the this place,
- respond to the heritage and cultural context of the wall,
- consider the character of Hickson Road along its length and respond to the design of this edge further south, to be developed by Central Barangaroo,
- incorporate heritage interpretation or art as appropriate,
- consider Crime Prevention Through Environmental Design (CPTED) requirements,
- consider maintenance and access requirements,
- be designed to deter graffiti and vandalism.

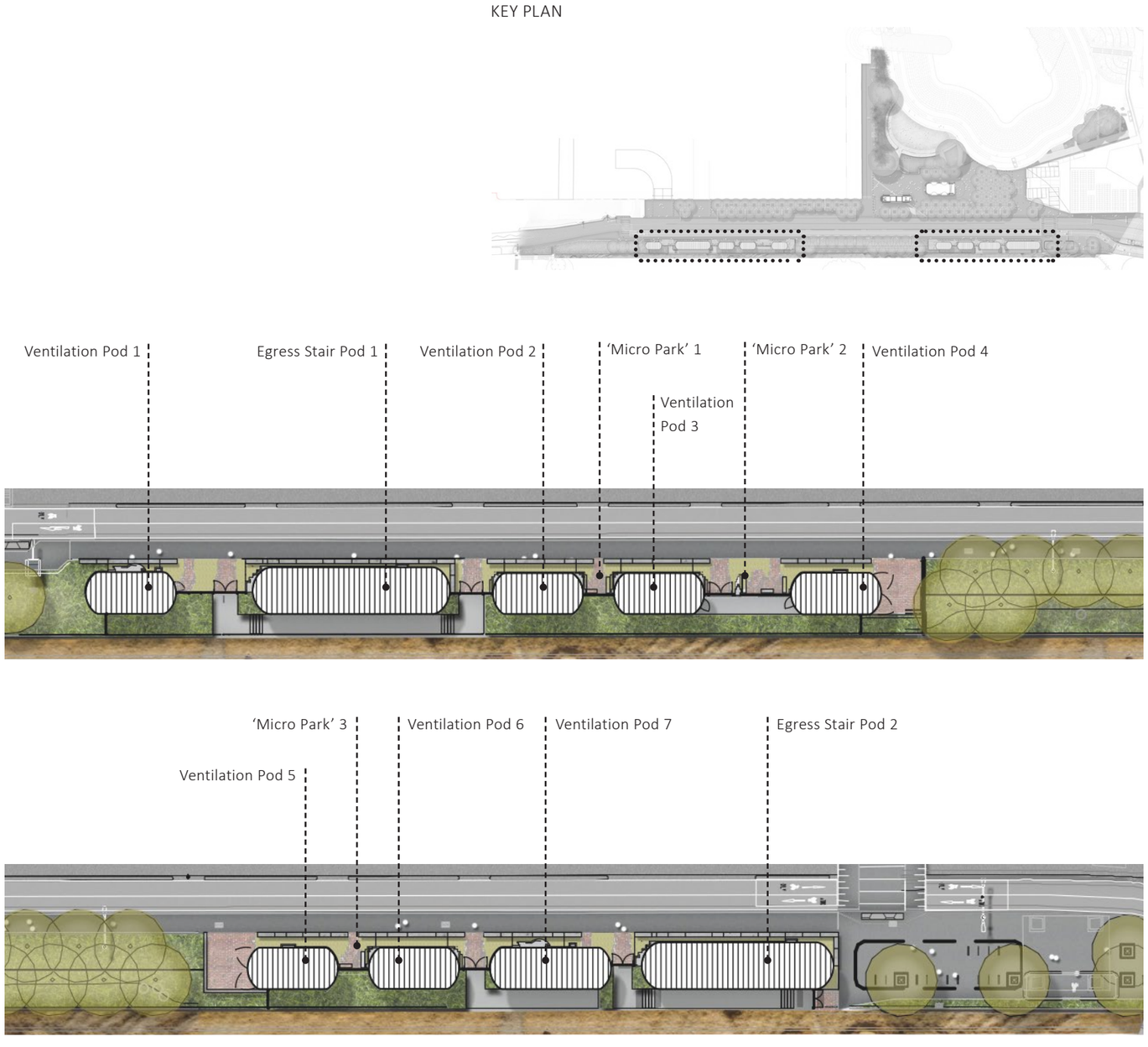
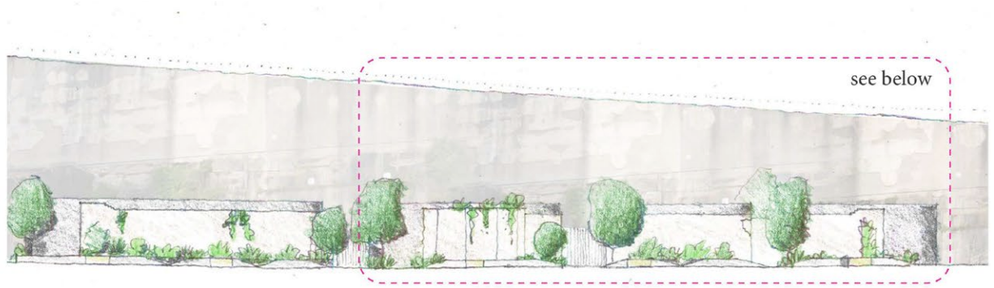


Figure 4.23 Service pods location
Source: Arcadia Landscape Architecture



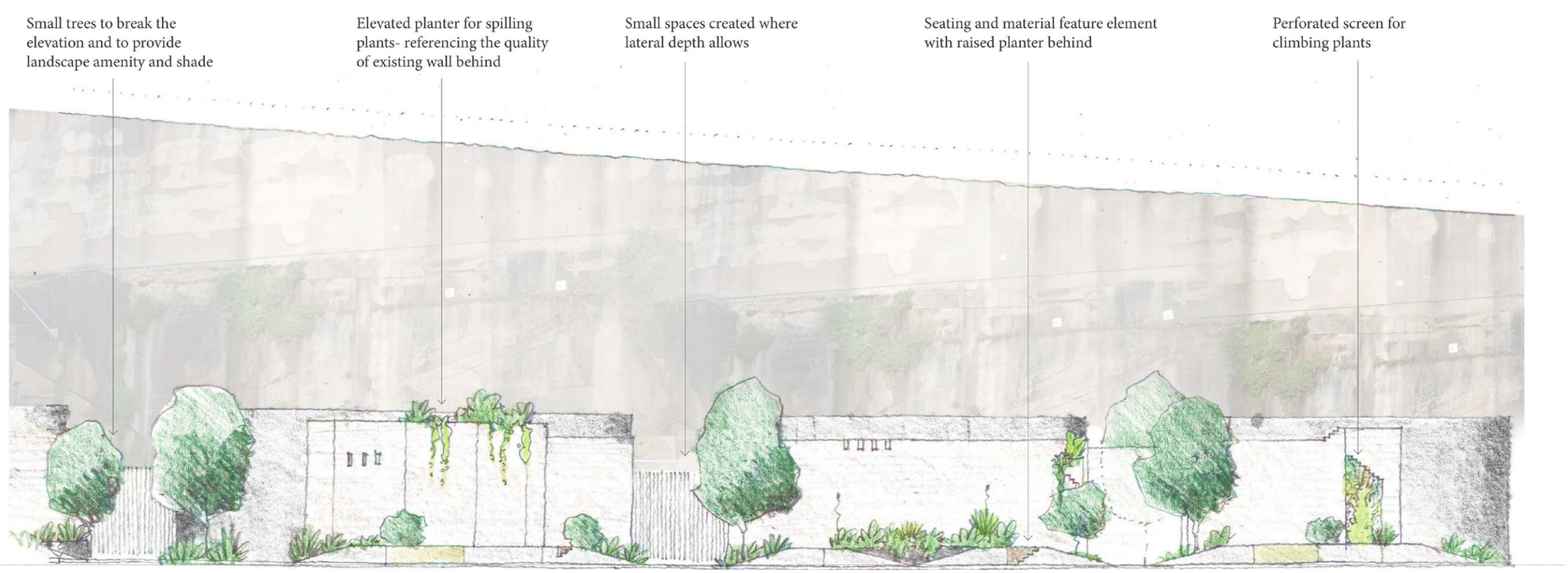


Figure 4.24 Barangaroo Pods - Landscape Character

Source: atelier Luke

The station precinct is an important interchange for multiple transport modes: walking, cycling, light rail, buses and Sydney Metro. The design will contribute to revitalising the precinct by creating a high-quality modal interchange. A new clear, easily recognisable station entry connects directly at grade to the wider precinct.

4.8.1 Pedestrian movement

The pedestrian network is both extended and enhanced by the project. The Hickson Road streetscape and Barangaroo Station Plaza and the Nawi Cove Parkland reconnects the wider Barangaroo Precinct to the harbour with informal, seamless pedestrian movement. The Nawi Cove Parkland allows for pedestrian movement through the parkland in all directions.

4.8.2 Cycle and shared paths

The project enhances the cycle network through the precinct. The separated dual direction cycleway adds to the wider precinct cycling strategy.

The proposed bi-directional cycleway along Hickson Road will add future connectivity to the small section of separated off road cycleway located at the southern end of the precinct on Sussex Street. More importantly, the new link will provide a critical active transport linkage which will enable the connection of all existing off-road shared path network in Barangaroo South to Millers Point.

4.8.3 Bicycle parking

Barangaroo Station requires 55 bicycle hoops for provision of 110 total bicycle parking spaces.
Refer to Figure 4.27 for the location of bicycle parking.

4.8.4 Interchange facilities

Refer Interchange Access Plan (IAP). Note that the IAP will be updated to reflect the contents of this SDPP (as required by Condition E93).

Around the station precinct, there are a total of two bus stops (one northbound and one southbound).

Additional northbound and southbound stops are planned to be located at the southern end of the precinct, in front of the Bond Building to take advantage of the existing stair and lift access located nearby to facilitate movement of patrons from Hickson Road up to Jenkins and Kent Streets at the higher level. These will be accessible by way of pedestrian crossing.

The primary northbound bus stop for the station precinct is located north of the station underneath Munn Street bridge. Upon completion of Central Barangaroo this bus stop will be relocated south of Street D and utilises the wide footpaths on the western side of Hickson Road to facilitate set down and pick-up functions. Located a short walk from the station entry, the bus stop provides a safe mode shift requiring the crossing of one secondary street. The southbound stop is located at the northern end of the precinct at the bend of Hickson Road, away from the station plaza and is accessible by way of pedestrian crossing.

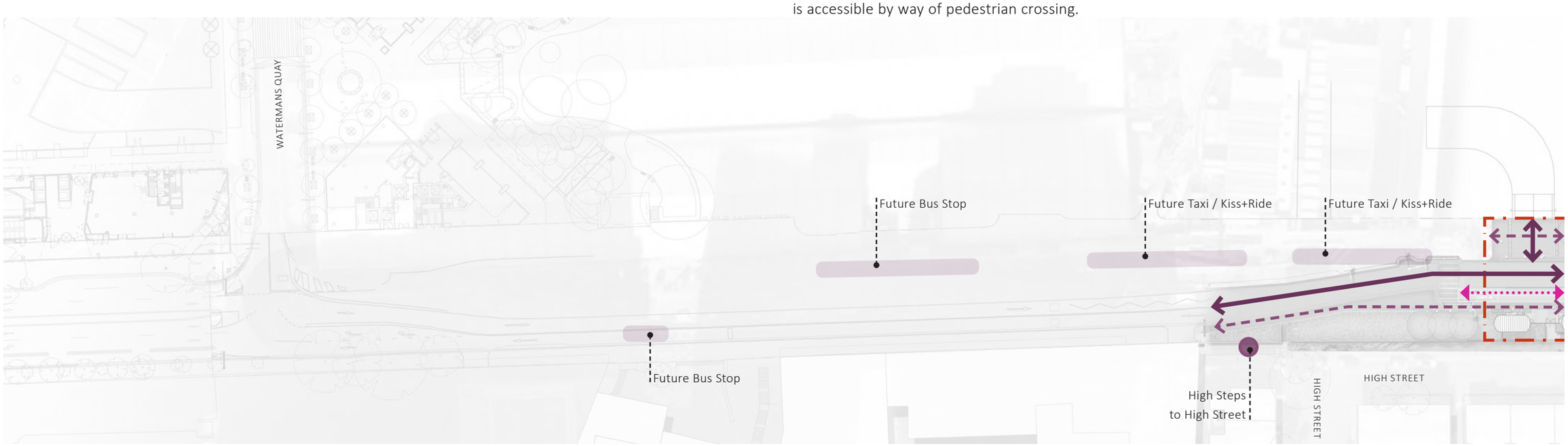
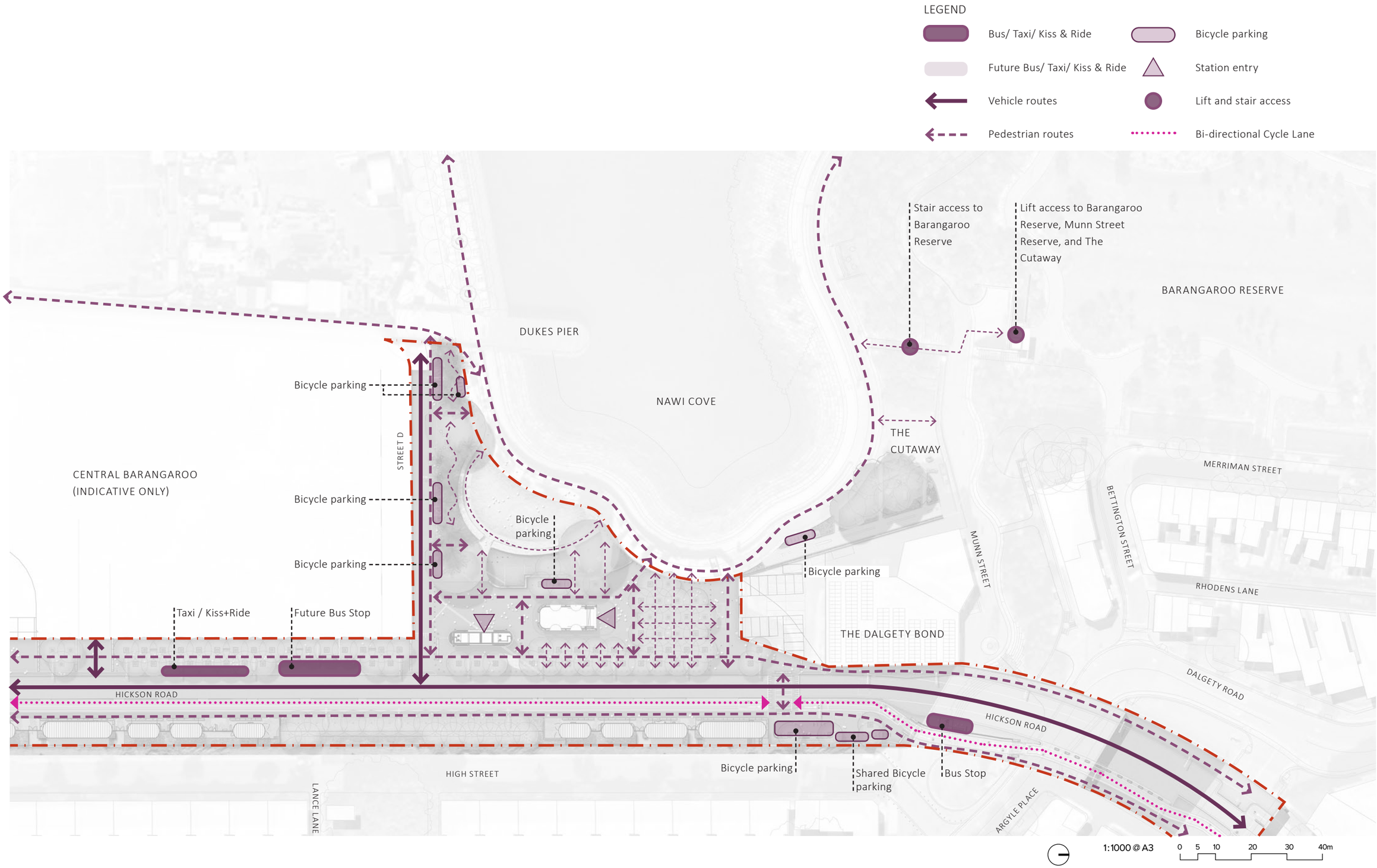


Figure 4.25 Connectivity and access strategy
Source: Arcadia Landscape Architecture


LEGEND
Bus/ Taxi/ Kiss & Ride
Future Bus/ Taxi/ Kiss & Ride
Vehicle routes
Pedestrian routes
Bicycle parking
Station entry
Lift and stair access
Bi-directional Cycle Lane
Stair access to Barangaroo Reserve
Lift access to Barangaroo Reserve, Munn Street Reserve, and The Cutaway
BARANGAROO RESERVE
DUKES PIER
NAWI COVE
THE CUTAWAY
CENTRAL BARANGAROO (INDICATIVE ONLY)
STREET D
Bicycle parking
Bicycle parking
Bicycle parking
Bicycle parking
Taxi / Kiss+Ride
Future Bus Stop
HICKSON ROAD
HIGH STREET
LANCE LANE
MERRIMAN STREET
BETTINGTON STREET
MUNN STREET
RHODENS LANE
THE DALGETY BOND
DALGETY ROAD
HICKSON ROAD
Bicycle parking
Shared Bicycle parking
Bus Stop
ARGYLE PLACE
1:1000 @ A3
0 5 10 20 30 40m

Following principles were derived from the Infrastructure New South Wales 2019 Reference Design workshop:

- Wide canopies that touch to create a colonnade of green (4.5m centres).
- Dappled canopy to maximise solar exposure at street level.
- Maximise clear sight lines along Hickson Road with elevated canopies and clean stems of three metre plus.
- Continue Hickson Road tree into Nawi Cove and Hickson Park.
- Species to relate to both the Barangaroo Precinct and the broader City of Sydney palette.

KEY PLAN

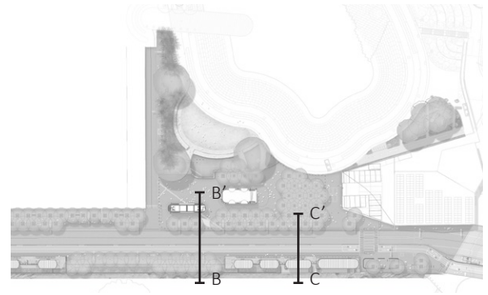


Figure 4.26 Section B-B' (not to scale)
Source: Arcadia Landscape Architecture

KEY PLAN

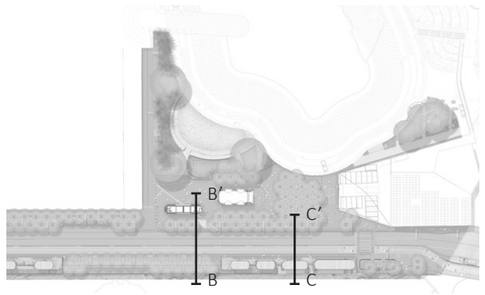


Figure 4.27 Section C-C' (not to scale)
Source: Arcadia Landscape Architecture

4.10 New plaza and Nawi Cove

Following principles were derived from the Infrastructure New South Wales 2019 Reference Design workshop:

- Maximise direct views from Hickson Road to Nawi Cove.
- Connect the language of Central Barangaroo and Barangaroo Reserve at Nawi Cove.
- Connect Hickson Road to Nawi Cove through a grid of trees that surround the Barangaroo station.
- Ensure permeability north, south, east and west.

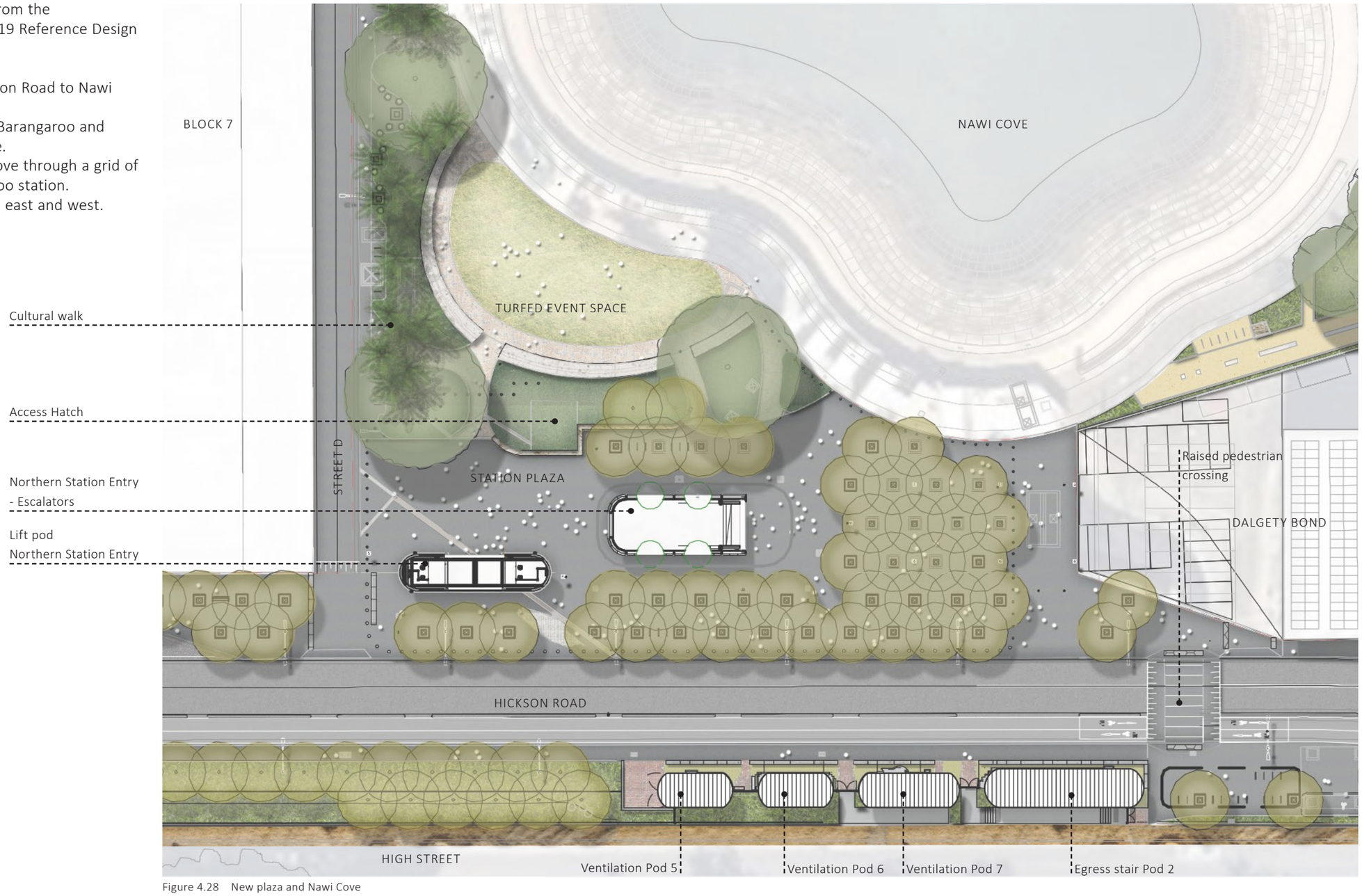


Figure 4.28 New plaza and Nawi Cove

Source: Arcadia Landscape Architecture

4.11.1 Landscape strategy

The landscape design within Hickson Road streetscape and Barangaroo Station Plaza compared with the Nawi Cove Parkland has two distinctive characters.

Hickson Road has a strong distinctive tree canopy, with single species on both side of the road. The varying condition on the eastern side of the road facilitates low level planting.

The intent for the Barangaroo Station Plaza is to also encourage cafe / outdoor dining that can spill into the plaza in the future from Central Barangaroo to the south and Dalgety Bond building interface to the north. A clear open space to the entrance of the plaza from Hickson Road aims to further activate the public realm, allowing the plaza to be used for future food trucks, or other community activities.

The Nawi Cove Parkland has a large open turf area with figs, palms and native tree species, reinforcing the already successful naturalistic foreshore character.

Dalgety Bond Store site indicative only.

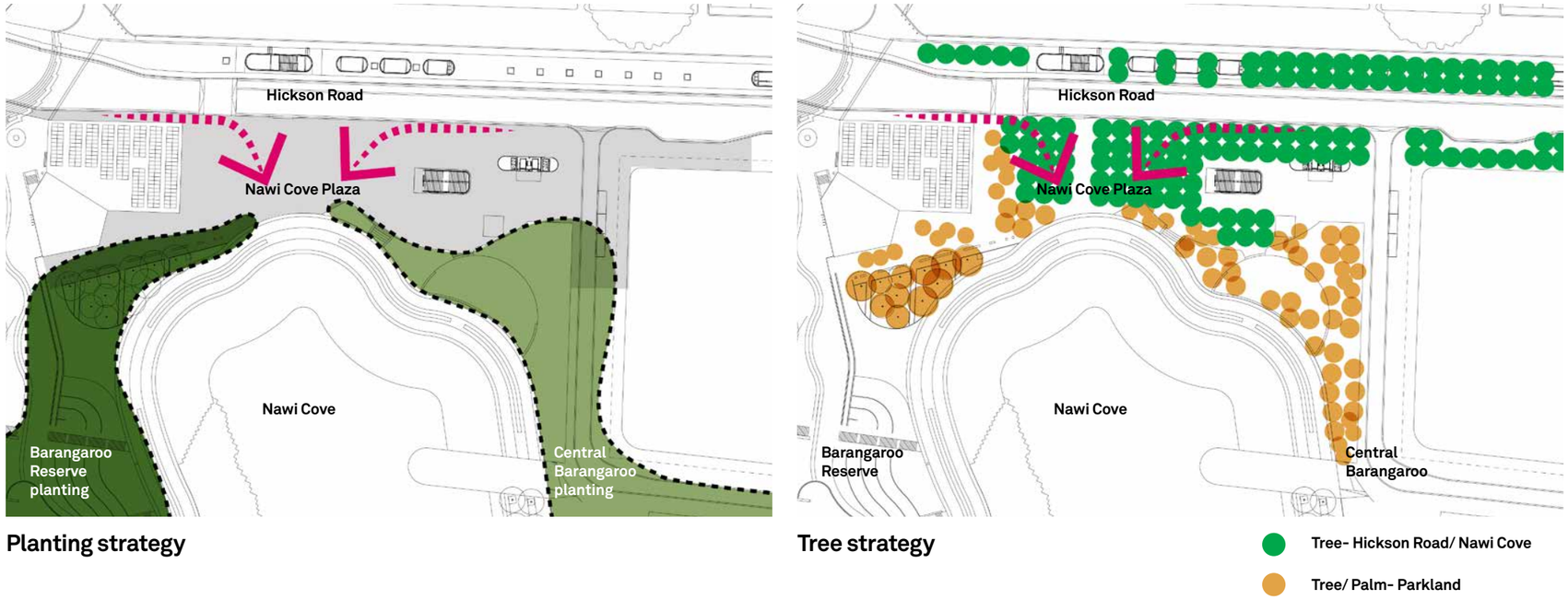


Figure 4.29 Nawi Cove concept plan

Source: iNSW/BDA image

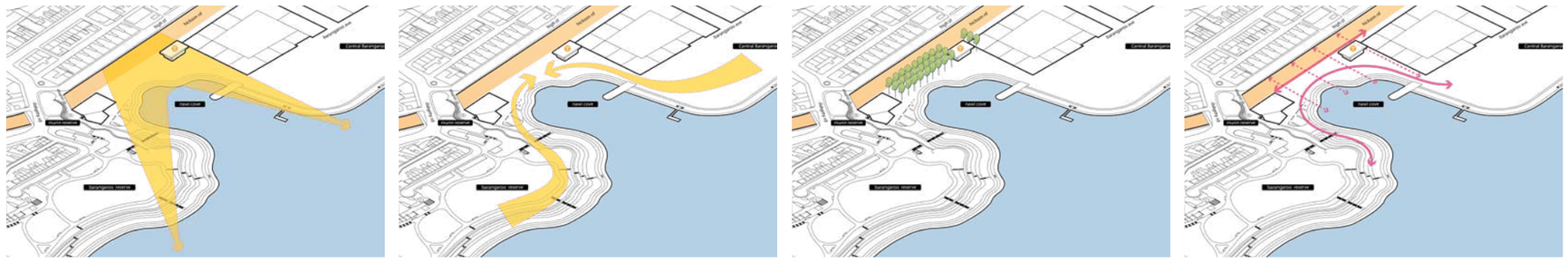


Figure 4.30 Nawi Cove key principles

Sources: iNSW/BDA image

4.11.2 Species selection

Tree species for Hickson Road streetscape and Barangaroo Station plaza are based on the below design principles:

- Wide canopies that touch to create a colonnade of green (4.5m centres).
- Dappled canopy to maximise solar exposure at street level.
- Maximise clear sight lines along Hickson Road with elevated canopies and clean stems of three metre plus.
- Continue Hickson Road tree into Nawi Cove and Hickson Park.
- Species to relate to both the Barangaroo Precinct and the broader City of Sydney palette Tree Strategy.

Credit iNSW/BDA/HASSELL

The Nawi Cove Parkland tree selection is to reinforce the Headland Park Tree Species pallet with figs, palms and native tree species.

Low level plant species are selected for the Hickson Road streetscape and Barangaroo Station plaza.

The tree and plant species selection considers long term success reducing management and maintenance within the public domain

The Nawi Cove Parkland plant selection is to support the outcomes of the Heritage Interpretation Plan.

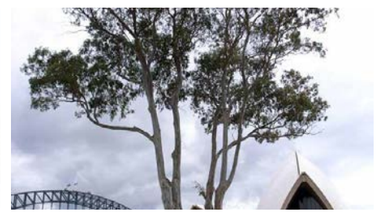
Hickson Road streetscape

Fraxinus pennsylvanica 'Urbanite'

Nawi Cove Parkland

Livistona australis

Ficus macrophylla



Eucalyptus tereticornis

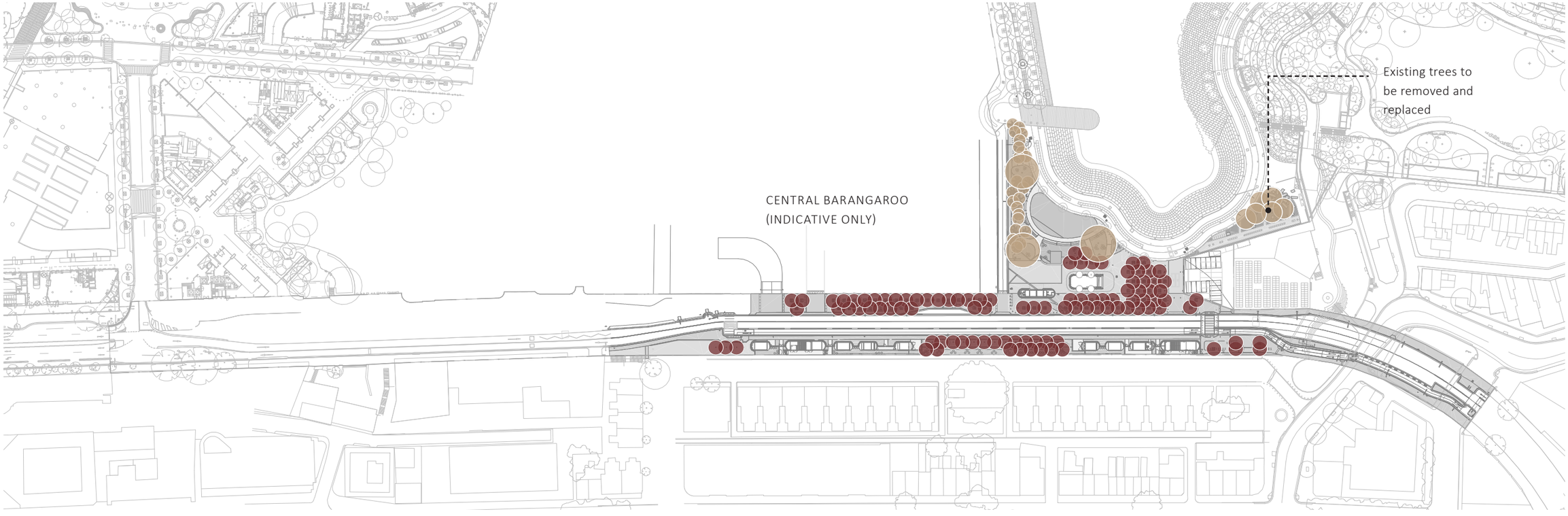


Figure 4.31 Tree planting diagram
Source: Arcadia Landscape Architecture

4.11.3 Typical planting details

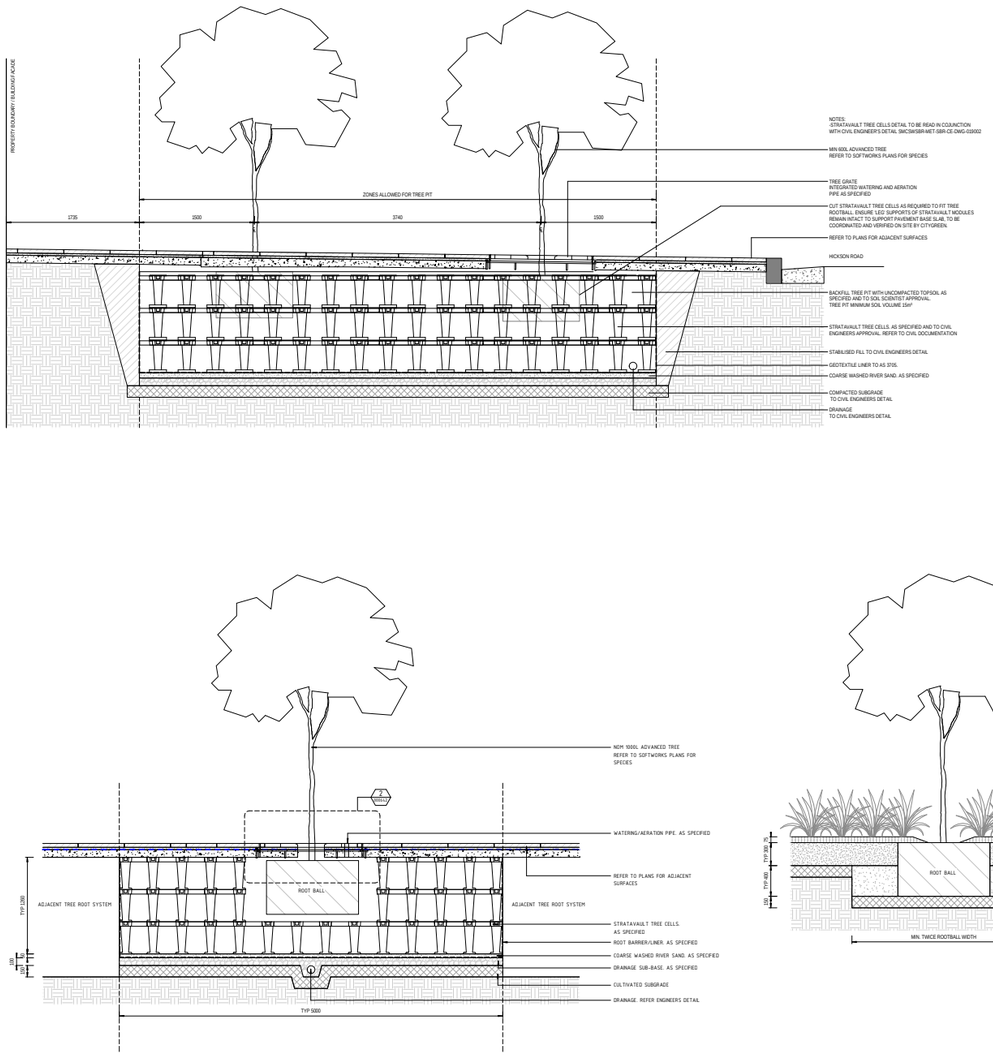


Figure 4.32 Typical planting details
Source: Arcadia Landscape Architecture

4.11.4 Water Sensitive Urban Design (WSUD)

The Hickson Road streetscape and Barangaroo Station plaza use an innovative structural soil cell system that is modular, lightweight, and secure. Soil cells are designed to provide trees and plants in urban environments with the correct nourishment and suitable conditions for healthy growth, without disturbing the structures above. The benefits include supporting large tree growth and maximising the use of on-site storm water collection. The system comprises an underground frame that can take loads above while still providing enough space below the surface for tree roots to grow in un compacted soil.

The selected product also uses recycled waste plastic to minimise the use of embodied energy.

Where possible storm water is directed in planting, and the eastern side of Hickson Road collects high flow rain events, where plant species will look to improve the quality of the water.

4.11.5 Landscape Maintenance

The monitoring and maintenance procedures for vegetation and landscaping, performance indicators, responsibilities, timing and duration, and contingencies are listed below for all trees and under storey planting:

A planting management plan has been developed for the project which details the plan of action designed to achieve a long-term and procedures to be undertaken with regards to the successful establishment and on-going maintenance of new vegetation. It also specifies procedures for the regeneration of disturbed vegetation.

The planting has been selected and designed to ensure low water use species have been planted to optimise long-term maintenance. Irrigation will be provided where water from pavements, directed into planting beds, cannot be achieved. Monitoring and maintenance should be undertaken to ensure plants sare maintained to their highest quality. Many other practices shall be carried out to ensure optimum plant condition by the operator – these include but are not limited to:

- Fresh supply of water – ensure planting is receiving sufficient yet efficient water to ensure a vigorous growth
- Observe and check the progress all plants for pest and diseases
- Replacement of plants to those damaged, diseased or dead, replace any stolen plant to ensure and maintain plant densities for the duration of the maintenance period
- Topdressing, Fertilizing and Re Mulching as necessary to maintain the mulch depth specified for the duration of the maintenance period
- Weed and pest control – Eradicate weeds using environmentally acceptable methods
- Remove any large rocks over 50mm rubbish, scrap, grass, vegetable and organic debris, scrub, trees (except trees to be retained), stumps, boulders and rubble - Litter and debris. Ensure that the site is kept clean, free of all litter landscape construction waste, and general debris at all times
- Fix of tree ties and stakes, or replacement if required to ensure healthy vigorous growth
- Pruning is best done when plants are dormant to reduce stress to the vegetation as required to ensure planting is kept clear of footpaths, operations of rail line, and Crime Prevention Through Environmental Design (CPTED) surveillance

Specific areas externally to the project boundary, disturbed as part of construction will be restored and re-vegetated. These practices include:

- Areas around compounds, material storage, access roads, fencing, services, drainage and infrastructure will be recorded upon establishment of the site
- Records will be made of the existing conditions
- Identified trees and areas of significant vegetation shall be protected with temporary fencing
- Unnecessary disturbance of vegetation will be minimised - Areas of vegetation that are disturbed during the works will be recorded and rehabilitated. This includes the retention of natural grades and drainage paths, reintroduction of grasses and planting

These areas that are affected above will be recorded to ensure a record is kept of how areas were re vegetated, including soil preparation and vegetation used.

4.12.1 Lighting

The design looks to comply with the EIS Condition Requirement E101 (g) - the location, design and impacts of operational lighting and measures proposed to minimise lighting impacts.

The lighting location, design and impacts achieve minimum light impacts and are consistent with all Stakeholder Requirments and Standards.

Hickson Road streetscape

Figure 4.33 Smart Pole - Walsh Bay
Source: Google

Station precinct

Figure 4.34 Schreder Shuffle Multi Function Pole
Source: Schreder

Foreshore lighting

Figure 4.35 Lanova 230 Pole
Source: Selux

Figure 4.36 Masterplan - lighting typologies
Source: Arcadia Landscape Architecture

4.13.1 Paving and street furniture selection

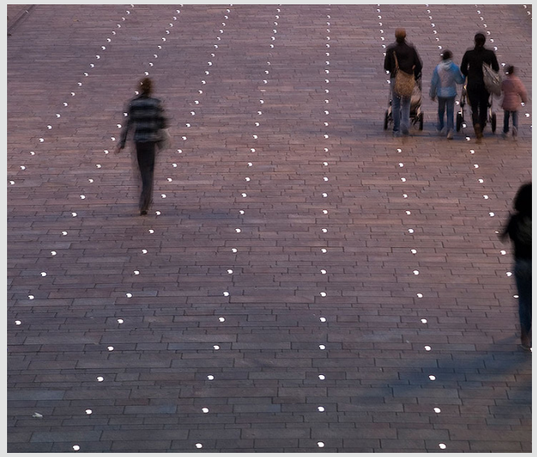
Paving strategy

1. Robust and durable

2. Special paving at the key nodal points of Hickson Park and Nawi Cove

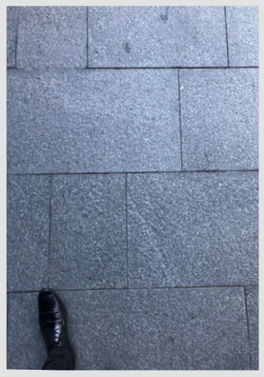
3. A continuous surface with paving along footpath and carriageway zones

4. Be distinct of place relating to both the Barangaroo Precinct and the broader City of Sydney palette



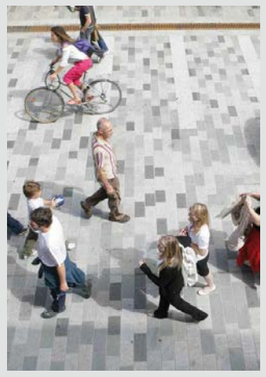
Paving strategy

Paving that relates to context and is based on the CoS palette along Hickson Road
Austral Black' granite



Rumble strip paving at north and south transition ramps
'Austral Black' granite

Special paving at threshold zones of Nawi Cove and Hickson Park
'Austral Black' granite with highlights



Paving at Nawi Cove that connects Central Barangaroo, Barangaroo Reserve and Hickson Road
Austral Black' granite

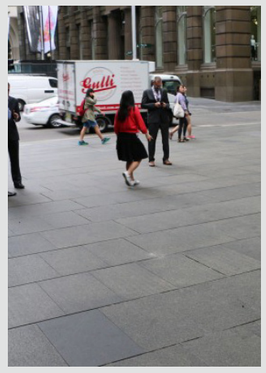


Figure 4.37 Paving strategies

Source: Hassell image

4.13.1 Paving and street furniture selection - City of Sydney Standard Details

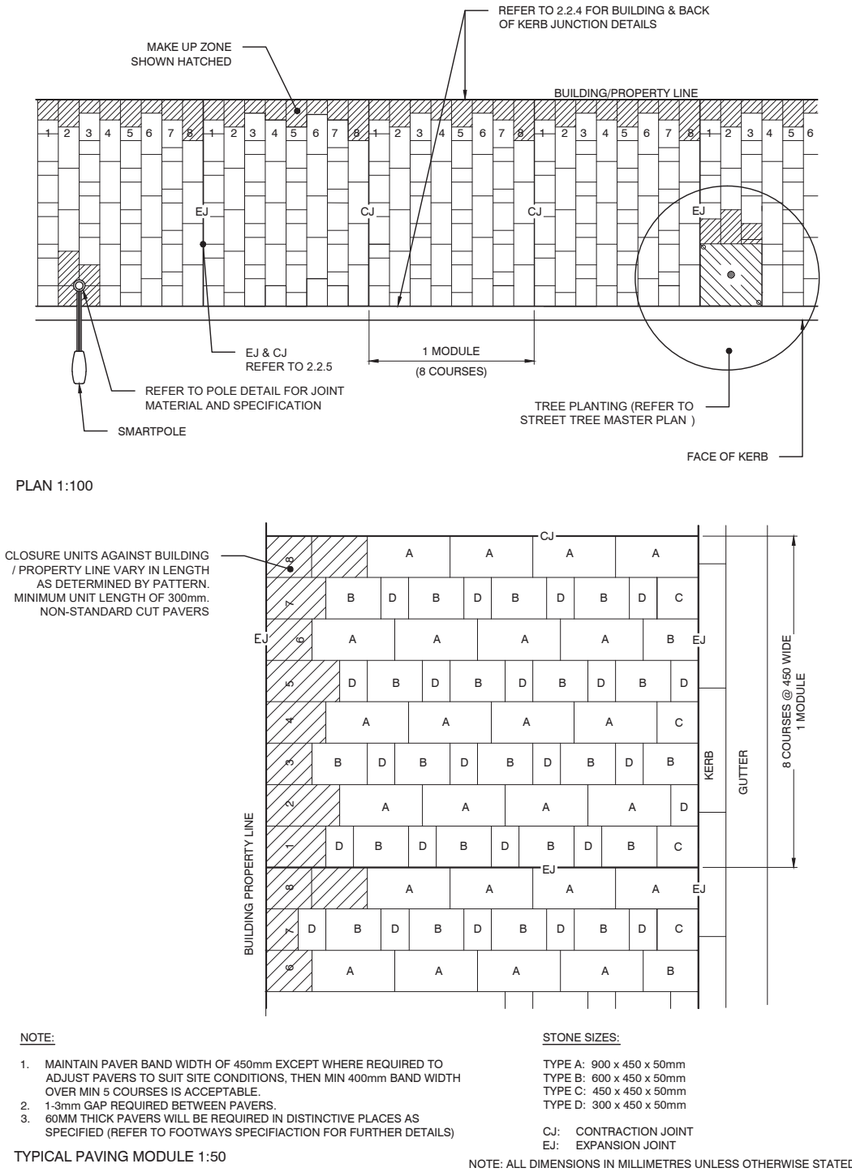


Figure 4.38 Typical paving layout

Source: City of Sydney, C: Standard Drawings Version 5 Dec 2019. Pg 34

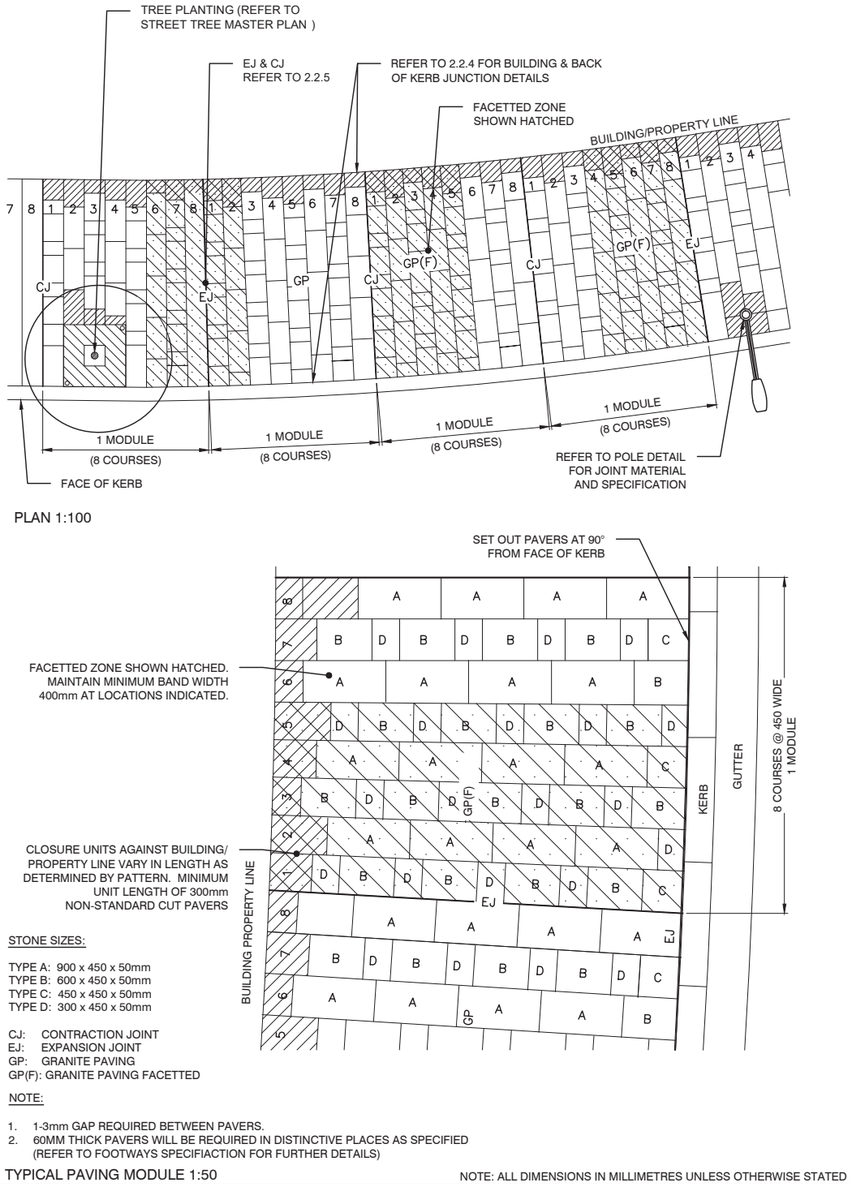


Figure 4.39 Typical paving layout

Source: City of Sydney, C: Standard Drawings Version 5 Dec 2019. Pg 35

Figure 4.40 Austral black granite

Figure 4.41 Austral black granite

Figure 4.42 Austral black granite

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4.13.1 Paving and street furniture selection - City of Sydney Standard Details

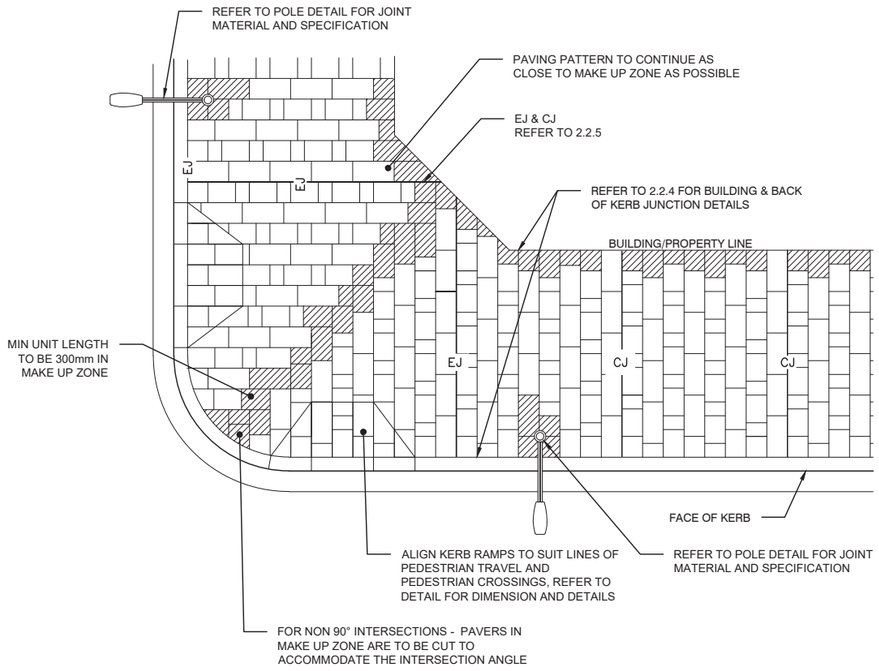

Figure 4.43 Typical paving layout

Source: City of Sydney, C: Standard Drawings Version 5 Dec 2019. Pg 36

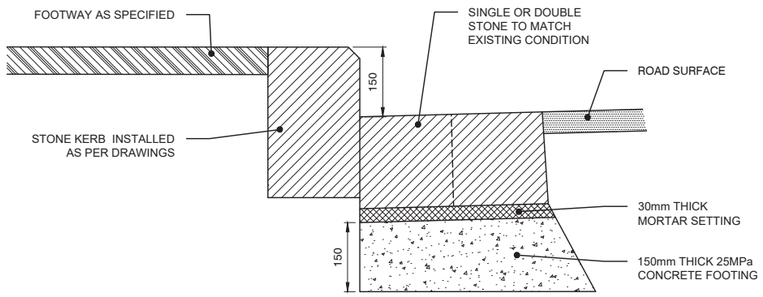

Figure 4.44 Typical paving layout

Source: City of Sydney, C: Standard Drawings Version 5 Dec 2019. Pg 18

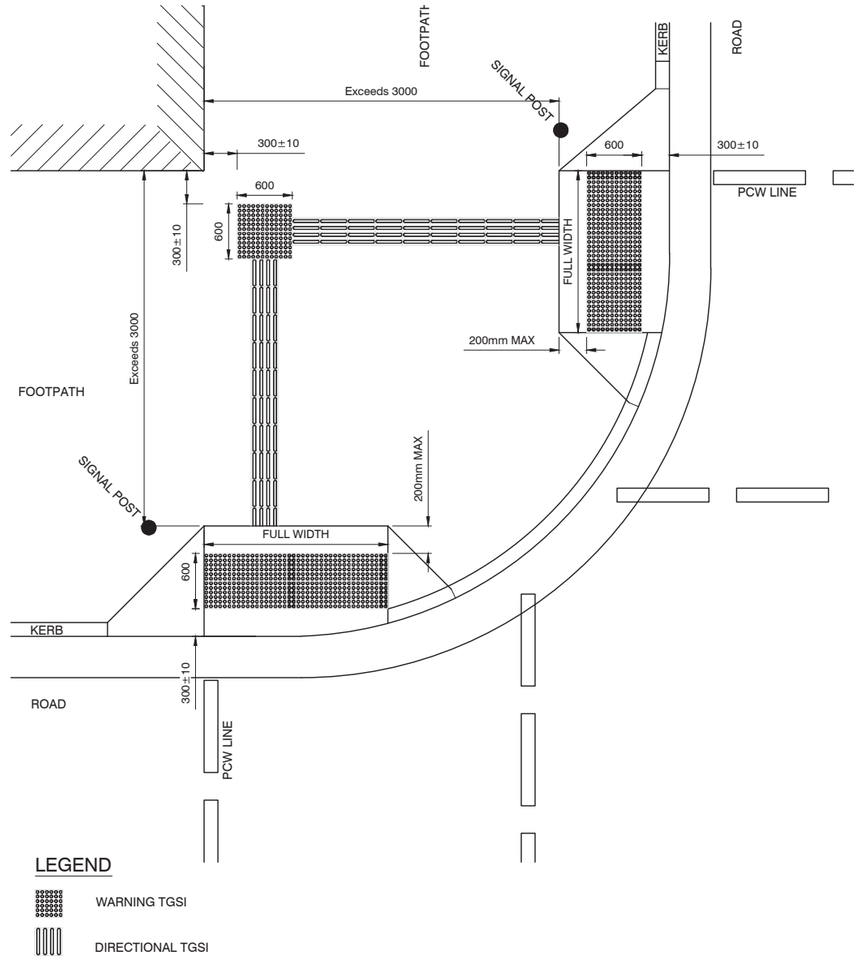

Figure 4.45 Typical paving layout

Source: City of Sydney, C: Standard Drawings Version 5 Dec 2019. Pg 36

4.13.2 CPTED (Crime Prevention Through Environmental Design)

Places that feel safe and well connected encourage walking and cycling including to public transport, while real and perceived crime risks can deter people from using certain facilities, taking particular routes or being in various locations. For Sydney Metro, CPTED is of particular importance with regard to how the project interfaces with the public realm and the movement of pedestrians and cyclists to and through the project corridor.

Targeted principles were developed early in the design process that address three CPTED strategies (natural access control, natural surveillance and territorial reinforcement), to inform and guide the urban, landscape and architectural design. The design provides for passive surveillance, and clear and legible paths of travel, to contribute to a perception of safety and security in a well designed, well cared for public domain. As the design developed, a CPTED assessment was also undertaken to help refine any outstanding issues.

The assessment noted the following considerations:

CPTED assessment issue	CPTED principle/s	How the design addresses the issue
• Station entries Maximise surveillance and maintain clear sightlines at station entry points	Natural surveillance	The northern station entry is situated within a grid of trees. Day one, the trees will have a three metre clear trunk before the canopy of the tree starts. This will allow passive surveillance throughout the precinct.
• Bike parking Maximise natural surveillance from nearby buildings bike racks / landscape. Ensure bike racks do not act as a climbing aid.	Natural surveillance Territorial reinforcement	Bicycle parking is provided at station plaza entry points. This is to ensure cyclists can park their cycles and not walk them across busy pedestrian station entries avoiding pedestrian and cyclist conflict. All bicycles parking is set away from other urban elements, fencing and trees to ensure climbing is not possible.
• Vegetation Consider maintenance of existing vegetation to maximise natural surveillance of platform areas, in particular under the booking office, behind the lift and beneath the stairs	Landscaping Natural surveillance Image and maintenance	Trees in the plaza have been selected for their form which is single / clear trunked to ensure visibility through the plaza. Shrubs and ground covers are typically less than one metre high, also to allow good sightlines through the plaza and to connecting paths. Existing and new vegetation will be maintained.
• Lighting Ensure lighting is in accordance with RSS 001 lighting performance requirements for station concourse building, platforms and platform buildings	Lighting	Considered in lighting design.
• Pedestrian safety around service pods	Increase sight lines and passive surveillance	The service pods are located on the eastern side of the Hickson Road and provide the station with crucial fire egresses and service accesses range of design approaches were considered for the screening of the pods on Hickson to balance the need for these elements to read as individual elements while ensuring the safety of pedestrians is not compromised. The approach adopted is to provide a continuous secure line to the metro plant and service areas, while improving security and surveillance by minimising the number of blind spots behind and between the structures. The street and footpath lighting nominated for the eastern side of Hickson Road will also ensure that 4 lux on vertical is obtained, which is consistent with the requirement under the Sydney Lights Public Domain Design Code to enable the operation of City of Sydney CCTV cameras, the positions of which are to be confirmed.

4 Design

4.14 Metro-wide design

4.14.1 Wayfinding and signage

The external (above ground) signage and wayfinding for Barangaroo station precinct and Hickson Road adopts a precinct wide approach, directing customers to the station entries.

The standard Sydney Metro suite of signs are used and positioned according to typical signage and wayfinding principles.

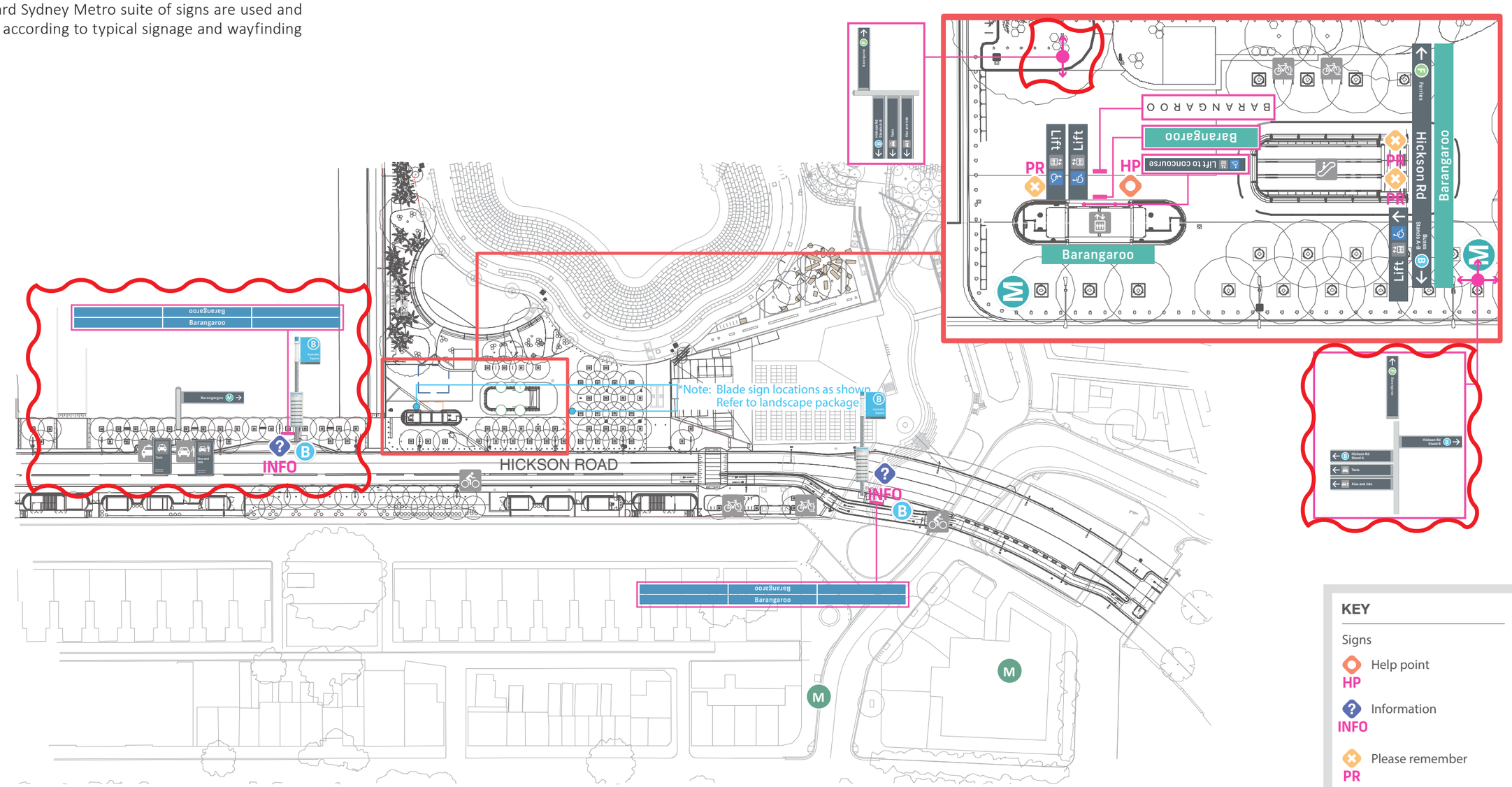

Figure 4.46 Wayfinding program: site strategy - base case

Source: Blue Sky Design Group Pty Ltd

4.14.2 Materials and finishes

Sustainability

The vision is to achieve a 5-Star design and as built rating, equivalent to Australian excellence, from the Green Building Council of Australia Sydney Metro Custom tool.

Strategies for the City & Southwest Stations include:

- Low-maintenance design
- Active transport facilities, including external bike rails and internal bike store
- Community engagement through building information display and public art
- Waste storage and sorting facilities provided
- Maximized occupant comfort and improved indoor environmental quality, through daylight penetration, appropriate acoustic treatment, optimized ventilation and indoor air quality
- Recyclable and low VOC materials proposed to be used where possible
- Water efficient services
- Energy efficient services

Materials and finishes

A material palette which is intrinsic to the local character of Sydney is proposed for the station interior; including local sand stone, bronze metal polished concrete and timber.

The high quality material for the architectural finishes and furniture will enhance the station identity and customer experiences. The proposed selection are all sustainable materials that have low embodied energy and could all be locally sourced.

Performance and durability of the materials were carefully considered in the design process to ensure ease of maintenance during the operation phase.

Transport and Access

Figure 5.1 Barangaroo Headland Park
Source: http://landezine.com/index.php/2016/07/barangaroo-reserve-by-pwp-landscape-architecture/

5 Transport and Access

5.1 Transport and access design measures

5.1.1 Maximising the amenity of public spaces

Hickson Road streetscape and Nawi Cove Parkland provide significant public space amenity for Sydney CBD.

"Hickson Road provides one of only two continuous north-south bidirectional traffic routes through the Sydney CBD – the other being the College Street / Macquarie Street route on the eastern side of the CBD. With the partial closure of George Street due to light rail construction, Hickson Road provides a key connection for people travelling between the south of the CBD to key locations such as Circular Quay and The Rocks. It is also the main route for those travelling to Walsh Bay." Quote: iNSW

The design maximises the amenity Hickson Road Streetscape by:

- Create an unimpeded widened pedestrian zone along the western edge of the road corridor.
- Activate the street with wide footpaths providing the opportunity for increased zones of F+B along the western edge.
- Create a cohesive and legible streetscape through selection of materials, urban elements, planting and lighting.
- Unite the overall streetscape through a high quality cohesive paving treatment that continues into the carriageway.
- Increase the amenity of the street with trees and planting.
- Provide a green, planted buffer along the eastern edge of the road corridor.
- Tie in with existing road conditions to the north and south of the project site.

5.1.2 Maximising permeability around entrances to stations

The design maximises the permeability around the Nawi Cove Parkland by "Prioritise the pedestrian by encouraging free movement of people through an unimpeded public domain." Quote: iNSW

5.1.3 Maximising integration with other transport modes

The station strategy for Barangaroo is to:

- Provide easy, safe and intuitive transfer to and from the metro station within the existing network and road environment.
- Maximise connectivity and legibility to the primary uses within and nearby the Barangaroo precinct.
- Ensure legible and direct access to Barangaroo Reserve and Barangaroo Ferry Hub.
- Integrate with development plans for Barangaroo.

Above dot points from Interchange Access Plan – Barangaroo April 2017

For further information refer Interchange Access Plan – Barangaroo April 2017. Note that the IAP will be updated to reflect the contents of this SDPP.

Figure 5.2 Barangaroo - Interchange and transfer requirements overview

Source: Interchange Access Plan - Barangaroo

5 Transport and Access
5.2 Integration with the Walking and Cycling Strategy

For further information refer Interchange Access Plan - Barangaroo April 2017

In accordance with Condition E93 of the Conditions of Approval for the construction and operation of the Sydney Metro between Chatswood to Sydenham:

(a) traffic and accessibility design requirements; and
(b) the Station Design and Precinct Plan(s) required by Condition E101.

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Consultation

6

Figure 6.1 Barangaroo Reserve
Source: http://lo[illegible]ndex.php/2016/07/barangaroo-reserve-by-pwp-landscape-architecture/

6 Consultation

This section includes evidence of consultation in preparation of the SDPP, and will note how feedback has been addressed before seeking review by the Design Review Panel.

6.1 iNSW/BDA

Consultation with various stakeholders were conducted by iNSW/BDA during the preparation of the iNSW/BDA MasterPlan.

6.2 iNSW/BDA Stakeholder Comments

Sydney Metro have collaborated with INSW and have held weekly coordination workshops during the development of the design. Sydney Metro have developed the design in accordance with the INSW Masterplan including:

- Station Northern Entrance - reduced size to improve views to Nawi Cove
- Nawi Cove parkland design – developed collaboratively with INSW to be more responsive to placemaking principles, site context, heritage interpretation, and open space programming objectives;
- Paving design strategies – refinement of paving typologies;
- Furniture and lighting design strategies – developed collaboratively with INSW to refine station furniture and lighting locations and types,
- Heritage design strategies – design of interpretive heritage elements informed by the Heritage Interpretation Plan;
- Planting design strategies – design of planted amenity and cultural planting species selection informed by the Heritage Interpretation Plan.

6.3 City of Sydney Consultation

Sydney Metro have consulted with a number of key stakeholders including INSW and the City of Sydney throughout the process. A record of this consultation process and the documentation of key changes are outlined as follows.

Key consultation workshops occurred on the following dates:
- 19th and 27th February 2020
- 16th March 2021

Key changes which have been incorporated into the design following this consultation include:

- Strategy for service pods subject to a design competition
- Hickson Road typical cross-section revised in line with City of Sydney preferred dimensions (parking, traffic lanes, bi-directional cycleway, bus stops)
- Hickson Road eastern verge - footpath revised to be 2.0m wide minimum in line with City of Sydney preferred dimensions
- Hickson Road western verge - amended street furniture strategy to City of Sydney preference

6.4 Heritage Interpretation Plan Consultation

The Heritage Interpretation Plan (SMCSWSBR-MET-SBR-HE-PLN-000001) has a summary of the stakeholders that were consulted as part of its production.

6.5 DRP

Sydney Metro have presented the design to a DRP (Design Review Panel). The project team presented the precinct design, tree selection, lighting, general arrangement, security, and pod design.

Key presentations occurred on the following dates:
- 21st January 2020
- 27th April 2022

Key changes which have been incorporated into the design following this consultation include:
- Inclusion of a footpath to the Hickson Road Eastern verge

Below are the DRP (Design Review Panel) Meeting minutes from 27th April 2022

DRP Advice:

Station Service Buildings:
- The Panel congratulates both the successful project team and the jury on the selection of the service pod scheme. This design demonstrates a richness of place, without detracting from the nature of the adjacent heritage wall. The Panel supports the intelligent expansion of the brief which has provide varying perspectives on the history of the place and encourages the project team to continue to explore this opportunity.

- The Panel likewise supports the proposal for a subtle public art, which is both discoverable and hidden whilst bringing additional richness to the scheme. The Panel recommends that Sydney Metro share the surrounding proposals for heritage interpretation and public art with the project team, to further support their development of the proposal.

- Whilst these elements of detail are successful, its is important that the project team remember that this is still within a civic scale of development. As such, the Panel recommends designing the details at two scale to ensure that the legibility of the legibility of the proposal is not lost or misconstrued from afar.

- The panel looks forward to their ongoing role as design integrity panel, to assist the project team and the jury by ensuring that the quality that make this project a success are not lost during detail design development

Station
Planning and Pedestrian Movement

- Item 1.02 The Panel supports the addition of safe pedestrian zones along Hickson Road (Closed).

- Item 2.01: Closed as per above items.

- Item 4.01: The Panel supports the shift from cream to warm white as proposed in the GRC and vitreous enamel samples. However, looks forward to reviewing a full scale mock up of the enamel panel to assess the jointing between them.

- Item 6.01: The Panel understands that the columns must be clad to conceal services and protect the surface from vandalism. As a result, it would be disingenuous to clad them in concrete. They therefore support the proposal to clad them in GRC to align with the high level datum.

- Item 6.02: The Panel accepts that the contract with Aqualand clearly stipulates that the design and operation of the entrance to their building from the station must align and integrate with the chosen finishes.

- Item 6.02: The Panel accepts that the contract with Aqualand clearly stipulates that the design and operation of the entrance to their building from the station must align and integrate with the chosen finishes.

- Item 6.03 The Panel accepts that the sandstone wall is no longer designed to be an direct representation of the cut sandstone, but rather a reference. As such, the expression of the grid to highlight the artwork and the panelised nature of the sandstone wall is logical.

Public Art and Heritage Interpretation

- Item 5.01: The Panel accept that Khaeled Sabsabi will review the development of the lighting design to ensure it achieved the desired outcome for his artwork.

- Item 5.02: The Panel accepts that Khaled Sabsabi has reviewed the mounting height of the artwork text band, and has supported the proposed height as directly relates to the artwork beyond and provides the greatest opportunity for public interaction.

- Item, 5.03: The Panel accepts the artists direction that the extent of copper has been considered to ensure that the size and extent designed is legible without feeling overpowering.

SDPP

The Panel endorses the Barangaroo Station SDPP while recognising that the station service pod design, and entry to the Aqualand development ae at an earlier design phase and therefore not core to the scope of the SDPP.

DRP comments are now fully Closed (as per the minutes)

CATEGORY	KEY THEME	FEEDBACK	Sydney Metro responses
Street Access	Re-open Pottinger Street in Dawes Point	Thank you for the update. I have 5 retail shops at 17A-21A Hickson Road Walsh Bay. I note the closure of Hickson Road between Towns Place and Napoleon Street which is disruptive for entry to Walsh Bay. You need to open Pottinger Street in Dawes Point. This street has been closed off by the erection of bollards for a number of years which should never have occurred. The founding fathers of the Walsh Bay Precinct, the NSW Government and the Walsh Bay Partnership of Transfield/Mirvac would never have permitted this yet the City of Sydney has done it and the local population who live and work in Walsh Bay suffer! There was no consultation. Please advise when Pottinger Street will resume its fit for purpose as a trafficable roadway?	There is no proposal to shut down Hickson Road as part of the Sydney Metro works. Pottinger Street re-opening is beyond the scope of these works and is a matter for City of Sydney (CoS). There will however be temporary traffic disruption to Hickson Road during the station construction phase.
Lift access	Lift access to the station bewtween High Street and Hickson Road	Dear Sydney Metro Planners The planning for Barangaroo Station should incorporate a lift between High Street and Hickson Road. Lift access to the station could be at ground level on Hickson Road or via a pedestrian bridge crossing Hickson Road.	Sydney Metro has reviewed this with stakeholders in the area and deemed existing infrastructure is sufficient. An existing lift at the Cutaway provides connectivity between the Barangaroo station area at Hickson Road and the Millers Point area. A pedestrian lift between High Street and Hickson Road has the potential to impact on the heritage significance of the High Street retaining wall which separates Hickson Road and High Street. Stakeholder engagement has been undertaken with CoS, Transport and Traffic Liaison Group (a grouping of Transport for NSW ,TfNSW traffic experts) and the Design Review Panel, (a State Government design review panel who are assembled to review Sydney Metro design works) who reached broad agreement that a lift is beyond the scope of Sydney Metro works.
Precinct Integration	Integration into the surroundings and acknowledgement of the area's history	Dear TfNSW, I wish to make one vital point in respect of the station at Barangaroo, part of the Sydney Metro project. The site, and the station, needs to effectively integrate into its surrounds and acknowledge the history of the area, both indigenous and industrial. Specifically, the station needs to acknowledge the area's proud maritime working waterfront heritage with a number of displays that pay homage to 'the Hungry Mile' that was Sussex St. I do not propose to comment on any of the project's engineering or transport challenges.	Sydney Metro appreciates that the station needs to integrate into its surrounds and acknowledge the history of the area, both Aboriginal and industrial. Please refer to the Barangaroo Station Heritage Interpretation Plan (HIP). The HIP outlines all types of history of the area, including Aboriginal, industrial and maritime, and how these elements are considered as part the project design. The SDPP has been informed by this HIP. With specific reference to the Hungry Mile, it is proposed that the Hungry Mile interpretation be undertaken in the near future by INSW and the City of Sydney, with Transport for NSW (TfNSW) as a partner.

6.0 Barangaroo SDPP Consolidated Public Consultation Feedback and Sydney Metro

CATEGORY	KEY THEME	FEEDBACK	Sydney Metro responses
Building Structure	Building design imposes on local surroundings and water views	Submission on Design of Barangaroo Station Integrated Urban, Landscape and Architectural Design Thank you for seeking feedback on the draft SSDA Applicaion. We would appreciate you considering and addressing the following comments/ concerns regarding the SSDA Designs: • The proposed SSDA Station Entrance design is very different to the 'Transparent Glass Box' concepts previously shown by TfNSW Metro, • The previous concepts provided are better opportunities for clearer sight lines and transparency that enhanced views of the harbour foreshore, harbour and Barangaroo Headland Park, • We do not support the bulkier, tall, solid structures and roof that have now been proposed. • The new structures are tall and solid and will block views of the harbour from High St, Hickson Rd and from the residential dwellings with Millers Point. • Properties in Millers Point sold by NSW to public/ private sector included sales contracts with strict Heritage Control requirements that included retention of harbour views for the Dock Worker cottages along High St, Millers Point. It would be contradictory for NSW Government to have imposed these requirements on new purchasers of the NSW Government housing sold to private sector – Only for NSW Government to then construct new assets that inhibit/ block those views, • We therefore recommend, the following: o Utilise more glazing and transparency to the roof and facades of the Station Entry boxes to make them less imposing and improve sight lines to water, o Lower the height of the Station entry boxes to make them less imposing and improve sight lines to water, o Reduce tree size and canopies proposed to minimise size of tree canopies that might diminish views and harbour sight lines. There are adequate large trees in Barangaroo Headland Park, Thank you for your consideration of these matters. We will be engaging a planner and legal representation to review the SSDA Application that is submitted to DPIE in relation to the above concerns. Regards	The artist's impressions shared by Sydney Metro represented a very preliminary concept and a general desire to achieve transparency and lightness in the design. Sydney Metro has aimed to achieve transparency, minimalism, and lightness in the design of the station entrance. The conceptual desires needed to be balanced against the project requirements of achieving blast and vandalism resilience, lift and escalator reticulation through the entrances, mechanical and electrical services integration with the entry pods, and ensuring that the necessary level of signage and wayfinding is achieved. Sydney Metro works are governed by the conditions of the planning approval, one such condition requires a Visual Impact Assessment (VIA) to be undertaken to ensure that visual amenity is maintained so far as is reasonably possible. As a result the use of clear glass at the entrance has been maximised to ensure that the sight-lines to the parkland and foreshore are optimised. The tree species have been chosen to provide a clear view under the canopy for pedestrians, and the use of street trees is a key part of the design concept. The trees will have clear stem to 3m to allow views (as mature trees are to be installed on day one).

6.0 Barangaroo SDPP Consolidated Public Consultation Feedback and Sydney Metro

CATEGORY	KEY THEME	FEEDBACK	Sydney Metro responses
Timing Interchange Facilities Noise Coach Parking Coach Parking Cycle Lanes Air pollution	Insufficient time to review SDPP Facilities should be provided next to the station Noise from interchange facilities Placement on coach parking facilities Relation to pedestrian facilities No provision of cycle lanes Fumes from commercial vehicles	Dear Sir or Madam, RE: STRATA PLAN 76902 | TOWNS PLACE Barangaroo Station Design & Precinct Plan We write as the Strata Managing Agents for Towns Place and on behalf of sixty five apartment owners and two retail food shops to register an objection. The Towns Place Owners Corporation declare that they have not donated to a Councillor or Council employee ever in the previous two years of this submission. You should be made aware of, or reminded, that the Towns Place residential complex spans the area surrounded Hickson Road, Towns Place and Dalgety Road. The 2 bridges that carry Dalgety Road / Argyle Street / Windmill Street over the north part of Hickson Road are next to the Towns Place residents. We refer to the Barangaroo Station Design & Precinct Plan (SDPP) issued for Public Consultation and we advise you that the Towns Place Owner Corporation has strong objections to certain proposals contained in this Plan as follows:- 1) This Plan is significant for this area of Barangaroo and Millers Point. There has not been sufficient time for us to review all parts this draft Plan, but have concentrated on specifics as they directly affect Towns Place. 2) The “Connectivity and Access” Section 4.8 of the SDPP, Pages 68 & 69, has a diagram showing Interim Bus Stop, Coach Parking, Taxis and Kiss & Ride parking on both sides of Hickson Road underneath the above referred to Bridges. The Towns Place owners specifically refer to Section 4.8.4 “ Interchange Facilities” and strongly objecting to this part of Hickson Road being used for Bus Stop (even on an interim basis), Coach Parking, Taxis and Kiss & Ride facilities. In the design of the ground floor plan upon completion of the Station, there should be ample facilities provided next to the station for such parking - particularly Buses, Coaches, Taxis & Kiss & Ride. This area should not be a dumping ground for ‘Interchange Facilities’ that have not been sufficiently provided for or thought about nearer to the station. 3) The main reason for objecting to the “Interchange Facilities’ 4.8.4 relate to health & safety, pollution, noise and congestion. You should be made aware that any noise generated by such vehicles in this area reverberates like a canyon under the Bridges which magnify the noise created. We have experienced this very clearly over the last three years with the construction of The Metro and the “Acoustic Shed” located between the Bridges. 4) Buses, Coaches, Taxis and Kiss & Ride vehicles will always overstay their permitted limited parking restrictions despite monitoring and when congested will park on Hickson Road towards Towns Place (the Road) and beyond. This creepage will be right next to the residential units facing Hickson Road. 5) NSW Planners have attempted to put Coach Parking in all parts of Towns Place / Millers Point / Walsh Bay over the last five years - normally very close or adjacent to residential areas. NSW should find a proper solution in a non-residential area and stop trying to sneak this coach parking without anybody noticing. We have noticed and strongly object. NSW has had all of Barangaroo to try to find a solution - the area under the Bridges is not the solution.	1. The SDPP was put on public exhibition between 11 and 25 June 2021. This two week exhibition period allowed the public to read and provide feedback on the SDPP. 2. The design for the station intends to have a very close connectivity between the above ground entrance pods and the surrounding parklands, precinct, and interchange facilities. The intention is to maximise efficiency, convenience, and safety by co-locating the various transport modes, retail offerings and recreation opportunities. The permanent location for the interchange facility will be located adjacent to Barangaroo Station in front of the future Central Barangaroo Development (CBD). Construction of Barangaroo Station will be completed in 2024 ahead of the future CBD and the installation of the permanent interchange facilities as part of the station construction would result in abortive works. The temporary interim location will be required until the CBD development has been completed. Once the permanent interchange facility location has been installed, it is intended that all the interchange facilities (north bound bus stop, taxi and kiss & ride) will be relocated. The temporary bus stop and coach stop parking length is 38m, accommodating the temporary bus stop and two coaches in the interim and three coaches in the future. It will also facilitate access to the INSW developments and Barangaroo Station. As part of this consultation exercise, Sydney Metro has reduced the number of kiss and ride and taxi spaces to one each. 3. The Interchange Access Plan will have more details on the Interchange facilities, and will be completed prior to the start of works on permanent above ground facilities for Barangaroo Station. The SDPP demonstrates the location of interchange facilities as further away from Towns Place than the acoustic shed, with the closest being the southbound bus stop under Munn Street, which would reduce noise impacts. As the comments above outline, this is a temporary location required until the CBD development has been completed. Once the permanent interchange facility location has been installed it is intended that all the interchange facilities (north bound bus stop, taxi and kiss & ride) will be relocated. 4. With regard to parking, this area will be managed by CoS traffic wardens and INSW wardens, who will enforce local traffic laws. 5. Please refer to response above, which comments on this issue.

6.0 Barangaroo SDPP Consolidated Public Consultation Feedback and Sydney Metro

CATEGORY	KEY THEME	FEEDBACK	Sydney Metro responses
		6) The generation of pedestrians from existing car parking in Towns Place and the Cutaway Car Parks allows office staff, families and customers to retail areas, Sydney Theatre and Cutaway events to circulate this area and walk under the Bridges heading south towards Barangaroo, as appropriate - and to the station in the future. The close relation of coaches and other vehicles to these pedestrians should not be permitted. 7) There is no provision of cycle lanes underneath the Bridges. We require this to be remedied. 8) Health & Safety & Pollution - More than likely the Buses, Coaches, Taxis etc will keep their engines running. The noise, fumes and physical closeness of these commercial vehicles will create a host of health, safety and pollution issues for the public and residents of Towns Place which have not been addressed in this area underneath the Bridges. The Towns Place Owners Corporation strongly urges you to remove the proposed design of "Interchange Facilities" particularly underneath the Bridges. A more acceptable long-term solution is required.	6. Please refer to response above, which comments on this issue. 7. There is a bi-direction cycleway on the eastern side of Hickson Road proposed in the SDPP, please see section 4.8 Connectivity and access. Bi-directional cycle ways do extend under the Dalgety Road bridge to the southern side of the Windmill Street bridge, where it connects to the CoS dedicated single lane cycle way. 8. Please refer to response above, which comments on this issue. In addition, this area underneath the bridge is very well ventilated and not considered a hazard to pedestrians. Buses and taxis would normally turn off their engines while waiting for passengers for an extended period of time.
Building Structure	Building integration into surrounding precinct	Dear Sir/Madam, Thank you for the opportunity to comment on the proposed design of the Barangaroo station. As a resident of the area and future user, I believe the proposed design for Station is too obtrusive and "heavy". I would favour a small and light metal and glass structure simply sheltering the passageway/ escalators down to the underground station. This would also allow the more of the area to be returned to parkland. In my view big and "glumpy" is not beautiful.	Sydney Metro strongly agrees with the aspirations of making the station entrance as unobtrusive and light as possible and these sentiments were key drivers in the evolution of the final design. The objective was to make the entrance pods in the park as minimal and transparent as possible. Sydney Metro balanced the design aspirations against the following project requirements: • making the structures blast resilient • allowing for air intake and exhaust to be housed in the entrance structures • provision of lift, escalator and emergency egress reticulation within the pods • providing signage, wayfinding, and communications at the entrances. Sydney Metro has endeavoured to make the above ground structures as light and elegant as possible, in conjunction with minimising the disruption to the parkland and foreshore.