Blackwattle Bay

State Significant Precinct

Attachment 4:

Transport Management and Accessibility Plan

June 2021

NSW GOVERNMENT

Blackwattle Bay Precinct Plan

Transport Management and Accessibility Plan

Revision D – 04-Jun-2021
Prepared for – Infrastructure NSW – ABN: 85031302516

Blackwattle Bay Precinct Plan

Transport Management and Accessibility Plan

Client: Infrastructure NSW

ABN: 85031302516

Prepared by

AECOM Australia Pty Ltd
Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8934 0000 F +61 2 8934 0001 www.aecom.com
ABN 20 093 846 925

04-Jun-2021

Job No.: 60546892

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Executive Summary

Context

The State Significant Precinct (SSP) Study is proposing to rezone Blackwattle Bay with a new planning framework and planning controls to enable its future urban renewal.

The rezoning proposal is based on the *Blackwattle Bay Precinct Plan* ('Precinct Plan') which provides a conceptual layout to guide the development of planning controls for the precinct and has informed this report. Key characteristics of the Precinct Plan include:

- New homes, jobs and services close to the CBD including:
  - 5,910 jobs
  - 2,850 residents
  - 1,580 dwellings including 10% affordable housing
- A continuous waterfront promenade – the missing link in an otherwise 15km foreshore walk from Woolloomooloo to Rozelle
- New active transport connections to bring the neighbourhood closer to the harbour through new and improved pedestrian and cycling links
- Improved public transport options and minimised vehicle usage strategies including:
  - Minimising car parking spaces with limited on-street parking.
  - Ferry wharf
  - Opportunity for buses to service through site link
  - Connections to the existing light rail
  - Access to a future metro station in Pyrmont
- New parks and green space with 30,000 m^2 of new open space
- An authentic, and world class new Sydney Fish Market at the heart of Blackwattle Bay
- An authentic place that builds on Indigenous and industrial stories and celebrating the local character.

This Transport Management and Accessibility Plan has been prepared by AECOM and on behalf of Infrastructure NSW, to form part of the Blackwattle Bay State Significant Precinct (SSP) Study. The SSP Study seeks a rezoning for new planning controls for Blackwattle Bay, located on the south-western side of Pyrmont.

Delivering on the Vision for Blackwattle Bay

The focus of the Transport Management and Accessibility Plan has been on the development and implementation of two sets of enablers to support delivery against the *Blackwattle Bay Precinct Plan* principles. The two enablers are **Transport Policies and Strategies** and **Transport and Traffic Strategies**:

1. **Overarching Transport Policies and Strategies** - implementation of transport policies and strategies which foster a mode shift to sustainable transport. These policies and strategies including the 'Travel Demand Management' Strategy, which aims to influence mobility to deliver sustainable outcomes based on mode and volume of travel, and compliance with Blackwattle Bay Design Guidelines, to realise precinct planning principles, objectives and performance outcomes.
2. **Specific Transport and Traffic Strategies –**multi-modal transport network which will support the strategic vision and principles. This considers the relationships between place and customers with the transport networks, and is a multi-layered vision for how future transport networks will operate to support the overarching *Blackwattle Bay Precinct Plan* objectives.

Validating the Vision for Blackwattle Bay

An assessment was undertaken to analyse the feasibility of the vision and scenarios presented. The outcome of the assessment demonstrated the stretch sustainable mode share scenario to be a realistic target Blackwattle Bay, with the provision of a Pyrmont Station on the Sydney Metro West Line, and the prioritisation of pedestrians and cyclists. This scenario is **'Beyond Business As Usual'** and supports the vision and objectives defined in strategic planning for Blackwattle Bay.

A multi-modal transport network which prioritises walking and cycling for shorter trips and metro, light rail and bus for longer trips will support the stretch sustainable mode share target. The sustainable mode share target is an ambitious future scenario, but can be delivered so long as all the strategies and measures presented in this report are delivered by the responsible parties. Figure E-1 defines the specific mode share targets developed for all modes within this scenario. The mode share target for walking and cycling is set at 29%, public transport at 56% and private vehicle at 15%.

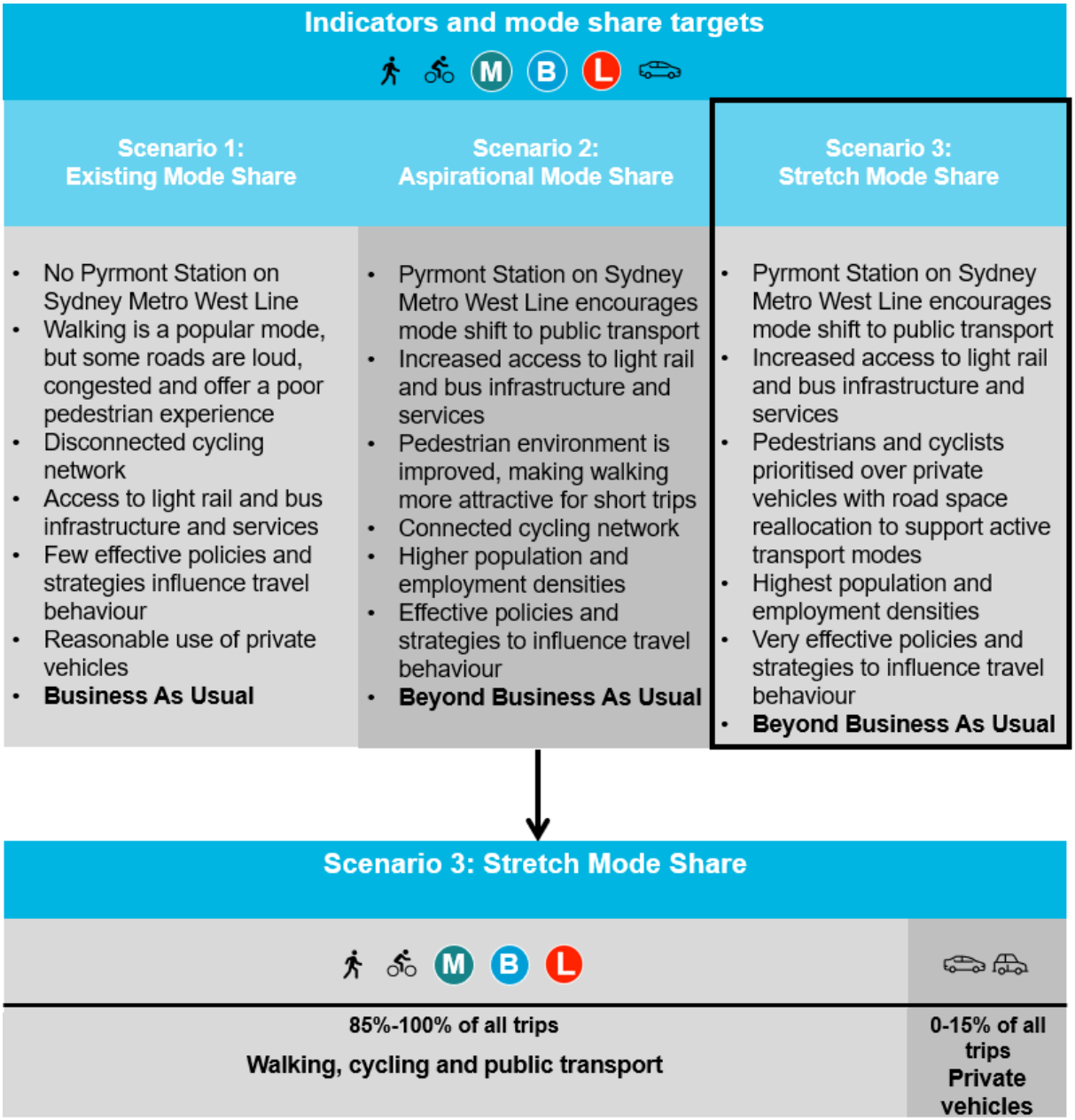


Figure E-1: Preferred morning peak period mode share scenario for Blackwattle Bay

1.0 Introduction

1.1 Blackwattle Bay

The Blackwattle Bay SSP Investigation Area ('Study Area') encompasses the land and water area, known as Blackwattle Bay, between Bank Street and the Glebe foreshore shown in Figure 1-1. The land is located within the City of Sydney local government area (LGA).

Figure 1-1: Blackwattle Bay Study Area

Source: FJMT, 2020

The land within the Study Area is approximately 8.4 hectares in size. It is largely government owned land containing the Sydney Fish Market (wholesale and retail), recreation and boating operations and facilities. There are three privately owned sites including a concrete batching plant operated by Hymix, seafood wholesaler Poulos Brothers and private developer Celestino which owns further wholesaling facilities. The Blackwattle Bay land area wraps around the southern and eastern edges of Blackwattle Bay and is bounded by Bridge Road to the south and Bank Street to the east. The Western Distributor motorway / Anzac Bridge viaduct is located adjacent to the eastern boundary before traversing over the northern section of the site. The water area of Blackwattle Bay is approximately 23 hectares.

1.1.1 The proposal

The SSP Study is proposing to rezone Blackwattle Bay with a new planning framework and planning controls to enable its future urban renewal.

The rezoning proposal is based on the Blackwattle Bay Precinct Plan ('Precinct Plan') which provides a conceptual layout to guide the development of planning controls for the precinct and has informed this report. The Precinct Plan provides overarching guidance about how the area should be developed based on community and stakeholder input, local character and place, current and future demographics, economic and social trends, cultural and environmental considerations, and urban renewal aspirations and needs regarding land use, community recreation, transportation, housing, and jobs. Key characteristics of the Precinct Plan include:

- New homes, jobs and services close to the CBD including:
  - 5,910 jobs
  - 2,850 residents
  - 1,580 dwellings including 10% affordable housing
- A continuous waterfront promenade – the missing link in an otherwise 15km foreshore walk from Woolloomooloo to Rozelle
- New active transport connections to bring the neighbourhood closer to the harbour through new and improved pedestrian and cycling links
- Improved public transport options and minimised vehicle usage strategies including:
  - Minimising car parking spaces with limited on-street parking.
  - Ferry wharf
  - Opportunity for buses to service through site link
  - Connections to the existing light rail
  - Access to a future metro station in Pyrmont
- New parks and green space with 30,000 m^2 of new open space
- An authentic, and world class new Sydney Fish Market at the heart of Blackwattle Bay
- An authentic place that builds on Indigenous and industrial stories and celebrating the local character.

Once the Study Area is rezoned and the new planning controls are in place, future development will need to seek development approval through the relevant approval pathway. This will include detailed development proposals and further associated environmental, social and economic assessments.

The rezoning proposal responds to the Study Requirements issued for Blackwattle Bay (formerly Bays Market District) by the Department of Planning and Environment in April 2017.

Blackwattle Bay offers an extraordinary opportunity to reconnect the harbour, its surrounding neighbourhoods and the city; to showcase Sydney's living culture and stories of Country; to build an inclusive and iconic waterfront destination that celebrates innovation, diversity and community.

This Transport Management and Accessibility Plan has been prepared by AECOM and on behalf of Infrastructure NSW, to form part of the Blackwattle Bay SSP Study. The SSP Study seeks a rezoning for new planning controls for Blackwattle Bay, located on the south-western side of Pyrmont.

Blackwattle Bay presents a significant opportunity for urban renewal across 8.4 hectares of predominantly government owned land located approximately one kilometre from the Sydney CBD. NSW Government is also investigating the delivery of a Metro Station in Pyrmont and has recognised the potential to transform the Pyrmont Peninsula with a new 20-year vision and planning framework through the Pyrmont Peninsula Place Strategy.

In 2015 the NSW Government recognised The Bays Precinct as one of the highest potential urban transformation sites in Australia with the release of The Bays Precinct, Sydney Transformation Plan.

Following this, the Minister for Planning identified the renewal of Blackwattle Bay and the broader Bays Precinct as a matter of State planning significance and to be investigated for rezoning through the SSP process. Study Requirements for the Blackwattle Bay (formerly known as 'Bays Market District') investigation area were issued by the Minister on 28 April 2017.

A critical part of Blackwattle Bay's revitalisation and vision has been the NSW Government's decision to relocate the Sydney Fish Market from its existing location on Bank Street to the head of Blackwattle Bay. This was sought through a State Significant Development Application (SSDA) process and approved in June 2020. The new Sydney Fish Market was designed alongside the baseline Blackwattle Bay studies to ensure that key aspects of the project are consistent with the vision and principles for Blackwattle Bay.

The outcome of the Blackwattle Bay State Significant Precinct process will be a new planning framework that will enable further development applications for the renewal of the Precinct, connected to the harbour and centred around a rejuvenated Sydney Fish Market. The framework will also provide for new public open spaces including a continuous waterfront promenade, community facilities, and other compatible uses.

1.2 AECOM scope

AECOM was engaged by Infrastructure NSW to provide transport planning and traffic modelling services to meet the relevant Blackwattle Bay SSP Study Requirements. As part of this engagement, AECOM was required to prepare a Transport Management and Accessibility Plan to support the planning proposal to rezone Blackwattle Bay.

AECOM has used a variety of data sources to prepare this Transport Management and Accessibility Plan. This includes 2016 Census data for Journey To Work trips, trip generation from the Transport for NSW *Guide to Traffic Generating Developments,* forecast demand from the Sydney Motorway Project Model and outputs from the new *Sydney Fish Market Environmental Impact Statement.*

This diverse range of sources has informed the development of an evidence-based and data-driven Transport Management and Accessibility Plan that has a clear vision to achieve a high sustainable mode share target for trips to and from Blackwattle Bay during the morning peak period.

The outcomes identified in this report indicate a mode share of 85% for public transport, walking and cycling will benefit both the new residents, workers and visitors in Blackwattle Bay, and the vibrant existing community in the Pyrmont Peninsula.

The SSP Study Requirements are shown in Table 1-1.

Table 1-1: Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Consideration of City of Sydney planning documents, strategies and policies including, but not limited to:	**Comments**	**Inclusion in Report**	**Section**
'A Plan for Growing Sydney' (December 2014)	Superseded by *Greater Sydney Region Plan*	Yes	2.3.1
'NSW Long Term Transport Masterplan' (December 2012)	Superseded by *Future Transport Strategy 2056*	Yes	2.2.3
Sydney's Transport Futures Documents (Walking, Cycling, Ferry, Bus, Rail)			
Sydney's Bus Future (2013)			
Sydney's Ferry Future (2013)			
Sydney's Walking and Cycling Future (2013)			
Sydney's Rail Future (2013)			
NSW Freight and Ports Strategy	*NSW Freight and Ports Plan 2018-2023*	Yes	2.3.4
Bays Working Harbour Study 2016		Yes	
TfNSW - Construction Materials Supply Chain Study 2016			
Port Authority NSW – Port Options Study 2016			
INSW – Glebe Island Review (currently underway)			
Sydney Streets Code 2013			
City of Sydney Cycle Strategy and Action Plan 2007-2017	Superseded by *Cycling Strategy and Action Plan*	Yes	2.3.10
City of Sydney Walking Strategy and Action Plan	Superseded by *Sydney Walking Strategy and Action Plan*	Yes	2.3.11
Additional planning documents included in report	**Comments**	**Inclusion in Report**	**Section**
Premier's Priorities and State Priorities (NSW Making It Happen)	Completed	Yes	2.2.1, 2.2.2
NSW Design Policy (Better Placed)	Completed	Yes	2.2.4
State Infrastructure Strategy 2018-2038	Completed	Yes	2.2.5

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Additional planning documents included in report	**Comments**	**Inclusion in Report**	**Section**
Practitioner's Guide to Movement and Place	Completed	Yes	2.2.6
Beyond the Pavement	Completed	Yes	2.2.7
Pyrmont Peninsula Place Strategy	Completed	Yes	2.2.8
Eastern City District Plan	Completed	Yes	2.3.2
Greater Sydney Services and Infrastructure Plan	Completed	Yes	2.3.3
Sydney City Centre Access Strategy	Completed	Yes	2.3.5
Sustainable Sydney 2030	Completed	Yes	2.3.6
Sydney Local Environmental Plan 2012	Completed	Yes	2.3.7
Sydney Development Control Plan 2012	Completed	Yes	2.3.8
Connecting our City: Transport Strategy and Action Plan	Completed	Yes	2.3.9
The Bays Precinct Transformation Plan	Completed	Yes	2.3.12
Blackwattle Bay Masterplan (Revitalising Blackwattle Bay)	Completed	Yes	2.3.13
Blackwattle Bay Accessibility Principles	Completed	Yes	2.3.14
Traffic and Transport	**Comments**	**Inclusion in Report**	**Section**
Prepare a comprehensive transport impact assessment, including maritime users: understand the transport network context, service and network limitations; identify transport solutions that will accommodate planned growth through integrating land use and transport and better managing travel demand and identify opportunities for improving customer experience.	Completed	Yes	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 5.1, 5.2, 7.1, 7.2, 7.3, 7.4, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7
Hold a scoping meeting to agree upon an acceptable methodology with Transport for NSW (TfNSW), Roads and Maritime Services (RMS) and the City of Sydney Council (CoS).	Agreed at project commencement in late 2017/early 2018 & finalised at meeting on 10 May 2018.	Yes	Note
Definition of a study area to be agreed by TfNSW, RMS, CoS and DPE.	Agreed at project commencement in late 2017/early 2018 & finalised at meeting on 10 May 2018.	Yes	Note

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Traffic and Transport	**Comments**	**Inclusion in Report**	**Section**
A broad review of the existing and future land use and transport context within the Bays Market District, including an assessment of access and connectivity within the precinct and its relationship to the surrounding transport network and land uses, including Central Sydney.	Completed	Yes	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 5.1, 5.2
Appraisal of current travel mode share in the Bays Market District including walking, cycling, public transport and private vehicles including shared vehicles.	Completed	Yes	3.4
Assess the travel needs, behaviours and patterns of a broad range of future customers accessing the precinct including residents, workers, wholesale purchasers, servicing trades/deliveries, logistics providers, customers, visitors, diners and the like. Use benchmarking, forecast modelling tools and other sources of evidence.	Completed	Yes	6.1, 6.2, 6.3, 6.4, 6.5, 7.1, 7.2, 7.3, 7.4
The transport outcomes and the effect of the transport network on the urban and place-making outcomes for the precinct.	Completed	Yes	7.1, 7.2, 7.3, 7.4, 8.1, 8.2, 8.3, 8.4, 8.5, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7
Access and connections to key destinations and infrastructure in the local area, in particular Central Sydney, schools, open spaces (especially Wentworth Park), community facilities, public transport infrastructure including light rail stations and bus stops and other local services, any potential future Metro Station and ferry wharf.	Completed	Yes	7.1, 7.2, 7.3, 7.4, 8.4, 8.5, 9.3, 9.4, 9.5
Road safety, particularly for pedestrians, cyclists and particularly in the vicinity of the access and egress points for the new fish market.	Completed	Yes	7.4, 8.3, 9.1, 9.2, 9.3, 9.4, 9.6
Location of existing and future wharves, maritime safety for vessels accessing any wharves / berths that are located in the Bays Market District, including any maritime navigational impacts or considerations.	Haskoning Report	Note	Note
Access and egress and services arrangements for the new fish market, including management of queueing at peak times, to the extent that it relates to the planning framework.	Arup Report	Note	Note

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Traffic and Transport	**Comments**	**Inclusion in Report**	**Section**
Performance of the existing and future pedestrian, cycling, public transport and road network, surrounding the Bays Market District, taking account the Bays Precinct SSP area any planned or proposed transport initiatives, such as: potential Metro Stations, ferry wharf, WestConnex and enabling works, and any modifications to Bridge Road. Performance of the road network is to account for access by pedestrians including waiting time at intersections on streets accessing the site.	Completed	Yes	3.3, 3.5, 3.6, 7.3, 7.4, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7
Future needs of all water users including recreational, commercial, fish markets and ports users and an outline of how all water users can be accommodated in the future taking into account safety, operational, recreational requirements.	Haskoning Report	Note	Note
Consult with RMS regarding the potential to reinstate an active transport connection between the Bays Market District and the broader Bays Precinct and, specifically if a ferry service is proposed, in relation to land uses that maybe constrained by its use.	Consultation was consistently undertaken with Transport for NSW throughout the project	Yes	Note
Following trip generating assessments for all modes and purposes associated with the proposal and the adjacent Sydney Fish Markets	**Comments**	**Inclusion in Report**	**Section**
Undertake a trip generation survey of the Fish Markets, on a typical day. Report on previous survey or patron estimations from seasonal variations.	Arup Report Surveys were undertaken in March 2017 and July 2017	Note	Note
Undertake a trip generation survey of a similar scale residential land use in a comparable geographic context.	Incorporated into trip generation rates and subsequently traffic modelling.	Yes	7.2
Estimate daily peak trip generation for different transport market segments across the day and week.	Completed	Yes	7.3, 7.4
Estimate seasonal peak tip generation for Sydney Fish Markets, including Christmas, Easter and any other potential events. Outline how these seasonal peaks and potential events will be managed from a transport perspective, including parking management.	Arup Report	Note	Note

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Following trip generating assessments for all modes and purposes associated with the proposal and the adjacent Sydney Fish Markets	**Comments**	**Inclusion in Report**	**Section**
The trip generation rates are to be prepared specifically for the precinct based on an evidence-based review of standard rates, characteristics of the precinct, the experience of developments of similar scale, geographic context and consultation with key stakeholders, and trip generation surveys. Trip generation rates are to be agreed by RMS, TfNSW, CoS and DPE.	Completed. Surveys were undertaken in March 2017 and July 2017	Yes	7.2
Cumulative growth of the surrounding area based on committed and planned developments and proposed infrastructure (such as WestConnex and associated projects) as well as historical annual rates of traffic change for the past ten years at least.	Completed	Yes	7.4
Impact of additional travel demands by all modes on the transport network serving the site,	**Comments**	**Inclusion in Report**	**Section**
If a ferry service is proposed: • Assessment of the type of ferry service and a forecast of its patronage as part of the integrated transport solution servicing the Bays Precinct and the site • Consideration of the impacts of any proposed new ferry terminal and associated ferry services on existing and future maritime developments within the White Bay and surrounds • Consideration of the impacts on the existing Glebe Island Bridge • Consideration of the impacts and implications on any potential future upgrade of Glebe Island Bridge	A public ferry service is not proposed. No further action required.	Not Applicable	Note
Establish a flexible and resilient system of access corridors (that considers the City of Sydney's Liveable Green Network) within the precinct (streets, walkways, open spaces) to connect and serve the precinct and local area, including to Central Sydney. Outline how this system of access corridors will drive visitation to the new Sydney Fish Market and strengthen Sydney's visitor and tourist economy.	Arup Report	Note	Note
Impact of additional travel demands by all modes on the transport network serving the site,	**Comments**	**Inclusion in Report**	**Section**

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Develop a traffic model to determine improvements to the movement network required to support the proposal, (scope, parameters and methodology to be agreed with RMS and to be carried out in accordance with RMS Traffic Modelling Guidelines 2013) including street hierarchy and spatial provision for all modes of travel, including pedestrians and cyclists.	Completed, with Section 9.2 incorporating Movement and Place classifications.	Yes	3.6, 7.4, 9.2
Develop an appropriate framework including potential inputs from strategic modelling to identify and validate required improvements to support the uplift in demand and target behaviours.	Completed	Yes	6.2, 6.3, 6.4, 6.5, 7.1, 7.2, 7.3, 7.4, 8.1, 8.2, 8.3, 8.4, 8.5
Detail the transport infrastructure and servicing improvements including identification of both the land (corridor preservation) and capital components to support the proposal including staging, costings and delivery and funding responsibilities.	Refer to Infrastructure and Contributions Strategy. The Strategy comprises a framework for ongoing consultation between Transport for NSW, the City of Sydney and other relevant agencies.	Note	Note
Consider the role of shared vehicles and automated vehicles in managing travel demand and provide any recommendations for implementation of shared and automated vehicle solutions.	Completed	Yes	9.7
Provide recommendations for land mix use designed to manage travel demand and create a walkable neighbourhood.	This was undertaken by others.	Note	Note
Assessment of the impact of the proposal on the surrounding suburbs of Glebe, Ultimo and Pyrmont identifying existing on-street parking controls and traffic treatments, and identifying parking and traffic mitigation measures the protect local amenity in these suburbs.	Completed	Yes	7.4, 9.6, Appendix A
Assessment of the impact of the proposal on access to Sydney Secondary College, Blackwattle Bay Campus, especially during the hours of high traffic use (07:45-09:00 and 14:45-15:45 school days).	AM Peak incorporated into traffic modelling. PM Peak was not part of our traffic modelling scope as agreed with INSW.	Yes	Note 3.6, 7.4
Provide recommendations for car, car share and bicycles parking rates within the capacity of the existing road network, to reduce private vehicle travel demand and promote travel by walking, cycling and public transport.	Completed	Yes	8.1, 8.2, 8.3, 8.4, 8.5, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7
Impact of additional travel demands by all modes on the transport network serving the site,	**Comments**	**Inclusion in Report**	**Section**

Blackwattle Bay Traffic and Transport State Significant Precinct Study Requirements			
Provide recommendations on the extent of end of trip facilities to be provided to support travel by active transport, particularly by staff to the new fish and food market.	Arup Report	Note	Note
Provide a strategic level assessment that demonstrates that on-site parking, servicing, access and egress requirements can be designed in accordance with RMS and CoS guidelines and relevant Australian Standards. An assessment of the servicing and queueing rates of any proposed mechanical parking facility should be included.	Completed	Yes	9.6, Appendix A
Prepare a staging plan that has trigger points for potential future development based on the delivery of transport infrastructure and service improvements.	Staging of land use is subject to individual development applications. No further action required.	Not Applicable	Note
Prepare a draft Travel Plan, including intended actions, monitoring, review and implementation as well as responsibilities for implementation and detailing all modes of transport available to future residents, visitors and employees of the site, noting that a final travel plan will be required once final uses and tenants are determined.	Completed	Yes	8.1, 8.2, 8.3, 8.4, 8.5
Prepare required DCP / design provisions in collaboration with CoS and DPE.	DCPs are not applicable to SSPs. City of Sydney DCP used as a reference point.	Not Applicable	Note
Provide an overview of potential impacts of construction traffic on existing and potential future development. Identify a strategic construction approach, including identification of potential staging that broadly outlines the construction area and construction related traffic access.	Completed	Yes	10.1, 10.2, 10.3, 10.4, 10.5
Any proposed physical, access, maintenance, operational, urban design and heritage (if applicable) impacts on Roads and Maritime Services assets that form part of the proposal must involve consultation with and must be approved by Roads and Maritime Services.	No proposed impacts on RMS assets in this phase of work. No further action required.	Not Applicable	Note

1.3 Report structure

This Transport Management and Accessibility Plan has been prepared by AECOM to address the transport and traffic Study Requirements and to support the exhibition of the Blackwattle Bay Precinct Plan. The report is structured as follows:

- **Section 2.0: Strategic Context** provides an outline of NSW Government and City of Sydney transport and land use initiatives that have guided the development of this document.
- **Section 3.0: Existing Transport and Land Use Context** identifies existing land uses, transport infrastructure and services, travel behaviour, travel demand and road network performance around Blackwattle Bay.
- **Section 4.0: Future Transport and Land Use Context** identifies planned transport infrastructure projects around Blackwattle Bay, as well as future transport technology and traffic impacts, which could influence the way people travel.
- **Section 5.0: Blackwattle Bay Precinct Plan** provides an outline of the planning process used to develop the Precinct Plan.
- **Section 6.0: Vision** articulates the Blackwattle Bay Precinct Plan vision and objectives, and sets out a range of complementary enablers, indicators and targets.
- **Section 7.0: Validation** details the process that was undertaken to validate the vision. It covers the transport assessment and a summary of traffic impacts.
- **Section 8.0: Blackwattle Bay 'Travel Demand Management' Strategy** outlines a package of actions for workers based in Blackwattle Bay, designed to minimise car use and maximise the number of people walking, cycling and catching public transport.
- **Section 9.0: Transport and Traffic Strategies** responds to the Blackwattle Bay Precinct Plan with a range of walking, cycling, public transport and traffic interventions.
- **Section 10.0 Construction Traffic Impact Assessment** aims to highlight appropriate construction traffic routes to mitigate the impact of construction for all road users.
- **Section 11.0 Delivery, Implementation and Staging** summarises the proposed staging and implementation of transport infrastructure, services, policies and strategies to support the integration of Blackwattle Bay into the fabric of the surrounding neighbourhoods.

2.0 Strategic context

2.1 Introduction

2.1.1 Strategies defining the vision

Transport planning and traffic modelling for the transformation of Blackwattle Bay need to align with various transport and land use initiatives and the strategic direction of the NSW Government. Infrastructure NSW, in consultation with the City of Sydney and the local community, has led this process.

The strategic policy and planning framework that supports this Transport Management and Accessibility Plan is shown in Figure 2-1. It comprises three parts:

- NSW strategic policies and plans
- City of Sydney strategic policies and plans
- Site-specific policies and plans that were developed in support of Blackwattle Bay.

The transformation of Blackwattle Bay has been driven by the *Premier's Priorities* which have shaped the potential directions of the vision. This is supported by key land use, transport and infrastructure policies such as the *Greater Sydney Region Plan, Eastern City District Plan*, *Future Transport Strategy 2056*, *State Infrastructure Strategy 2018-2038, Greater Sydney Infrastructure and Services Plan* and *NSW Design Policy*.

The Greater Sydney Commission outlines the vision and strategy for Greater Sydney to become a global metropolis of three unique and connected cities through the *Greater Sydney Region Plan*. The vision and objectives for the Eastern Harbour City were refined in the *Eastern City District Plan*. Infrastructure initiatives have been driven through the *Greater Sydney Services and Infrastructure Plan*.

The Government Architect of NSW provides strategic design leadership in architecture, urban design and landscape architecture, shaping the built environment through its policies and plans, including *NSW Design Policy (Better Placed)* and *Practitioner's Guide to Movement and Place*. These have been supported by *Beyond the Pavement* by the Centre for Urban Design within Transport for NSW.

The City of Sydney Council has also implemented a range of strategies aimed at improving sustainability and transport connectivity within the city. These include *Sustainable Sydney 2030*, *Connecting our City: Transport Strategy and Action Plan*, *Walking Strategy and Action Plan* and *Sydney Cycling Strategy and Action Plan*. These plans are in turn supported by the *Sydney Local Environmental Plan 2012* and *Sydney Development Control Plan 2012*.

Within Blackwattle Bay, its transformation into an authentic, vibrant and sustainable place connected to Sydney's iconic harbour is driven by the *Pyrmont Peninsula Place Strategy*, *The Bays Transformation Plan* and more recently, the *Blackwattle Bay Precinct Plan – Urban Design Statement Volume 1*.

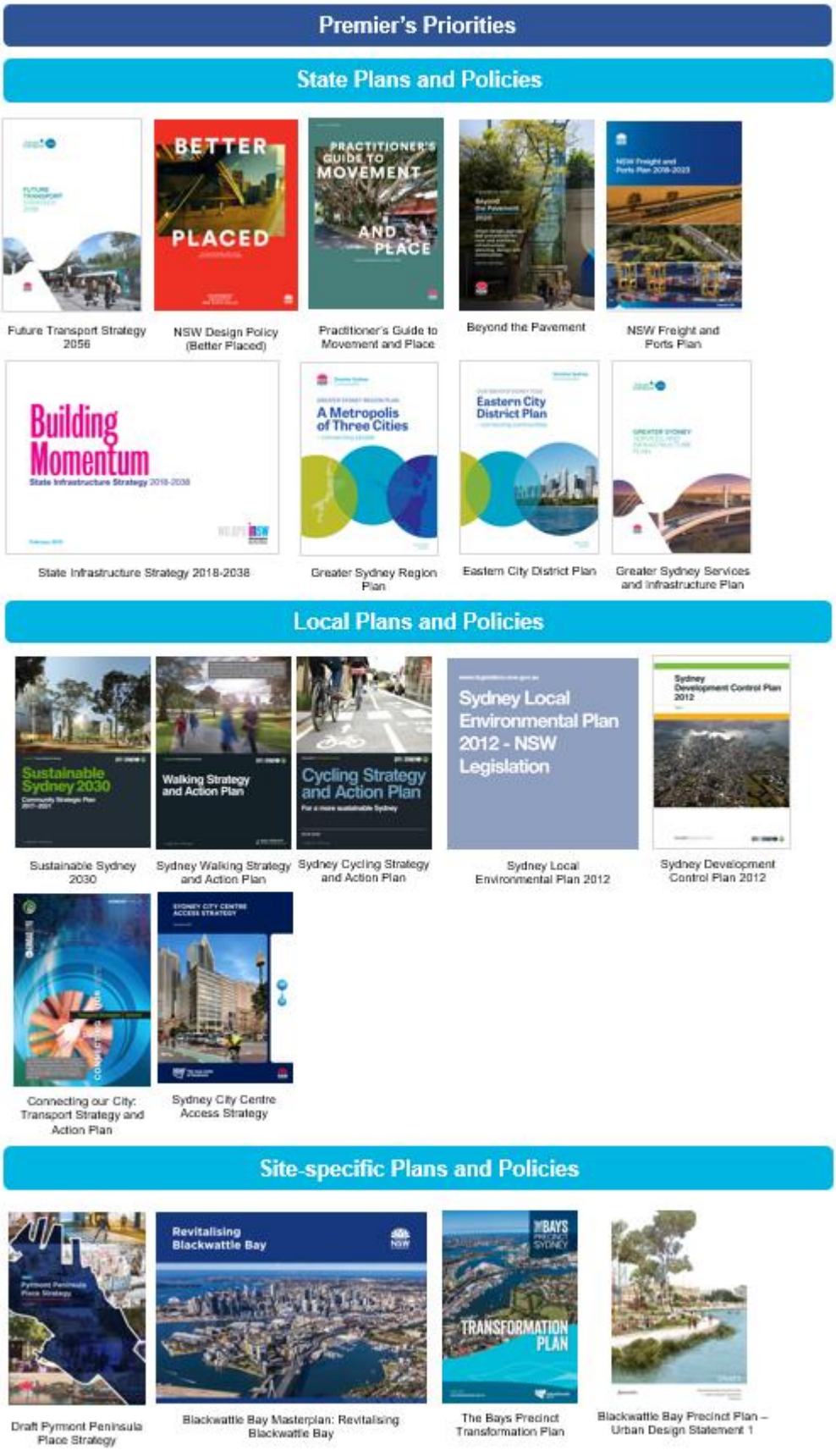


Figure 2-1: Policy and planning framework

2.2 Policy documents

2.2.1 Premier's Priorities

The five *Premier's Priorities* reflect a whole-of-government approach to addressing key issues for the people of New South Wales. The five priorities are shown in Figure 2-2. The creation of *well-connected communities with quality local environments* and *a strong economy* are most relevant to Blackwattle Bay. These priorities reflect the importance of investment in housing, jobs, services and infrastructure to benefit local communities through sustainable urban connections and land use planning. 14 targeted initiatives deliver on the five *Premier's Priorities*.

Figure 2-2: Premier's Priorities

2.2.2 State Priorities (NSW Making It Happen)

The NSW Government has identified 18 *State Priorities (NSW Making it Happen)* to make New South Wales a better place to live. The *State Priorities* are categorised under five broader objective areas:

- Strong budget and economy
- Building infrastructure
- Protecting the vulnerable
- Better services
- Safer communities.

The *State Priorities* most relevant to Blackwattle Bay include:

- **Increasing housing supply**: Deliver more than 50,000 approvals every year
- **Accelerating major project assessment**: Halve the time taken to assess planning applications for State Significant Developments
- **Improving road travel reliability**: 90%of peak travel on key road routes is on time
- **Ensure on-time running for public transport**: Maintain or improve reliability of public transport services over the next four years
- **Reducing road fatalities**: Reduce road fatalities by at least 30% from 2011 levels by 2021.

2.2.3 Future Transport Strategy 2056

Future Transport Strategy 2056 (*Future Transport 2056*) is an overarching 40-year strategy which aims to achieve a 40-year vision for the New South Wales transport network: *transport is an enabler of economic and social activity and contributes to long term economic, social and environmental outcomes.* Six state-wide transport outcomes have been developed to provide a framework for planning and investment for the future of transport in NSW, shown in Figure 2-7.

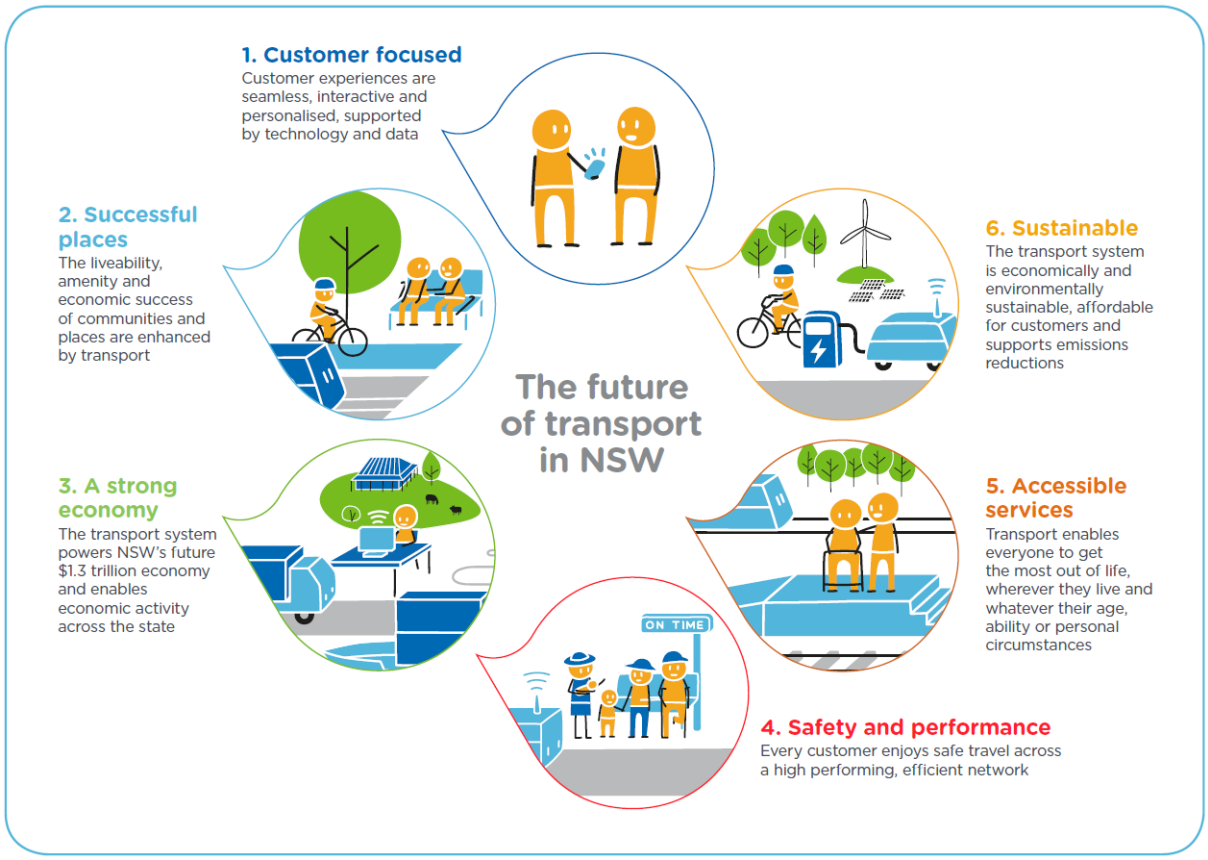


Figure 2-3: Six state-wide outcomes in Future Transport 2056

Source: Transport for NSW, 2018

In addition, 12 Greater Sydney transport customer outcomes have been developed which directly align with the state-wide outcomes: Figure 2-4 presents the NSW and Greater Sydney outcomes and their alignment.

Figure 2-4: Alignment of NSW transport outcomes and Greater Sydney transport customer outcomes

Source: Transport for NSW, 2018

Future Transport 2056 has been developed concurrently with the *Greater Sydney Region Plan* and the *State Infrastructure Strategy 2018 – 2038.* It is also supported by a suite of supporting documents, of which the *Greater Sydney Services and Infrastructure Plan* is the most relevant. Together, these plans will align land use, transport and infrastructure outcomes across Greater Sydney to facilitate the delivery of 725,000 new dwellings and 817,000 new jobs in Greater Sydney by 2036.

2.2.4 NSW Design Policy (Better Placed)

The *NSW Design Policy (Better Placed)* informs seven design objectives for the New South Wales built environment:

- Better fit: contextual, local and of its place
- Better performance: sustainable, adaptable and durable
- Better for community: inclusive, connected and diverse
- Better for people: safe, comfortable and liveable
- Better working: functional, efficient and fit for purpose
- Better value: creating and adding value
- Better look and feel: engaging, inviting and attractive.

These are all relevant considerations for the Blackwattle Bay design process. The Blackwattle Bay design process involves the construction of a brand-new built environment while redesigning the existing one to better suit its place. The built environment must recognise the importance of design quality on the function, integration and contribution of places and spaces to users, inhabitants and audiences they support or attract.

2.2.5 State Infrastructure Strategy 2018-2038: Building Momentum

The *State Infrastructure Strategy* is a 20-year investment plan prepared by Infrastructure NSW for the NSW Government. The Strategy assesses infrastructure problems and solutions and provides recommendations to grow the New South Wales economy, enhance productivity and improve living standards.

The State Infrastructure Strategy outlines six cross-sectional strategic directions, outlined in Figure 2-5, which are designed to achieve ‘more with less’ and embed good design practice across the lifecycle of infrastructure.

Figure 2-5: State Infrastructure Strategy strategic directions

Source: Infrastructure NSW, 2020

The State Infrastructure Strategy recognises that different parts of NSW face different opportunities and needs, outlining geographic directions for infrastructure planning, investment and policy. These are presented in Figure 2-6.

Figure 2-6: State Infrastructure Strategy geographical infrastructure directions

Source: Infrastructure NSW, 2020

The strategic directions and geographic directions were built upon, with the State Infrastructure Strategy outlining policy and investment options across the key infrastructure sectors. These sectors are shown in Figure 2-7.

Figure 2-7: State Infrastructure Strategy sectors

Source: Infrastructure NSW, 2020

The *State Infrastructure Strategy* indicates the Eastern Harbour City will remain a significant driving force for the State economy. The *State Infrastructure Strategy* identifies the Sydney CBD as being well served by public transport and high capacity road links, however the periphery of the Sydney CBD is constrained by road capacity and geographic barriers (such as Sydney Harbour). Improved public transport connections are recognised as having the potential to enhance vibrancy, innovation and highly-productive areas on the periphery of the Sydney CBD, such as Pyrmont and The Bays.

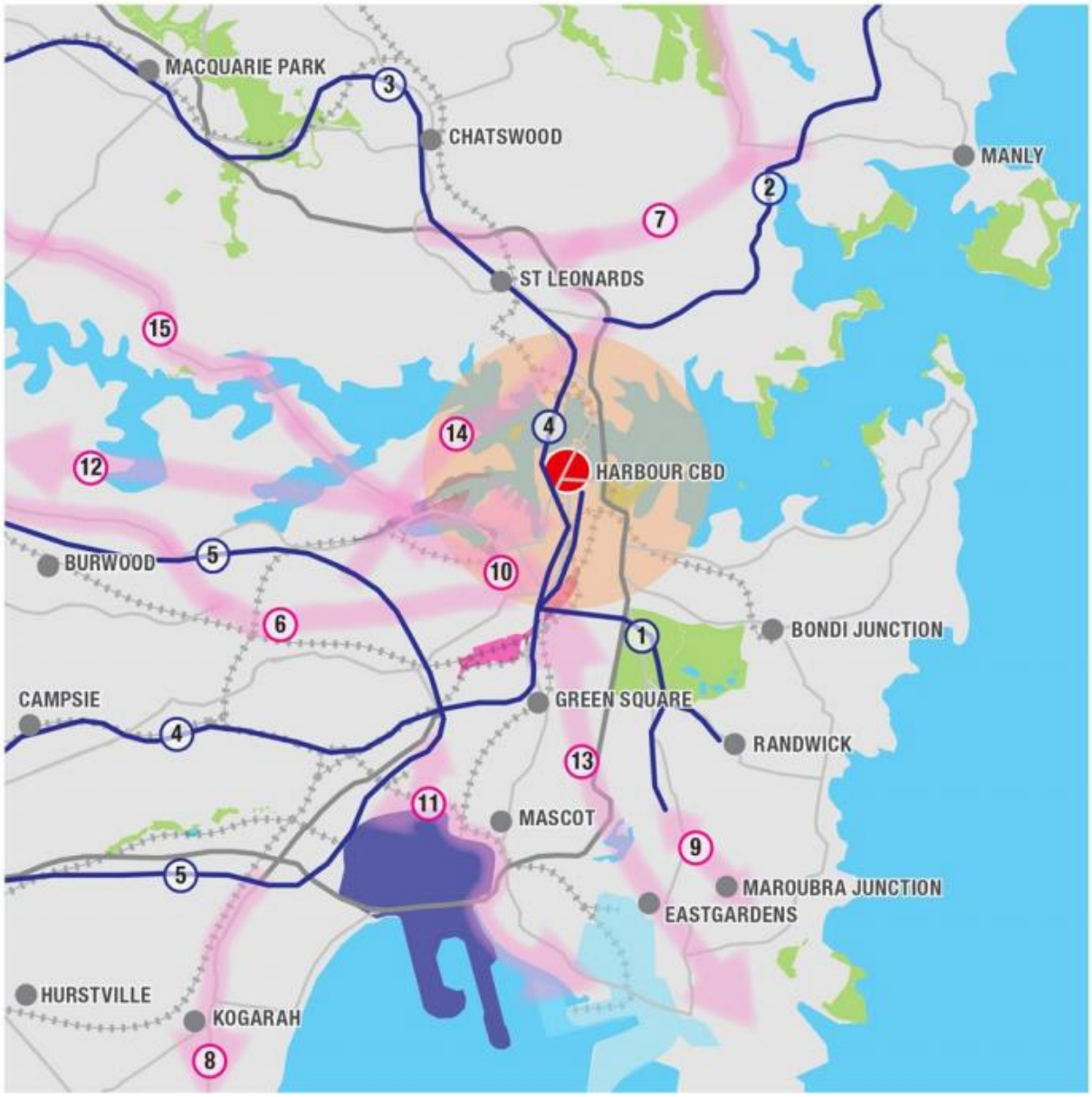


Figure 2-8: Movement corridors in the Eastern Harbour City

Source: State Infrastructure Strategy, 2018

The recommendations that are relevant to Blackwattle Bay are:

- Development of business cases for on-road rapid transit and priority infrastructure that caters for buses and high efficiency vehicles on Parramatta Road and Victoria Road in support of the Sydney Metro West Project
- Collaboration between NSW Government agencies on a common timeframe to publish population and employment projects, the housing and employment supply pipeline and agency infrastructure planning actions to coordinate the availability of key information to support Capital Infrastructure Plans and annual budget decisions.

2.2.6 Practitioner's Guide to Movement and Place

The objective of "Movement and Place" is to achieve roads and streets that:

- Contribute to the network of public space within a location, where people can live healthy, productive lives, meet each other, interact, and go about their daily activities
- Are enhanced by transport and have the appropriate space allocation to move people and goods safely and efficiently and connect places together.

Balancing Movement and Place recognises that trade-offs may be required to achieve a best fit for the objectives.

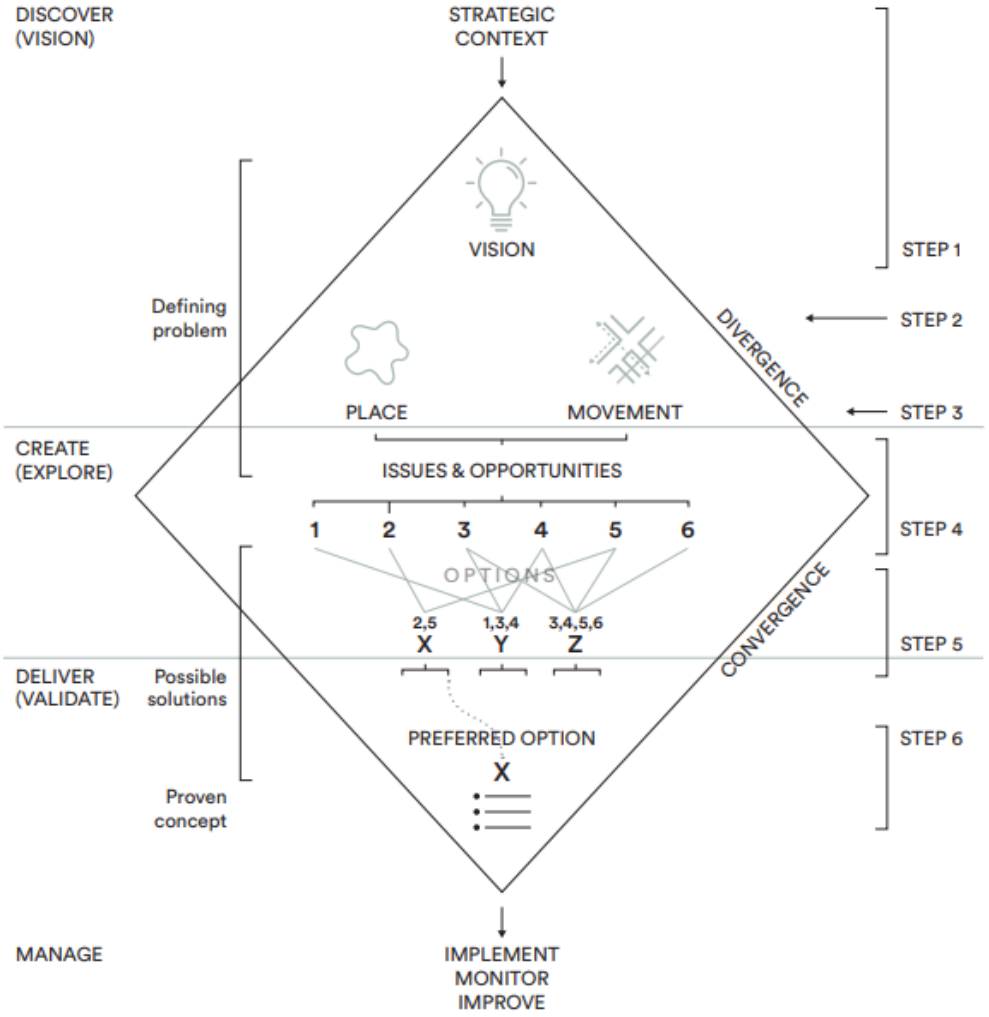


Figure 2-9: The six steps in the core Movement and Place process

Source: Government Architect of NSW, 2020

The Movement and Place process is designed to ensure this is done in the context of informed conversations, working collaboratively towards a shared vision, identifying a range of options to determine the best approach, considering multiple points of view, and consulting with multiple disciplines and stakeholders.

Movement and Place principles apply throughout New South Wales and can be adapted to any scale of project and level of decision-making. They apply to places where activities occur and to the connections between these places. The Practitioner's Guide is therefore highly relevant to the development of Blackwattle Bay.

The core process presented in the above six steps, presented in Figure 2-9, outlines the spectrum of activities that constitute "taking a Movement and Place approach." This involves collaboration and 'design thinking' and a focus on existing work where possible. The process should not be taken as preventing more integrated methods of working.

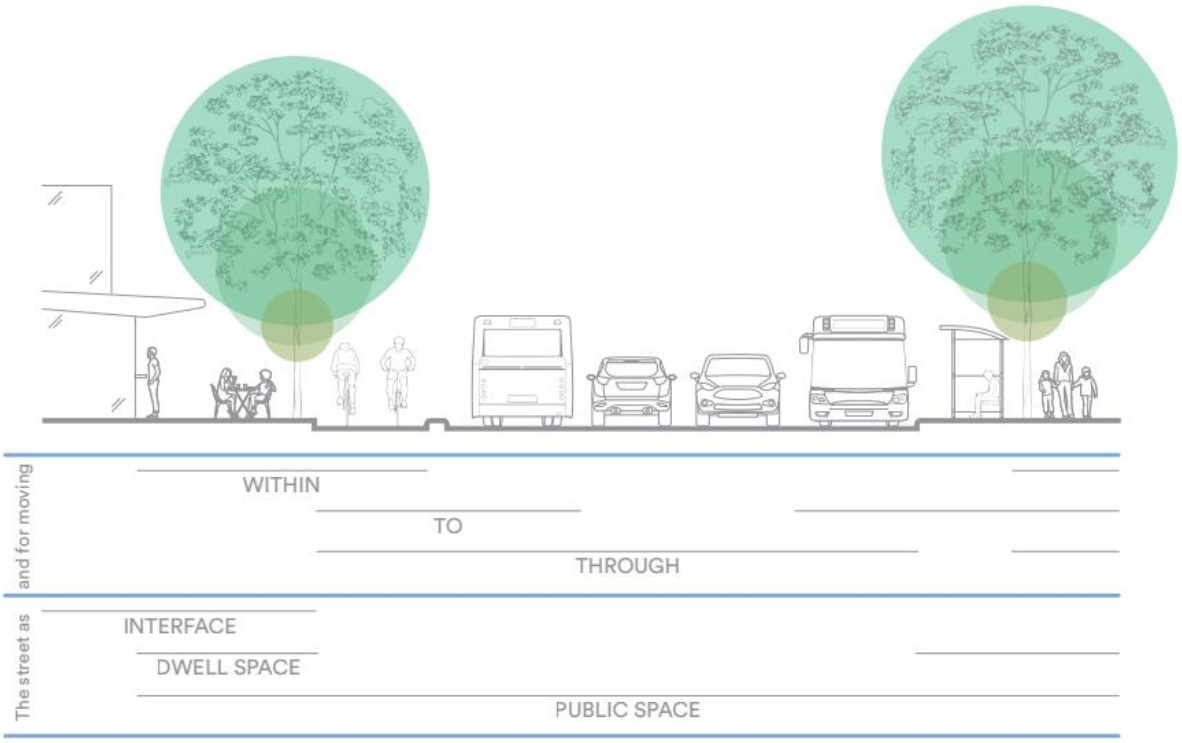


Figure 2-10: An example of a street cross section supporting both Movement and Place

Source: Government Architect of NSW, 2020

The Practitioner's Guide acknowledges the importance of compromise in balancing Movement and Place, due to limitations on space available in urban areas or in new projects where there is tension between the vibrancy or value for money compared to accommodating all functions. To ensure the best outcome for both Movement and Place, the process needs to be as inclusive and exploratory as possible.

In pursuing balance between Movement and Place outcomes, practitioners must recognise that, Movement and Place are not always able to be complementary. Balancing outcomes requires consideration of the place as a whole, and is generally considered spatially, by deciding which streets should accommodate which networks or place functions to get the best overall outcome for the place as a whole (and the wider strategic context).This is evaluated against a set of questions.

The built environment can be assessed in a number of ways including quantitative and qualitative comparison; gap analysis by reference to benchmarks or standards; needs assessment; an analysis of strengths, weaknesses, opportunities and threats; analysing the capacity and performance of an area; and studying its character.

The five built environment themes and the ten user outcomes that contribute to a well-designed built environment are illustrated in Figure 2-11.

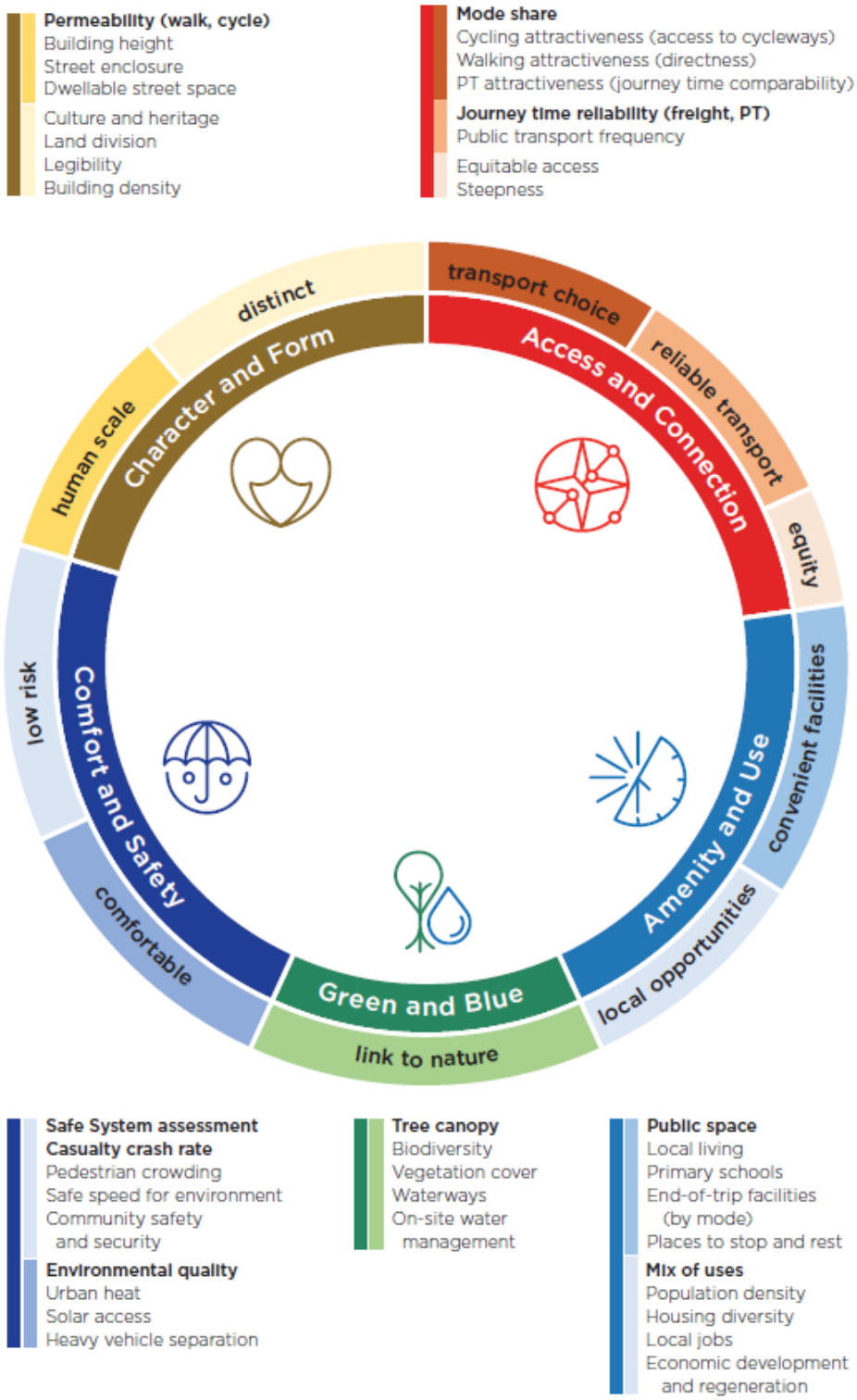


Figure 2-11: Alignment of the build environment indicators and the ten user outcomes

Source: Government Architect of NSW, 2020

The classification of streets is no longer the focus of Movement and Place analysis, with the role of this tool clarified to focus on outcomes or the identification of priority streets.

Classification requires breaking roads and streets into segments to understand the variety of roles, uses, and place qualities, and the potential need and priorities for modifications and improvements. Roads and streets may change character for lengths as short as 50 metres. For corridor planning, a segment length of 200 metres is recommended.

The updated framework comprises four different street environments, as outlined in Figure 2-12:

- **Civic spaces** are streets at the heart of our communities and have a significant meaning, activity function, or built environment. They are often in our major centres, our tourist and leisure destinations, and our community hubs. These streets are often shared spaces with pedestrian priority
- **Local streets** are the majority of streets within our transport networks and often have important local place qualities. Activity levels are less intense, however these streets can have significant meaning for local people
- **Main streets** have both significant movement functions and place qualities. Balancing the functions of these streets is a common challenge
- **Main roads** are routes central to the efficient movement of people and freight. They include motorways, primary freight corridors, major public transport routes, the principal bicycle network, and key urban pedestrian corridors. Place activity levels are less intense, however, these roads and routes can have significant meaning to local people.

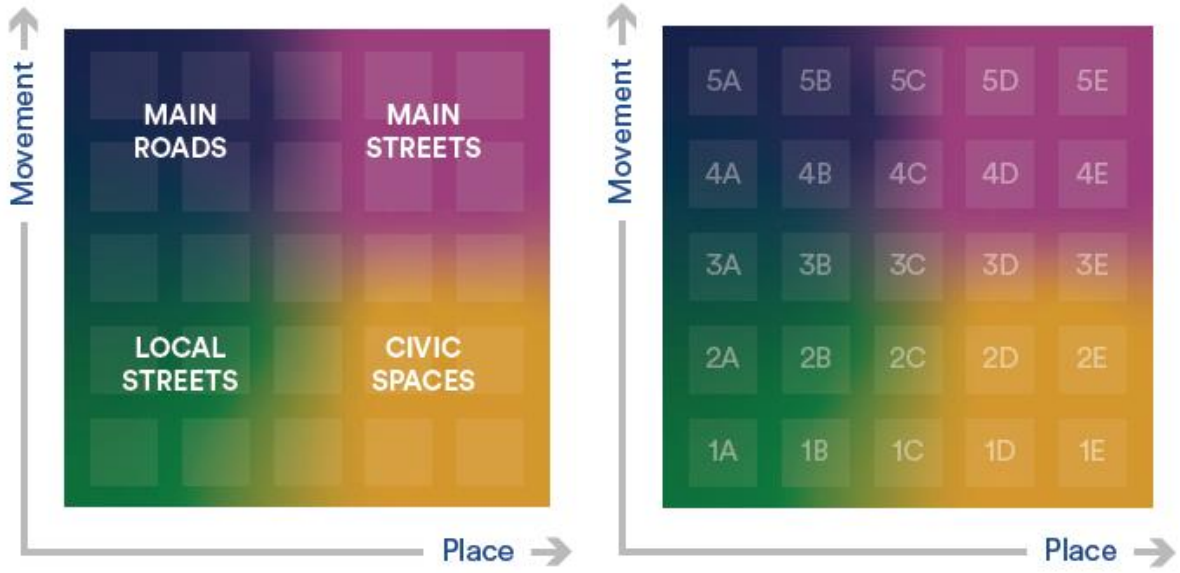


Figure 2-12: Movement and Place Framework

Source: Government Architect of NSW, 2020

Place Intensity and Movement Significance are then assessed with the assistance of the advisory note *Classifying Street Environments* and a range of factors outlined in the document.

2.2.7 Beyond the Pavement

This document by the Centre for Urban Design with Transport for NSW outlines the urban design approach and procedures for road and maritime infrastructure planning, design and construction.

There are four physical urban design objectives that should be achieved on all road and maritime infrastructure:

- Projects should fit sensitively into the built, natural and cultural environment in both urban and rural locations.
- Projects should contribute to the accessibility and connectivity of communities and a general permeability of movement through areas by all modes of movement.
- The design and management of projects should contribute to the overall design quality of the public domain for the community, including transport users.
- Projects should help revitalise areas and contribute to the local and broader economy.

The objectives are then outlined in more detail through nine *Beyond the Pavement* design principles which are presented in Figure 2-13.

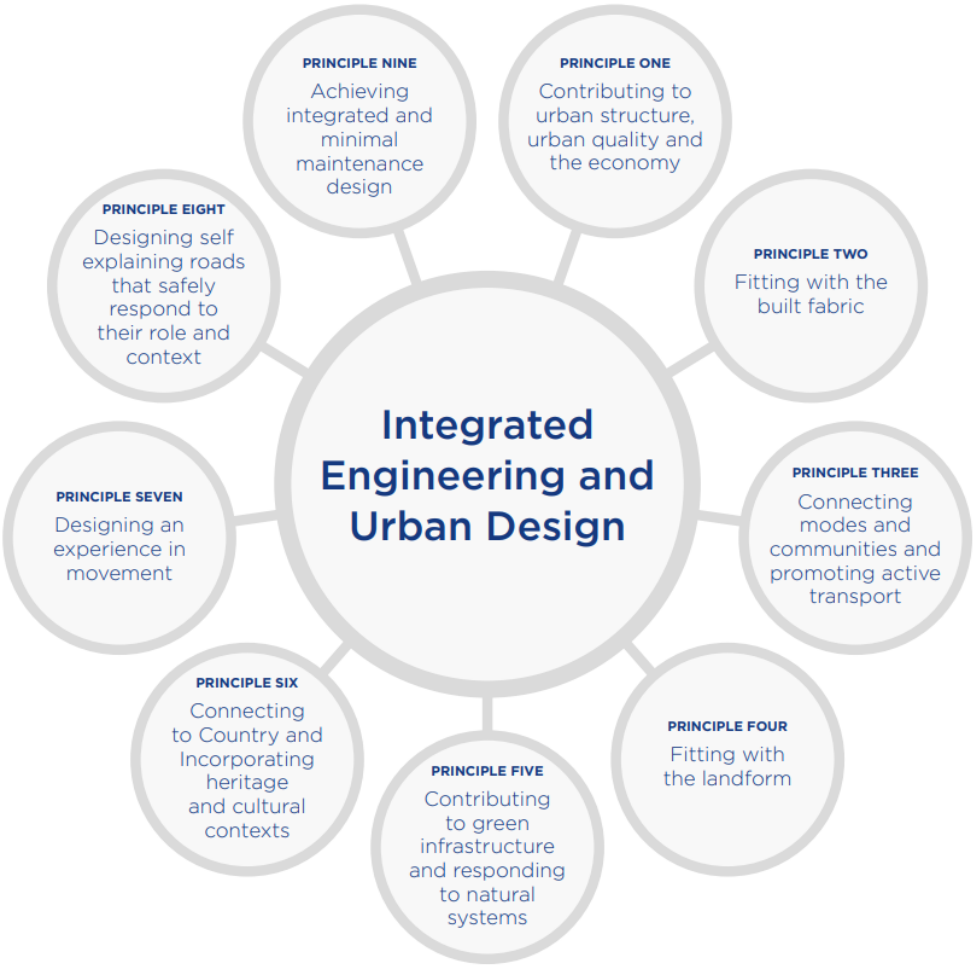


Figure 2-13: Beyond the Pavement urban design principles

Source: Centre for Urban Design, Transport for NSW, 2020

As an area with a projected variety of land uses, urban design for Blackwattle Bay must be integrated and context sensitive.

2.2.8 Road User Space Allocation Policy

The *Road User Space Allocation Policy* (January 2021) has been developed by Transport for NSW to allocate the physical and temporal road user space safely and equitably to support the movement of people and goods and place objectives. The implementation of the *Road User Space Allocation Policy* ensures that the allocation of road user space meets the following objectives:

- Deliberately considers the place, function and movement requirements of roads
- Achieves intent and outcomes as set out in state-wide, metropolitan and regional strategies
- Achieves the movement and place vision of a corridor or network
- Considers the limited amount of space available to accommodate competing user needs
- Can be adjusted to respond to specific circumstances.

Two types of allocation have been identified to meet the objectives above:

- Physical allocation: The physical road user infrastructure of the road, such as kerbs, medians, lane delineation and surface treatments. This includes permanent and temporary treatments
- Temporal allocation: Optimising how space is allocated throughout the day, week or year. This includes the dynamic control of space, access, level of priority, speed and kerbside use through signage, signals, and other technology.

A number of principles have been developed to guide the allocation of road user space:

- Balance between place and the movement of people and goods by first establishing a network vision and primary road functions based on strategies and plans
- Consider all road users in order of: walking, cycling, public transport, freight and deliveries, and point to point transport ahead of general traffic and on-street parking for private vehicles
- Facilitate the movement of goods and servicing of property responds to the local context
- Aim for the reduction of the mode share of private motor vehicle trips within built up areas
- Where it's not practicable to allocate space with these principles, dynamically allocate space
- Implement measures over time to achieve the strategic intent and outcomes
- Track how these principles are being implemented against strategic intent and outcomes
- Adhere to principles ahead of guidance that protects or maintains private vehicle level of service.

Figure 2-14 presents the order in which to determine the allocation of road user space.

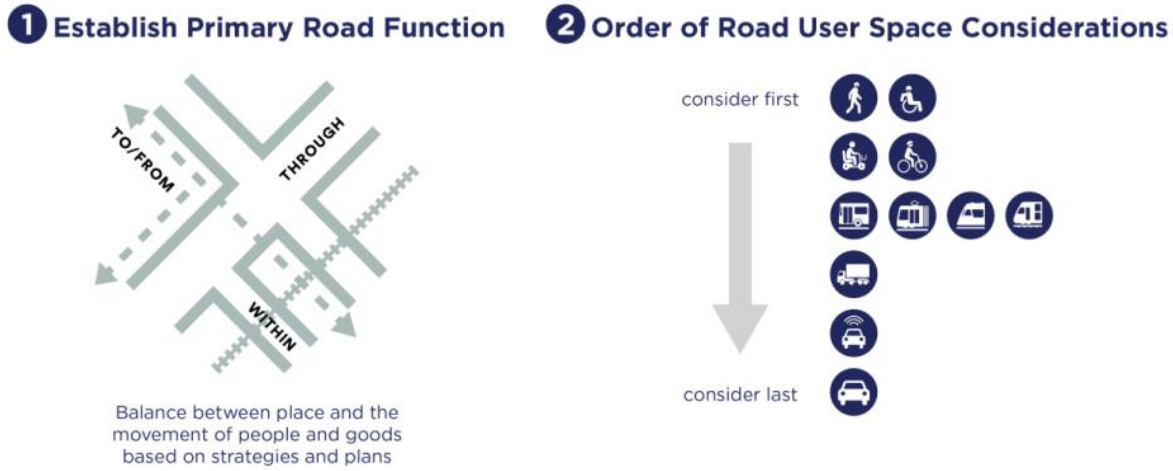


Figure 2-14: Order of determination for allocating road user space

Source: Transport for NSW, 2021

2.2.9 Pyrmont Peninsula Place Strategy

The revitalisation of the Pyrmont Peninsula, with the Western Harbour precinct as the next jobs hub and economic driver of growth in Sydney, is underpinned by the *Pyrmont Peninsula Place Strategy*. Ten directions have been developed in partnership with the City of Sydney and other state agencies. The directions are based on themes of infrastructure and collaboration, liveability, productivity and sustainability and are shown below in Figure 2-15.

Figure 2-15: Pyrmont Peninsula Plan Directions

Source: NSW Department of Planning Industry and Environment, 2020

The directions most relevant to this Blackwattle Bay Transport Management and Accessibility Plan are listed below:

- Direction 1: Jobs and industries of the future
  - Relocation of the Sydney Fish Market to the head of Blackwattle Bay is a catalyst for job creation in Blackwattle Bay. This is consistent with the NSW Government's intention to increase the number of jobs in the Pyrmont Peninsula.
- Direction 2: Development that complements or enhances that area
  - The redevelopment intends to transform Blackwattle Bay into a vibrant mixed-use waterfront precinct. The redevelopment of Blackwattle Bay will unlock a new waterfront promenade, connecting Glebe with Woolloomooloo. It will also comprise new public parks, streets and spaces that integrate with the Pyrmont street network. Development will comprise a mix of residential apartments, office space and retail, providing new living, working and service amenity for to enhance the Pyrmont Peninsula.

- Direction 3: Centres for residents, workers and visitors; and Direction 5: A tapestry of greener public spaces and experiences
    - In addition to unlocking a new waterfront promenade, connecting Glebe with Woolloomooloo, Blackwattle Bay will also comprise new public spaces, streets and spaces that seek to deliver greener public spaces and experiences. These aspirations lend themselves to valuable contributions to the Sydney Green Grid.
- Direction 6: Creativity, culture and heritage
    - The renewal of Blackwattle Bay presents an opportunity to celebrate the long history of this site. Connections to Country and the Gadigal and Wangal clans – the traditional custodians of this Place – are integral. The working harbour history associated with the Sydney Fish Market will also be celebrated.
- Direction 7: Making it easier to move around
    - The renewal of Blackwattle Bay is an opportunity to incorporate new streets, laneways and promenades which integrated into the existing grid. It is understood that a new metro station will be built in Pyrmont on Sydney Metro West. Sydney Metro West is a visionary transport project which will help to connect Blackwattle Bay with metropolitan centres such as the Sydney CBD and Parramatta, as well as strategic centres like Sydney Olympic Park and Burwood.
- Direction 8: Building now for a sustainable future
    - Renewing Blackwattle Bay to provide jobs, housing and services closer to where people live will help reduce commute times and encourage walking, cycling and the use of public transport. It also helps to protecting Sydney’s urban fringe from development.

2.3 Planning documents

2.3.1 Greater Sydney Region Plan

The *Greater Sydney Region Plan* (the Plan) was developed by the Greater Sydney Commission. The Plan is built on a vision of three cities where most residents live within 30 minutes of their jobs, education and health facilities, services and great places. The Plan identifies three cities (shown in Figure 2-16) within the Greater Sydney Metropolitan Area:

- **Eastern Harbour City**: centred on the Harbour CBD (including Blackwattle Bay);
- **Central River City**: based on Greater Parramatta; and
- **Western Parkland City**: focused on the future Western Sydney Airport and Badgerys Creek Aerotropolis.

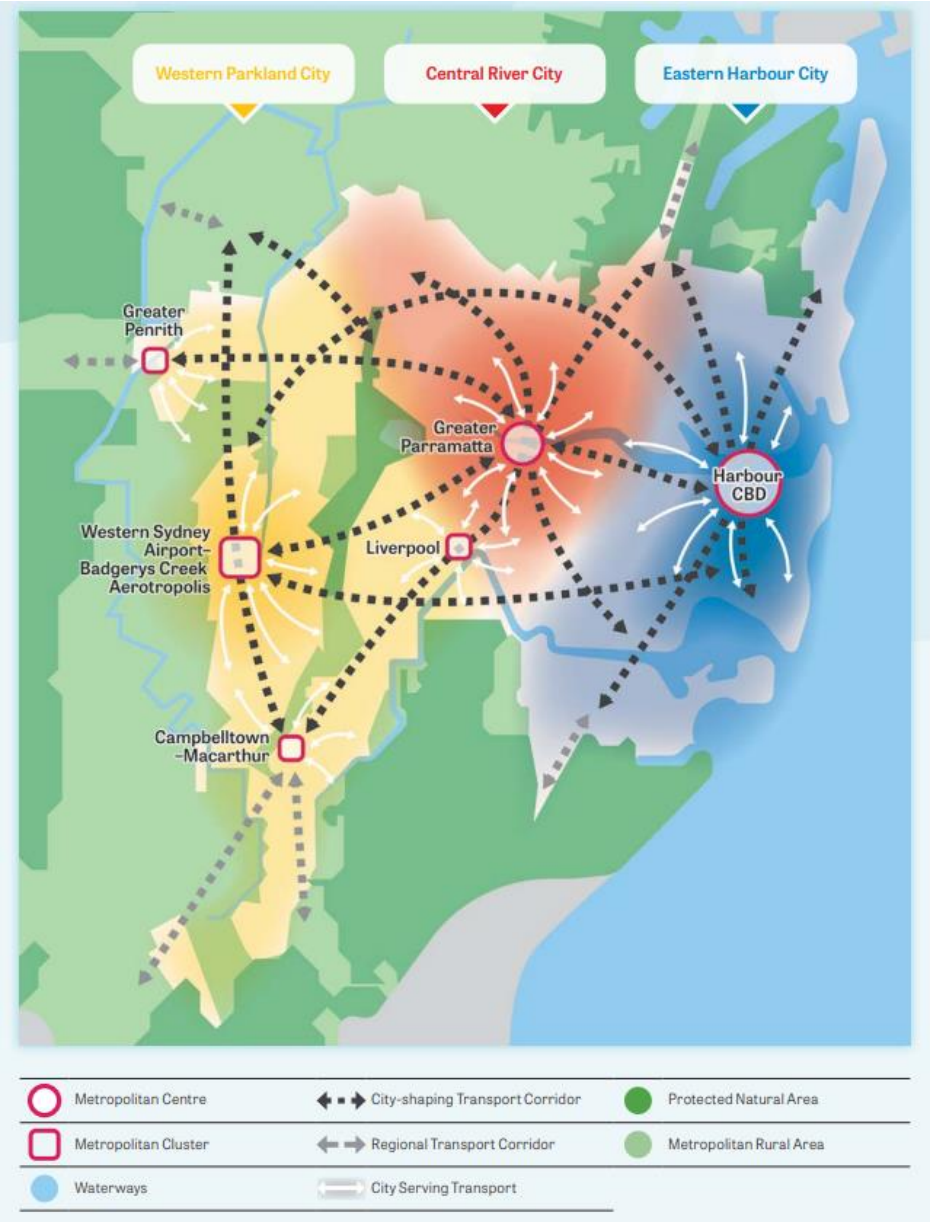


Figure 2-16: The Three Cities concept

Source: Greater Sydney Commission, 2018

The Plan was developed concurrently with the *State Infrastructure Strategy 2018 – 2038* (described in Section 2.3.2) and the *Future Transport Strategy 2056* (discussed in Section 2.2.3). Together, these plans align land use, transport and infrastructure outcomes across Greater Sydney to facilitate the delivery of 725,000 new dwellings and 817,000 new jobs in Greater Sydney by 2036.

The four themes of Infrastructure and Collaboration, Liveability, Productivity and Sustainability shape the ten directions that will initiate the delivery of the *Greater Sydney Region Plan,* shown in Figure 2-17.

Figure 2-17: Alignment of the Greater Sydney Region Plan's four themes and ten directions

Source: Greater Sydney Commission, 2018

A total of 40 objectives have been outlined which align with the themes and directions presented in Figure 2-17. Of these objectives, those that are most relevant to Blackwattle Bay include:

- Objective 1: Infrastructure supports the three cities
- Objective 2: Infrastructure aligns with forecast growth – growth infrastructure compact
- Objective 6: Services and infrastructure meet communities' changing needs
- Objective 7: Communities are healthy, resilient and socially connected
- Objective 10: Greater housing supply
- Objective 11: Housing is more diverse and affordable
- Objective 12: Great places that bring people together
- Objective 13: Environmental heritage is identified, conserved and enhanced
- Objective 14: A Metropolis of Three Cities – integrated land use and transport creates walkable and 30-minute cities
- Objective 15: The Eastern, GPOP and Western Economic Corridors are better connected and more competitive
- Objective 21: Internationally competitive health, education, research and innovation precincts
- Objective 30: Urban tree canopy cover is increased
- Objective 31: Public open space is accessible, protected and enhanced.

The *Greater Sydney Region Plan* aligns directly with *Future Transport Strategy 2056* through the Movement and Place framework and the 30-minute city by supporting the liveability, productivity and sustainability of Greater Sydney.

2.3.2 Eastern City District Plan

The *Eastern City District Plan* (the District Plan) is a district-level guide for the implementation of the *Greater Sydney Region Plan* over a 20-year period. The District Plan acts as a bridge between regional and local planning.

The District Plan outlines 22 planning priorities that correspond with the ten directions developed in the *Greater Sydney Region Plan*. These planning priorities are distributed between five key themes shown in Figure 2-18 below.

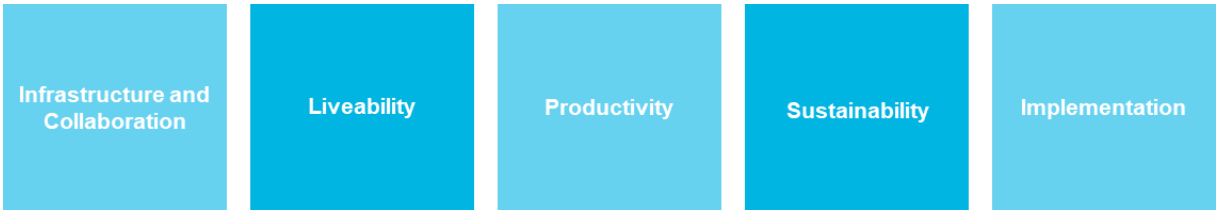


Figure 2-18: Eastern City District Plan Themes

Source: Greater Sydney Commission, 2016

The District Plan aims to make the Easter City District more innovative and globally competitive, carving out a greater portion of knowledge-intensive jobs from the Asia Pacific Region. The Eastern City District currently has about 904,500 jobs, 37% of 2.4 million jobs in the Greater Sydney Metropolitan Area.

More than half of the jobs in the Eastern City District are in the Harbour CBD. The Harbour CBD comprises the traditional Sydney CBD in addition to Barangaroo, The Bays, Camperdown-Ultimo, Darling Harbour, North Sydney, Pyrmont, Redfern to Eveleigh, parts of Surry Hills and Sydney East.

The District Plan also identifies The Bays as part of an Innovation Corridor along the western edge of the Harbour CBD. The Innovation Corridor extends from The Bays through Pyrmont and Ultimo to the Camperdown-Ultimo health and education precinct and beyond to the Australia Technology Park.

Over the 20 years to 2036, the baseline projection for the Harbour CBD is the delivery of an additional 165,900 jobs. This equates to almost 8,300 jobs per year. As a brownfield site within the Harbour CBD, Blackwattle Bay is well placed to help the Harbour CBD reach its future jobs target.

The residential baseline projection for the Eastern City District is the delivery of an additional 157,500 dwellings over the next 20 years to 2036. This equates to an average of almost 7,900 new dwellings per year. About 59% of new dwellings are expected to come in the form of new apartments, with a further 19% to be delivered as medium density housing. The District Plan projects the population of the Eastern City District to increase by 325,000 to 1,338,250. Blackwattle Bay presents an opportunity to contribute to this significant target.

Table 2-1: Employment and population projections

Area	2016 Jobs	2036 Baseline Jobs	2016-2036 Growth	2016 Population	2036 Baseline Population	2016-2036 Growth
Harbour CBD	496,100	662,000	33%			
Eastern City District	904,500			1,013,200	1,338,250	32%
Greater Sydney Metropolitan Area	2,439,800	3,256,800	33%	4,800,000	6,100,000	27%

Source: Greater Sydney Commission, 2018

2.3.3 Greater Sydney Services and Infrastructure Plan

The *Greater Sydney Services and Infrastructure Plan* is a transport blueprint designed to facilitate the growth of Greater Sydney over the next 40 years. The *Greater Sydney Services and Infrastructure Plan* supports the whole-of-government approach to Greater Sydney becoming a metropolis of three cities, where people have access to jobs and services within 30 minutes of where they live. The *Greater Sydney Services and Infrastructure Plan* identifies targeted investment opportunities in services and infrastructure. Investment opportunities are split into four types of initiatives shown in Figure 2-19.

Figure 2-19: Investment opportunity types

Source: Transport for NSW, 2016

The initiatives relevant to Blackwattle Bay are listed below:

- **Committed initiatives (0-10 years):**
  - **WestConnex:** A new and upgraded motorway currently under construction to provide a western bypass of the Harbour CBD. A largely underground interchange will be built to the west of the Anzac Bridge, facilitating movement to other major road corridors including Western Harbour Tunnel.
  - **Sydney Metro West:** A new underground metro railway under investigation to link the Parramatta and Sydney CBDs. A new station has been identified at The Bays, with a station under consideration in Pyrmont.
  - **Western Harbour Tunnel:** An underground road connection between WestConnex (at Rozelle) and the Warringah Freeway (at North Sydney). A largely underground interchange will be built to the west of the Anzac Bridge, facilitating movement to other major road corridors including WestConnex.
  - **Victoria Road public transport improvements:** Improvements will include upgrading bus services and infrastructure through the Bus Priority Infrastructure Program. This initiative is to support planned growth in The Bays, and to integrate with committed and proposed initiatives within the corridor such as Sydney Metro West and WestConnex.
- **Initiatives for investigation (0-10 years):**
  - **Harbour CBD to Green Square Mass Transit Link:** A rapid bus link connecting the Harbour CBD to Green Square via Botany Road. A route through the Harbour CBD is yet to be defined.

- **Initiatives for investigation (10-20 years)**:
  - **Light Rail to Bays Precinct:** A proposed loop from the existing Inner West Light Rail, connecting the existing line at North Leichhardt and at Pyrmont via The Bays and the old Glebe Island Bridge.

2.3.4 NSW Freight and Ports Plan 2018-2023

The *NSW Freight and Ports Plan 2018-2023* outlines the strategy for the government and industry to collaborate together, making freight more efficient and safe in order to enable future movement and growth in within NSW. The *NSW Freight and Ports Plan* is a supporting document to *Future Transport Strategy 2056* and aligns with the *Region Plan, District Plans* and *the State Infrastructure Strategy.*

The *NSW Freight and Ports Plan* identifies key issues that NSW Government agencies, the Australian Government and Local Councils need to consider and incorporate into land use and infrastructure planning to meet the demand of freight in the future, with changes in freight demand shown in Figure 2-20 below.

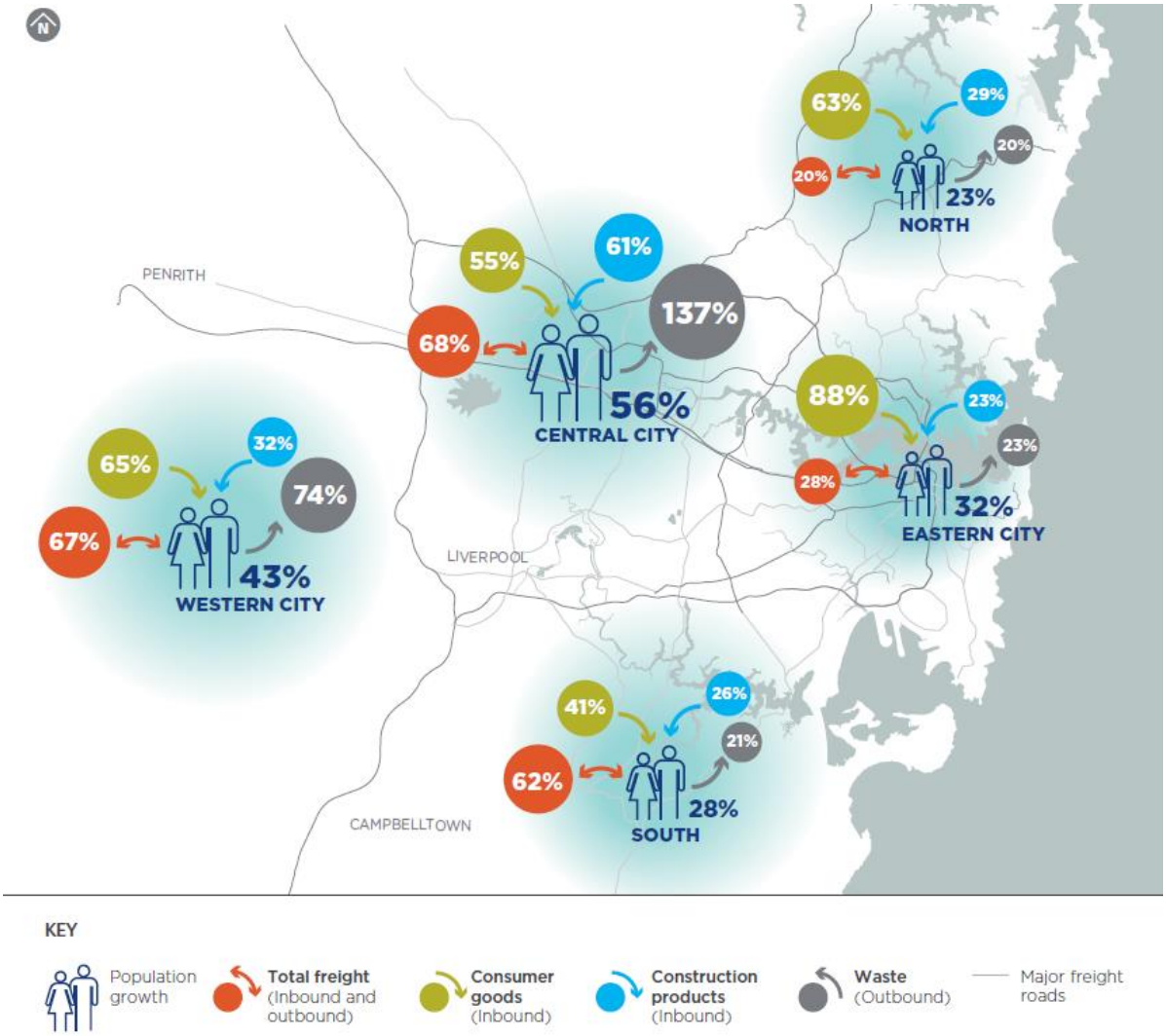


Figure 2-20: Greater Sydney population growth and changes in freight demand to 2036

Source: Transport for NSW, 2018

Responding to these issues, five key objectives have been identified. These are presented in Figure 2-21.

Figure 2-21: NSW Freight and Ports Plan key objectives

Source: Transport for NSW, 2018

Each key objective is broken down further into goals and supporting actions for the NSW Government. The goals which will have an impact on the future of freight passing through Blackwattle Bay include:

- Improve freight data
- Support the use of technology to improve efficiency and productivity
- Manage freight in urban centres
- Deliver new infrastructure to increase road freight capacity and improve safety
- Safer networks, transport, speeds and people
- Support initiatives to reduce freight emissions
- Manage the noise impacts of freight movement.

2.3.5 Sydney City Centre Access Strategy

The *Sydney City Centre Access Strategy* (SCCAS) was released by Transport for NSW to help deliver a fully integrated transport network in Sydney's city centre that put the customer first and met the growing transport task. In particular, the strategy focuses on increasing public transport usage.

The strategy defines an integrated network where transport networks function together to deliver a range of customer benefits which include the following, as shown in Figure 2-22 below.

Figure 2-22: Benefits of SCCAS

Source: Transport for NSW, 2013

The three key priorities that form part of the solution to improving access to the city centre, and access within it are shown in Figure 2-23 below.

Figure 2-23: Key priorities of SCCAS

Source: Transport for NSW, 2013

The actions in this strategy that are relevant to the Blackwattle Bay upgrade are listed below:

- Prioritise city centre street space
- Prioritising kerbside lanes
- Establish traffic bypass and priority routes to move traffic around and within the city centre
- Improve late night access by public transport and taxis
- Efficient access for commercial and service vehicles
- On-street and off-street parking reforms
- Improve real time customer information
- An improved bus system in the city centre to reduce congestion
- Improve safety, amenity and capacity for walking and cycling in the city centre
- Complete the city centre cycleway network
- Operational changes to increase capacity.

2.3.6 City Plan 2036: Local Strategic Planning Statement

The Local Strategic Planning Statement sets the 20-year vision for land use in the Local Government Area, the special character and values that are to be preserved and how change will be managed into the future.

The *City Plan 2036* gives effect to the *Greater Sydney Region Plan* and the *Eastern City District Plan* and is also informed by the City of Sydney Council's Community Strategic Plan; S*ustainable Sydney 2030*. It sets the strategic planning vision for the next 20 years; Green, Global and Connected.

The *City Plan* sets 13 priorities and a series of actions to achieve the vision and guide future changes to our planning controls. The priorities are outlined in

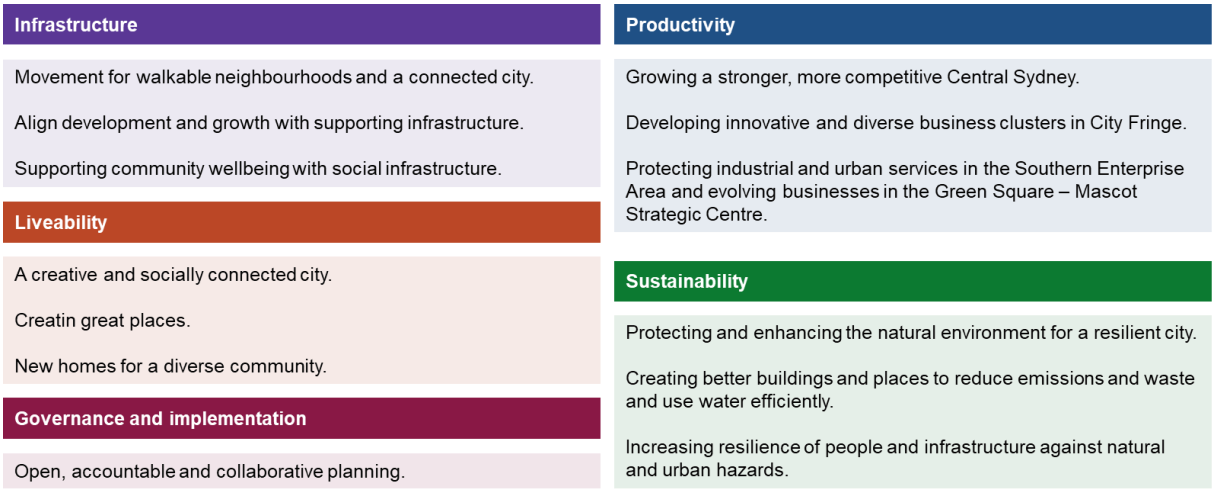


Figure 2-24: City Plan 2036 planning priorities

Source: City of Sydney, 2020

The supporting actions relevant to transport and land use in Blackwattle Bay include:

- Improve the accessibility, capacity and function of existing community infrastructure by:
  - Investigating existing infrastructure capacity and community demand for infrastructure
  - Creating a network of open space, and recreation facilities by creating and improving streets, and other walking and cycling connections through the city, including the delivery of the Liveable Green Network
- Plan for and provide open space to meet the following criteria and outcomes
  - All residents and workers are to be within 400 metres of quality, functional open space
  - Major urban renewal areas and individual sites are to provide between 9% and 15% of the land as public open space in a consolidated and accessible location, with high-density projects delivering 15%, as described in the Open Space, Sports and Recreation Needs Study 2016
  - At least 15% of the site area of NSW Government urban renewal projects and major urban renewal projects are to be delivered as public open space in a consolidated and accessible location
- Continue to facilitate housing development utilising capacity available under current planning controls
- Work with the NSW Government to facilitate medium density housing that is designed and built to respect the established local character of an area and the amenity of future residents and the existing community through a process in which the community is consulted

- Collaborate with others on a range of planning matters including:
  - Housing, sustainability and infrastructure in the District
  - State Significant Precincts and other NSW Government projects
- Advocate for greater, genuine and effective collaboration on State Significant Precincts, development enabled by transport infrastructure and other precincts and corridors identified to boost growth and investment including through governance arrangements that identify roles and responsibilities, resourcing and accountability, and review processes and monitoring of infrastructure delivery
- Work with the NSW Government to reintegrate selected precincts and sites into the City's planning framework.

2.3.7 Sustainable Sydney 2030

Sustainable Sydney 2030 is the City of Sydney's vision for the City of Sydney Local Government Area. The vision focuses on three key themes as shown in Figure 2-25 below:

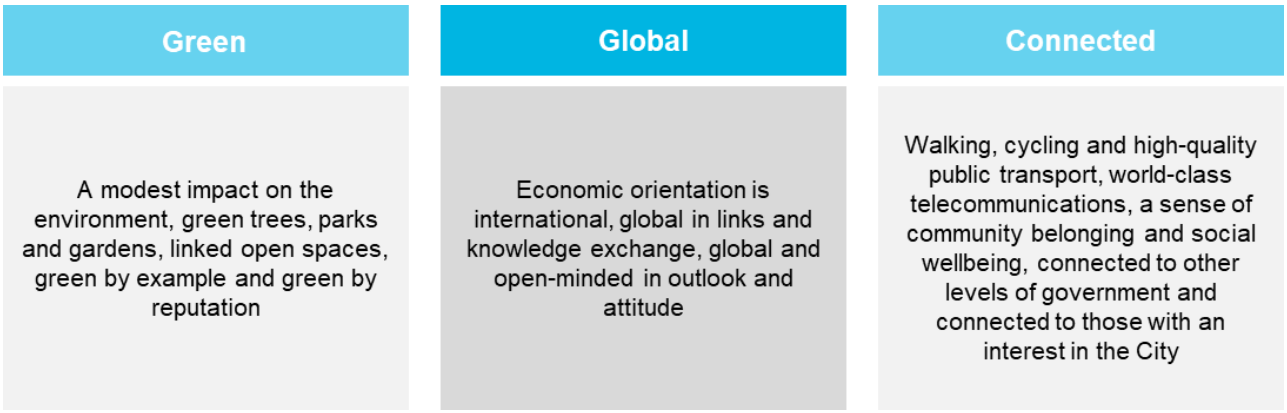


Figure 2-25: Key themes of Sustainable Sydney 2030

Source: City of Sydney, 2017

Sustainable Sydney 2030 sets ten targets to make the City of Sydney a more sustainable place. Those targets relevant to transport and land use in Blackwattle Bay include:

- 48,000 additional dwellings when compared with 2006. This equates to an average annual increase of 2,000 dwellings
- 7.5% of all City housing will be social housing and a further 7.5% of all City housing will be affordable housing
- 97,000 additional jobs when compared with 2006
- 80% of all Journey to Work trips by City of Sydney residents and workers will be via public transport
- 50% of all trips made in the City of Sydney will be on foot, and a further 10% will be by bicycle
- Every resident is within reasonable walking distance of local services such as fresh food, childcare, health and leisure, social, learning and cultural infrastructure
- Every resident is within a three-minute walk of continuous green links that connect the Sydney Harbour foreshore, Sydney Harbour parklands, Moore Park, Centennial Park or Sydney Park.

Sustainable Sydney 2030 sets ten strategic directions to achieve these targets. Those strategic directions (and their objectives) relevant to transport and land use include:

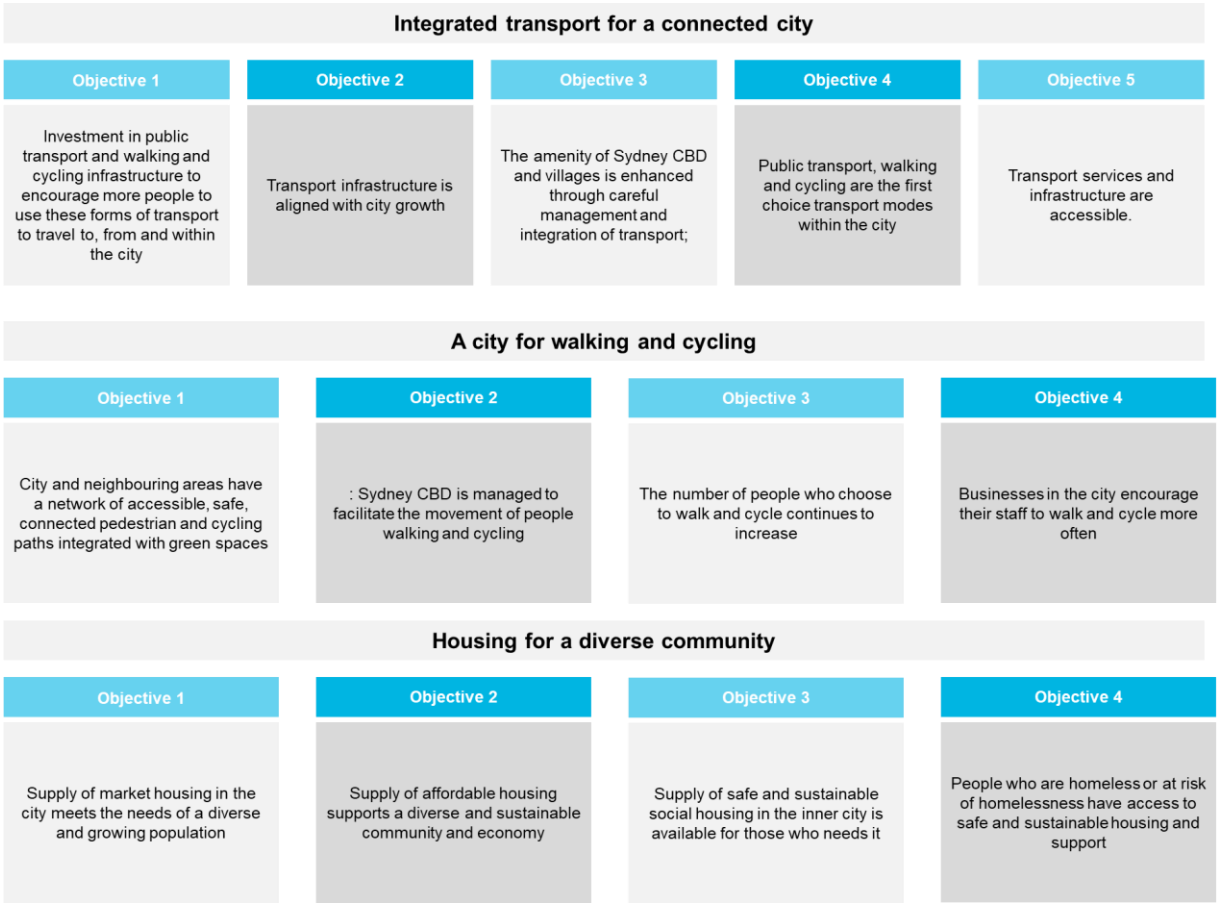


Figure 2-26: Sustainable Sydney Directions and Objectives

Source: City of Sydney, 2017

Strategic need for Blackwattle Bay: *Sustainable Sydney 2030* was adopted by the City of Sydney in 2008, in a period of slower historic and projected population growth. In the ten years that have passed, population growth has accelerated in Greater Sydney:

- In 2008, the City of Sydney projected 48,000 additional dwellings would be needed in the 24 years between 2006 and 2030. This equates to an average annual increase of 2,000 dwellings.
- In 2016, the NSW Department of Planning and Environment projected 69,950 additional dwellings would be needed in the 25 years between 2011 and 2036. This equates to an average annual increase of 2,800 dwellings.
- In 2008, the City of Sydney projected 97,000 additional jobs would be created in the 24 years between 2006 and 2030. This equates to an average annual increase of 4,040 jobs.
- In 2016, the City of Sydney projected 133,000 additional jobs would be created in the 24 years between 2012 and 2036. This equates to an average annual increase of 5,540 jobs.
- **Blackwattle Bay was not identified as an urban renewal area when *Sustainable Sydney 2030* was released in 2008. As a result, it presents a new opportunity to unlock brownfield land for the delivery of housing and jobs in line revised**

2.3.8 Sydney Local Environmental Plan 2012

The purpose of the *City of Sydney Local Environmental Plan 2012* (Sydney LEP) is to make local environmental planning provisions for land in the City of Sydney in accordance with the relevant standard environmental planning instruments under section 3.20 of the Sydney LEP. The objectives of the Sydney LEP are to:

Table 2-2: Objectives of LEP

Objectives of Sydney LEP
1. Reinforce the role of the City of Sydney as the primary centre for Metropolitan Sydney
2. Support the City of Sydney as an important location for business, educational and cultural activities and tourism
3. Promote ecologically sustainable development
4. Encourage the economic growth of the City of Sydney by: Providing for development at densities that permit employment to increase; and Retaining and enhancing land use for employment purposes that are significant for the Sydney region.
5. Encourage the growth and diversity of the residential population of the City of Sydney by: providing for a range of appropriately located housing, including affordable housing retaining and enhancing land use for employment purposes that are significant for the Sydney region.
6. Enable a range of services and infrastructure that meets the needs of residents, workers and visitors
7. Ensure that the pattern of land use and density in the City of Sydney reflects the existing and future capacity of the transport network and facilitates walking, cycling and the use of public transport
8. Enhance the amenity and quality of life of local communities
9. Provide for a range of existing and future mixed-use centres and to promote the economic strength of those centres
10. Achieve a high quality urban form by ensuring that new development exhibits design excellence and reflects the existing or desired future character of particular localities
11. Conserve the environmental heritage of the City of Sydney
12. Protect, and to enhance the enjoyment of, the natural environment of the City of Sydney, its harbour setting and its recreation areas

Source: City of Sydney Local Environmental Plan, 2012

The existing Sydney Fish Market site is predominantly zoned B3 Commercial Core. The B3 Commercial Zone classification provides for a wide range of uses including retail, business, office, entertainment, community and other suitable land uses that serve the needs of the local and wider community.

A small section of the existing Sydney Fish Market site (near the Bank Street and Miller Street intersection) is zoned RE1 Public Recreation. RE1 Public Recreation zone classification enables the use of land for things such as public open space or recreational purposes.

The existing Sydney Fish Market site has a maximum permissible Floor Space Ratio of 2.5:1. The future Sydney Fish Market site is excluded from Floor Space Ratio zoning.

The existing Sydney Fish Market site has a maximum permissible building height of 33 metres, near the corner of Pyrmont Bridge Road and Bank Street. Most of the remainder of the site has a permissible building height of 22 metres, however this drops to 15 metres adjacent to the waterfront (south of Miller Street). The new Sydney Fish Market site is excluded from building height restrictions.

The new Sydney Fish Market site is not under the jurisdiction of the City of Sydney, and as such is not zoned by the City of Sydney.

2.3.9 City of Sydney Development Control Plan 2012

The *City of Sydney Development Control Plan 2012* (Sydney DCP) provides guidelines, objectives and controls for development in the City of Sydney. The Sydney DCP is supported by the Sydney LEP and relevant state and regional environmental planning policies. The Sydney DCP aims to:

- Encourage development to respond to its context and is compatible with the existing built environment and public domain
- Recognise and reinforce the distinctive characteristics of the City of Sydney's neighbourhoods and centres
- Build upon the detailed objectives and controls under Sydney LEP 2012
- Protect and enhance the public domain
- Achieve the objectives of the City's Sustainable Sydney 2030 Strategy
- Encourage design that maintains and enhances the character and heritage significance of heritage items and heritage conservation areas
- Encourage ecologically sustainable development and reduce the impacts of development on the environment.

The new Sydney Fish Market site is not under the jurisdiction of the City of Sydney, and as such is not zoned by the City of Sydney.

2.3.10 Central Sydney Planning Framework 2016 – 2036

The *Central Sydney Planning Framework 2016 – 2036* has been developed by the City of Sydney Council. It is a 20-year growth strategy that revises a number of previous planning controls and aims to deliver on the *Sustainable Sydney 2030* program for a green, global and connected city. The *Central Sydney Planning Framework* identifies a vision for Sydney to 2036:

Central Sydney is part of a green, global and connected city – a centre that is beautiful and vibrant, which supports a strong and growing economy, a sustainable environment and diverse communities.

The *Central Sydney Planning Framework* outlines 10 key moves and aims to balance the opportunities for development to meet the demand of population growth to 2036 and beyond with the changing needs of workers, residents and visitors. A number of actions have been proposed to support the implementation of these key moves in the short-, medium- and long-term, and are outlined in Figure 2-27.

1	Prioritise employment growth and increase capacity	6	Move towards a more sustainable city
2	Ensure development responds to context	7	Protect, enhance and expand Central Sydney's heritage, public places and spaces
3	Consolidate and simplify planning controls	8	Move people more easily
4	Provide for employment growth in new tower clusters	9	Reaffirm commitment to design excellence
5	Ensure infrastructure keeps pace with growth	10	Monitor outcomes and respond

Figure 2-27: Ten key moves of the Central Sydney Planning Framework

Source: City of Sydney, 2020

The key changes proposed seek to facilitate amendments to controls that govern additional height and density in suitable locations, and broadly opportunities to unlock additional capacity for economic and employment growth, as well as ensuring that new development achieves design excellence.

However, it should be noted that the Blackwattle Bay precinct is located outside of the Central Sydney area which the *Central Sydney Planning Framework* applies to.

2.3.11 Connecting Our City: Transport Strategy and Action Plan

The *Transport Strategy and Action Plan* has been developed by the City of Sydney Council as a framework for action to improve transport and access within the City of Sydney, building on the objectives, targets and ideas developed in the *Sustainable Sydney 2030* report. The *Transport Strategy and Action Plan* aims to improve the experience of people travelling to, from or within the City of Sydney, and accommodate future growth in population and employment by 210,000 people.

Six objectives have been developed to improve transport and access and are shown in Figure 2-28.

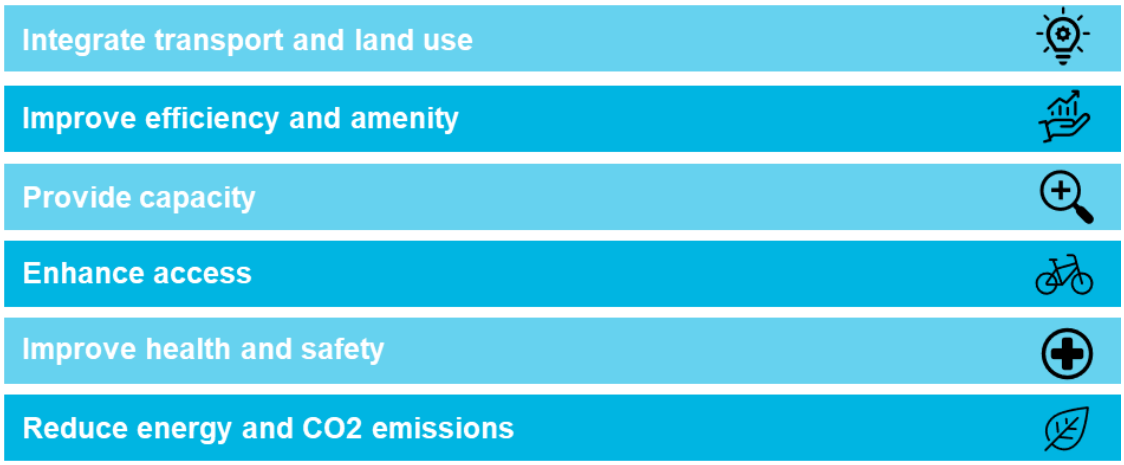


Figure 2-28: Transport Strategy and Action Plan objectives

Source: City of Sydney, 2012

Progress towards these six objectives can be measured by established targets, which draw on the targets outlined in *Sustainable Sydney 2030,* the *State Priorities* and plans from other relevant organisations. 31 actions have been proposed to be implemented over the short, medium and long term. These comprise six areas, which begin where the City can lead and are shown in Figure 2-29.

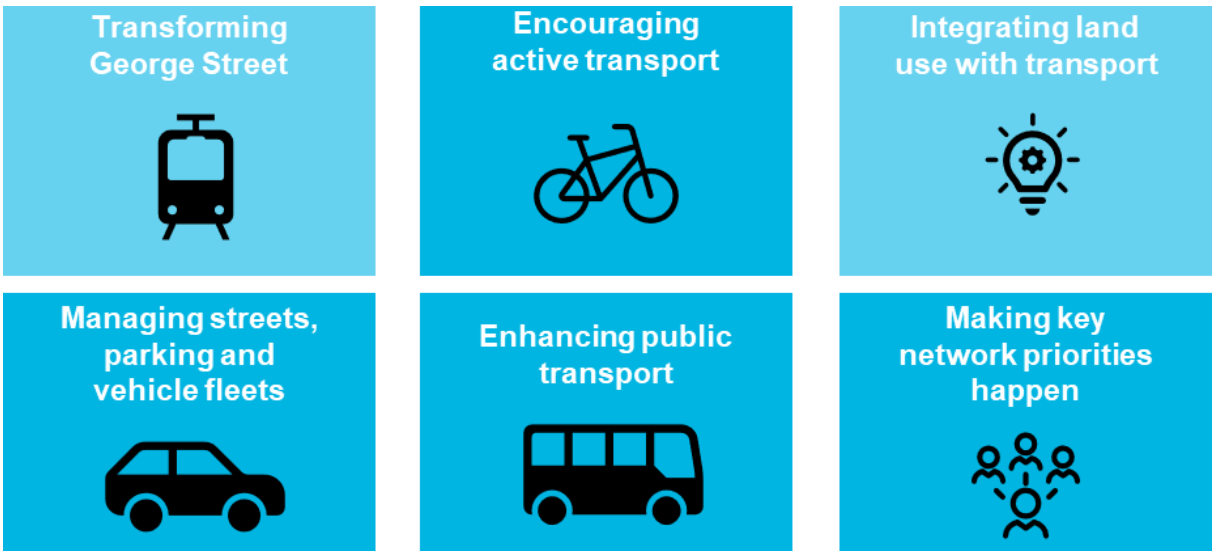


Figure 2-29: Key actions

Source: City of Sydney, 2012

2.3.12 Cycling Strategy and Action Plan

The *Cycling Strategy and Action Plan* is a 10-year plan to transform and modernise the Sydney bike network within the City of Sydney Local Government Area. The City of Sydney has established a benchmark for the Sydney bike network as "a bike network that is safe enough for a 12 year old to ride alone". The development of a safe, separated Sydney bike network will contribute to the *Sustainable Sydney 2030* target of 10% of all trips into the City of Sydney being made by bike.

The *Draft Cycling Strategy and Action Plan* identifies four key priorities to guide the development of the Sydney bike network. This is shown in Figure 2-30.

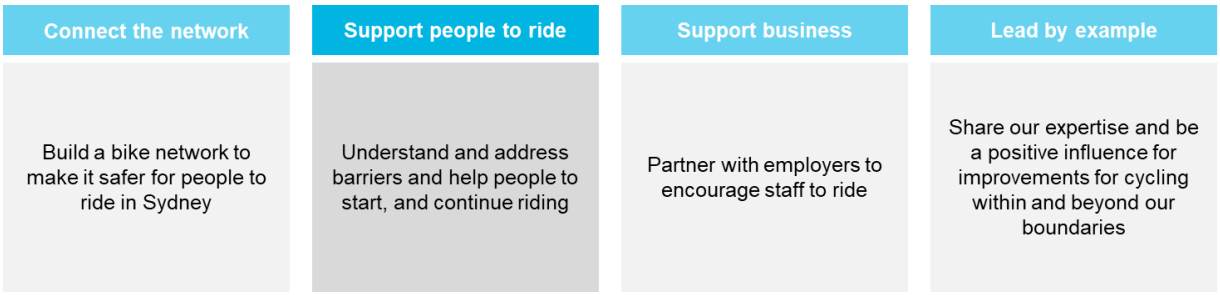


Figure 2-30: Draft Cycling Strategy and Action Plan key priorities

Source: City of Sydney, 2018

The *Draft Cycling Strategy and Action Plan* envisages a three-tier Sydney bike network: This is shown in Figure 2-31.

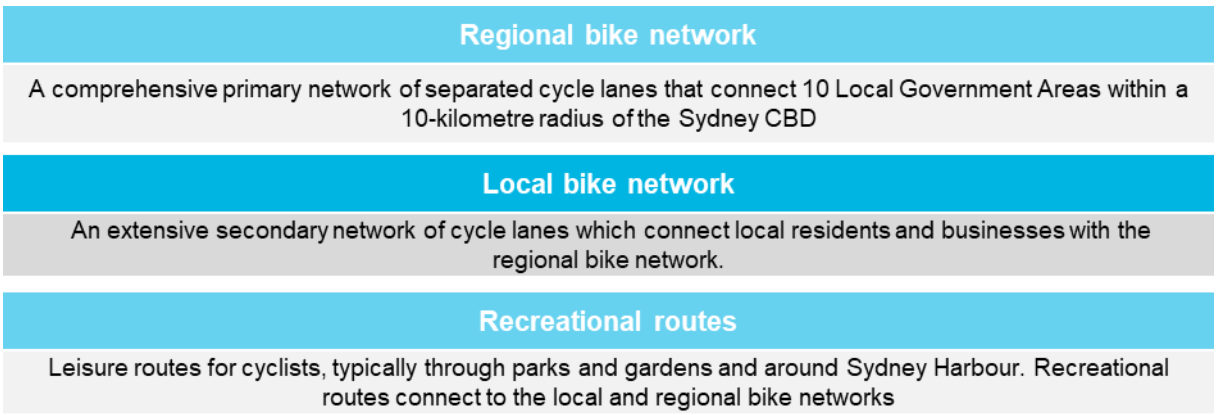


Figure 2-31: Three-tier Sydney bike network

Source: City of Sydney, 2018

The planned Sydney bike network is shown in Figure 2-32.

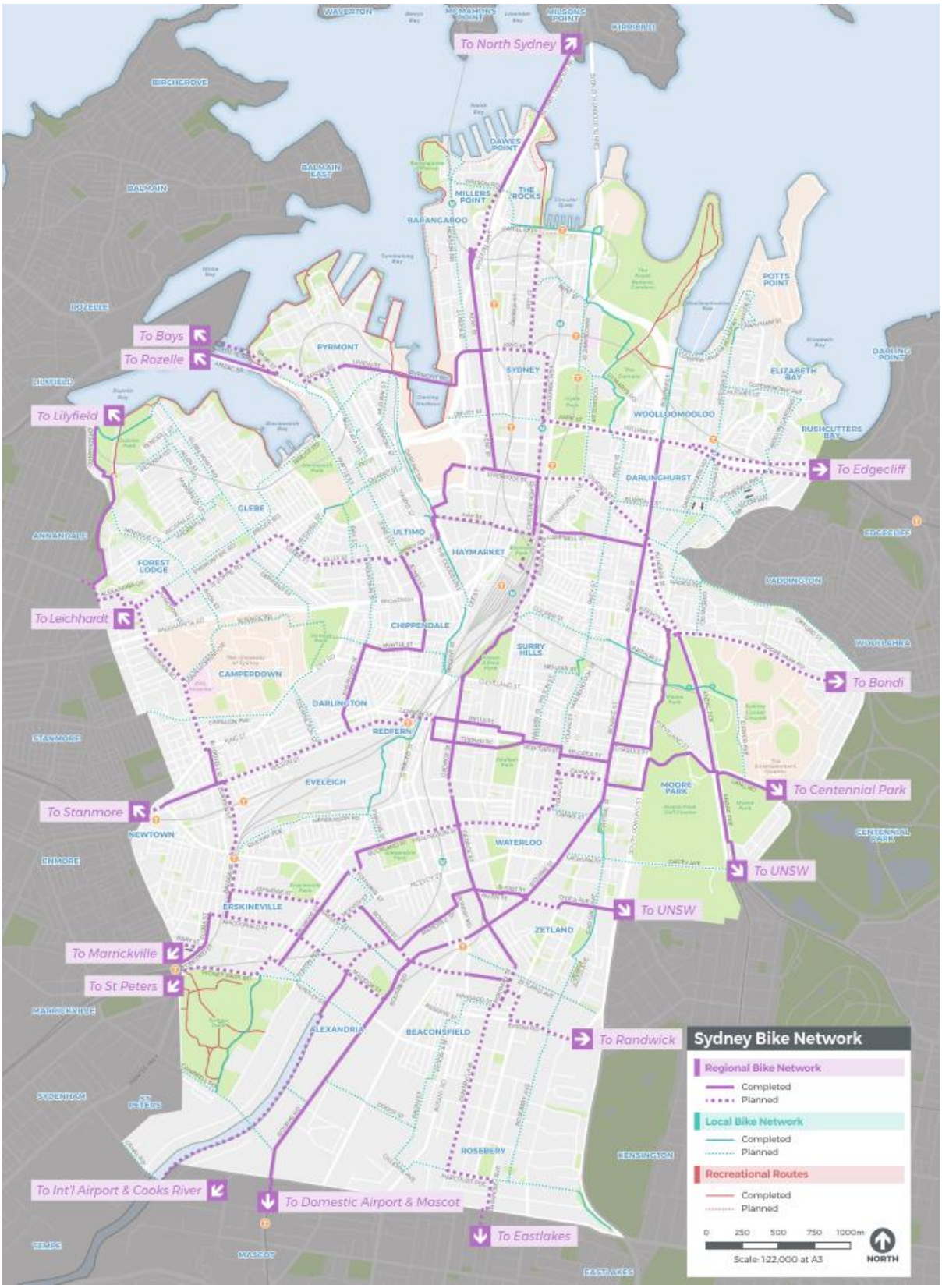


Figure 2-32 Sydney Bike Network

Source: City of Sydney, Draft Cycling Strategy and Action Plan, 2018

2.3.13 Sydney Walking Strategy and Action Plan

The *Walking Strategy and Action Plan* outlines City of Sydney Council's plan to support walking as a mode of transport to meet its environmental, economic and social objectives set in *Sustainable Sydney 2030* and *Connecting Our City*.

It's key directions for walking are:

- Make walking quick, convenient and easy
- Make walking inviting and interesting
- Make walking safe and comfortable
- Create a strong walking culture.

The strategy includes walking targets which are assessed against trends and forecasts to track progress. The walking are targets are shown in Figure 2-33.

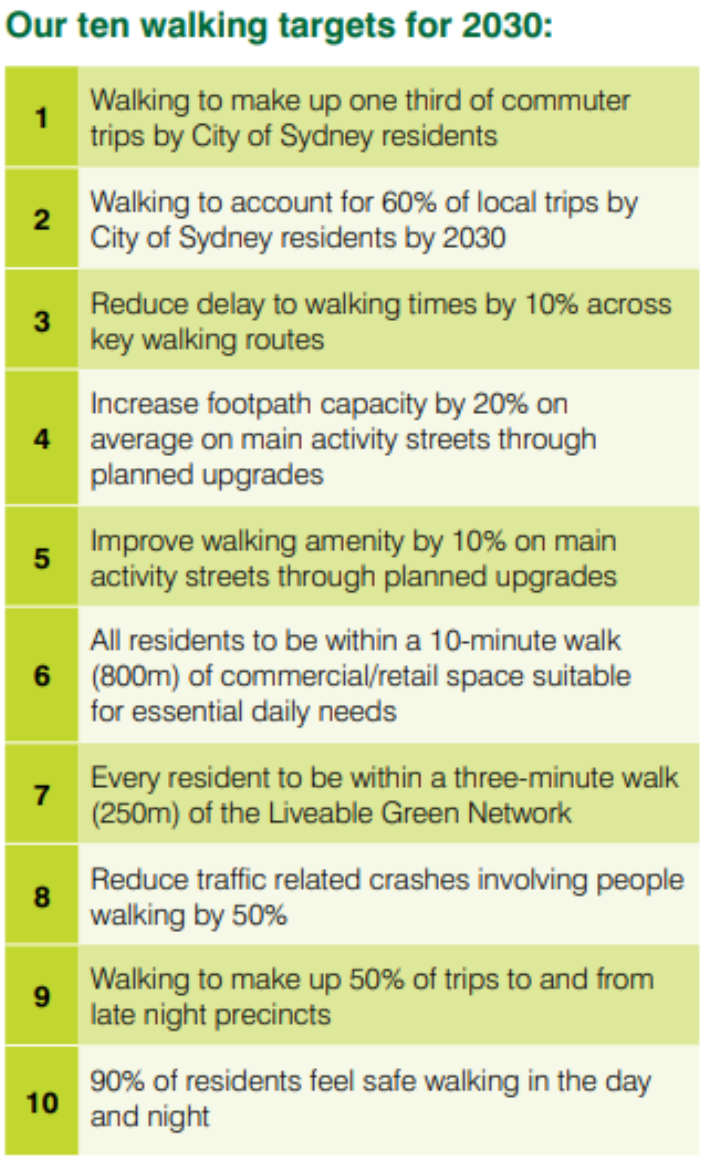


Figure 2-33: 2030 Walking Targets

Source: City of Sydney, Walking Strategy and Action Plan, 2017

The actions that will support the achievement of these targets and realisation of the key directions which are directly relevant to Blackwattle Bay's upgrade are:

- Implement planning controls that encourage active street frontages on activity streets
- Work with neighbouring local governments to deliver more walkable environments
- Undertake a walkability audit every five years to determine improvement in walkability
- Work with the NSW Government to investigate opportunities to improve pedestrian priority and reduce travel time for people walking
- Investigate and request low speed environments in the LGA
- Implement an integrated wayfinding system across the LGA
- Investigate and implement streetscape amenity improvements
- Encourage provision of end-of-trip facilities in development through promotional efforts
- Support workplace travel planning through promotional efforts
- Promote walking as a mode of transport through targeted communication campaigns
- Upgrade all activity streets to comply with City of Sydney standards by 2030.

2.3.14 The Bays Transformation Plan

The development of The Bays is set out in the NSW Government's Transformation Plan. Central to the Transformation Plan is the ambition for The Bays to be a leading, export-oriented hub of knowledge-intensive jobs – a place that enhances Australia's international competitiveness in areas that will drive future economic growth. The proximity of The Bays to the Sydney CBD is characteristic of innovation and technology hubs around the world. As an innovation hub, The Bays would be the location for leading-edge anchor institutions, which would attract other partners and start-up businesses.

The Bays will be a centre that contains a range of different types of housing, including affordable housing, integrated with commercial developments and recreational / open space land uses. Encouragement of walking and cycling, and the creation of a healthy and active place, is also a key objective for the transformation of the Precinct. The Bays Waterfront Promenade will be a 5.5-kilometre promenade providing an attractive and safe opportunity to walk or cycle along the water from Balmain through to the Sydney CBD and Woolloomooloo.

In addition to recreational amenities, dining and entertainment precincts are planned. Blackwattle Bay will be a new world-class market offering food and dining options. The experience will be enhanced by its connection to the water and will be centred on a rejuvenated Sydney Fish Market.

The mixed use nature of the transformed Bays Precinct, as well as the location of a technology hub, will create a precinct in which people can live, work and play, with a high level of 'trip containment', minimising people's need to travel or increasing travel only within the precinct.

2.3.15 Blackwattle Bay Masterplan (Revitalising Blackwattle Bay)

The Blackwattle Bay Masterplan outlines the NSW Government commitment to revitalising Blackwattle Bay to deliver an authentic, vibrant and sustainable place connected to Sydney's iconic harbour.

The vision recognises that "*Blackwattle Bay offers an extraordinary opportunity to reconnect the harbour, its surrounding neighbourhoods and the city; to showcase Sydney's living culture and stories of Country; to build an inclusive and iconic waterfront destination that celebrates innovation, diversity and community*".

To support the realisation of this vision, the masterplan included 16 principles:

- Improve access to Blackwattle Bay, the foreshore and water activities for all users
- Minimise additional shadowing to Wentworth Park and Glebe Foreshore (in mid-winter) and create new places with comfortable conditions for people to enjoy

- Pursue leading edge sustainability outcomes including climate change resilience, improved water quality and restoration of natural ecosystems
- Prioritise movement by walking and cycling and public transport
- Balance diverse traffic movement and parking needs for all users
- Link the Blackwattle Bay precinct to the City, Glebe Island and White Bay and other surrounding communities and attractors
- Mandate Design Excellence in the public and private domain
- Integrate housing, employment and mixed uses to create a vibrant, walkable, mixed use precinct on the city's edge
- Maintain and enhance water uses and activities
- Allow for co-existence and evolution of land uses over time
- A place for everyone that is inviting, unique in character, socially inclusive and affordable
- Expand the range of recreational, community and cultural facilities
- Plan for the future community's education, health, social and cultural needs
- Deliver development that is economically, socially, culturally and environmentally viable
- Embed and interpret the morphology, heritage and culture of the site to create an authentic and site responsive place
- Foster social and cultural understanding and respect to heal and grow relationships.

Furthermore, the masterplan developed three precinct plan scenarios for future renewal which explored how Blackwattle Bay might be revitalised through different land use mixes, open space arrangements and water front promenade designs, and street and building layouts. They also highlighted different cultural design elements, which combine to contribute to a strong sense of place and identity.

The three scenarios (Homes, Balanced, Jobs) are summarised below in Figure 2-34.

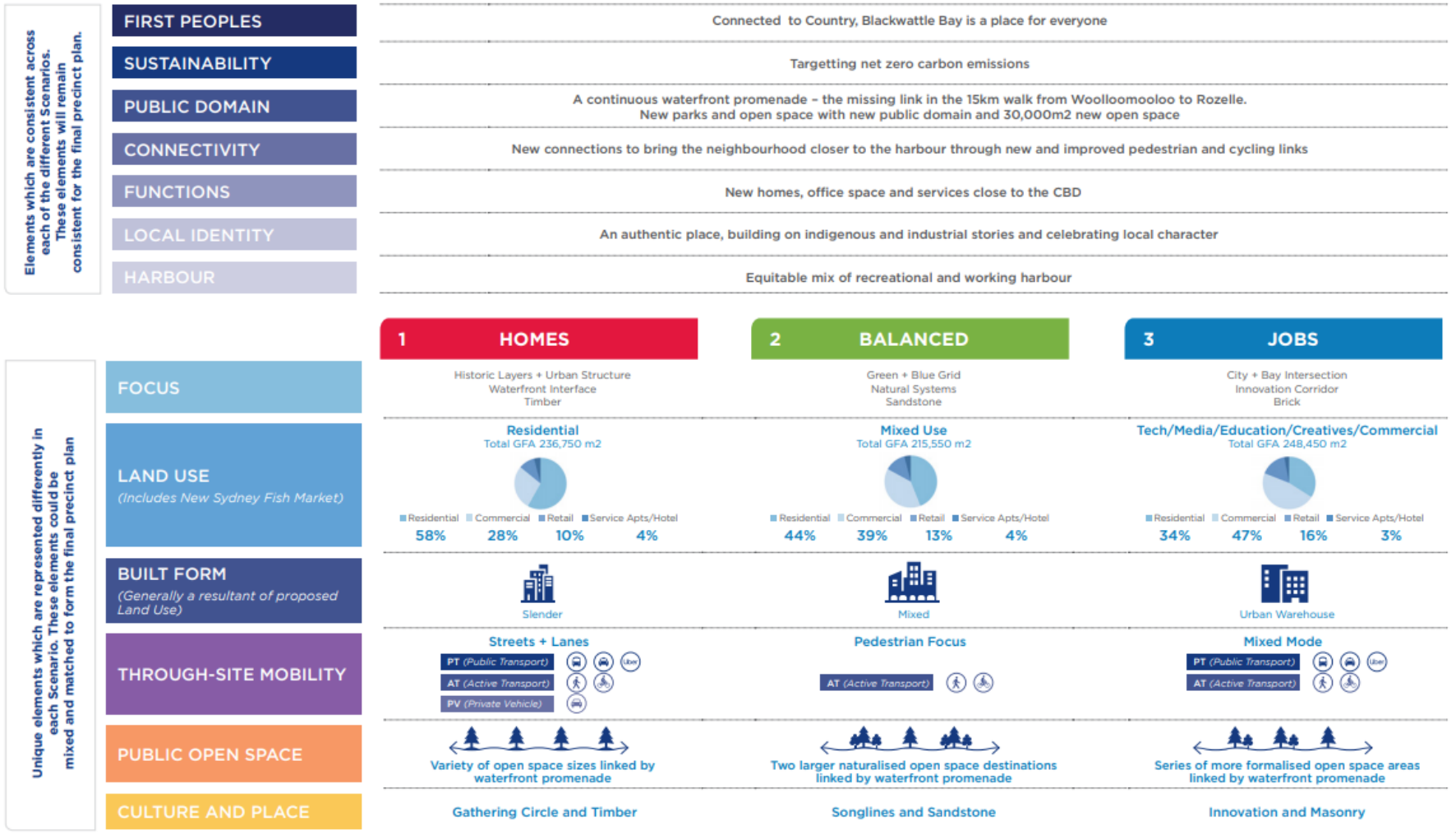


Figure 2-34: Summary of Scenarios

Source: Infrastructure NSW, Revitalising Blackwattle Bay, 2020

Following stakeholder consultation, the three scenarios were revised into the final precinct plan which forms the basis of the SSP study.

Including the new Sydney Fish Market, the final scenario comprises 259,374 square metres of total GFA. This will support 5,910 jobs and 2,850 residents in 1,580 dwellings (including up to 10% affordable housing).

2.3.16 Blackwattle Bay Accessibility Principles

The Bays Transport Vision was set by Transport for NSW to capture the transport and access objectives identified in Government planning strategies. Accessibility Principles were developed to guide the realisation of The Bays Transport Vision in the context of Blackwattle Bay.

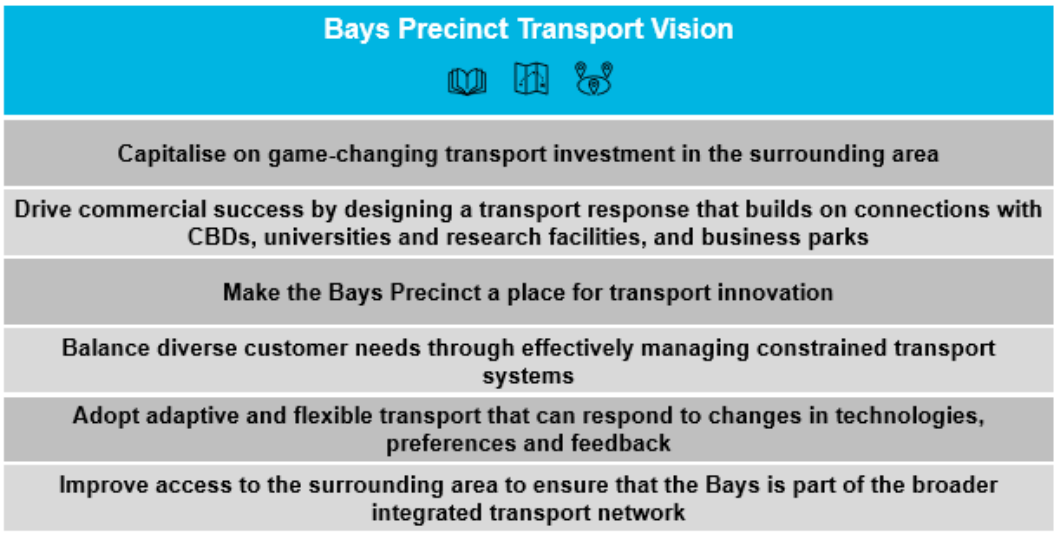


Figure 2-35: Bays Precinct Transport Vision

Source: Infrastructure NSW, 2015

The Blackwattle Bay Accessibility Principles form the basis of the traffic and transport strategies.

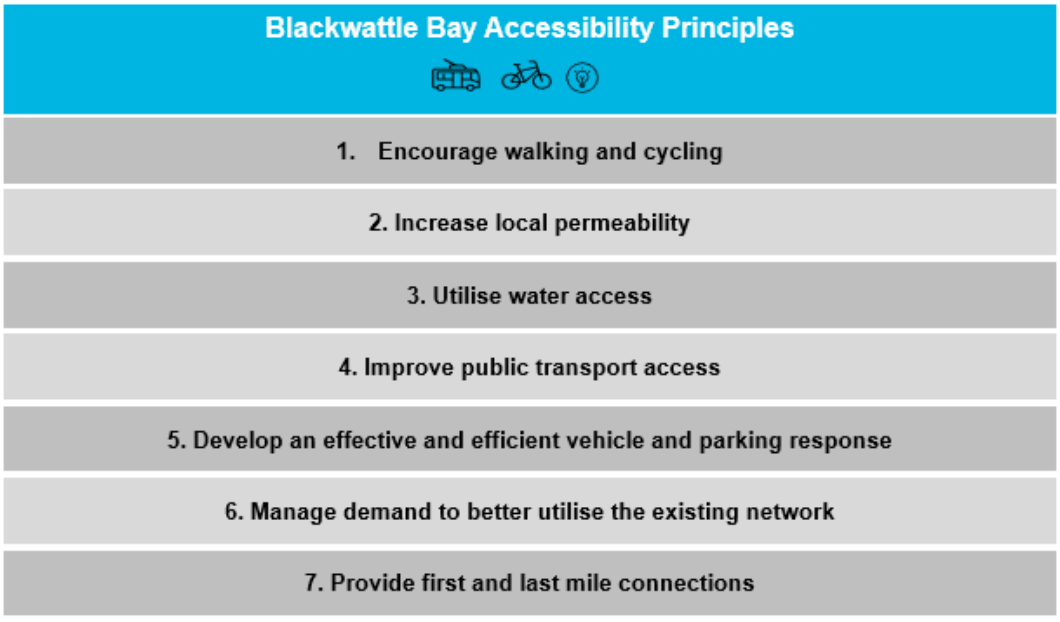


Figure 2-36: Blackwattle Bay Accessibility Principles

Source: Infrastructure NSW, 2015

3.0 Existing transport and land use context

3.1 Site location

Blackwattle Bay is located approximately one kilometre from the western edge of the Sydney CBD. The precinct planning area covers approximately 8.4 hectares of land which are primarily government-owned with an additional area of 23 hectares over water. An aerial image of Blackwattle Bay is shown in Figure 3-1.

Figure 3-1: Aerial shot of Blackwattle Bay

Source: Infrastructure NSW, Revitalising Blackwattle Bay, 2020

3.2 Land use

3.2.1 Adjacent land uses

The area around the shoreline is used for a variety of purposes which include infrastructure, residential and mixed use and is governed by the *Sydney Local Environmental Plan 2012* (*Sydney LEP 2012*)

The light rail corridor, zoned as SP2 (infrastructure) passes through Blackwattle Bay in an east–west direction.

Directly south of the shoreline is Wentworth Park and it is referred to as City West (CW) under the *Sydney LEP 2012* and governed by *Sydney Regional Environmental Plan No 26 – City West*. It is predominantly used for public recreation featuring soccer fields, a sporting complex and greyhound racetrack.

Directly west of the shoreline is Sydney Secondary College Blackwattle Bay Campus, a secondary high school zoned as SP2 (infrastructure). Further along, the west end of Blackwattle Bay along Bridge Road contains a mixture of businesses from the Kauri Foreshore Hotel to stores selling plumbing and telescopes.

Further adjacent land use varies between general residential (R1) and mixed use (B4) with some public recreation spaces (RE1) scattered between. These residential blocks include the Ultimo-Pyrmont medium and high density buildings and Glebe small lots. In general, the built form varies with mostly lower to medium heights focused in the centre of the peninsula and taller heights located more towards its periphery. Notable mixed business lots include the City of Sydney Depot.

The land zoning for Blackwattle Bay is shown in Figure 3-2.

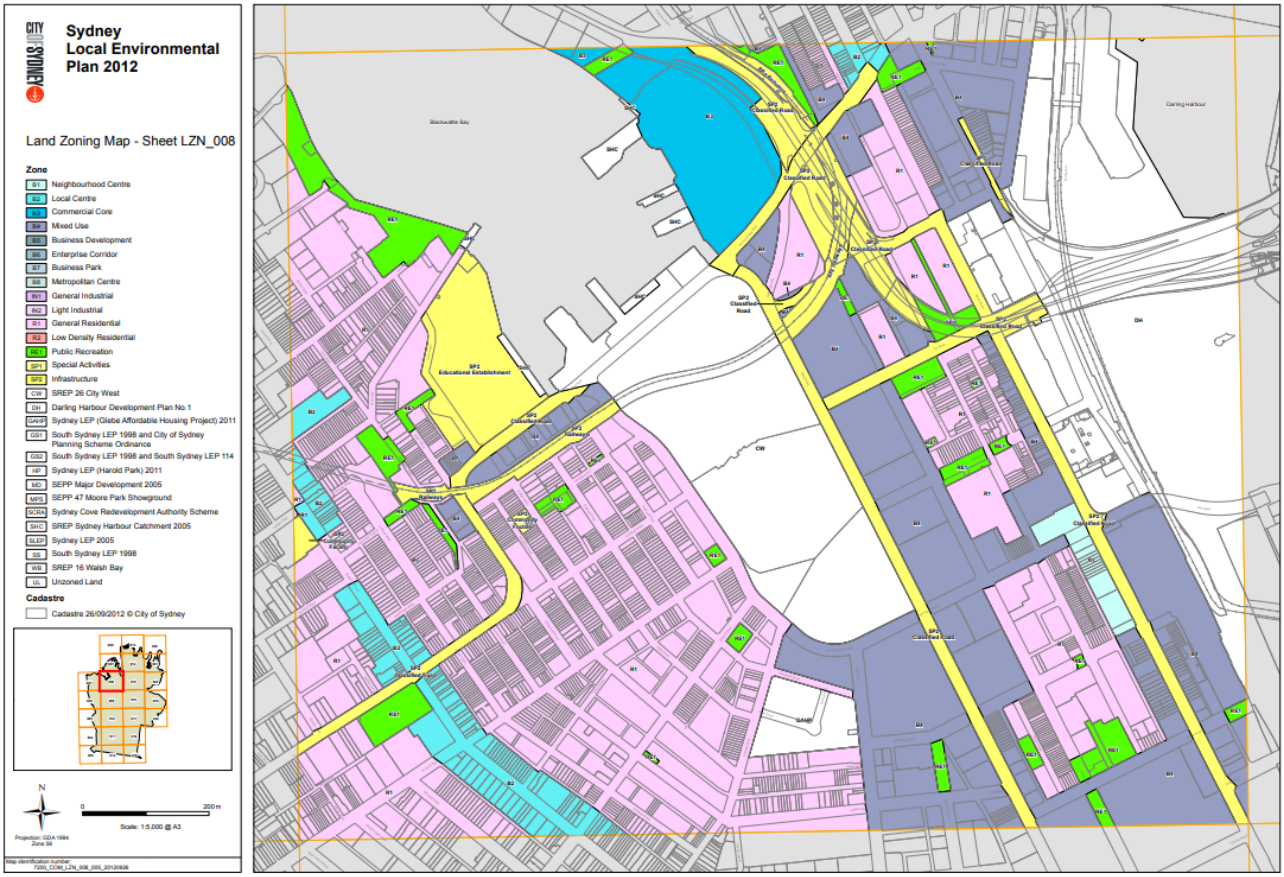


Figure 3-2: Blackwattle Bay Land Use Zoning

Source: City of Sydney, Sydney Local Environmental Plan 2012

3.2.2 Maritime Activities

Haskoning prepared the '*Blackwattle Bay Navigation Study'* to support the Blackwattle Bay SSP Study. The following existing maritime activities are detailed in the Haskoning Report, alongside key considerations and recommendations for Blackwattle Bay.

3.2.2.1 Recreational power boats

Recreational power boats are serviced by a number of berthing and boat storage facilities within Rozelle Bay and Blackwattle Bay. Berthing and boat storage facilities within Rozelle Bay include:

- Sydney City Marine
- Sydney Superyacht Marina
- Sydney Boathouse
- Seawind Catamaran Marina.

Berthing facilities within Blackwattle Bay include:

- Blackwattle Bay Marina (five-year temporary use approval)
- Blackwattle Bay Marine Operatives
- Existing Fish Market (northern mooring jetty).

In addition to permanent berths, there are also public wharves available for temporary mooring of visiting recreational vessels. These facilities comprise:

- Rozelle Bay Public Pontoon at Bicentennial Park (shown in Figure 3-3) – signage indicates the pontoon is for casual mooring only (pick up and drop off, vessels attended at all times), maximum vessel length of ten metres, and maximum draught at low tide of 1.4 metres
- Blackwattle Bay Public Pontoon at the headland adjacent to Bellevue House (shown in Figure 3-4) – signage indicates the pontoon is for casual mooring only (pick up and drop off, vessels attended at all times), maximum vessel length of ten metres, and maximum draught at low tide of 2.4 metres
- Existing Fish Market public pontoon in Blackwattle Bay (shown in Figure 3-5) – provides a drop off/pick up facility for visitors to the existing Sydney Fish Market, accommodates vessels of up to six metres in length, 1.2 metre water depth is available at low tide
- Glebe Rowing Club pontoon in Blackwattle Bay (shown in Figure 3-15) – low freeboard pontoon designed primarily for rowing boat access.

These facilities cater for a range of motorised vessel sizes including trailable recreational boats (runabouts, motor cruisers), motor yachts, super yachts and larger sized recreational boats less than 11 metres in length (dry storage at Sydney Boathouse).

Figure 3-3: Rozelle Bay Public Pontoon

Source: Haskoning, 2020

Figure 3-4: Blackwattle Bay Public Pontoon

Source: Haskoning, 2020

Figure 3-5: Existing Fish Market Public Pontoon (Blackwattle Bay)

Source: Haskoning, 2020

3.2.2.2 Sailing yachts

Facilities that cater for sailing yachts are located in Rozelle Bay and include:

- Sydney City Marine (shown in Figure 3-6) – boat repair and refitting of sailing yachts
- Sydney Heritage Fleet (shown in Figure 3-7) – restoration of heritage boats including sailing skiffs
- Seawind Catamaran Marina (shown in Figure 3-8) – marina offering berths specifically for service, repair, chartering and boat management of large ocean going catamarans and tri-marans (only dedicated multihull marina in Sydney), some motor yachts and cruisers are also berthed.

Figure 3-6: View across Rozelle Bay towards Sydney City Marine repair facility (Rozelle Bay)

Source: Haskoning, 2020

Figure 3-7: View across Rozelle Bay towards Sydney Heritage Fleet (Rozelle Bay)

Source: Haskoning, 2020

Figure 3-8: Seawind Catamaran marina (Rozelle Bay)

Source: Haskoning, 2020

3.2.2.3 Commercial vessels

Commercial vessels use the waterway to access berths and repair facilities located at a number of waterfront premises occupied by marine contractors. Commercial vessels used by these contractors include tugs, workboats and barges. Marine contractors are primarily located along the northern shoreline of Rozelle Bay (shown in Figure 3-9) and include:

- Clement Marine
- Australian Wharf and Barge
- Polaris Marine
- Waterway Constructions.

Figure 3-9: View of marine contractors along northern shoreline of Rozelle Bay

Source: Haskoning, 2020

RMS operational vessels are berthed outside the RMS Head Office (Maritime Division) on the northern shoreline of Rozelle Bay, adjacent to the Anzac Bridge (shown in Figure 3-10).

Figure 3-10: View across Rozelle Bay of RMS Head Office and adjacent operational vessel berths

Source: Haskoning, 2020

Within Blackwattle Bay, a number of marina berths are provided for charter boat operators. These include:

- Blackwattle Bay Marina – previously provided 22 berths with vessels including All Occasions Cruises vessels and 12 other charter operators, this marina facility is now vacant and the vessels have been relocated elsewhere
- Existing Fish Market (shown in Figure 3-11) – the end berths of the northern mooring jetty are used by Manly Fast Ferries and Fusion Cruises
- Blackwattle Bay Marine Operatives (shown in Figure 3-12) – provides up to 26 informal berths for use by charter operators, no public access to adjacent foreshore (privately owned Hymix concrete batching plant).

Figure 3-11: Existing Fish Market northern jetty end berths occupied by charter boats (Blackwattle Bay)

Source: Haskoning, 2020

Figure 3-12: Blackwattle Bay Marine Operatives

Source: Haskoning, 2020

Fishing trawlers also access Blackwattle Bay to berth at the existing Fish Market facilities, which include:

- Dedicated fishing trawler berths at the inner berths of the northern timber mooring jetty (shown in Figure 3-13)
- Main concrete jetty with hardstand area (trawler wharf, shown in Figure 3-14) is used for unloading, reprovisioning, refuelling and maintenance of fishing vessels.

Figure 3-13: Existing Fish Market northern jetty inner berths occupied by fishing boats (Blackwattle Bay)

Source: Haskoning, 2020

Figure 3-14: Existing Fish Market main concrete jetty (Blackwattle Bay)

Source: Haskoning, 2020

3.2.2.4 Rowing boats

Rowing is a popular activity in the Bays Precinct with boat houses for rowing clubs occupying waterfront land within Blackwattle Bay and use of the waterway on a regular basis for training purposes. Existing facilities providing waterway access for rowers include:

- Beach launching area within Bicentennial Park (Rozelle Bay, shown in Figure 3-25)
- Glebe Rowing Club (GRC) boathouse and pontoon (Blackwattle Bay, shown in Figure 3-15)
- Sydney University Boat Club (SUBC) boathouse and pontoon (Blackwattle Bay, shown in Figure 3-16)
- Dragon Boat ramp at Bank Street, Pyrmont (Blackwattle Bay, shown in Figure 3-20)
- Foreshore access steps adjacent to Sydney Secondary College (Blackwattle Bay Campus, shown in Figure 3-26).

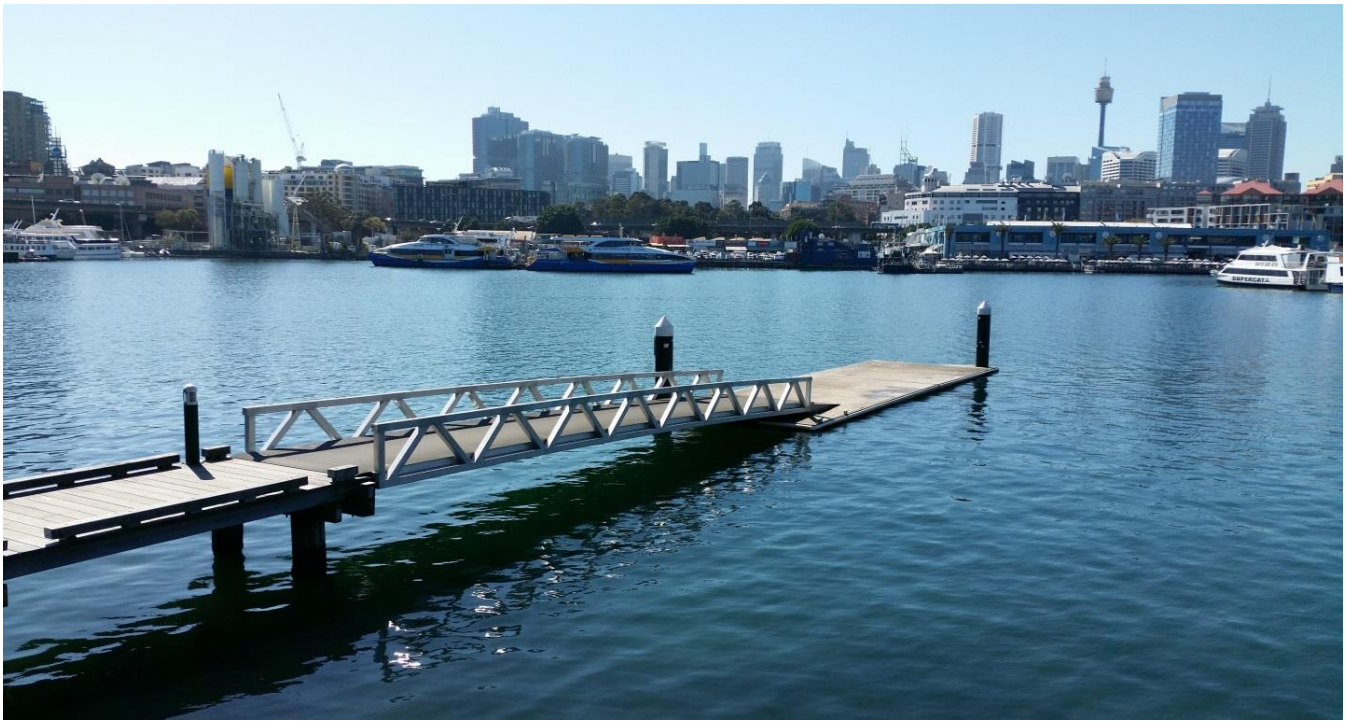


Figure 3-15: Glebe Rowing Club Pontoon (Blackwattle Bay)

Source: Haskoning, 2020

Figure 3-16: Sydney University Boat Club boathouse and pontoon (Blackwattle Bay)

Source: Haskoning, 2020

A voluntary rowing guide developed by the former Roads and Maritime in consultation with local rowing groups (including Dragon Boating Clubs) and details a recommended rowing course throughout Rozelle and Blackwattle Bays. This rowing course is shown in Figure 3-18 and, based on observations during a Saturday morning site visit, is generally adhered to by rowing clubs during training activities. The course runs in an anti-clockwise direction around the perimeter of both Rozelle and Blackwattle Bay with row boats staying on the starboard side and keeping a distance off of 25 metres to 40 metres from berthing structures and moored vessels.

The Glebe Rowing Club (GRC) website notes that training can comprise two to five laps of the course and the best water conditions for rowing are early morning or late afternoon. During meetings with members of the GRC it has been noted that Blackwattle Bay provides a 500 metre practice run, Rozelle Bay provides a one kilometre practice run, and weather permitting, White Bay to Barangaroo provides a 2km practice run. The GRC Club Handbook includes a Rowing Map (shown in Figure 3-19) that also indicates an extended rowing course through Johnstons Bay and into White Bay. However, it is noted on the GRC website that rowing in White Bay is undertaken on the weekend if water conditions are good and that a tinnie escort (shown in Figure 3-17) is required for rowing beyond White Bay.

Figure 3-17: Row boat with tinnie escort in Blackwattle Bay

Source: Haskoning, 2020

From review of information on the GRC and SUBC websites, rowing training occurs on most mornings during the week and over the weekend. Learn to row programs are also held by the clubs and are typically scheduled on Saturday or Sunday mornings at 9:00am-11:00am following early morning rowing training.

Sydney Secondary College (Blackwattle Bay Campus) is located on the western shoreline of Blackwattle Bay and offers rowing, kayaking and dragon boating as part of its school sports curriculum.

A J.B. Sharp Series rowing regatta was also held in 2016 with a racing course being set out within Rozelle Bay and Blackwattle Bay. This was attended by a number of Sydney rowing clubs and multiple rowing boat access points were utilised to launch boats onto the water for the event.

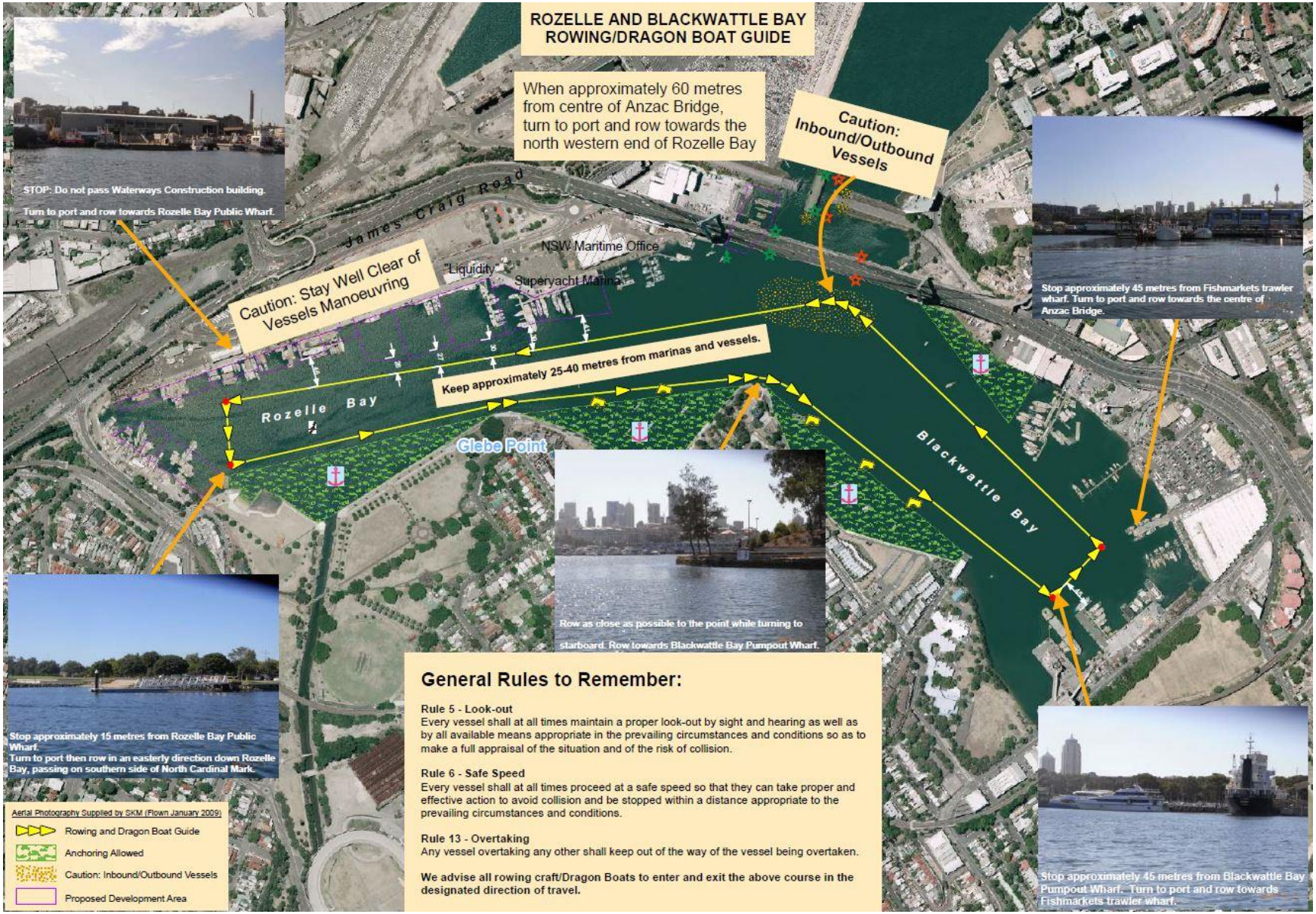
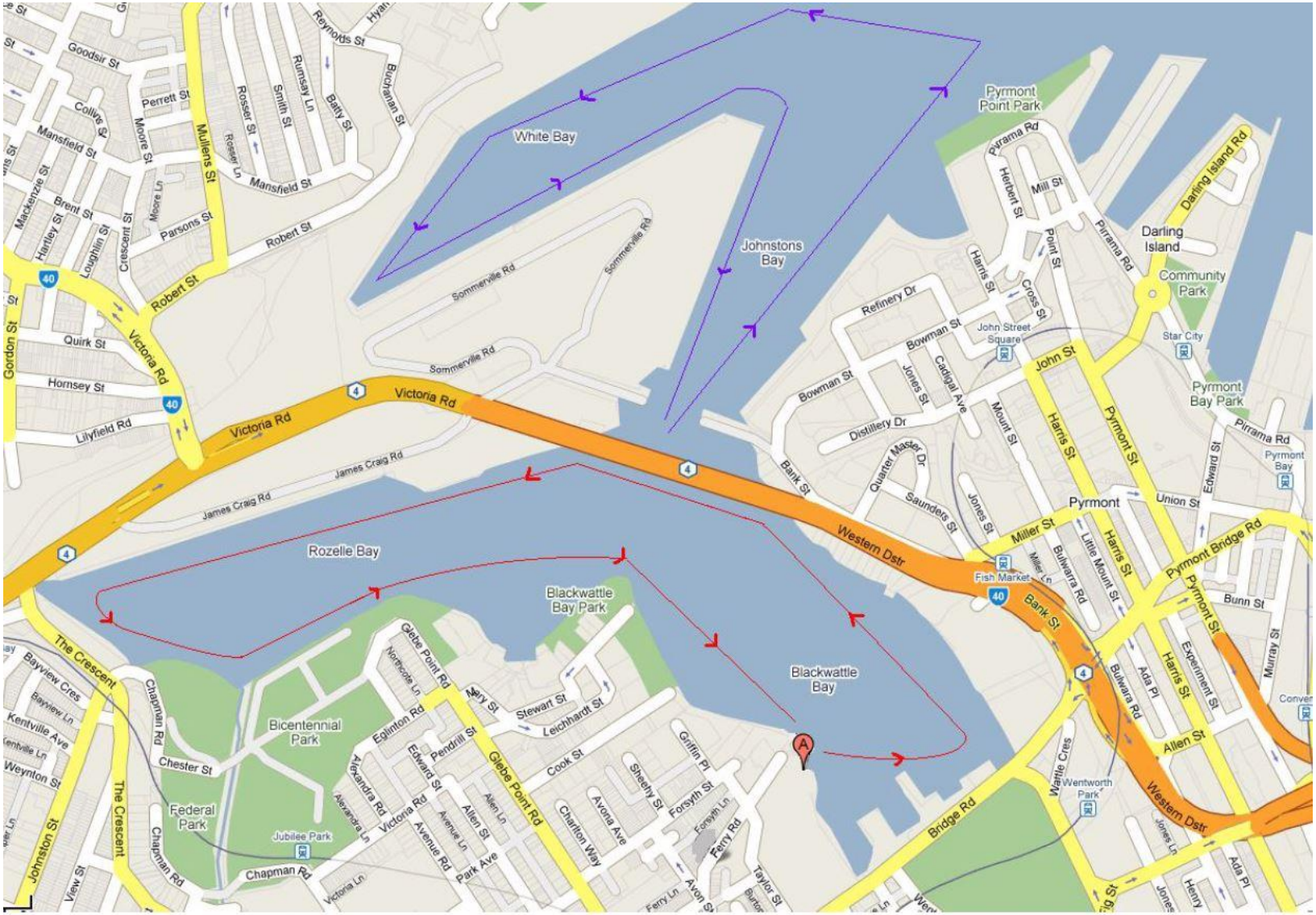


Figure 3-18: Recommended Rowing Course in Rozelle Bay and Blackwattle Bay (SSM, 2017)

Source: Haskoning, 2020



The red line shows the standard Blackwattle Bay and Rozelle Bay course, while the blue line shows the extended White Bay course (note that the direction of rowing is indicated by the arrows).

Figure 3-19: Glebe Rowing Club Handbook Rowing Map

Source: Haskoning, 2020

3.2.2.5 Dragon boats

Dragon boating is another popular passive recreation activity enjoyed on the waterway. Dragon Boats NSW Inc. occupy waterfront land used for dragon boat storage and have a dedicated ramp launching facility (including lighting) at Bank Street, Pyrmont (shown in Figure 3-20 and Figure 3-21). According to the Dragon Boats NSW (DBNSW) website, 15 dragon boating clubs use the Pyrmont facility on a regular basis for training ahead of dragon boating regattas held in regional NSW, interstate and in the Sydney metropolitan area. The Bank Street site is also used as an unsealed parking area for dragon boat club members and is surrounded by a chain wire security fence.

Figure 3-20: Dragon boat launching ramp at Bank Street, Pyrmont

Source: Haskoning, 2020

Figure 3-21: Onshore dragon boat storage racks and parking area at Bank Street. Pyrmont

Source: Haskoning, 2020

The dragon boating clubs follow the same training route around Rozelle Bay and Blackwattle Bay as described above for rowing clubs. This was confirmed by observations during a Saturday morning site visit. It was also observed that dragon boats can row two abreast in pairs (shown in Figure 3-22) and that dragon boat clubs also use the Blackwattle Bay Public Pontoon as a marshalling area for crew changes (refer Figure 3-23).

Figure 3-22: Dragon boats rowing two abreast

Source: Haskoning, 2020

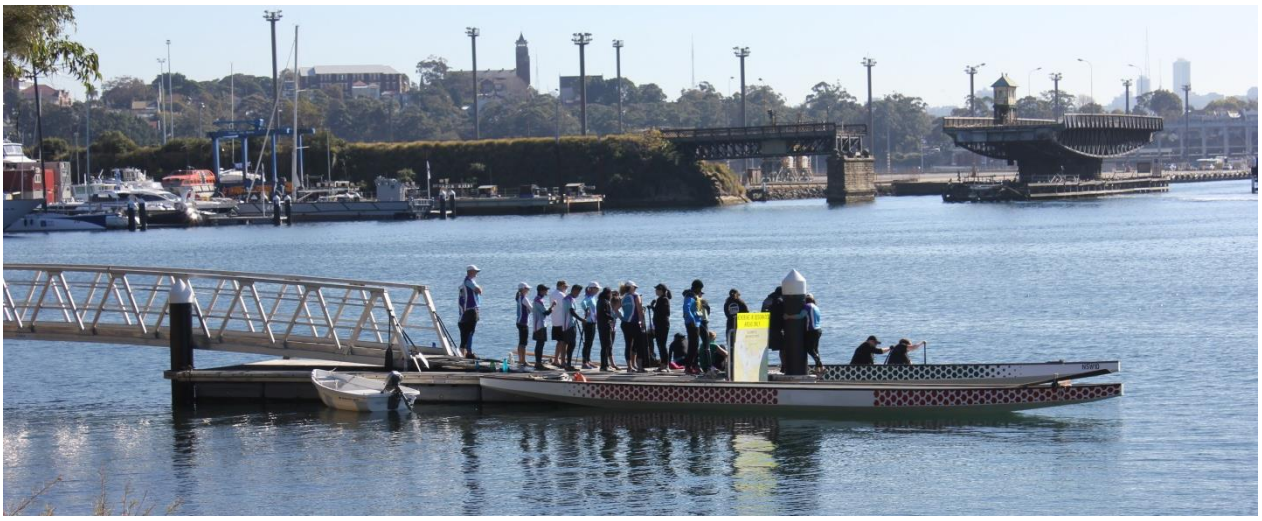


Figure 3-23: Dragon boat clubs using Blackwattle Bay Public Pontoon

Source: Haskoning, 2020

Dragon boat club training is generally held in the evenings during weekdays (most popular on Tuesday and Thursday evenings) and on Saturday and Sunday mornings.

DBNSW have advised that additional training by corporate groups takes place from November to January and is scheduled Monday to Friday between 5.30pm and 8.30pm. State crew training is also undertaken from January to March by 6 boats between 1:00pm and 4:00pm on Sundays. National crew training is also undertaken during early morning periods.

3.2.2.6 Canoes and kayaks

Rozelle Bay and Blackwattle Bay are highly regarded waterway areas for calm water kayaking and are listed as top destinations for kayaking within Sydney Harbour on websites of kayak tour operators, travel blogs and passive recreation groups. In addition to the sheltered waters, other attractions of the area for kayaking visitors include paddling beneath the iconic Glebe Island Bridge and Anzac Bridge, extensive foreshore park areas for picnicking, the Glebe Foreshore Walk including canoe storage racks (refer Figure 3-24), surrounding industrial and commercial activities, and dining options at the existing fish market and The Boathouse (Blackwattle Bay).

Figure 3-24: Canoe storage racks adjacent to Sydney Secondary College, Blackwattle Bay

Source: Haskoning, 2020

A dedicated kayak launching area is also provided at Bicentennial Park on the southern foreshore of Rozelle Bay (refer Figure 3-25). This comprises steps leading down to a 20m wide shallow beach area that has been recessed into the shoreline. A low freeboard pontoon is also provided at the adjacent public wharf.

Several sets of water access steps (refer Figure 3-26) are provided as part of the Glebe Foreshore Walk along the western shoreline of Blackwattle Bay (two sets of steps) and the southern shoreline of Rozelle Bay (three sets of steps). These steps provide water access from the elevated promenade level and could be used for launching of passive craft.

Figure 3-25: Steps leading to beach launching area for passive craft at Bicentennial Park, Rozelle Bay

Source: Haskoning, 2020

Figure 3-26: Water access steps along the western shoreline of Blackwattle Bay

Source: Haskoning, 2020

Annandale Boat Hire is located at the head of Rozelle Bay (behind Seawind Catamaran marina) and offers hiring of kayaks and stand-up paddleboards.

A range of passive craft were observed on the water during a Saturday morning site visit. These included fishing kayaks, outrigger canoes (refer Figure 3-27) and sea kayaks (refer Figure 3-28).

Figure 3-27: Outrigger canoe in Blackwattle Bay

Source: Haskoning, 2020

Figure 3-28: Sea kayaks in Rozelle Bay

Source: Haskoning, 2020

3.3 Transport infrastructure and services

3.3.1 Walking

Blackwattle Bay is located on several significant active transport corridors, directly connecting the site to major destinations within Sydney. These corridors include the following which are displayed in Figure 3-29:

- **Glebe to the Sydney CBD corridor** via Bridge Road / Pyrmont Bridge Road / Pyrmont Bridge
- **Blackwattle Bay to the Sydney CBD corridor** via Miller Street / Union Street / Pyrmont Bridge
- **Blackwattle Bay to Central Station corridor** via Jones Street / Wattle Street / Broadway

All the roads that form the walking corridors have footpaths on both sides aside from the Pyrmont Bridge Rd/ Bank St intersection that offers limited pedestrian crossings.

Town Hall and Central stations are a 30-minute walk from Blackwattle Bay.

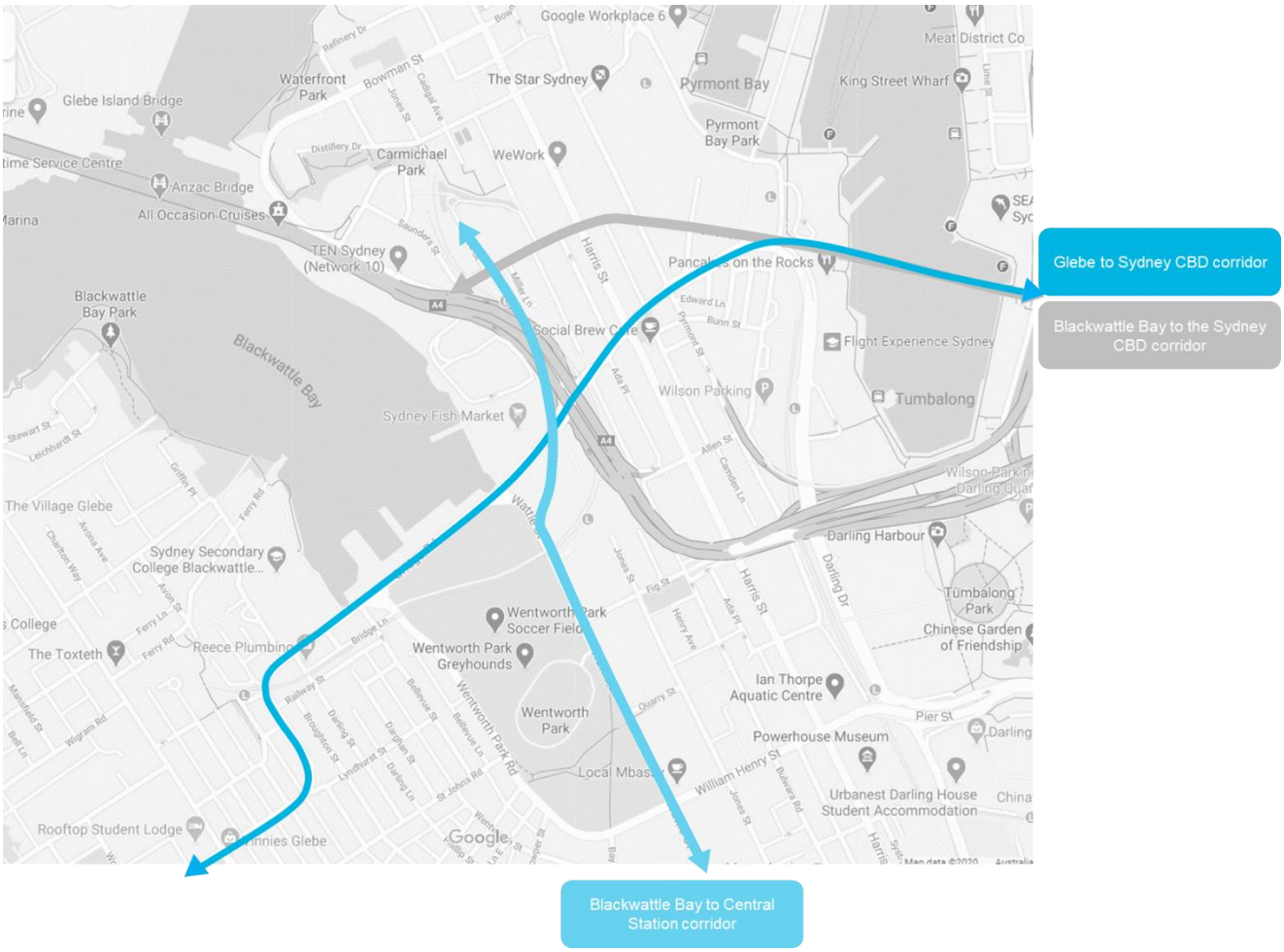


Figure 3-29: Main walking routes

Source: AECOM, 2020

The current road network provides walking opportunities for pedestrians in the area surrounding Blackwattle Bay. However, due to the largely industrial and port use history of the broader precinct, Blackwattle Bay currently features an incomplete waterfront promenade and few walking opportunities within and between the proposed destinations.

Street furniture and utilities such as street lights and traffic signs also create pinch points for pedestrians on footpaths.

The gradients along some footpaths on routes towards public transport stops and major transport hubs (Town Hall and Central stations) are steep, creating accessibility issues. The lack of active frontage and wayfinding along key active transport routes also pose safety risks.

3.3.2 Cycling

The current cycling routes around Blackwattle Bay are displayed in Figure 3-30:

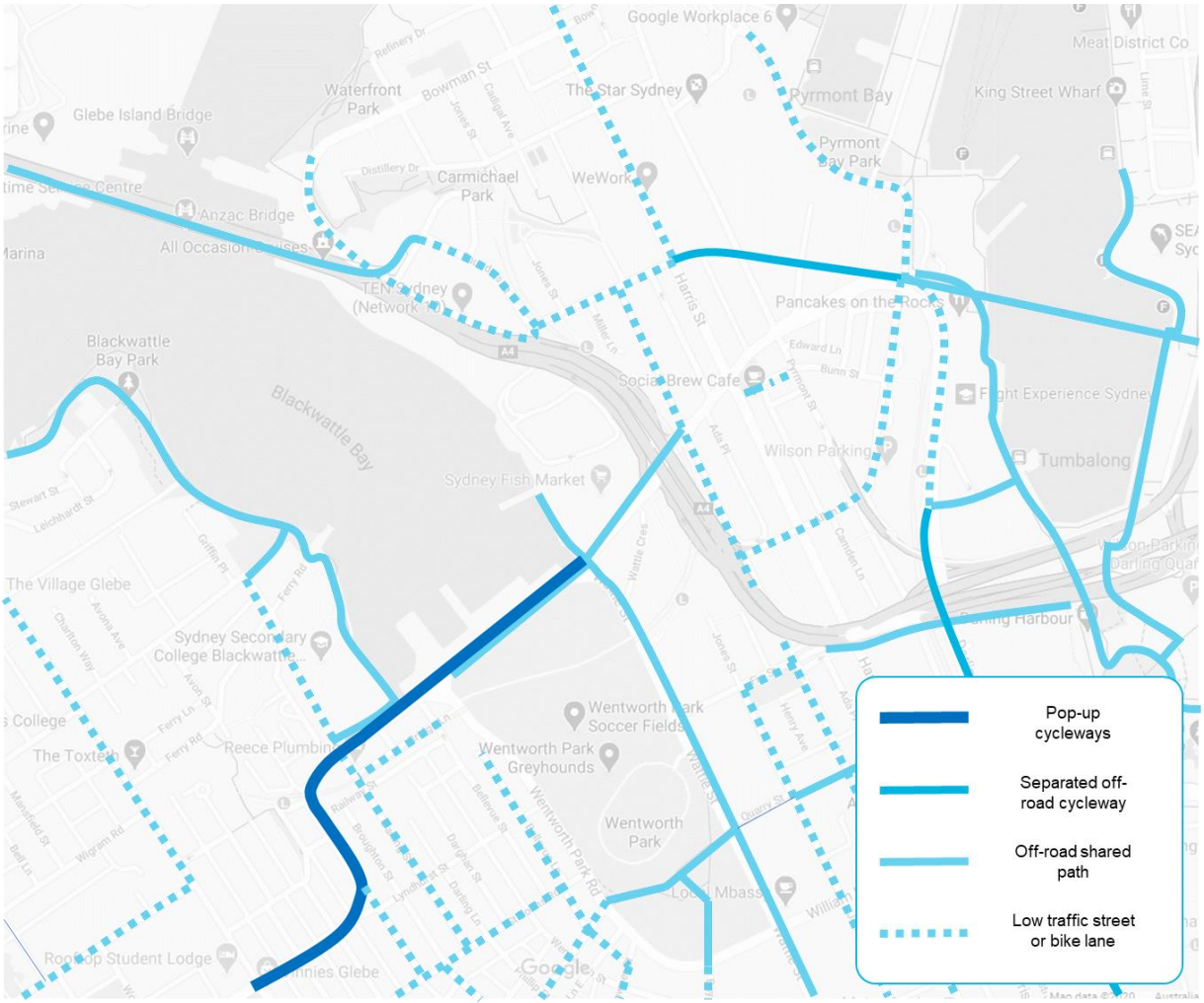


Figure 3-30: Blackwattle Bay Cycling Routes

Source: City of Sydney, Sydney Cycling Map, 2020

Blackwattle Bay has good accessibility from existing regional and local cycleways. Miller Street, Union Street and Pyrmont Bridge form the existing east-west cycle link between Blackwattle Bay and Sydney CBD via Pyrmont Bridge The low-speed, low-traffic nature of the roads makes this an attractive route. However, it has been observed that commuter cyclists use the more direct route via Pyrmont Bridge Road where there is no dedicated cycle lane.

Near Blackwattle Bay, the following dedicated cycling facilities are currently provided:

- **Shared paths:** Anzac Bridge, Victoria Road between Anzac Bridge and Birkenhead Point, along the foreshore of Rozelle Bay and Blackwattle Bay, Pyrmont Bay, Johnstons Bay and Jones Bay, The Crescent, through Jubilee Park, Bicentennial Park and Wentworth Park and along Darling Street and Union Street
- **Road shoulder:** Wentworth Park Road, Glebe Point Road, St Johns Road, Miller Street and Darling Drive
- **Mixed traffic lanes:** Ferry Road, Taylor Street, Glebe Street and Saunders Street.

In February 2015, Transport for NSW counted an average of about 1,750 cyclists using the Anzac Bridge cycleway on a typical weekday. It is the second highest use cycle connection in Sydney, behind Sydney Harbour Bridge. As of 2019, an average of 1,000 cyclists use the Anzac Bridge cycleway on a typical day.

City of Sydney counts in February 2015 show about 1,100 cyclists per day on Union Street. Recently in March 2020, City of Sydney recorded 1,571 cyclists passing through Union Street during the peak morning and afternoon hours.

In April 2021, Transport for NSW counted a typical weekly average of approximately 2,330 cyclists using the pop-up cycleway on Bridge Road. The success of the pop-up cycleway demonstrates local demand for this mode of transport and the importance of connectivity through the precinct, Pyrmont and beyond in order to achieve the proposed mode share targets.

From Blackwattle Bay, it takes 10 minutes to cycle to Central and Wynyard stations and 20 minutes to North Sydney.

3.3.3 Heavy Rail and Metro

Blackwattle Bay is not currently served by the Sydney Trains or the Sydney Metro networks. The closest train stations to the site are Town Hall Station, located a 1.7 kilometre walk to the east, and Central Station, a 2.1 kilometre walk to the south-east of Blackwattle Bay. These are highlighted in Figure 3-31.

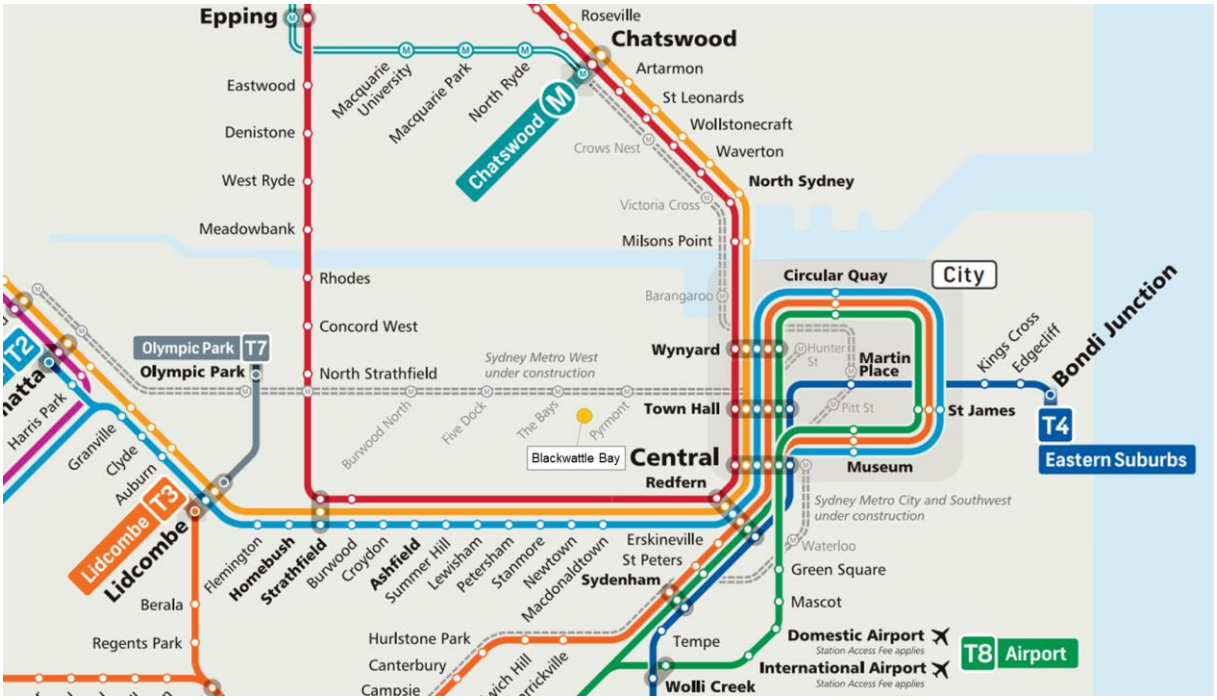


Figure 3-31: Surrounding Sydney public transport network

Source: Transport for NSW, adapted by AECOM 2020

3.3.4 Light Rail

The L1 Dulwich Hill Line (shown in Figure 3-32) links the Central Station and Dulwich Hill interchanges via Darling Harbour and Pyrmont. The L1 Dulwich Hill Line has an end-to-end journey time of approximately 36 minutes. Services broadly operate at eight-minute headways during peak periods, ten-minute headways during the interpeak period and 15-minute headways off peak during the evening or on weekends. Between Central Station and The Star, services operate 24 hours a day, seven days a week in both directions.

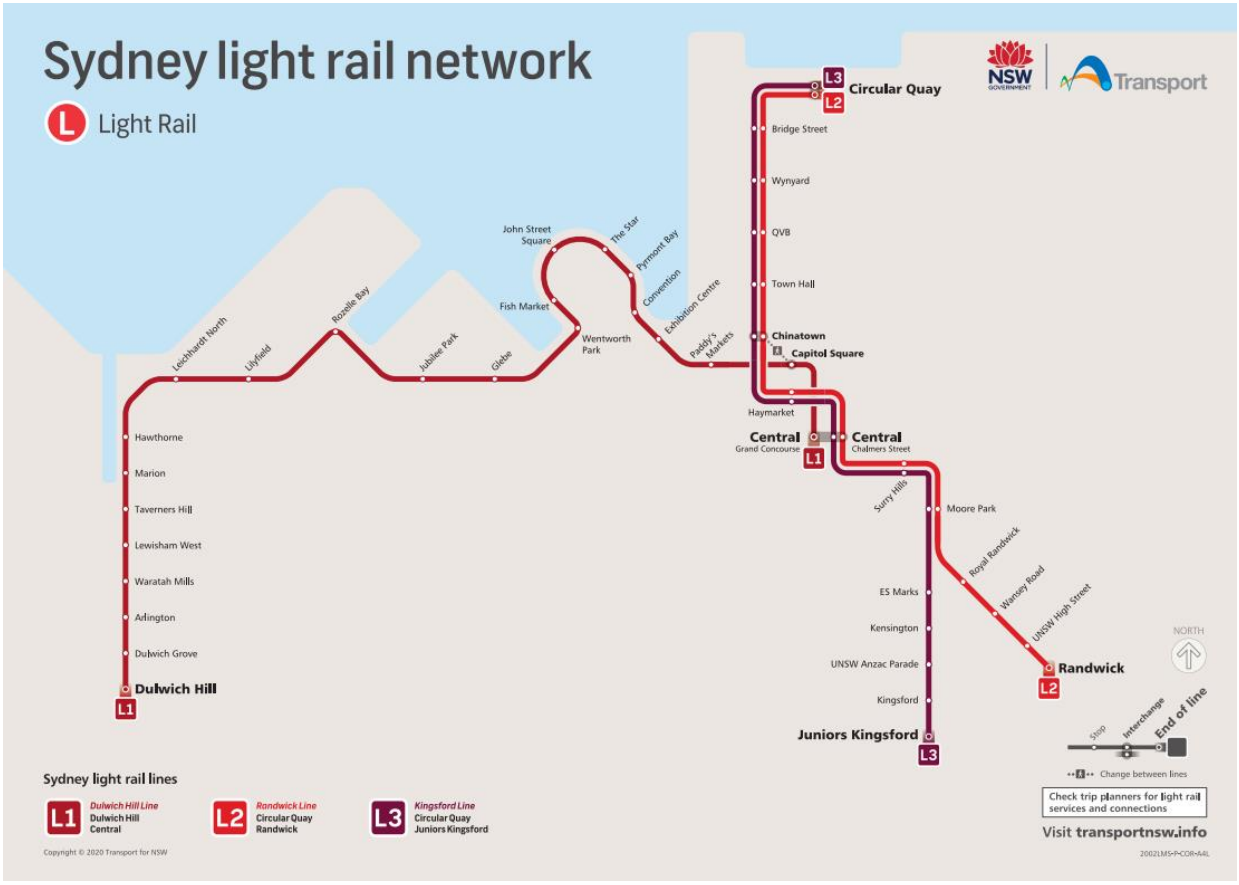


Figure 3-32: Sydney Light Rail network

Source: Transport for NSW, 2020

3.3.5 Bus

Five main bus routes currently service Blackwattle Bay:

- **370**: Coogee to Leichhardt Marketplace, operated by Transit Systems and stopping at Glebe Library on Glebe Point Road. This route connects Leichhardt and Coogee with an end-to-end journey time of 54 minutes. The service runs from 5:04am to 12:10am during weekdays. The eastbound route generally runs every ten minutes during the morning and afternoon peaks and every 15 minutes throughout the day. The westbound route generally runs once every ten minutes during the morning and afternoon peaks and every 15 minutes throughout the day.
- **389**: Bondi Junction to Pyrmont, operated by Transit Systems and stopping at Harris Street after Pyrmont Bridge Road. This route connects Bondi Junction and Pyrmont with an end-to-end journey time of 20 minutes. The service runs from 5:05am to 1:01am during weekdays. The eastbound route runs roughly every eight minutes with a similar frequency of every seven minutes during the afternoon peak. The westbound route runs roughly once every eight minutes with a similar frequency of every nine minutes during the afternoon peak.

- **431**: City Martin Place to Glebe Point, operated by Transit Systems and stopping at Glebe Library on Glebe Point Road. This route connects Martin Place and Glebe Point with an end-to-end journey time of 17 minutes. The service runs from 5:23am to 3:50am during weekdays. During the day, the eastbound route runs roughly every ten minutes with an increased frequency of every five minutes during the afternoon peak. During the day, the westbound route runs roughly once every ten minutes with an increased frequency of once every six minutes during the afternoon peak.
- **433**: Central Pitt Street to Balmain Gladstone Park, operated by Transit Systems and stopping at Glebe Library on Glebe Point Road. This route connects Central Station and Balmain with an end-to-end journey time of 24 minutes. The service runs from 5:36am to 12:00am during weekdays. During the day, the eastbound route runs roughly every 15 minutes with an increased frequency of every ten minutes during the afternoon peak. During the day, the westbound route runs roughly once every 20 minutes with an increased frequency of every seven minutes during the afternoon peak.
- **501**: Central Pitt Street to West Ryde via Ultimo and Pyrmont, operated by the State Transit Authority and stopping at Miller Street opposite Jones Street. This route connects West Ryde to Central Station with an end-to-end journey time of 41 minutes. The service runs from 4:37am to 3:30am during weekdays. During the morning peak the eastbound route runs roughly once every 15 minutes, once every 20 minutes throughout the rest of the day and with an increased frequency of every 10 minutes during the afternoon peak. During morning peak, the westbound route runs roughly once every 13 minutes, once every 20 minutes throughout the rest of the day and with an increased frequency of every seven minutes during the afternoon peak.

These routes are shown below in Figure 3-33.

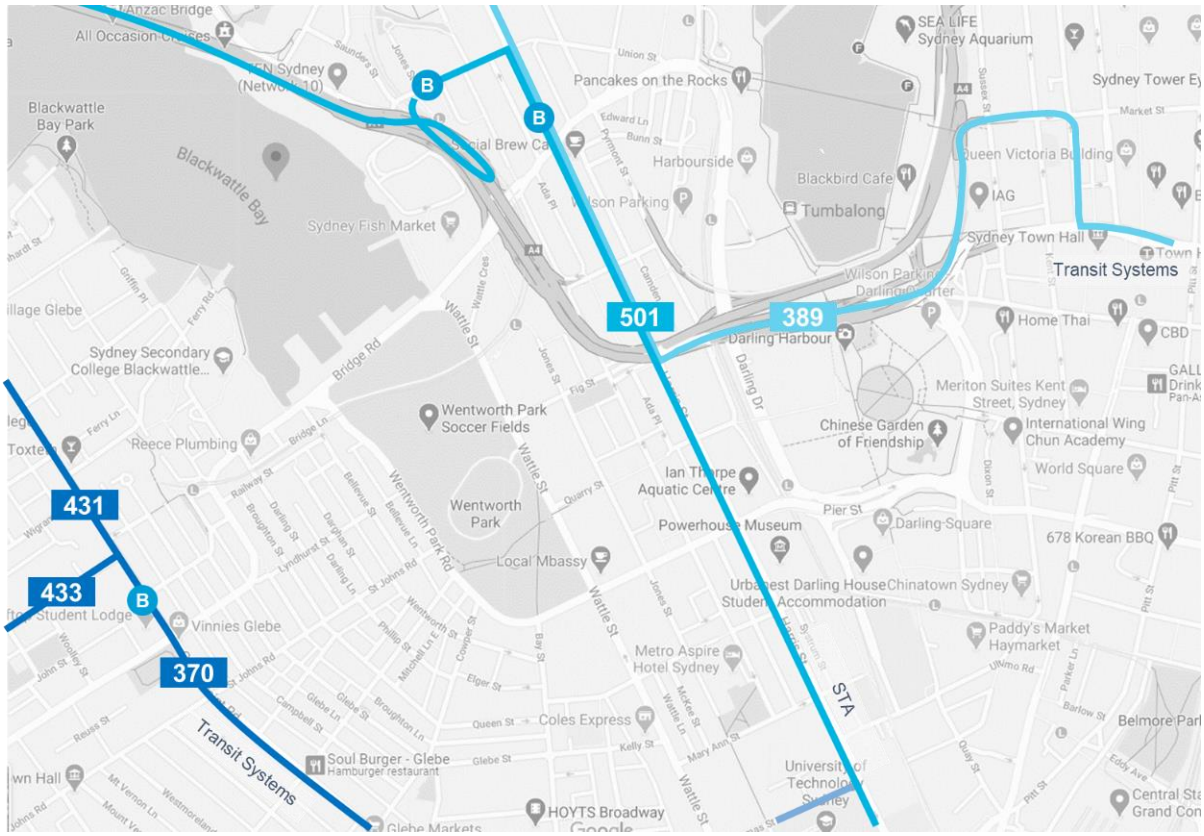


Figure 3-33: Bus routes servicing Blackwattle Bay

Source: Transport for NSW, adapted by AECOM 2020

Table 3-1 summarises the frequency of eastbound bus routes servicing Blackwattle Bay.

Table 3-1: Frequency of eastbound services

Route	Frequency		
	Morning	Afternoon	Other
370	10	15	10
389	8	7	8
431	10	5	10
433	15	10	15
501	15	10	20

Source: Transport for NSW

Table 3-2 summarises the frequency of westbound bus routes servicing Blackwattle Bay.

Table 3-2: Frequency of westbound services

Route	Frequency		
	Morning	Afternoon	Other
370	10	15	10
389	8	9	8
431	10	6	10
433	20	7	20
501	13	7	20

Source: Transport for NSW

3.3.6 Ferries

Blackwattle Bay is not served by public ferry services. An on-demand ferry service was launched in October 2019 by Transdev and ran between Barangaroo, Pirrama Park in Pyrmont, the current Sydney Fish Market and Blackwattle Bay in Glebe., as shown in Figure 3-34. It operated between 7:00am and 10:00pm on weekdays (excluding public holidays) and 8:30am and 9:30pm on weekends. The on-demand service is currently on hold and Transdev intends to restart it as soon as possible.

Figure 3-34: On-demand ferry service

Source: Transdev, 2020

3.3.7 Road network

Hierarchy

Road access to/from Blackwattle Bay is supported by a hierarchy of roads as defined in Roads and Maritime's *Schedule of Classified and Unclassified Roads*[1]:

- **State Roads:** Western Distributor, Harris Street, Bridge Road and Wattle Street
- **Regional Roads:** William Henry Street
- **Local Roads** that support the State and Regional Roads.

State Roads

The *NSW Road Management Arrangements* document defines state roads as 'major arterial links throughout New South Wales and within major urban areas.' State roads are principal road corridors for the movement of people and goods in Sydney. These roads also provide connections between Sydney and other capital cities (such as Melbourne, Brisbane and Canberra), major NSW cities (including Newcastle, Wollongong and those on the Central Coast) and smaller towns and cities across the state.

The Western Distributor is a prime example of a high-volume State Road, providing connections between the Sydney Harbour Bridge and the North Shore to the north, the Sydney CBD to the east and Western Sydney and Victoria Road to the west.

Transport for NSW is responsible for the management and funding of State Roads. Transport for NSW also regulates activities to promote road safety, traffic efficiency and the protection of road assets.

Regional Roads

Regional Roads perform an intermediate function between the main arterial network of State Roads and Local Government-controlled Local Roads. Regional Roads act as sub-arterial routes in major urban areas. The closest regional roads to Blackwattle Bay are William Henry Street and Pier Street. These roads form an east-west corridor, connecting Wentworth Park with Sydney CBD, and intersecting Wattle Street and Harris Street, which are both identified as State Roads.

Transport for NSW provides financial assistance to Local Governments for the management of Regional Roads within their jurisdictions. However, Regional Roads are the responsibility of the Local Government to fund, prioritise and maintain.

[1] Roads & Maritime Services, Schedule of Classified & Unclassified Regional Roads, January 2014

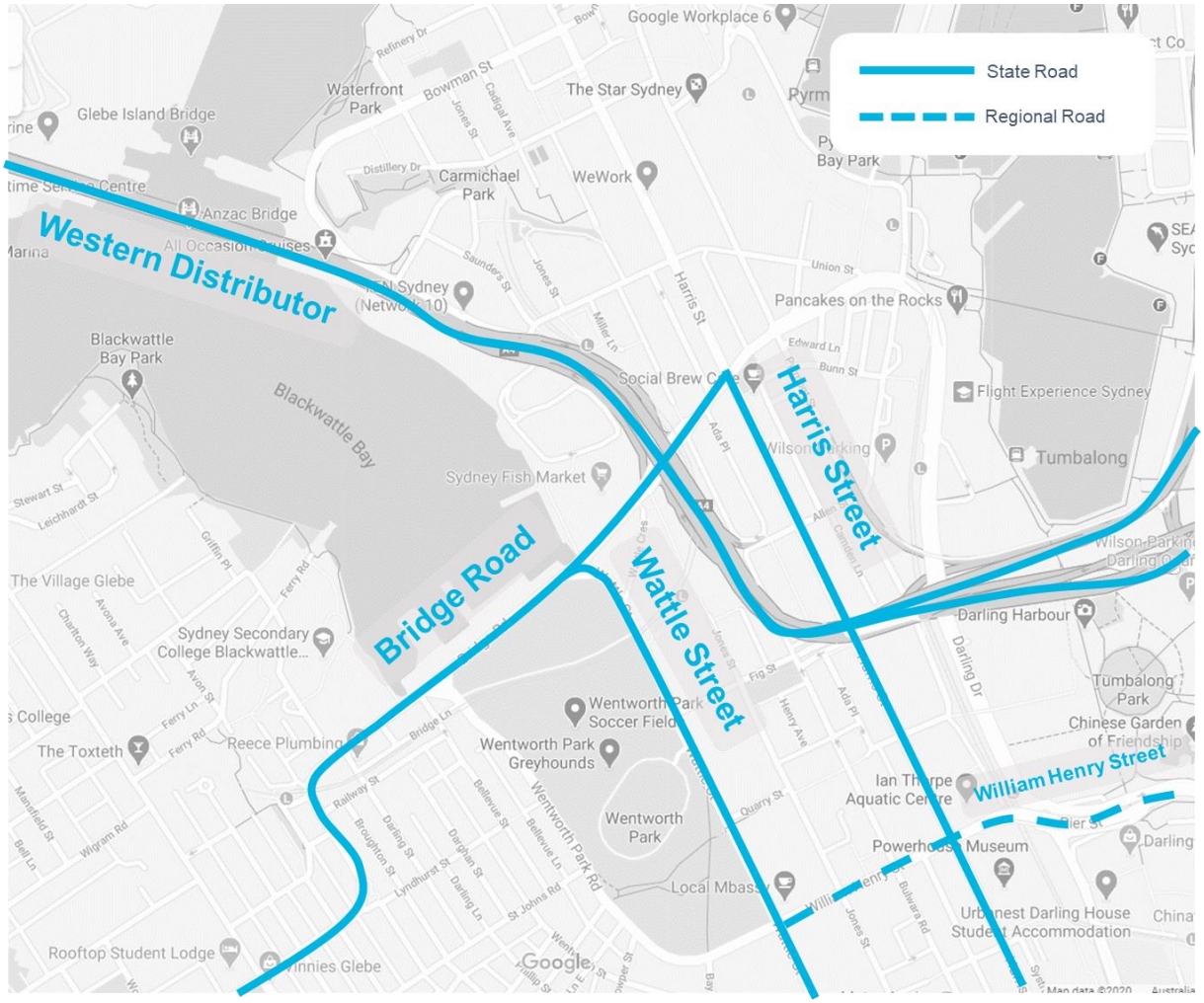


Figure 3-35: Key road links in the context of The Bays

Source: RTA Classified Roads Map – Greater Sydney Area, 2011 and adapted by AECOM, 2020

Local Roads

Local Roads make up the remaining routes under the jurisdiction of Local Governments. The *NSW Road Management Arrangements* define Local Roads as routes 'which provide for local circulation and access.' Local Roads are unclassified and therefore not included in the *Schedule of Classified and Unclassified Roads.*

As with Regional Roads, Local Roads are the responsibility of the Local Government to fund, prioritise and maintain. The State Government provides only limited assistance for funding Local Roads; however the Commonwealth Government's *Roads to Recovery Program* provides additional funding to local government. The *AusLink Strategic Regional Program* also provides Local Government with additional funding options for Local Roads.

Key Issues

A series of assessments have been undertaken for the State road network within Greater Sydney by Transport for NSW. A number of roads within and connecting to the Blackwattle Bay study area were reviewed, with key issues identified including.

- Speed limits degrade pedestrian and cycling environments, affecting user safety
- High volume of cyclists using the roads, with a pop-up cycle lane required
- Limited crossing opportunities, cycle parking facilities and narrow footpaths affecting both cyclists and pedestrians, improving accessibility, safety and connectivity

- A review of pedestrian and cycling connections to light rail stops
- Major land use and transport developments, including the Fish Market, Blackwattle Bay, WestConnex, and the Western Harbour Tunnel, will impact traffic demand. Such projects see a general focus on the reduction of private vehicle use within the study area.

3.3.8 Parking

The existing Sydney Fish Market accommodates 417 formal parking bays including 4 accessible spaces and 26 loading/service vehicle spaces. The car park has a high turn-over rate, with up to 30% of visitors parking on site for less than 15 minutes and almost 75% staying for less than an hour.

Parking demand exceeds available capacity by less than 4% between 12:00pm and 2:00pm on weekends, and approaches capacity on Fridays, particularly during the school term.

Close to 300 parking spaces, or more than 60% of overall capacity, are occupied by 7:00am on the site on weekdays. This is likely attributed to staff parking and trade vehicles from buyers attending the auction.

3.3.8.1 On-street parking controls

The below sections outline the on-street parking controls and traffic treatments on key roads in surrounding that surround the Blackwattle Bay SSP Study Area. An assessment of the on-street parking controls in relation to the Blackwattle Bay Precinct Plan is provided in Section 8.3.1.2.

Bank Street

A variety of kerbside controls are in place along Bank Street. In the northbound direction between Pyrmont Bridge Road and Miller Street, no parking is permitted. A kerbside bay is provided for authorised Transport for NSW, City of Sydney, NSW Police and State Transit Authority vehicles. From Miller Street to the Blackwattle Bay Marina the kerbside is primarily used for parking with 6-hour ticketed parking permitted between 8:00am and 7:00pm. In addition, a 15-minute bus stopping area is provided, with a series of no stopping areas in place where kerb indentations occur and the road narrows to one lane or for access to adjacent properties and intersecting roads.

In the southbound direction between the Blackwattle Bay Marina and Miller Street, 6-hour ticketed parking is permitted between 8:00am to 7:00pm or 9:00am to 4:00pm on weekdays and between 8:00am and 7:00pm on weekends with no restrictions outside of this time period. Some parts of this parking zone are denoted as 15-minute parking between 7:00am to 9:00am and 4:00pm to 7:00pm on weekdays, loading zones between 7:00am to 6:00pm on weekdays and no stopping areas where kerb indentations occur and the road narrows to one lane or for access to adjacent properties and roads. No parking is permitted along Bank Street from Miller Street to Pyrmont Bridge Road.

Miller Street

The kerbside lane in the eastbound direction of Miller Street has a mix of controls in place. From Bank Street to Saunders Street, a no stopping zone is in operation to allow for access to the bus zone located between Saunders Street and Jones Street. From Jones Street to Harris Street, 2-hour ticket parking is in place with provision for a loading zone at Little Mount Street which is in operation between 8:00am to 6:00pm from Monday to Saturday. In addition, a dedicated car share parking space is provided opposite the Woolworths Metro at Bulwara Road.

The kerbside lane of Miller Street in the westbound direction between Harris Street and Jones Street is primarily used for on-street parking with 1-hour or 2-hour ticketed parking permitted and a small area of 15-minute parking between 7:00am to 7:00pm on weekdays adjacent to the Woolworths Metro at Bulwara Road. A dedicated car share parking space is provided before Miller Lane. Note that permit holders are excepted from these parking controls. From Jones Street to Bank Street, the kerbside lane is utilised as a bus zone then with no stopping permitted to allow for vehicle access to Bank Street and nearby on-ramps to the Western Distributor.

Harris Street

The indented kerbside lane in the northbound direction on Harris Street has a range of controls in place in the block between Pyrmont Bridge Road and Miller Street / Union Street. The kerbside is primarily utilised for on-street parking with 15-minute ticketed parking between 8:00am to 6:00pm on

weekdays and 2-hour ticketed parking at all other times allowed, with permit holders excepted. In addition, a bus zone and mail zone are provided with some areas of no parking to facilitate access to private properties.

The kerbside lane in the southbound direction of Harris Street between Miller Street / Union Street and Pyrmont Bridge Road has a range of controls in place. The primary use of the kerbside is for on-street parking with 1-hour ticketed parking between 8:00am to 6:00pm on weekdays, and 2-hour ticketed parking at all other times, with permit holders excepted. In addition, a loading zone is in operation between 7:00am to 6:00pm on weekdays and 7:00am to 12:00pm noon on Saturdays and a bus zone is provided just before a no stopping zone in the left-hand turning lane which facilitates access to Pyrmont Bridge Road.

Along Harris Street, some kerbside parking spaces in both directions have been reclaimed as extended footpaths, outdoor dining areas, dedicated seating and planting areas to add urban amenity.

Pyrmont Bridge Road

The eastbound kerbside lane on Pyrmont Bridge Road is denoted as a clearway between 6:00am to 10:00am and 3:00pm to 7:00pm on weekdays between Wattle Street and Harris Street. However, no parking is permitted outside of these times. In addition, an indented bus zone bay is provided for use between Bulwara Road and Little Mount Street.

The westbound kerbside lane on Pyrmont Bridge Road is denoted as no stopping during all times.

Bridge Road

The eastbound kerbside lane on Bridge Road is denoted as a clearway between 6:00am to 10:00am and 3:00pm to 7:00pm on weekdays. However, no parking is permitted outside of these times on the stretch of road between Taylor Street and Wattle Street. In addition, a bus zone is provided between Taylor Street and Darghan Street.

The same kerbside lane controls are in place in the westbound direction between Wattle Street and Bellevue Street. In addition to the clearway, an all-day bus zone and works zone is in operation between 10:00am to 2:30pm on weekdays and 7:00am to 3:30pm on Saturdays which is located in the block between Bellevue Street and Darghan Street. An additional bus zone is provided between Darghan Street and Darling Street.

Taylor Street

No parking is permitted along the northbound kerbside of Taylor Street between Bridge Road and Ferry Road.

No parking is permitted for most of the southbound kerbside of Taylor Street, with an additional lane added to the roadway at the south-west access point to Sydney Secondary College Blackwattle Bay Campus. Approximately 65 metres of this lane is denoted as a bus zone for use between 8:00am to 10:00am and 1:00pm to 4:00pm on weekdays. Outside of these times it is unrestricted parking. However, it should be noted that the lane is utilised as an informal drop off point for access to the school. The kerbside then returns to no parking on the approach to the intersection with Bridge Road.

Ferry Road

The eastbound kerbside of Ferry Road provides unrestricted on-street parking along the length of the street, with an area designated to motorbikes only and access maintained to the Ferry Apartments.

The westbound kerbside also provides unrestricted on-street parking, for a stretch of approximately 43 metres between Ferry Road and a driveway access point to Sydney Secondary College Blackwattle Bay Campus.

3.4 Travel behaviour

The 2016 Census of Population and Housing provides an indication of current work-related travel behaviours for statistical areas in Australia. Blackwattle Bay is predominantly located in the Pyrmont-Ultimo statistical area (Pyrmont-Ultimo).

The blue arrows in Figure 3-36 show the distribution of residents commuting from Pyrmont-Ultimo for work. The majority of Pyrmont-Ultimo residents (64%) commuting to work travel east. This includes around 40% who work in the Sydney CBD.

The orange arrows show the distribution of workers commuting to Pyrmont-Ultimo for work. Most workers (42%) in Pyrmont-Ultimo commute to work from the west, as shown in Figure 3-36.

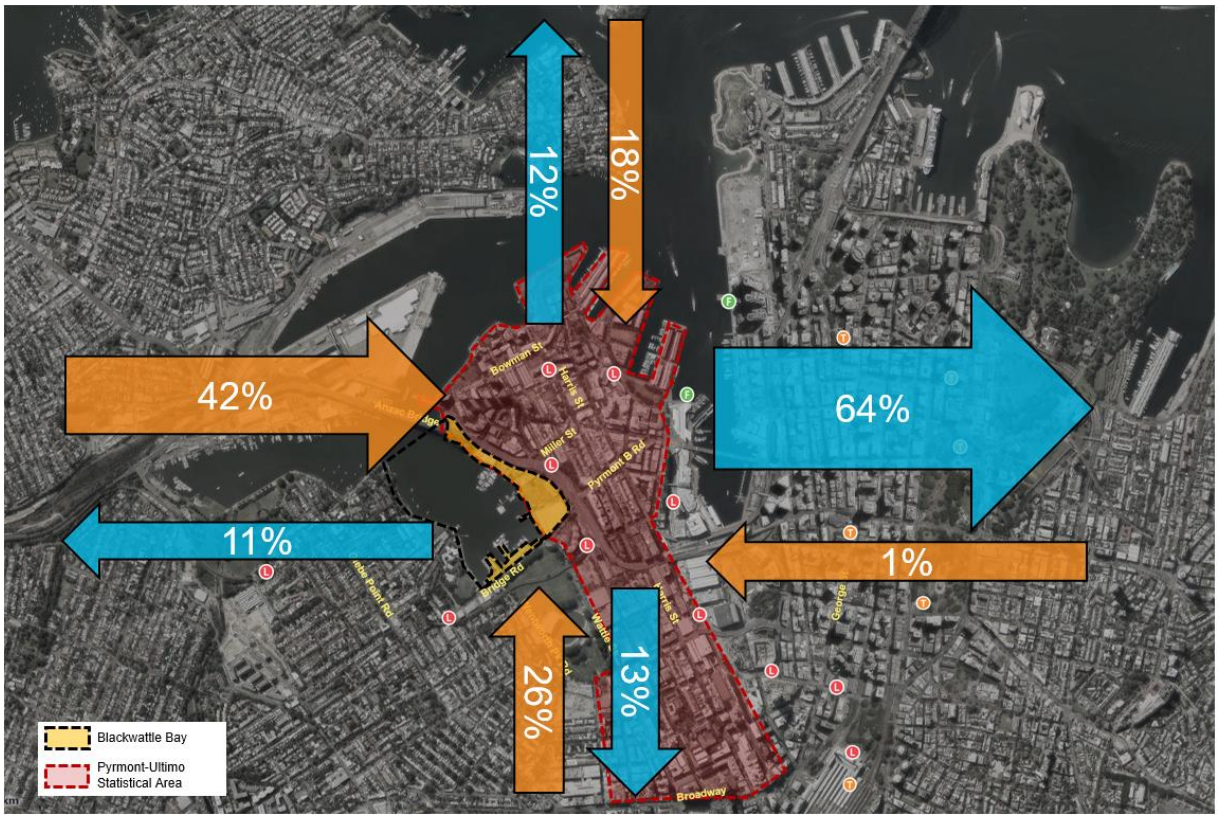


Figure 3-36: Work trip distribution for Pyrmont-Ultimo

Source: 2016 Census of Population and Housing, Australian Bureau of Statistics, 2016

3.4.1 Mode share for residents commuting to work from Pyrmont-Ultimo

Active transport is the preferred mode for residents commuting to work from Pyrmont-Ultimo. Around 45% of residents walk or cycle to work from Pyrmont-Ultimo. The proximity of Pyrmont-Ultimo to Sydney CBD encourages 66% of residents to walk or cycle to work in Sydney CBD.

29% of residents catch public transport to work from Pyrmont-Ultimo. Existing transport infrastructure and services (such as the Inner West light rail and local bus routes) mean statistical areas in the Inner West have the highest public transport mode share for residents catching public transport to work from Pyrmont-Ultimo.

26% of residents use a private car to commute to work from Pyrmont-Ultimo. About 30% of these private car trips are to Sydney CBD or Pyrmont-Ultimo, while around 40%of private car work trips from Pyrmont-Ultimo are to destinations to the west.

The existing mode share for residents commuting to work from Pyrmont-Ultimo is shown in Figure 3-37, indicating an overall 74% / 26% modal split for active and public transport / private car.

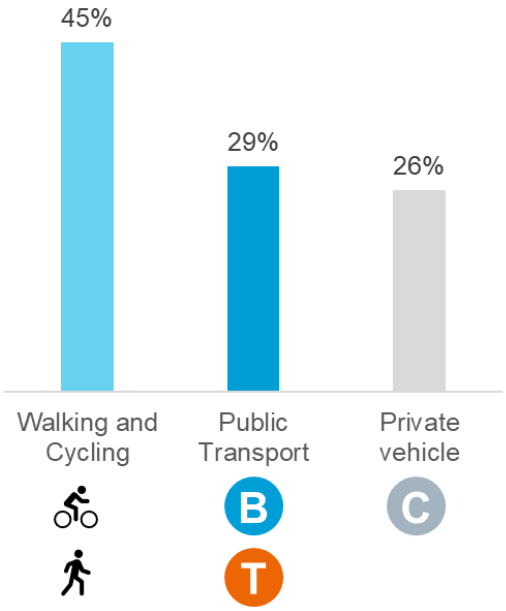


Figure 3-37: Mode share split of commuters travelling to work from Blackwattle Bay (Pyrmont-Ultimo)

Source: 2016 Census of Population and Housing, Australian Bureau of Statistics, 2016

Information on destinations of commuters travelling from Blackwattle Bay is shown below in Table 3-3. The majority of commuters from Pyrmont-Ultimo are travelling relatively short distances (40% to Sydney CBD, 18% within Pyrmont-Ultimo) while some travel a bit further out to North Sydney – Lavender Bay and Surry Hills.

Table 3-3: Destination of commuters from Blackwattle Bay

Destination	Number	Percentage
Sydney – Haymarket – The Rocks	4,544	40%
Pyrmont-Ultimo	2,067	18%
North Sydney – Lavender Bay	309	3%
Surry Hills	290	3%
Newtown – Camperdown – Darlington	167	1%
Other	4,118	35%
Total	**11,495**	**100%**

Source: 2016 Census of Population and Housing, Australian Bureau of Statistics, 2016

3.4.2 Mode share for workers commuting to work in Pyrmont-Ultimo

Approximately 32,500 workers commuted to Pyrmont-Ultimo for work.

Public transport is the preferred mode for workers commuting to work in Pyrmont-Ultimo. 54% of workers catch public transport to work in Pyrmont-Ultimo.

35% of workers use a private car to commute to work in Pyrmont – Ultimo. About 40% of these private car trips come from west of Pyrmont-Ultimo.

Walking and cycling account for 11% of work trips to Pyrmont-Ultimo. Most active transport work trips are made from surrounding suburbs such as Glebe, Chippendale or Sydney CBD.

Existing mode share for workers commuting to work in Pyrmont-Ultimo is shown in Figure 3-38, indicating an overall 65% / 35% modal split by active and public transport / private car.

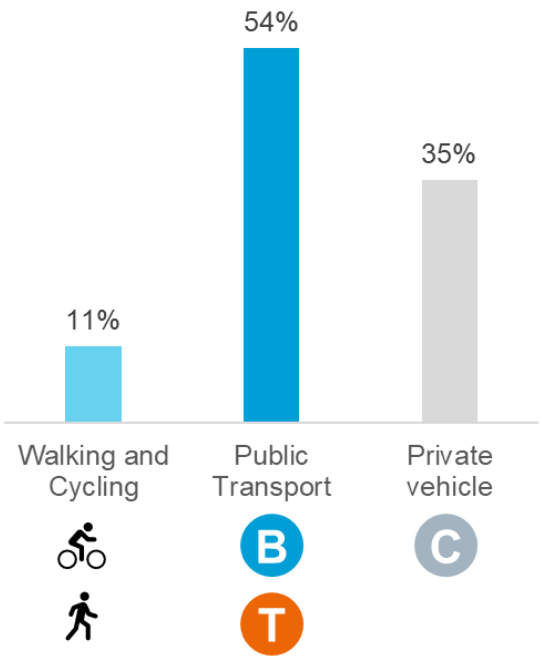


Figure 3-38: Mode share split of commuters travelling to work to Blackwattle Bay (Pyrmont-Ultimo)

Source: 2016 Census of Population and Housing, Australian Bureau of Statistics, 2016

3.5 Travel demand

3.5.1 Light Rail

The L1 Dulwich Hill Light Rail Line services Blackwattle Bay with three main stops (Glebe, Wentworth Park, Fish Market). This is shown in Figure 3-39 below.

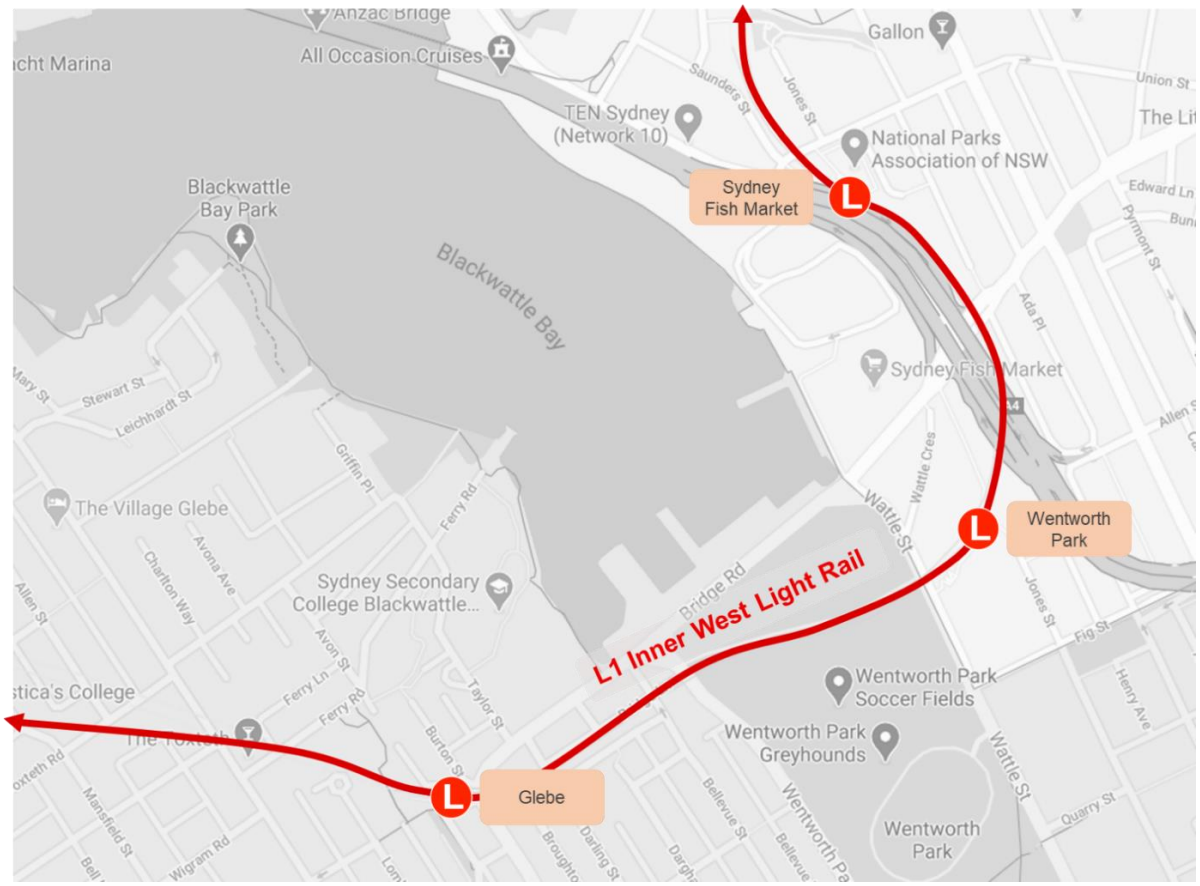


Figure 3-39: Light rail stations servicing Blackwattle Bay

Source: Transport for NSW, adapted by AECOM 2020

Travel data from Transport for NSW obtained by AECOM identifies the customer patronage on the L1 Inner West Light Rail during the morning peak hour (8:00am to 9:00am) and afternoon peak hour (5:00pm to 6:00pm). The data includes both inbound (eastbound) and outbound (westbound) directions and includes monthly data from November 2019 and February 2020.

Key findings from the data are listed below:

- There is higher patronage (63% average capacity) on inbound routes during the morning peak and outbound routes during the afternoon peak.
- There is lower patronage (15% average capacity) on inbound routes during the afternoon peak and outbound routes during the morning peak.
- During the morning peak, inbound services have an average of 30% spare capacity and can transport in an additional 434 passengers into Blackwattle Bay.
- During the afternoon peak, outbound services have an average of 39% spare capacity and can transport out an additional 476 passengers away from Blackwattle Bay.
- The closest stops to Blackwattle Bay on the L1 Dulwich Hill Line are Fish Market, Wentworth Park and Glebe. March 2019 patronage data collected by Transport for NSW indicates the majority of services operating through these stops have spare capacity, as shown in Table 3-4 and Table 3-5**.** Further travel demand analysis is provided in Section 3.5.1.

Table 3-4 shows the number and maximum capacity of services during the weekday morning and afternoon peak periods on inbound and outbound routes to and from Blackwattle Bay.

Table 3-4: Number of weekday peak period services and standard capacity on L1 Dulwich Hill Line

Metric	Dulwich Hill to Central (inbound)		Central to Dulwich Hill (outbound)	
Time	8:00am–9:00am	5:00pm–6:00pm	8:00am–9:00am	5:00pm–6:00pm
Number of services	7	7	4	6
Total capacity	**1,442**	**1,442**	**824**	**1,236**

Source: Transport for NSW, 2020

Table 3-5 shows the weekday inbound patronage and capacity of the L1 Dulwich Hill Line during the morning peak hour (8:00am to 9:00am) and the afternoon peak hour (5:00pm to 6:00pm).

995 passengers are onboard inbound services on arrival at the Glebe stop. This equates to 69% of the standard capacity for inbound services. This reduces to 61% (or 879 passengers) of the standard capacity after the Fish Market stop.

Table 3-5: Weekday inbound patronage and capacity of L1 Dulwich Hill Line services

Description	Dulwich Hill to Central (inbound)	
Time	8:00am-9:00am	5:00pm-6:00pm
Total passengers onboard L1 Dulwich Hill services on arrival at Glebe stop	995	176
Capacity used	**69%**	**12%**
Total passengers onboard L1 Dulwich Hill services on departure from Fish Market stop	879	307
Capacity used	**61%**	**21%**

Source: Transport for NSW, 2020

Table 3-6 shows the weekday outbound patronage and capacity of the L1 Dulwich Hill Line during the morning peak hour (8:00am to 9:00am) and the afternoon peak hour (5:00pm to 6:00pm).

719 passengers are onboard outbound services on arrival at the Sydney Fish Market stop. This equates to 50% of the standard capacity for outbound services. This increases to 53% (or 761 passengers) of the standard capacity after the Glebe stop

Table 3-6: Weekday outbound patronage and capacity of L1 Dulwich Hill Line services

Description	Central to Dulwich Hill (outbound)	
Time	8:00am-9:00am	5:00pm-6:00pm
Total passengers onboard L1 Dulwich Hill services on arrival at Fish Market stop	162	719
Capacity used	**20%**	**58%**
Total passengers onboard L1 Dulwich Hill services on departure from Glebe stop	44	761
Capacity used	**5%**	**62%**

Source: Transport for NSW, 2020

3.5.2 Bus

Five main bus routes service Blackwattle Bay. More detail can be found in above in Section 3.3.5. The routes are shown in Figure 3-33 and are listed below in Table 3-7.

Table 3-7 Bus routes servicing Blackwattle Bay

Route Number	Route name	Stop	Stop ID	Operator
370	Coogee to Leichhardt Marketplace	Glebe Library on Glebe Point Road Glebe Point Rd opp Glebe Library	203735 203724	Transit Systems
389	Bondi Junction to Pyrmont	Harris St after Pyrmont Bridge Rd Harris St at Pyrmont Bridge Rd	200928 200916	Transit Systems
431	City Martin Place to Glebe Point	Glebe Library on Glebe Point Road Glebe Point Rd opp Glebe Library	203735 203724	Transit Systems
433	Central Pitt St to Balmain Gladstone Park	Glebe Library on Glebe Point Road Glebe Point Rd opp Glebe Library	203735 203724	Transit Systems
501	Central Pitt St to West Ryde via Ultimo & Pyrmont	Harris St after Pyrmont Bridge Rd Harris St at Pyrmont Bridge Rd	200928 200916	STA

Source: Transport for NSW, 2020

Travel data from Transport for NSW, obtained by AECOM identifies the customer patronage on above routes during the morning (8:00am to 9:00am) and afternoon peaks (5:00pm to 6:00pm). The data includes both inbound (towards Blackwattle Bay) and outbound (away from Blackwattle Bay) directions during March 2019. Key findings from the data are listed below:

- In general, there is higher patronage on inbound routes during the morning peak and outbound routes during the afternoon peak
- Route 370 has the lowest patronage (18% average occupancy) and has potential to transport an additional 974 passengers to and from Blackwattle Bay. However, the long travel time of the route disincentivises bus travel.
- Route 501 has the highest patronage (53% average occupancy) with occupancy of 84% of capacity on the inbound direction during morning peak and occupancy of 75% of capacity on the outbound direction during afternoon peak. This means that on average, the service has limited capacity to transport an additional passengers (685) throughout the day.
- Routes 389, 431, 433 have an average of 35% occupancy throughout the day. This average increases to 41% occupancy for morning peak inbound routes and afternoon peak outbound routes. This means that on average, the services have ample capacity to transport additional passengers (3194) throughout the day.

3.6 Road network performance

3.6.1 Overview

As part of this commission, AECOM has developed a VISSIM microsimulation model to understand the road network performance surrounding Blackwattle Bay under existing traffic operations and to provide a robust platform on which the impacts of future year development scenarios on the road network can be assessed.

The purpose of this section is to document the 2017 base year model development process, the calibration and validation results and the performance of the base year network surrounding the Blackwattle Bay development site.

3.6.2 Intersection performance

As defined in the *Guide to Traffic Generating Developments* published by Roads and Maritime in 2002, average delay was used to assess the actual performance of the intersections, with Level of Service (LOS) used as an index. The average delays for different LOS is outlined in Table 3-8**.**

Table 3-8: Level of service criteria for intersections

Level of Service	Average Delay/Veh (s/veh)	Traffic Signals | Roundabout	Give Way | Stop Signs
A	≤ 14	Good operation	Good operation
B	14 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28 to 42	Satisfactory	Satisfactory, but accident study required
D	42 to 56	Operating near capacity	Near capacity and accident study required
E	56 to 70	At capacity; at signals incidents will cause excessive delays Roundabout will require other control mode	At capacity; requires other control mode
F	> 70	Over Capacity, unstable operation	Over Capacity, unstable operation

LOS D is generally accepted by the former Roads and Maritime as a design constraint. It should also be noted that capacity constraint can be used as a demand management technique and that over-provision of capacity can encourage more car use. In order to show the LOS throughout the simulation period, the average vehicle delay was extracted from the model in one hour intervals. Delay is defined as the time difference between the theoretical travel time for a vehicle to travel from an upstream intersection through a specified intersection at the sign-posted speed, and the average travel time recorded by the simulation.

The following seven key intersections were assessed inside the core model area. It should be noted that the performance of any intersection inside the model boundary area does not consider the impacts of network bottlenecks outside the model boundary area.

1. Bank Street / Miller Street / Existing Fish Market Entry
2. Pyrmont Bridge Road / Bank Street / Western Distributor off-ramps
3. Bridge Road / Wattle Street / Pyrmont Bridge Road
4. Harris Street / Miller Street
5. Harris Street / Pyrmont Bridge Road
6. Bridge Road / Wentworth Park Road / New Sydney Fish Market
7. Glebe Point Road / Bridge Road.

Table 3-9 presents the overall Level of Service at the seven key intersections for the morning peak period. Intersection modelling results indicate that the Pyrmont Bridge Road / Bank Street intersection is operating at Level of Service 'F' in the morning peak period. The Bank Street and Miller Street intersection is currently operating at Capacity (Level of Service 'E') in the morning peak period. All of the remaining intersections perform at or above a Level of Service 'D.'

Table 3-9: Intersection performance at seven key intersections (morning peak hour 8:00am to 9:00am)

Intersection	Traffic Volume (veh)	Average delay per vehicle (s)	LoS
Bank Street / Miller Street / Fish Market Entry	889	57	E
Pyrmont Bridge Road / Bank Street / Western Distributor off-ramps	3,578	77	F
Bridge Road / Wattle Street / Pyrmont Bridge Road	2,499	51	D
Harris Street / Miller Street	824	20	B
Harris Street / Pyrmont Bridge Road	2,330	55	D
Bridge Road / Wentworth Park Road	2,087	8	A
Glebe Point Road / Bridge Road	1,977	50	D

3.6.3 Queue lengths

Precise queue length validation is difficult in microsimulation modelling due to the volatility and random nature of queuing. Therefore, there are no set guidelines for quantitative queue length calibration and general trends should be replicated in the modelling. Travel time survey generally reflects the delays on approaches along the survey route.

During the queue length check in the model, AECOM used the report prepared by TMA modelling team based on a site visit observation carried out on Wednesday 14 March 2018. It is unknown how long the queue length observation was made at each intersection and there was no queue length data supplied to AECOM modelling team. Therefore, only a qualitative assessment was undertaken to compare the modelled queue lengths with the site visit observation.

Figure 3-40 to Figure 3-43 show existing queue conditions in the morning peak. When comparing the modelled queue lengths with site visit observations, the modelled queue lengths are generally representative of existing traffic conditions.

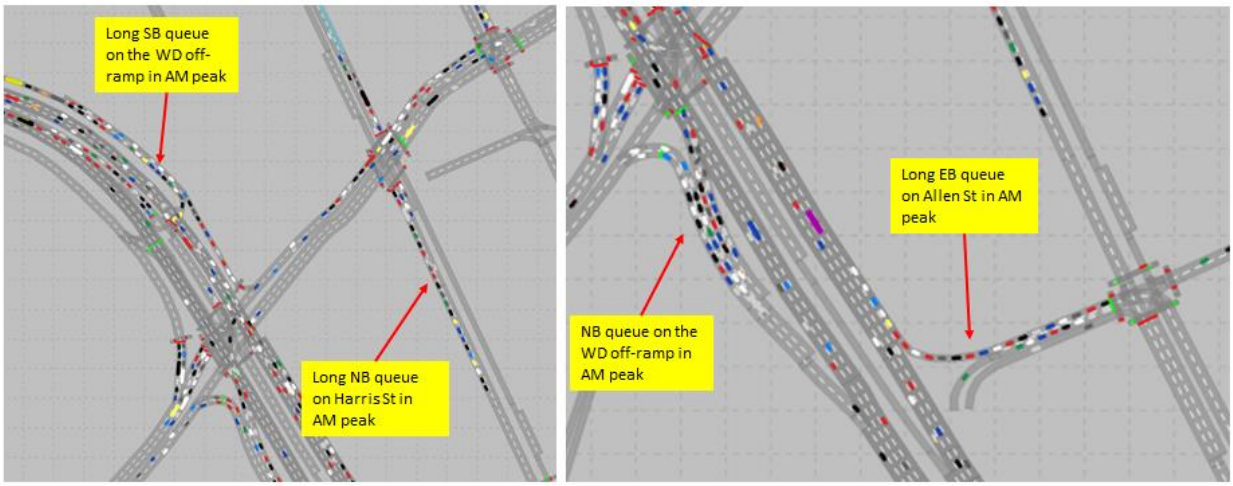


Figure 3-40: Morning peak queue conditions on Bank Street, Western Distributor off-ramp, Harris Street and Allen Street off-Ramp

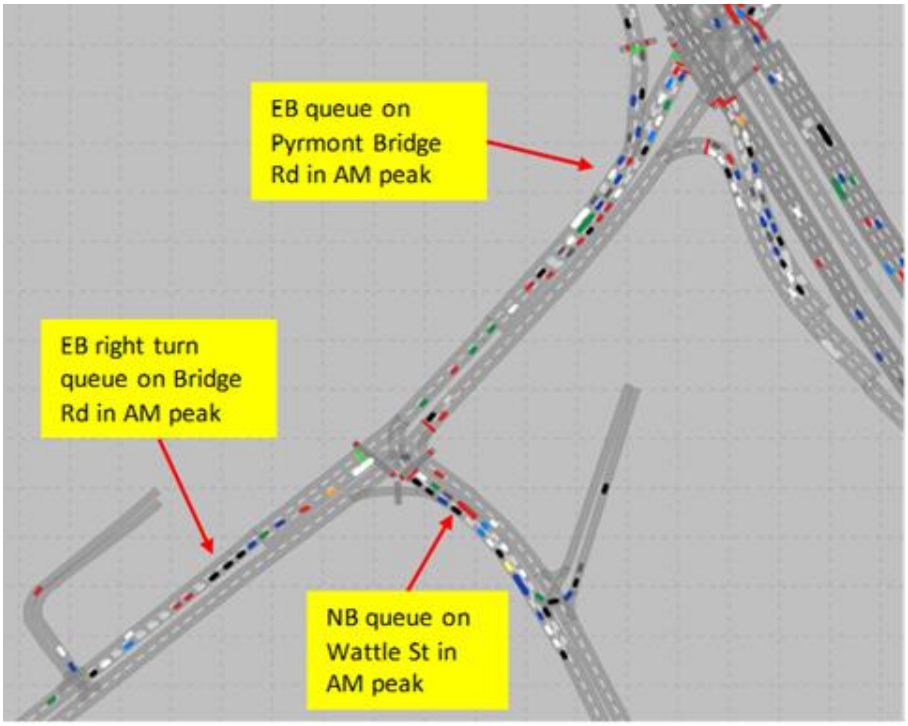


Figure 3-41: Morning peak queue conditions on Wattle Street, Bridge Road and Pyrmont Bridge Road

Figure 3-42: Morning peak queue conditions on Wattle Street, Fig Street and Fig Street off-ramp

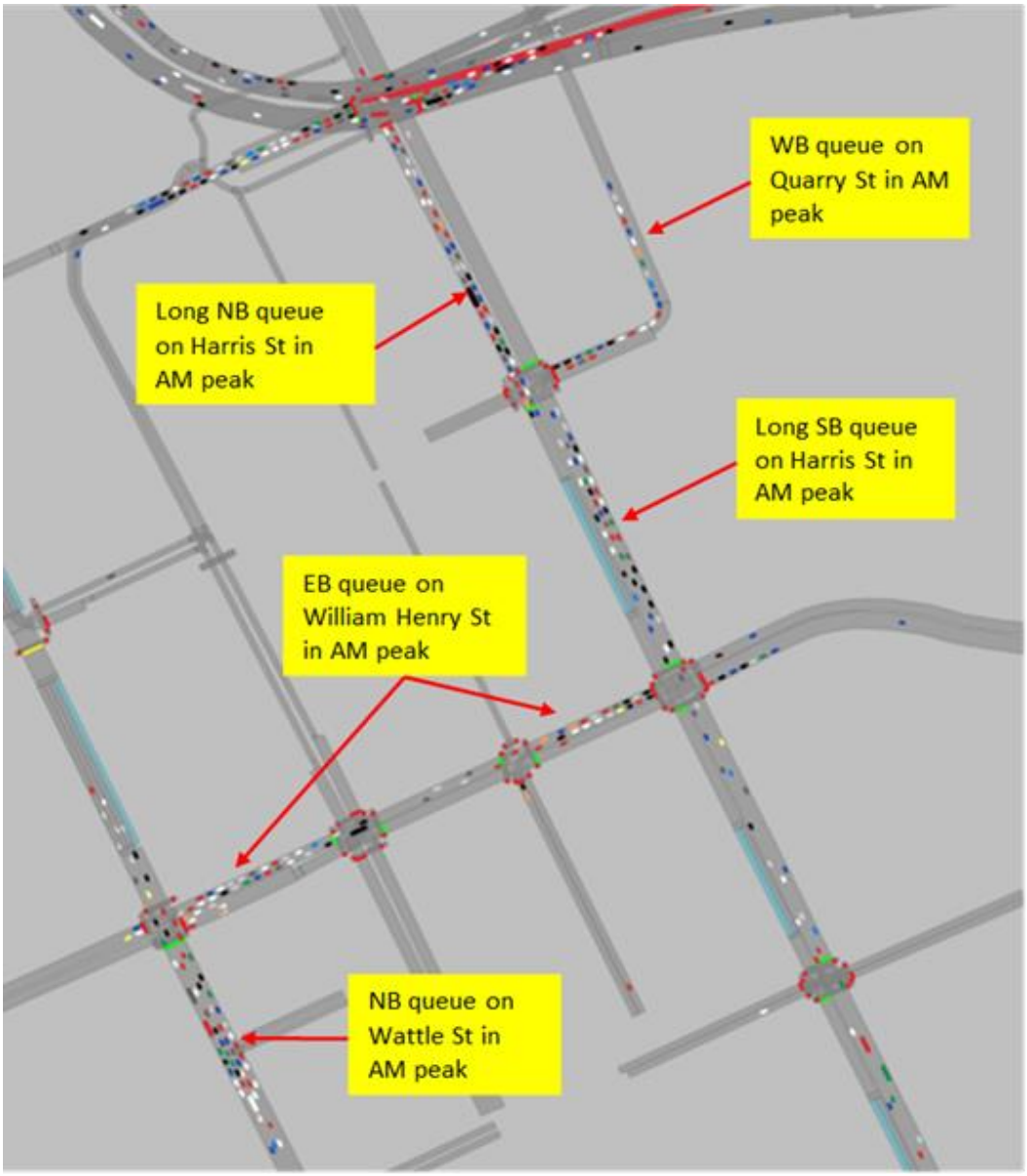


Figure 3-43: Morning peak queue conditions on Harris Street, Wattle Street and William Henry Street

3.6.4 Travel time impacts

As set in the Roads and Maritime's Traffic Modelling Guidelines, the following travel time criteria were adopted for the model validation:

Average modelled journey time to be within 15% or one minute (whichever is greater) of average observed journey time for full length of route. Each route should be cumulatively graphed by section. Table 3-10 and Table 3-11 below show the observed versus the modelled average travel time along the three routes. Modelling results indicates that travel times on each route and for each direction met Roads and Maritime travel time validation criteria.

Table 3-10: Morning peak travel time validation results

Route ID	Time Period	Direction	Observed avg. travel time (mm:ss)	Modelled avg. travel time (mm:ss)	Differences (mm:ss)
Route 1 - Wattle Street	7.00 - 8.00	NB	01:46	02:22	00:36
	8.00 - 9.00	NB	01:52	02:29	00:37
Route 2 - Harris Street	7.00 - 8.00	NB	03:27	03:22	00:34
		SB	04:07	03:54	00:13
	8.00 - 9.00	NB	06:00	06:57	00:57
		SB	04:55	03:58	00:58
Route 3 - Pyrmont Bridge Road	7.00 - 8.00	NB	02:47	01:57	00:50
		SB	02:36	02:15	00:21
	8.00 - 9.00	NB	03:50	03:04	00:46
		SB	02:46	02:13	00:34

Table 3-11: PM peak travel time validation results

Route ID	Time Period	Direction	Observed avg travel time (mm:ss)	Modelled avg travel time (mm:ss)	Differences (mm:ss)
Route 1 - Wattle Street	4.30 - 5.30	NB	02:42	03:28	00:46
	5.30 - 6.30	NB	03:45	04:02	00:17
Route 2 - Harris Street	4.30 - 5.30	NB	04:20	03:36	00:44
		SB	04:20	03:30	00:50
	5.30 - 6.30	NB	04:04	03:11	00:54
		SB	04:50	04:42	00:08
Route 3 - Pyrmont Bridge Road	4.30 - 5.30	NB	02:22	02:31	00:09
		SB	02:21	02:05	00:16
	5.30 - 6.30	NB	02:21	02:36	00:15
		SB	02:45	02:10	00:35

3.6.5 Seasonal variation

The new Sydney Fish Market Traffic Impact Assessment assessed seasonal variation in traffic for Christmas, Easter and other potential events. Arup obtained 2016 SCATS data to identify higher levels of private vehicles accessing the Sydney Fish Market. The results of the analysis are shown below:

- Christmas Eve is almost three times busier than a typical Saturday, with around 8,000 vehicles accessing the Sydney Fish Market. Additional parking is made available at the Sydney Secondary College, Pyrmont Bridge Road during the 36-hour seafood marathon.
- New Year's Eve is approximately 40% busier than a typical Saturday, with just under 5,000 vehicles accessing the Sydney Fish Market.
- Traffic volumes accessing the site during Easter are comparable to that of a typical Saturday.

The new Sydney Fish Market Traffic Impact Assessment identifies mitigation measures to manage demand, including parking management.

4.0 Future transport and land use context

The Blackwattle Bay Precinct, and more broadly, The Bays are the subject of numerous future infrastructure upgrades which include potential renewal or replacement for the Glebe Island Bridge and enhancing transport connectivity via construction of a Sydney Metro West station and WestConnex. These are outlined in greater detail below.

4.1 Glebe Island Bridge

Glebe Island Bridge is a heritage-listed electric swing bridge which connected Victoria Road (as Bank Street) to Rozelle Bay. It was closed in 1995 when it was replaced by Anzac Bridge. Glebe Island Bridge is currently in an open position, allowing vessels to pass through it.

Glebe Island Bridge has the potential to be restored and used to provide additional transport connectivity between Bays West and the Pyrmont Peninsula. It could be used to encourage the uptake of active transport, in a similar manner to Pyrmont Bridge. The Department of Planning, Industry and Environment has recognised this, identifying 'a number of pathway and cycleway connections that could be provided over time to try to better connect the areas either side of the Western Distributor.'

As part of the planning for the renewal of The Bays, Transport for NSW is investigating the future potential use of Glebe Island Bridge. The Glebe Island Bridge is outside the study area, no potential future upgrades are being proposed or considered as part of this plan.

4.2 Sydney Metro West Line

The Sydney Metro West Line is a proposed fully-automated, underground rapid transit line running approximately 24 kilometres from Westmead in the west to the Sydney CBD in the east. The Sydney Metro West Line will feature nine metro stations at Westmead, Parramatta, Sydney Olympic Park, North Strathfield, Burwood North, Five Dock, The Bays, Pyrmont and Hunter Street. The proposed alignment, stations and facilities are shown below in Figure 4-1

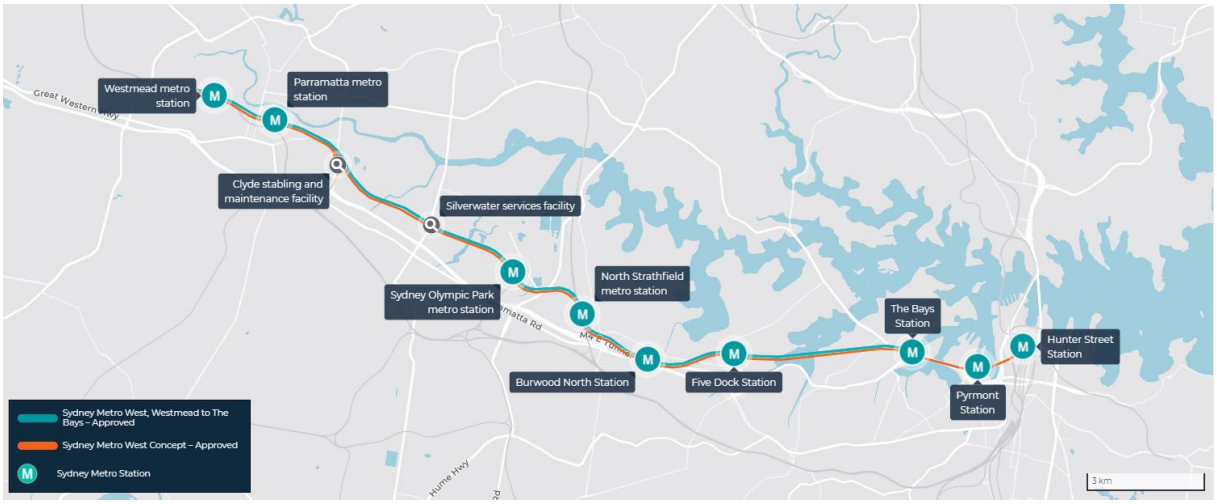


Figure 4-1: Sydney Metro West Map

Source: Transport for NSW, 2020

Early works commenced on the Sydney Metro West Line in late 2020. The line is scheduled to open in 2030. It will double the rail capacity between Sydney's two metropolitan centres: Parramatta and the Sydney CBD, able to move more than 40,000 people an hour in each direction. It will also offer a 20-minute travel time between these two centres. The ultimate operational capacity of the Sydney Metro West Line is 30 metro trains per hour in each direction, equating to a train every two minutes in each direction.

4.2.1 Pyrmont Station

In December 2020, the NSW Government confirmed a metro station will be built in Pyrmont on the Sydney Metro West Line. Two station entries are planned (and are shown in Figure 4-2):

- Entrance 1: bound by Union Street, Pyrmont Bridge Road and Bridge Road
- Entrance 2: bordered by Pyrmont Street, Pyrmont Bridge Road, Paternoster Row

Figure 4-2: Pyrmont Station portals are shown with Entrance 1 (left) and Entrance 2 (right)

At its closest point, Entrance 2 is located less than 300 metres (or a five minute walk) from Blackwattle Bay. The majority of Blackwattle Bay is located within 800 metres (or a ten minute walk), as Figure 4-3 shows. Note that the walking catchment shown is reflective of the existing street network and will be enhanced with the construction of the new through-site link and waterfront promenade.

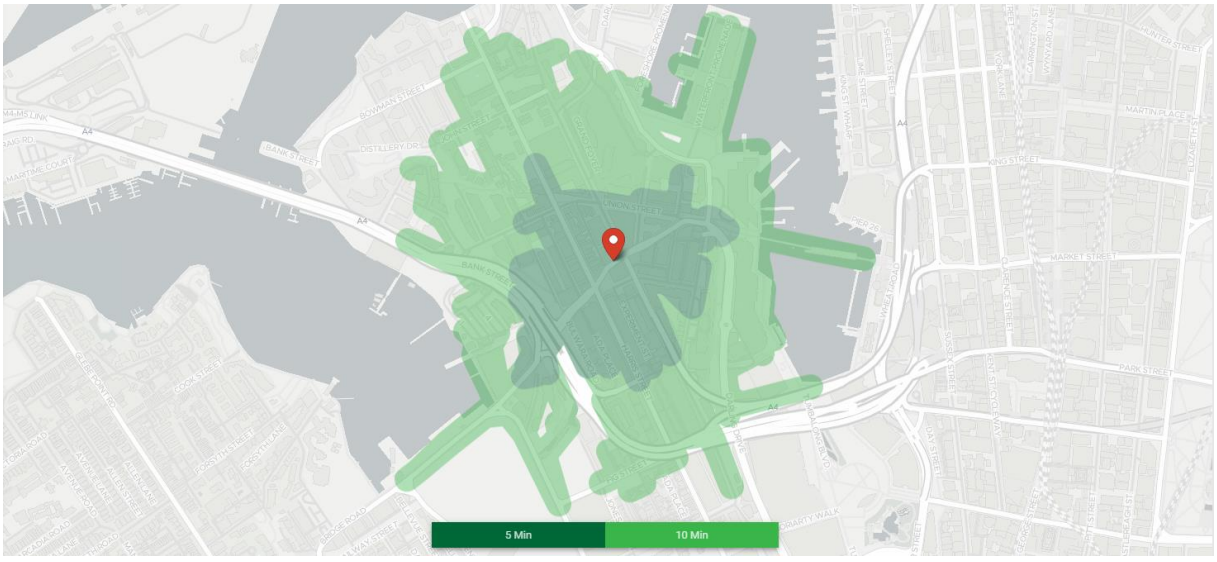


Figure 4-3: Ten minute walking catchment (based on existing street network) from Entrance 2

Source: Targomo, 2021

Pyrmont Station will significantly reduce travel times for local residents, workers and visitors to other major centres:

- 2-minute travel time to/from the Sydney CBD
- 13-minute travel time to/from Sydney Olympic Park
- 18-minute travel time to/from Parramatta
- 20-minute travel time to/from Westmead.

Pyrmont Station is expected to reduce crowding at existing Sydney CBD stations such as Central and Town Hall. It is also expected to relieve demand on the L1 Dulwich Hill Line by approximately 10%.

4.3 Sydney Ferries

Blackwattle Bay is currently not serviced by regular public ferry services. Due to its proximity to Sydney Harbour and Darling Harbour, Blackwattle Bay is well located to benefit from new ferry services.

An on-demand ferry service was launched in October 2019 by Transdev and ran between Barangaroo Wharf to Pyrmont's Pirrama Park, the Sydney Fish Market and the Glebe side of Blackwattle Bay. Its operating times were from 7:00am to 10:00pm (Monday to Friday, excluding public holidays) and 8:30am to 9:30pm (Saturday and Sunday). The on-demand service is currently on hold and Transdev intend to restart it as soon as possible (initial estimation of October 2020). The route of the on-demand ferry was shown in Figure 3-34 in the preceding section.

In addition, there is potential for a privately operated ferry stop in Blackwattle Bay with provision of a ferry wharf at the New Sydney Fish Market. Part of the wharves at the New Sydney Fish Market will service fishing boats unloading their catch but it will also service commuter and recreational ferry routes in the future which will integrate with the existing public transport network. This will promote adaptable and flexible transport options for Blackwattle Bay.

The final design of the future wharves are subject to the size and types of vessels that will be berthed. This information is currently unknown, however, as illustrated in the precinct plan, future wharves can be accommodated within Blackwattle Bay in accordance with the recommendations of the Navigation Study. As per the Navigation Study structures and berths are to be sited more than 25m from the existing rowing route to prevent narrowing of the available waterway area for vessel navigation.

4.4 WestConnex

Transport for NSW has received approval to construct and operate the WestConnex M4-M5 Link, which will comprise a new multi-lane road link between the M4 East Motorway at Haberfield and the new M8 Motorway at St Peters. The WestConnex will also include an interchange at Lilyfield and Rozelle (the Rozelle interchange) and a tunnel connection between Anzac Bridge and Victoria Road, east of Iron Cove Bridge (the Iron Cove Link). In addition, construction of tunnels, ramps and associated infrastructure to provide connections to the proposed future Western Harbour Tunnel and Beaches Link project would be carried out at the Rozelle interchange. The proposed alignment is shown in Figure 4-4.

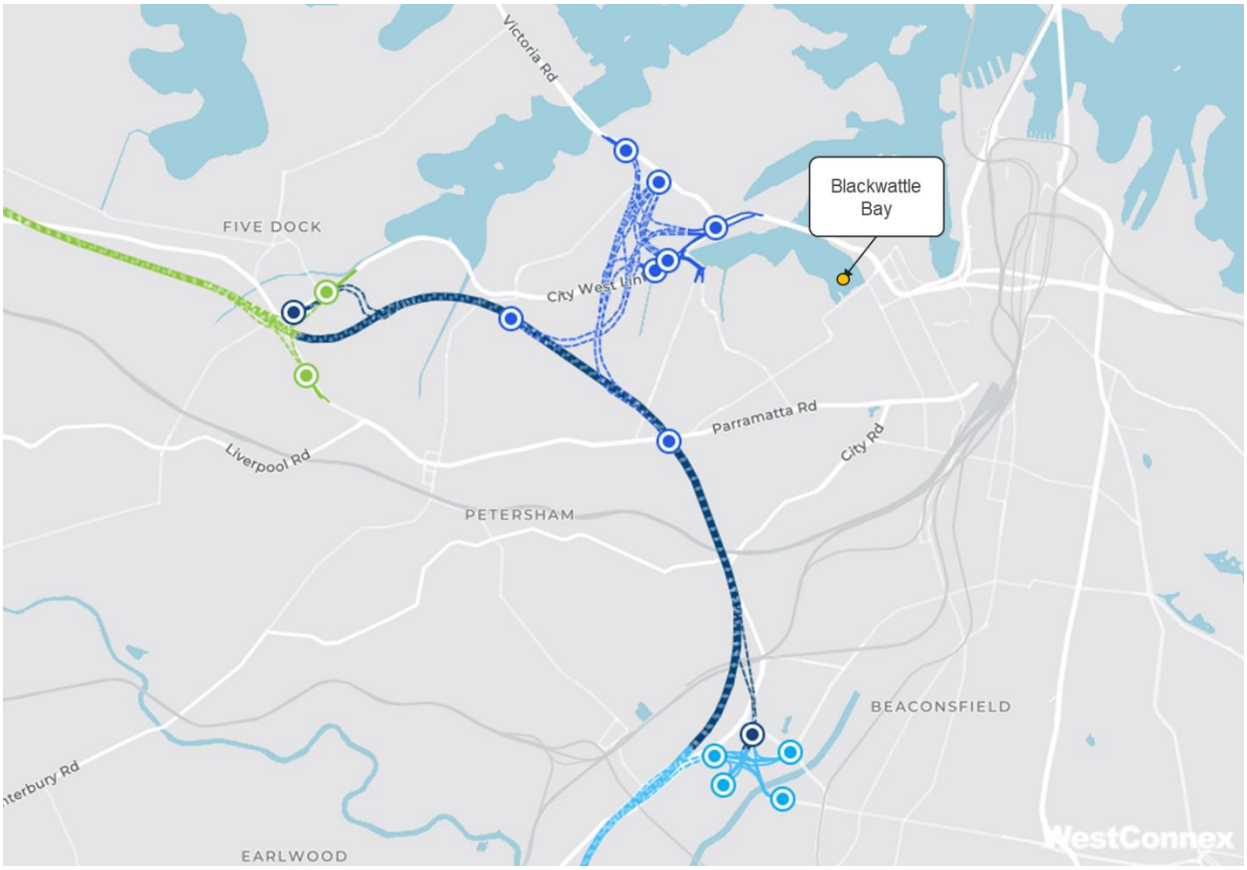


Figure 4-4: Overview of WestConnex M4-M5 Link

Source: WestConnex, 2020

Together with the other components of WestConnex and the proposed future Sydney Gateway, the WestConnex project will facilitate improved connections between Western Sydney, Sydney Airport, Port Botany and south and south-western Sydney. It will also provide better connections to important economic centres along Sydney's Global Economic Corridor and local communities.

In addition to linking to other WestConnex projects, the M4-M5 Link will provide connections to the proposed future Western Harbour Tunnel and Beaches Link, Sydney Gateway (via the St Peters interchange) and the M6 Extension (via the M8 Motorway).

4.5 Western Harbour Tunnel

The Western Harbour Tunnel will connect to WestConnex at the Rozelle Interchange, cross under Sydney Harbour between the Birchgrove and Waverton areas and connect with the Warringah Freeway at North Sydney. As part of the project, the Warringah Freeway Upgrade is planned to make the road network safer and more efficient. The proposed alignment is shown in Figure 4-5.

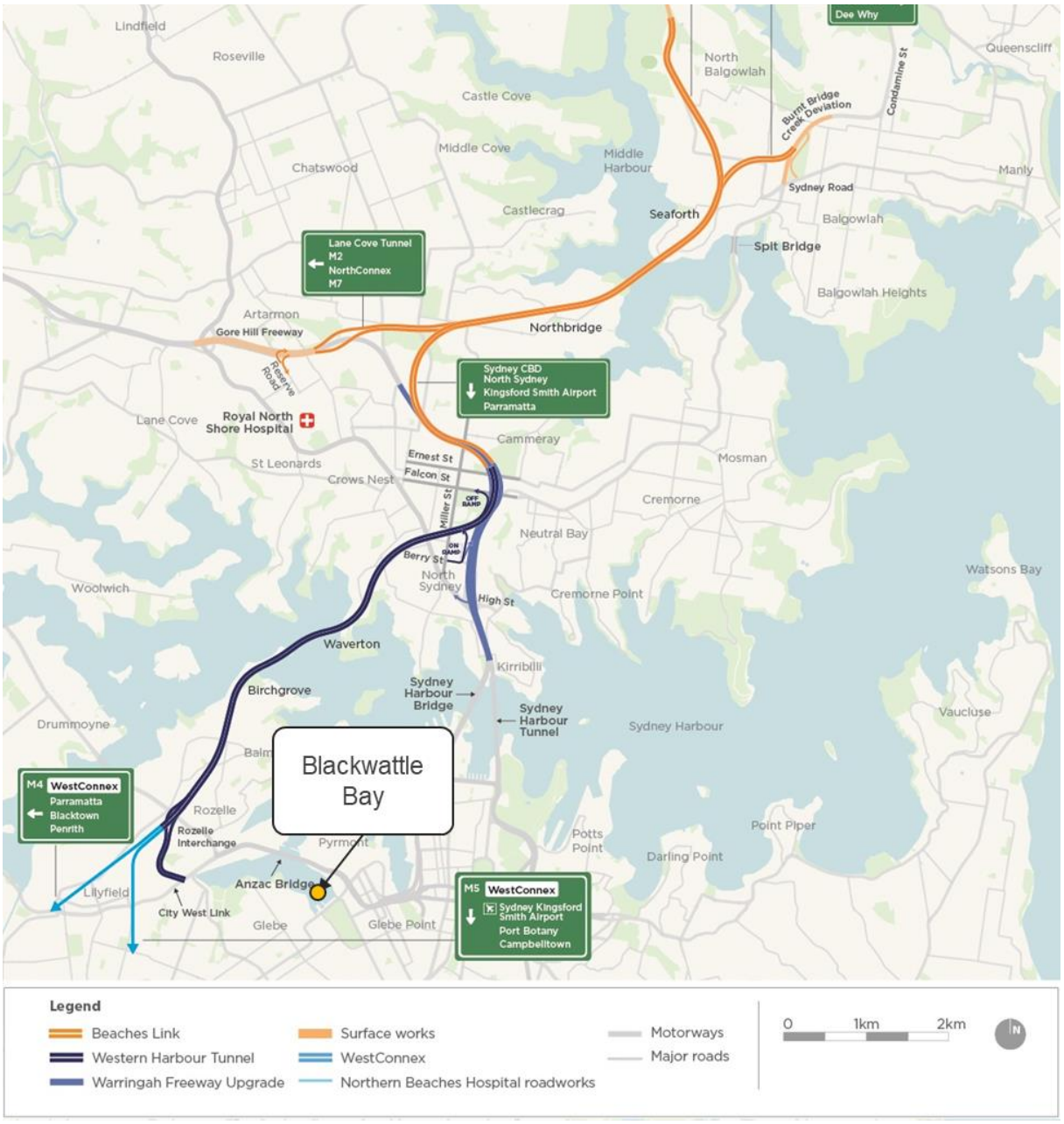


Figure 4-5: Proposed alignment of Western Harbour Tunnel

Source: Transport for NSW, 2019

The Beaches Link is a tunnel that will connect to the Warringah Freeway, cross under Middle Harbour connecting with the Burnt Bridge Creek Deviation at Balgowlah and the Wakehurst Parkway. The Wakehurst Parkway will be upgraded to two lanes each way between Seaforth and Frenchs Forest. The project will also offer new 'east-west' connectivity with links to the Lane Cove Tunnel and M2 Motorway via a Gore Hill Freeway Connection.

4.6 Future transport technology

Blackwattle Bay is located within the Innovation Corridor defined by the Eastern District Plan. Part of the vision includes becoming a place for transport innovation, with a range of potential future transport technologies including:

- Provision of on-demand transport services to connect Blackwattle Bay and the new Sydney Fish Market to select transport hubs and other tourist destinations
- Investigation into trial of autonomous vehicles for Pyrmont loop connecting various tourist destinations
- Provisioning for public infrastructure which caters for private electronic modes of transport such as electric vehicles and electric bikes
- Exploration of future freight solutions may include trials of autonomous small delivery vehicles.

5.0 Blackwattle Bay Precinct Plan

5.1 Overview

The redevelopment of Blackwattle Bay is anticipated to take over 20 years. A Precinct Plan has been developed to guide the renewal of the area. The Precinct Plan comprises two sites (shown in Figure 5-1):

- **Site 1:** The new Sydney Fish Market at the head of Blackwattle Bay (subject to a separate State Significant Development Application). The new Sydney Fish Market will include retail and food and beverage premises, wholesale facilities and auction rooms, offices and commercial space, Sydney Seafood Schools, back-of-house facilities and car, truck and coach parking spaces.
- **Site 2:** The remaining area bounded by Glebe Island Bridge, Bank Street, Pyrmont Bridge Road and Blackwattle Bay. Site 1 will be set within an improved public domain including the creation of a waterfront promenade with improved access to Blackwattle Bay, linking to surrounding areas and public transport. A through-site link, potentially capable of supporting the movement of private vehicles, servicing vehicles and buses, is proposed. The through-site link would connect the intersection of Pyrmont Bridge Road and Bridge Road with the intersection of Miller Street and Bank Street.

Figure 5-1: The Blackwattle Bay Precinct Plan comprises two sites – the new Sydney Fish Market (Site 1) and a combination of the existing Sydney Fish Market, government-owned land and private land holdings (Site 2)

Source: Nearmap, March 2020 (edited by AECOM)

A layout of the Blackwattle Bay Precinct Plan is shown in Figure 5-2. This reflects the preferred approach to the positioning of streets, public parks and jetties. It also reflects how it is intended for Blackwattle Bay to interface with the existing urban fabric of Pyrmont and Glebe.

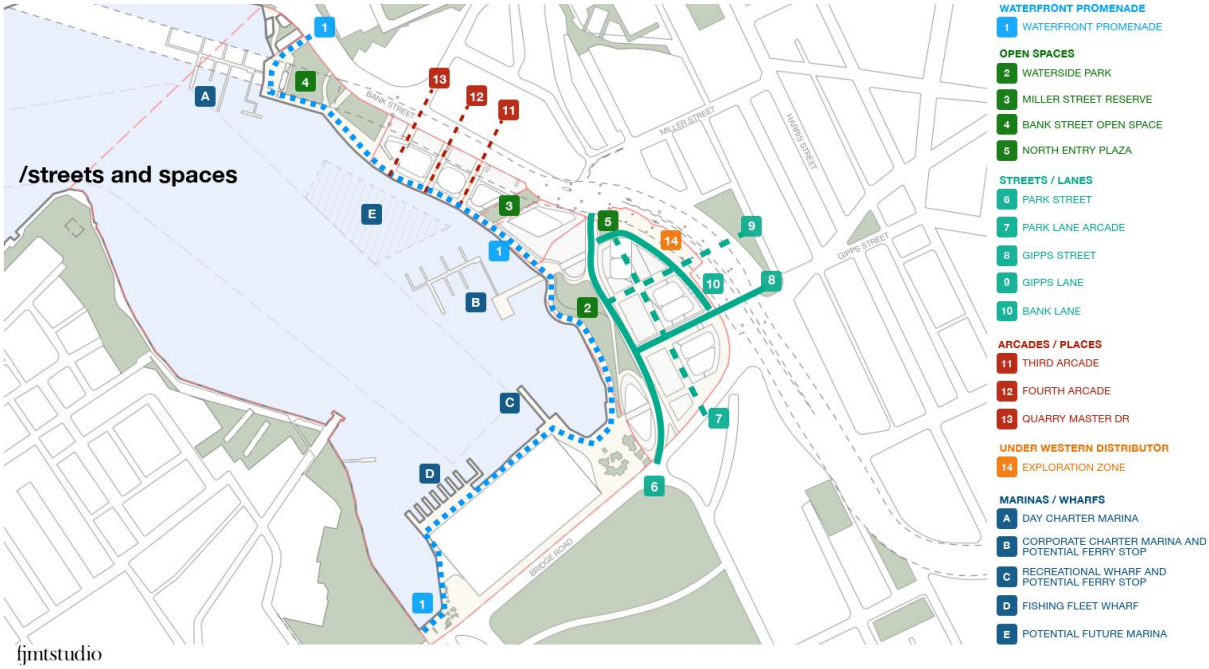


Figure 5-2: Layout of Blackwattle Bay Precinct Plan

Source: FJMT, January 2021

5.1.1 Foreshore promenade

The delivery of a continuous foreshore promenade is a key driver of the renewal of Blackwattle Bay. The foreshore promenade will connect the north end of the Pyrmont peninsula and the Glebe Island Bridge to the new Sydney Fish Market, Wentworth Park and the Glebe Foreshore. This is the missing link in the promenade from Rozelle Bay in the west to Woolloomooloo in the east. It will transform the waterside experience of Blackwattle Bay and prove an important new connection for recreational walking and cycling links.

FJMT has designed a foreshore promenade that embraces site constraints and maximises public benefit and opportunity for renewal. It is designed for slow and medium pace movement including walking and recreational cycling. It is also important to distinguish that the foreshore promenade will be a recreational cycling route as opposed to a transport/journey to work one.

The Blackwattle Bay foreshore promenade is identified by the City of Sydney as a future off-road shared path for pedestrians and cyclists. This is consistent with existing foreshore promenades around Sydney Harbour including the Glebe foreshore promenade (to the west of Blackwattle Bay) and the Pyrmont foreshore promenade (to the north of Blackwattle Bay, under the Anzac Bridge). It is also consistent with Wulugul Walk at Barangaroo and the Circular Quay promenade, both of which are identified as existing off-road shared paths.

The Glebe foreshore promenade (to the west of Blackwattle Bay) and the Pyrmont foreshore promenade (to the north of Blackwattle Bay, under the Anzac Bridge) are considerably smaller in scale than the Blackwattle Bay foreshore promenade. The hard-paved path for walking and cycling at Glebe is approximately three metres in overall width and the Pyrmont foreshore promenade varies from four metres up to a maximum width of ten metres. The majority of the Pyrmont foreshore promenade has a width of approximately six metres, indicating this is a suitable scale for recreational cycling/walking.

The Blackwattle Bay foreshore promenade is shown in Figure 5-3 and the cycle network in Figure 5-4.

Figure 5-3: Proposed Blackwattle Bay street hierarchy

Source: FJMT, 2021

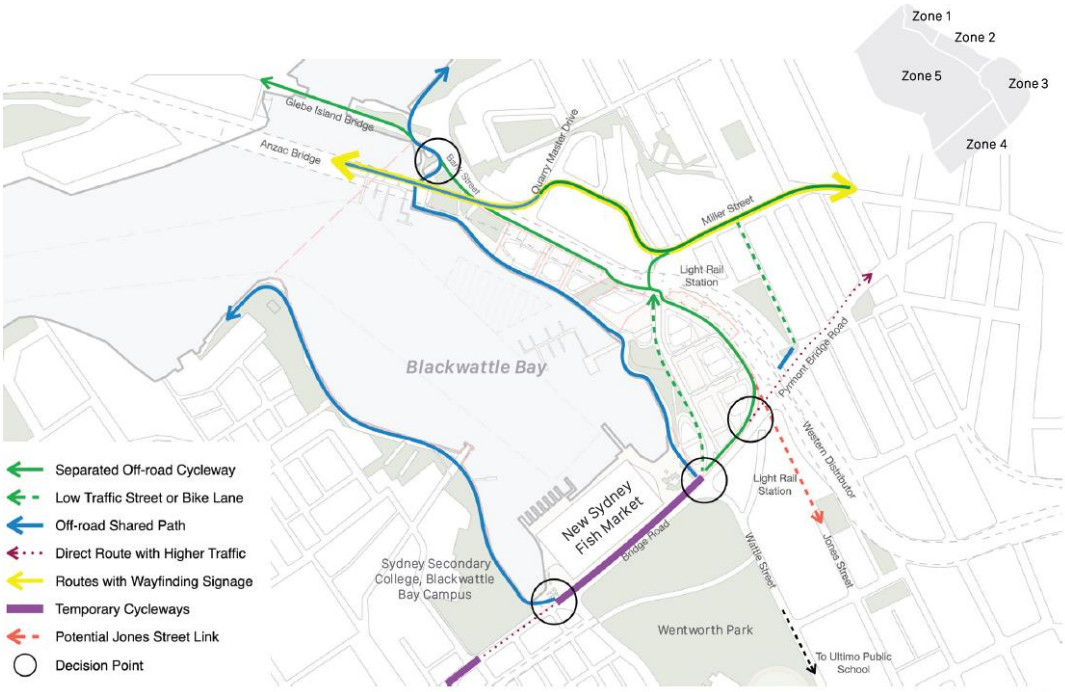


Figure 5-4: Proposed Blackwattle Bay cycle network

Source: FJMT, 2021

5.1.1.1 Analysis of waterfront promenade width

FJMT has designed the foreshore promenade to have a variable width. The variable width approach to the promenade places open space and public domain where they can provide the greatest benefit. The minimum promenade width of ten metres applies to only 17% of the promenade length, and is complemented by seven metres of additional width for the colonnade and laneways. These parts of the promenade will primarily be used by local residents for recreation and are hence aligned with the uses in other parts of the foreshore promenade such as in Glebe and Pyrmont.

The promenade expands into sizeable open spaces that can provide a range of recreational, community facilities and social infrastructure. As such, the remaining 83% of the promenade has a width greater than the minimum ten metres and provides ultimate programming flexibility. This is consistent with those parts of the promenade that have more of a visitor orientation, particularly in the areas closer to the new Sydney Fish Market. The variable width of the Blackwattle Bay foreshore promenade is shown in Figure 5-5.

Figure 5-5 Variable width of the foreshore promenade

The Blackwattle Bay foreshore promenade has a minimum width of ten metres. The promenade comprises of three distinct movement zones and a zone for tree planting, seating, lighting and other street furniture.

A three and a half metre width directly adjacent to the sea well is a slow movement space for recreational pedestrians to enjoy the outlook across Blackwattle Bay. This zone may include standing, walking with prams, young children and the elderly. Bicycles are not actively encouraged in this zone.

A one and a half metre wide planting and street furniture zone provides shade, amenity and places to sit and rest. This space buffers the slow movement zone from the central medium movement zone.

The central three metre wide movement zone accommodates fitness walkers, joggers and low speed recreational cyclists. It is important to note that cyclists are anticipated to include tourists and families. Faster bike riders (such as fitness cyclists and commuters for Journey To Work trips) will be able to choose alternate routes within and in the immediate vicinity of Blackwattle Bay.

A third movement zone is pedestrian focused. This two and a half metre wide movement zone will discourage use by cyclists through pavement treatments and other design interventions. This zone allows pedestrians to stop to consider places to dine in the colonnade of the potential adjacent buildings.

The colonnade is a seven metre wide dedicated area within adjacent building envelopes. This allows for sheltered outdoor spaces for restaurants, cafes and bars to be accommodated outside the ten metre minimum waterfront promenade width. The colonnade is elevated to aid definition of the dining zone.

These movement zones are shown in the cross-section in Figure 5-6.

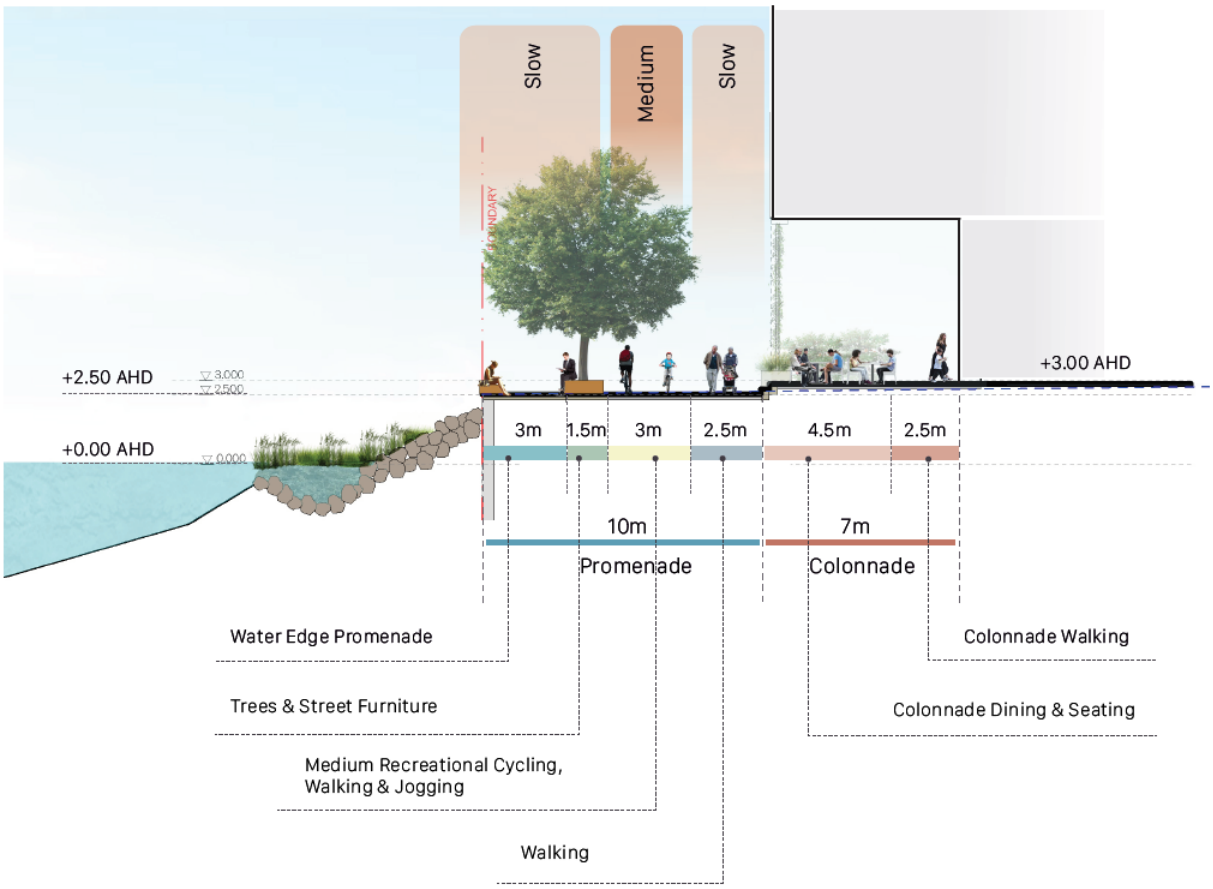


Figure 5-6: Waterfront promenade typical cross section

Source: FJMT, 2021

5.2 Development yields

The renewal of Blackwattle Bay is one of several developments in Pyrmont-Ultimo that will generate an increase in the number of trips. The *Pyrmont Peninsula Place Strategy* identified an increase of up to 23,000 jobs and 8,500 residents in Pyrmont-Ultimo by 2041.

The State Significant Precinct (SSP) Study is proposing to rezone Blackwattle Bay for approximately 5,910 jobs and 2,850 residents. These figures represent 26% of the total number of new jobs and a third of the total number of new residents in Pyrmont-Ultimo. This means the renewal of Blackwattle Bay represents a minority proportion of the number of new jobs and residents planned in Pyrmont-Ultimo.

A breakdown of the different land uses under for the final precinct plan for Site 2 is shown in Table 5-1. Note that land use distribution is indicative and will be subject to some further refinement during design development.

Table 5-1: Blackwattle Bay Precinct Plan Site 2 development yields

Land use type	Gross Floor Area	Number of apartments
Residential	128,042 square metres	1,581
Commercial	84,768 square metres	-
Retail	10,813 square metres	-
Hotel/serviced apartments	9,000 square metres	-
Total	**232,623 square metres**	**1,581**

6.0 Vision

6.1 Blackwattle Bay Precinct Plan

The Blackwattle Bay Precinct Plan outlines the NSW Government commitment to revitalising Blackwattle Bay to deliver an authentic, vibrant and sustainable place connected to Sydney Harbour.

6.2 Vision

The vision for Blackwattle Bay is defined in the Blackwattle Bay Precinct Plan:

"*Blackwattle Bay offers an extraordinary opportunity to reconnect the harbour, its surrounding neighbourhoods and the city; to showcase Sydney's living culture and stories of Country; to build an inclusive and iconic waterfront destination that celebrates innovation, diversity and community.*"

Blackwattle Bay is a place defined through a rich and shifting history in the Eastern Harbour City. Through revitalisation of Blackwattle Bay, the NSW Government intends celebrate the stories of Aboriginal and industrial significance and those that make the area unique. In particular, the NSW Government wants to recognise Blackwattle Bay's history as a place of indigenous fishing and historical foreshore line as well as its modern use as an active harbour.

The renewal of Blackwattle Bay will deliver a continuous waterfront promenade to create a 15 kilometre walk from Woolloomooloo to Rozelle, new public parks and green space and new connections to bring the neighbourhood closer to the harbour through new and improved pedestrian and cycling links. Furthermore, Blackwattle Bay will feature an authentic and world class new Sydney Fish Market alongside new homes, jobs and services. Importantly, the renewal will build on Indigenous and industrial stories and celebrating local character.

Future residents, workers and visitors will feel supported and embedded in a diverse mixed-use precinct. The selection of materials, design of the landscape and public domain and careful integration of public art will collectively reflect Blackwattle Bay's rich history, stories and cultural identity including the role of the Bay, fishing and industries over time.

6.3 Principles

The Blackwattle Bay Precinct Plan intends to revitalise Blackwattle Bay to deliver an authentic, vibrant and sustainable place connected to Sydney's iconic harbour. 16 principles align with five key themes: Landscape and Environment, Access and Movement, Land Uses and Built Form, Social, Economic and Community and New. These objectives are being applied to strategic and integrated planning.

The Blackwattle Bay Precinct Plan objectives are summarised in Figure 6-1 with those most relevant to this report **in bold**. The development of this Transport Management and Accessibility Plan has been guided by these objectives.

Blackwattle Bay Precinct Plan principles				
Landscape & Environment	**Access & Movement**	**Land Uses & Built Form**	**Social, Economic & Community**	**New**
• **Improve access to Blackwattle Bay and its foreshore** • Minimising building shadowing • Pursuit of sustainability outcomes	• **Prioritise movement by walking, cycling and public transport** • **Balance diverse traffic movement and parking for all users** • **Link Blackwattle Bay to the City and surrounding communities**	• Mandate Design Excellence in the public and private domain • Integrate housing, employment and mixed uses • Maintain and enhance water uses • Allow for co-existence and evolution of land use	• A unique, inviting, inclusive and affordable place for everyone • Range of recreational, community, and cultural facilities • Plan for the future needs of community	• Deliver development that is economically, socially, culturally and environmentally viable • Embed morphology, heritage and culture of site • Foster social and cultural understanding and respect

Figure 6-1: Blackwattle Bay Precinct Plan Objectives and Principles

Source: FJMT, adapted by AECOM 2020

6.4 Enablers

The focus of the Transport Management and Accessibility Plan has been on the development and implementation of two sets of enablers to support delivery against the *Blackwattle Bay Precinct Plan* principles. The two enablers are **Transport Policies and Strategies** and **Transport and Traffic Strategies**. These enablers aim to integrate transport and land use outcomes to support the delivery of the Blackwattle Bay Precinct Plan.

1. **Transport Policies and Strategies –** the implementation of transport policies and strategies which foster a mode shift to sustainable transport will support the strategic vision and objectives. These policies and strategies include:
    - The 'Travel Demand Management' strategy which defines and promotes sustainable travel options and choices to influence mobility to deliver sustainable outcomes in terms of mode of travel and volume of travel
    - Compliance with Blackwattle Bay Design Guidelines to realise the precinct planning principles, objectives and performance outcomes through the application of controls to the future vision of Blackwattle Bay
2. **Transport and Traffic Strategies –**multi-modal transport network which will support the strategic vision and principles. This considers the relationships between place and customers with the transport networks, and is a multi-layered vision for how future transport networks will operate to support the overarching *Blackwattle Bay Precinct Plan* objectives. This sets out:
    - A new Pyrmont metro station on Sydney Metro West, providing safe, efficient and reliable rapid transit connections between Pyrmont and major activity centres such as the Sydney CBD, Parramatta, The Bays, Sydney Olympic Park, Westmead and Burwood.
    - Safe, efficient and reliable light rail and bus services, with frequencies, coverage and capacities responding to customer demand.
    - A dedicated walking network with pedestrian footpaths on all roads and streets. Consideration of a high amenity environment for walking throughout the precinct, which provides for priority access to, from and within Blackwattle Bay, particularly from the new Pyrmont metro station and the new Sydney Fish Market.
    - An extensive, dedicated bicycle network with separated bicycle facilities built on all key roads and streets, to support the needs of cyclists from confident commuters through to occasional recreational riders. The extensive coverage of the network, combined with the dedicated infrastructure is designed to make cycling an easy and comfortable travel choice for short, medium and long-distance journeys.

A balanced road network, which provides for private vehicles and freight, as well as all the other modes identified above. There is a focus on accessibility at the local level, where accessibility is critical to network function. Intermediate roads have a balanced focus of access, place and movement. Higher order roads which make up the strategic network (such as the Western Distributor) focus on movement, reliability of travel times and safe operations to support the efficient movement of people and goods for strategic travel. Together these two key enablers will support the delivery of the desired outcomes, as outlined in the *Blackwattle Bay Precinct Plan*. The relationship between the strategic principles and the key enablers is described in Figure 6-2.

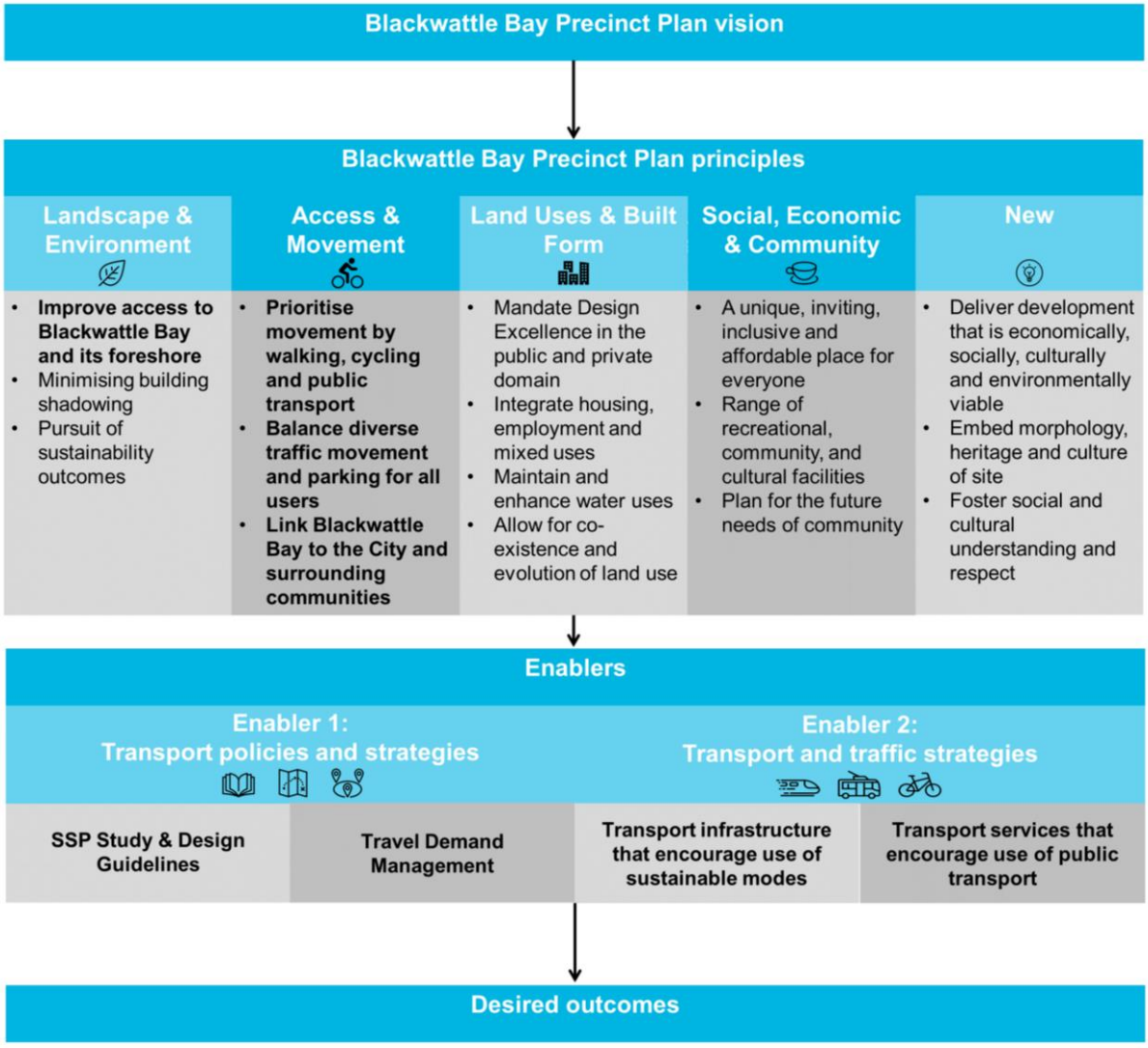


Figure 6-2: Enablers support the *Blackwattle Bay* vision, themes and objectives to deliver the desired outcomes

6.4.1 Enabler 1: Transport policies and strategies

Two Policies and Strategies are pivotal to achieving the desired outcomes in future: **the 'Travel Demand Management' Strategy** and compliance with the Blackwattle Bay SSP Study & Design Guidelines, as Figure 6-3 shows. Together, these two documents aim to influence the use of public transport, walking and cycling as desirable modes of travel for those that live, work and visit the Blackwattle Bay.

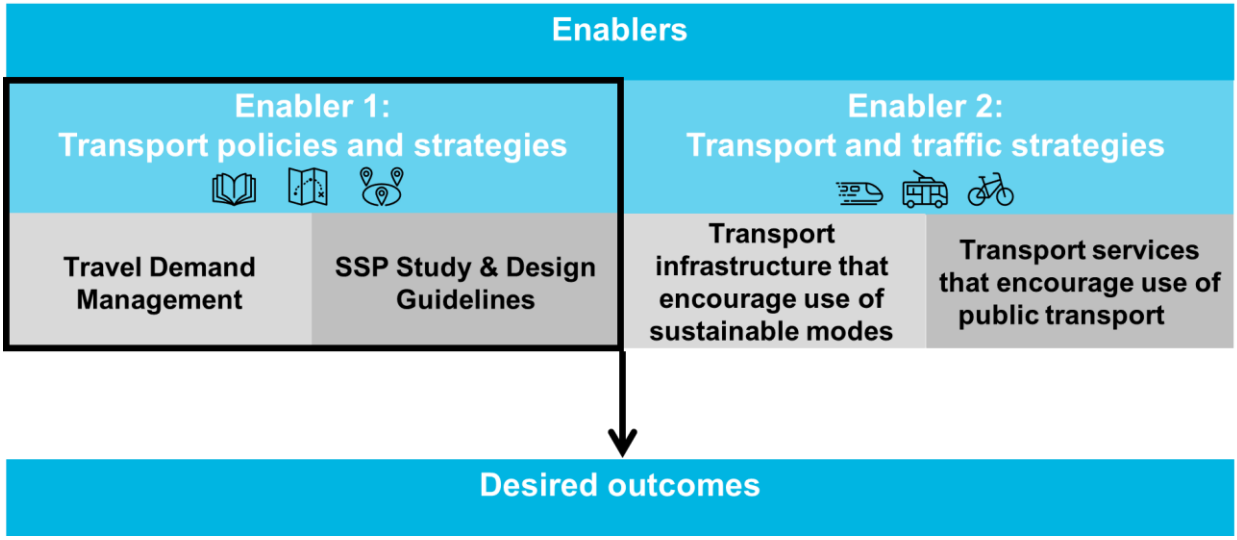


Figure 6-3: Transport policies and strategies are pivotal to achieving the desired outcomes

The 'Travel Demand Management' Strategy involves the application of focused, evidence-based measures and interventions that change demand on transport networks by redistributing journeys to other modes, times, routes or by removing the journey altogether. 'Travel Demand Management' is most effectively applied when there is an impetus or catalyst for behaviour change. The Blackwattle Bay 'Travel Plan' is detailed in Section 8.0.

The *SSP Study and Design Guidelines* is a detailed set of planning and design guidelines that will guide the redevelopment of Blackwattle Bay. Amendments to zoning and planning controls in a SSP are made through a *State Environmental Planning Policy*. A *State Environmental Planning Policy* typically results in an amendment to local planning documents such as the *City of Sydney Local Environment Plan* and the *City of Sydney Development Control Plan*.

6.4.2 Enabler 2: Transport and traffic strategies

A well-planned network of transport infrastructure and services is pivotal to achieve the desired outcomes. An integrated, multi-modal network comprising dedicated walking and bicycle facilities, metro, light rail and bus services will facilitate the right balance of travel options.

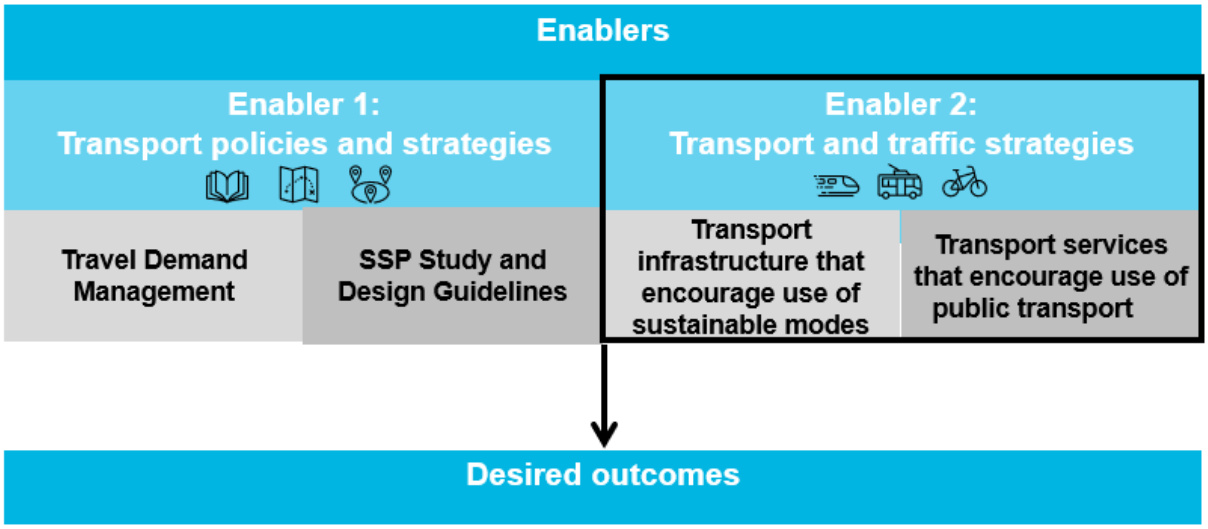


Figure 6-4: Transport and traffic strategies are pivotal to achieving the desired outcomes

6.5 Indicators and mode share targets

Three potential mode share scenarios have been identified to support the Blackwattle Bay vision and principles, as shown in Figure 6-5.

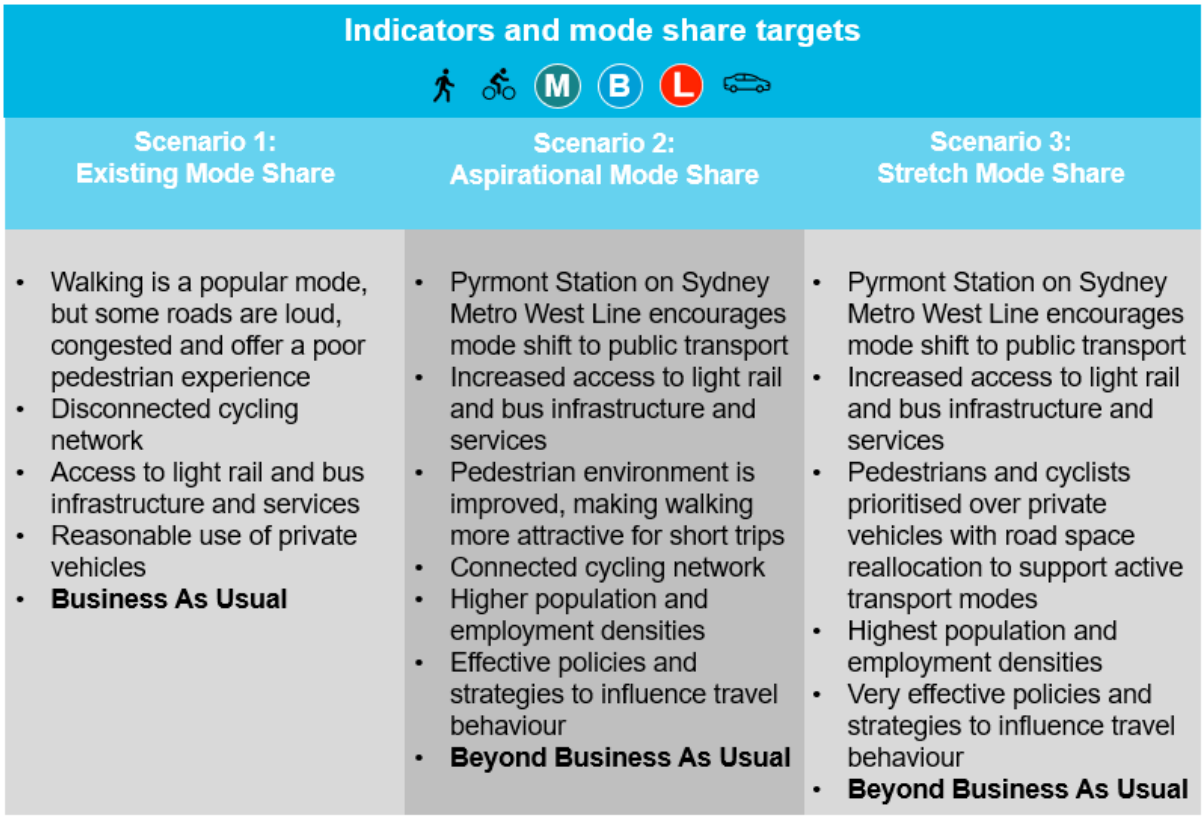


Figure 6-5: Potential mode share scenarios for Blackwattle Bay

These scenarios are assessed below, and a preferred scenario is identified. The remainder of this document has been structured to support the mode share targets identified for the preferred scenario.

6.5.1 Scenario 1: Existing mode share

Existing mode share target is defined as walking, cycling and public transport comprising 67% of all trips in the morning peak period to and from Blackwattle Bay. Under this scenario, private vehicles comprise the remaining 33% of all trips during the morning peak period.

Scenario 1 represents a 'Business As Usual' approach to land use and transport planning and policy. Under this scenario, a Pyrmont Station would not be built on Sydney Metro West. Walking would remain a popular mode, however the lack of a metro station would likely limit investment in improving footpaths and the pedestrian experience. Similarly, the cycling network would be disconnected, with varying degrees of separation from general traffic. Light rail and buses would remain the dominant public transport modes. Few effective policies and strategies have been implemented to influence travel behaviour. Figure 6-6 summarises the characteristics of this scenario.

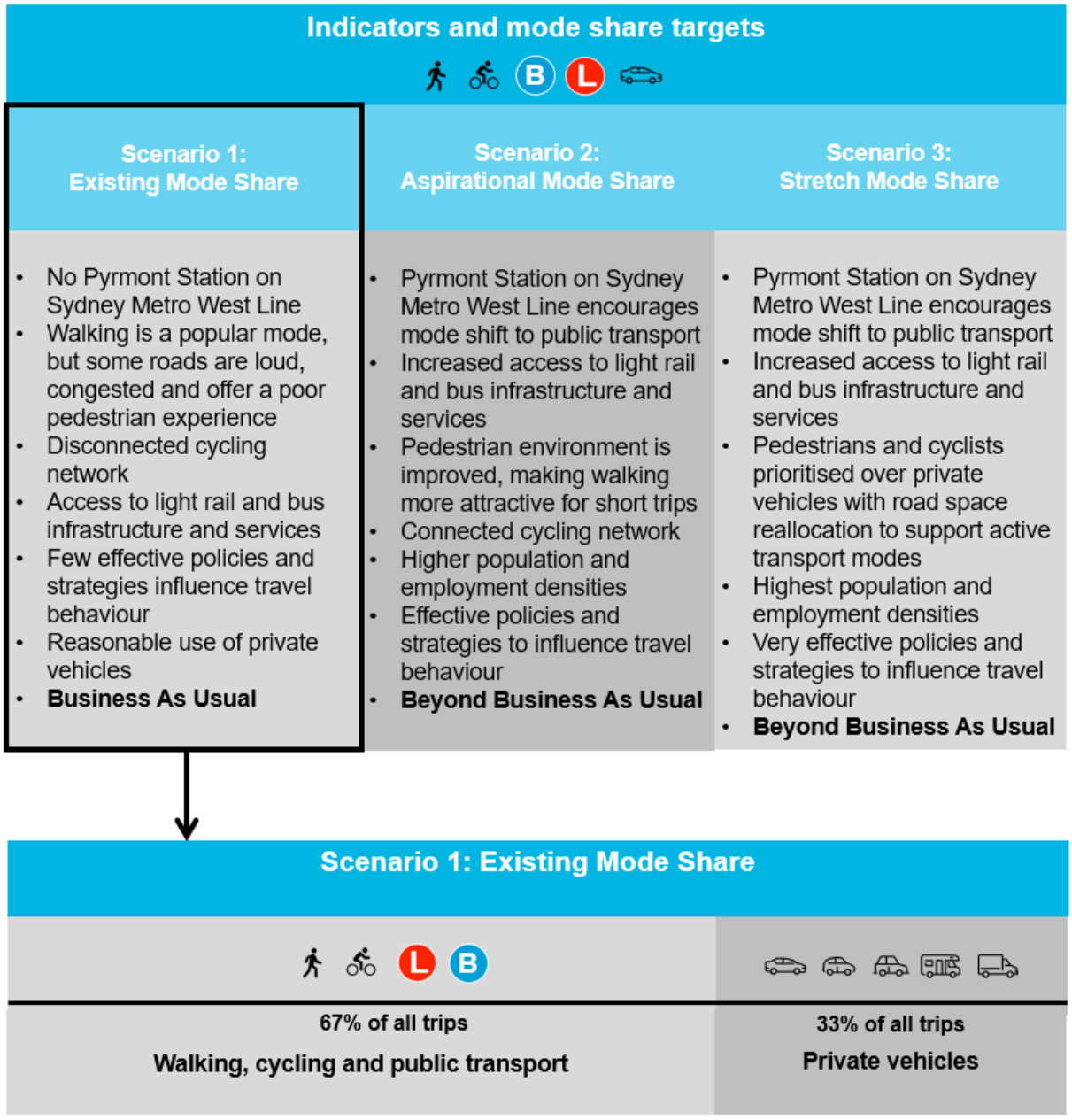


Figure 6-6: Scenario 1 summary

6.5.2 Scenario 2: Aspirational mode share targets

Aspirational mode share is defined as walking, cycling and public transport comprising 80% of all trips in the morning peak period to and from Blackwattle Bay. Under this scenario, private vehicles comprise the remaining 20% of all trips during the morning peak period.

Scenario 2 represents a 'Beyond Business As Usual' approach to land use and transport planning and policy. Under this scenario, a Pyrmont Station would be built on Sydney Metro West Line. A Pyrmont Station would be a significant step change in the provision of public transport infrastructure and services for the precinct. A metro station is likely to generate investment in improving footpaths, cycleways and the overall walking and cycling experience for station access. Light rail and buses would complement metro operations, providing connectivity to adjacent neighbourhoods. Effective policies and strategies have been implemented to influence travel behaviour. Figure 6-7 summarises the characteristics of this scenario.

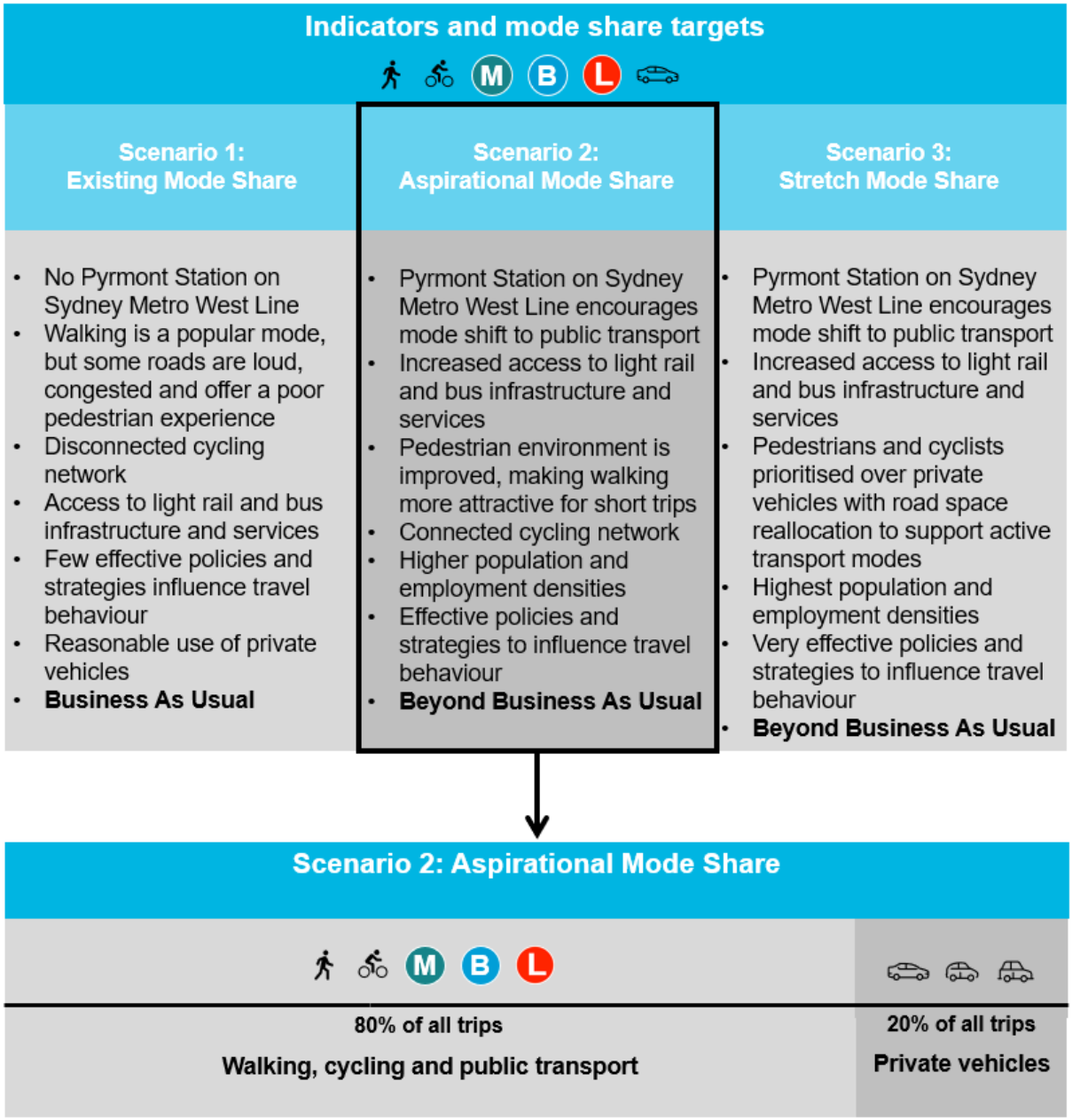


Figure 6-7: Scenario 2 summary

6.5.3 Scenario 3: Stretch mode share targets

A stretch mode share target is defined as walking, cycling and public transport comprising at least 85% of all trips to and from Blackwattle Bay during the morning peak period. Under this scenario, private vehicles comprise a maximum of 15% of all trips.

Scenario 3 represents a 'Beyond Business As Usual' approach to land use and transport policy. Under this scenario, suburbs typically have the highest densities. Very effective policies and strategies have been implemented to influence travel behaviour, and there is a high rate of cycling and public transport use for medium- and long-distance trips. Walking and cycling are typically more attractive options than in Scenarios 1 or 2 due to safe, efficient and connected infrastructure that is very attractive for short and medium-length trips. Figure 6-8 summarises the characteristics of a scenario with high sustainable mode share targets.

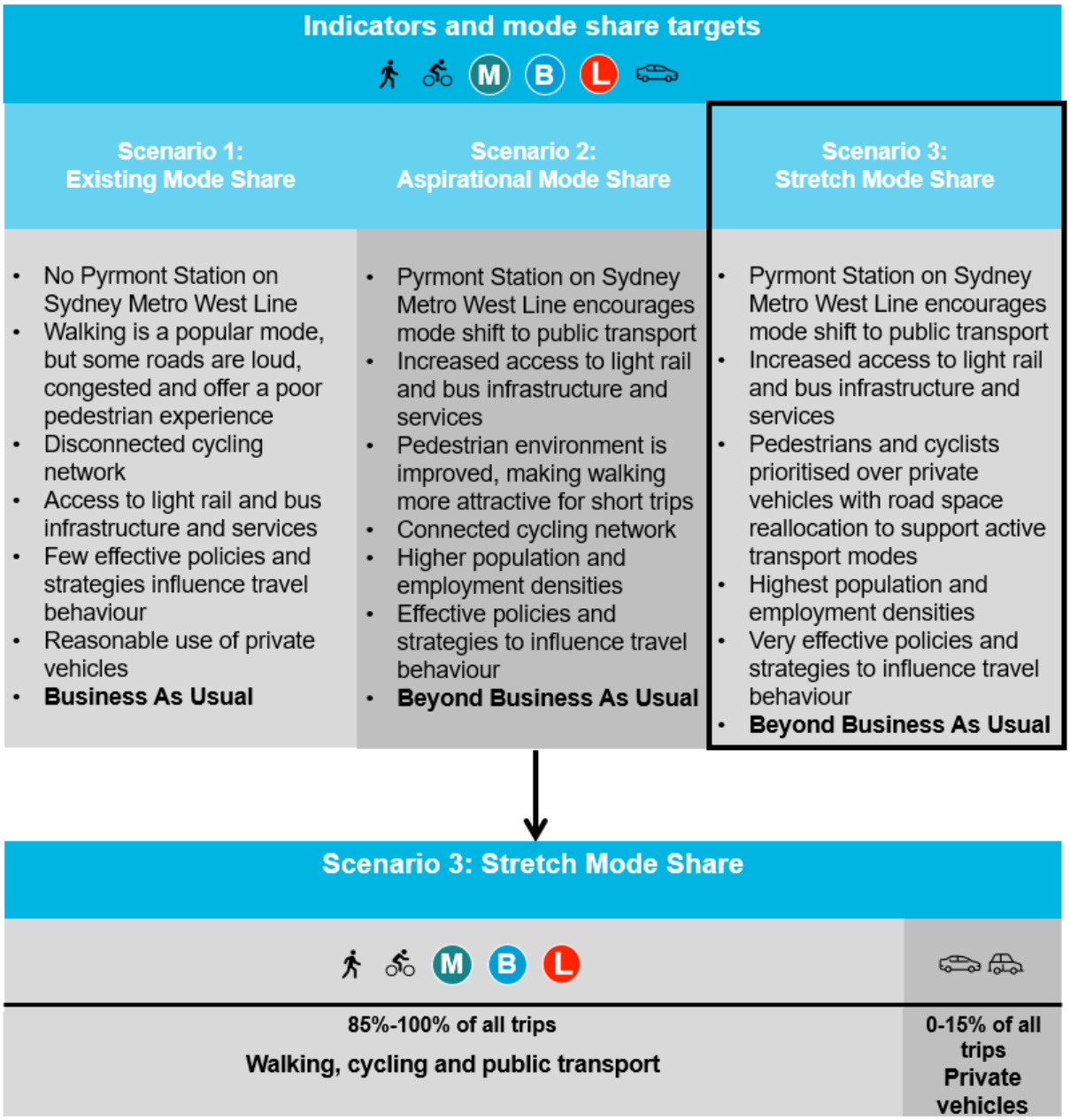


Figure 6-8: Scenario 3 summary

6.5.4 Analysis

6.5.4.1 Benchmarking the provision of public transport infrastructure

The application of an appropriate mode share target can be best informed by analysing available data for adjacent neighbourhoods with similar characteristics in the City of Sydney Local Government Area. Possible case study locations were assessed based on location, geography, urban form, existing transport infrastructure and services, density and mode share.

As such, Pyrmont-Ultimo, Redfern-Chippendale and Potts Point-Woolloomooloo were identified as appropriate locations against which this significant city-building opportunity can be benchmarked.

These locations are noted as sharing a number of similar characteristics to Blackwattle Bay, including the location within the City of Sydney local government area, the nature of the urban form with a focus on medium to high density buildings, the provision of existing transport infrastructure and services across two or more transport modes, the higher concentration of residential and employment populations and higher shares for more sustainable transport modes.

Pyrmont-Ultimo is the broader statistical area in which Blackwattle Bay is located. Redfern-Chippendale is undergoing an urban transformation, anchored by the Central Park development. Potts Point-Woolloomooloo shares similar harbourfront characteristics with Pyrmont-Ultimo. Residential, employment and 'Journey To Work' mode share data is available at a Statistical Area 2 level and was not able to be broken down into finer-grain detail.

One of the key drivers of high sustainable mode share is the provision of public transport infrastructure and services. Table 6-1 provides a comparison of planned public transport infrastructure and services between Blackwattle Bay, Pyrmont-Ultimo, Redfern-Chippendale and Potts Point.

Table 6-1: Provision of public transport infrastructure

Precinct	Metro/Train	Light Rail	Bus
Blackwattle Bay	Pyrmont Station (planned)	3 stops	5 routes
Pyrmont-Ultimo	Pyrmont Station (planned) Central Station	7 stops	>20 routes
Redfern-Chippendale	Central Station Redfern Station Macdonaldtown Station	N/A	>20 routes
Potts Point-Woolloomooloo	Kings Cross Station	N/A	5 routes

6.5.4.2 Benchmarking population and employment densities

Redfern-Chippendale has the best accessibility to mass transit, with three stations. Redfern-Chippendale is also serviced by over 20 bus routes, with a particular concentration of activity on Broadway. Pyrmont-Ultimo is serviced by one planned station, as well as seven existing light rail stops and over 20 bus routes. The Blackwattle Bay SSP Study Area and Potts Point-Woolloomooloo will have a comparable provision of mass transit and bus services. The Blackwattle Bay SSP Study Area also has the benefit of being serviced by three light rail stops on the L1 Dulwich Hill Line.

Another key driver of high sustainable mode share is density, particularly a combination of high population and employment densities. Table 6-2 provides a comparison of the total number of jobs and job density between the Blackwattle Bay SSP Study Area, Pyrmont-Ultimo, Redfern-Chippendale and Potts Point-Woolloomooloo. After the Blackwattle Bay SSP Study Area, Pyrmont-Ultimo has the highest job density (246 jobs per hectare). In contrast, Redfern-Chippendale has a considerably lower job density (66 jobs per hectare), almost four times lower than Pyrmont-Ultimo and almost 11 times lower than the Blackwattle Bay SSP Study Area.

Table 6-2: Comparison of jobs between the Blackwattle Bay SSP Study Area and other City of Sydney neighbourhoods

Precinct	Jobs	Size (hectares)	Job density (jobs/ha)
Blackwattle Bay SSP Study Area	5,910 (planned)	8.4	703
Pyrmont-Ultimo	36,837 (2016)	150	246
Redfern-Chippendale	14,583 (2016)	220	66
Potts Point-Woolloomooloo	14,953 (2016)	150	100

Table 6-3 provides a comparison of the total number of residents and population density between the Blackwattle Bay SSP Study Area, Pyrmont-Ultimo, Redfern-Chippendale and Potts Point-Woolloomooloo. The Blackwattle Bay SSP Study Area will have the highest population density (339 residents per hectare), which is more than double that of Pyrmont-Ultimo (144 residents per hectare). In contrast, Redfern-Chippendale has the lowest population density (102 residents per hectare).

Table 6-3: Comparison of residents between the Blackwattle Bay SSP Study Area and other City of Sydney neighbourhoods

Precinct	Residents	Size (hectares)	Population density (residents/ha)
Blackwattle Bay SSP Study Area	2,850 (planned)	8.4	339
Pyrmont-Ultimo	21,656 (2016)	150	144
Redfern-Chippendale	22,501 (2016)	220	102
Potts Point - Woolloomooloo	21,205 (2016)	150	141

6.5.4.3 Benchmarking 'Journey To Work' mode share data

Figure 6-9 shows the 'Journey To Work' mode share for residents and workers in Pyrmont-Ultimo. Walking and cycling was the most popular 'Journey To Work' mode for residents (43%), followed by public transport (33%). Together, walking, cycling and public transport accounted for 76% of 'Journey To Work' trips by residents. Private vehicles accounted for 24% of all 'Journey To Work' trips by residents.

Public transport was the most popular 'Journey To Work' mode for workers (55%) in Pyrmont-Ultimo. Walking accounted for 12% of all 'Journey To Work' trips for workers. When combined, walking, cycling and public transport accounted for just over 67% of all 'Journey To Work' trips for workers. Private vehicles accounted for 34% of all 'Journey To Work' trips by workers.

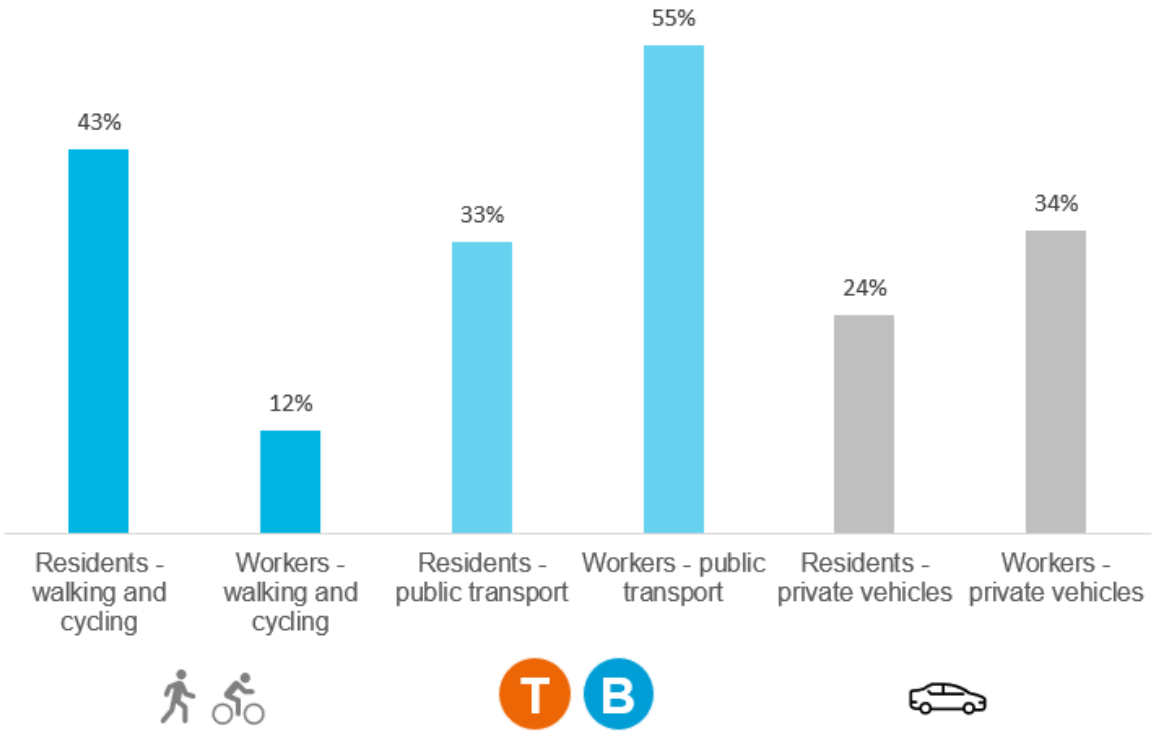


Figure 6-9: 'Journey to Work' mode share for Pyrmont-Ultimo

Figure 6-10 shows the 'Journey To Work' mode share for residents and workers in Redfern-Chippendale. Public transport was the most popular Journey To Work mode for residents (51%), followed by walking and cycling (29%). Together, walking, cycling and public transport accounted for almost 77% of 'Journey To Work' trips by residents. Private vehicles accounted for 23% of all 'Journey To Work trips' by residents.

Public transport was the most popular 'Journey To Work' mode for workers (51%) in Redfern-Chippendale. Walking accounted for 13% of all 'Journey To Work' trips for workers. When combined, walking, cycling and public transport accounted for just over 63% of all 'Journey To Work' trips for workers. Private vehicles accounted for 37% of all 'Journey To Work' trips by workers.

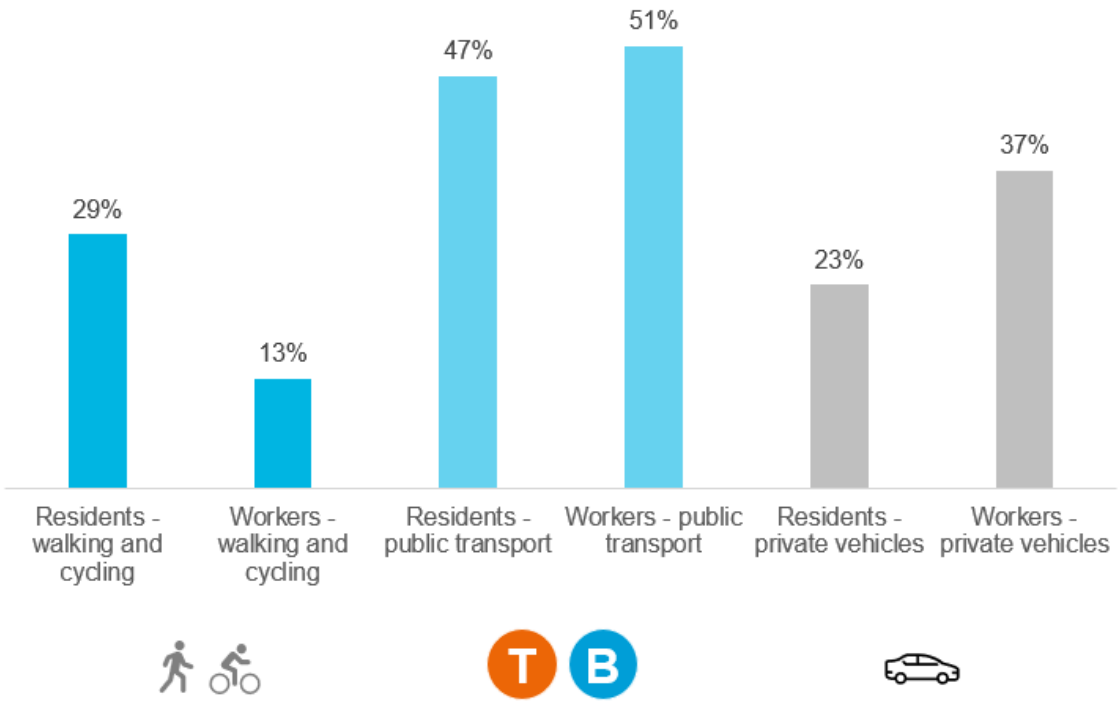


Figure 6-10: 'Journey to Work' mode share for Redfern-Chippendale

Figure 6-11 shows the 'Journey To Work' mode share for residents and workers in Potts Point-Woolloomooloo. Public transport was the most popular 'Journey To Work' mode for residents (43%), followed by walking and cycling (34%). Together, walking, cycling and public transport accounted for almost 78% of 'Journey To Work' trips by residents. Private vehicles accounted for 22% of all 'Journey To Work' trips by residents.

Public transport was the most popular 'Journey To Work' mode for workers (46%) in Potts Point-Woolloomooloo. Walking accounted for 16%% of all 'Journey To Work' trips for workers. When combined, walking, cycling and public transport accounted for 62% of all 'Journey To Work' trips for workers. Private vehicles accounted for 38% of all 'Journey To Work' trips by workers.

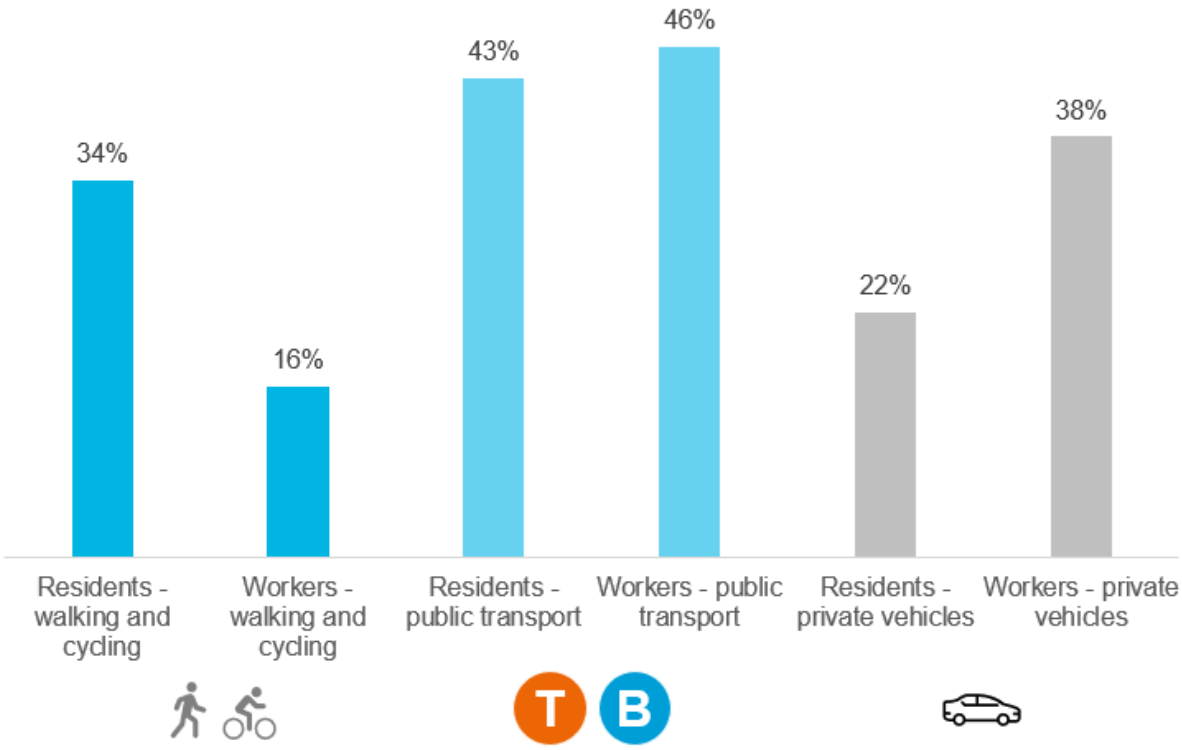


Figure 6-11: 'Journey to Work' mode share for Potts Point-Woolloomooloo

6.5.5 Conclusion

Outcome: The above analysis indicates Redfern-Chippendale has the best access to public transport, but the lowest population and employment densities. Density lends itself to the provision of a comprehensive public transport network of infrastructure and services. Compact and dense urban form also makes walking and cycling attractive mode choices for shorter trips. This suggests Redfern-Chippendale may not an exemplar to benchmark for the Blackwattle Bay SSP Study Area mode share targets.

Scenario 2 has been identified as an achievable mode share target for the Blackwattle Bay SSP Study Area. While none of Pyrmont-Ultimo, Redfern-Chippendale or Potts Point-Woolloomooloo achieved an 80% sustainable transport mode share for 'Journey To Work' trips for residents or workers, it is thought that this is an achievable target for a smaller development area.

Scenario 3 may be deemed more of a stretch target, but the NSW Government commitment to the construction of Pyrmont Station on the new Sydney Metro West Line presents a sound basis to implement the significant changes to culture and travel behaviours required to achieve this mode share target.

Therefore, it is recommended that **Scenario 3: stretch mode share target be adopted as the preferred option.** Scenario 3 comprises a morning peak period mode share target of 85% walking, cycling and public transport, and 15% private vehicle.

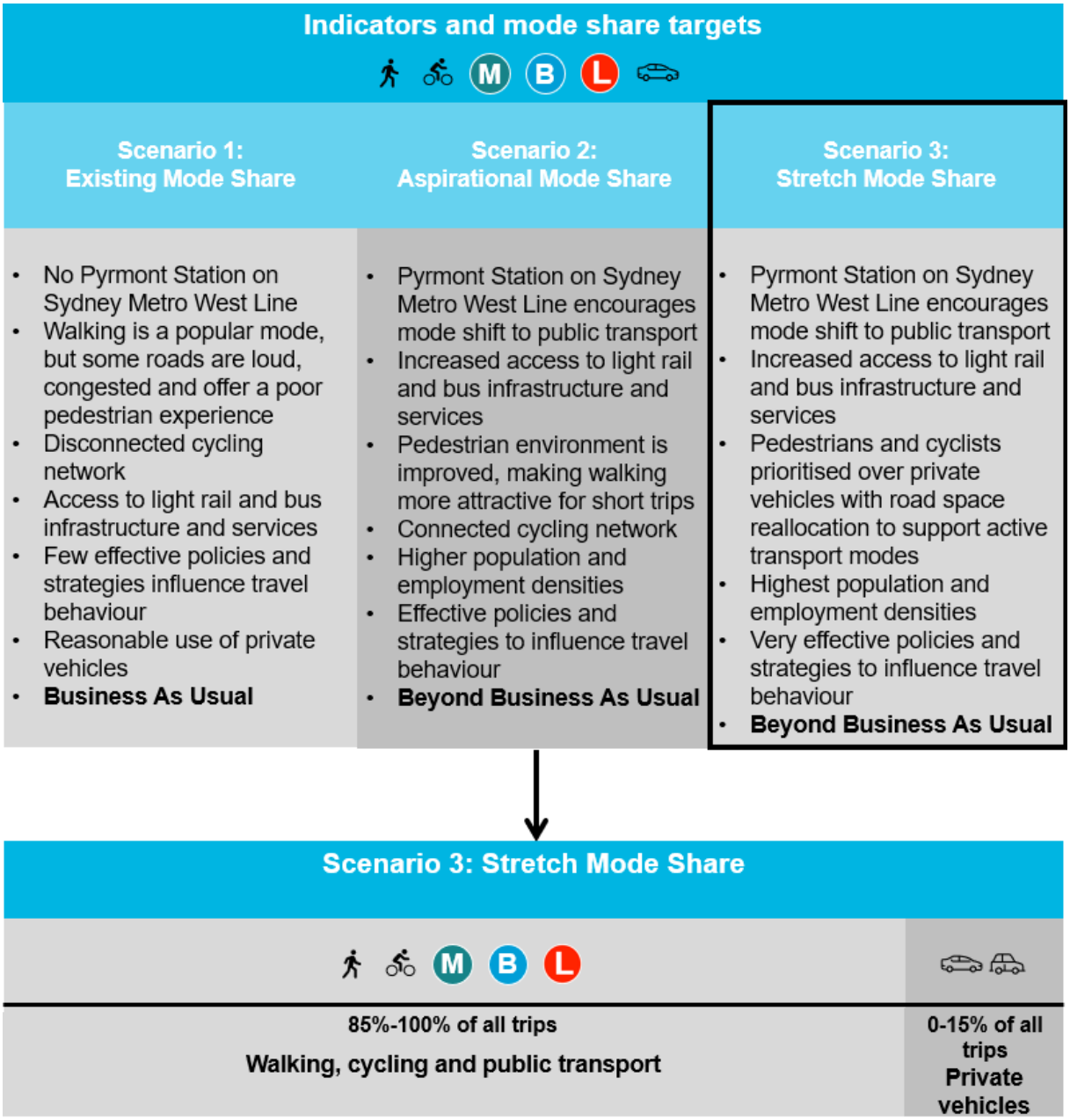


Figure 6-12: Scenario 3 conclusion

7.0 Validation

7.1 Methodology overview

The study area, scope and methodology were endorsed at project commencement at the end of 2017 and early 2018. The stakeholders included Infrastructure NSW (then UrbanGrowth NSW), the City of Sydney and Transport for NSW (then Roads and Maritime Services). The framework was finalised at the meeting on 10 May 2018.

A 'Vision and Validate' approach draws on an understanding of what the future of Blackwattle Bay could hold and what can be done to achieve it. Performance is then tested against achieving this vision, while allowing for room to adapt for the unknown.

The approach has been adopted to the assessment of the future vision for Blackwattle Bay, identified in Section 0. The vision and the mode share scenarios identified to support this vision have been assessed through the following stages:

- Trip generation assessment – as described in Section 7.3
- Transport capacity assessment – as described in Section 7.4
- Traffic impacts – as described in Section 7.5.

7.2 Validating the mode share targets

In line with the 'Vision and Validate' approach, stretch mode share targets have been defined, which will support the delivery of the overarching *Blackwattle Bay Precinct Plan* vision and objectives.

Section 0 defined three potential mode share scenarios, these are reiterated Figure 7-1 below.

This visioning exercise presented *Scenario 3: stretch mode share targets* as the most appropriate and viable option. **Scenario 3 is 'Beyond Business as Usual'**. The '**Beyond Business as Usual'** approach presented will support delivery of the Blackwattle Bay Precinct Plan objectives with targets for walking, cycling and public transport far higher than those for private car. This is a feasible and desirable scenario, validated in this section of this report.

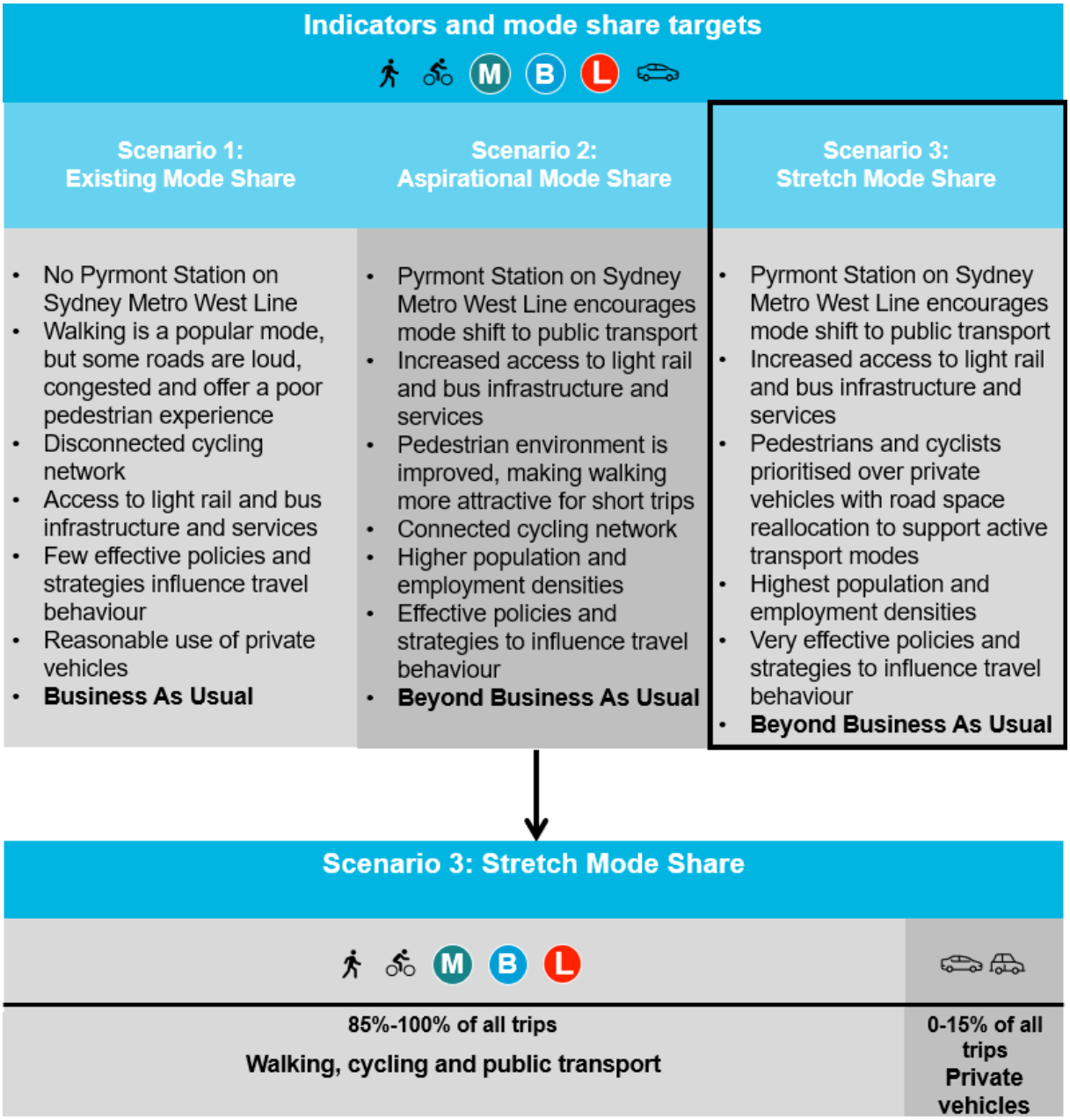


Figure 7-1: Preferred morning peak period mode share scenario for Blackwattle Bay

7.3 Trip generation assessment

7.3.1 Approach

A detailed four-step methodology was used to undertake the trip generation assessment. This approach took the trip generation and mode share work developed by Arup in the new *Sydney Fish Market Environmental Impact Statement* and combined it with existing trip generation and mode share behaviour for Pyrmont-Ultimo. This trip generation assessment includes Journey To Work trips as well as other trip types such as education, recreation and shopping.

The combined trips were re-allocated based on the preferred scenario identified in Section 6.5, which aims to achieve 85% of all trips in the morning peak period (7:00am to 9:00am) by walking, cycling and public transport, and the remaining 15% to be taken by private vehicle. This process is shown in Figure 7-2.

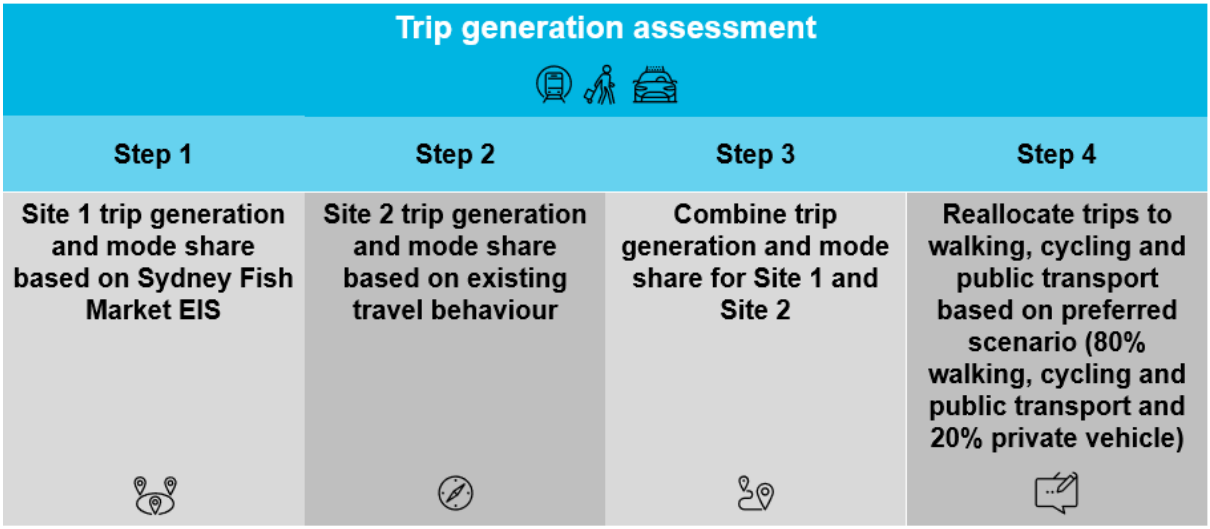


Figure 7-2: Trip generation assessment approach

7.3.2 Step 1: Site 1 trip generation and mode share

The Traffic Impact Assessment prepared for the new *Sydney Fish Market Environmental Impact Statement* expects a combination of employees, buyers/distributors and visitors will travel to Site 1 in the morning peak period between 7:00am and 9:00am. It is anticipated that 50% of Site 1 trips will be by private vehicle.

Table 7-1: Site 1 weekday 7:00am to 9:00am mode share

Mode	Trips	Percentage
Walking	685	32%
Light rail	158	7%
Private vehicle	1,061	50%
Bicycle, coach, bus and taxi	211	10%
Total	**2,115**	**100%**

Source: *New Sydney Fish Market Environmental Impact Statement*, Traffic Impact Assessment, Arup, 2019

7.3.3 Step 2: Site 2 trip generation and mode share

Assuming future residents, employees and visitors of Site 2 follow existing travel behaviours (without the implementation of modal strategies detailed in Section 0), it is expected that Site 2 would generate 3,220 public transport trips, 2,265 private vehicle trips and 1,630 walking and cycling trips in the morning peak period (7:00am to 9:00am). A breakdown of the anticipated trip generation and subsequent mode share for Site 2 is shown in Table 7-2.

Table 7-2: Site 2 weekday 7:00am to 9:00am mode share

Mode	Peak period demand					
	Resident trips	%	Employee trips	%	Total trips	%
Walking & cycling	1,120	45%	510	11%	1,630	23%
Public transport	720	29%	2,500	54%	3,220	45%
Private vehicle	640	26%	1,625	35%	2,265	32%
Total	**2,480**	**100%**	**4,635**	**100%**	**7,115**	**100%**

There are approximately two planned jobs for every planned resident at Blackwattle Bay. This means the dominant transport task during the morning peak period will be to accommodate people travelling to Blackwattle Bay from other parts of Sydney. A multi-modal transport network which prioritises walking and cycling for shorter trips and metro, light rail and bus for longer trips will support the aspirational sustainable mode share target.

7.3.4 Step 3: Combined Site 1 and Site 2 trips and mode share

Table 7-3 provides a summary of the combined trips and mode shares for Site 1 and Site 2. The mode share breakdown in this table reflects:

- The anticipated number of trips and mode share for Site 1
- The application of existing 'Journey to Work' travel behaviour for residents and workers in Pyrmont-Ultimo.

The new Sydney Fish Market and Scenario 2 have 9,225 trips combined in the morning peak period (7:00am to 9:00am).

Table 7-3: Blackwattle Bay anticipated weekday 7:00am to 9:00am mode share

Scenario		Private vehicle	Active & public Transport	Total
Site 1				
New Sydney Fish Market TIA	Trips	1,060	1,050	2,110
	Mode share	50%	50%	100%
Site 2				
Scenario 2	Trips	2,265	4,850	7,115
	Mode share	32%	68%	100%
New Sydney Fish Market + Scenario 2	**Trips**	**3,325**	**5,900**	**9,225**
	Mode share	**36%**	**64%**	**100%**

7.3.5 Step 4: Reallocate trips based on preferred scenario

The above analysis indicates existing travel behaviours are likely to result in a mode share of 64% active and public transport and 36% private vehicle. Section 9.0 details modal strategies for private vehicles, walking, cycling and public transport. These modal strategies have been developed to achieve an 85% active and public transport and 15% private vehicle mode share target for Blackwattle Bay. Table 7-4 shows the anticipated number of trips by mode using these targets for Blackwattle Bay.

Table 7-4: Blackwattle Bay anticipated number of trips by mode with 85% by active and public transport and 15% by private vehicle

Blackwattle Bay	Private vehicle	Active & public transport	Total
Number of trips	1,385	7,840	9,225
Mode share	15%	85%	100%

The reallocation of trips to walking, cycling and public transport has been broken down further into walking and cycling trips and public transport trips. This reallocation was undertaken using the proportions identified in Table 7-2. Table 7-2 identified 23% of trips would be taken by walking and cycling, and 45% by public transport. This means:

- 34% of all sustainable transport trips would be undertaken by walking and cycling
- 66% of all sustainable transport trips would be undertaken on metro, light rail or bus

Applying these proportions to the Blackwattle Bay SSP Study Area indicates 5,170 trips (or 56%) would be taken on metro, bus or light rail, and 2,670 trips (or 29%) would be undertaken by walking or cycling. This is shown in Table 7-5.

Table 7-5: Blackwattle Bay anticipated number of trips by mode

Blackwattle Bay	Private vehicle	Walking and cycling	Public transport	Total
Number of trips	1,385	2,670	5,170	9,225
Mode share	15%	29%	56%	100%

7.4 Public transport capacity assessment

Analysis of public transport patronage indicates approximately 67% of morning peak period trips occur between 8:00am and 9:00am in the morning peak hour. Applying this to the Blackwattle Bay Precinct Plan, approximately 3,460 public transport trips would be generated during the morning peak hour.

Opal data was analysed for March 2019. This analysis showed there is existing available capacity on the L1 Dulwich Hill Line and bus routes that service stops immediately adjacent to Blackwattle Bay.

Inbound to the Sydney CBD, there is existing available capacity of approximately 1,340 potential passengers on bus services and approximately 445 potential passengers on light rail services during the morning peak hour. This equates to combined existing available capacity of 1,785 potential passengers inbound to the Sydney CBD during the morning peak hour.

Table 7-6 summarises the existing available capacity for bus and light rail services inbound to the Sydney CBD during the morning peak hour.

Table 7-6: Inbound existing available public transport capacity

Blackwattle Bay	Existing capacity	Existing patronage	Existing available capacity
Bus	2,700	1,360	1,340
Light Rail	1,440	995	445
Total	**4,140**	**2,355**	**1,785**

Outbound from the Sydney CBD, there is existing available capacity of approximately 960 potential passengers on bus services and approximately 660 potential passengers on light rail services during the morning peak hour. This equates to combined existing available capacity of 1,620 potential passengers outbound from the Sydney CBD during the morning peak hour.

Table 7-7 summarises the existing available capacity for bus and light rail services outbound from the Sydney CBD during the morning peak hour.

Table 7-7: Outbound existing available public transport capacity

Blackwattle Bay	Existing capacity	Existing patronage	Existing available capacity
Bus	1,360	400	960
Light Rail	820	160	660
Total	**2,180**	**560**	**1,620**

When combined, analysis of Opal data indicates that there is sufficient capacity on the existing public transport network to accommodate the anticipated uplift in demand associated with an 85% walking, cycling and public transport mode share for the Blackwattle Bay renewal.

A Pyrmont Station will be built on the Sydney Metro West Line. The Sydney Metro West Line is scheduled to commence operation in 2030. The Sydney Metro West Line has an ultimate capacity of 40,000 passengers per hour in each direction. In peak periods, 30 metro trains would operate in each direction, resulting in two minute frequencies.

One of three Environmental Impact Statements has been exhibited for the Sydney Metro West Line. The Stage 1 Environmental Impact Statement focuses on all major civil construction works between Westmead and The Bays.

The Stage 3 Environmental Impact Statement will focus on all major civil construction works including station excavation, tunnels, stations, depots and rail systems between The Bays and the Sydney CBD (via Pyrmont). It will also detail operations on the line.

At the time of writing this report, information that could be used to inform a Sydney Metro West Line capacity assessment for Pyrmont Station is not currently available. However, due to the transformative nature of this infrastructure project, it is anticipated that the Sydney Metro West Line will have sufficient capacity to play a significant role in accommodating demand associated with the Blackwattle Bay SSP Study Area renewal.

7.5 Traffic impacts

7.5.1 Model scenarios

To assess the operational traffic impacts of the Blackwattle Bay precinct, the following three scenarios were developed in the future year 2033:

- 2033 without development
- 2033 with development (extrapolation of existing travel behaviour)
- 2033 with development and traffic and transport interventions (85% walking, cycling and public transport mode share, 15% private vehicle mode share).

7.5.1.1 2033 without development

The aim of this scenario was to assess the operational state of the network on the future year and set a base to further compare the Blackwattle bay development options. As such, the existing morning base models were updated to reflect the future 2033 traffic demand and the already agreed committed projects in the area.

The 2033 demand development was based on the demand growth extracted from the Sydney Motorway Project Model, provided by Transport for NSW. Refer to Section 7.5.2.

Information on committed projects in the area was also provided by Transport for NSW, such as optimising traffic flow across the Anzac Bridge with smart motorway infrastructure during peak periods.

7.5.1.2 2033 with development

This scenario includes all changes from the previous scenario, plus the traffic volumes generated and attracted by Blackwattle bay development, as well as upgrades on the following two intersections:

- Bridge Road and Wattle Street
- Bank Street and Miller Street

Both intersections have been designed in accordance with Transport for NSW guidelines and the relevant Australian standards. Both intersections and the new through-site link are able to accommodate the following potential vehicle types:

- 14.5-metre long rigid buses (for both through and turning movements)
- 8.8-metre long medium rigid vehicles (for both through and turning movements)

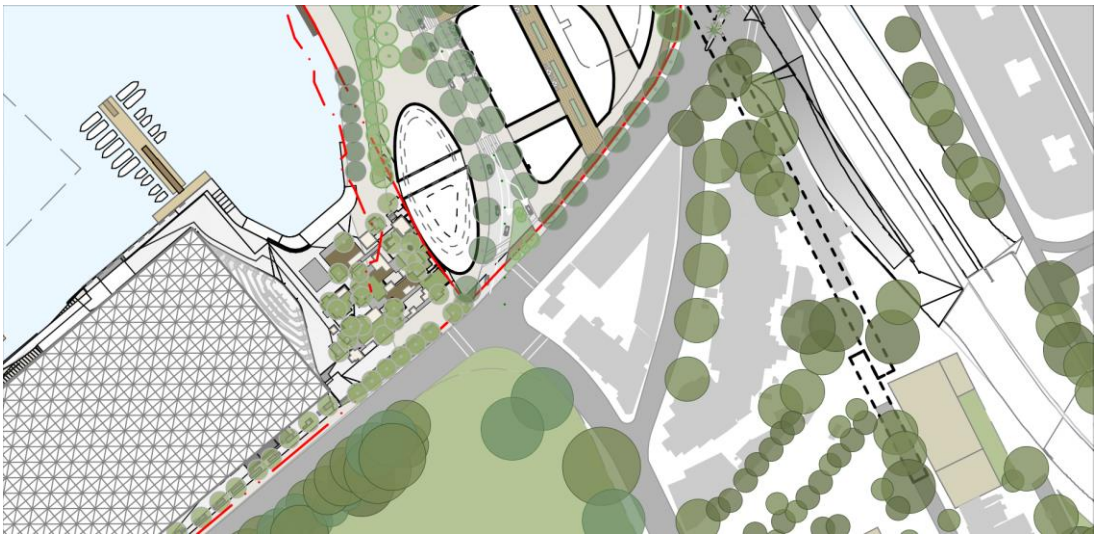


Figure 7-3: Bridge Road and Wattle Street intersection upgrade

Source: FJMT, January 2021

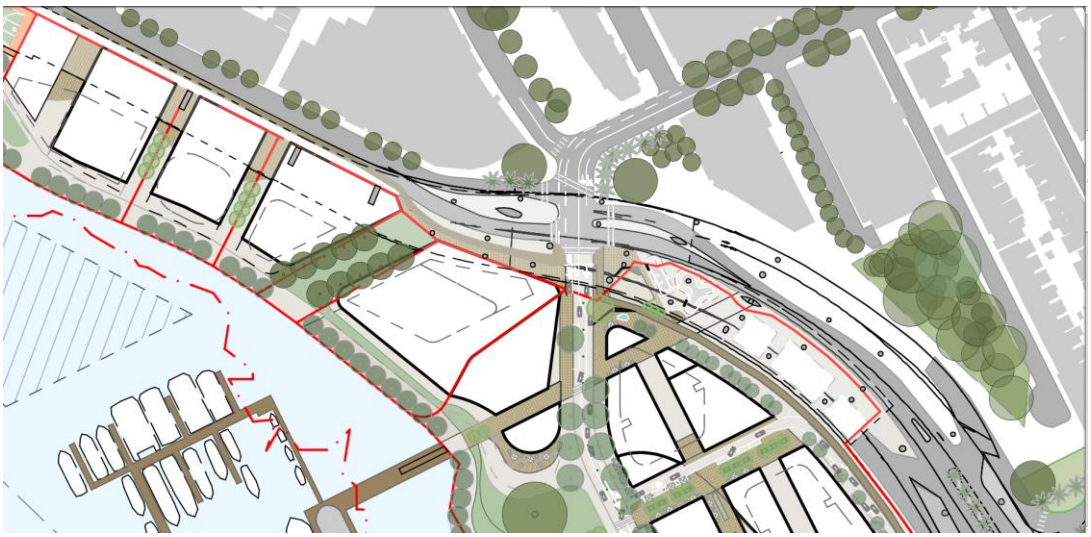


Figure 7-4: Bank Street and Miller Street intersection upgrade

Source: FJMT, January 2021

7.5.1.3 2033 with development and traffic and transport interventions

This third scenario considers the same network upgrades as the previous scenario. However, the traffic demand generated by and attracted to the new dwellings is expected to decrease with the implementation of other traffic and transport interventions. This scenario aligns with the 85% walking, cycling and public transport mode share target, and the subsequent transport and traffic strategies identified in Section 9.0.

7.5.2 Strategic modelling

Future year traffic model matrices were developed following the calibration and validation of the 2017 base year models. Forecast demand was extracted from the Sydney Motorway Project Model (SMPM) and received through TfNSW. Traffic demand matrices were developed for 2033 forecast year.

7.5.3 Measures of network performance

Level of Service is a measure to describe the operational conditions and efficiency of a road or intersection. The definition of Level of Service generally outlines the operating conditions in terms of speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and road safety. It is a qualitative measure describing operational conditions within a roadway or intersection, as perceived by motorists and/or passengers.

There are six levels of service; Level of Service A to Level of Service F. Level of Service A represents the best operating conditions and Level of Service F the poorest operating conditions. When the level of service of a road or intersection falls below Level of Service D, investigations are generally carried out to identify suitable remediation. However, constraints in built up urban areas mean that Level of Service E and Level of Service F are regularly experienced by motorists on the Sydney road network during traffic peak periods.

Intersection performance and level of service

Average delay is often used to assess the operational performance of intersections, with level of service used as an index. An assessment of performance of the intersection is undertaken to determine the average delay times experienced by traffic at the intersection. The intersection is then characterised into its corresponding level of service ‘band’ based on these delay times.

A description of the level of service scale for intersection performance is provided in Table 7-8. For analysing intersection performance in this traffic and transport assessment, all exit blocking constraints, applied in the microsimulation models to reflect network congestion beyond the modelled network extents, were removed. This allows for an assessment of the intersections within the modelled network, irrespective of any downstream queueing that would mask the actual operation of the intersection.

7.5.4 Intersection performance

As defined in the *Guide to Traffic Generating Developments*, average delay is used to assess intersection performance, with Level of Service (Level of Service) used as an index. The average delays for different Levels of Service is shown in Table 7-8.

Table 7-8: Level of service criteria for intersections

Level of Service	Average Delay/Veh (s/veh)	Traffic Signals | Roundabout	Give Way | Stop Signs
A	≤ 14	Good operation	Good operation
B	14 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	28 to 42	Satisfactory	Satisfactory, but accident study required
D	42 to 56	Operating near capacity	Near capacity and accident study required
E	56 to 70	At capacity; at signals incidents will cause excessive delays Roundabout will require other control mode	At capacity; requires other control mode
F	> 70	Over capacity, unstable operation	Over capacity, unstable operation

Level of Service 'D' is generally accepted by Transport for NSW as a design constraint. It should also be noted that capacity constraints can be used as a demand management technique and that over-provision of capacity can encourage more car use.

In order to show the Level of Service throughout the simulation period, the average vehicle delay was extracted from the model in a one hour interval. As the morning peak period is the focus of this report, the traffic impacts were modelled for 7:00am to 8:00am and 8:00am to 9:00am.

Delay is defined as the time difference between the theoretical travel time for a vehicle to travel from an upstream intersection through a specified intersection at the sign-posted speed, and the average travel time recorded by the simulation.

The following seven key intersections were assessed inside the core model area. It should be noted that the performance of any intersection inside the model boundary area does not consider the impacts of network bottlenecks outside the model boundary area.

1. Bank Street / Miller Street / Existing Fish Market Entry
2. Pyrmont Bridge Road / Bank Street / Western Distributor off-ramps
3. Bridge Road / Wattle Street / Pyrmont Bridge Road
4. Harris Street / Miller Street
5. Harris Street / Pyrmont Bridge Road
6. Bridge Road / Wentworth Park Road / New Sydney Fish Market
7. Glebe Point Road / Bridge Road.

Table 7-10 presents the overall Level of Service at the seven key intersections for the morning peak hour. During the morning peak hour, intersection modelling results indicate that:

- Bank Street / Miller Street / Existing Fish Market Entry:
  - The *2033 with development and transport interventions scenario* sees a 58% increase in traffic volumes when compared with the 2017 base model due. This is largely due to the renewal of Blackwattle Bay plus other additional background traffic generated by other developments in the Pyrmont Peninsula.
  - Despite this, optimised traffic signal phasing in the *2033 with development and transport interventions scenario* mean the average delay remains constant when compared with the 2017 base model (56 seconds versus 57 seconds)
  - *2033 with development scenario* performs the worst with the highest traffic volumes, the worst average delay and the lowest Level of Service. This reinforces the need to prioritise the use of sustainable transport modes.
- Pyrmont Bridge Road, Bank Street and Western Distributor off-ramps:
  - The 2017 base model and all future scenarios have a Level of Service 'F.'
  - All future scenarios have an increase in traffic volumes of between 6% and 8% when compared with the 2017 base model.
  - The *2033 with development and transport interventions scenario* sees an 8% increase in traffic volumes when compared with the 2017 base model.
  - The average delay worsens from 77 seconds in the 2017 base model to 123 seconds in the *2033 with development and transport interventions scenario.* Despite this, optimisation of the signal phasing showed a 17 second improvement on the average delay when compared with the *2033 with development scenario.*
  - Whilst the traffic model shows there may be longer delays for vehicular traffic, this intersection will be a critical link for pedestrians walking between the Blackwattle Bay SSP Study Area and the planned Pyrmont Station, particularly if no alternative pedestrian connections (such as a pedestrian tunnel) are built.
- Bridge Road, Wattle Street and Pyrmont Bridge Road:
  - All future scenarios have a reduction in traffic volumes of between 6% and 8% when compared with the 2017 base model.
  - The *2033 with development and transport interventions scenario* sees a 6% reduction in traffic volumes when compared with the 2017 base model.
  - The average delay worsens from 51 seconds in the 2017 base model to 99 seconds in the *2033 with development and transport interventions scenario*. This can be explained by changes to signal phasing to accommodate a new through-site link in the Blackwattle Bay SSP Study Area. Despite this, optimisation of the signal phasing showed a 32 second improvement on the average delay when compared with the *2033 with development scenario.*
  - Whilst the through-site link may result in longer delays for vehicular traffic, it will be a critical link for pedestrians and cyclists travelling east-west along Bridge Road and Pyrmont Bridge Road, particularly for those accessing the new Sydney Fish Market.
  - The new through-site link also has potential to be used for bus operations.
- Harris Street / Miller Street:
  - All future scenarios have an increase in traffic volumes of between 40% and 51% when compared with the 2017 base model.
  - The average delay worsens from 20 seconds in the 2017 base model to 32 seconds in the *2033 with development and transport interventions scenario*. Despite this,

optimisation of the signal phasing showed a 2 second improvement on the average delay when compared with the *2033 with development scenario.*

- The *2033 with development and transport interventions scenario* is the lowest performing with the highest traffic volumes, the worst average delay and the lowest Level of Service at Level of Service 'C'. This reinforces the need to prioritise the use of sustainable transport modes.
- Whilst the traffic model shows there may be longer delays for vehicular traffic, this intersection will be a critical link for pedestrians walking between the Blackwattle Bay SSP Study Area and the planned Pyrmont Station, particularly if no alternative pedestrian connections (such as a pedestrian tunnel) are built.

- Harris Street / Pyrmont Bridge Road:
  - All future scenarios have an increase in traffic volumes of between 21% and 22% when compared with the 2017 base model.
  - The average delay worsens from 55 seconds in the 2017 base model to 61 seconds in the *2033 with development and transport interventions scenario*. Despite this, optimisation of the signal phasing maintained the average delay of 55 seconds when compared with the *2033 with scenario.*
  - The *2033 with development and transport interventions scenario* performs the worst with the highest traffic volumes, the worst average delay and the lowest Level of Service at Level of Service 'E'. This reinforces the need to prioritise the use of sustainable transport modes.
  - Whilst the traffic model shows there may be longer delays for vehicular traffic, this intersection will be a critical link for pedestrians walking between the Blackwattle Bay SSP Study Area and the planned Pyrmont Station, particularly if no alternative pedestrian connections (such as a pedestrian tunnel) are built.
- Bridge Road / Wentworth Park Road / New Sydney Fish Market:
  - All future scenarios have a reduction in traffic volumes of between -5% and -6% when compared with the 2017 base model.
  - The average delay improves from 8 seconds in the 2017 base model to 6 seconds in the *2033 with development and transport interventions scenario*.
  - The *2033 with development and transport interventions scenario* performs well at Level of Service 'A'; the same outcome for all four scenarios.
  - The Sydney Secondary College Blackwattle Bay Campus is located to the immediate north of Bridge Road, between the intersection of Bridge Road, Wentworth Park Road and the New Sydney Fish Market, and the intersection of Bridge Road and Taylor Street. Table 7-9 identifies the morning peak hour midblock traffic counts on Bridge Road, adjacent to Sydney Secondary College. The morning peak hour is reported on as it is the time period with the highest demand for travel. All future scenarios have a reduction in traffic volumes when compared with the 2017 base model.

Table 7-9 Morning peak hour midblock traffic counts on Bridge Road, adjacent to Sydney Secondary College

Direction	2017 base model	2033 without development	2033 with development	2033 with development and transport interventions
Bridge Road eastbound	970	900	943	930
Bridge Road westbound	889	855	806	838
Total	**1,859**	**1,755**	**1,749**	**1,768**

- Glebe Point Road / Bridge Road:
  - All future scenarios have an increase in traffic volumes of between 6% and 8% when compared with the 2017 base model.
  - The average delay worsens from 50 seconds in the 2017 base model to 56 seconds in the *2033 with development and transport interventions scenario*. Despite this, optimisation of the signal phasing showed a 2 second improvement on the average delay when compared with the *2033 with development scenario.*
  - The *2033 with development and transport interventions scenario* is the lowest performing with the highest traffic volumes, the worst average delay and the lowest Level of Service. All scenarios performed at Level of Service 'D'. This reinforces the need to prioritise the use of sustainable transport modes.

Table 7-10: Intersection performance at seven key intersections in the morning peak hour (8:00am to 9:00am)

Intersection	2017 base model			2033 without development			2033 with development			2033 with development and transport interventions		
	Vol	Ave delay	LoS	Vol	Ave delay	LoS	Vol	Ave delay	LoS	Vol	Ave delay	LoS
Bank St / Miller St / Existing Fish Market	889	57s	E	1,047	46s	D	1,404	112	F	1,401	56s	E
Pyrmont Bridge Rd / Bank St / Western Dstr off-ramps	3,576	77s	F	3,794	100s	F	3,821	140	F	3,868	123s	F
Bridge Rd / Wattle St / Pyrmont Bridge Rd	2,499	51s	D	2,398	58s	E	2,306	131	F	2,363	99s	F
Harris St / Miller St	824	20	B	1,137	26	B	1,194	30	C	1,248	32	C
Harris St / Pyrmont Bridge Rd	2,330	55	D	2,811	44	D	2,842	55	D	2,854	61	E
Bridge Rd / Wentworth Park Rd / New Sydney Fish Market	2,087	8	A	1,955	5	A	1,965	13	A	1,981	6	A
Glebe Point Rd / Bridge Rd	1,977	50	D	2,135	55	D	2,108	54	D	2,133	56	D

Note: LoS represents the worst LoS among the performance levels of the various legs comprising the intersection

7.5.5 Travel time impacts

Travel times were assessed for the same routes used in the 2017 base model validation. These are shown in Figure 7-5.

Figure 7-5: Travel time routes

Table 7-11 shows the modelled average travel time along the three routes for all tested options. During the morning peak period (7:00am to 9:00am), modelling results indicates that:

- Wattle Street (Corridor 1) experiences an increase in travel time towards the peak hour (8:00-9:00), especially in the 2033 with development scenario. This is due to northbound traffic accessing the Western Distributor at the Pyrmont Bridge on-ramp and the increase of traffic volumes at Pyrmont Bridge Road and the Bank Street intersection from the Blackwattle Bay development. This again reinforces the need to prioritise the use of sustainable transport modes to mitigate the impact on vehicular travel times.
- Pyrmont Bridge Road (Corridor 2) also sees an increase of travel time on the eastbound direction towards the end of the simulation. Pyrmont Bridge Road and Bank Street

intersection works at capacity, resulting in delays at all its approaches that are propagated upstream to other intersections.

- Harris Street (Corridor 3) in the northbound direction has a travel time increase in the *2033 with development scenario* and the *2033 with development and transport interventions scenario* due to left turning traffic at Pyrmont Bridge Road. In the southbound direction, the fact that the *2033 with development and transport interventions scenario* has more throughput of right turning vehicles from the Allen Street off-ramp into Harris Street, increases congestion along Harris Street at Fig Street and the travel time at this section.

Table 7-11 Morning peak period travel time validation results

Route ID	Time Period	Direction	2017 base model	2033 without development	2033 with development	2033 with development and transport interventions
Wattle St Corridor 1	7:00am – 8:00am	Northbound	02:22	02:33	02:06	01:59
	8:00am – 9:00am	Northbound	02:29	03:12	07:26	04:18
Pyrmont Bridge Rd Corridor 2	7:00am – 8:00am	Northbound	01:57	02:32	03:10	02:57
		Northbound	02:15	02:29	02:05	02:08
	8:00am – 9:00am	Northbound	03:04	03:32	07:02	05:31
		Northbound	02:13	02:00	03:01	02:53
Harris St Corridor 3	7:00am – 8:00am	Northbound	03:22	03:22	04:11	04:03
		Southbound	03:54	03:48	03:59	04:00
	8:00am – 9:00am	Northbound	06:57	03:58	04:22	04:46
		Northbound	03:58	04:05	04:02	05:01

7.6 Pedestrian impacts

7.6.1 Signal phasing scenarios

Two scenarios were assessed using the SIDRA Intersection modelling platform to analyse the potential pedestrian impacts:

- 2033 with development (extrapolation of existing travel behaviour)
- 2033 with development and traffic and transport interventions (85% walking, cycling and public transport mode share, 15% private vehicle mode share).

The following two intersections were assessed in the immediate vicinity of the Blackwattle Bay SSP Study Area:

- Bank Street / Miller Street / New Through-Site Link
- Bridge Road / Wattle Street / Pyrmont Bridge Road / New Through-Site Link

The existing cycle times were determined using 2014 SCATS data. In the two future 2033 scenarios, cycle times were modelled in decreasing increments of ten seconds from the existing cycle times. This enabled the impact of reducing the cycle times on general traffic to be determined. The intersection operation results are summarised in Table 7-12 and Table 7-13.

The SIDRA Intersection results in Table 7-12 indicate that in the *2033 with development* scenario, there is a potential opportunity to improve the operation of the intersection and reduce pedestrian wait times by reducing the existing cycle time of 110 seconds to 90 seconds. This would result in:

- Minor impacts to general traffic (average delay decreases from 45 seconds to 41 seconds and no change to Level of Service for general traffic)
- Increased pedestrian crossing opportunities (18% more frequent than at present).

Similarly, in the *2033 with development and traffic and transport interventions* scenario, reducing the existing cycle time of 110 seconds to 90 seconds would result in:

- Minor impacts to general traffic (average delay decreases from 44 seconds to 40 seconds and no change to Level of Service for general traffic)
- Increased pedestrian crossing opportunities (18% more frequent than at present).

Table 7-12: Intersection performance of Bank Street / Miller Street / New Through-Site Link in the morning peak hour (8:00am to 9:00am)

Bank St / Miller St / New Through-Site Link	Cycle Time 110 seconds (Existing Cycle Time)		Cycle Time 100 seconds		Cycle Time 90 seconds		Cycle Time 80 seconds		Cycle Time 70 seconds	
	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS
2033 with development	45s	D	43s	D	41s	C	68s	E	279s	F
2033 with development and transport interventions	44s	D	41	C	40	C	68	E	248	F

Note: LoS represents the worst LoS among the performance levels of the various legs comprising the intersection

The SIDRA Intersection results in Table 7-13 indicate that in the *2033 with development scenario,* there is a potential opportunity to improve the operation of the intersection and reduce pedestrian wait times by reducing the existing cycle time of 125 seconds to 95 seconds. This would result in:

- Minor impacts to general traffic (average delay decreases from 54 seconds to 51 seconds and no change to Level of Service for general traffic)
- Increased pedestrian crossing opportunities (24% more frequent than at present).

Similarly, in the *2033 with development and traffic and transport interventions* scenario, reducing the existing cycle time of 110 seconds to 90 seconds would result in:

- Minor impacts to general traffic (average delay decreases from 54 seconds to 49 seconds and no change to Level of Service for general traffic)
- Increased pedestrian crossing opportunities (24% more frequent than at present).

Table 7-13: Intersection performance of Bridge Road / Wattle Street / Pyrmont Bridge Road / New Through-Site Link in the morning peak hour (8:00am to 9:00am)

Bridge Rd / Wattle St / Pyrmont Bridge Rd / New Through-Site Link	Cycle Time 125 seconds (Existing Cycle Time)		Cycle Time 115 seconds		Cycle Time 105 seconds		Cycle Time 95 seconds		Cycle Time 85 seconds		Cycle Time 75 seconds	
	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS	Ave delay	LoS
2033 with development	54s	D	52s	D	52s	D	51s	D	54s	D	138s	F
2033 with development and transport interventions	54s	D	53s	D	54s	D	49	D	57s	E	141s	F

Note: LoS represents the worst LoS among the performance levels of the various legs comprising the intersection

The renewal of Blackwattle Bay could generate high numbers of pedestrians and cyclists during the morning peak period. The SIDRA Intersections results indicate there are potential opportunities to reduce signal cycle times in order to reduce pedestrian dwell times, and improve pedestrian amenity, at the intersections immediately adjacent to the Blackwattle Bay SSP Study Area. These improvements would not be detrimental to general traffic.

8.0 Blackwattle Bay 'Travel Demand Management' Strategy

8.1 'Travel Demand Management' Strategy: Aims and Objectives

The 'Travel Demand Management' Strategy defines a framework to achieve a future policy-driven, sustainable transport mode share target.

'Travel Demand Management' focuses, firstly, on making sustainable travel options and choices available to customers and, secondly, on the communication and promotion of sustainable travel options which can influence mobility. In so doing, 'Travel Demand Management' can help to deliver sustainable urban outcomes, enhancing liveability and productivity, by supporting better choices in modes of travel and help in decision making that influences the volume of travel.

The definition of **objectives**, **principles**, **measures, Interventions** and **targets** are critical to a successful 'Travel Demand Management' Strategy. The following sections describe each of these elements in relation to Blackwattle Bay.

8.2 'Travel Demand Management' Strategy: Objectives for Blackwattle Bay

Objectives to ensure positive outcomes are defined for individuals, businesses and the broader community. The objectives developed to be applied to Blackwattle Bay are:

- Provide excellent travel choices and encourage walking, cycling and public transport trips
- Limit unnecessary car trips, particularly for shorter trips
- Promote alternatives to vehicle ownership
- Reduce the need to travel, especially in peak periods
- Facilitate the efficient use of land, through road space allocation and proximity of jobs and services to people
- Create a liveable community, with excellent local environmental quality and community cohesion

8.3 'Travel Demand Management' Strategy: Principles for Blackwattle Bay

The following 'Travel Demand Management' principles have been applied in the development of this strategy. They reflect the key principles of the Blackwattle Bay Precinct Plan.

8.3.1 Vehicle Parking

The greater the restrictions placed on private vehicle parking, the less likely people will use private vehicles. Examples such as requiring payment for parking, restricting time limits and reducing the amount of parking available, have all been proven to deter people from driving to their destinations, which aids the shift towards public transport, walking and cycling. However, this must be balanced against the fundamental mobility needs of a diverse community.

The Blackwattle Bay SSP Study Area is currently classified as a Category B in the City of Sydney Local Environmental Plan (2012) for residential private vehicle parking rates under Land Use and Transport Integration. It is also identified as a Category F for commercial private vehicle parking rates under Public Transport Accessibility.

Following stakeholder engagement with the NSW Department of Planning, Industry and Environment, Infrastructure NSW, Transport for NSW and the City of Sydney, it was determined that parking should be reclassified under both Land Use and Transport Integration and Public Transport Accessibility. The construction of Pyrmont Station on the Sydney Metro West Line, along with improvements to walking and cycling infrastructure, are the catalysts for this reclassification.

Whilst this report suggests the restriction of parking will ultimately reduce the maximum number of permissible parking spaces, the private vehicle modal split will still be a small proportion of the overall number of Journey To Work trips. It is anticipated that car ownership for this demographic would be largely based on convenience.

Reclassifying the Blackwattle Bay SSP Area from a Category B to a Category A for Land Use and Transport Integration would reduce the maximum number of residential parking spaces by 15%, from 1,091 spaces under Category B to 932 spaces under Category A. This is shown in Figure 8-1.

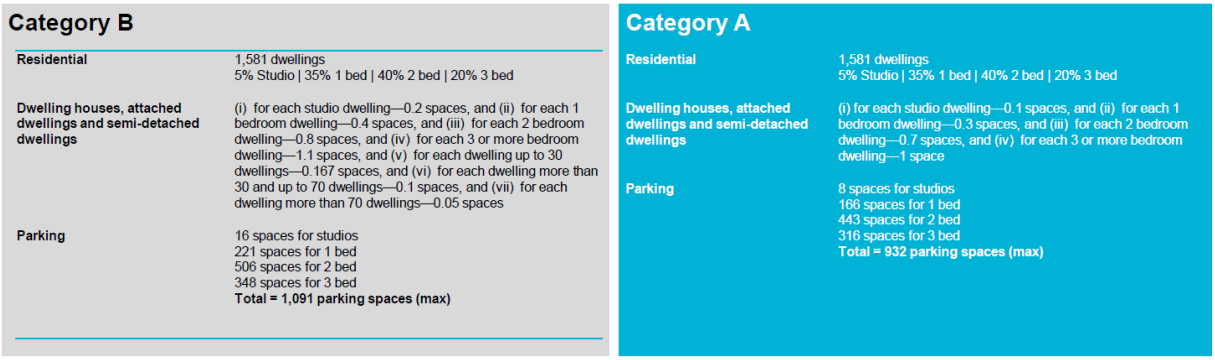


Figure 8-1: Maximum residential private vehicle parking spaces

The provision of Pyrmont Station on the Sydney Metro West Line along with improvements to walking and cycling infrastructure also presents an opportunity to recategorize the Blackwattle Bay SSP Study Area as a Category D for commercial, retail and hotel private vehicle parking rates under Public Transport Accessibility. This would reduce the number of commercial, retail and hotel private vehicle parking spaces by 25% (excluding the new Sydney Fish Market site, which is already approved and under construction), from a maximum of 636 spaces under Category F to 474 spaces under Category D. Maximum private vehicle parking rates remains constant for accommodation uses regardless of the category applied. This is shown in Figure 8-2.

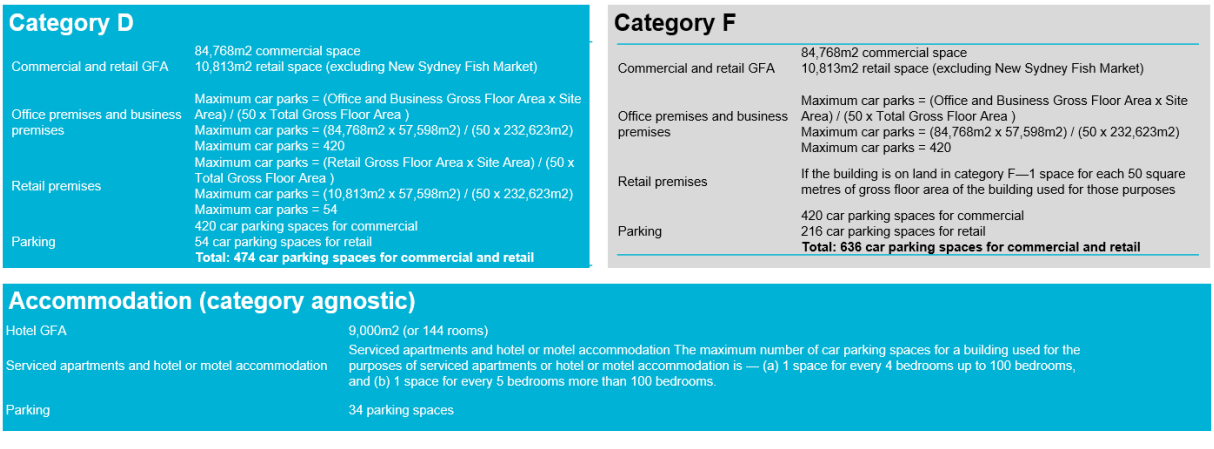


Figure 8-2: Maximum commercial, retail and hotel private vehicle parking spaces

When combining the proposed land uses (excluding the new Sydney Fish Market site, which is already approved and under construction) within the Blackwattle Bay SSP Study Area, shifting from Categories B and F to Categories A and D reduces the maximum number of private vehicle parking spaces by 20% (or 355 spaces). Categories A and D (as proposed for the precinct) yield a maximum number of 1,406 parking spaces. Whereas, the previous classifications as Categories B and F would have yielded a maximum number of 1,761 parking spaces, as shown in Table 8-1

Table 8-1: Maximum private vehicle parking provisions

Land use	Category A / D	Category B / F
Residential	932	1,091
Commercial, retail and accommodation	474	670
Maximum number of parking spaces	**1,406**	**1,761**

8.3.1.1 Case studies on comparison of maximum permissible and proposed parking rates

Two case studies were analysed to compare maximum permissible and proposed parking rates:

- Waterloo Metro Quarter, Waterloo
- Tech Central, Haymarket

These case studies were selected as they are current projects within the City of Sydney Local Government Area and have immediate proximity to mass transit. Waterloo Metro Quarter will be a transit-oriented development located above the future Waterloo Station. Tech Central is located immediately adjacent to Central Station.

Figure 8-3 summarises the comparison of maximum and proposed parking rates for Waterloo Metro Quarter and Tech Central.

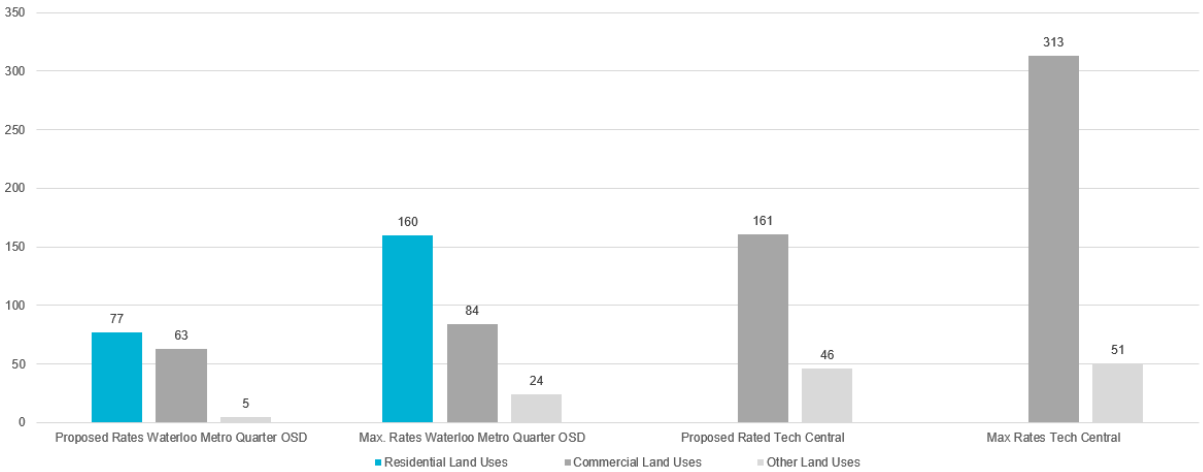


Figure 8-3 A comparison of proposed and maximum permissible parking rates for Waterloo Metro Quarter and Tech Central

This analysis demonstrated that 268 parking spaces was the maximum parking provision permitted for the Waterloo Metro Quarter. This would allow for a maximum of 160 residential parking spaces, 84 commercial parking spaces and 24 for other purposes (such as childcare and religion).

The Waterloo Metro Quarter proposes a total of 145 parking spaces. This is 123 fewer (or 46% less) than the maximum number of parking spaces permitted.

Tech Central has a maximum parking provision of 364 parking spaces. This would allow for a maximum provision of 313 commercial parking spaces and 51 for other purposes (such as retail).

Tech Central proposes a total of 207 parking spaces. This is 157 fewer (or 43% less) than the maximum number of parking spaces permitted.

These findings demonstrate that developments do not always build out to the maximum number of permissible parking spaces. This is particularly pertinent for a waterfront location such as Blackwattle Bay, where the construction of basements is costly due to issues such as contamination, reclaimed land and a high water table. Subsequent work will be undertaken for each development site when Development Applications are lodged for assessment.

8.3.1.2 On-street vehicle parking

Demand for parking in Pyrmont is in high demand. To balance competing demands for parking space, parking controls could be adjusted to shift the function of on-street parking away from long-term stays for commuters to access points for visitors.

Time limits help to ensure parking turnover in retail precincts. Time limits also mitigate commuter parking in residential neighbourhoods and encourage public transport use. Under these arrangements,

visitors and small businesses in Pyrmont may be eligible for parking permits. Permits exempt the applicable users from most time limits and parking meter fees in a specific area.

Such measures could include the introduction of time restricted on-street parking along Bank Street, Taylor Street and Ferry Road. Other measures could include the installation of car share parking pods adjacent to public transport nodes and key areas of mixed land uses.

8.3.2 Walking environment

Walking is an integral part of everyday life and an important part of Greater Sydney's transport system. Most journeys within Greater Sydney start and end with walking, and as a result, well-placed and well-connected walking networks can extend the reach of public transport.

This 'Travel Demand Management' Strategy recognises walking as a sustainable transport mode, and encourages people to walk for transport, especially for trips within two-kilometre catchments of origins and destinations. Encouraging more people to walk, and combining more walking with public transport trips, is an effective way to free up capacity on the transport system and reduce congestion in centres.

The quality of the walking environment within two kilometres of key destinations will influence walking as an option for residents, workers and visitors within Blackwattle Bay. In particular, the quality of the walking environment within an 800-metre walking catchment of Pyrmont Station on the Sydney Metro West Line will influence the uptake of public transport as a mode of travel within Blackwattle Bay. This applies similarly to the Inner West Light Rail stations around Blackwattle Bay, specifically Glebe, Wentworth Park and Sydney Fish Market. In addition, the road speed has a direct impact on a pedestrian's sense of safety within an environment.

The following eight principles have been identified as needing to be addressed in order to encourage walking within Blackwattle Bay. These are based on the objectives and supporting priorities detailed in Collaboration Area Place Strategies in Greater Sydney:

1. *Easy to cross* – facilities which make it easy for pedestrians of all abilities and ages to cross roads
2. *Shade and shelter* – ample urban greening provides cover along pathways to ensure good amenity and comfortable use in all seasons
3. *Places to stop and rest* – shaded spaces for pedestrian to stop during journeys, in particular for people with restricted mobility
4. *Not too noisy* – pedestrians can hold conversations while walking on footpaths adjacent to roads
5. *People feel safe* – the environment is and feels safe for pedestrians to ensure all users, including those of different ages and mobility levels, feel able to walk comfortably at all times
6. *Quick and direct* – pedestrian access to and from locations is uninterrupted to ensure timely travel over shorter distances
7. *Ample provision of space and distance between pedestrians on footpaths* – wide enough to accommodate all users at a safe distance
8. *Variety* – the walking environment is interesting for pedestrians through the presence of urban greenery, active frontages and activated Places

The provision of a high-quality walking environment within Blackwattle Bay will result in more walking trips, assisting in the shift towards sustainable mode share goals outlined in Section 0.

8.3.3 Cycling environment

Cycling is an ideal mode of transport for short distances of approximately ten kilometres. Riding a bike or e-bike can often be quicker than a car for trips within the ten-kilometre catchment, and faster than public transport for trips up to eight kilometres.

Encouraging more people to cycle for transport will help to reduce the demand for other modes of transport. Well-placed cycling networks can also extend the catchment of the public transport system.

The quality of the cycling environment within ten kilometres of key destinations within Blackwattle Bay could positively influence cycling volumes within the study area.

The following six key design principles have been identified as needing to be addressed in order to encourage further uptake of cycling in Blackwattle Bay:

1. *Separated infrastructure* – cyclists must be separated from high volume traffic and pedestrians, both at junctions and on the stretches of road between them
2. *Connections* – routes must connect with each other forming a wider network
3. *Quick and direct* – routes must be direct, logical and intuitive to all users
4. *Priority* – physical barriers along cycling routes, such as poles and fences, should be avoided to ensure ease of ride and cycle priority maintained throughout the network
5. *Facilities* – end of trip facilities should be provided to encourage cycling for commuting
6. *Shade* – ample urban greening along cycling routes provides shade to ensure comfortable use in all seasons

The provision of a high-quality cycling environment within Blackwattle Bay will result in a greater use of active modes of transport, assisting in the shift towards sustainable mode share goals outlined in Section 0.

8.4 'Travel Demand Management' Strategy: Measures and Impacts

The following sections describe 'Travel Demand Management' measures that are suitable for businesses, educational facilities and communities to manage travel demand and promote sustainable travel in Blackwattle Bay. They focus on policy and travel interventions.

8.4.1 Transport Management Associations

Transportation Management Associations (TMAs) are non-profit, member-controlled organisations that provide initiatives to promote sustainable transport in a particular area. TMAs are generally public-private partnerships, consisting primarily of area businesses with government support.

TMAs provide a long-term framework for delivering 'Travel Demand Management' programs and services. They are usually more cost effective than programs managed by individual businesses and allow small employers to provide services comparable to those offered by large companies.

TMAs connect employers, employees, and government agencies to mitigate traffic congestion challenges through a variety of travel measures. A number of travel intervention measures identified in Section 0 are typically delivered as part of the TMA framework.

In addition, TMAs have the opportunity to utilise emerging technologies in the future, aligning with Blackwattle Bay Accessibility Principles and this Blackwattle Bay Transport Management and Accessibility Plan which reflect a commitment to making Blackwattle Bay a place for transport innovation, which will help shape their offering and monitoring of travel interventions.

TMAs bring together a network of dedicated Travel Management Coordinators (TMCs). TMCs are professionals who work on behalf of TMAs or individual employers and focus on initiatives to facilitate a mode shift to sustainable transport modes.

Table 8-2 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within the Blackwattle Bay to assist in achieving sustainable mode share targets by 2033.

Table 8-2: Transport Management Associations summary table

Objectives	Comments
Travel choice	• Increase in basic transport options and choice
Limit vehicle trips	• Reduction in overall vehicle travel by more than 7%
Alternative modes	• Promote alternative modes of travel and the need to travel
Efficient land use	• Reduction in demand for parking
Community liveability	• Liveable places through a reduction in overall vehicle travel
Application	
• Cluster of multiple employers • Successful implementation of Connect in Macquarie Park and North Ryde • Blackwattle Bay precinct future renewal	

8.4.2 'Travel Plan'

A 'Travel Plan' is an overarching set of measures designed to reduce private car dependency for a development by encouraging use of more sustainable transport modes. A 'Travel Plan' should contain a series of complementary measures which will act in unison to discourage private car dependency. 'Travel Plans' can be developed for residential, business or education developments.

A 'Travel Plan' is often submitted alongside applications for residential and non-residential developments of a particular size and should align and integrate with a TMA if established. This size differs based on Local Government Area.

A 'Travel Plan' must include:

- *Travel data* – baseline travel demand and mode share estimates derived from experience with comparable developments

- *Targets* – including reductions in single occupancy car trips and increased mode share for sustainable transport
- *Action plan* – which outlines the measures to be implemented as part of the 'Travel Plan', associated promotional, information and education initiatives, and management mechanisms to be introduced as part of the Green 'Travel Plan'
- *Commitment* – to the on-going maintenance and adaptation of the action plan to ensure its long-term success, by future occupants and/or owners
- *Monitoring and review* – shall be conducted in consultation with Council officers.

Table 8-3 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-3: 'Travel Plan' summary table

Objectives	Comments
Limit vehicle trips	• Reduction in overall vehicle travel through targets and data
Travel choice	• Encouraging use of active transport and public transport modes
Community liveability	• Improved local environmental quality through reduced car use • Reduction in noise pollution
Application	
• Inclusion in the Blackwattle Bay SSP Study and associated design guidelines for new development applications • Blackwattle Bay, specifically along the active transport corridors	

8.4.3 Provision of bicycle parking and end-of-trip facilities

The Blackwattle Bay Precinct Plan identifies the need to improve and build new cycling links so that cycling is prioritised as a form of transport, which currently impacts travel behaviour in City of Sydney Council LGA.

Adequate provision of bicycle parking and end-of-trip facilities will ensure more commuters, families and residents from a wider catchment use active transport modes for travel. These facilities need to have space to store bicycles, scooters and helmets, in addition to end of trip facilities such as showers and changerooms.

To ensure a future shift towards sustainable modes of travel is achieved, the minimum bicycle parking requirements within commercial areas, educational facilities as well as community, medical, recreational and residential facilities need to be increased in quantity and be situated at easily accessible and safe locations.

The provision of ample and secure bicycle parking and end of trip facilities to serve Blackwattle Bay is currently defined by Blackwattle Bay Design Guidelines which will mirror the City of Sydney DCP which outlines the required bicycle and end of trip facilities for developments. These can be found in Appendix A: Parking Requirements.

The AustRoads *Bicycle Parking Facilities: Updating the AustRoads Guide to Traffic Management Report* (2016) provides information that assists policy makers in identifying what provision of bicycle parking and end-of-trip facilities is appropriate for developments, as well as how they should be designed and accessed. The report provides recommendations and principles that should be followed to encourage people to cycle regularly. The recommended rates for bicycle parking and end of trip facilities by AustRoads are outlined in Appendix A: Parking Requirements assuming a 10% mode share target and for long-term non-residential land use.

Where a higher bicycle mode splits are expected, the rates indicated in Appendix A: Parking Requirements should be factored up based on the specific mode split targets for Blackwattle Bay, and associated bicycle parking demand calculations rounded up, to help ensure a suitable level of bicycle parking provision is provided.

Additional information on the design of bicycle parking is outlined in the AustRoads report, which should be read in conjunction with the *Australian Standard AS 2890.3: 2015 Parking Facilities - Bicycle Parking*.

Table 8-4 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay. Table 8 3 Provision of bicycle parking and end of trip facilities summary table.

Table 8-4: Provision of bicycle parking and end of trip facilities summary table

Objectives	Comments
Travel choice	• Encouraging people from a wider catchment to use active transport
Alternative modes	• Encouraging people to utilise sustainable modes of transport
Community liveability	• Improved local environmental quality through reduced car use
Application	
• New development applications • Blackwattle Bay Area, specifically destinations of inbound commuters from outside of the area and outbound commuters from within the area identified in Section 3.4.	

8.4.4 Maximum parking provision

The Blackwattle Bay Precinct Plan identifies the need to develop an effective and efficient vehicle and parking response.

Introduction of maximum parking provision rates encourages investors and developers in Blackwattle Bay to adhere to a lower parking provision, restricting the number of people who are able to drive to and within the study area; making sustainable modes more attractive and reducing vehicle trips.

The existing car parking requirements for the City of Sydney Council is outlined in Vehicle Parking requirements in Appendix A: Parking Requirements. Blackwattle Bay Design Guidelines will be consistently applied throughout land within Blackwattle Bay with specifications for different types of land use and mirror the City of Sydney DCP maximum parking provisions. The adoption of maximum parking rates outlined in the City of Sydney Development Control Plan will encourage Blackwattle Bay to be a more compact transit-orientated design that leverages its proximity with Pyrmont Station, light rail stops, bus services and ferry wharves, ensuring commercial areas, residential developments and community facilities are highly accessible by public transport and active transport modes in mixed-use areas.

Table 8-5 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-5: Maximum parking provision summary table

Objectives	Comments
Limit vehicle trips	• Encouraging a mode shift away from private vehicle use • Reduction in overall trips through mixed-use developments • Encouraging the design of Transit-Oriented Developments
Travel choice	• Transit-orientated developments improve uptake of other modes
Efficient land use	• Less land required for roads and parking, preserving open space and reducing urban sprawl
Community liveability	• Healthier communities through greater active transport use • Greater economic mobility with success not linked to owning a car • Compact and affordable Transit-Oriented Developments for equitable communities • Reduction in urban heat island effects through land allocation
Application	
• Blackwattle Bay precinct future renewal • Successful removal of minimum parking rates in urban residential and commercial areas of Sydney CBD, New Zealand and California	

Additional measures that can be adopted include:

- Consolidation of car parking with one dedicated parking area as opposed to private on-street parking
- Construction of adaptable car parking structures which could be repurposed for use by public transport services.

Further measures such as future road space reallocation can be considered by Transport for NSW and Councils for on-street parking.

8.4.5 Traffic calming and speed reduction

Traffic calming refers to strategies implemented in the design and operation of roads which are intended to reduce vehicle traffic speeds and volumes on a particular section of road. It is used to change streetscape design to give greater emphasis to pedestrians, cyclists and residents. Traffic calming supports the diverse functions of roads and reallocation of road space and delivers complete streets and universal design principles to enable access for all including people with restricted mobility.

Traffic calming can range from minor modifications of an individual street to comprehensive redesign of a road network. Within Blackwattle Bay, it is recommended the focus be on roads with options explored in detailed design for kerb extensions, raised crossings, pavement treatments, road diets, street trees, shared zones and speed reductions.

Implementing measures to reduce traffic speed improves walking and cycling conditions with greater uptake of activity in addition to increasing safety, reducing air and noise pollution and reducing accidents. This encourages more compact development and local business activity. Traffic calming and speed reduction measures will also assist with the anticipated high volumes of pedestrians accessing the new Sydney Fish Market and the Blackwattle Bay waterfront promenade.

The adoption of complete streets policies, ensuring roads are designed to accommodate a balance of the diverse range of modes, users and activities, and the implementation of traffic calming measures within Blackwattle Bay will assist in creating a safer environment for a shift to a greater uptake of active transport for travel to and from educational facilities, particularly primary and secondary schools.

The following factors influence the level to which a traffic calming project impacts travel:

- **Magnitude of change** – the more traffic calming reduces traffic speeds and improves walking and cycling conditions, the more it will affect overall travel and mode shift
- **Walking and cycling demand** – traffic calming projects have the most impact if implemented near major pedestrian and cycling trip generators, including schools
- **Integration with other improvements** – traffic calming complements other 'Travel Demand Management' measures and when implemented together, can increase the effectiveness of the strategies
- **Land use effects** – traffic calming supports higher density, mixed-use and pedestrian orientated development that further reduce vehicle use and dependency over the long-term.

It should be noted that traffic calming and speed reduction needs to be balanced with the efficient movement of both freight and on-road public transport along key corridors.

Table 8-6 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay

Table 8-6: Traffic calming and speed reduction summary table

Objectives	Comments
Travel choice	• Reduction in overall vehicle travel within areas through the improvement of the environment for sustainable mode use
Community liveability	• Healthier communities through greater active transport use • Greater neighbourhood interaction and local economic activity through active travel • Increase in passive surveillance and property values • Lower traffic casualty rates through reduced vehicle travel speeds • Reduction in noise pollution
Application	
• Urban residential, commercial and community areas with compact land use • Successful implementation throughout areas of Greater Sydney • Balancing measures with movement on public transport corridors • Blackwattle Bay precinct future renewal	

8.4.6 Provision of car share parking

Further provision of ample and centrally located car share parking pods to serve Blackwattle Bay would encourage more people and businesses to reconsider ownership of vehicles and to utilise car share programs for trips which cannot be completed via a sustainable mode.

The Blackwattle Bay Precinct Plan outlines a traffic and transport strategy which will facilitate an effective and efficient parking response. To ensure a future shift towards sustainable modes of travel is achieved, the minimum car share parking requirements within commercial areas, educational facilities as well as community, medical, recreational and residential facilities need to be established and be situated at easily accessible and safe locations.

Table 8-7 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-7: Provision of car share parking summary table

Objectives	Comments
Limit vehicle trips	• Reduction in overall vehicle ownership and vehicle trips
Travel choice	• Greater options available for people who don't own cars
Alternative modes	• Promotes alternative options to vehicle ownership
Efficient land use	• Less land required for roads and parking, preserving open space and reducing urban sprawl
Application	
• Successful adoption of car share programs throughout Greater Sydney • Blackwattle Bay precinct future renewal	

8.5 'Travel Demand Management' Strategy: Interventions and Impacts

8.5.1 Alternative work schedules

Alternative work schedules can reduce peak period travel by shifting commute travel times to off-peak thereby reducing congestion throughout the transport network:

- **Flextime** – employees are allowed flexibility within their daily work schedules. For example, companies may implement flexible start and finish times allowing employees to start and finish at times that suit them best; some employees work from 8.00am to 4.30pm, while some may work 7.00am to 3.30pm or 9.00am to 5.30pm.
- **Compressed work week** – employees work fewer but longer days such as four 10-hour workdays each week or 9-hour days with an additional day off each fortnight
- **Staggered shifts** – shifts are staggered to reduce the number of employees arriving and leaving a worksite at the same time. This measure is similar to flextime, however, does not give the employees as much control over their schedules.

Flextime and compressed work weeks are generally implemented when both employees and their managers agree to the selected workday hours. However, these hours may vary from day-to-day or week-to-week, depending on circumstances. Often formalised policies are put in place to support the existing practices following pilot programs; with management practices changing to reduce the need to have employees physically together at the one time through telework options. It should be noted that most major employers have some form of alternative work schedules available to employees, particularly following the impact of COVID-19 as people start to return to offices via public transport at off-peak periods.

Alternative work schedules are not suitable for all jobs and not all employees want to utilise these options due to personal preference of family commitments.

Table 8-8 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-8: Alternative work schedules summary table

Objectives	Comments
Limit vehicle trips	• Reduction in peak hour private vehicle trips and congestion • Spreading of peak demand across the transport network
Travel choice	• Increased transport options through use of alternative modes
Application	
• Most appropriate for jobs where rigid schedules are not required and in organisations which have effective employee performance assessment practices in place. An example includes a workplace which focuses on assessing performance and not time spent at the office • Most effective in urban areas where significant congestion and capacity restrictions exist • Blackwattle Bay precinct future renewal	

8.5.2 Telework

Telework is the use of telecommunications such as telephone, email and video conferencing, to substitute for physical travel. The feasibility of telework has significantly increased following the COVID-19 pandemic, with many employees already working from home and likely to do this in combination with working from an office in the future; reducing the overall demand on the transport network.

Telework is generally implemented by businesses and government agencies to meet demand, improve services and reduce costs. However, following the COVID-19 pandemic, telework has been adopted across Australia, with business and educational institutions now equipped to work online. The continuation of telework in the longer-term is still uncertain.

Telework may require changes in management practices that reduces the need to have employees physically together at one time, including more outcome-oriented management practices, and increased reliance on electronic communication.

Table 8-9 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-9: Telework summary table

Objectives	Comments
Limit vehicle trips	• Significant reduction in peak hour trips and network congestion
Travel choice	• Increased transport options and convenience
Alternative modes	• Promote alternative modes of travel and the need to travel
Community liveability	• Greater uptake of walking and cycling for local trips • Reduction in vehicle use and associated noise pollution
Application	
• Application of telework is now widespread throughout Australian cities following COVID-19 • Likely to be used in combination with returning to the office for the foreseeable future • Can improve employment opportunities for some disadvantaged groups • Blackwattle Bay precinct future renewal	

However, the benefits of telework may be offset in a number of various ways:

- Employees may move further from their workplace, particularly in rural areas, as they only need to commute to the office, for example, two days a week; increasing urban sprawl
- People working from home may make additional vehicle trips to run errands than would otherwise be made during a commute
- Vehicles not used for commuting may be driven by other household members
- People working from home may use additional energy for heating, cooling and electricity in addition to that already being used at the office
- Shopping online increases light vehicle use for the delivery of freight throughout cities.

Should an increase in non-commute trips be seen through telework or urban sprawl, road safety and environmental benefits may be reduced or eliminated.

It should be noted that some people may experience difficulty when utilising telework, particularly potential feelings of isolation. As a result, assistance must be in place for the mental health of those working from home.

8.5.3 Carpooling program

Carpooling, or ridesharing, describes the practice of private vehicles carrying additional passengers when making a trip with minimal additional mileage, to lower the number of vehicles travelling a similar journey, in turn reducing urban traffic problems like congestion.

Carpooling is a very common and cost-effective alternative mode of travel, especially in areas which are not well served by public transport, with many commuters utilising the service part-time and for people who don't drive.

TMAs and community transportation organisations often provide ride matching services, however dynamic ridesharing apps and services are available to be used to match travellers together for individual trips based on the start and end points of journeys.

Ridesharing tends to experience economies of scale; as more people use the service the chances of finding a suitable carpool increases significantly. As a result, success of carpooling programs depends on their promotion to encourage a significant portion of potential users to register for participation.

An example of a carpooling program which has been implemented by a TMA within Greater Sydney is Cohop by Connect serving Macquarie Park and North Ryde.

Table 8-10 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-10: Carpooling program summary table

Objectives	Comments
Limit vehicle trips	• Reduction in commute trips by up to 20% • Reduction in peak hour private vehicle trips and congestion • Reduction in overall vehicle kilometres travelled
Travel choice	• Increased transport options
Alternative modes	• Encouraging people to utilise more sustainable modes of transport
Application	
• Programs based on regions are most effective to create a larger pool to match commuters from • Greater uptake of carpooling is likely as additional information and encouragement is put in place, such as transit priority lanes and parking cash out measures • Should carpooling be successful in reducing a small percentage of private vehicle trips, the expenses of the program can be offset through reduced parking facility costs • Blackwattle Bay precinct future renewal	

8.5.4 Combined travel behaviour campaigns

Travel behaviour campaigns use education, information, incentives and other marketing-based approaches to persuade and assist people to reduce their need to travel, reduce dependence on private cars and increase physical activity by making voluntary changes in their travel habits and patterns. Such changes include reducing car use and increasing the share of trips by alternatives such as cycling, walking, public transport or carpooling.

Travel behaviour campaigns use a packaged approach to shift people's travel demand preferences by providing information, incentives and support to try alternative travel modes. The programs seek to permanently influence participants into more efficient travel patterns.

Table 8-11 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-11: Combined travel behaviour campaigns summary table

Objectives	Comments
Limit vehicle trips	• Reduction in vehicle traffic and parking demand adjacent to key land uses and destinations at peak periods
Travel choice	• Support the uptake of active transport modes • Increased accessibility for people without cars and those with restricted mobility
Alternative modes	• Encouraging people to utilise sustainable modes of transport • Promote alternative modes of travel and the need to travel
Community liveability	• Healthier communities through greater active transport use • Greater neighbourhood connectedness through active travel • Increase in passive surveillance • Reduction in noise pollution
Application	
• Partnership with Local Governments • Combination of 'Travel Demand Management' measures which are tailored to the target audience • Blackwattle Bay precinct future renewal	

8.5.5 Commuter financial incentives

Commuter financial incentives are financial incentives offered to commuters to use alternative modes of travel and reduce their use of parking facilities. Various financial incentives can be used to encourage employees' use of more efficient commute modes:

- **Employee parking pricing** – companies charge for parking at existing parking lots or eliminate any subsidies in place for off-site employee parking
- **Parking cash out** – people with subsidised parking offered similar incentive to use alternate mode
- **Travel allowances** – financial payment provided to employees instead of parking subsidies so commuters can use this money to pay for parking or other modes of travel
- **Transit and rideshare benefits** – free or discounted fares to employees who use public transport or carpooling programs
- **Company travel reimbursement policies** – policies that reimburse active or public transport mode mileage for business trips when these modes are comparable in speed to driving.

The inclusion of employees in the program development and planning will assist in identifying any practical and equity concerns through implementation. In addition, employee participation in these programs can be offered as fulltime or part-time to ensure they are flexible for working arrangements.

California has passed a cash-out law requiring some businesses within the state to give employees a cash offer to give up their parking spots, with the offer being tax deductible, while the employee benefit of parking is not. In addition, the law provides incentives for carpooling and active transport modes and encourages businesses to further assess the value of their carparking.

The travel impacts of a commuter financial incentive program are dependent on the type of incentives on offer, the quality of travel choices and demographics. However, modal shift tends to be greater if current use of alternative modes is low. Travel tends to shift towards walking and public transport in urban areas, whereas it tends to shift to ride sharing, teleworking and cycling in more suburban areas.

Travel impacts vary, depending on conditions, including the quality of alternative modes and the degree to which inadequate information and encouragement limits their use. Table 8-12 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-12: Commuter financial incentives summary table

Objectives	Comments
Limit vehicle trips	• Reduction in peak period travel and associated congestion
Travel choice	• Increased transport options • Employee satisfaction, increased equity, recruitment and retention • Improved alternative modes of travel through economies of scale
Alternative modes	• Encouraging people to utilise sustainable modes of transport
Efficient land use	• Reduction in parking demand, productive land, increased density
Community liveability	• Liveable places through a reduction in overall vehicle travel • Lower traffic casualty rates through reduced vehicle travel • Reduction in noise pollution
Application	
• Most effective in areas with urban areas and suburban centres with greater mode choice • Unbundling of car parking from dwellings in residential land use • Blackwattle Bay precinct future renewal	

8.5.6 Active transport training and guides

Training and guides can be provided through the form of courses and online resources to help people develop the skills and confidence to use active transport modes within certain areas; primarily focused on cycling and tailored to specific study areas such as school catchments or Local Government Areas. Courses may include information on skills, traffic rules, route planning, bike care and maintenance. Guides can consist of information regarding bike network, self-guided routes and parking locations.

By providing training, active transport becomes more accessible as people become more familiar with their surroundings and more confident in their skills. The higher level of confidence around active transport assists in the likelihood of school students and families using it as a mode of travel; helping to facilitate a mode shift. In addition, greater use of active transport as a mode of travel for various trip purposes will increase the amount of passive surveillance within a community as well as support businesses within centres as people walking and cycling are more likely to visit retail as parking is not required or significantly easier.

Table 8-13 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-13: Active transport training and guides

Objectives	Comments
Limit vehicle trips	• Reduction in overall vehicle travel through greater local uptake
Travel choice	• Increased awareness of active transport modes • Provision of information making sustainable transport accessible • Increase in commute choice and confidence in options available
Alternative modes	• Promotes alternative options to vehicle ownership • Encouraging people to utilise sustainable modes of transport
Community liveability	• Healthier communities through greater active transport use • Liveable places through a reduction in overall vehicle travel • Reduction in noise pollution
Application	
• Tailored application to specific study areas, precincts or school catchments • Successful application by the City of Sydney with two group courses offered to residents • Blackwattle Bay precinct future renewal	

8.5.7 Education

The inclusion of bicycle training and safety awareness in physical education curriculums to improve student's understanding, skills and confidence with using bikes as a mode of travel within their local area. The lessons may include practical instructions on how to ride a bike, the relevant road rules, as well as classroom learning about safety awareness through videos, discussions and presentations. Bike maintenance session could also be delivered.

In addition, toolkits may be developed to support the program with guidelines for teaching cycling safety outside of school through recreational use.

Table 8-14 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application for students in Pyrmont-Ultimo.

Table 8-14: Education summary table

Objectives	Comments
Travel choice	• Children develop a sense of independence and learn about safety
Community liveability	• Healthier communities through greater active transport use • Greater neighbourhood connectedness through active travel • Increase in passive surveillance • Lower traffic casualty rates through improved road awareness
Application	
• Tailored application to the target age group through curriculum development • Blackwattle Bay and Pyrmont-Ultimo	

8.5.8 Events and challenges

Events and challenges may be held by businesses and schools throughout the year to encourage use of alternative modes in a fun and interactive way. These events and challenges may include car free days, steps challenges and points challenges.

Table 8-15 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-15: Events and challenges summary table

Objectives	Comments
Limit vehicle trips	• Reduction in overall vehicle travel
Travel choice	• Increase in commute choice and confidence in options available • Increased awareness for active transport modes • Provision of information making sustainable transport accessible
Alternative modes	• Encouraging people to utilise sustainable modes of transport
Community liveability	• Healthier communities through greater active transport use • Liveable places through a reduction in overall vehicle travel • Lower traffic casualty rates through reduced vehicle travel • Reduction in noise pollution
Application	
• Tailored application to the target audience • Examples: World Car Free Day, 10,000 Steps Challenge, Steptember, National Walk Safely to School Day and RideScore Active Schools • Blackwattle Bay	

8.5.9 Navigation and journey planning tools

Navigation and journey planning tools such as guidebooks, smartphone applications and websites provide information on journey planning and travel options to a destination, including routes, schedules, fares, connections, services, real time arrival information, and key contact information.

Navigation tools can be tailored for specific users or trips, such as commuters, tourists, visitors, people with disabilities. Stakeholder engagement in the development of tools assists in their effectiveness.

Navigation tools can come in a range of forms, including maps on printed information such as business cards or welcome packs for new employees, internet sites or smartphone apps. Some tools intentionally exclude information on vehicle access and parking options to discourage driving.

An example of a navigation tool is a multi-modal access guide, a document that provides concise and customised information on how to access a particular destination such as Blackwattle Bay by various modes. The guide includes special consideration for sustainable modes and can typically include:

- A map of the area, showing the destination, major roads, nearby landmarks, the closest train station or bus stops, and recommended cycling and walking routes
- Information about transit service frequency, fares, first and last services, and public transportation schedules if possible; plus the website for transit service providers and taxi companies. Special transit schedule information can be provided for major events that start and end at specified times
- Information on how long it takes to walk from train stations or bus stops and other reference locations to your site
- Information on how to reach the destination from major transportation terminals including Central Station, Sydney Airport and the forthcoming Western Sydney International Airport
- Universal access arrangements for people with restricted movement on public transport routes
- Availability of bicycle facilities, including secure bike parking, showers and change facilities
- Car parking availability and price

Navigation tools are a good opportunity to improve mobility options to destinations within TMAs, highlighting interventions to improve the environment to foster a culture of sustainable transport use.

Travel impacts vary, depending on conditions, including quality of alternative modes and information and encouragement. Table 8-16 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-16: Navigation and journey planning tools summary table

Objectives	Comments
Limit vehicle trips	• Reduction in overall vehicle travel and increase in sustainable modes of travel
Travel choice	• Provision of information making sustainable transport accessible
Alternative modes	• Promote alternative modes of travel
Efficient land use	• Reduction in demand for parking
Community liveability	• Liveable places through a reduction in overall vehicle travel • Lower traffic casualty rates through reduced vehicle travel • Reduction in noise pollution
Application	
• Cluster of multiple employers or educational facilities which attract significant visitation • Most effective in areas with diverse travel options available • Blackwattle Bay precinct future renewal	

8.5.10 Wayfinding

Wayfinding refers to people's ability to navigate through an area, and to signs, maps, electronic devices, and other information resources that help orient visitors.

Wayfinding is particularly important when people walk or cycle through an unfamiliar area, and for traveling through transportation terminals such as bus and train stations, and airports; making these modes more accessible to people.

Table 8-17 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay and Pyrmont-Ultimo.

Table 8-17: Wayfinding summary table

Objectives	Comments
Travel choice	• Increased transport options • Improved basic mobility for people new to the study area • Support the use of public transport and active transport modes
Community liveability	• Healthier communities through greater active transport use • Greater neighbourhood interaction through active travel • Increase in passive surveillance and property values
Application	
• Applied most often in urban areas and business parks • Low cost to implement • Blackwattle Bay and Pyrmont-Ultimo	

8.5.11 'Travel Demand Management' Safe Routes to School

Safe Routes to School is a road safety program which focuses on the travel to and from school. The program differs across states in Australia however generally involves four stages and is delivered by groups such as the school community, Transport for NSW, Councils and New South Wales Police:

- Planning and establishing the program at the school level
- Investigation of local issues and needs often through a combination of a travel survey which is used to establish the routes used by students to access schools and observation surveys to examine behaviour patterns
- Developing and implementing an action plan which may comprise of engineering, education, enforcement and encouragement dimensions
- Maintaining, monitoring and evaluating the program.

There is an opportunity to revisit the program previously implemented with a focus on behaviour as well as engineering interventions at locations of safety concern, particularly focused on the crossing of arterial roads. By identifying locations which present road safety dangers, students and parents are able to be mindful of these areas when planning their route to travel to and from school. However, with the addition of engineering solutions to the program, these locations can be reviewed and upgraded to improve the safety of those using active transport for a mode of travel to and from school.

By improving the safety of the areas surrounding schools, a primary barrier for children walking to school is removed, which may encourage a greater uptake of active modes of transport for local trips.

Table 8-18 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-18: Safe Routes to School summary table

Objectives	Comments
Travel choice	• Support the uptake of active transport modes • Children develop a sense of independence and learn about safety
Community liveability	• Healthier communities through greater active transport use • Greater neighbourhood connectedness through active travel • Increase in passive surveillance • Improved walking environment removing barriers to travel • Lower traffic casualty rates through reduced vehicle travel • Reduction in noise pollution
Application	
• Application in Blackwattle Bay and progressive expansion with observable and measurable signs of success • Relates to the introduction of safety awareness education and active transport training / guides	

8.5.12 Staggered school start times

Staggered school start times involves spreading the start and finish times of schools to reduce road and public transport congestion during peak periods, normally within an area with a cluster of educational facilities. The staggering can be based on school or year levels and may range between 15 minutes to one hour to minimise bottlenecks for access to and from the schools.

However, staggered school hours do not directly promote mode shift or reduce the need to travel.

Table 8-19 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay.

Table 8-19: Staggered school start times summary table

Objectives	Comments
Limit vehicle trips	• Eases congestion around the school grounds • Spreading of road network and public transport peak demand
Travel choice	• Support the use of public transport and active transport modes
Alternative modes	• Promote alternative modes of travel
Efficient land use	• Reduction in peak demand for parking adjacent to schools
Community liveability	• Reduction in large groups gathering at schools, ensuring social distancing can be met during periods of COVID-19 restrictions
Application	
• Most applicable to a location where there is a cluster of educational facilities, where a significant amount of people are trying to travel to and from the same area at the same time each day • Public schools can set their own start and finish times in consultation with the school community • Applicability within Pyrmont-Ultimo	

8.5.13 Walking School Bus and Cycling School Bus

A Walking School Bus and a Cycling School Bus are where groups of children walk or cycle to and from school with one or more adults (or other children).

Walking and cycling school buses can range from informal agreements where two families take it in turns to walk to school to more structured programs with a route, meeting points, timetables and a schedule of trained volunteers. The groups generally operate within a 30-minute catchment of schools.

Parents often cite safety issues as one of the primary reasons they are reluctant to allow their children to walk to school. By providing adult supervision, walking and cycling to school becomes a safer option for families in addition to being social; creating opportunities to network within the community.

Table 8-20 presents a summary of the measures and how they align with the 'Travel Demand Management' objectives, impacts and application within Blackwattle Bay and Pyrmont-Ultimo.

Table 8-20: Walking and cycling to school bus summary table

Objectives	Comments
Limit vehicle trips	• Eases congestion around the school grounds as every child on the bus is potentially one less car on the road
Travel choice	• Increased transport options • Children develop a sense of independence and learn about safety • Support the use of public transport and active transport modes
Alternative modes	• Encouraging people to utilise sustainable modes of transport
Efficient land use	• Reduction in demand for parking adjacent to schools
Community liveability	• Healthier communities through greater active transport use • Greater neighbourhood connectedness through active travel • Increase in passive surveillance • Lower traffic casualty rates through reduced vehicle travel • Reduction in noise pollution
Application	
• Schools or parent representative groups are best placed to coordinate the program following community engagement to ensure it will be utilised • Catchments differ for walking and cycling, with the programs needing to be tailored to the urban residential area of application • Some applicability to Blackwattle Bay and Pyrmont-Ultimo with requirement for further upgrades to cycling connections for improved feasibility of intervention	

9.0 Transport and traffic strategies

9.1 Overview

9.1.1 Challenges

The road network surrounding the Blackwattle Bay SSP Study Area is congested and highly constrained. Therefore, it is critical to encourage walking, cycling and use of public transport and to discourage private vehicle trips. To achieve the mode share targets (85% walking, cycling and public transport and 15% private vehicle), the following challenges will need to be overcome:

- Current travel behaviour suggests that the road network would need to accommodate a third of future trips generated by Blackwattle Bay in peak periods
- The existing Western Distributor ramps will continue to attract through-traffic to Blackwattle Bay
- Public transport services will need to accommodate new demand
- New development in the area will extend public transport demand beyond existing peak periods
- Walking and cycling routes between Blackwattle Bay and public transport stops and major transports hubs are steep in gradient and lack activated frontages
- Wayfinding to key attractions and services in the area is poor
- Pedestrian crossing facilities do not cater for existing demand
- Traffic access to Blackwattle Bay will need to be managed to avoid concentration of new trips at key intersections
- New site traffic access movements will increase right-turn vehicle movements at key intersections, potentially increasing delays and queuing if not managed
- Existing public ferry fleet operated by Harbour City Ferries is unable to access Blackwattle Bay due to low-wash area at Blackwattle Bay

9.1.2 Opportunities

Opportunities provided by the location of Blackwattle Bay and planned transport infrastructure include:

- New foreshore connection between Waterfront Park in Pyrmont and the Glebe Foreshore to create a continuous waterfront walking and cycling link between Glebe and Woolloomooloo
- The construction of a new crossing between Glebe Island and Pyrmont could support new walking, cycling and public transport links
- Ability to leverage Blackwattle Bay's proximity to the Goods Line to provide improved connections to Central Station
- New Sydney Metro West stations will increase public transport capacity in Blackwattle Bay
- New Sydney Metro West services may cause mode shift for east-west movements and reduce through-traffic in Blackwattle Bay
- Spare capacity on existing bus routes provides opportunity to reconfigure the bus network to better service Blackwattle Bay
- Private ferry operators with fleets that operate in low-wash areas, like Blackwattle Bay
- Development in Blackwattle Bay could provide end-of-trip facilities for cyclists
- New development in Blackwattle Bay could provide opportunities to employ travel demand measures such as car share and parking management
- Innovative transport solutions such as electric vehicles, autonomous vehicles and on-demand services could be trialled in Blackwattle Bay

9.1.3 Next Steps

Creating a connected, multimodal transport network through further investment in active and public transport infrastructure, and by leveraging off planned major projects, represents the transport response with the most potential. Five goals were identified for the future transport network surrounding the Blackwattle Bay SSP Study Area:

- Reduce the need for vehicle infrastructure and encourage residents, employees, and visitors to travel to and within the site by walking, cycling, or public transport rather than driving
- Create a network that accommodates all modes of transportation and prioritises active (walking and bicycling) and public transport first and private vehicles second
- Prioritise pedestrians and wheelchair accessibility by creating streets that are safe, comfortable, attractive, and appealing for walking so residents, employees, and visitors want to get around on foot/wheel
- Provide clear, safe and connected bicycle network via high-quality, on-street and off-street facilities including bicycle parking and storage throughout the Blackwattle Bay precinct
- Leverage existing and planned public transport infrastructure, including the new Pyrmont Station on the Sydney Metro West Line, the three light rail stations on the L1 Dulwich Hill Line and local bus routes to recognise Blackwattle Bay as a multimodal precinct.

To achieve these goals with respect to the Blackwattle Bay Accessibility Principles, modal strategies were developed for:

- Walking and cycling
- Public transport
- Site access and parking
- Future transport.

The modal strategies were prepared in collaboration with Transport for NSW and City of Sydney and are presented in the sections to follow.

9.2 Movement and Place

The objective of Movement and Place is to achieve roads and streets that:

- *Contribute to the network of public space within a location, where people can live healthy, productive lives, meet each other, interact, and go about their daily activities*
- *Are enhanced by transport and have the appropriate space allocation to move people and goods safely and efficiently and connect places together. Balancing movement and place recognises that trade-offs may be required to achieve a best fit for the objectives*

The Movement and Place framework is defined by the below future and associated description of each category. Classification into the four street environments provides an understanding of the function and form of a road corridor, where movement and place interact, which are illustrated in Figure 9-1.

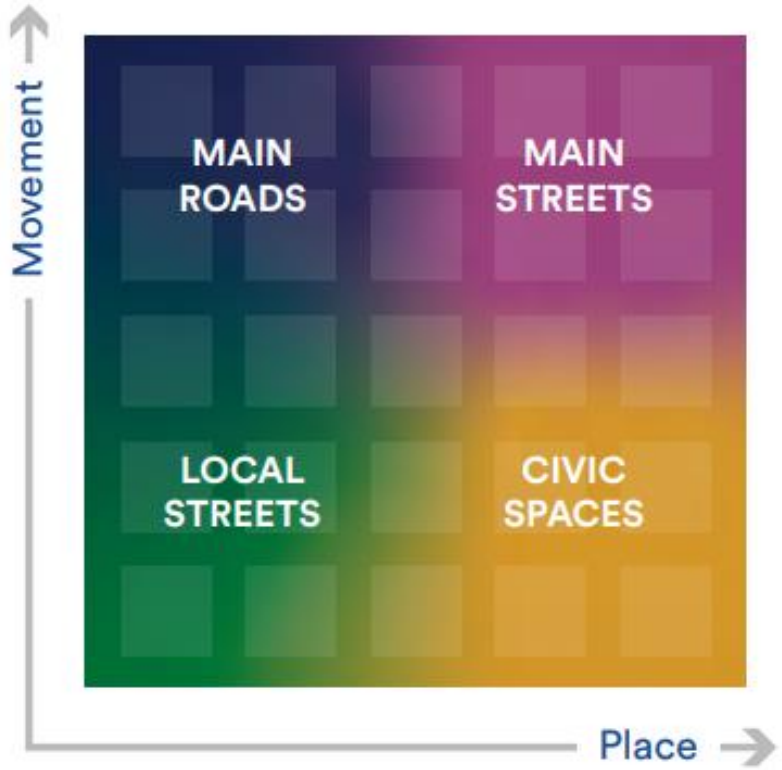


Figure 9-1: Movement and Place framework

Source: Government Architect NSW, 2020

- **Civic Spaces** (was “Places for People”) are streets at the heart of our communities and have a significant meaning, activity function, or built environment. They are often in our major centres, our tourist and leisure destinations, and our community hubs. These streets are often pedestrian priority, shared spaces.
- **Local Streets** are the majority of streets within our transport networks and often have important local place qualities. Activity levels are less intense; however, these streets can have significant meaning for local people.
- **Main Streets** (was “Vibrant Streets”) have both significant movement functions and place qualities. Balancing the functions of these streets is a common challenge.
- **Main Roads** (was “Movement Corridors” and “Motorways”) are routes central to the efficient movement of people and freight. They include motorways, primary freight corridors, major public transport routes, the principal bicycle network, and key urban pedestrian corridors. Place activity levels are less intense; however, these roads and routes can have significant meaning to local people.

A future state assessment and definition of the roads and streets in and around the Blackwattle Bay SSP Study Area was undertaken in a collaborative approach by AECOM and FJMT. This approach identified the need to apply two different classifications to the road network to reflect the temporal factors:

- Peak periods: when demand for travel is highest, and the Movement function on Bridge Road, Pyrmont Bridge Road and Wattle Street are elevated. The Movement and Place classifications for peak periods are shown in Figure 9-2.
- Off-peak periods: when demand for travel is lower, and the Movement function on Bridge Road, Pyrmont Bridge Road and Wattle Street is less pronounced. The Movement and Place classifications for off-peak periods are shown in Figure 9-4.

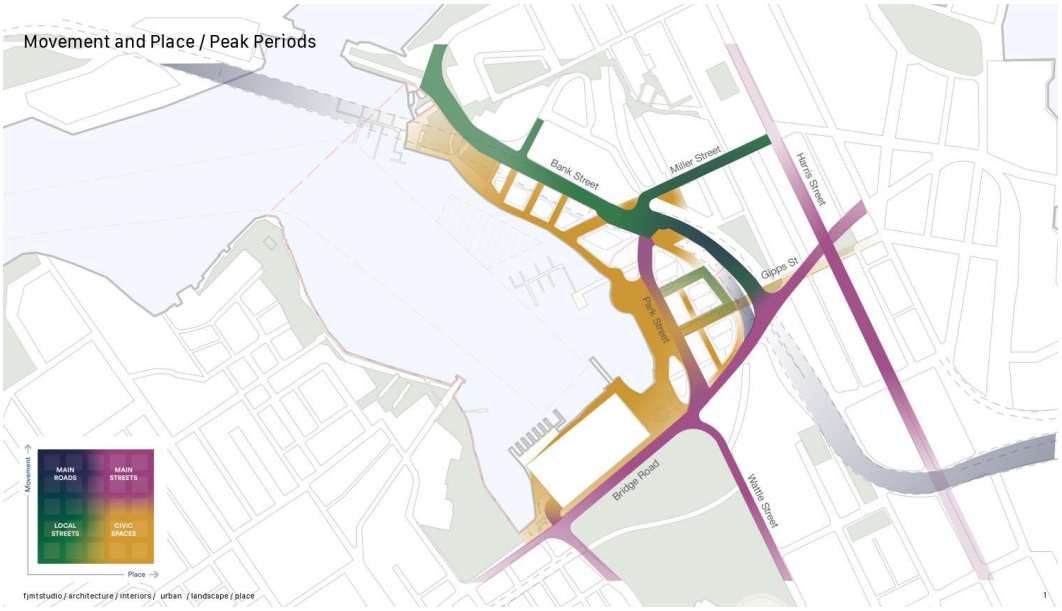


Figure 9-2: Movement and Place peak period classifications for Blackwattle Bay and the surrounding road network

Source: FJMT, January 2021

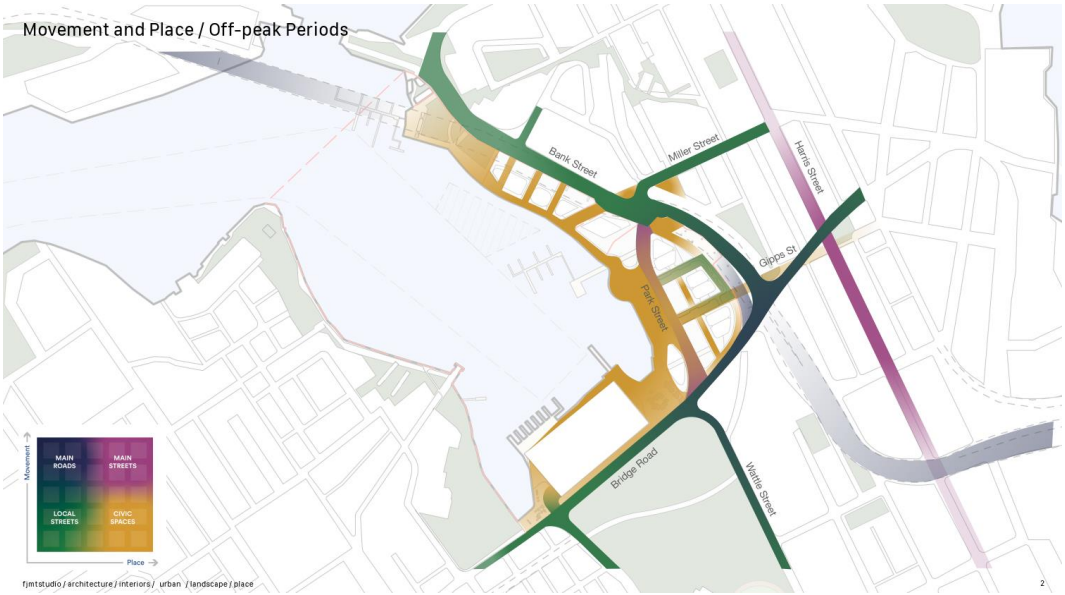


Figure 9-3: Movement and Place off-peak period classifications for Blackwattle Bay and the surrounding road network

Source: FJMT, January 2021

9.2.1 Movement and Place narrative

The purpose of this assessment is to support the Blackwattle Bay vision:

Blackwattle Bay offers an extraordinary opportunity to reconnect the harbour, its surrounding neighbourhoods and the city; to showcase Sydney's living culture and stories of Country; to build an inclusive and iconic waterfront destination that celebrates innovation, diversity and community.

The Blackwattle Bay Precinct Plan embraces the NSW Government Architect's Movement and Place policy. The Plan establishes a clear public domain and street network that supports the three modes of movement (walking and cycling, public transport and general traffic), and also creates places for gathering and enjoyment.

The Blackwattle Bay Precinct Plan is guided by 16 Design Principles developed with the community through consultation in 2017 and subsequent stakeholder and community representative input. Principles 1, 4, 5, 6 and 11 talk specifically to Movement and Place. These are shown in Figure 9-4.

Design Principles				
Principle 1	Principle 4	Principle 5	Principle 6	Principle 11
Improve access to Blackwattle Bay, the foreshore and water activities for all users	Prioritise movement by walking, cycling and public transport	Balance diverse traffic movement and parking needs for all users	Link the Blackwattle Bay precinct to the City, Glebe Island and White Bay and other surrounding communities and attractors	A place for everyone that is inviting, unique in character, social inclusive and affordable

Figure 9-4: Design principles for Blackwattle Bay

The opportunity to re-connect Pyrmont to the waters of Blackwattle Bay and to link the waterfront promenade from Pyrmont through to the Glebe foreshore is supported by streets and public domain that provide for movement but emphasise place.

9.3 Walking strategy

The walking strategy aims to encourage people to walk, increase local permeability and provide improved first and last mile connections between Blackwattle Bay and key transport facilities.

Walkability is a key ingredient to a successful urban environment. It enhances public safety, improves health, fosters more personal interactions, and increases economic vitality. Creating a comprehensive pedestrian network promotes an easy transition to adjacent neighbourhoods, which supports the goal of increased local permeability. Additionally, a mix of land uses that provides daily necessities for commercial and residential tenants within walking distance will support walkability. Importantly, it reduces congestion that is otherwise generated from the use of private vehicles to travel directly between origin and destination. Prioritising walking also reinforces the aims to combine context-sensitive development with streets that capitalise on infrastructure investments and stimulate economic development in urban corridors.

The walking strategy identifies actions to provide improved active transport facilities along surrounding key transport routes, including a new waterfront promenade along Blackwattle Bay .

Table 9-1 summarises the actions that can be taken as part of the walking strategy.

Table 9-1: Walking actions

Action	Benefits	Mode Shift Impacts
Provide new waterfront promenade along Blackwattle Bay	A new waterfront promenade will provide a pleasant recreational walking option for residents, workers and visitors alike	Increase in walking as an alternative to public transport or private vehicles for short trips
Provide improved walking facilities along Bridge Road and Miller Street	New active transport facilities along Bridge Road, Miller Street and through the site will help make walking more attractive between Glebe, Camperdown, the Pyrmont peninsula and other parts of the Inner West. Provides better walking, and disability compliant connections to Sydney CBD	Increase in walking as an alternative to public transport or private vehicles for short trips
Provide new walking facilities between Wattle Street and Miller Street via a new through-site link	New pedestrian facilities through the site will help to make Blackwattle Bay accessible for pedestrians and help to develop a human scale at street level while providing more direct access to public transport	Increase in walking as an alternative to public transport or private vehicles for short trips
Investigate underground connection between new Pyrmont Station and Blackwattle Bay	A new underground connection, similar to Wynyard Walk, would enable faster, weather-proofed pedestrian connections between Blackwattle Bay and Sydney Metro	Improving first-mile and last-mile connections encourages the use of sustainable modes
Investigate underground connection between Fish Market Light Rail stop and Blackwattle Bay	A new underground connection, similar to Wynyard Walk, would enable faster, weather-proofed pedestrian connections between Blackwattle Bay and the L1 Dulwich Hill Line. Potential to integrate this underground connection with the underground connection to Pyrmont Station on the Sydney West Metro Line	Improving first-mile and last-mile connections encourages the use of sustainable modes
Provide improved walking facilities along Bank Street to connect to Glebe Island via the Glebe Island Bridge	New pedestrian facilities along Bank Street and a future connection between Glebe Island and Pyrmont via the Glebe Island Bridge. The Glebe Island Bridge is owned by Transport for NSW and will help to provide a strong connection to the planned metro station in Bays West, and more broadly future development within Blackwattle Bay	Increase in walking as an alternative to public transport or private vehicles for short trips

Action	Benefits	Mode Shift Impacts
Provide improved pedestrian connectivity to water, parks, public transport stops and the surrounding key transport nodes	Improving pedestrian connectivity will ensure walking is an attractive option for people travelling to, from or within Blackwattle Bay	Increase in walking and public transport use over private vehicles for commutes
Provide improved pedestrian connectivity to Broadway and Central Station	Improved pedestrian connectivity to Broadway and Central Station would allow Blackwattle Bay to leverage off a busy and well-connected railway station and bus corridor This corridor is owned by City of Sydney	Increase in walking and public transport use over private vehicles for commutes
Widen and enhance the Bridge Road footpath adjacent to the new Sydney Fish Market site	A wider footpath on Bridge Road will provide a pleasant walking option for residents, workers and visitors alike	Increase in walking as an alternative to public transport or private vehicles for short trips
Provide a new signalised pedestrian crossing at Wentworth Park Road / Bridge Road	Support pedestrian crossing movements, including a dedicated pedestrian crossing across the new car park entry point	Increase in walking as an alternative to public transport or private vehicles for short trips
Modification to the Wattle Street and Bridge Road intersection to remove the existing slip lane on the south-west approach of the intersection	Provide safer pedestrian crossings of Bridge Road	Improve pedestrian safety
Investigate reducing the existing signal cycle time at the intersections of the new through-site link with Bank Street and Miller Street, and Bridge Road, Pyrmont Bridge Road and Wattle Street	Reduce pedestrian waiting times at signalised intersections, helping to reduce potential footpath crowding	Increase in walking and public transport use over private vehicles

The actions are also displayed below in Figure 9-5.

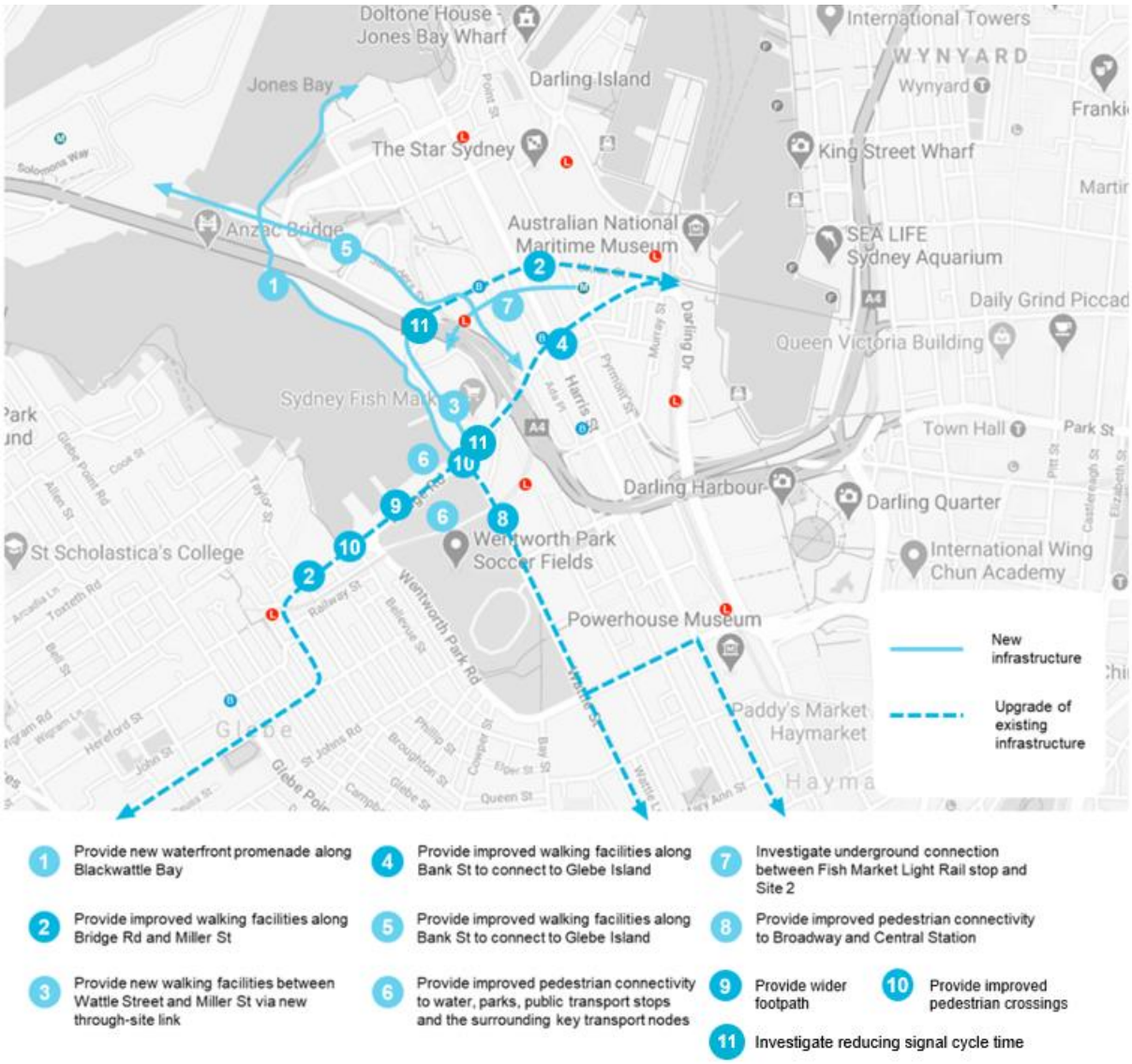


Figure 9-5: Potential walking initiatives

Source: AECOM, 2020

9.4 Cycling strategy

The cycling strategy aims to encourage the use of cycling, increase local permeability and provide improved first and last mile connections between Blackwattle Bay and key transport facilities.

Prioritising bicycle use enhances the overall liveability of an area. It does so by creating connections which bring neighbourhoods closer, improving public health and air quality. This aligns with the vision and principles behind the renewal of Blackwattle Bay. It also manages traffic demand, encourages activity, and fosters a sense of community by providing alternatives to private vehicles and public transport during the daily commute. Prioritising cycling also reinforces the aims to combine context-sensitive development with streets that capitalise on infrastructure investments and stimulate economic development on urban corridors. Improved bicycle facilities also reinforce the goal of having a high ease of use bicycle facility within a quarter mile of every household.

The cycling strategy identifies actions to provide improved cycling facilities along surrounding key transport routes, including a new waterfront promenade along Blackwattle Bay .

Table 9-2 summarises the actions that can be taken as part of the cycling strategy.

Table 9-2: Cycling actions

Action	Benefits	Mode Shift Impacts
Provide new waterfront promenade along Blackwattle Bay	A new waterfront promenade will provide a pleasant cycling option for residents, workers and visitors alike	Increase in cycling as an alternative to public transport or private vehicles for short trips
Provide improved cycling facilities along Bridge Road and Miller Street	New active transport facilities along Bridge Road, Miller Street and through the site will help make cycling more attractive between Glebe, Camperdown, the Pyrmont peninsula and other parts of the Inner West. Provides better cycling connections to Sydney CBD	Increase in cycling as an alternative to public transport or private vehicles for short trips
Provide new cycling facilities between Wattle Street and Miller Street via new through-site link	New cyclist facilities through the site will help to make Blackwattle Bay accessible for cyclists and help to develop a human scale at street level	Increase in cycling as an alternative to public transport or private vehicles for short trips
Recommend improved facilities along Pyrmont Bridge Road for commuter cyclists	Strengthen strategic cycling network to provide better connections to Sydney CBD	Increase in cycling as an alternative to public transport or private vehicles for short trips
Provide improved cycling facilities along Bank Street to connect to Glebe Island	New cyclist facilities along Bank Street and a future connection between Glebe Island and Pyrmont via the Glebe Island Bridge. The Glebe Island Bridge is owned by Transport for NSW and will help to provide a strong connection to the planned metro station in Bays West, and more broadly future development within Blackwattle Bay.	Increase in cycling and public transport use over private vehicles for commutes
Provide cycle parking and end of trip facilities around Blackwattle Bay	Residents and workers get the opportunity to live a healthy lifestyle, facilities to park their bike in a secure location and freshen up prior to work or personal commitments	Increase in cycling and public transport use over private vehicles for commutes

Action	Benefits	Mode Shift Impacts
Provide improved cyclist connectivity to Broadway and Central Station	Improved cyclist connectivity to Broadway and Central Station would allow Blackwattle Bay to leverage off a busy and well-connected railway station and bus corridor. This corridor is owned by City of Sydney	Increase in cycling and public transport use over private vehicles for commutes

The actions are also displayed below in Figure 9-6.

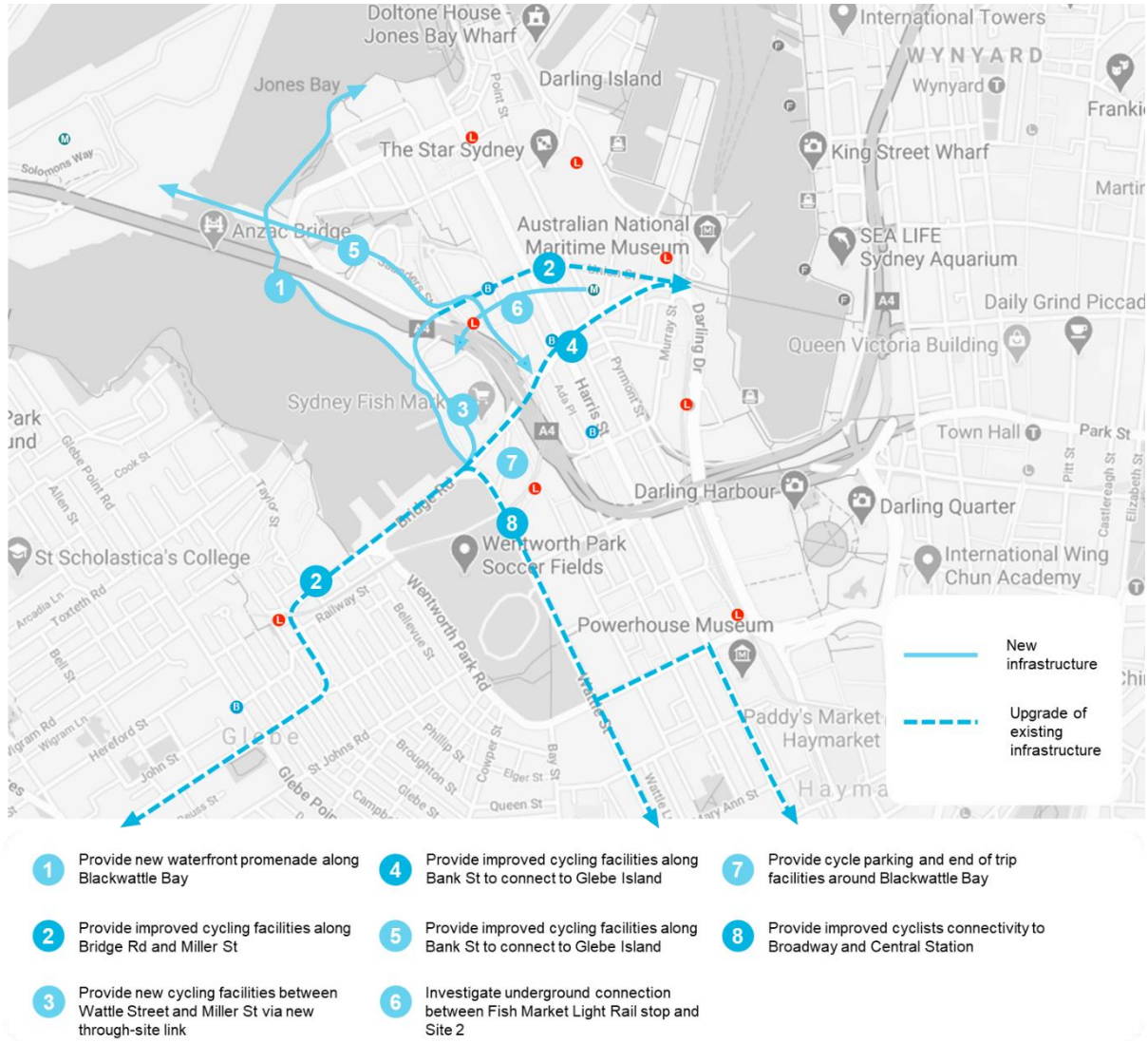


Figure 9-6: Potential cycling initiatives

Source: AECOM, 2020

9.5 Public transport strategy

The public transport strategy aims to improve access to public transport around Blackwattle Bay. It includes actions to investigate increasing light rail service frequencies, reconfigure local bus routes, utilise water access and leverage off potential new Sydney Metro stations.

Public transport is crucial to the liveability of any city. It is an important contributing factor to urban sustainability. The provision of attractive public transport services helps reduce road congestion, travel times and environmental impacts.

Table 9-3 summarises the actions that can be taken as part of the public transport strategy.

Table 9-3: Public transport actions

Action	Benefits	Mode Shift Impacts
Build new Pyrmont Station on the Sydney Metro West Line and align with Sydney Metro Station Design and Precinct Plan	Utilise planned mass transit infrastructure to do some of the heavy lifting for people travelling to/from Blackwattle Bay	Increase in public transport usage and subsequent increase in active transport usage as a first and last mile connection Potential decrease in private vehicle usage
Increase Inner West Light Rail peak hour service frequency during the peak hours in line with demand	Cost-effective use of existing infrastructure to influence travel behaviour in favour of light rail, a sustainable transport mode	Increase in public transport usage Potential increase in active transport usage and decrease in private vehicle usage as first and last mile connections
Reconfigure bus network to improve connections to Bays West, Central, Redfern and the Inner West	Plug a gap in the bus network and provide the ability for bus passengers to interchange to/from rail outside of the highly constrained Sydney CBD environment	Increase in public transport usage Potential increase in active transport usage and decrease in private vehicle usage as first and last mile connections
Provide private ferry services to Blackwattle Bay	A private ferry service has the potential to provide a strong public transport connection between Blackwattle Bay and the northern Sydney CBD	Potential increase in active transport and public transport usage as first and last mile connections
Improve signage and wayfinding to public transport services and key destinations	Provide benefits to existing residents, workers and visitors in the area with enhanced signage and wayfinding	Increase in active transport and public transport usage Decrease in private vehicle usage

The actions are also displayed below in Figure 9-7.

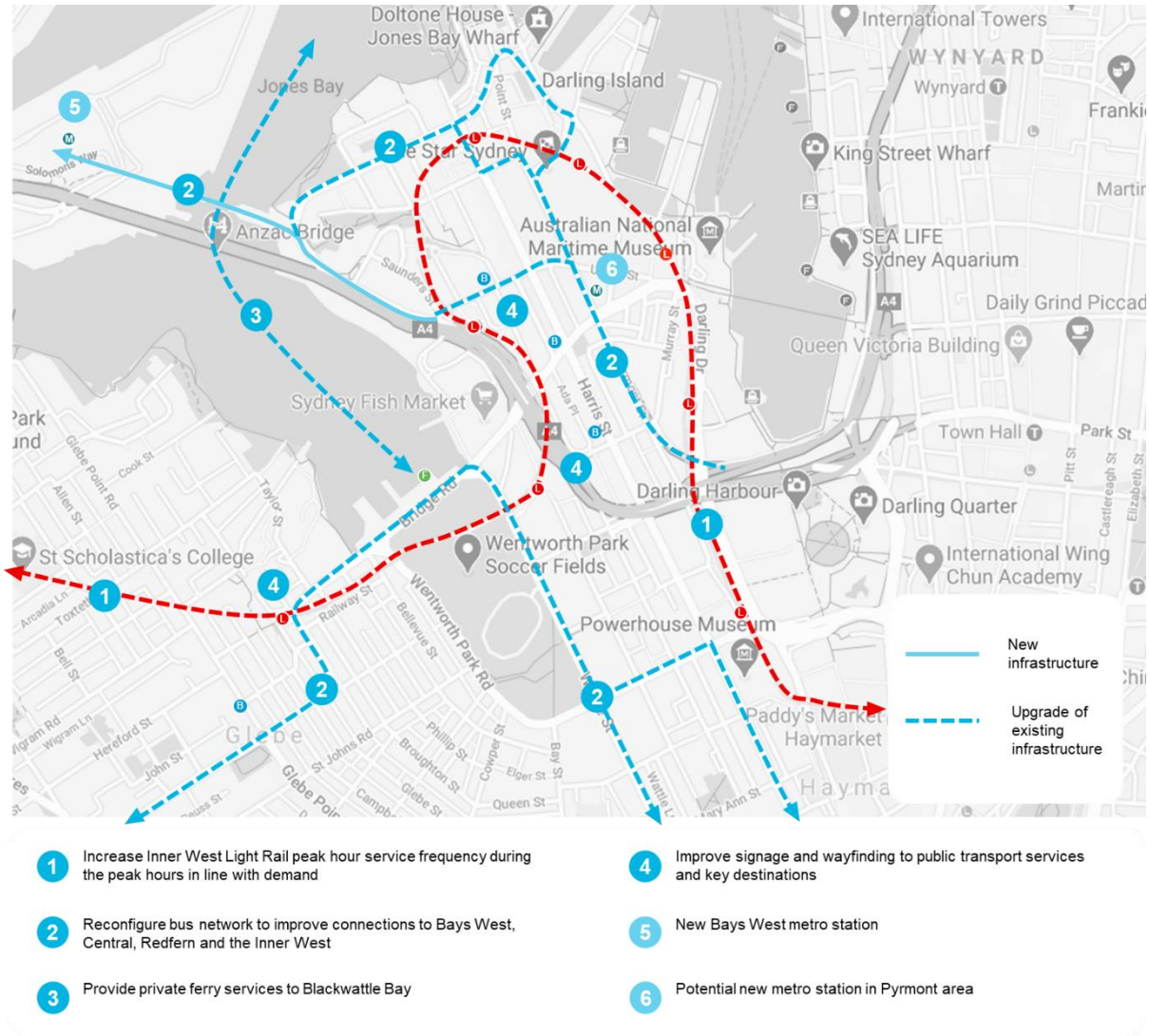


Figure 9-7: Potential public transport initiatives

Source: AECOM, 2020

9.6 Site access and parking

The site access and parking strategy aims to develop an effective and efficient vehicle and parking response and manage traffic demand to better utilise the existing road network. The target outcome is to reduce the reliance on private-car travel and thus minimise the impact of travel demand generated by Blackwattle Bay on the surrounding road network.

The site access and parking strategy includes actions to manage parking demand, distribute access points across Blackwattle Bay to avoid concentration of traffic demand and encourage ride share.

The strategy aims to reduce single occupancy private vehicle trips, particularly during peak traffic periods, by shifting those trips to other modes of travel or to other times of day. Implementation of a robust strategy will be a critical element of the success of the plan area. It will enable the multi-modal transportation network detailed in previous sections to adequately serve the land uses and intensities envisioned for this area.

Table 9-4 summarises the actions that can be taken as part of the site access and parking strategy.

Table 9-4: Site access and parking actions

Action	Benefits	Mode Shift Impacts
Provide the same number of parking spaces at the new Sydney Fish Market as at the current Sydney Fish Market. New Sydney Fish Market staff parking arrangements to be managed to increase availability of public parking	No net increase in car parking at the new Sydney Fish Market (when compared with the current Sydney Fish Market) will encourage staff and visitors to utilise forms of transport other than private vehicles. On-line parking booking system will manage peaks in customer demand over a longer period	Increase in active transport and public transport usage Decrease in private vehicle usage
Provide new coach/shared-vehicle/taxi pick-up and drop-off facilities along the front of the new Sydney Fish market	The provision of formal facilities for coaches, shared vehicles and taxis could help to reduce the number of vehicles circling whilst looking for drop-off/pick-up facilities at the new Sydney Fish Market. Reduces reliance on low-occupancy vehicular trips. Reduces parking demand	Decrease in private vehicle usage
Provide access to new Sydney Fish Market car park and loading area via new signalised intersection at Wentworth Park Rd/Bridge Rd	Access to an underground parking and loading space at the new Sydney Fish Market via a signalised intersection will help to separate pedestrians and cyclists from vehicular movements and create a more appealing arrival point for customers Access provides a safer and more direct route between Bridge Road and Miller Street for pedestrians and cyclists. Access provides ability to operate public transport services closer to future customers	Potential increase in active and public transport usage Corresponding decrease in private vehicle usage
Provide new access to the current Sydney Fish Market site via Miller St/Bank St and Bridge Rd/Wattle St intersections	The provision of a new local street within Blackwattle Bay will facilitate local traffic movements within Pyrmont, allowing residents and workers to avoid congested intersections such as Bridge Road, Pyrmont Bridge Road and Bank Street	Potential increase in active transport and public transport usage Potential increase in private vehicle usage

Action	Benefits	Mode Shift Impacts
	A new local street within Blackwattle Bay also provides alternative drop-off/pick-up opportunities within a safe, slow speed environment Access provides a safer and more direct route between Bridge Road and Miller Street for pedestrians and cyclists Access provides ability to operate public transport services closer to future customers.	
Shift to maximum parking rates identified for Land Use & Transport Integration Category A and Public Transport Accessibility Level Category D	Re-categorising Blackwattle Bay as Land Use & Transport Integration Category A and Public Transport Accessibility Level Category D would reduce the maximum car parking rate and would further limit the number of parking spaces that can be provided. This reduces reliance of future residents and employees on private vehicles while alternative means of travel are made available.	Decrease in private vehicle usage Increase in active transport and public transport usage
Recommend use of maximum car park rates for Blackwattle Bay development in line with City of Sydney planning controls Investigate opportunities to minimise the provision of parking for residents, employees and visitors in Site 2	Specifying a maximum car park rate over a minimum car park rate caps the number of parking spaces that can be provided. Reduces reliance of future residents and employees on private vehicles while alternative means of travel are made available	Decrease in private vehicle usage Increase in active transport and public transport usage
Support use of car share programs to encourage reduction in personal car ownership	Reduce the number of private vehicle trips generated by Blackwattle Bay Provides savings opportunities for people who use car share over personal car ownership	Decrease in private vehicle usage Increase in active transport and public transport usage
Explore interventions such as multi-utility hubs for bicycle and private vehicle parking at detailed design stage	Enable greener streets through reducing need for on-street parking Social infrastructure to deliver bike and end-of-trip facilities to support people in small dwellings	Increase in active transport and public transport usage
Recommend NSW Department of Planning, Industry and Environment monitor transport and traffic situation in local area	Constant monitoring of transport and traffic situation will allow evidence-based adjustments to maximum allowable parking through amendment to the parking controls	Decrease in private vehicle usage Increase in active transport and public transport usage

9.7 Future transport

Part of the vision for Blackwattle Bay is that it will be a place of transport innovation. It is also located in the Innovation Corridor defined by the Eastern City District Plan. The future transport strategy for Blackwattle Bay therefore sets actions to investigate opportunities to provide innovative transport technology and services such as on-demand transport, autonomous vehicles and electric vehicle infrastructure.

Table 9-5: Future transport actions

Action	Benefits	Mode Shift Impacts
Provide on-demand transport services to connect Blackwattle Bay and the new Sydney Fish Market to select transport hubs and other tourist destinations	The provision of flexible, on-demand transport services will improve accessibility to Blackwattle Bay	Increase in public transport use with decrease in private vehicle use Potential increase in active transport use as a first and last mile connection
Investigate autonomous vehicles trail for Pyrmont loop connecting various tourist destinations	Innovative approach to tourist transportation Aligns with vision set down in the Greater Sydney Region Plan which identifies an Innovation Corridor to the west of Sydney CBD	Increase in public transport use and potential decrease in private vehicle use (hire cars and taxis)
Plan for the future through provision of public infrastructure that caters for private electronic modes of transport (e-bikes, scooters)	Aligns with vision set down in the Greater Sydney Region Plan which identifies an Innovation Corridor to the west of Sydney CBD	Increase in active transport use as a first and last mile connection Decrease in private vehicle use
Explore future freight solutions including trials of autonomous small delivery vehicles	Aligns with vision set down in the Greater Sydney Region Plan which identifies an Innovation Corridor to the west of Sydney CBD	Decrease in private vehicle use offset to an extent by small delivery vehicle trips
Provide charging stations for electric vehicles and electric bikes	Aligns with vision set down in the Greater Sydney Region Plan which identifies an Innovation Corridor to the west of Sydney CBD Aligns with aspirations for multi-utility hubs	Increase in active transport use Increase in more sustainable private vehicle use and some decrease in fossil fuel-based private vehicle use.

10.0 Construction Traffic Impact Assessment

10.1 Overview

While there is no formal construction program for the renewal of Blackwattle Bay, the potential construction activities and key stages, impacts and mitigation measures are explored in this section. Potential construction impacts and traffic routes are identified for both Site 1 and Site 2, as outlined in Figure 10-1.

Figure 10-1: Blackwattle Bay SSP Study Area

Source: FJMT, 2021

10.1.1 New Sydney Fish Market (Site 1)

The potential impacts from construction of the new Sydney Fish Market to traffic, transport and access are described below in more detail. Identified impacts would be experienced at various times throughout the construction phase, as works progress and depending on the activity being undertaken. The indicative construction program and working hours will be determined by Multiplex which was contracted to build the new Sydney Fish Market. It is expected that Multiplex will also prepare a more detailed Construction Pedestrian and Traffic Management Plan (CPTMP) prior to commencement of works on the site in 2021.

10.1.2 Site 2

As part of the Blackwattle Bay SSP renewal, the current Sydney Fish Market will be demolished to make way for mixed use buildings and a network of public open space with uses including; residential, commercial, retail and service apartments/hotels. Demolition work will occur once the Sydney Fish Market relocates to the new location at the head of Blackwattle Bay.

10.2 Construction program

An overview of the key construction activities for the upgrade of Blackwattle Bay is provided below:

10.2.1 New Sydney Fish Market (Site 1)

1. Multiplex to commence Marine Main piling works in early 2021
2. Formal construction of three-storey building, waterfront structures, improvements to public domain such as intersection upgrades and pedestrian and cycle access commencing late 2021, with the opening of new Sydney Fish Market in late 2024
3. Transfer of personnel, businesses and equipment from old Sydney Fish Market to new Sydney Fish Market in late 2024
4. Ongoing materials delivery

10.2.2 Site 2

1. Conduct site assessment and tests in areas marked for development within Blackwattle Bay including the current Sydney Fish Market site
2. Demolition of existing structures at old Sydney Fish Market site in 2025
3. Preparation and clearing of current Sydney Fish Market site and other dated infrastructure marked for demolition in 2025
4. Excavate and install earthworks at appropriate sites before construction commences
5. Internal fit out of constructed buildings
6. Ongoing materials delivery

10.3 Construction traffic routes

10.3.1 New Sydney Fish Market (Site 1)

At this stage, it is envisaged access to the construction site will be via existing driveways to the site located on Bridge Road. It is not expected that on-street work zones will need to be established on Bridge road to facilitate the construction works. Instead, a hardstand area north of the existing Bridge road footpath will be utilised to store construction vehicles. A site hoarding will be established to separate this work zone from the adjacent Bridge Road footpath so not to impact the safety of pedestrians in the area. Traffic controllers will be present at the vehicle crossover points to manage interactions with pedestrians.

Construction vehicles will travel to and from the site via the state road network and main roads including the Western Distributor, Victoria Road and the City West Link before arriving at the site through Bridge Rd.

The potential construction traffic routes are shown in Figure 10-2.

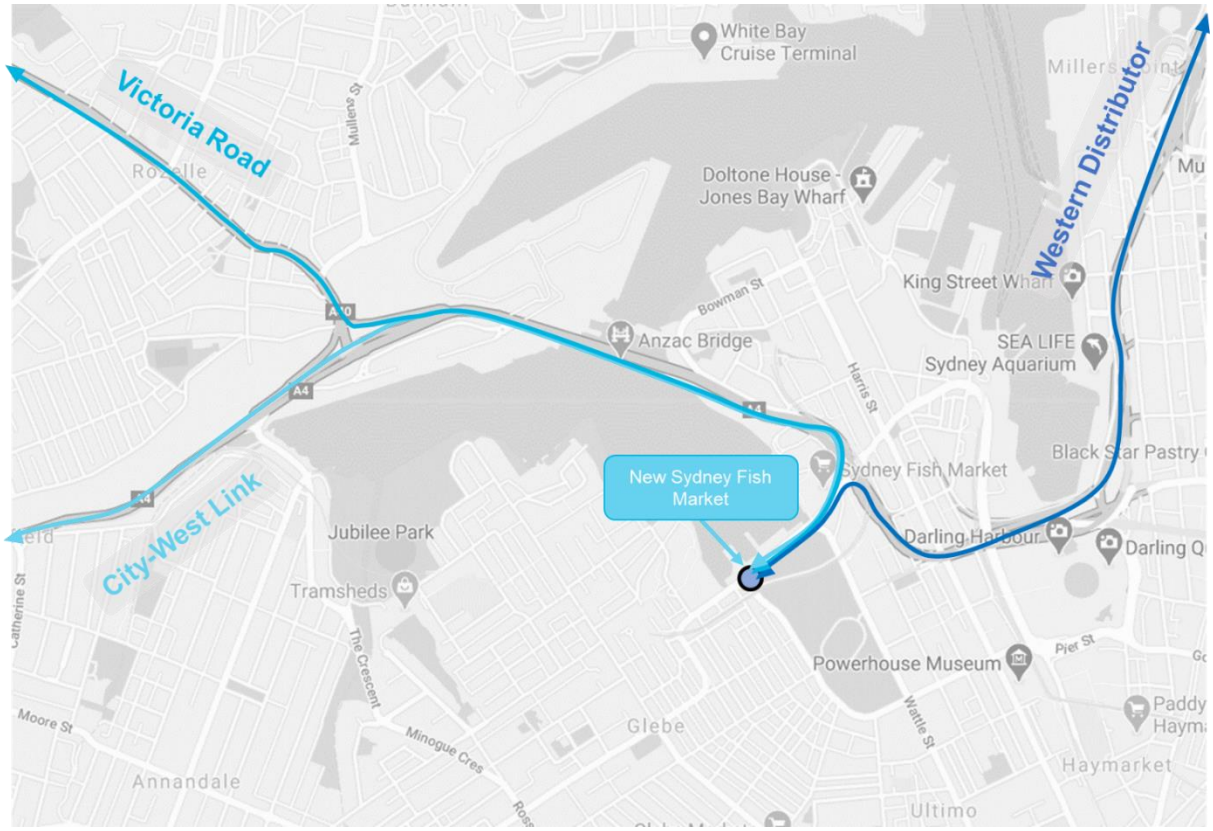


Figure 10-2: Potential construction routes to new Sydney Fish Market site

Source: Hansen Yuncken, 2020, adapted by AECOM

10.3.2 Site 2

During the demolition of Site 2, it is anticipated that the construction traffic routes would focus on the roads shown in Figure 10-3 and enter Site 2 through the Bridge Rd/Wattle St intersection. In particular, construction vehicles will travel to and from Site 2 via the State road network and main roads including the Western Distributor, Victoria Road and the City West Link.

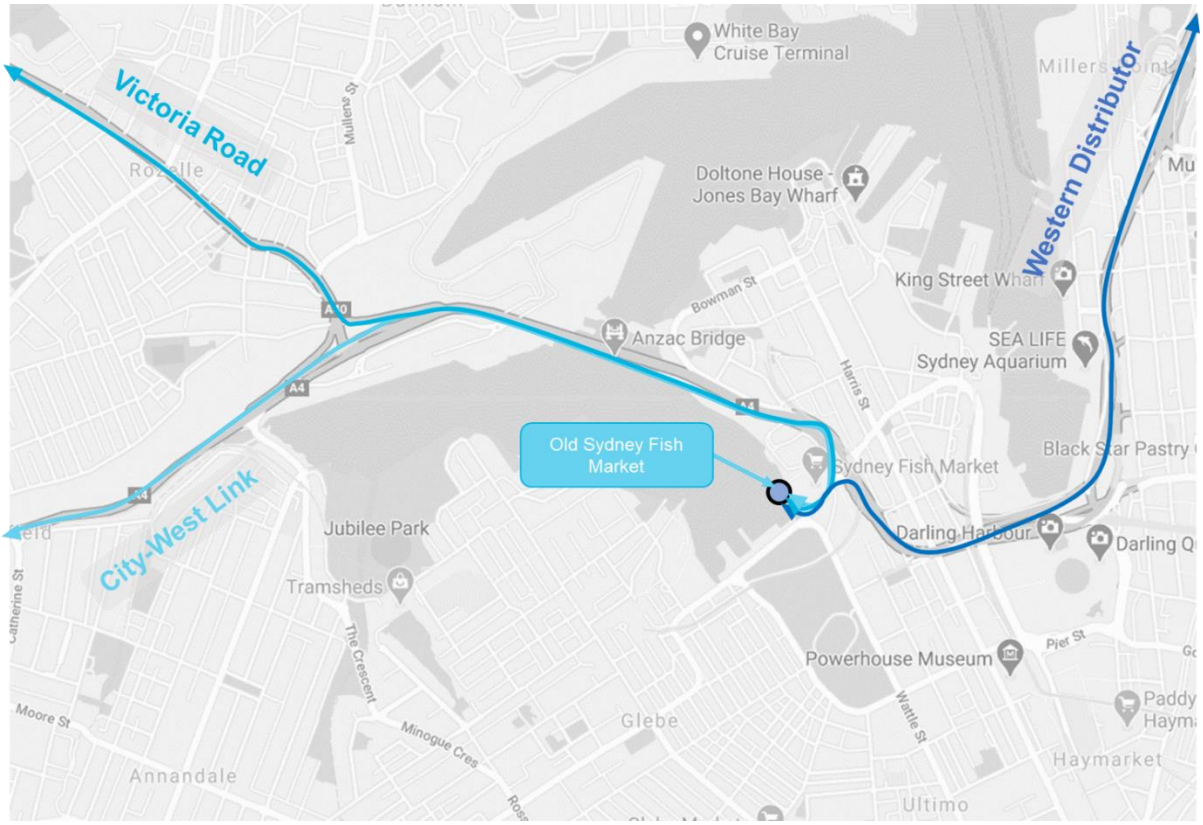


Figure 10-3: Potential construction routes to Blackwattle Bay

Source: AECOM, 2020

10.4 Construction traffic impacts

The impact of construction traffic is yet to be determined and subject to phasing of renewal in the precinct. The following assessments are an estimate of the construction traffic impacts on different road users. They are not indicative of the final impact of construction on traffic.

10.4.1 Active transport

Active transport routes that service Blackwattle Bay are currently the main pedestrian paths and cycle routes outlined in Sections 3.3.1 and 3.3.2. It is anticipated the movement of construction traffic such as heavy vehicles and utility private vehicles will interrupt active transport movement more than ordinary traffic currently does. This may occur during transit or when entering or exiting construction sites throughout Blackwattle Bay. Active transport connections between Glebe and Sydney CBD are expected to be the most affected as construction traffic is likely to travel along Bridge Road and towards Harris Street. Bridge Road features footpaths on both sides of the road and a pop-up cycleway, which would likely be negatively impacted by construction traffic. Alternative temporary active transport routes through or south of Wentworth Park may be adopted to address these impacts from construction.

10.4.2 Emergency vehicles

Emergency vehicles will most likely travel along the State road network and main roads around Blackwattle Bay as their route of choice to reach their destination as soon as possible. Construction traffic must be adequately managed to ensure emergency vehicles have priority when passing through and around the construction site. This may also mean that on-street parking around construction sites could be removed to widen the corridor, minimising the time emergency vehicles need to pass through or around construction vehicles or traffic.

10.4.3 Public transport

On-road public transport routes that service Blackwattle Bay are currently the bus services discussed in Section 3.3.5. These routes do not directly pass through the proposed construction site of the new Sydney Fish Market but may be affected by other construction within Blackwattle Bay. The routes may also be affected along the State road network and main roads including the Western Distributor, Victoria Road and the City West Link. Both the Western Distributor and Victoria Road carry significant numbers of buses during weekdays, especially during the morning and afternoon peak. Construction vehicle arrival and departure times from sites within Blackwattle Bay will need to be adequately managed to avoid increased congestion for the public transport network within the vicinity of the Blackwattle Bay.

10.5 Mitigation measures

Mitigation measures can be adopted during the construction phases of Blackwattle Bay to ensure construction will have minimal impact on surrounding traffic, land uses and the community in general. Footpath closures should be minimised where possible. The traffic, transport and access-related mitigation measures during the construction phase include the following:

- Truck loads should be covered during transportation off-site for sensitive loads
- Establishment and enforcement of appropriate on-site vehicle speed limits (20 km/h), which should be reviewed depending on weather conditions or safety requirements
- Neighbouring properties should be notified of construction works and timing
- Materials should be delivered and spoil removed during standard construction hours
- Deliveries should be planned to ensure a consistent and minimal number of trucks arriving at site at any one time
- No on-site parking should be provided to encourage the use of public transport to the construction site.
- Traffic controllers will be used to manage traffic on the public street(s) to allow trucks to enter or leave construction sites throughout Blackwattle Bay
- Where possible, vehicles should enter and exit the site in a forward direction. They must wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site
- Vehicles entering, exiting and driving around the site should be required to give way to pedestrians and vehicles already on the road
- All deliveries should be pre-booked

It is expected that a Construction Traffic Management Plan would be prepared during the detailed design for the various sites within the precinct to support and inform an environmental review, to investigate in greater detail specific impacts of construction activities.

11.0 Delivery, Implementation and Staging

11.1 Infrastructure schedule

Pyrmont is the subject of a range of infrastructure upgrades which have been driven through the collaboration of State government agencies, namely Infrastructure NSW, the NSW Government Architect, the Department of Planning, Industry and Environment, and Transport for NSW. This has led to planned infrastructure upgrades in Pyrmont which include WestConnex and Sydney Metro West Line. The infrastructure schedule below in Table 11-1 contains a list of upcoming transport-oriented infrastructure upgrades for Pyrmont.

Table 11-1: Blackwattle Bay infrastructure upgrades

Item	Upgrade	Who	Process
1	Construction of the new Sydney Fish Market • Development footprint of 40,160 m^2 with 12,000 m^2 of new public domain including the harbour promenade, an urban park, a local plaza and Bridge Road promenade	Infrastructure NSW	Construction ongoing with completion in 2024
2	Shared footpaths and cycleways • Shared footpaths along major active transport corridors identified in Section 9.4.	Transport for NSW	Delivery as part of construction of new Sydney Fish Market, associated works and construction of new Sydney Metro West Line station at Pyrmont
3	Sydney Metro West Line • Construction of metro station at Pyrmont with possible underground connection to Sydney Fish Market light rail stop	Transport for NSW	Construction ongoing as part of Sydney Metro West Line project, estimated completion in 2024
4	WestConnex • Completion of M4-M5 Link, which will comprise a new multi-lane road link between the M4 East Motorway at Haberfield and the new M8 Motorway at St Peters, located at Rozelle	Transport for NSW	Construction ongoing as part of WestConnex project with estimated completion in 2023
5	Western Harbour Tunnel • Stretches from the Warringah Freeway at Cammeray, across Sydney Harbour, to the M4-M5 Link at Rozelle	Transport for NSW	Construction ongoing as part of Western Harbour Tunnel & Warringah Freeway Upgrade with estimated completion in 2026
6	New waterfront promenade • Construction to provide the missing link to create a 15km walk from Woolloomooloo to Rozelle	Infrastructure NSW	Part will be delivered as part of construction of new Sydney Fish Market, with the remaining section through Blackwattle Bay delivered as part of the precinct renewal
7	New through site links, connections and public realm through old Sydney Fish Market site	Infrastructure NSW/Private Developers	Delivery as part of renewal of Blackwattle Bay Precinct

11.2 Implementation of Action Plan

Table 11-2 outlines the action plan for the implementation of the 'Travel Demand Management' measures described in Section 8.0; presenting the alignment with the 'Travel Demand Management' objectives, the relevant application groups, delivery time frames, precincts and agencies to lead the measures.

The short-term time frame refers to time between now and 2023, with medium-term between 2023 and 2028 and long-term between 2028 and 2033.

11.2.1 Monitoring and evaluation

The responsibility of monitoring and evaluating 'Travel Demand Management' measures within Blackwattle Bay sits with the Department of Planning, Industry and Environment.

'Travel Demand Management' measures need to be reviewed on an annual basis, ensuring that they are positively contributing towards a shift in travel to more sustainable modes, reflected in mode share data.

When a Transportation Management Association is established for Blackwattle Bay, the organisation will then take responsibility for the monitoring and evaluation of the associated 'Travel Demand Management' measures in place and their impact on private vehicle use and sustainable mode share.

An evaluation framework needs to be established as part of the renewal of Blackwattle Bay.

Table 11-2: 'Travel Demand Management' action plan

'Travel Demand Management' Measures	Objectives						Application			Time Frame			Agency Involvement (L = Lead, C = Contributor)				
	Encourage Active and Public Transport Trips	Limit Vehicle Trips	Travel Choice	Alternatives Modes	Efficient Land Use	Liveable Communities	Business	Education	Community	Short Term	Medium Term	Long Term	Department of Planning, Industry and Environment	NSW Government / TfNSW	City of Sydney Council	Transportation Management Association	Developers / Businesses
Measures																	
Transport Management Associations	●	●	●	●	●	●	●	●		●			L	C	C	L	C
'Travel Plan'	●	●	●	●		●	●	●	●	●				L	C		C
Bicycle Parking & End of Trip Facilities	●		●	●		●	●	●	●	●				L	C		C
Maximum Car Parking Provision	●	●	●		●	●	●	●	●	●			L	L	C		C
Traffic Calming & Speed Reduction			●			●	●	●	●	●	●	●	C	L	C		
Provision of Car Share Parking		●	●	●	●		●		●	●	●	●			C	C	L
Interventions																	
Alternative Work Schedules	●	●	●	●			●			●	●	●				C	L
Active Transport Training & Guides	●	●	●	●		●	●	●	●		●	●			C	L	C
Carpooling Program		●	●	●			●	●			●	●				L	C
Combined Travel Behaviour Campaigns	●	●	●	●		●	●	●	●		●	●		L	C	L	

'Travel Demand Management' Measures	Objectives						Application			Time Frame			Agency Involvement (L = Lead, C = Contributor)				
	Encourage Active and Public Transport Trips	Limit Vehicle Trips	Travel Choice	Alternatives Modes	Efficient Land Use	Liveable Communities	Business	Education	Community	Short Term	Medium Term	Long Term	Department of Planning, Industry and Environment	NSW Government / TfNSW	City of Sydney Council	Transportation Management Association	Developers / Businesses
Commuter Financial Incentives	●	●	●	●	●	●	●		●		●	●				C	L
Education	●		●			●		●			●	●		L	C		
Events and Challenges	●	●	●	●		●	●	●	●		●	●		C		L	C
Navigation and Journey Planning Tools	●	●	●	●	●	●	●	●	●	●	●	●		C	C	L	
Safe Routes to School	●		●			●		●			●	●		L	C		
Shuttle Bus Services		●	●	●		●	●	●	●	●	●	●				L	C
Staggered School Start Times		●	●	●	●	●		●			●	●		L			
Telework		●	●	●		●	●				●	●		C		C	L
Walking and Cycling to School Bus	●	●	●	●	●	●		●			●	●		L	C		
Wayfinding (inside Blackwattle Bay)	●		●			●	●		●	●	●	●		C	C	L	L
Wayfinding (outside Blackwattle Bay)	●		●			●	●		●	●	●	●		L	L	C	C

Appendix A: Parking Requirements

City of Sydney DCP

Overview

DCPs are not applicable to State Significant Precincts, however the Sydney DCP will be used as a reference for how car parking provisions may be applied to the site.

The purpose of the Sydney DCP 2012 is to supplement the Sydney LEP 2012 and provide more detailed provisions to guide development. The DCP provides controls which guide development in order to:

- Encourage development to respond to its context and is compatible with the existing built environment and public domain
- Recognise and reinforce the distinctive characteristics of the City of Sydney's neighbourhoods and centres
- Build upon the detailed objectives and controls under Sydney LEP 2012
- Protect and enhance the public domain
- Achieve the objectives of the City's Sustainable Sydney 2030 Strategy
- Encourage design that maintains and enhances the character and heritage significance of heritage items and heritage conservation areas
- Encourage ecologically sustainable development and reduce the impacts of development on the environment.

Transport and parking

The transport and parking section of the DCP contains provisions for managing the transport and parking needs of the city so that the environmental and economic impacts of private car use can be managed. The provisions also encourage walking, cycling, public transport and car sharing.

The following objectives have been identified for developments within the City of Sydney:

- Ensure that the demand for transport generated by development is managed in a sustainable manner
- Ensure that bike parking is considered in all development and provided in appropriately scaled developments with facilities such as change rooms, showers and secure areas for bike parking
- Establish requirements for car share schemes for the benefit of people living and or working within a development
- Design vehicle access and basement layouts and levels to maximise pedestrian safety and create high quality ground level relationships between the building and the public domain
- Provide accessible car parking.

Provisions with relevant 'Travel Demand Management' measures for development within the City of Sydney are outlined in the following sections.

Managing transport demand

This provision includes measures taken which minimise the need to travel and the length of trips, particularly by car, and encourages travel by the most sustainable mode of transport:

- A Transport Impact Study is required to address the potential impact of the development on surrounding movement systems where the proposed development is
    - A non-residential development equal to or greater than 1,000sqm GFA

  - Car park with more than 200 spaces
  - For 25 or more dwellings
  - In the opinion of the consent authority, likely to generate significant traffic impacts
- Commercial development is to include initiatives to promote walking, cycling and the use of public transport, through the submission of a Green 'Travel Plan', where the estimated peak trip generation is greater than or equal to
  - 100 vehicles per hour for non-residential development
  - 50 vehicles per hour for residential development within Green Square and shown as Category A on the Land Use and Transport Integration Map
  - 60 vehicles per hour for residential development within Green Square and shown as Category B or C on the Land Use and Transport Integration Map
  - Is likely to generate significant traffic impacts according to Council
- A Transport Access Guide and a strategy for the future availability of the Guide to residents, employees and visitors of a development is to be prepared for all developments except
  - Individual dwelling houses and dual occupancies
  - Residential flat buildings of less than 25 units
  - Individual businesses and services in existing shopping strips and retail centres
  - Developments having a floor area of less than 1,000sqm GFA
  - Businesses employing less than 10 staff.

Vehicle Parking requirements

The following provisions have been outlined in the DCP relating to vehicle parking within developments in the City of Sydney:

- Where the development comprises a land use not specified in the Sydney LEP 2012, the proposed rate of car parking provision is to be justified via a Parking and Access Report
- For residential buildings, car parking spaces are to be allocated to dwelling units in accordance with parking rates in the Sydney LEP 2012 and are to be a part lot to a dwelling unit in a strata plan so that they remain connected to the dwelling
- All visitor spaces are to be grouped together in the most convenient locations relative to car parking area entrances, pedestrian lifts and access points and are to be separately marked and clearly sign-posted
- Development applications are to indicate how visitor parking is to be accessed, including arrangements for access into a secure area if proposed
- New developments are to achieve high quality ground level relationships between the buildings and all public domain interfaces even where this will result in inefficient basement car parking layouts including spilt basement levels or additional excavation
- Where a residential development proposes less than the maximum number of car parking spaces permissible under Sydney LEP 2012, the reduction in the number of spaces should be shared proportionally between resident parking spaces and visitor parking spaces
- Development proposing less than the maximum number of parking spaces permissible under Sydney LEP 2012 must adjust the number of visitor parking spaces in accordance with the reduction of total car parking spaces.

Division 2 of the Sydney LEP 2012 outlines the maximum parking rates for a number of land uses, including land categories A to F.

Bike Parking requirements

The following provisions have been outlined in the DCP relating to bike parking and facilities within developments in the City of Sydney:

- All development is to provide on-site bike parking designed in accordance with the relevant Australian Standards for the design criteria of bike parking facilities
- Bike parking spaces for new developments are to be provided in accordance with the rates set out in Table A-1 except where:
    - An apartment in a residential building has a basement storage area on title that is large enough to accommodate a bike and is no smaller than a Class 1 bike locker, then additional bike parking for that apartment is not required
    - A proposed use is not included in Table A-1 an applicant is to provide bike facilities to accommodate Council's mode share target for trips by bike as described in the Cycle Strategy and Action Plan 2007-2017
- Secure bike parking facilities are to be provided in accordance with the following:
    - Class 1 bike lockers for occupants of residential buildings
    - Class 2 bike facilities for staff/employees of any land use
    - Class 3 bike rails for visitors of any land use
- Where bike parking for tenants is provided in a basement, it is to be located:
    - On the uppermost level of the basement
    - Close to entry/exit points
    - Subject to security camera surveillance where such security systems exist
- A safe path of travel from bike parking areas to entry/exit points is to be marked
- Access to bike parking areas are to be:
    - A minimum of 1.8m wide to allow a pedestrian and a person on a bike to pass each other and may be shared with vehicles within buildings and at entries to buildings)
    - Accessible via a ramp
    - Clearly identified by signage
    - Accessible via appropriate security or intercom systems
- Bike parking for visitors is to be provided in an accessible on-grade location near a major public entrance to the development and is to be signposted
- For non-residential uses, the following facilities for bike parking are to be provided at the following rates:
    - 1 personal locker for each bike parking space
    - 1 shower and change cubicle for up to 10 bike parking spaces
    - 2 shower and change cubicles for 11 to 20 or more bike parking spaces are provided
    - 2 additional showers and cubicles for each additional 20 bike parking spaces or part thereof
    - Showers and change facilities may be provided in the form of shower and change cubicles in a unisex area in both female and male change rooms
    - Locker, change room and shower facilities are to be located close to the bike parking area, entry and exit points and within an area of security camera surveillance where there are such building security systems.

Table A- 1: City of Sydney on-site bike parking rates

Proposed Use	Residents / Employees	Customers / Visitors
Residential		
Residential accommodation	1 per dwelling	1 per 10 dwellings
Commercial		
Office or business premises	1 per 150 m^2 GFA	1 per 400 m^2 GFA
Bulky goods premises	1 per 600 m^2 GFA	1 per 1,00 m^2 GFA
Shop, restaurant or café	1 per 250 m^2 GFA	2 plus 1 per 100 m^2 over 100 m^2 GFA
Shopping centre	1 per 200 m^2 GFA	1 per 300 m^2 sales GFA
Pub	1 per 100 m^2 GFA	1 per 100 m^2 GFA
Entertainment facility	-	Greater of 1 per 15 seats or 1 per 40 m^2 GFA
Place of public worship		
Industry		
Industry, warehouse or distribution centre	1 per 10 staff	-
Community		
Child care centre	1 per 10 staff	2%
Medical centres, health consulting rooms	1 per 5 practitioners / professionals	1 per 200 m^2 GFA
Tertiary educational institution	1 per 10 staff and 1 per 10 students	-
Swimming pool	1 per 10 staff	2 per 20 m^2 of pool area
Library	1 per 10 staff	2 plus 1 per 200 m^2 GFA
Art gallery or museum	1 per 1,000 m^2 GFA	1 per 200 m^2

Source: City of Sydney, 2012

AustRoads

Table A- 2: AustRoads bicycle parking provision rates

Land Use	Description	10% Mode Share Rate	
		Short Stay	Long Stay
Dwelling	Dwelling	0.02 spaces per dwelling	Based on average bicycle ownership levels per dwelling
Education	Primary School	-	0.3 spaces per student and staff
	Secondary School		
	Tertiary		
Food and drink premises	Restaurant	0.1 spaces per seat	0.1 spaces per staff
	Takeaway food		
Health services	Hospital	0.1 spaces per patient	0.1 spaces per staff
	Health facility		
Industry	Industry	0.02 spaces per 100m^2 NFA	0.18 spaces per 100m^2 NFA
Office	Office	0.05 spaces per 100m^2 GFA	0.45 spaces per 100m^2 GFA
Places of Assembly	Library	0.1 space per visitor	0.1 space per staff
	Sports facility		
	Community centre		
Retail	Bulky Goods Retail	0.3 spaces per 100m^2 NFA	0.07 spaces per 100m^2 NFA
Shop	Shop	0.4 spaces per 100m^2 NFA	0.1 spaces per 100m^2 NFA
	Department Store	0.3 spaces per 100m^2 NFA	0.07 spaces per 100m^2 NFA
	Supermarket	0.57 spaces per 100m^2 NFA	0.14 spaces per 100m^2 NFA

Source: AustRoads, 2016

Table A- 3: AustRoads end of trip facility provision rates

Number of Showers	Change Rooms
One shower for the first five bicycle spaces or part thereof, plus an additional shower for each 10 bicycle parking spaces thereafter.	One change room or direct access to a communal change room per shower.

Source: AustRoads, 2016