Placemaking NSW

Darling Harbour | Tumbalong Cycling Strategy

January 2025

Acknowledgement of Country

We acknowledge Gadi Country, her lands, sea and sky, we acknowledge her custodians, the people of the Grass tree, their kin the Wangal, Bidjigal, Cabrogal and Cammeraygal who often visited this Country to connect and share. We offer our respect to their Elders both past and present.

We advise this resource may contain images, or names of deceased persons in photographs or historical content.

It should be noted that the precinct names selected and applied for this document are known as *The Sydney Language,* named so for the purposes of Placemaking NSW's Reconciliation Action Plan. We acknowledge that there are numerous Aboriginal language place names, including Gadigal, Wangal, Cammeraygal and Dharawal, connected with these precincts.

Darling Harbour | Tumbalong Cycling Strategy

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More information

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Acknowledgements

Cover photo Tumbalong Park, Darling Harbour. Credit: Cassandra Hannagan.

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Executive Summary

What is the Darling Harbour Cycling Strategy?

This strategy has been prepared to identify and set priorities for infrastructure works and initiatives to be carried out regarding the planning, management and promotion of safe cycling in Darling Harbour.

Why is it useful?

Darling Harbour is a treasured and celebrated shared place. To ensure the ongoing safe use of the precinct by a mix of users, the strategy outlines a series of actions, informed by robust analysis of the existing and predicted future conditions of Darling Harbour.

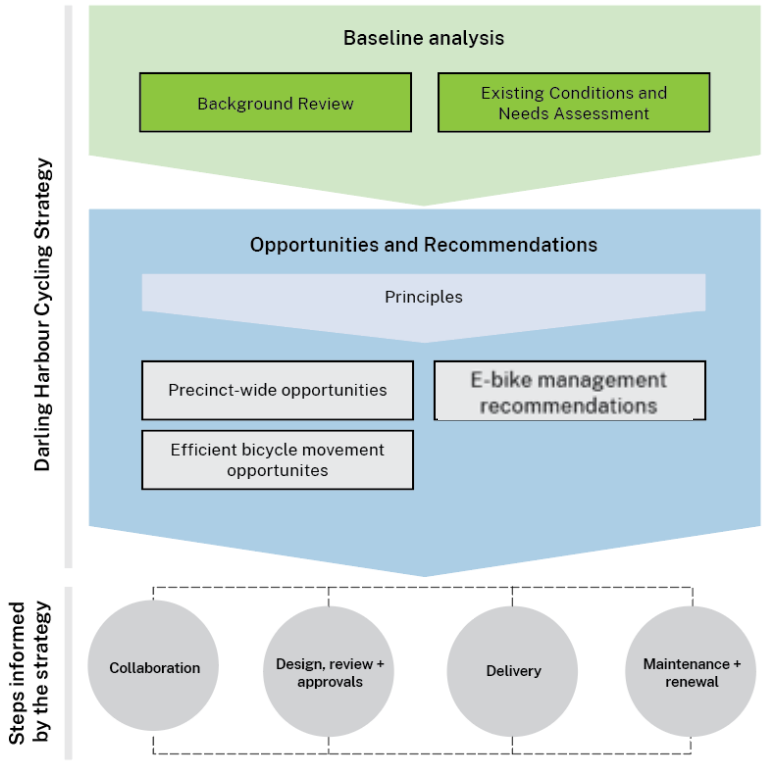
Who is this strategy for and when should it be used?

This strategy is for Placemaking NSW (PMNSW) and local stakeholders.

The principles and recommendations of this strategy should be considered (but not limited to) when:

- New building development is being undertaken
- Upgrades to the public domain and wayfinding are undertaken
- Consultation with Transport for NSW (TfNSW) or City of Sydney Council are occurring for private and public works adjacent to Darling Harbour

The Darling Harbour | Tumbalong Cycling Strategy will be reviewed and updated every five years (or earlier if housekeeping amendments are required).



Strategy structure and future steps

1

Introduction

1.1 Introduction

Stantec Australia Pty. Ltd. was commissioned by PMNSW to prepare a Cycling Strategy ('Strategy') for the Darling Harbour | Tumbalong precinct with the goal of making Darling Harbour | Tumbalong a "safe, attractive and accessible destination" for recreational, delivery and commuting cyclists. Placemaking NSW is the trading name of Place Management NSW (PMNSW). The new strategy builds upon the key findings of *Safe Bicycle Riding in a Pedestrian Precinct – Ideas and Management Strategy for Darling Harbour,* produced in 2016 by Property NSW.

The purpose of the Strategy is to:

- Update the recommendations contained in *Safe Bicycle Riding*, relevant to the contemporary context
- Identify and set priorities for infrastructure works and initiatives to be carried out regarding the planning, management and promotion of safe cycling in Darling Harbour.

The key objectives are to:

- Create a cycle-friendly precinct that benefits individuals, communities and the wider Sydney LGA while also ensuring the precinct is safe and welcoming for pedestrians.
- Recognise the different types of cyclists (commuters, tourists, recreational, couriers, food delivery, share bikes) within Darling Harbour and cater to their different needs and aspirations, whilst balancing the needs of other users in the precinct, including pedestrians.
- Acknowledge that an informal cycle network exists but is disjointed in parts, lacks connectivity and needs to be safer for cyclists and other users of the public domain.
- Nominate key cycle movement corridors within and around Darling Harbour and include recommendations for managing cyclists including the creation of shared zones and provision of new supporting infrastructure.
- Ensure appropriate public bicycle parking is provided to promote cycling while balancing potential visual and safety impacts across Darling Harbour.
- Recommend strategies and other interventions for maximising public safety between cyclists and other users of Darling Harbour.
- Define actions, projects, specific timeframes, and reporting requirements so implementation of the strategy can be monitored by PMNSW.
- Identify opportunities to link Darling Harbour with the surrounding cycle network under the control of the City of Sydney Council.
- Support other Government policies and initiatives for the promotion of cycling between Darling Harbour and the adjoining Sydney LGA.

1.2 Strategy Approach

1.2.1 Overview

The development of this Strategy is influenced by the three key drivers of **place, movement** and **connectivity**. In developing the Strategy with these drivers in mind, the resulting recommendations in the Strategy will manage the competing needs of public domain use and design, different cycle users and visitors of the precinct, and will prioritise actions.

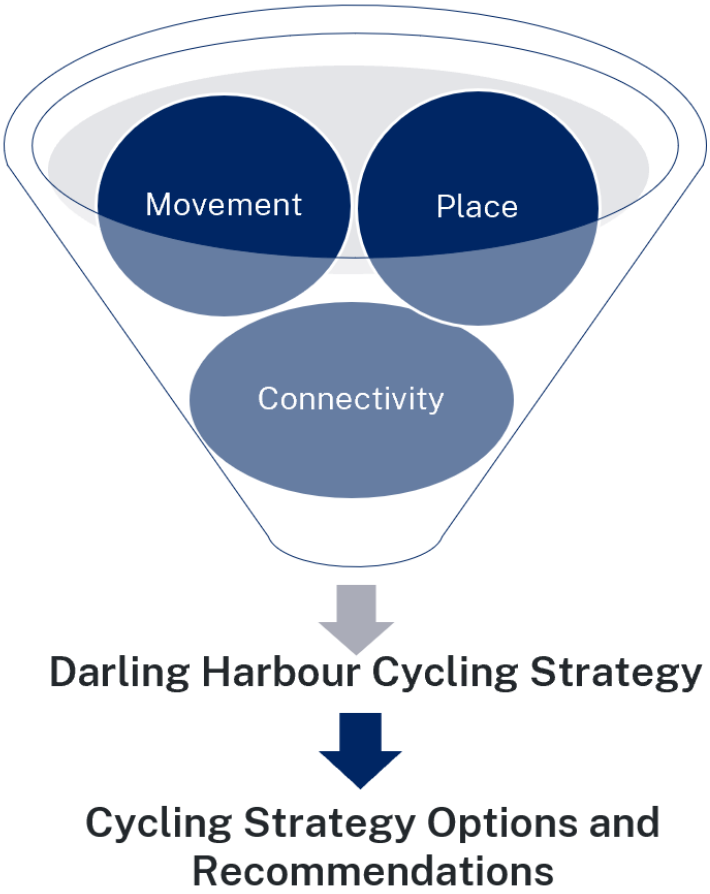


Figure 1.1: Three project drivers informing an integrated approach

Place

Darling Harbour is one of Sydney's premier destinations for entertainment, hospitality, recreation and tourism as well as a major attractor of commerce, employment and residential activity. The Strategy is guided by an overall drive to continue enhancing Darling Harbour as a place that draws millions of people every year and is a major destination for tourists and locals alike. This approach will mean prioritising the many public spaces and 'hotspots' in the precinct as places for people and activity. This will encourage slow movement to allow people to take in the precinct's sights and attractions, rather than focusing on direct and fast movement through the precinct.

Movement

Notwithstanding Darling Harbour's role as a major public place in Sydney, the precinct also serves a significant 'movement' role for residents, workers, delivery cyclists and visitors who want to access places both within the precinct as well as neighbouring major attractors such as the city centre, Pyrmont, Barangaroo and Chinatown in a direct and expedient manner. In the absence of intervention, this type of movement may be in direct conflict with the precinct's primary 'place' functions. Accordingly, the Strategy identifies and prioritises specific locations both within and adjacent to the precinct that are more suited for direct movement functions and have a strong likelihood to attract cyclists who would otherwise need to travel through the heart of the precinct.

Connectivity

Darling Harbour is located close to other major attractors such as the Sydney city centre. To best leverage its advantageous location, holistic consideration should be given to how:

- Existing and future potential cycling routes can be safely connected with adjoining major precincts.
- Nearby existing and planned cycling infrastructure can enhance cycling accessibility and safety into and out of Darling Harbour.

Consideration for connectivity involves a nuanced understanding of how direct cycle movement from outside the precinct will interface with entry points into Darling Harbour and how this movement can be filtered into slow or direct movement depending on the prevailing 'place' or 'movement' function at the point of entry.

1.2.2 Movement and Place Framework

With regard for the above, streets and movement pathways in the Darling Harbour precinct are considered to fall into the 'Civic Spaces' category of the NSW Government's Movement and Place Framework (as shown in **Figure 1.2**), requiring slower movement and more place. An excerpt from the Practitioner's Guide to Movement and Place on Civic Spaces is presented below:

> "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 pedestrian priority, shared spaces".

The cycle strategy will be guided by this classification.

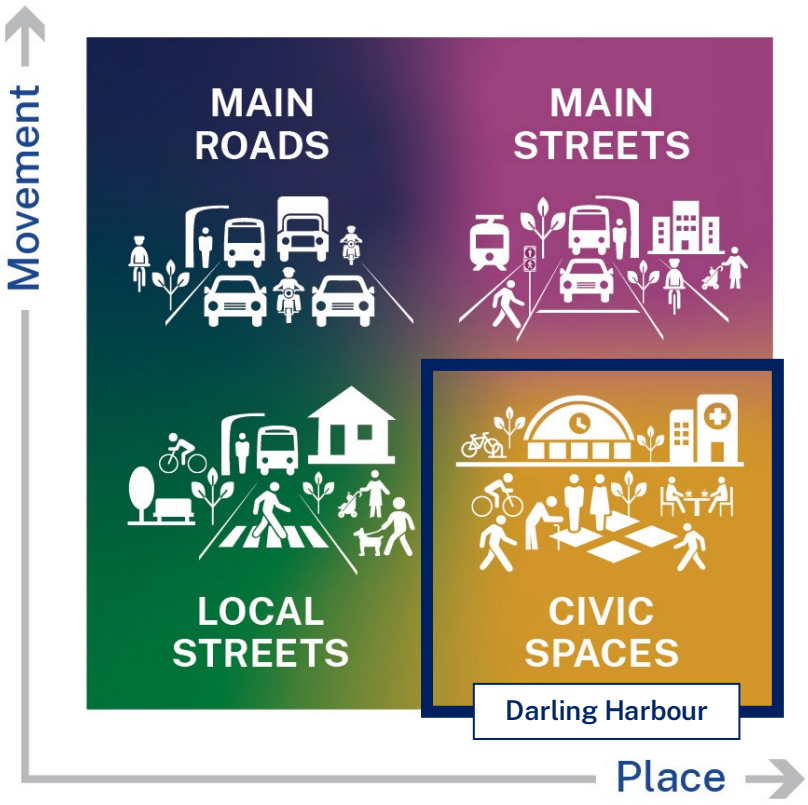


Figure 1.2: Movement and Place Street Environment Diagram, highlighting classification of Darling Harbour as a civic space.

Source: NSW Government

1.3 Methodology

The approach taken for the development of the Darling Harbour Cycle Strategy's opportunities and recommendations (the Strategy) considers the following:

- Understanding the local context for different user needs (e.g. destination cycling versus movement cycling) and how each user would travel.
- Understanding the existing and proposed cycling networks in and surrounding Darling Harbour as well as any network constraints or gaps.
- Ensuring a strategy that is fit for purpose with a focus on meeting end user requirements.
- Understanding the level of difficulty in building and implementing any network changes with an understanding of who the potential responsible party would be.
- Managing stakeholders, both external and internal as well as their perceptions and beliefs.
- Ensuring that the Strategy is aligned with Council and State Government Policies.

To this end, the preparation of the Strategy has followed a structured and staged methodology that aligns with the considerations and opportunities arising from consultation and input from stakeholders during the overall process. A summary of the process followed in preparing this Strategy is shown in **Figure 1.3.**

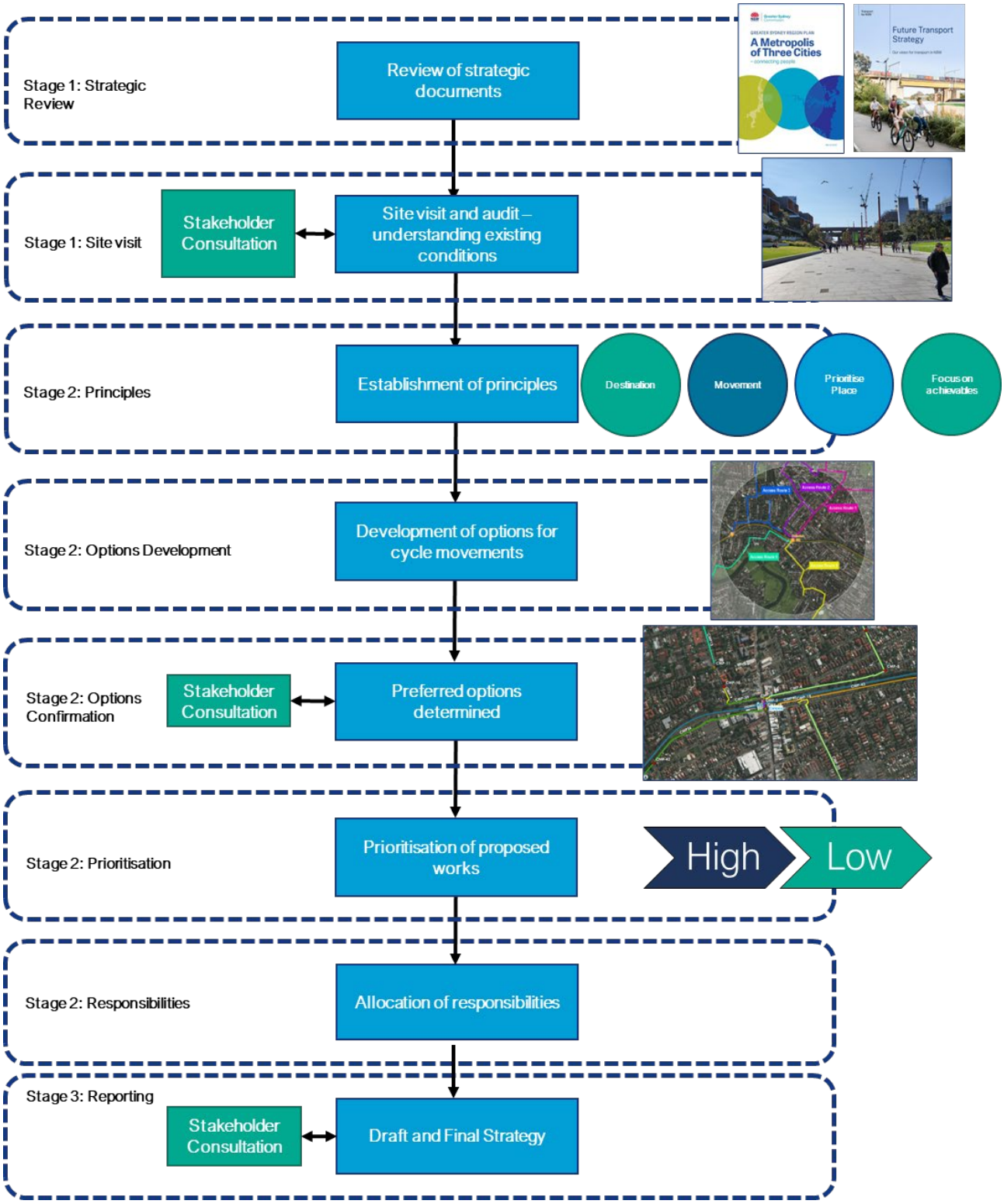


Figure 1.3: Overall methodology and process

With Stage 1 having involved the review of existing conditions and relevant strategic documents, the remainder of Stage 2 in this part of the report focuses on the establishment of driving principles, opportunities and recommendations.

1.4 Principles

The existing conditions and needs assessment provided in **Section 3** provide clear insights into the movement patterns and trends for the diverse range of people that visit and access Darling Harbour, which in turn have implications for the opportunities to cater to Darling Harbour's needs. The insights provided earlier can be directly translated into principles that will guide the development of cycle strategy opportunities and the subsequent recommendations. These principles are shown in **Figure 1.4** and explained below.

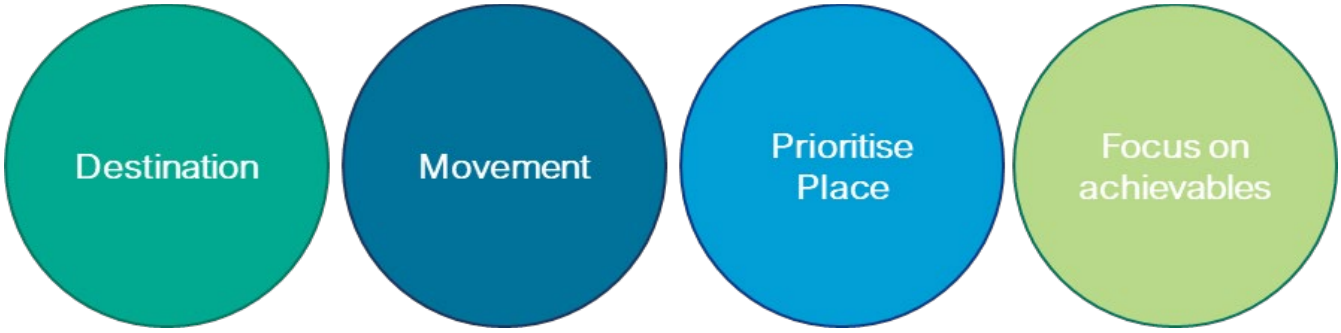


Figure 1.4: Guiding Principles

DESTINATION
Darling Harbour is a major destination in Sydney – it will always attract people walking and cycling

Darling Harbour is a major destination or 'place' in Sydney's Harbour foreshore, hosting an eclectic range of entertainment venues, events, restaurants, apartments, offices, parks, playgrounds and hotels. As a result, it attracts large numbers of people coming via many modes of transport, including walking (even those driving or using public transport must walk through Darling Harbour) and cycling. People walking and cycling to, within, around and between key sites within Darling Harbour will continue to be a mainstay of this major destination.

MOVEMENT
Darling Harbour is a major movement corridor for people walking and cycling to other places

Darling Harbour functions as a major movement corridor for people walking and cycling to major destinations located adjacent to the harbour, including the city centre, Pyrmont, Chinatown, Central Station and Ultimo. Consequently, Darling Harbour is an important location for through movement to these destinations; this is particularly discernible during peak periods.

PLACE
Overlap between place and movement functions in Darling Harbour requires solutions that recognise and prioritise place values

It is evident that the overlap between Darling Harbour's place and movement functions creates conflicts between different user types and different activities in Darling Harbour. These conflicts relate to differences in speed and direction, differences in activity functions as well as spatial overlap of activities. For example, between commuter cyclists and people walking or cycling recreationally, between delivery riders and people mingling and between locations of recreational activities and commuter travel. In light of these conflicts, cycle strategy options should target interventions that prioritise place given Darling Harbour's role as a major public place and destination.

ACHIEVABLE

Not all movement functions in Darling Harbour are created equal – focus on the achievables

Prioritising place means recognising that there are some movement functions and directions in Darling Harbour that can be influenced through interventions and some that are difficult to change. For example, Pyrmont Bridge is recognised as the only east-west movement axis in Darling Harbour due to the lack of reliable alternatives. Conversely, there are multiple north-south routes for people cycling to travel around the core of Darling Harbour to access the city centre or Pyrmont. Proposed interventions should target these 'achievables' while managing movement impacts for movement axes for which there are no alternatives.

2

Strategic Context

2.1 Overview

The strategic planning context for Darling Harbour has undergone significant change since the publication of the *Safe Bicycle Riding in a Pedestrian Precinct – Ideas and Management Strategy for Darling Harbour* in 2016. This includes the *Future Transport 2056* transport planning framework for NSW which has shaped how strategic cycle studies are developed, as well as the development of the *Pyrmont Peninsula Place Strategy (2020*) and *City of Sydney Cycling Strategy and Action Plan (2018)*.

The following documents have been reviewed, with summaries and key policy implications for the study summarised in the next section:

- *The Greater Sydney Region Plan* (2018) and *Eastern City District Plan* (2018), *Greater Sydney Commission*
- *Future Transport Strategy 2064* (2022), Transport for NSW
- *Sydney City Centre Access Strategy* (2013), Transport for NSW
- *Pyrmont Peninsula Place Strategy* (2020), NSW Department of Planning, Housing and Infrastructure
- *Local Strategic Planning Statement* (2020), City of Sydney
- *City of Sydney Cycling Strategy and Action Plan* (2018), City of Sydney
- *Community Strategic Plan* (2022), City of Sydney
- *Cycleway Design Toolbox* (2020), Transport for NSW
- *NSW Electric Vehicle Strategy* (2021), NSW Department of Planning, Housing and Infrastructure.

To understand the existing and proposed bicycle network within and around Darling Harbour, an analysis has been undertaken of the networks provided in the relevant strategic documents outlined above. The City of Sydney proposed bicycle network in the *Cycling Strategy and Action Plan 2018-2030 (CoS 2018)* and *Transport for NSW's Sydney City Centre Access Strategy (SCCAS)* are slightly different and therefore have been reproduced in **Figure 2.1**.

The map in **Figure 2.1** shows a combined network of the cycling routes proposed by City of Sydney through the study area**.** This network forms the basis for further analysis of cycling movement patterns in and around the Darling Harbour precinct, and provides recommendations related to cycling accessibility, connectivity and safety.

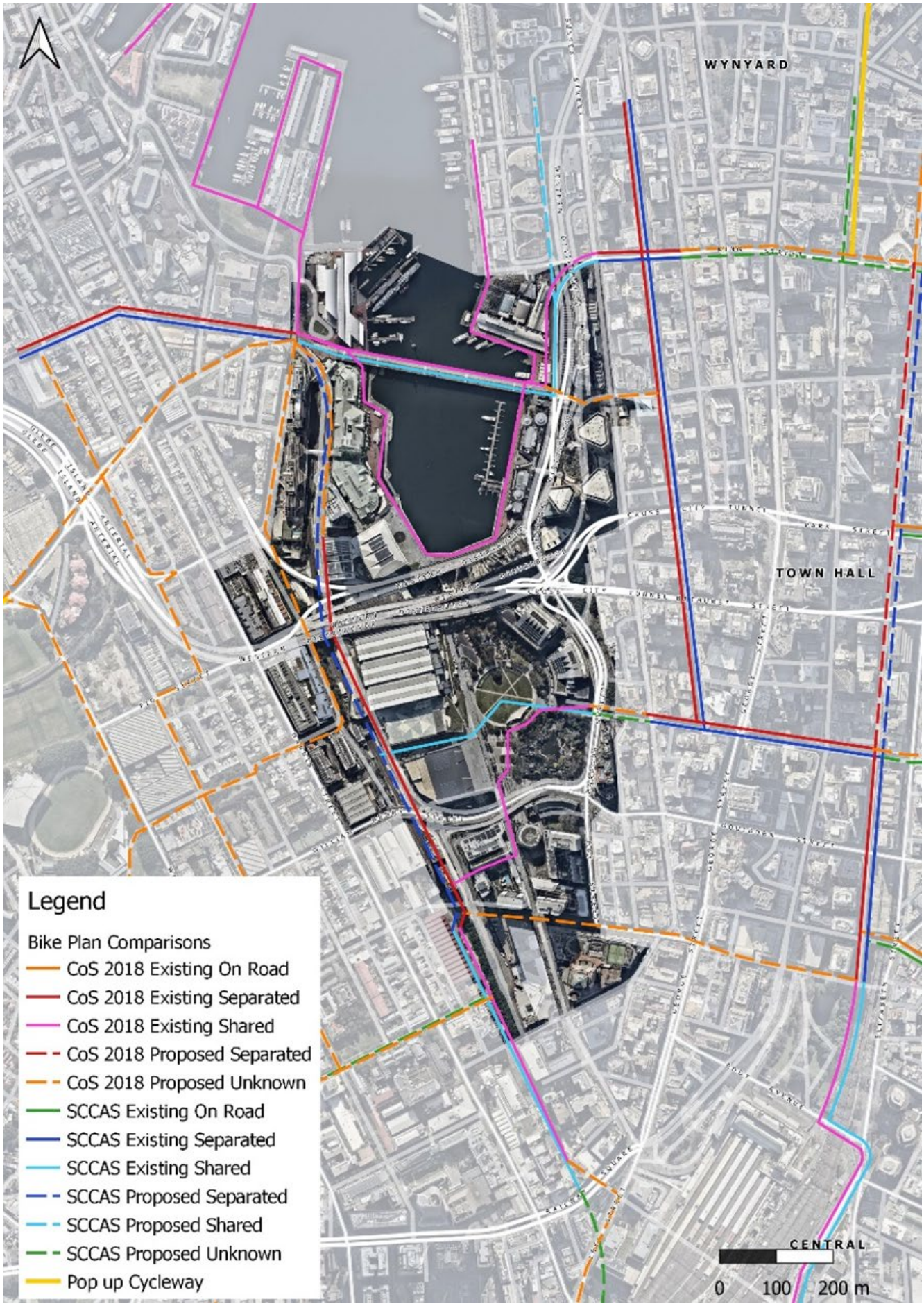


Figure 2.1: Proposed bicycle network comparison

2.2 Policy and legislative alignments

2.2.1 The Greater Sydney Region Plan (2018) and Eastern City District Plan (2018)

A Metropolis of Three Cities -The Greater Sydney Region Plan 2018 establishes a 40-year strategic land use plan for Sydney. This plan was developed by the Department of Planning, Housing and Infrastructure concurrently with *Future Transport Strategy 2056* prepared by Transport for NSW, which aims to deliver better connectivity and accessibility for the residents of Greater Sydney. The land use vision for Greater Sydney is a metropolis of three cities: the Eastern Harbour City (Sydney CBD), the Central River City (Greater Parramatta) and the Western Parkland City (around the new Western Sydney Airport).

Sitting underneath the *Greater Sydney Region Plan* is the *Eastern City District Plan*. It presents a 20-year plan to manage growth in the context of economic, social and environmental matters to achieve the 40-year vision for Greater Sydney. It contains the planning priorities and actions for implementing the *Greater Sydney Region Plan* at a district level and is a bridge between regional and local planning.

The *Eastern City District Plan* classifies the urban environment into three categories: Metropolitan City Centre, Strategic Centre and Local Centre. Here, the Harbour CBD is the metropolitan city centre for the entire Eastern Harbour City. Randwick, Green Square-Mascot, Kogarah, Burwood and Rhodes are the Eastern City District's strategic centres nearest to Darling Harbour, while North Sydney and St Leonards are also strategic centres in the adjoining North District. Balmain and Rozelle are nearby local centres within the Eastern City District.

Consistent with *Future Transport Strategy 2056*, one of the key elements of the *Greater Sydney Region Plan* and *Eastern City District Plan* is the vision of a 30-minute city which aims to provide transport infrastructure and services that enable people to reach their nearest Metropolitan City Centre within 30 minutes, seven days a week. **Table 2.1** below identifies key actions for the Eastern City District that relate to cycling.

No.	Action
10b	Deliver healthy, safe and inclusive places for people of all ages and abilities that support active, resilient and socially connected communities by prioritising opportunities for people to walk, cycle and use public transport.
23c	Prioritise infrastructure investments, particularly projects focused on access to the transport network which enhance cycling connectivity within 5 kilometres of strategic centres or 10 kilometres of the Harbour CBD.
38g	Provide access to jobs, goods and services in centre by completing and improving a safe and connected cycling network to and within centres.
66c	Progressively refine the detailed design and delivery of walking and cycling links for transport as well as leisure and recreational trips.
67g	Maximise the use of existing open space and protect, enhance and expand public open space by providing walking and cycling links for transport as well as leisure and recreational trips.

Table 2.1: Eastern City District Plan – Cycling Related Actions

2.2.2 Future Transport Strategy

Future Transport Strategy 2064 sets out the strategic direction to provide a long-term planning blueprint for enhancing integrated transport options in NSW. This strategy is an update to the *Future Transport Strategy 2056 (2018),* with new perspectives and directions that reflect the unprecedented changes in travel behaviour of people during the COVID-19 pandemic.

The strategy identifies the importance of meeting net zero targets by prioritising walking, cycling, micro-mobility and public transport while reiterating the commitment made in the previous transport strategy to double the investment in active transport infrastructure. The Strategic Cycleway Corridors Program has been rolled out for each of the six cities to support this.

Future Transport outlines steps and actions to support councils in the delivery and expansion of their local bicycle networks through planning and funding under the Get NSW Active program amongst other significant initiatives. The 2022/23 Get NSW Active program provided $117 million in funding projects that support safe and enjoyable walking and cycling trips across NSW.

2.2.3 Sydney City Access Strategy (2013)

Transport for NSW's *Sydney City Centre Access Strategy* plans for a fully integrated transport network in Sydney's city centre. It envisions a complete cycleway network to support the rapid growth in cyclists to the city centre. Some existing cycleways are to be extended, and additional cycleways are planned to connect the whole city centre. In most cases, the proposed cycleways are on street space not used for traffic movement, including parking and loading zones and some areas of wide footpaths. **Figure 2.2** depicts the end-state of the proposed strategic cycleway network, including Pyrmont Bridge, Liverpool Street and Darling Drive classified as strategic cycle routes.

Figure 2.2: Completed Strategic Cycleway Network

(Source: TfNSW Sydney City Centre Access Strategy, 2013)

2.2.4 Pyrmont Peninsula Place Strategy (2020)

The Department of Planning, Housing and Infrastructure's *Pyrmont Peninsula Place Strategy* presents a vision for Pyrmont's transformation and development, attempting to balance the area's economic, social and environmental objectives. Concerning cycling, the Strategy prioritises walking and cycling as the dominant mode for local trips, proposing multiple east-west and north-south cycleways to create a complete cycling network on the peninsula. In the Strategy's Structure Plan, Pyrmont Bridge, Tumbalong Boulevard and Darling Drive are described as "active movement corridors" under the 'green walkable street' classification.

Figure 2.3: Pyrmont Peninsula Structure Plan

Source: Pyrmont Peninsula Place Strategy, 2020

2.2.5 TfNSW Cycleway Design Toolbox

The *TfNSW Cycleway Design Toolbox* guides practitioners on cycleway design across NSW. In concurrence with the *NSW Movement and Place Framework*, the design principles and recommendations provided in the toolbox aim to address both the movement function and place character of the location (as outlined in **Table 2.2**: TfNSW Cycleway Design Toolbox principles). The toolbox provides a specific range of road and intersection configurations for different cycleway typologies that can be implemented through temporary and permanent initiatives.

Principle	Description
Safe	Cycling infrastructure must not only be safe but should also be perceived to be safe so that people of all ages and abilities feel comfortable using the facilities.
Connected	Cycling infrastructure should be designed and planned to enable people to reach their day-to-day destinations easily, along routes that are connected, simple to navigate, and of a consistent quality that is appropriate for the expected use of that route.
Direct	Measured in both time (effort) and distance, direct routes should provide bicycle riders with the shortest and fastest way of travelling from place to place and make cycling an attractive alternative to driving or even public transport, particularly for local journeys.
Attractive	Cycling is a pleasurable activity, in part because it involves such close contact with the surroundings. Cycling infrastructure should connect to and help deliver public spaces that are well-designed and be places that people want to spend time.
Comfortable	Comfortable conditions for cycling require routes that are clearly demarcated from motor vehicles and pedestrians with high-quality, well-maintained and smooth surfaces.

Table 2.2: TfNSW Cycleway Design Toolbox principles

As noted in the TfNSW *Cycleway Design Toolbox*:

> "Bicycle parking is integral to any cycle network and to wider transport systems incorporating public transport. The provision and availability of bicycle parking at the beginning and end of every journey has a significant influence on cycle use – parked bicycle provide evidence of demand and patterns of use and can form part of a monitoring regime to measure growth and demand in cycling."

The provision of public bicycle parking within Darling Harbour is a key part of the approach to supporting safe cycling in Darling Harbour.

2.3 City of Sydney Policies and Projects

Darling Harbour's location within the City of Sydney (CoS) local government area makes it is critical that the strategic aspirations and plans of both PMNSW and CoS are mutually aligned where possible, and improvements are coordinated and holistically across management boundaries.

2.3.1 Community Strategic Plan (2022)

Delivering Sustainable Sydney 2030 – Community Strategic Plan (CSP) identifies the themes, goals and strategies that will provide direction for the delivery of planning outcomes to 2030 based on community engagement. The CSP notes that providing a safe and comfortable walking and cycling experience promotes community connection, by creating opportunities for people to collaborate and interact more easily. As part of a broader vision of sustainability, the CSP sets a target of at least 10 per cent of all trips in the city to be made by bicycle and 50 per cent by pedestrians by 2030.

2.3.2 City of Sydney Cycling Strategy and Action Plan (2018)

The City of Sydney *Cycling Strategy and Action Plan 2018-2030* outlines Council's key priorities to support more cycling to, from and within the City of Sydney. One core objective is to connect the existing disjointed cycling facilities to create a complete network. The Plan identifies two regional routes and one local route that directly interface with Darling Harbour. The regional routes include Pyrmont Bridge and the Liverpool Street – Tumbalong Park route, and Darling Drive is designated a local route. The proposed City of Sydney cycle network, in relation to the existing facilities in Darling Harbour, is shown in **Figure 2.4**.

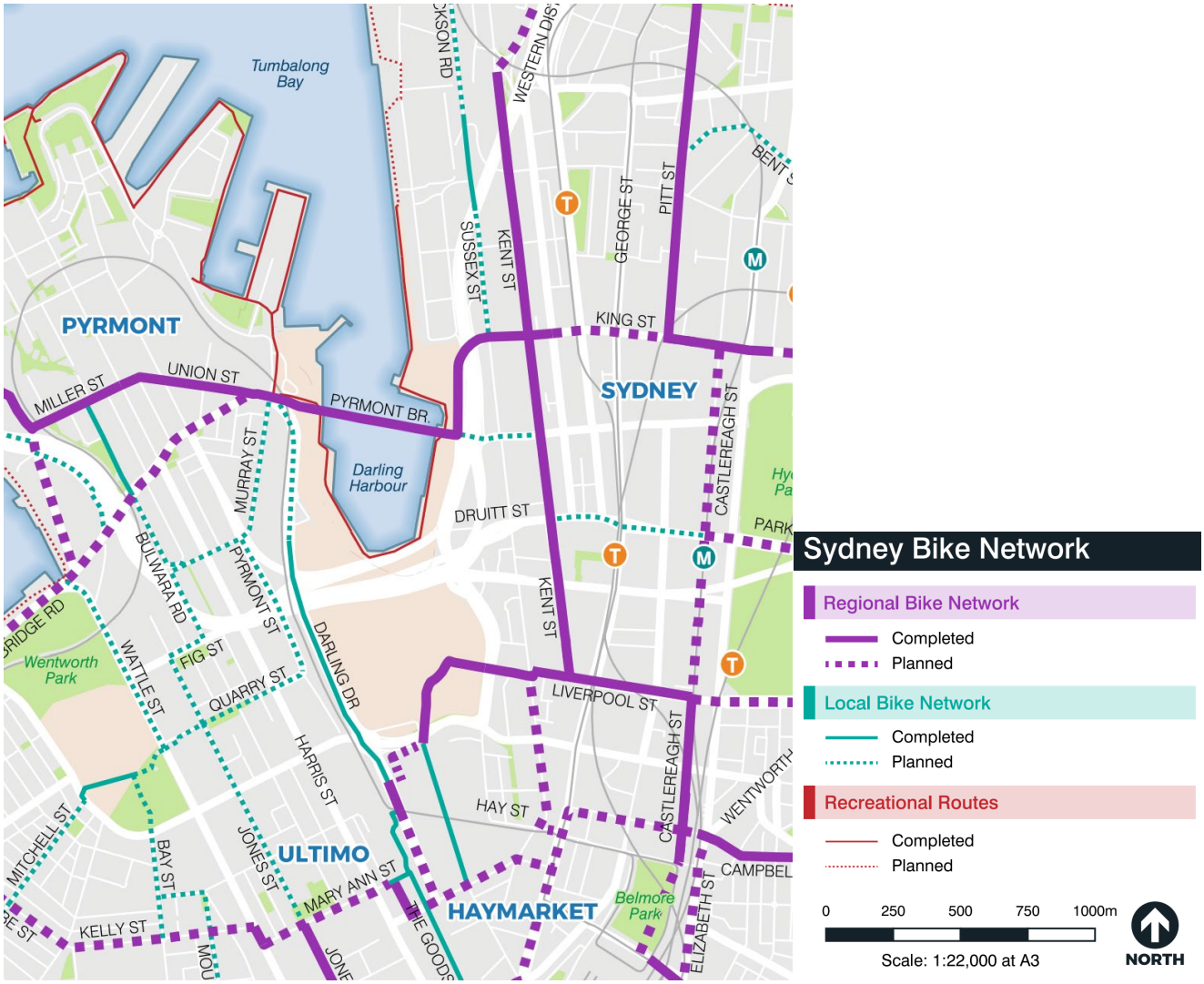


Figure 2.4: City of Sydney Proposed Cycle Network

Source: City of Sydney Cycling Strategy and Action Plan 2018-2030 (2018)

2.3.3 Local Strategic Planning Statement (2020)

Amendments to the *Environmental Planning and Assessment Act 1979* (the Act) undertaken in 2020 require the City of Sydney to review its existing Local Environmental Plan (LEP) and prepare a revised LEP in the future, to address the requirements in the Eastern City District Plan. The Act also requires Council to undertake the review in a strategic manner, by developing a Local Strategic Planning Statement (LSPS) that sets out the community's 20-year vision for land-use in the local area and how change will be managed into the future. While the LSPS puts forward general objectives of improving the cycling environment, it refers to the Cycling Strategy and Action Plan and the State Government's plans as the relevant strategies to guide infrastructure decisions.

2.3.4 City of Sydney DCP (2012)

City of Sydney DCP (2012) (Sydney DCP) Section 3.11.3 establishes provisions related to bicycle parking and associated facilities within the LGA. This includes rates for on-site bicycle parking based on land use, the type of secure bike parking facilities required, their location, access requirements and end-of trip facilities for inclusion in developments with non-residential uses. This is of particular importance to developments that have and continue to occur within the Darling Harbour precinct.

2.3.5 Liverpool Street Western Link cycleway extension

The Liverpool Street Cycleway runs along Liverpool Street between Sussex Street and Castlereagh Street along the northern and southern edge of the road. As shown in **Figure 3.36** and **Figure 3.35** there is moderately high demand for cyclists to access Darling Harbour via Liverpool Street. Before the opening of this cycleway, two pedestrian bridges were already provided above the northern and southern legs of the Liverpool Street/ Harbour Street intersection, with the southern bridge preferred by cyclists as the northern bridge includes stairs.

To provide formal access and connect riders to the southern bridge over Harbour Street into Darling Harbour, City of Sydney Council has extended the existing Liverpool Street cycleway. Key features of this developed cycleway shown in **Figure 2.5** include:

- an extension of the existing Liverpool Street cycleway to Sussex Street
- a diagonal bike crossing across Sussex Street
- a wider footpath and two-way cycleway on the south side of Liverpool Street from Sussex Street to Dixon Street.

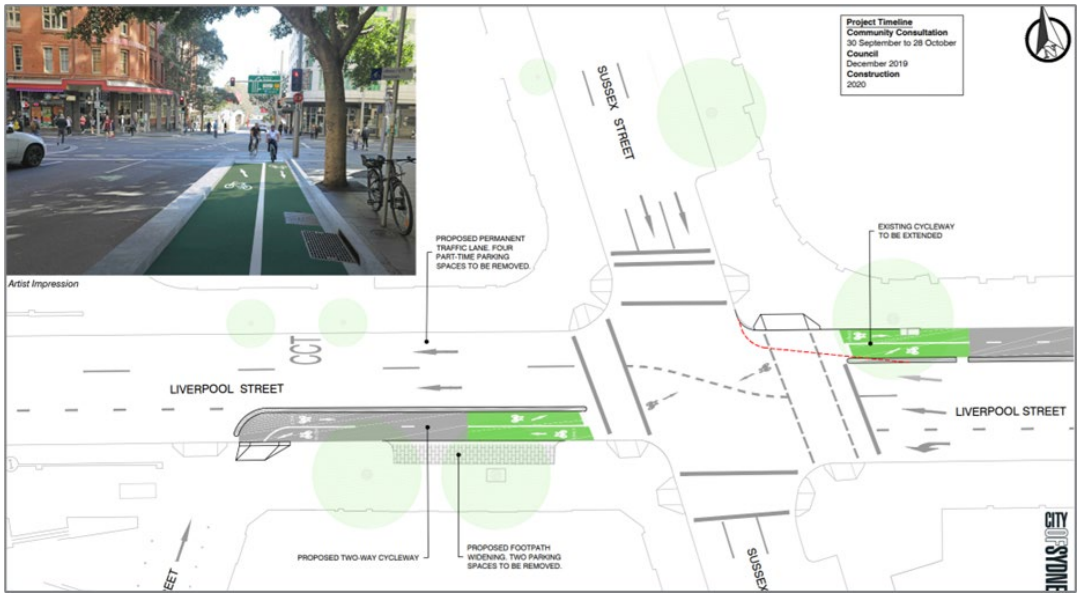


Figure 2.5: Liverpool Street – walking and cycling improvements

(Source: https://www.cityofsydney.nsw.gov.au/proposed-works-maintenance/liverpool-street-walking-and-cycling-improvements, accessed 14 October 2020)

2.3.6 Saunders and Miller Streets Cycleway

This cycleway runs from the Anzac Bridge to the west of the precinct and connects eastwards towards Sydney CBD. There is high commuter demand for cyclists to access the city utilising Pyrmont Bridge from the west. The two-way separated cycleway on the northern side of Saunders and Miller Street supports this movement. This City of Sydney cycleway was implemented to strengthen this connection and to provide a major link in greater Sydney's strategic bike network. Key features of this cycleway are shown in **Figure 2.6.**

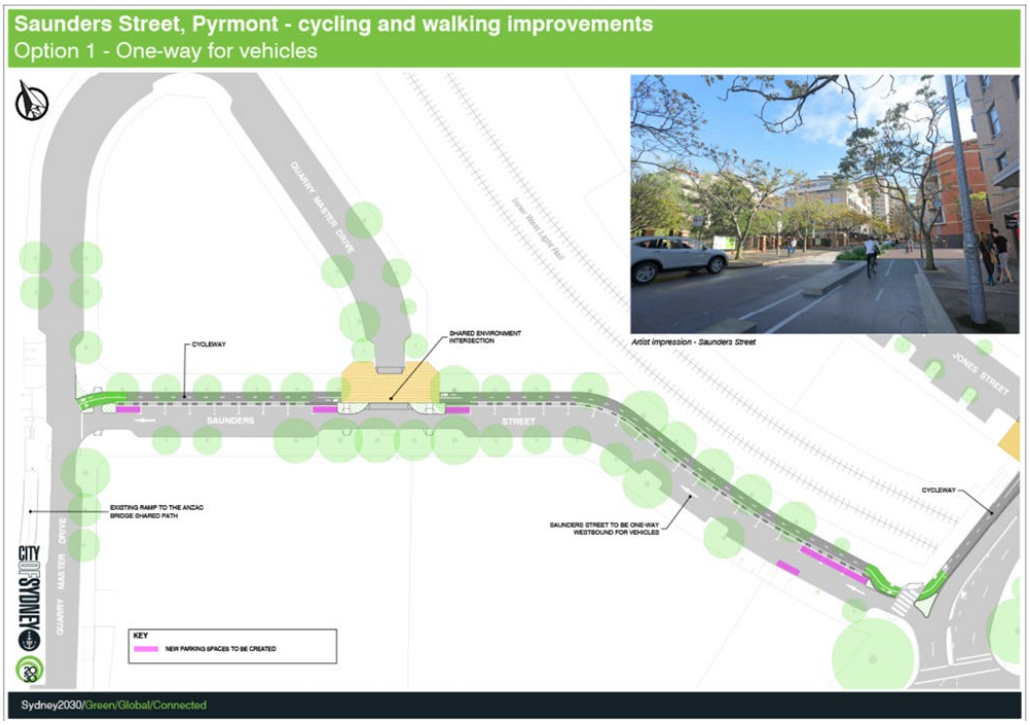


Figure 2.6: Saunders and Miller Streets Cycling Improvements

(Source: https://www.cityofsydney.nsw.gov.au/proposed-works-maintenance/liverpool-street-walking-and-cycling-improvements, accessed 15 June 2023)

3

Existing Conditions and Needs Assessment

3.1 Overview

Darling Harbour is a major entertainment precinct, tourism destination, recreational facility, employment hub and high-density residential neighbourhood which attracts locals and visitors alike. With limited roadways across the precinct, most trips through the precinct are walking and cycling trips. Large volumes of people use the precinct daily, including tourists, which can lead to conflicts between people on bike and people on foot.

To enable the development and planning of a successful Cycling Strategy it is important that the existing path network and desire lines are known and documented. This includes knowledge of any future proposed routes and facilities that may influence the travel patterns and amenity through the precinct.

As part of the review of the existing network, audits were conducted to observe pedestrian and cyclist behaviour in the Darling Harbour precinct. Audits aimed to establish existing network and identify issues and opportunities to enhance the effectiveness and safety of active transport networks. Audits were conducted on foot on 8 September 2019, 24 September 2020, 16 October 2020, and 20 April 2023 and at other times during peak periods and on weekends.

The data collected provided a rich understanding of current use over time, at various times of day and night, and on different days of the week. Collecting data over a three-year period has allowed us to see distinctive changes in travel patterns and behaviour notably during the COVID-019 lockdown periods and a period of adjustment immediately after these periods.

Most significant were changes evident due to:

1. Impacts from COVID-19 lockdown periods during 2020 and 2021, and immediately following these periods, as communities returned to a “new normal” and tourists resumed travel.
2. The ongoing development of the Ribbon site between Darling Harbour Children’s Playground and Cockle Bay, and associated construction works and pedestrian closures surrounding that site.
3. The increased usage of e-bikes and scooters during the audit period.

Major walking and cycling routes and desire lines audited included Pyrmont Bridge, King Street Wharf, Cockle Bay Wharf, Tumbalong Park, Darling Quarter and Darling Drive but did not include The Goods Line.

The Goods Line (while not located within Darling Harbour) forms an important corridor connecting Darling Harbour to Central, Ultimo and adjacent educational institutions. This will continue to be managed as a passive recreational space and considered as part of ongoing public domain and streetscape improvements in Darling Harbour.

3.2 Site Context

Darling Harbour has undergone significant change and transformation since the publication of the *Safe Bicycle Riding in a Pedestrian Precinct – Ideas and Management Strategy for Darling Harbour*. The Sydney International Convention Centre, Exhibition Centre and Theatre is an entertainment and conference venue for events, attracting thousands of people on a regular basis. The Darling Square mixed-use development has introduced around 7,000 additional residents and workers through the commercial and apartment developments, student accommodation, mixed use, dining and retail laneways.

A shared path along Darling Drive, between Darling Harbour and Pyrmont has been completed and further regeneration is underway through Harbourside and Cockle Bay Wharf which will bring increased commercial, residential and retail to the precinct.

Because of this transformation, the volume of people walking, riding and spending time within the precinct is greater than ever before. **Figure 3.1** and **Figure 3.2** depict satellite imagery of Darling Harbour to demonstrate the significant infrastructure and environment changes between 2015 and 2023.

Figure 3.1 Darling Square and Tumbalong Park – March 2015

Source: Nearmap

Figure 3.1 Darling Square and Tumbalong Park – April 2023

Source: Nearmap

Key land uses and attractions within Darling Harbour are illustrated in **Figure 3.3**.

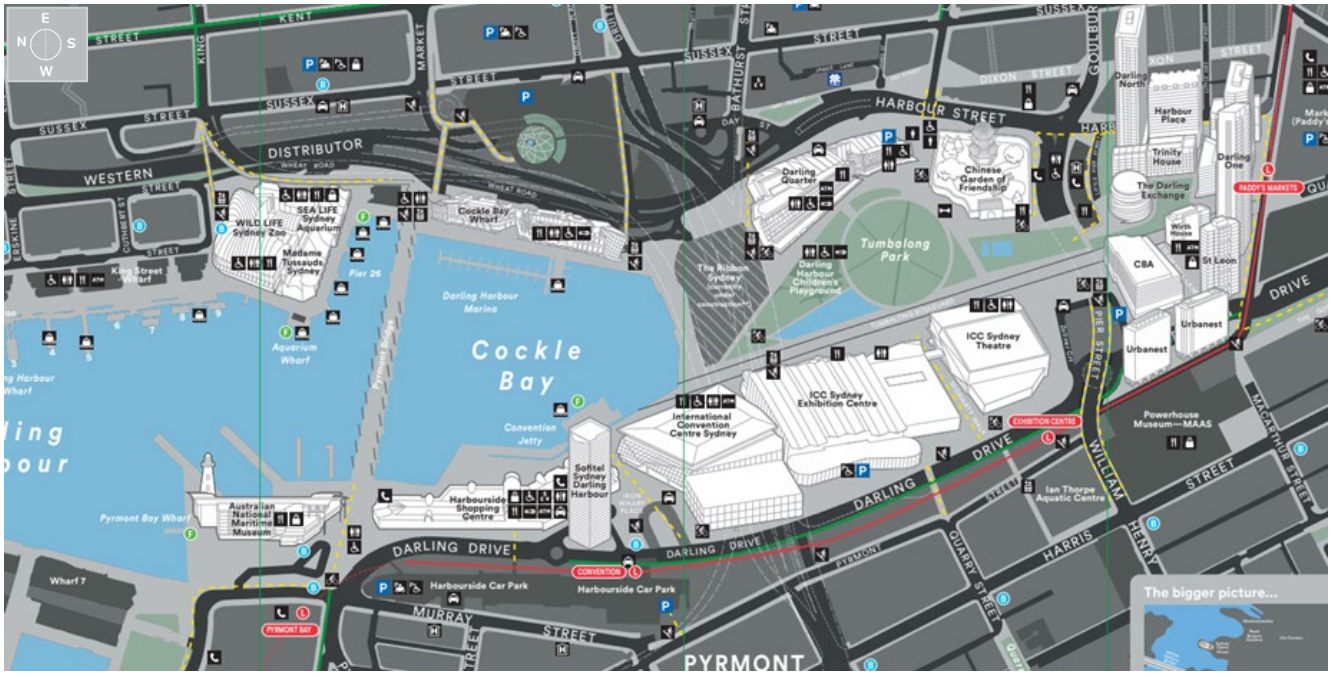


Figure 3.2: Darling Harbour key land uses

Source:https://www.darlingharbour.com/cmspages/getamazonfile.aspx?path=~%5cdarlingharbour%5cmedia%5cdarlingharbourmedialibrary%5cdarling-harbour-foldout-map-2019.pdf&hash=4764f5efe7336622a1595b26e8b8652f3fffc9668fd6fa4eb22149375c681a85, accessed 15 June 2023

3.2.1 Events and Activations

Darling Harbour plays a critical role in hosting major events, festivals and celebrations. It is the home to singular national and regional scale assets, major event and experiences. Events and activations occur on a weekly basis, occurring in a range of locations within the precinct including the International Convention Centre (ICC), Tumbalong Park, Darling Square, along the foreshore promenade and in the harbour itself.

Temporary obstruction of day-to-day movement paths is often required for a few hours to a few weeks to enable bump in/bump out, queuing, security or for the event footprint itself. Coupled with large crowds, cycling movement across the precinct can be difficult, with an increased risk of conflict with pedestrians and temporary structures. A proactive approach to wayfinding, and redirection of cycling movement is required to better manage safety and clarity of movement.

Figure 3.3 FIFA Fan Festival 2023 in Tumbalong Park, closing off east-west paths usually used by pedestrians and cyclists

3.2.2 Service Vehicles

NSW's *Event Sites in The Rocks, Circular Quay & Darling Harbour (2018)* policy document outlines the specifications for temporary events and activations throughout these precincts. The document notes the emergency access zones that cannot be obstructed, either for temporary activations or everyday use. In Darling Harbour, four-metre emergency vehicle thoroughfares are located at the Cockle Bay Promenade, International Convention Centre forecourt, Tumbalong Boulevard and underneath the Pier Street overpass, as shown in **Figure 3.5**.

These controls are crucial to understanding the constraints of the area and the limitations of potential solutions. For example, placement of street furniture or urban elements such as bollards or bench seats to disrupt and slow cyclist movement cannot be considered in the 4-metre emergency vehicle access zones, as an uninterrupted path of travel must be ensured at all times.

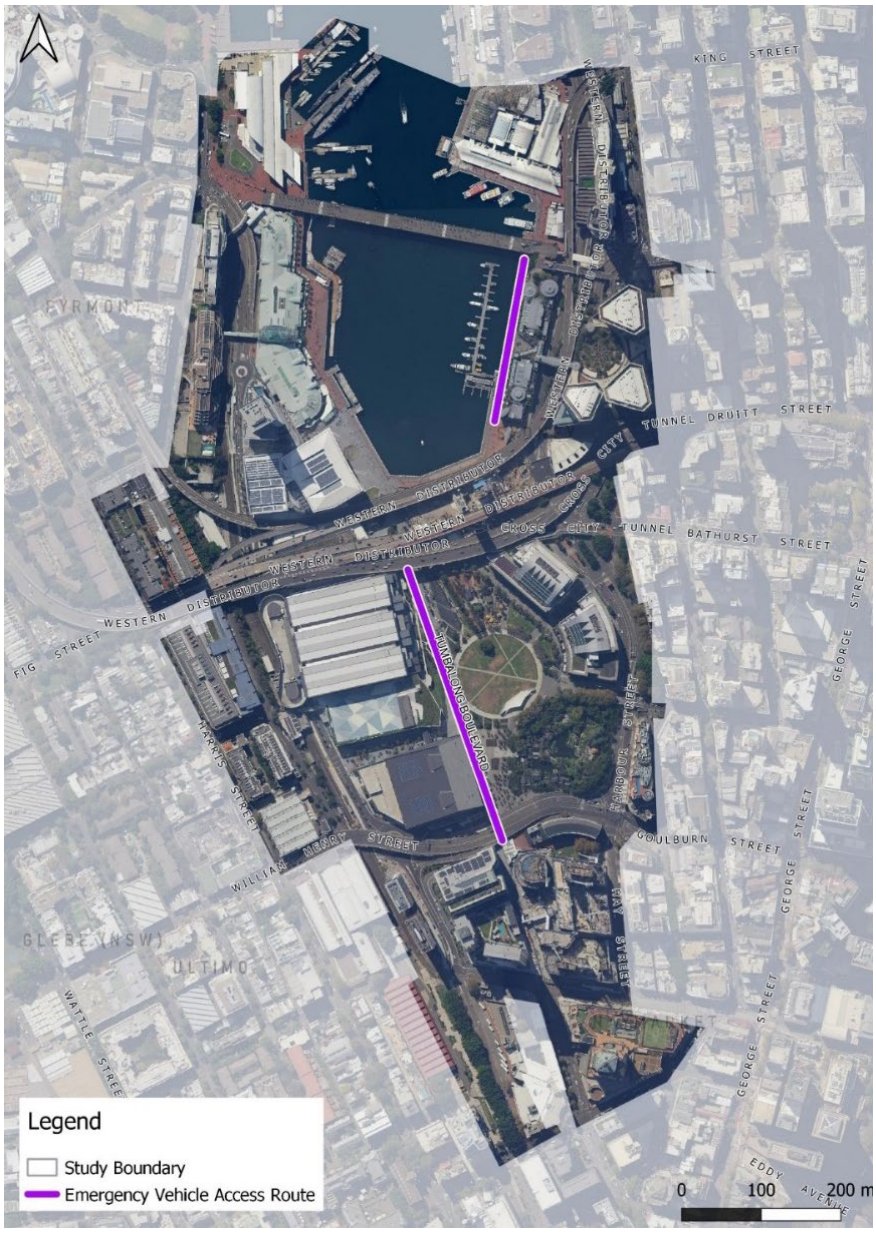


Figure 3.4: Emergency vehicle access on pedestrian areas

(Source: Event Sites in The Rocks, Circular Quay & Darling Harbour, 2018)

3.2.3 Development Context

Darling Harbour is undergoing significant redevelopment including the following key sites (as shown in **Figure 3.6**):

- The recently completed Ribbon building on the old IMAX site, located at 31 Wheat Road
- Current construction of the Harbourside mixed use development, located at 2-10 Darling Drive
- The future Cockle Bay Wharf mixed use development, located at 241-249 Wheat Road.

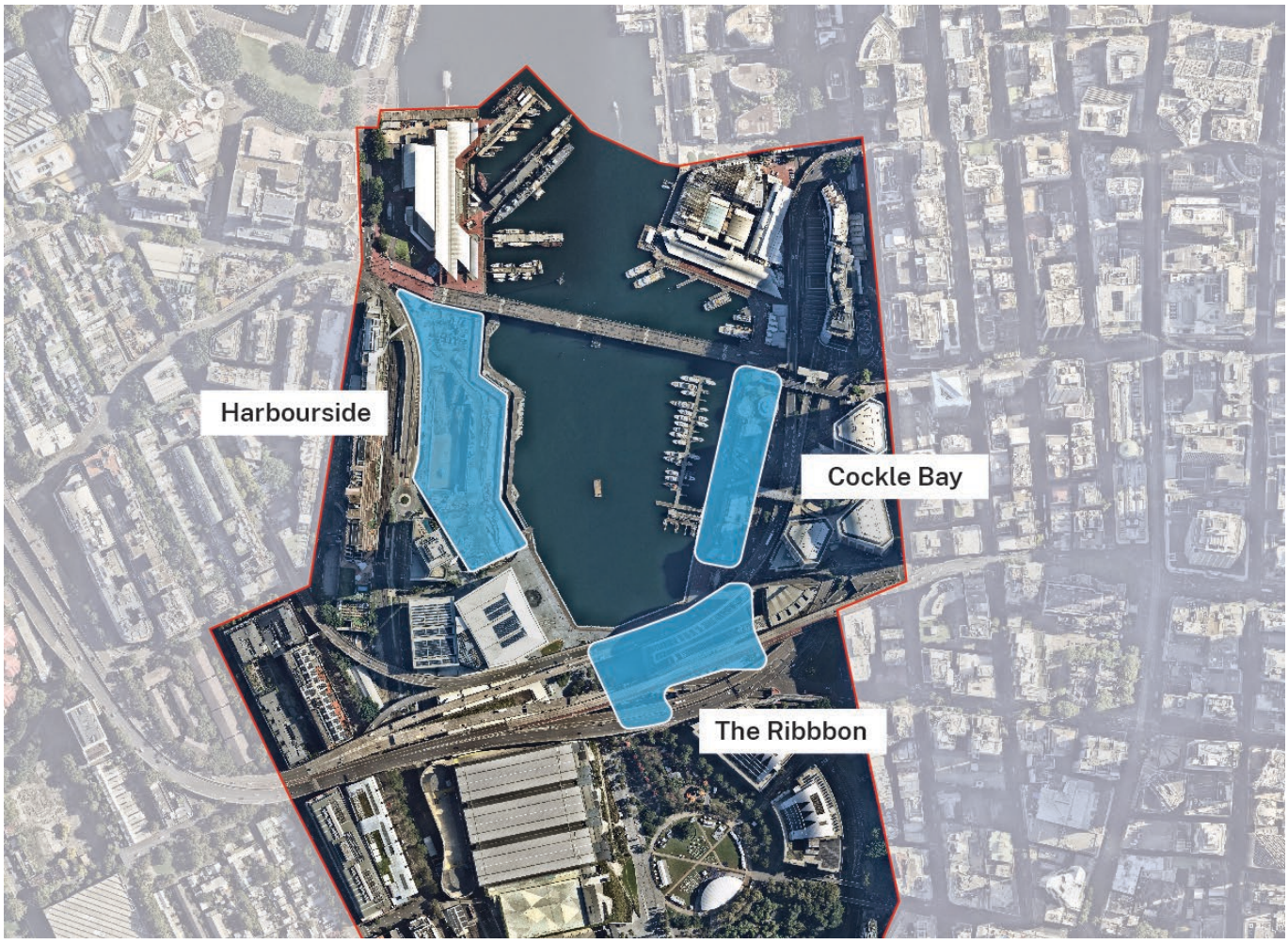


Figure 3.5: Key Development Sites at Darling Harbour

The Ribbon - Mixed Use Development

The recently opened Ribbon development includes a 300-room hotel, IMAX theatre and new restaurants. Importantly for the use and access of the public domain, the redevelopment includes:

- Retail and outdoor dining, the IMAX lobby and additional public furniture along its northern edge.
- Revitalised western public domain, which has created a strong pedestrian link between Darling Quarter and Cockle Bay providing improved access to waterfront, harbourside and ICC Centre from the south.
- Large and permeable multi-use gathering space in the western public domain.
- A new playground in the western domain aligning with the existing Darling Quarter edge which extends and further strengthens the existing playground and pedestrian boulevard.

The approved public domain plan, including pedestrian circulation, spatial zoning diagrams and bike parking locations for the Ribbon Project are shown in **Figures 3.7** to **3.11.**

Development consent SSD 15_7388, granted on 28 July 2016 for the redevelopment of the IMAX building, included 239 bicycle parking spaces at ground level. During the process of project refinement and delivery, the quantity and location of bicycle parking was further reduced as follows:

- MOD 3 approved on 2 Nov 2017 reduced the number of bicycle parking provided within the ground floor level of the podium from 239 down to 32 and increased the number of visitor bicycle spaces provided within the public domain from 56 up to 176.
- MOD 11 approved on 28 May 2021 reduced the number of visitor bicycle parking spaces from 176 down to 120 spaces with a requirement that a minimum of 56 visitor bicycle parking spaces to be provided off site within the public domain. This was in response to PMNSW, the landowner of the site and agency responsible for the development and growth of Darling Harbour, wishing to achieve a more equitably distribution of bicycle parking across the precinct rather than a concentration within The Ribbon development. This is consistent with the aims and objectives of the Darling Harbour Cycling Strategy. The implementation of these spaces is currently being reviewed in line with the findings and recommendations of this strategy.

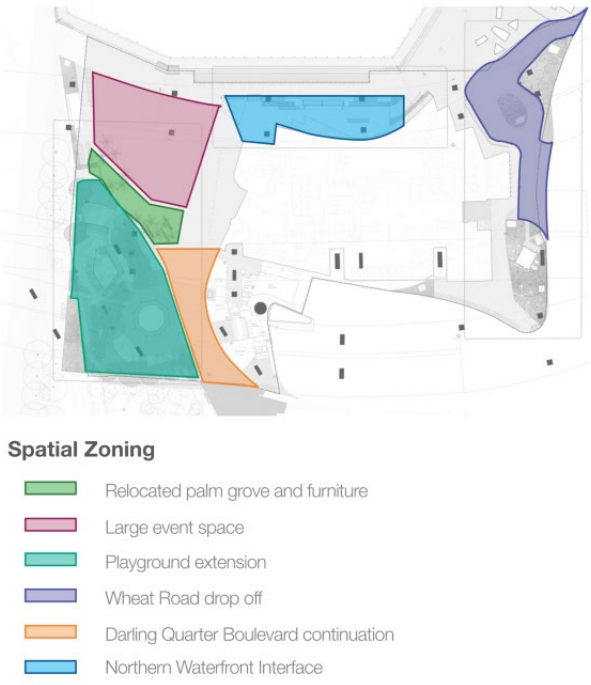


Figure 3.7: The Ribbon – Public Domain Spatial Zoning

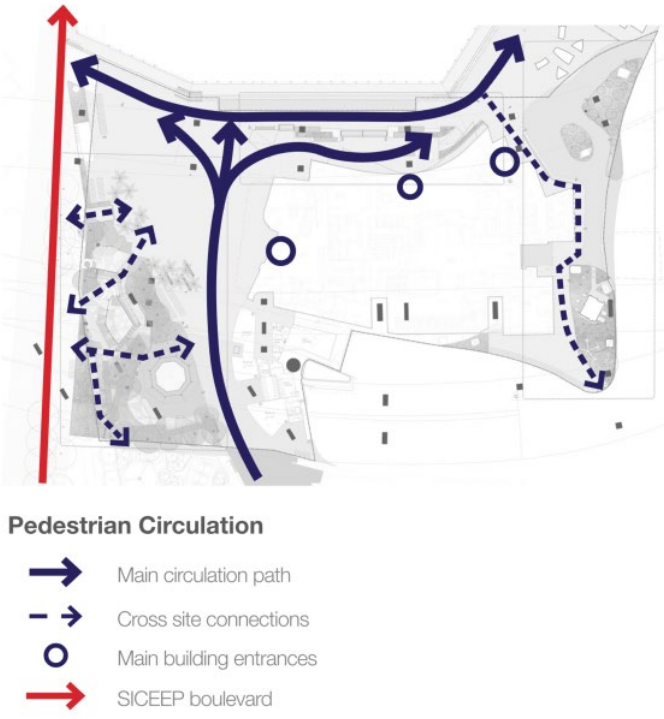


Figure 3.6: The Ribbon – Pedestrian circulation Plan

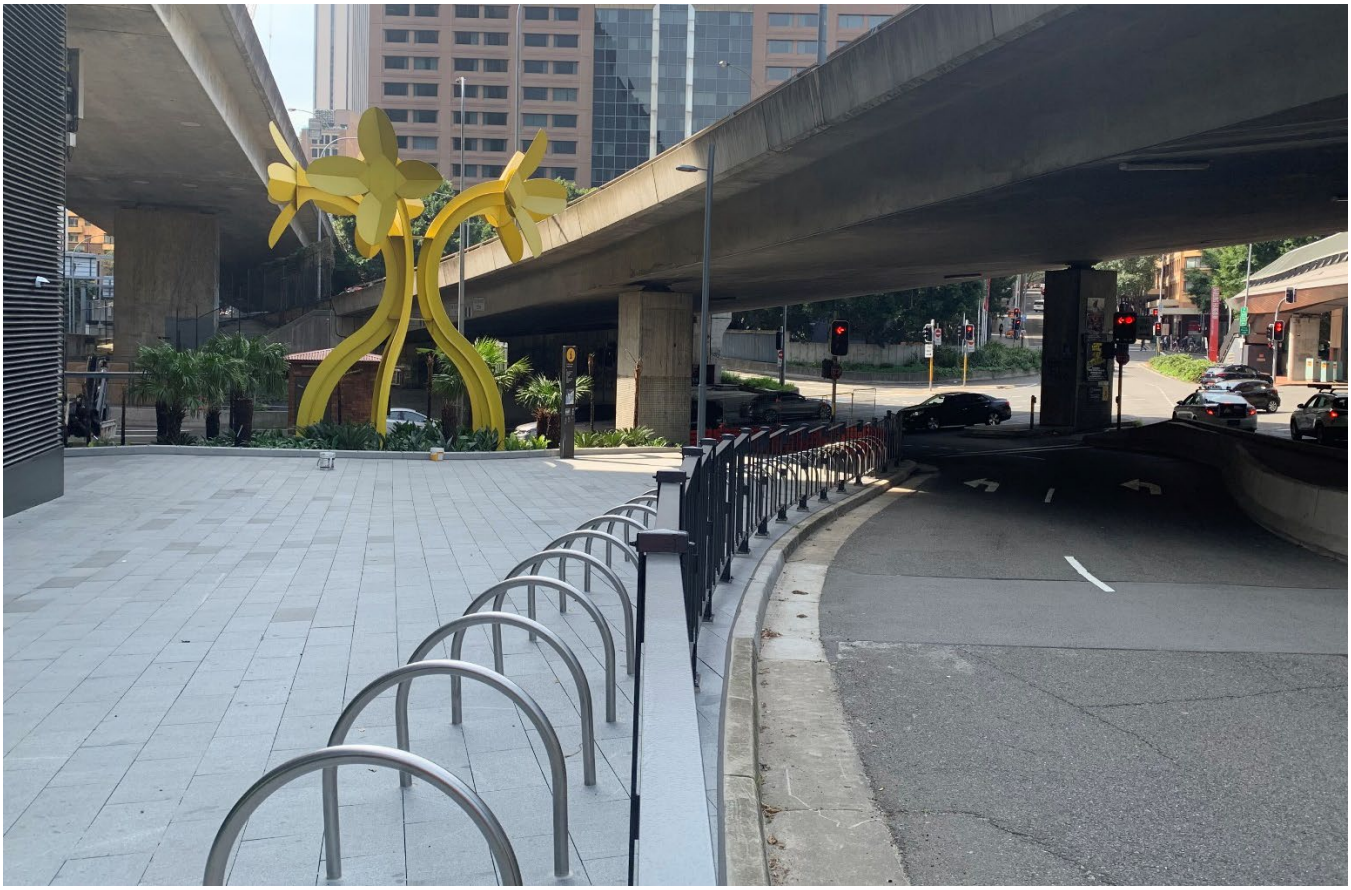


Figure 3.8: Bike Parking at the rear of The Ribbon

Figure 3.9: Bike Parking along Tumbalong Boulevard provided as part of The Ribbon Development

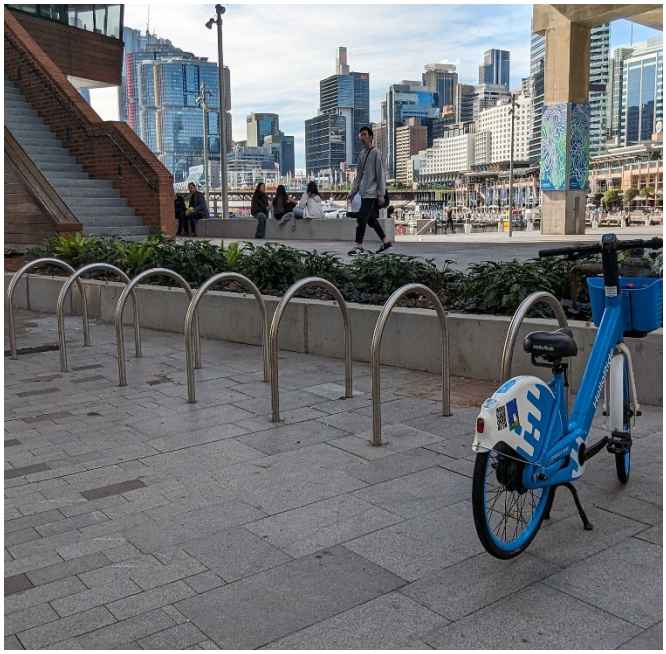


Figure 3.10: Bike Parking outside provided as part of The Ribbon Development

Harbourside Mixed Use Development

A new mixed-use development is being built at the former Harbourside site, which comprises retail and commercial/non-residential podium and a residential tower, that will contribute to the ongoing renewal and revitalisation of Darling Harbour.

In addition to improved retail, commercial and residential buildings, the key public spaces proposed as part of this project (as shown in **Figure 3.13**) are:

- A widened waterfront promenade with more seating
- A new pedestrian bridge over Bunn Street connecting to Pyrmont
- Waterfront Garden
- North and South walk connecting the waterfront to outer precinct.

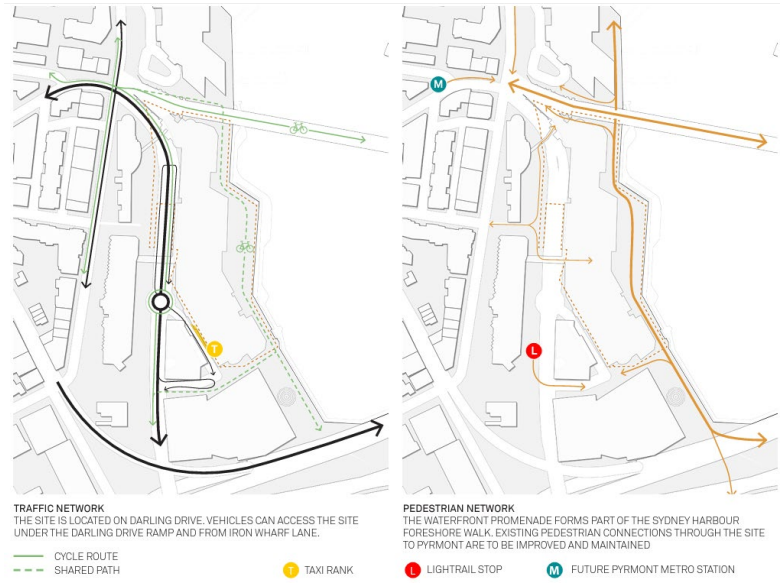


Figure 3.11: Proposed Harbourside Traffic and Pedestrian Network

(Source: Open Space, Public Domain and Landscape Report, prepared by Snohetta and Hassell June 2023)

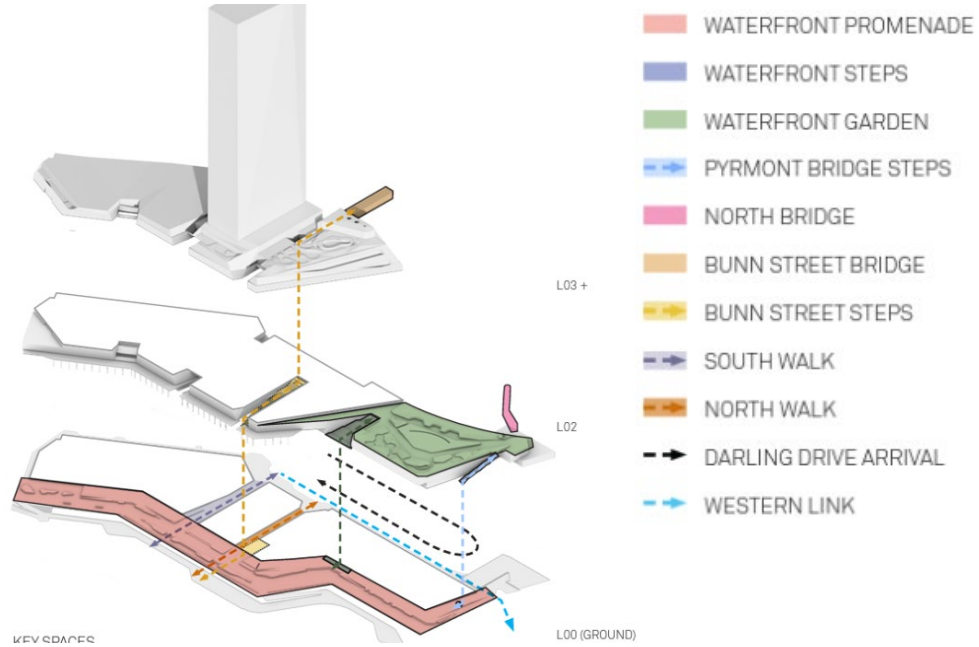


Figure 3.12: Network of Public Spaces associated with the Harbourside redevelopment

(Source: Open Space, Public Domain and Landscape Report, prepared by Snohetta and Hassell June 2023)

Cockle Bay Wharf Redevelopment

The Cockle Bay Wharf redevelopment site encompasses parts of the Eastern Distributor and Wheat Road, Darling Park and Pyrmont Bridge. The proposed development consists of 43 floor levels of predominantly commercial use, including a retail podium. Future cyclist desired lines to and from the proposed Cockle Bay Wharf development are shown in **Figure 3.14.**

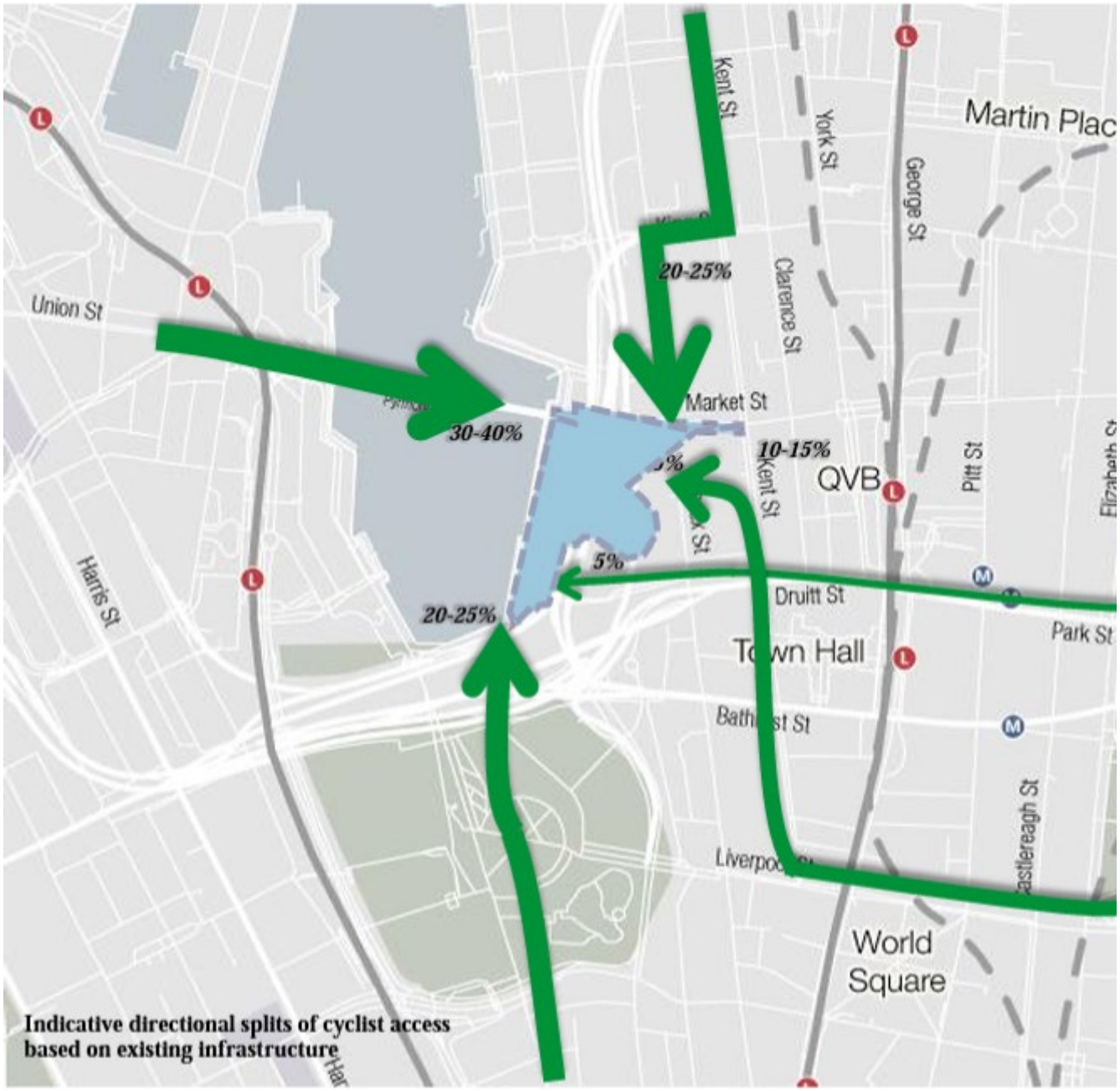


Figure 3.13: Indicative direction splits of cyclist access for Cockle Bay Wharf Development

(Source: Cockle Bay Park Redevelopment, Cyclist Movement, 11 October 2021)

3.3 Modes of Travel

Journey to work data has been sourced from the Australian Bureau of Statistics 2016 Census and provides an idea of existing travel patterns from the study area.

The 2016 data was utilised as 2021 data shows substantial reliance on work from home considering it is influenced by the COVID-19 pandemic and may not reflect the transport network's operations to full capacity. The 2016 data represents a higher proportion of work trips compared to 2021 data.

Table 3.1 provides a summary of the existing key transport modes employed residents and workers in the surrounding area use to get to work. The results indicate that walking is the most common mode of transport by employed residents (41 per cent), with a smaller number of workers walking to the area (7 per cent) as their primary mode of transport.

Mode of Travel [1]	Mode Share [2]	
	Employed Residents	**Workers**
Car as driver	27%	14%
Car as passenger	5%	3%
Train	14%	51%
Bus	5%	19%
Tram	4%	1%
Ferry	1%	1%
Walked Only	41%	7%
Bicycle	0%	1%
Other	1%	1%

Table 3.1: Existing travel mode share

[1] Figures rounded to the nearest whole number.

[2] Does not include residents or workers who worked at home, did not go to work or who were not applicable.

The results indicate that public transport is the most common mode of transport for workers to the area (72 per cent), with a substantial number of employed residents also using public transport (25 per cent), noting most public transport connections require users to walk through Darling Harbour as the first/ last mile of their journey. Minimal trips (less than 2 per cent) were recorded to or from the area by bicycle.

Figure 3.15 details the catchment of census data analysed which corresponds to the Transport for NSW's Transport Performance and Analytics geographical area of a Travel Zone (TZ). The relevant TZ's used for this assessment includes 78 (The Star City), 79 (Sydney Aquarium), 88 (Novotel, Grand Mercure, Ibis), 89 (Harbourside), 90 (Cockle Bay Wharf), 91 (Cockle Bay Wharf East), 108 (Exhibition Centre) and 125 (Entertainment Precinct).

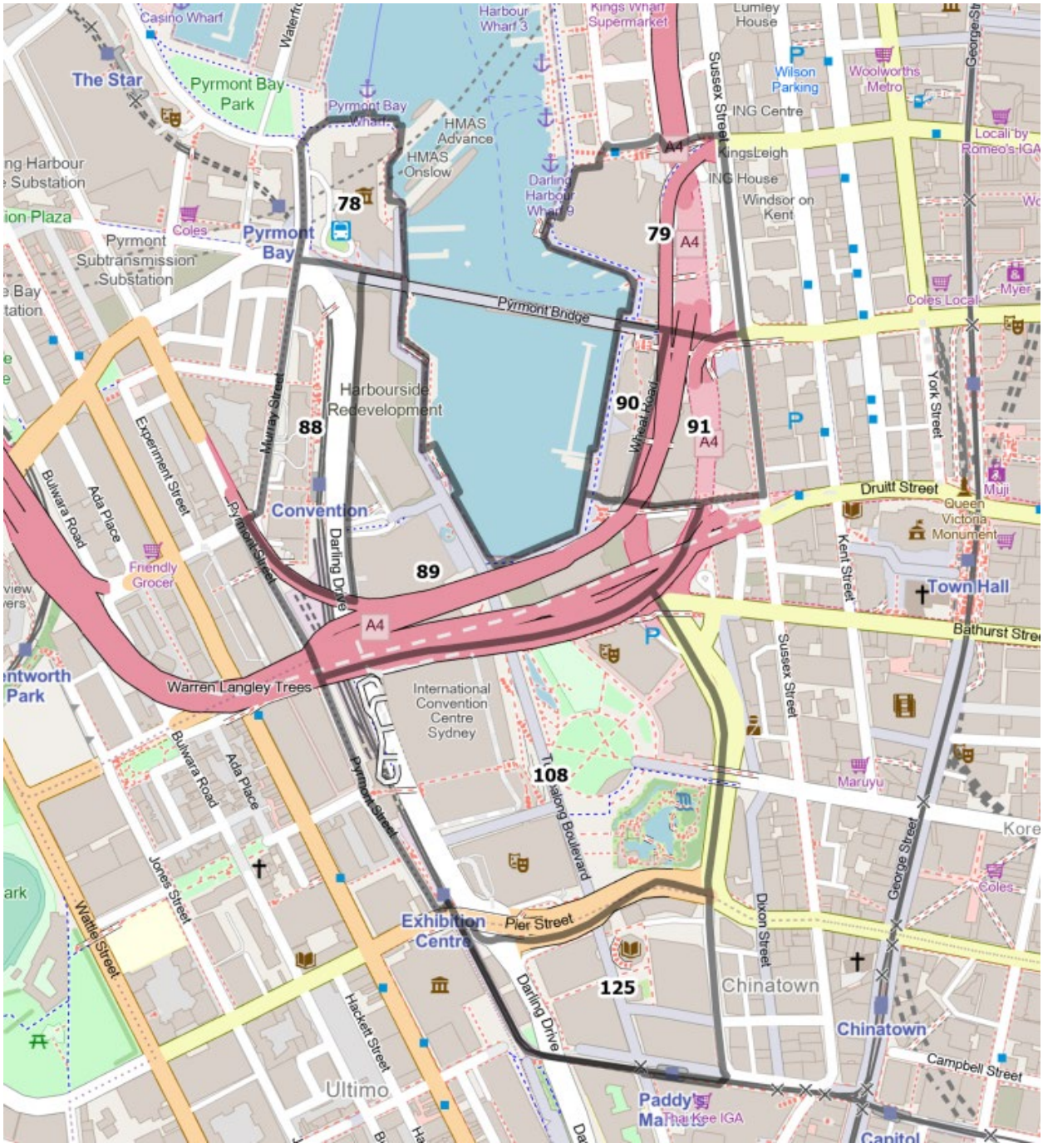


Figure 3.14: Catchment census data – Journey to work

At the time of the 2016 census, only 513 employed residents were recorded in the study area. As noted in **Section 3.2**, Darling Square's construction was not yet complete, and as such, the new residents (and workers) in the area are not captured by the 2016 data. In contrast, almost 19,000 persons were recorded as working in the study area. This may be inflated due to the number of construction sites active at the time of census.

Darling Harbour attracts more than 26 million people movements each year and is a key tourist destination. Most trips into Darling Harbour and within the precinct are undertaken by foot. This results in high daily pedestrian volumes throughout the entire precinct, with peak periods occurring on the weekends and evenings. There are many destinations within Darling Harbour that shape key pedestrian desire lines. These include:

- concentrations of restaurants and shops along the waterfront
- a public ferry wharf and privately leased wharves
- the International Convention Centre, Exhibition Centre and the ICC Theatre
- the outdoor recreational areas to the south of the precinct
- The Ribbon development (Hotel and IMAX), and
- Harbourside mixed-use development.

Due to the concentration of all these land uses, the boundaries of these trip generators become somewhat blurred, and they can effectively act as a single generator that have different levels of attraction depending on the events and time of the year.

3.3.1 Existing Pedestrian Network

Figure 3.16 through to **Figure 3.24** depict key pedestrian environments across the Darling Harbour precinct, showing the layout, urban design and landscape, and the significant land uses nearby.

Combined, these areas shape the key pedestrian desire lines in the precinct, as shown in **Figure 3.25.** It can be seen from the plan that there are several physical barriers that prevent full activation of the edges and permeability to the precinct. These barriers include the configuration of motorways, arterial road network and the light rail tracks.

Figure 3.15: Darling Harbour West Harbour Foreshore

Figure 3.16: Darling Harbour water fountains and children's playground

Figure 3.17: Tumbalong Boulevard (northern segment, looking south)

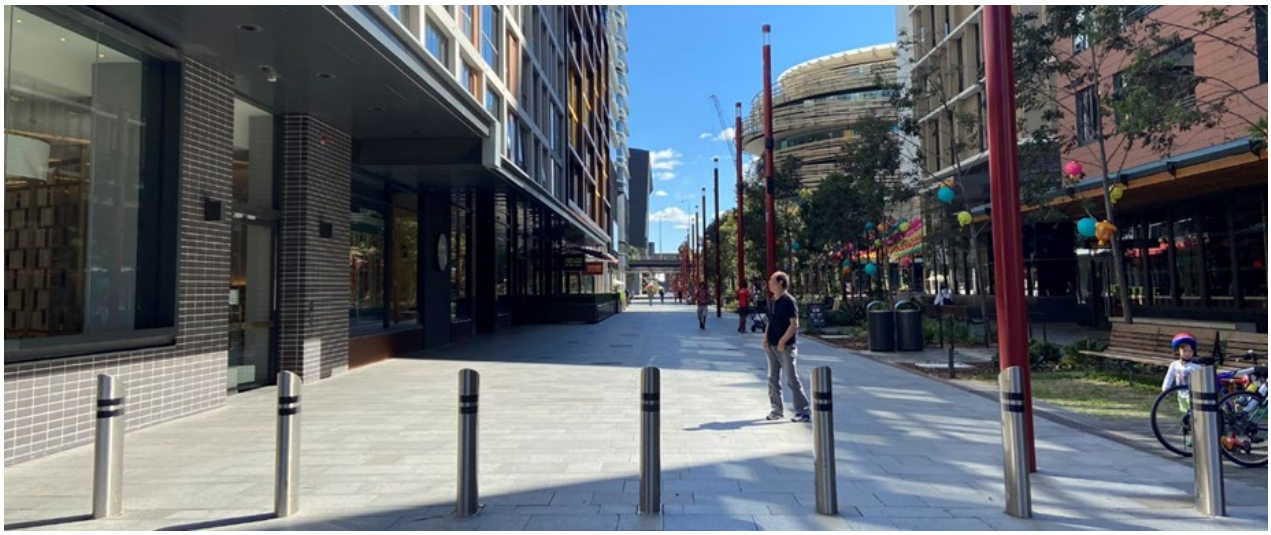


Figure 3.18: Tumbalong Boulevard (Darling Quarter, looking north)

Figure 3.19: Pyrmont Bridge (looking west)

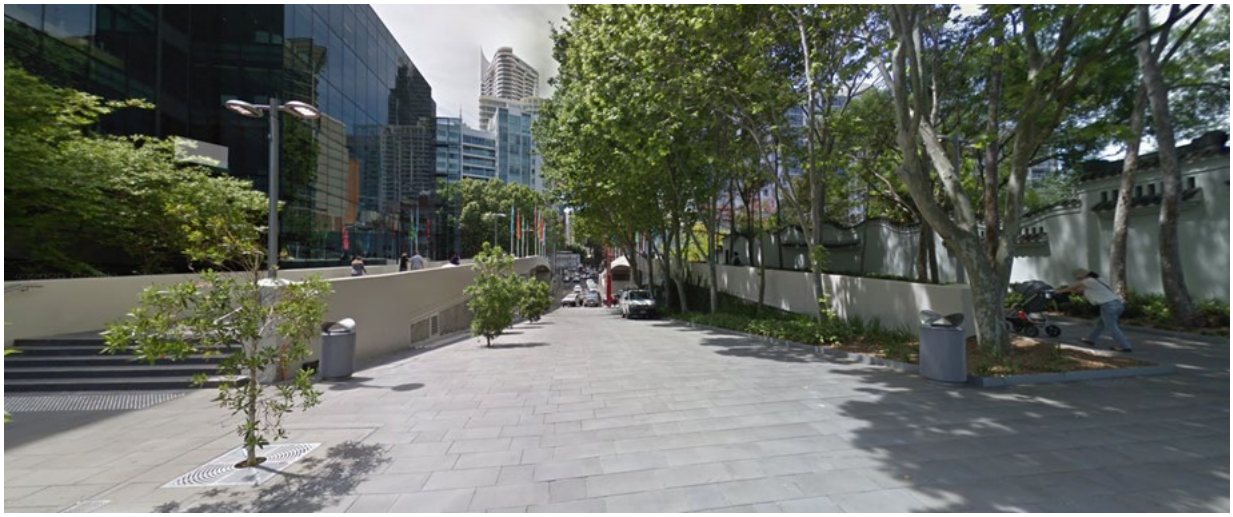


Figure 3.20: Tumbalong Park East to Liverpool St (looking east)

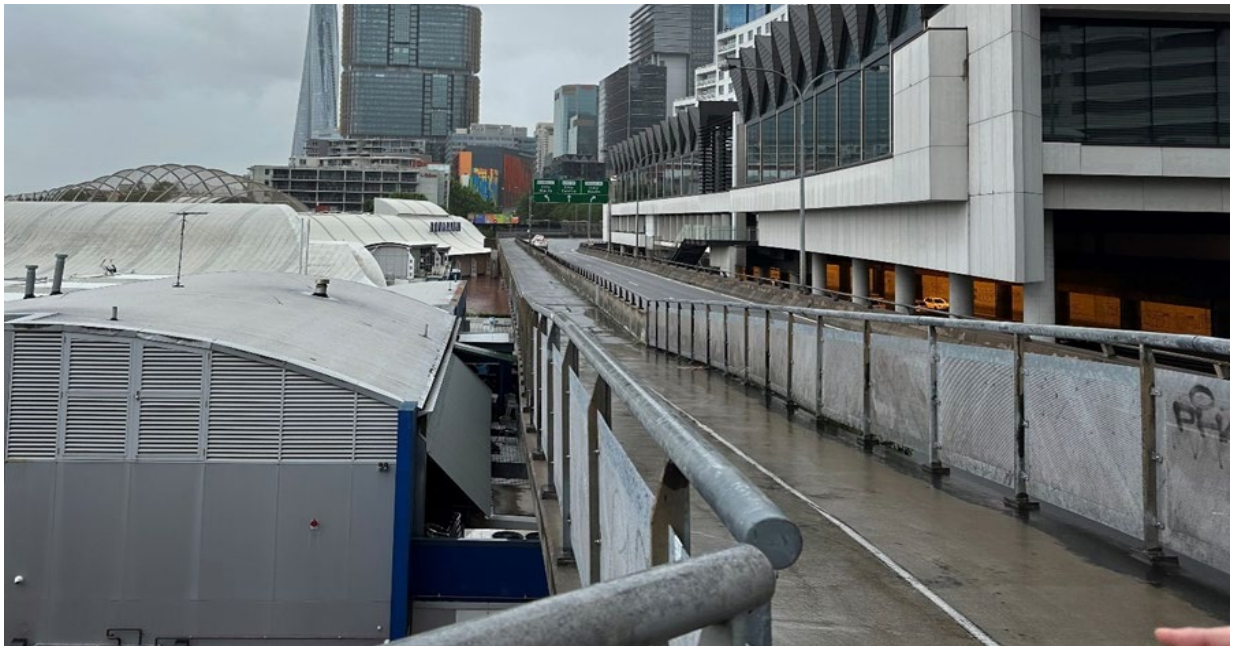


Figure 3.21: Pyrmont Bridge – Cycleway Bridge (looking north)

Figure 3.22: Darling Harbour East Foreshore – Cockle Bay Wharf

Figure 3.23: Darling Harbour Foreshore – East boundary of New Ribbon Site

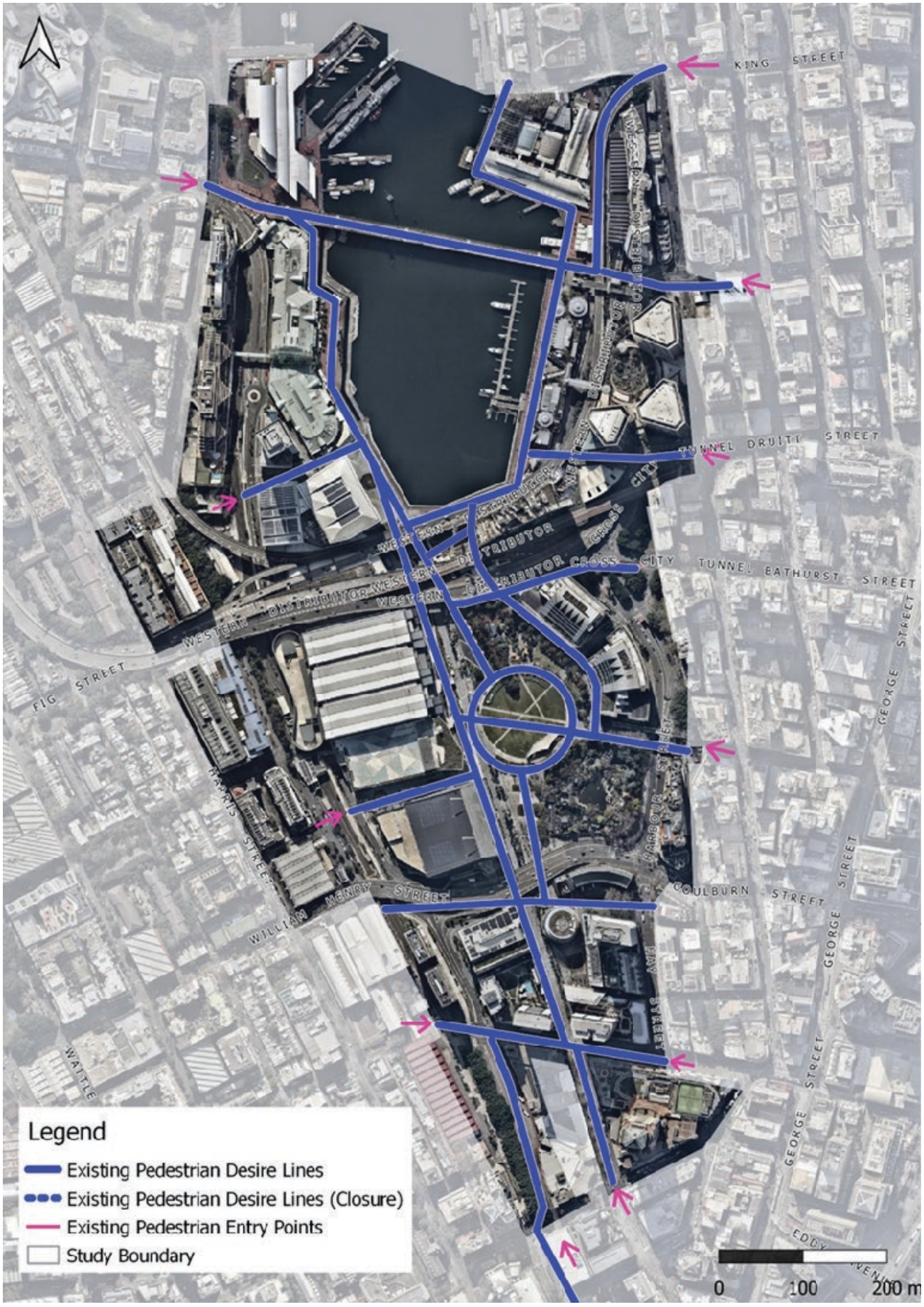


Figure 3.24: Key pedestrian desire lines

3.3.2 Pedestrian Volumes

Figure 3.26 illustrates data collected from Strava Heat Map for pedestrian activity in and around Darling Harbour. The data indicates that significant pedestrian activity occurs in the northern portion of the precinct, with a high number of pedestrians traveling along the harbour foreshore or across the precinct via Pyrmont Bridge. Key entry points into the precinct include King Street shared path, Darling Drive/ Union Street intersection and Market Street.

Significant pedestrian activity also occurs along Tumbalong Boulevard, as it is the most direct pedestrian connection between Darling Quarter and Cockle Bay. Moderate pedestrian activity is recorded in the southern portion of the precinct, with key access points into the precinct being at Liverpool Street, Quay Street, Steam Mill Lane and Pier Street.

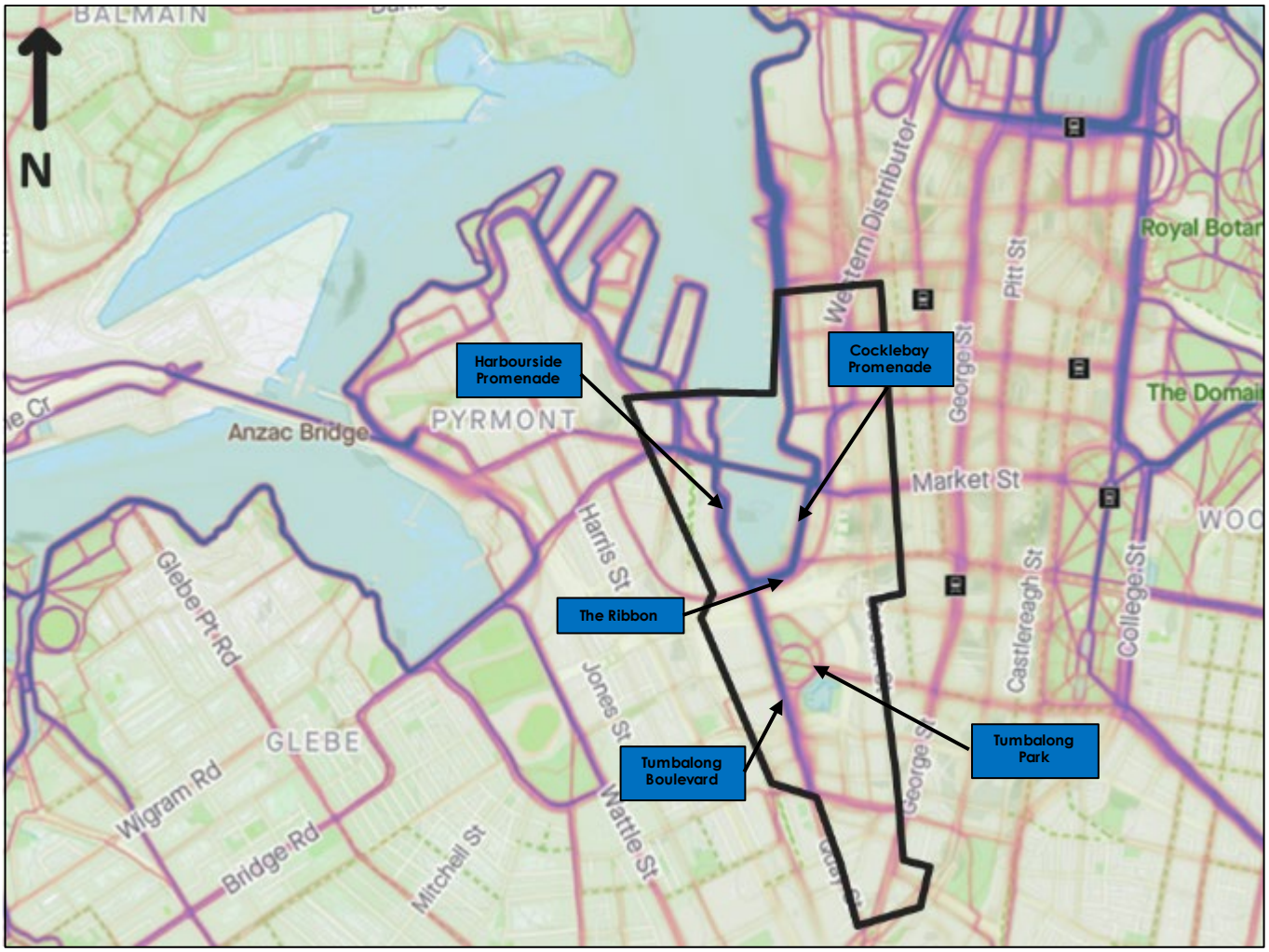


Figure 3.25: Strava Global Heat Map – Pedestrian Activity in and around Darling Harbour

(Source: https://www.strava.com/heatmap#15.00/151.20085/-33.87171/hot/run, accessed 26 October 2023)

3.4 Cycling

3.4.1 Existing Cycling Network

Although the City of Sydney does highlight specific routes across Darling Harbour, cycling occurs through all public domain areas within the precinct. An informal cycling network covers the entire precinct.

The majority of public domain areas in Darling Harbour are treated as 'shared paths. The *TfNSW Cycleway Design Toolbox* notes:

> "A shared path is a facility that accommodates two-way bicycle and pedestrian movement along either a footpath or an off-road environment without delineation…Shared paths provide lower levels of service to both people walking and people cycling due to the potential for conflicts with pedestrians which must be carefully managed."

Future public domain improvements should promote active transportation and manage potential conflicts to enhance the overall accessibility and usability of public space.

Shared paths should be supported with:

- **Clear Signage:** Indicating the shared nature of the path and any specific rules.
- **Pavement Markings:** To guide users and ensure safe navigation.
- **Smooth Surfaces:** To make the path accessible for all, including those with mobility aids.
- **Lighting and Landscape:** To enhance safety and aesthetics.

The consideration of shared path features (as outlined above) should be delivered across the whole precinct. This Strategy advocates for formalising shared path features into a public, civic space like Darling Harbour, to manage safety and to encourage more sustainable and healthy modes of transportation while fostering a sense of community.

As seen on the following map **Figure 3.27**: Existing Cycling , City of Sydney mapping does not capture the widespread use of the Darling Harbour public domain by cyclists in a shared path format.

Cycling routes into the precinct include separated and on-road cycleways on King Street and Liverpool Street in Sydney CBD and Union Street in Pyrmont. Pyrmont Bridge (and the shared path adjacent to the Western Distributor) provide a convenient connection between these cycleways. As a result, Pyrmont Bridge is a popular cycling route, particularly for commuters. Pyrmont Bridge currently operates as a shared (cyclist and pedestrian) path.

The current alignment of the Liverpool Street cycleway encourages cyclists to enter Darling Harbour on the southern pedestrian bridge over Harbour Street. Steam Mill Lane is indicated as part of the formal bicycle network however due to the prevalence of restaurants with on street eating, the Lane functions as a place for pedestrians rather than cyclists.

Shared paths within the precinct are typically designated through use of regulatory signage rather than line marking, apart from at King Street Bridge. **Figure 3.29** and **Figure 3.30** depict the current regulatory and speed limit signs, and current line markings on Pyrmont Bridge.

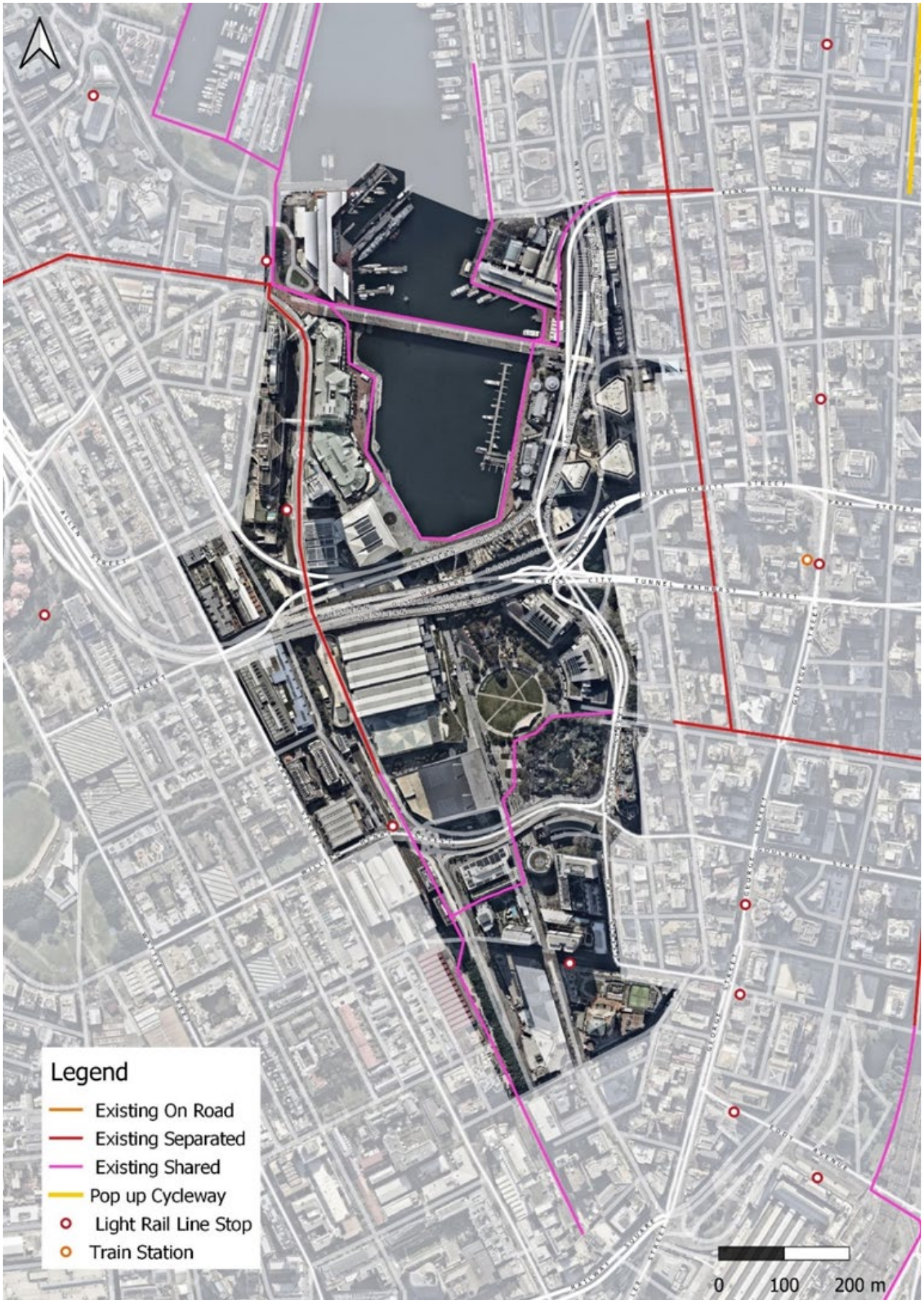


Figure 3.26: Existing Cycling Network (Source: City of Sydney)

Figure 3.27: Cycleway on Darling Drive

Figure 3.28: Shared use and speed limit sign on Pyrmont Bridge

Figure 3.29: Shared use line marking on Pyrmont Bridge

3.4.2 User Groups

Within the context of Darling Harbour, most cyclists can be classified into three categories: commuter, recreational and food delivery.

Commuter Cyclists

Following observations from the site visits, fast travelling cyclists were generally observed to be commuters in the morning and afternoon peak hours, primarily concentrated on Pyrmont Bridge as the key cycling gateway to and from the Sydney CBD from the west.

Recreational Cyclists

Recreational cyclists often ride to and from destinations within the Darling Harbour precinct, as opposed to commuters travelling through the precinct. While generally travelling slower than commuter cyclists, recreational cyclists are more likely to cycle in areas that have not been designated as key cycle routes.

Bike sharing has been operating in Darling Harbour in recent years. Cyclists using bike share bicycles are most often tourists or recreational cyclists. Bike share bicycles are not managed by PMNSW.

Food Delivery Cyclists

Food delivery cyclists are not a new user group, however, they have certainly risen in prominence and public visibility with the growth of several food delivery companies, including Uber Eats and Deliveroo. Detailed discussion on the use of e-bikes by the food delivery cyclists is provided in **Sections 3.4.3 and 4.1.3.**

Figure 3.30: Food delivery availability at a Darling Harbour restaurant

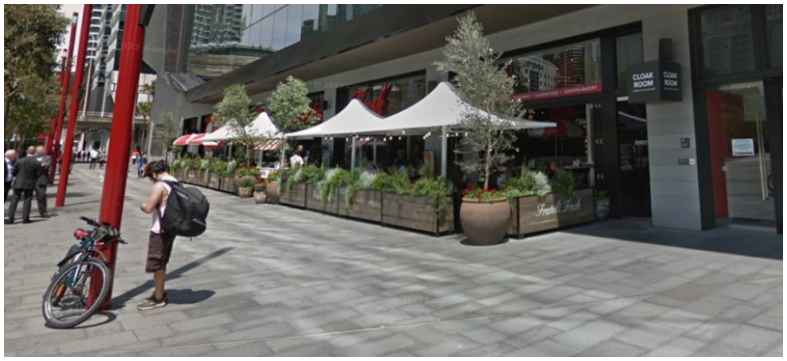


Figure 3.31: Tumbalong Boulevard

3.4.3 Electric Bikes

What is an e-bike

An e-bike is like a regular bicycle, but it comes equipped with an electric motor that aids the rider when going uphill or facing winds. The purpose of the motor is to supplement the rider's manual power, but not to replace it completely.

In Australia, electric bikes are generally classified as bicycles rather than motor vehicles. This classification recognises that e-bikes rely primarily on human pedalling power, with the electric motor providing additional assistance.

NSW E-Bike Laws

In NSW, there are two types of e-bikes permitted:

1. Power-assisted pedal cycles: This type of e-bike has one or more motor attached with a combined maximum power output of up to 200 watts.
2. Electrically power-assisted cycles: An electrically power-assisted cycle can have a maximum continued rated power of up to 500 watts. The power output must reduce as the e-bike's speed increases beyond 6km/h.

To be permitted, an e-bike's motor must output a maximum of 200W when assisted and 250W overall. The motor's power should decrease as speed increases and cut off at 25 km/h or if pedalling stops. Any bike powered solely by motors outside these specifications, or with petrol engines are not allowed in public spaces in NSW. [1]

Legislation and management

As the use of private and shared e-mobility devices grows, cities and countries are implementing new legislation, policies, and regulations to ensure their safe use. The NSW Government regulates the operating conditions of e-mobility devices in Sydney, and non-compliance is enforced by the NSW Police Service.

E-bikes

Local councils can restrict access for e-mobility devices from areas of high pedestrian activity and regulate where they can be parked through local laws and policy. When riding an e-bike, users are required to follow the same general road rules as when riding a normal bicycle. Management of shared e-bike schemes is subject to ongoing collaboration with City of Sydney and private operators.

E-scooters

Some NSW Councils are enabling trials of shared e-scooters, however, personal e-scooters remain illegal on NSW roads, road-related areas including footpaths, shared paths and bicycle lanes, including within the precinct and Sydney LGA.

[1] E-bikes | Transport for NSW

Lithium-ion battery fire risk

Rechargeable lithium-ion batteries are used in a range of everyday household items and are the main batteries utilised for e-bikes. Fire & Rescue NSW have identified that lithium-ion batteries represent a fast-growing fire risk in NSW and that fires attributed to e-bikes and e-scooters have increased significantly in recent years.

In response, Fire & Rescue NSW have issued guidance to manage potential fire risk. This is closely aligned with international approaches to risk management and focuses heavily on charging, storage, damage and disposal of batteries. This includes:

- Ensuring a smoke or heat alarm is working in rooms where lithium-ion batteries are stored or charged
- Charging batteries in open areas like a garage or shed, away from exits
- Using only approved chargers with the Australian Regulatory Compliance Mark Tick, and
- Disposing of batteries which are bulging, leaking cracking or dented, gotten wet or been in water or have overheated.

Charging of shared e-bikes does not occur within the public domain of Darling Harbour.

The understanding and management of fire risks associated with lithium-ion batteries is evolving. There is a need for PMNSW to actively ensure that safe practices are implemented around the use of these vehicles in the precinct, and that up to date and best practice approaches are understood and implemented as guidance or statutory requirements change over time.

Issues related to shared e-bikes in Darling Harbour

Multiple issues have been identified related to the usage of e-bikes in Darling Harbour. They have been summarised under two major categories:

Speed

Darling Harbour has multiple zones where high cycling speeds have been captured. These areas are home to restaurants, bars and retail establishments which generate a high volume of e-bike traffic in the form of trips taken by delivery riders.

Food delivery cyclists are incentivised to ride fast to complete as many individual deliveries as possible. This incentive also means that this user group is more likely to use illegal high-powered e-bikes that can reach speeds of up to 60km/hr by disabling their pedal assist. This is despite the regulation that e-bikes should cut-off at 25km/h if pedalling stops.

In addition to the issue of speed, food delivery cyclists will often use the most direct route, regardless of whether it is a formalised cycling facility or not.

Observations from site visits showed that:

- The long straight path on Tumbalong Boulevard was particularly popular for food delivery cyclists.
- With restaurants in Darling Harbour offering food delivery services through delivery apps, these cyclists are not only travelling through the precinct, but also accessing restaurants within the precinct.

Issues around speeding are not solely isolated to e-bike riders, but the high volume of commercial e-bike riders concentrated at mealtimes can exacerbate safety risks.

Shared e-bike parking and management

Darling Harbour attracts thousands of visitors every year and shared e-bikes are increasingly becoming a mode for them to use to move through the area. This adds an additional layer of unfamiliarity with the location and with local road rules. Observations from the site visit showed that:

- Shared e-bikes are being abandoned outside various locations which are not meant for parking. This causes serious issues relating to safety and management.
- Riders drop off bikes at locations for their own convenience often in locations that block pathways, access routes and other public domain areas.

Figure 3.32 – Shared e-bikes on Tumbalong Boulevard outside Darling Square

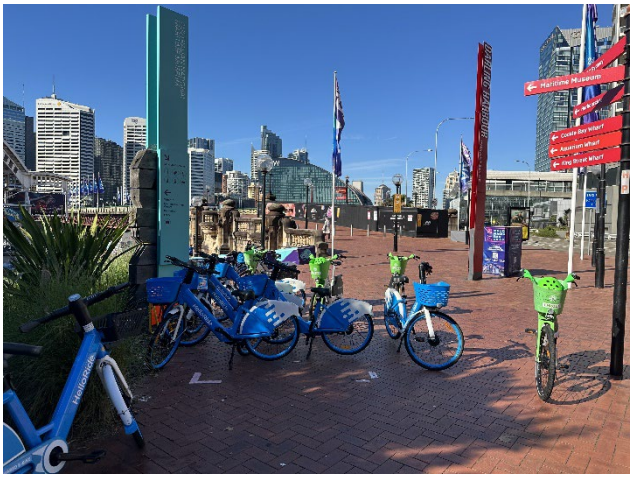


Figure 3.33 – Shared e-bikes on the Pyrmont side (west) of Pyrmont Bridge

3.4.4 Cyclist Volumes

Figure 3.35 illustrates data collected from Strava Heat Map for cyclist activity in and around Darling Harbour. The data indicates that the most trafficked route through the precinct is across Pyrmont Bridge, followed by Tumbalong Boulevard and around Cockle Bay Wharf. This is confirmed by review of cyclist counts provided the City of Sydney, collected over two one-week periods in May 2019 during the morning (7:00am to 11:00am) and evening (3:00pm to 7:00pm).

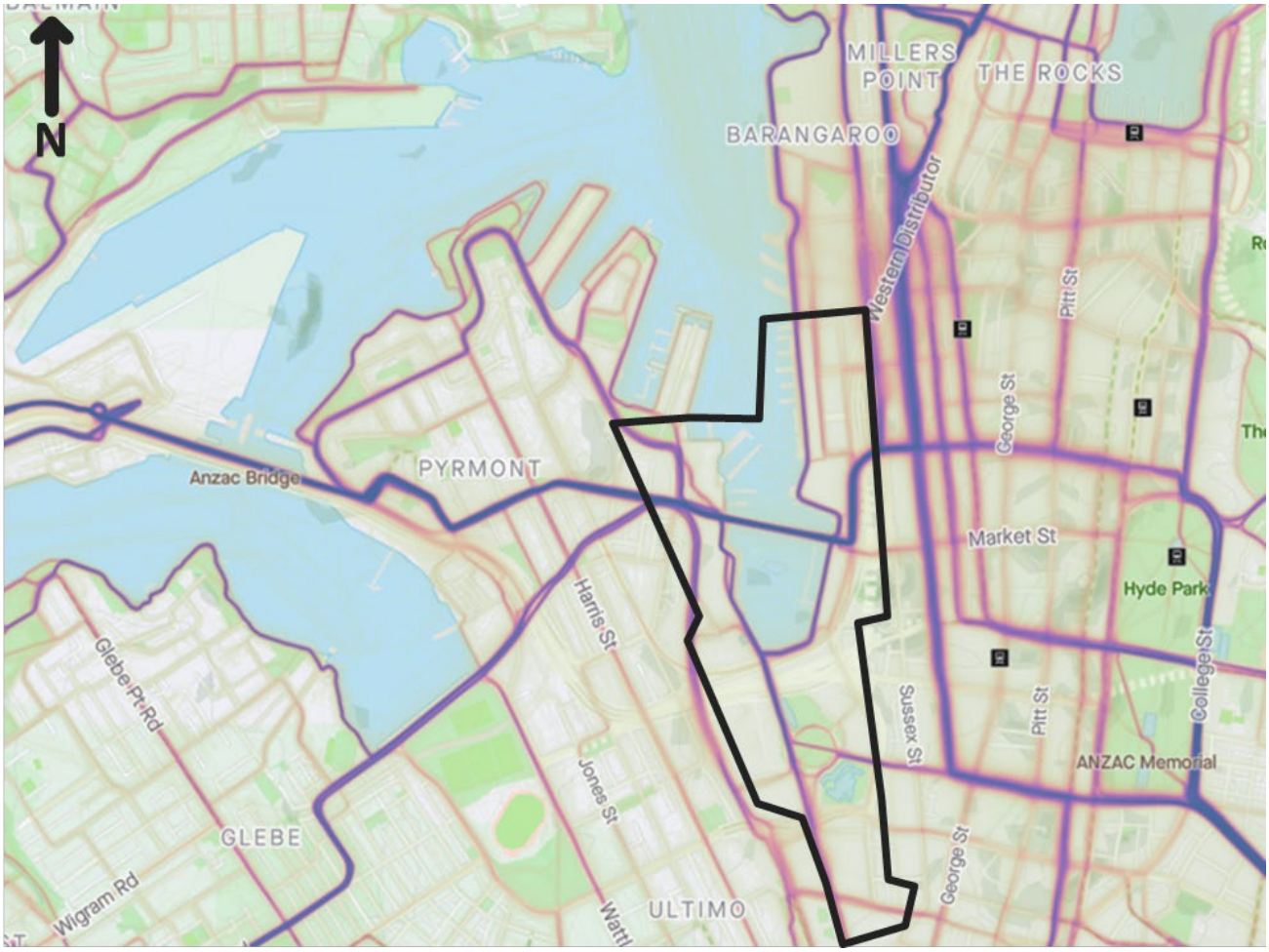


Figure 3.34: Strava Global HeatMap – Cyclist Activity in and around Darling Harbour

(Source: https://www.strava.com/heatmap#15.00/151.20085/-33.87171/hot/run, accessed 26 October 2023)

The volume of cyclists on Pyrmont Bridge and Tumbalong Boulevard have been summarised in **Figure 3.36** and **Figure 3.37**. As shown, cyclist activity along Tumbalong Boulevard is around half that of Pyrmont Bridge. The graphs also clearly demonstrate the ebb and flow of activity between the morning, day and evening periods, with cyclists traveling north/ east bound (towards the city) in the morning and west/ southbound (away from the city) in the evening.

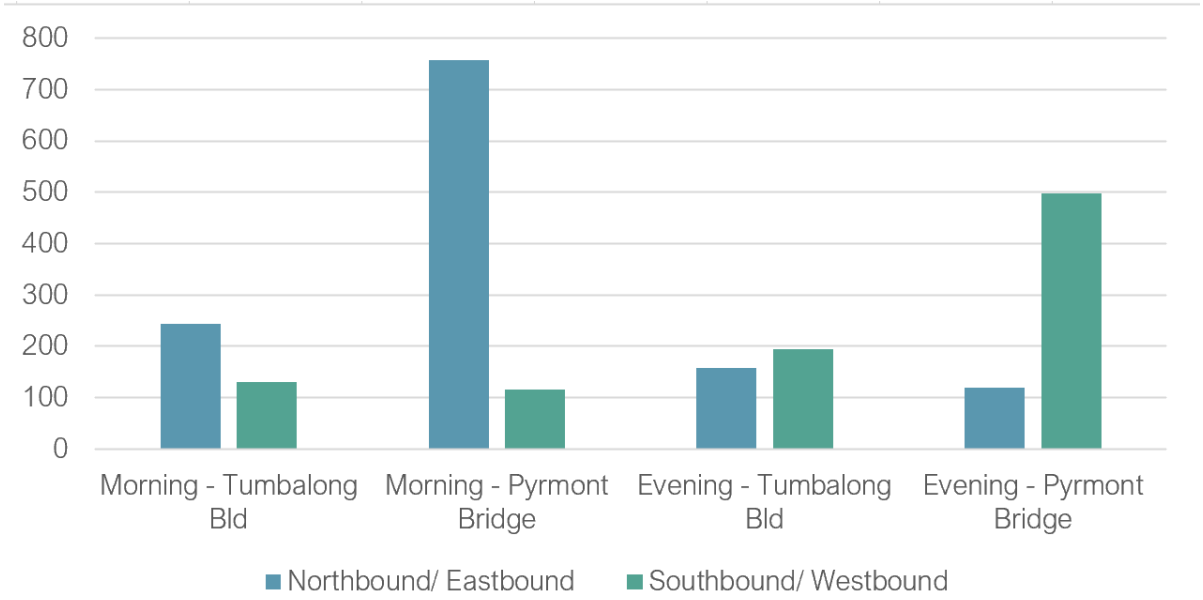


Figure 3.35: Cyclist counts – 85th percentile May 2019

(Source: City of Sydney)

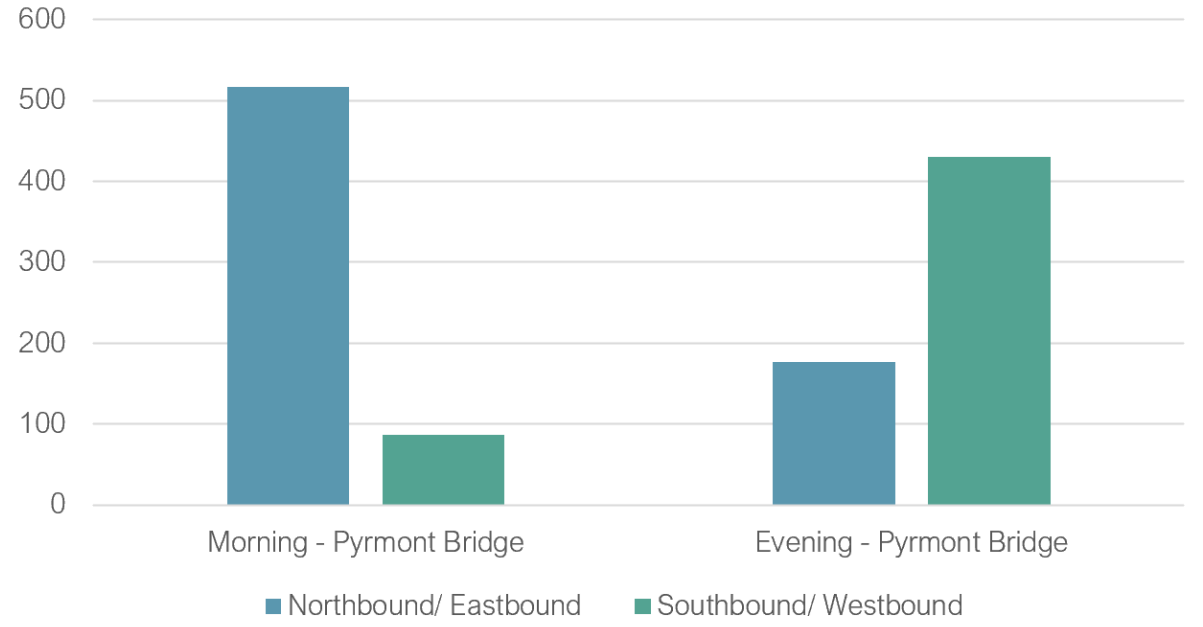


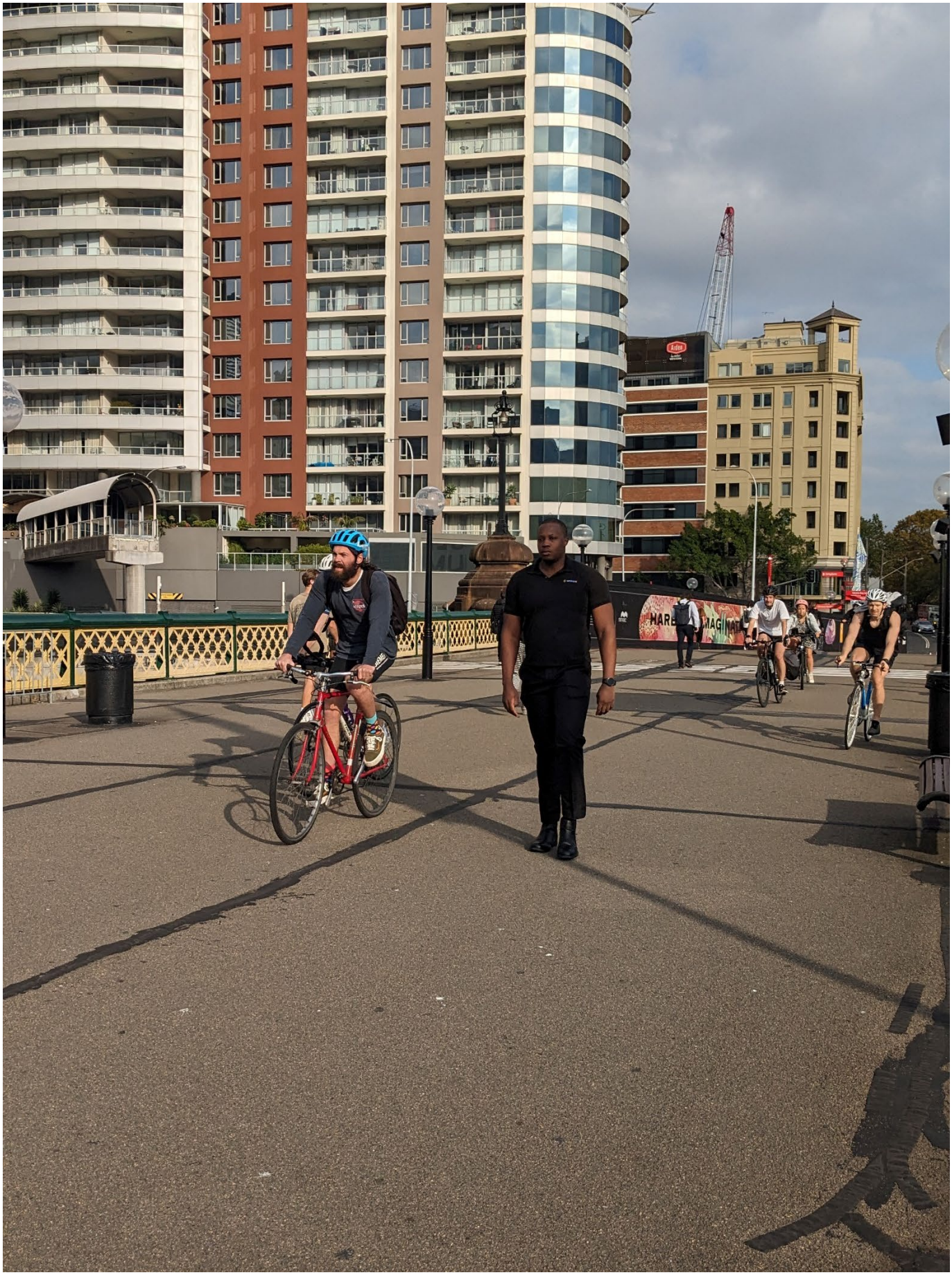
Figure 3.36: Cyclist counts – Pyrmont Bridge October 2022

(Source: City of Sydney)

Figure 3.35 also indicates that key entry points into the precinct include King Street shared path, Darling Drive/ Union Street intersection and Market Street. Cyclists traveling to/from the west use two primary routes: along the Western Distributor (Anzac Bridge) towards Balmain or Haberfield and Bridge Road towards Glebe. High cyclist activity also occurs along Darling Drive, indicating that some cyclists may use the separated cycling facilities as an alternative to traveling along Pyrmont Bridge or to access city south.

Cyclists traveling to/from the east use the Market St (Podium) and the cyclists from the south use Liverpool St (North and South Bridges). Moderately high cyclist activity is observed at key entries to the precinct including Liverpool Street and Market Street. Cyclist activity is also observed along Steam Mill Lane, Moriarty Walk, Pier Street and Hay Street.

Cyclist activity at Tumbalong Park appears to be evenly spread, with cyclists traveling both through and around the park.



3.5 Public Bicycle Parking

Darling Harbour is known for its vibrant attractions, including museums, parks, and over 150 places to eat and drink. It's a popular destination for both locals and tourists, also attracting thousands of deliveries, recreational and commuter cyclists.

Cycling plays a critical role in ensuring accessibility and convenience for visitors who choose to visit Darling Harbour. Therefore, appropriate public bicycle parking is crucial for Darling Harbour to enhance the overall visitor experience. Effective provision and proper management ensure that visitors can easily park their bicycles and explore the area without inconvenience. For the purposes of analysis and review, public bicycle parking refers to bicycle parking located within the public domain for short-term, casual use.

As noted in the TfNSW *Cycleway Design Toolbox (2020)*, "Bicycle parking is integral to any cycle network and to wider transport systems incorporating public transport. The provision and availability of bicycle parking at the beginning and end of every journey has a significant influence on cycle use – parked bicycles provide evidence of demand and patterns of use and can form part of a monitoring regime to measure growth and demand in cycling." The adequate provision of public bicycle parking within Darling Harbour will form a key part of the approach to supporting safe cycling in Darling Harbour.

As of the date of publication, there are no existing public bicycle parking rates for Darling Harbour either established by City of Sydney or Placemaking NSW. Bicycle parking related to residents/employees and visitors have been established in *Sydney DCP 2012* for delivery through private development. This section does not address private bicycle parking located within the building footprint.

Audit

On May 24th, 2024, an audit was conducted to evaluate existing bicycle parking infrastructure. The goal was to assess the current allocation of parking spaces in the public domain and understand how well they meet the demand. This assessment helped identify any gaps or inefficiencies in the management of bicycle parking.

The stages of this assessment included:

- Data collection - Gathering information on existing bicycle racks, their locations, and utilisation
- Gap Analysis - Identifying any gaps or areas where the current bicycle parking infrastructure falls short
- Recommendations for parking location – Proposing improvements or additional bicycle parking facilities at desired locations
- Recommendations for parking provision rate – Proposing a rate for bicycle parking provision in public domain by future developments.

This approach and assessment was developed to optimise bicycle parking and contribute to a more sustainable and visitor-friendly Darling Harbour.

3.5.1 Existing Conditions and Utilisation

Currently, across the public domain of Darling Harbour are 458 bicycle spaces. An audit was conducted on 24 May 2024, to assess the current allocation of parking in the public domain and understand its overall utilisation. In general, it was observed that the southern part of the precinct has well-distributed bicycle parking compared to the northern part of Darling Harbour.

Figure 3.38 shows the existing bike parking locations identified during the site audit.

Figure 3.37: Existing bicycle parking locations (May 2024)

While there is a high quantity of bike parking in the southern precinct, many of the spaces are not clearly visible to cyclists. Cyclists are generally opportunistic and will seek to park as close to their destination as possible. Where no formal facilities are present (or visible), cyclists will improvise using other facilities such as fencing or street poles.

The under or over-utilisation of all existing locations based on the audit is outlined in **Table 3.2** and explained in **Sections 3.5.2** and **3.5.3**. It is to be noted that the audit was conducted on a Friday, and the utilisation rate may not provide a full picture of the travel behaviour of workers (considering people with flexible working arrangements would prefer to work from home). However, the summary of observations could generally provide input into bicycle parking allocation across the precinct.

Bicycle Parking Locations	Trip Generators	No of Bicycle Spaces
Hay Street / Tumbalong Boulevard	restaurants, shops	14
Tumbalong Boulevard outside Darling Square	restaurants, shops	14
Darling Drive / Hay Street	restaurants	20
Harbour Street / Darling Square Food Lane	restaurants	8
Little Pier Street	restaurants, businesses	30
Tumbalong Boulevard / Zollner Circuit	shops, businesses	30
Chinese Garden of Friendship	destination	54
Liverpool Street / Tumbalong Park	restaurants, destination	20
Dancers Alley / Darling Drive	visitors	20
Commbank South Building at Harbour St	offices	42
Commbank North Building at Harbour St	offices	36
Outside McDonalds Darling Quarter	restaurants	30
The Ribbon Public Domain on Tumbalong Boulevard	destination	120
Darling Harbour Theatre on Darling Drive	destination	20

Table 3.2: Existing Bicycle Parking Details

3.5.2 Over-utilised Locations

It was observed that share bike parking locations on the fringes of Darling Harbour and key entry/exit points were over-utilised with available bike parking racks at 100 per cent capacity and additional bikes being parked informally next to full bike parking facilities (as shown in **Figure 3.39**). This could be due to multiple reasons, including, but not limited to:

- E-bike providers have established their dedicated parking zones within their phone apps and enabled “no-parking” restrictions elsewhere within the precinct.
- Riders use bikes to get to the precinct and then park and choose to walk within the precinct.
- The parking locations are accessible, well-marked and easier to get to.
- The consistency of design, material and wayfinding for bike racks used across the precinct could influence a rider’s decision to park.
- Some locations were in a shaded area under a roof where riders would feel safer to leave their bikes.

Figure 3.38 - Darling Harbour Theatre on Darling Drive

Figure 3.39 – Tumbalong Boulevard outside Darling Square

Figure 3.40 – Darling Drive / Hay Street

Figure 3.41 – Darling Drive / Hay Street

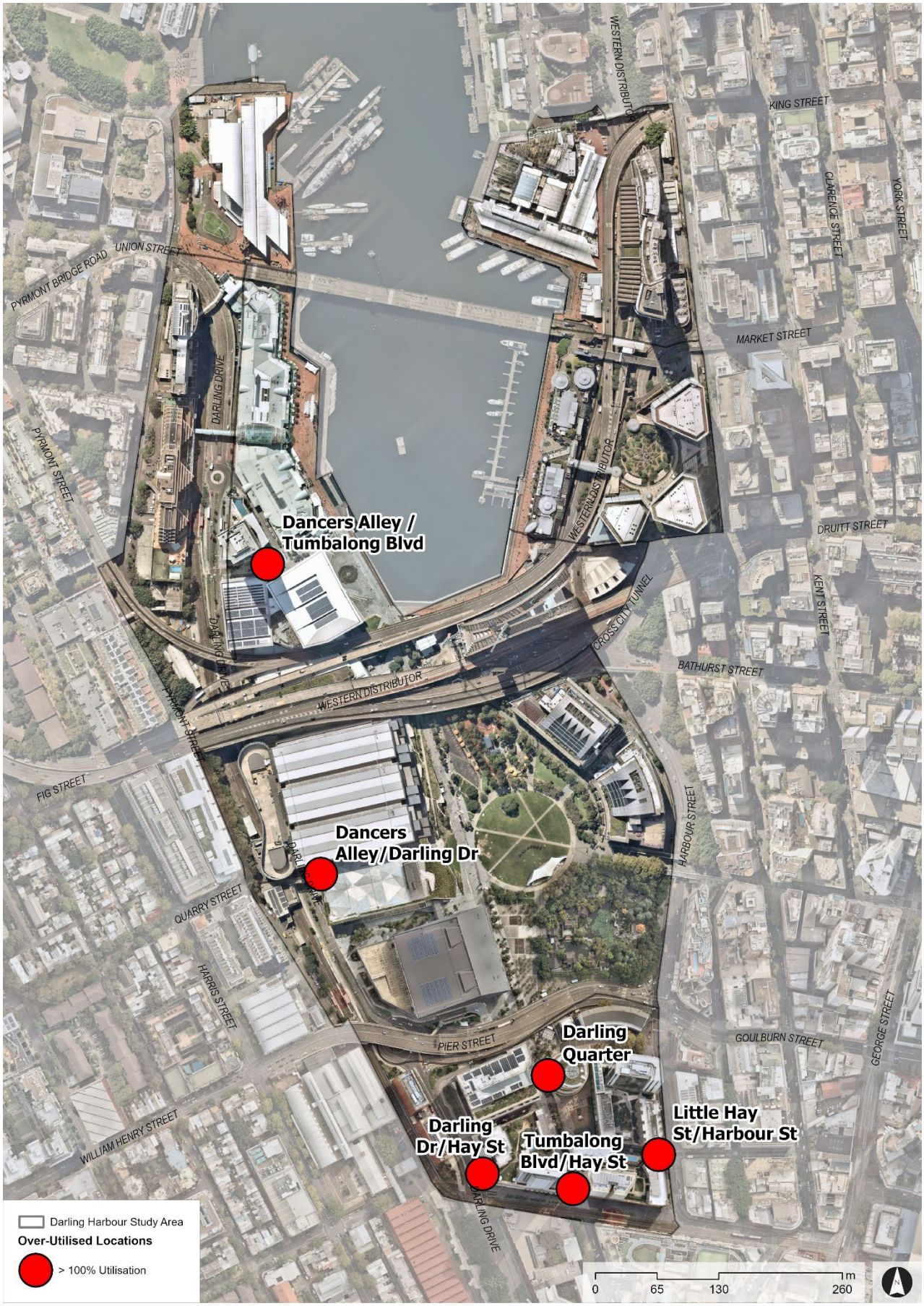


Figure 3.42: Over-utilised bike parking locations

3.5.3 Under-utilised Locations

Bicycle parking locations are not clearly visible to cyclists, resulting in under-utilisation of isolated parking locations within the Darling Harbour precinct (identified at locations shown in **Figure 3.44** to **Figure 3.53**).

Moreover, the large volume of delivery cyclists accessing Darling Harbour, park directly adjacent to their pick-up points, rather at formal bicycle parking areas (as identified on Tumbalong Boulevard and Cockle Bay Wharf Promenade).

This under-utilisation could be due to multiple reasons, including, but not limited to:

- Parking being provided at locations where the demand is not high.
- The bicycle racks are not at an accessible or visible location.
- The design, colour and make of bicycle racks are not consistent across the precinct which may make them hard to distinguish.
- Lack of wayfinding signage to suggest presence of bike parking at all locations across the precinct.

Figure 3.43 - Tumbalong Boulevard outside Darling Square

Figure 3.44 – Tumbalong Boulevard outside Darling Square

Figure 3.45 – Little Pier Street

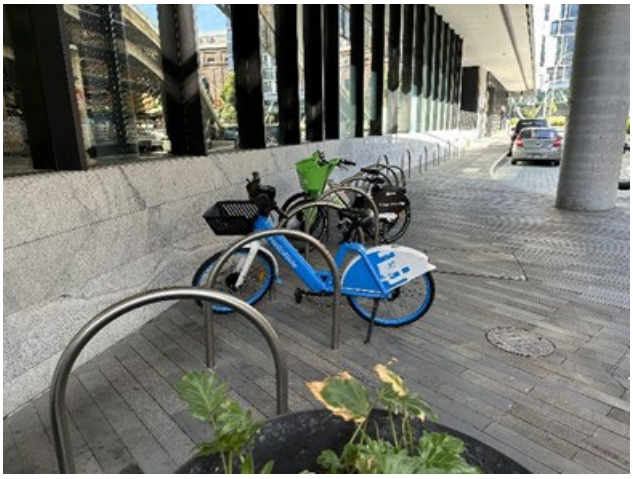


Figure 3.46 – Tumbalong Boulevard / Zollner Circuit

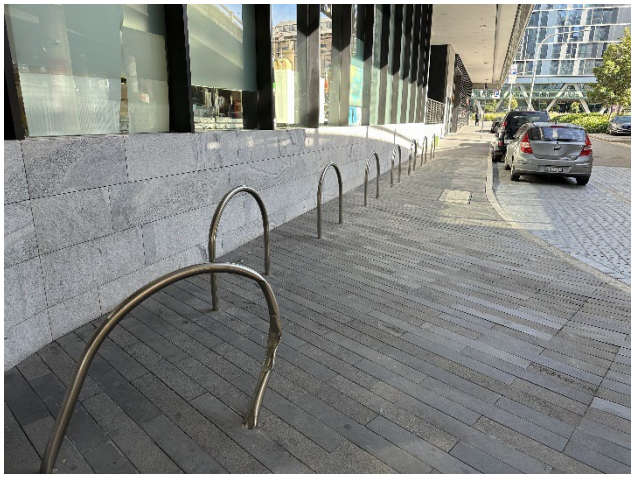


Figure 3.47 – Tumbalong Boulevard / Zollner Circuit

Figure 3.48 – Chinese Garden of Friendship

Figure 3.49 – Liverpool Street / Tumbalong Park

Figure 3.50 – Dancers Alley / Darling Drive

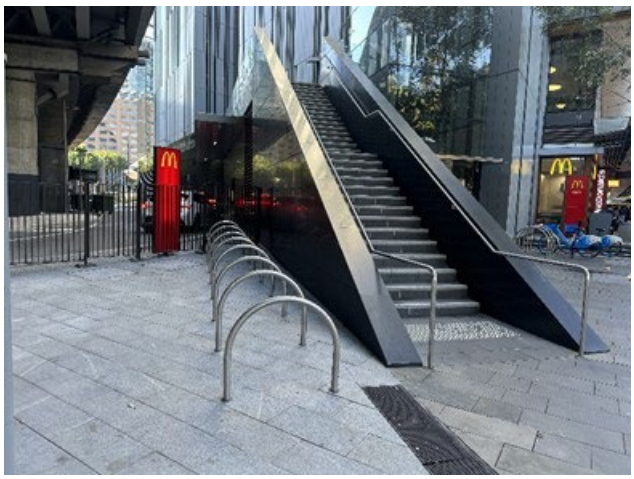


Figure 3.51 – Outside McDonalds Darling Quarter

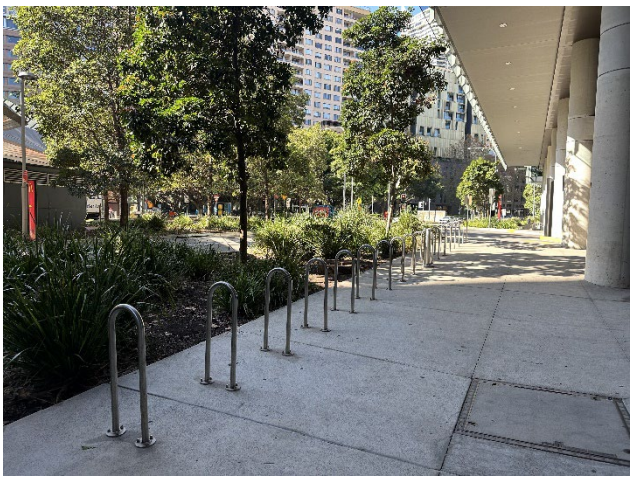


Figure 3.52 – Commonwealth bank North Building at Harbour St

3.5.4 Gap Analysis

Public bicycle parking should be located outside places that attract the most demand, rather than in opportunistic locations where there is little or no demand for bike parking. As shown in **Figures 3.54** to **Figure 3.57,** bicycle parking is missing along main boulevards and promenades that currently attract higher movement of cyclists.

Figure 3.58 shows the existing bicycle parking locations and their respective density catchments. This analysis supports the observations made during the audit related to gaps in the bicycle parking network. The density catchment map is an accurate representation of the absence of parking at certain locations such as Tumbalong Boulevard and Cockle Bay Wharf Promenade.

It was also observed that clusters of e-bikes are present at various locations where there are no bike racks. It is our understanding that the shared e-bike companies provide suggested drop off locations to their users via mobile apps. To ensure private and shared e-bike riders can tidily park their bikes, PMNSW is working with shared e-bike providers to manage drop-off locations.

This gap analysis forms the basis for further analysis and recommendations outlined in **Section 4.1.2.**

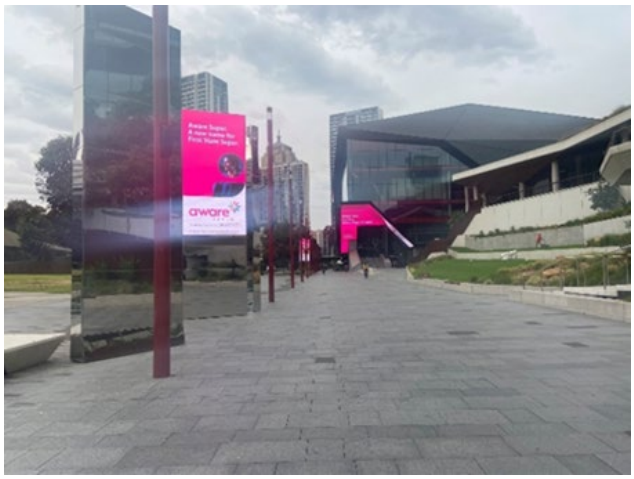


Figure 3.53 - Tumbalong Boulevard outside ICC

Figure 3.54 – Tumbalong Boulevard outside Darling Square

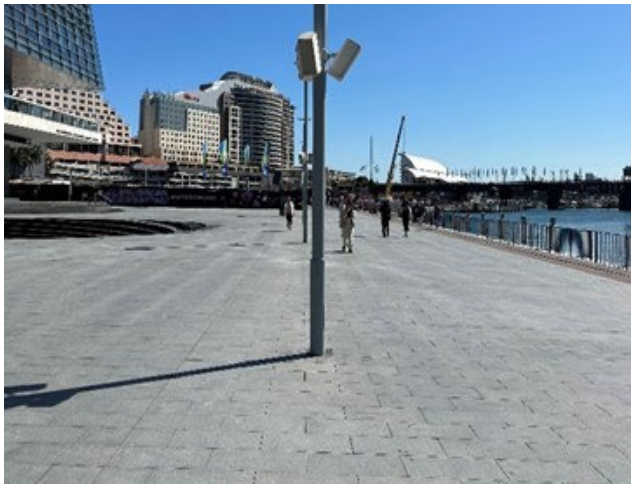


Figure 3.55 – Tumbalong Boulevard outside Darling Harbour Theatre

Figure 3.56 – Darling Harbour Southern Foreshore

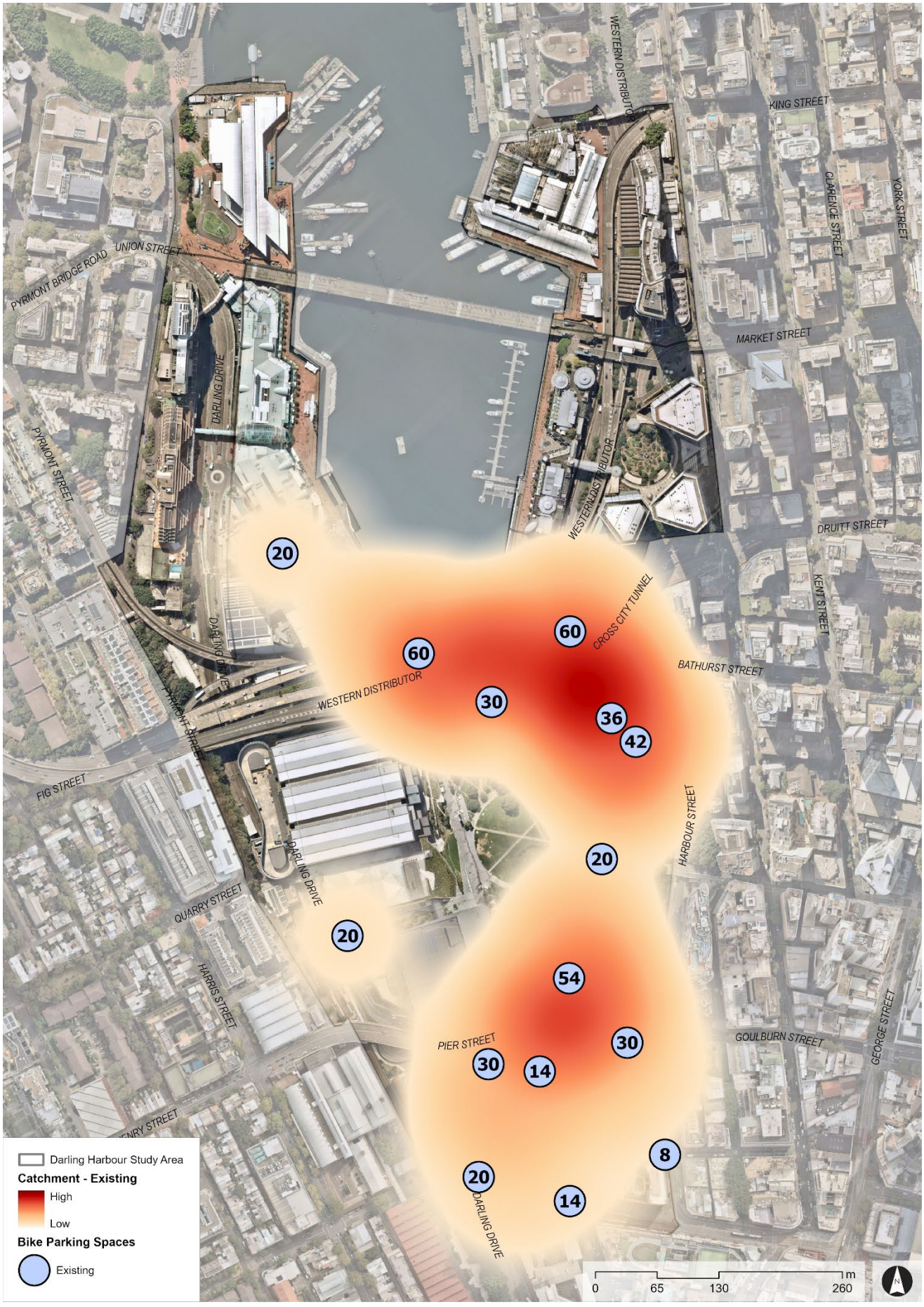


Figure 3.57 Existing Bicycle Parking

3.6 Overview of Conflict Points

With consideration for the significant volumes of both pedestrians and cyclists accessing the Darling Harbour precinct, the potential for conflict between the two groups is high at several locations. Conflicts typically occur on shared paths and in spaces that are shared between pedestrians and cyclists, and at intersections between pedestrians, cyclists and vehicles. The primary conflict points are outlined in **Table 3.3** and as shown in **Figure 3.59**, they are categorised as follows:

- general pedestrian cycling conflict
- areas of high cycling speeds
- physical constraints and obstacles
- signage and wayfinding
- compromised sight lines

Figures 3.60 to **3.66 are** photographs of some of the potential areas of conflict, taken in September-October 2020 and May 2023. The interaction between pedestrians and cyclists at several key conflict areas, including along Pyrmont Bridge, Tumbalong Boulevard and Liverpool Street west, are illustrated below.

ID	Category	Location	Description	Timing
1	**General pedestrian cycling conflict**	Public domain between Pyrmont Bridge and Union Street and Sussex St/King St intersection	Transition in cyclist infrastructure from separated cycleway to shared path	All Day
2		Tumbalong Boulevard, north and south of Tumbalong Park, Cockle Bay Wharf	Pedestrian and cyclist cross movements due to restaurants/ bars on Boulevard	All Day
3		West of Harbour Street/ Liverpool Street intersection	Cyclists use of southern pedestrian bridge conflicts with pedestrian movements	AM and PM
4	**Area of high cycling speeds**	Pyrmont Bridge	Long, straight pathway encourages high speed	AM and PM
5		Tumbalong Boulevard		All Day
6	**Physical constraints and obstacles**	Pyrmont Bridge east end	Escalators, stairs and kiosk restricts the effective usable width of the bridge and creates squeeze points	All Day
7		King Street shared path, Pyrmont Bridge east end	Transition from wide bridge to narrow shared path, with sharp (90 degree) corner	All Day
8		Tumbalong Park, central pedestrian path	Narrow pedestrian footpath used by cyclists	All Day
9		Hay Street between Darling Drive and Tumbalong Boulevard	Cycle route conflicts with Light Rail	All Day
10		East side of harbourside shopping centre	Wharf forms bottleneck during peak periods, expected to be exacerbated by delivery cyclists in future	All Day
11		Pyrmont Bridge and Tumbalong Boulevard	Obstacles in public domain in form of HVM Bollards, flag poles, light poles, etc.	All Day
12	**Signage and wayfinding**	Iron Wharf Place (porte cochere between ICC and Sofitel)	Lack of clear signage and wayfinding for cyclists. This potentially leads to people cycling in areas designed for vehicle access and greater pedestrian activity, leading to modal conflict.	All Day
13		Eastern approaches to Darling Drive/ Zollner Circuit/ Pier Street intersection	Access and wayfinding issues at roundabout	All Day
14,15	**Compromised sight lines**	Intersection of Cockle Bay Wharf, Tumbalong Boulevard and ICC	Poor sight lines around advertising structures (users from Cockle Bay Wharf conflict with users exiting Tumbalong Boulevard)	All Day

Table 3.3: Primary Conflict Points

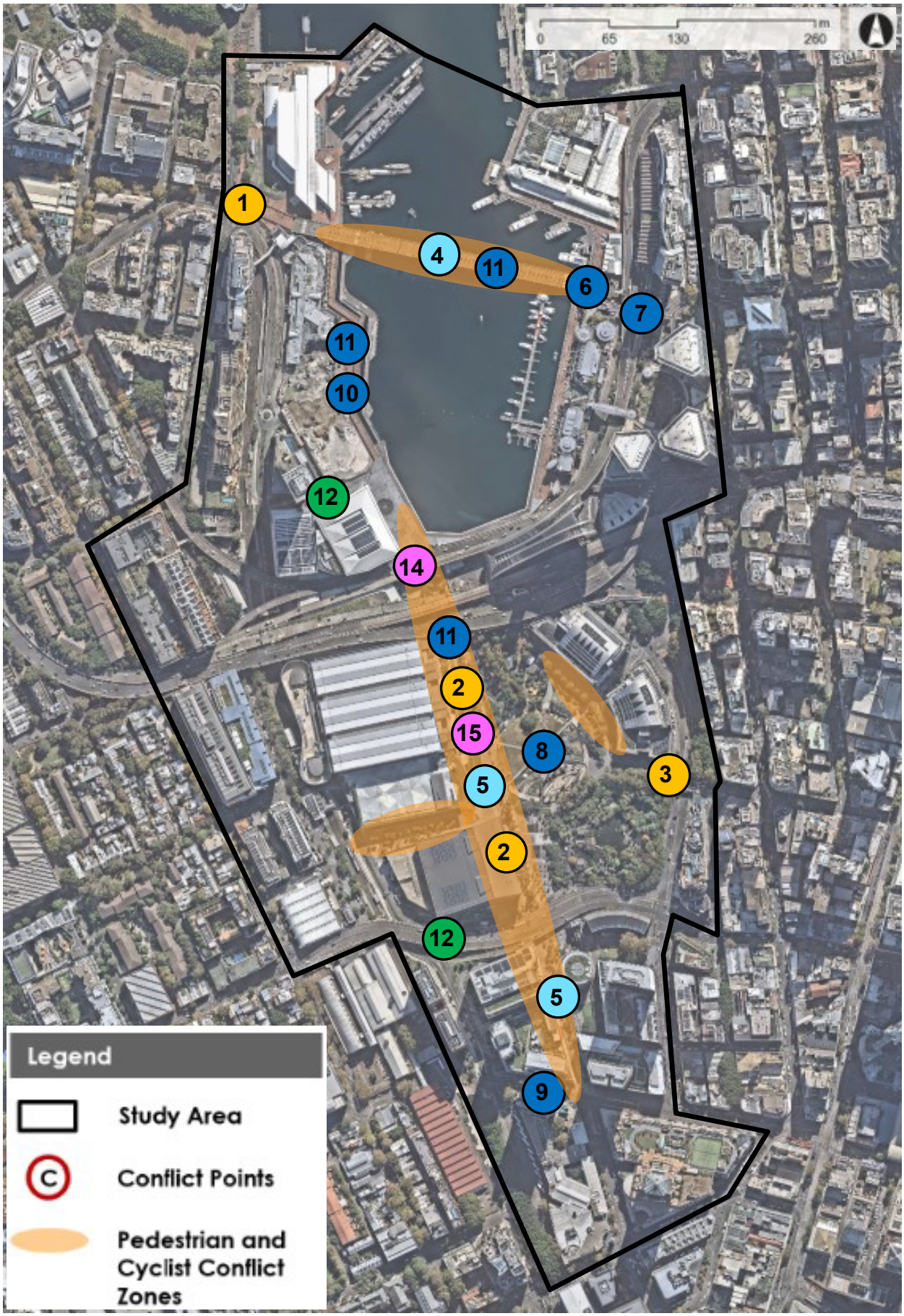


Figure 3.58: Pedestrian and cyclists conflict zones/points across the precinct

Figure 3.59: **Conflict 1 -** General Conflict

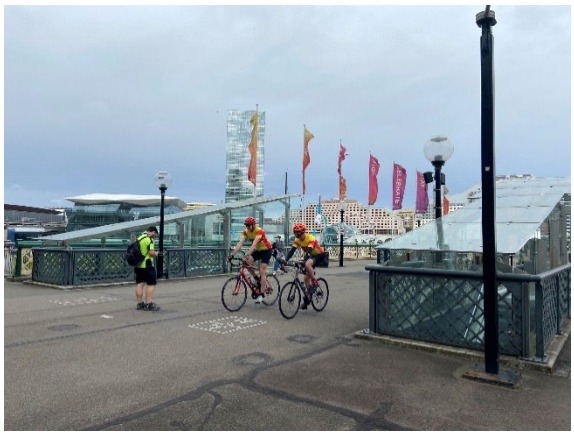


Figure 3.60: **Conflict 6** - Physical Constraint

Figure 3.61: **Conflict 9 -** Physical constraint

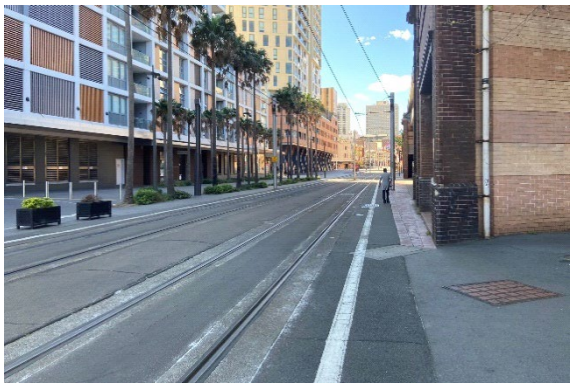


Figure 3.62: **Conflict 7 -** Physical constraint

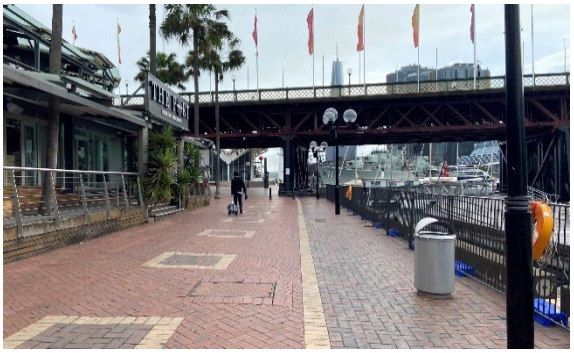


Figure 3.63: **Conflict 10 -** Physical constraint

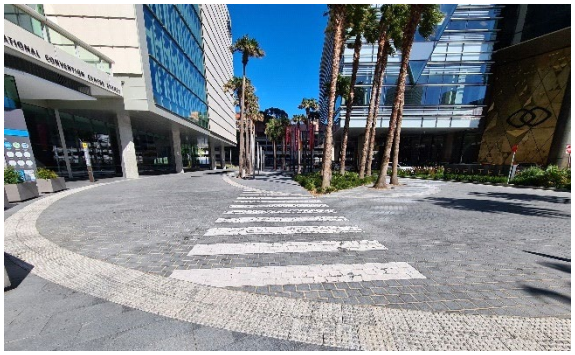


Figure 3.64 **Conflict 11 -** Signage and wayfinding

Figure 3.66: **Conflict 13 -** Sight line obstruction

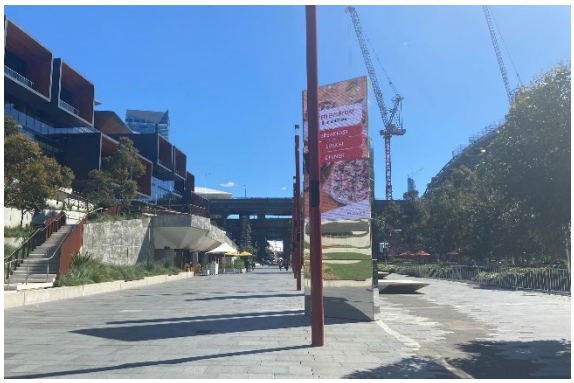


Figure 3.65: **Conflict 14 -** Sight line obstruction

3.6.1 Pyrmont Bridge (Conflicts 4, 6 and 11)

Conflicts on Pyrmont Bridge are particularly prevalent between pedestrians and commuter cyclists. As a strategic conduit in the surrounding bicycle network, Pyrmont Bridge carries high volumes of commuters into and out of the city. The long, straight pathway with minimal obstructions encourages high speeds. However, the presence of the kiosk and escalator at the eastern end of the bridge restricts the effective usable width of the bridge and creates squeeze points.

The worst conflicts generally occur between *fast* cyclists and pedestrians – where the speed differential is the greatest. Commuter pedestrians also using Pyrmont Bridge are less likely to conflict with commuter cyclists, as they are also travelling in a direct path and are familiar with accommodating cyclists. Recreational pedestrians, including tourists or even locals travelling for leisure, are particularly vulnerable to conflict.

As the bridge is a destination itself, these pedestrians tend to walk less directly and are more likely to take photographs of the harbour and city at the bridge balustrades. The north-south pedestrian movements across the bridge are in direct conflict with the east-west movement of commuter cyclists. **Figure 3.68** shows cyclists and pedestrians sharing Pyrmont Bridge, and **Figure 3.69** demonstrates how the movement patterns of these user groups interact.

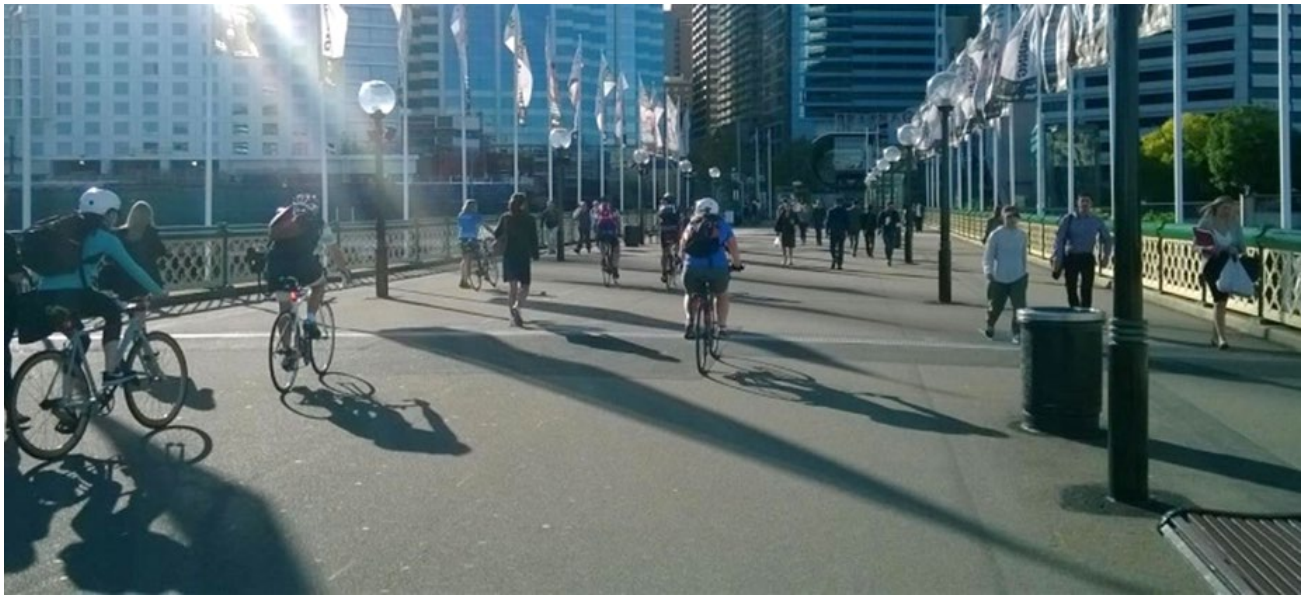


Figure 3.67: Cyclists and Pedestrians Sharing Pyrmont Bridge

Figure 3.69 shows the conflict points and movements occurring on Pyrmont Bridge. The conflict points shown are referenced to **Table 3.3,** but don't occur specifically at the spots where the labels are.

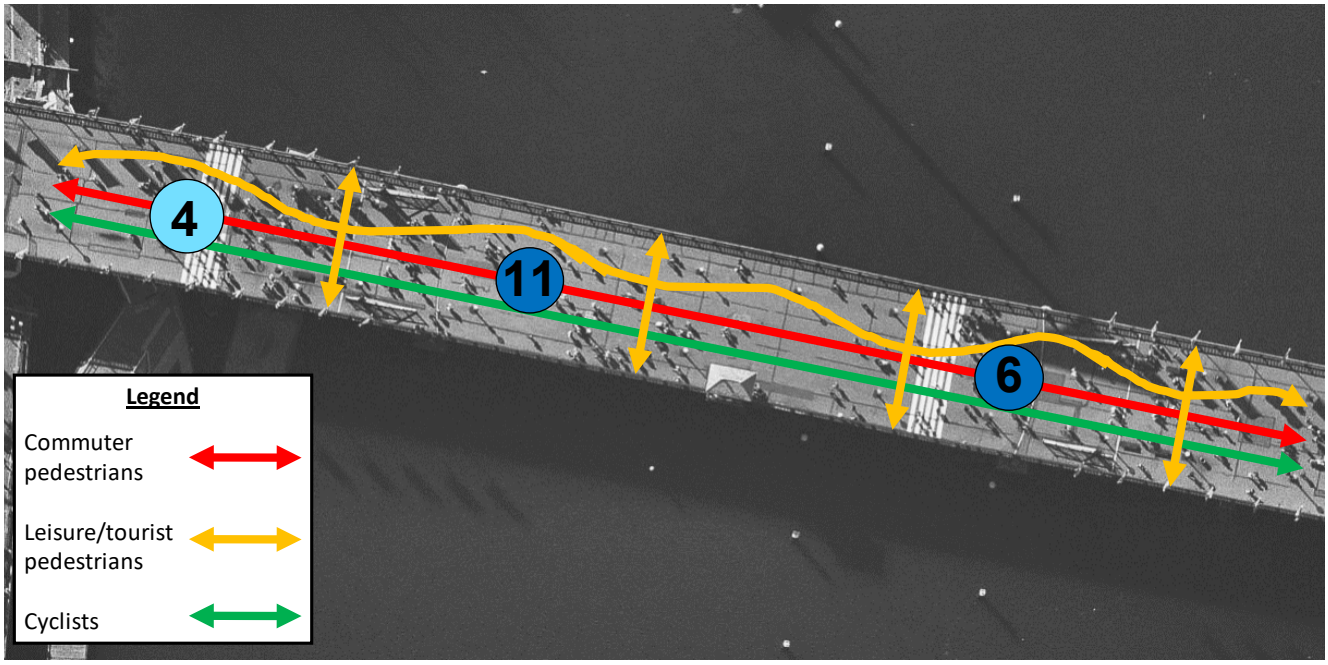


Figure 3.68: Cyclist and Pedestrian Movement Patterns on Pyrmont Bridge

Existing management strategies to slow cyclists down and reduce the risk of conflict include:

- shared path signage
- line-marking
- speed limit signage
- two rangers are located at each end of the bridge during commuter peak periods next to temporary signage advising that cyclists drop their speed to 10km/h

The painted signage on the ground says, "advisory speed limit", which attempts to make the cyclists pay attention to their respective speed limits. Rangers are not permitted to enforce speeds, so commuter cyclists were often observed to disregard their presence. This arrangement is not effective due to the lack of enforcement ability and the fact that cyclists are cycling to the design speed of the bridge (wide pathways on the bridge induce higher speeds), rather than the temporary advisory speed limit. Therefore, solutions to address conflicts on Pyrmont Bridge between cyclists and pedestrians are not solely related to speed management; rather, strategies to separate walking and cycling movements on the bridge will also address this conflict.

3.6.2 Tumbalong Boulevard (Conflicts 2 and 5)

Conflict 5 – Long, straight pathway encourages high speed

Tumbalong Boulevard is a popular route for food delivery cyclists, acting as a conduit to restaurants across the precinct including along Tumbalong Boulevard itself. As with Pyrmont Bridge, the long, straight pathway with minimal obstructions encourages high speeds.

Conflict 2 – Pedestrian and cyclist cross movements due to restaurants/bars

Restaurants along Tumbalong Boulevard offer sit-down dining for their customers, and this interface between the restaurant's active frontage and Tumbalong Boulevard is a primary cause of user conflicts. Customers exiting the restaurant onto the boulevard can walk directly into the travel path of cyclists, noting the use of fencing and planters around the outdoor dining area add a false sense of security to pedestrians as they step into the thoroughfare. This is exacerbated for restaurants where alcohol is served, potentially lowering pedestrian's perception of their environment. An example of this interface is shown in **Figure 3.70** and cross movement illustrated in **Figure 3.71**.

Figure 3.69: Outdoor dining on Tumbalong Boulevard (south Tumbalong Park)

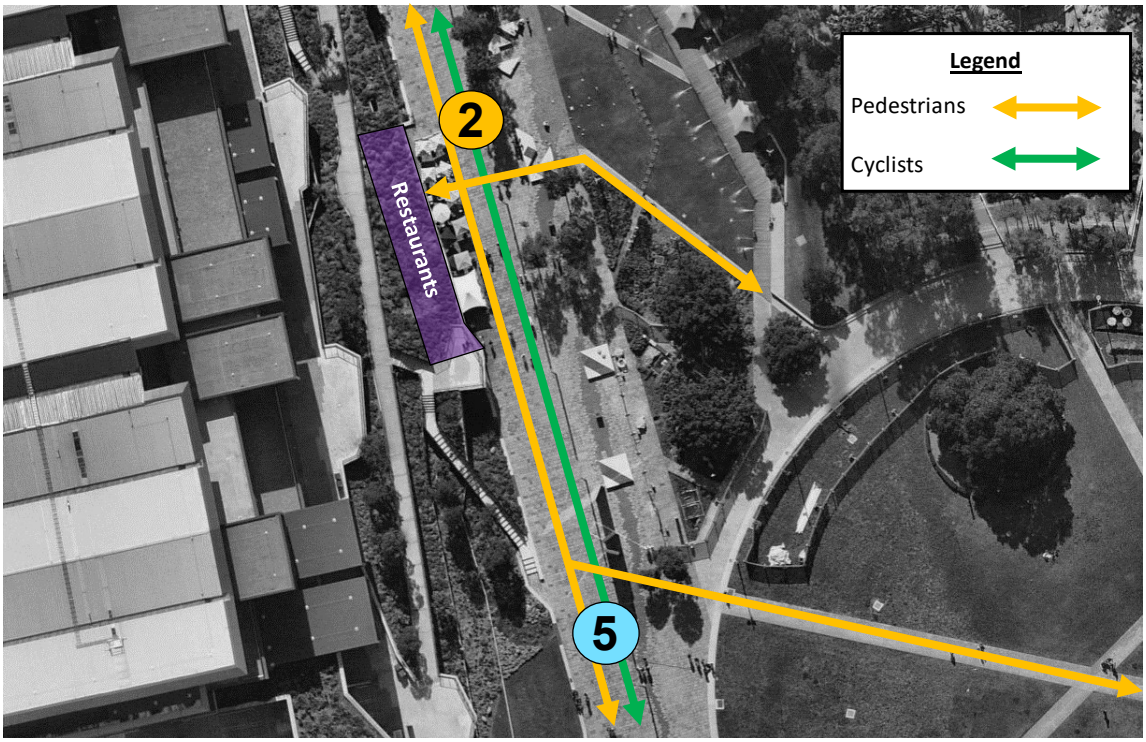


Figure 3.70: Pedestrian cross movements on Tumbalong Boulevard (north Tumbalong Park)

3.6.3 Liverpool Street and Tumbalong Park (Conflicts 3 and 8)

Conflict 3 – Cyclists use of southern pedestrian bridge conflicts with pedestrian movements

Liverpool Street is a key gateway into Darling Harbour. Currently, many cyclists use the southern pedestrian bridge across Harbour Street to access the precinct. Improvements to the Liverpool Street cycleway have increased cyclist volumes entering Darling Harbour at this location.

Here, cyclists can gain speed as they cycle off the bridge and into Tumbalong Park, where they encounter a greater number of pedestrians gathered near Tumblong Park and the surrounding food establishments.

Conflict 8 – Narrow pedestrian footpath used by speeding cyclists

Inadequate wayfinding signage at Tumbalong Park means there is no guidance for a specific path of travel for cyclists. The ambiguity further increases the risk of conflict when delivery riders ride through the diagonal paths in Tumbalong Park which are approximately 2.25m wide, which may not be qualified as a shared path adequate for a two-way flow.

Figure 3.74 shows these paths and multiple points of potential conflict with pedestrians.

Figure 3.72: Straight path and restaurants on east of Tumbalong Park

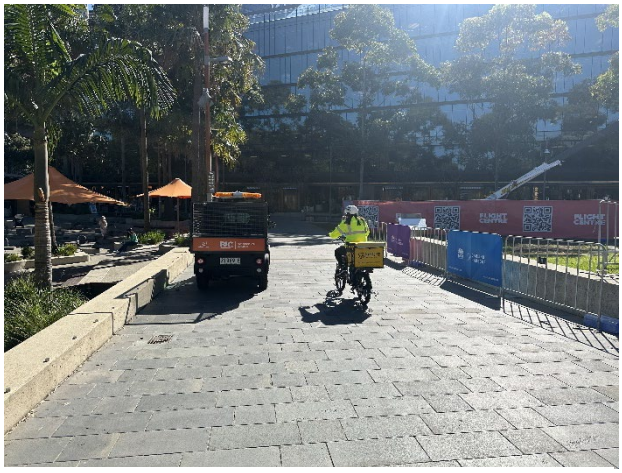


Figure 3.73: Path connecting Tumbalong Park to

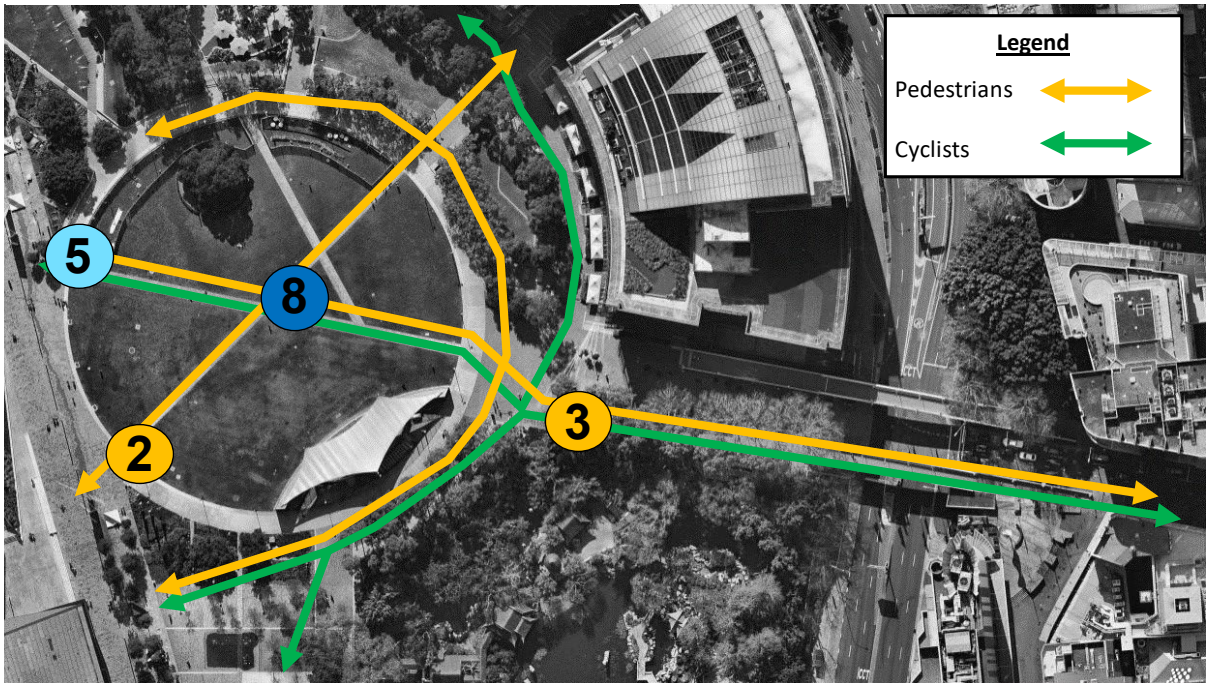


Figure 3.71: Pedestrian and Cyclist interaction in Tumbalong Park

3.6.4 Education Information to mitigate conflicts

Educating cyclists on how to ride safely and educating pedestrians on how to interact with cyclists in shared environments could help to minimise conflicts and increase safety for all users. The *Australian Road Rules* are clear in the providing guidance around how to behave on shared paths. Cyclists travelling on a shared path are required to keep to the left unless impractical to do so and to give way to any pedestrian who is on the shared path[2]. In some cases, there can be engrained cultural behaviours among commuter riders who believe that they are entitled to use Pyrmont Bridge as a cycling thoroughfare and that pedestrians should give way to them.

Darling Harbour is generally perceived as a pedestrian environment since this is the dominant mode of travel. With substantially greater numbers of pedestrians than cyclists in the area, pedestrians may not expect to encounter cyclists, even though they are permitted to cycle throughout the precinct.

In seeking to mitigate the potential for conflicts in the precinct, a holistic approach needs to be considered that includes intuitive design, education and awareness programs and clear guidance around how to behave and interact between cyclists and pedestrians in the precinct. Treatment options and opportunities are discussed in **Chapter 4: Opportunities and Recommendations**.

[2] Australian Road Rule 242 (1), 2012

4

Opportunities and Recommendations

4.1 Opportunities and Recommendations

A series of opportunities have been identified that reflect the principles in **Section 1.4**, namely:

- Darling Harbour's status as a major destination
- Recognise its movement functions
- Prioritise place activity
- Focuses on realising tangible changes to movement functions, or a combination thereof.

Opportunities and recommendations are broken down into four types:

1. **Precinct-Wide Opportunities:** These opportunities address the behavioural aspects, ongoing maintenance and collaboration required to manage cycling activity throughout Darling Harbour.
2. **Bicycle Movement Opportunities:** These opportunities are for improving safe bicycle movements through Darling Harbour:
    - **Opportunity 1:** Improve North-South Cycle Connections
    - **Opportunity 2:** Reduce Speed and Increase Safety
    - **Opportunity 3:** Enhance the King Street Bridge and Connections
    - **Opportunity 4:** Improve the Clarity of Functions to Pyrmont Bridge
3. **Public Bicycle Parking Recommendations**
4. **E-Bike Management Recommendations**

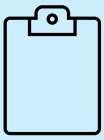
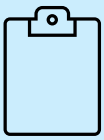
All actions and recommendations are subject to further development and feasibility.

4.1.1 Precinct Wide Recommendations

Recommendations address the behavioural aspects of managing cycling activity throughout Darling Harbour. Recommendations will be considered in context of developments, precinct priorities, available budgets and technological improvements as they occur. They will be undertaken in consultation with precinct partners, stakeholders and other government agencies as required.

Recommendations along with their rationale are outlined in **Table 4.1.**

Recommendation: A Precinct wide Cycling Action Plan

Recommendation	Explanation
Conduct biannual (one in Spring and one in Autumn) bicycle survey for key entry points and along key routes of Darling Harbour. 	Collection of cycling movement data allows PMNSW to understand cycling volumes, speeds, parking usage and trends at key points throughout the precinct. This survey can be coordinated with the City of Sydney's biannual cycling surveys to understand cycling through movements to/from City of Sydney streets and potentially including: • Darling Drive • The Goods Line • Pyrmont Bridge • Tumbalong Boulevard • Hay Street • Quay Street • Tumbalong Park • Liverpool Street entrance to Darling Harbour • Cockle Bay promenade • Outside SEALIFE/ WILDLIFE • Harbourside Shopping Centre promenade • King Street cycling/walking bridge
Undertake an audit of the precinct 12-18 months after the Strategy's adoption. 	Seasonal and daily changes can affect cycle usage patterns within the precinct. A supporting detailed audit should be undertaken to provide a more holistic understanding of cycling within Darling Harbour, to inform delivery of the strategy.
Recommend regular training and education for staff and rangers be provided by contracted service providers should include management of cyclists and customer service. 	Training would equip staff and rangers with the knowledge and understanding to manage their responsibilities in Darling Harbour. Training could include: • Bicycle riding and safety training for patrols to be conducted by bicycle • Expected behaviours by people cycling • Cycling advisory and enforcement responsibilities • Procedures to deal with conflicts and accidents including record keeping procedures

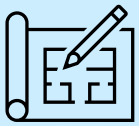
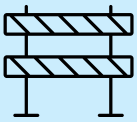
Develop communications and public relations plan regarding cycling activity. 	Develop a clear and concise policy information and statements on expected cycling behaviours coupled with swift responses to any concerns, complaints or issues raised. This could include: • Safety messages and advertising for slow cycling through places of high pedestrian activity • Recommended movement routes for cycling (e.g. Darling Drive) • Statements that reiterate that all forms of cycling are welcome in Darling Harbour but people cycling are expected to do so in a responsible and safe manner.
Construction-related and event-related cycling management. 	Require as conditions of approval for any construction work and events in Darling Harbour above an agreed threshold, and which impact on cycling movement and parking must be supported by a management plan that shows how cycling diversions and offset parking will be provided.
Shared zone signage at precinct threshold areas. 	Installation of shared zone signage at all entry points into the Darling Harbour (excluding cycleways along Darling Drive) will remind people cycling and walking of the need to look out for one another and for people cycling to do so slowly.
Permanent LED speed signage along areas of high place activity throughout Darling Harbour.	Install permanent LED advisory speed signage along areas of high place activity that are shared with cycling movements. For example: • Tumbalong Boulevard • Tumbalong Park • Cockle Bay promenade • Outside SEALIFE/ WILDLIFE • Harbourside Shopping Centre promenade • The Goods Line • Pyrmont Bridge.
Continue to collaborate with the City of Sydney and Transport for NSW to integrate this Darling Harbour Cycling Strategy with their Cycling Strategies. 	Integration of the two strategies and agreement on a common approach to route development, expected treatments, signage and management will enable a borderless approach to cycling between PMNSW-managed City of Sydney-managed land. This will also enable common agreement on cycling routes proposed by City of Sydney currently through PMNSW-managed land. Collaboration with City of Sydney can be carried out through existing channels such as PMNSW's involvement in the City of Sydney's Cycling Advisory Committee.

Table 4.1: Precinct Wide Behavioural Change Recommendations

4.1.2 Public Bicycle Parking Recommendations

Background

Delivery of public bicycle parking is integral to the support of safe cycling in the precinct. This bicycle parking should be for casual, short-term use and not appropriate for long term parking.

In response to analysis of the existing conditions (noted in **Chapter 3**) and consistent with the aspirations of the TfNSW *Cycleway Design Toolbox*, the following recommendations have been established to guide future delivery of public bicycle parking in Darling Harbour.

Recommendation: Public bicycle parking delivery model

The recommended public bicycle parking delivery model decouples the majority of future bicycle parking delivery from public expenditure and refines the existing model of facilitating privately funded bicycle parking in the public domain through the State Significant Development (SSD) approval pathway.

In collaboration with PMNSW, private development should deliver public bicycle parking in public domain areas within and directly adjacent to their development site, consistent with the principles established within this strategy.

Principles to apply in delivering public bicycle parking

This revised model would apply to new developments and refurbishments in the precinct, and design solutions would be developed in collaboration and agreement of all parties. The following principles should be considered when delivering public bicycle parking:

- **Locate parking strategically:**
    - New bicycle parking should be situated outside places that attract the most demand, rather than in opportunistic locations where there is little or no demand for parking, complemented with good lighting and as close as practicable to the user's destination.
    - Provide bicycle parking in small groups of bicycle racks ranging from 5-10 spaces, spread across the precinct at strategic locations. This will enable lesser riding speeds and promote optimal usage of parking
- **Balance the provision of bicycle parking with other uses:** There are several demands on the public domain of Darling Harbour. This includes for biodiversity and planting, places to dwell and opportunities for events and activations. The quantity and location of bicycle parking needs to balance these competing needs to deliver the best holistic outcome for Darling Harbour.
- **Encourage slow movement:** Distribute bicycle parking into small groups. Bicycle parking along Tumbalong Boulevard and the promenades also serves a speed limiting function to deter fast cycling through the strategic filling in of vast voids in space that currently attract this type of movement.
- **Address under-provision:** New public parking provision should increase parking in areas where there is a paucity of parking. To minimise expense and for quicker delivery of bicycle parking in locations where it is needed most (as outlined in **Section 3.5.4**) , Placemaking NSW may consider relocating bicycle parking racks and hoops at underutilised locations as an immediate first step. This includes:
    - immediately outside The Maker's Dozen Food Hall,

    - along Tumbalong Boulevard to service the local food businesses,
    - the park and playground
    - along Sydney Harbour foreshore promenades in the northern section of Darling Harbour (i.e. Cockle Bay Wharf, Harbourside, Sydney SEA LIFE and Sydney Maritime Museum)

- **Establish a sustainable and responsive model for delivering public bicycle parking in Darling Harbour:** Work with private development to deliver public bicycle parking within and adjacent to their development sites.
- **Deliver appropriate infrastructure:** Public bicycle parking should be provided at minimum as Class C bicycle parking, consistent with AS2890.3 (2015) Standard – Parking facilities. A bicycle parking space where the bicycle frame and both wheels can be locked to a bicycle parking device using the owners own locking device.

4.1.3 E-Bike Management Recommendations

Ensuring the safety in shared zones across Darling Harbour where e-bikes interact with pedestrians and other road users is crucial. Therefore, a precinct wide approach needs to be undertaken related to e-bike usage and information sharing, **Table 4.2** outlines key recommendations for future delivery.

Recommendation: Precinct wide e-bike approach

Recommendation	Explanation
Data Collection and Management	Collection of e-bike usage counts would enable PMNSW to understand the volumes, speeds and trends throughout the precinct. This survey could help understand the travel patterns of e-bike riders, especially food delivery people, and identify crucial nodes of conflict. Suggested locations include: • The Goods Line • Pyrmont Bridge • Tumbalong Boulevard • Tumbalong Park • Liverpool Street entrance to Darling Harbour • Cockle Bay promenade • Harbourside Shopping Centre promenade Additionally, PMNSW and City of Sydney can have an agreement with operators to share bi-annual crash data to identify frequent crash locations. Data related to usage and issues of shared e-bikes should also be collected.
Policy and Guidelines Framework	Compliance related to e-bike guidelines can be implemented through following measures for all user groups including commuters, food delivery drivers and shared e-bike recreational riders: • Incentives and financial penalties could be used to motivate riders to use designated path and parking areas. • Monetary incentives by service providers and warning signs could help shift rider behaviour and keep their speed in check. • PMNSW along with City of Sydney could pursue policy that requires e-bike providers operating within their jurisdiction to enhance route guidance techniques to ensure safety and speed compliance.
User Safety Training and Education	PMNSW staff and rangers need to be educated with the necessary knowledge on e-bike guidelines. The topics can include: • E-bike riding and safety • Expected behaviours by e-bike riders including delivery riders • Incentive schemes, penalties and enforcement responsibilities • Procedures to deal with conflicts and accidents. • Required incident recording procedures.

Recommendation: Precinct wide e-bike approach	
Traffic Management and Technology	Strengthening traffic management by leveraging technology: • Mandatory speed limit systems for e-bike users, including penalties for speeding • Limit speeds in high activity areas and shared zones where possible through exploring the use of GPS and IOT speed limiting technology. Working in partnership with operators, virtual geographic boundaries could be established. Speed-limiting georeferencing scheme can be planned and set up based on crash database or other parameters • In partnership with industry, harness gps tools to guide riders to appropriate parking and designated travel routes through the precinct.
Signage and Wayfinding	Further consideration will be given to more detailed wayfinding and signage needs analysis for e-bike management throughout the precinct. Targeted and effective signage and wayfinding markers have the potential to educate and remind riders of designated parking and docking spaces, designated high-traffic pathways, areas of high pedestrian traffic, and to manage conflict points in a non-invasive manner.
Lithium-ion battery safety	Continue to work with & Rescue NSW to manage the ongoing risks of fire due to Lithium-ion batteries. As policy is updated to give clear safety and usage direction.
Collaborate with stakeholders to align e-bike policy and guidance in specific locations.	Explore partnering with City of Sydney to establish a common e-bike strategy specific to sites and places covered by both jurisdictions, and giving clarity to users of designated routes, safety expectations.

Table 4.2: E-bike Management Recommendations

4.1.4 Bicycle Movement Recommendations

Opportunity 1: Improve North-South Cycle Connections

Darling Harbour serves an important role in supporting key north-south movement functions between Central Station to the south, and Pyrmont and the Sydney city centre to the north. As indicated in the existing conditions review, this movement is currently occurring primarily through Tumbalong Boulevard and along the promenades at Cockle Bay Wharf and at Harbourside. This can create points of conflict and issues of safety between bicycles and pedestrians.

The following actions as outlined in **Table 4.3** seek to better facilitate this north-south movement by improving the quality of alternative routes around the precinct. This will:

- Connect into proposed City of Sydney streetscape and cycling improvements in adjacent areas including projects in Haymarket/Chinatown.
- Divert higher volumes of cyclists and reduce conflicts with the high intensity of place activity throughout Darling Harbour.

Opportunity	Action
Opportunity 1 – Improve north-south cycle connections	1A: Deliver Central to Tumbalong Park route
	1B: Deliver new cycle connections along Darling Drive
	1C: Upgrade cycle connections along Hay Street

Table 4.3: Opportunity 1 and its Actions

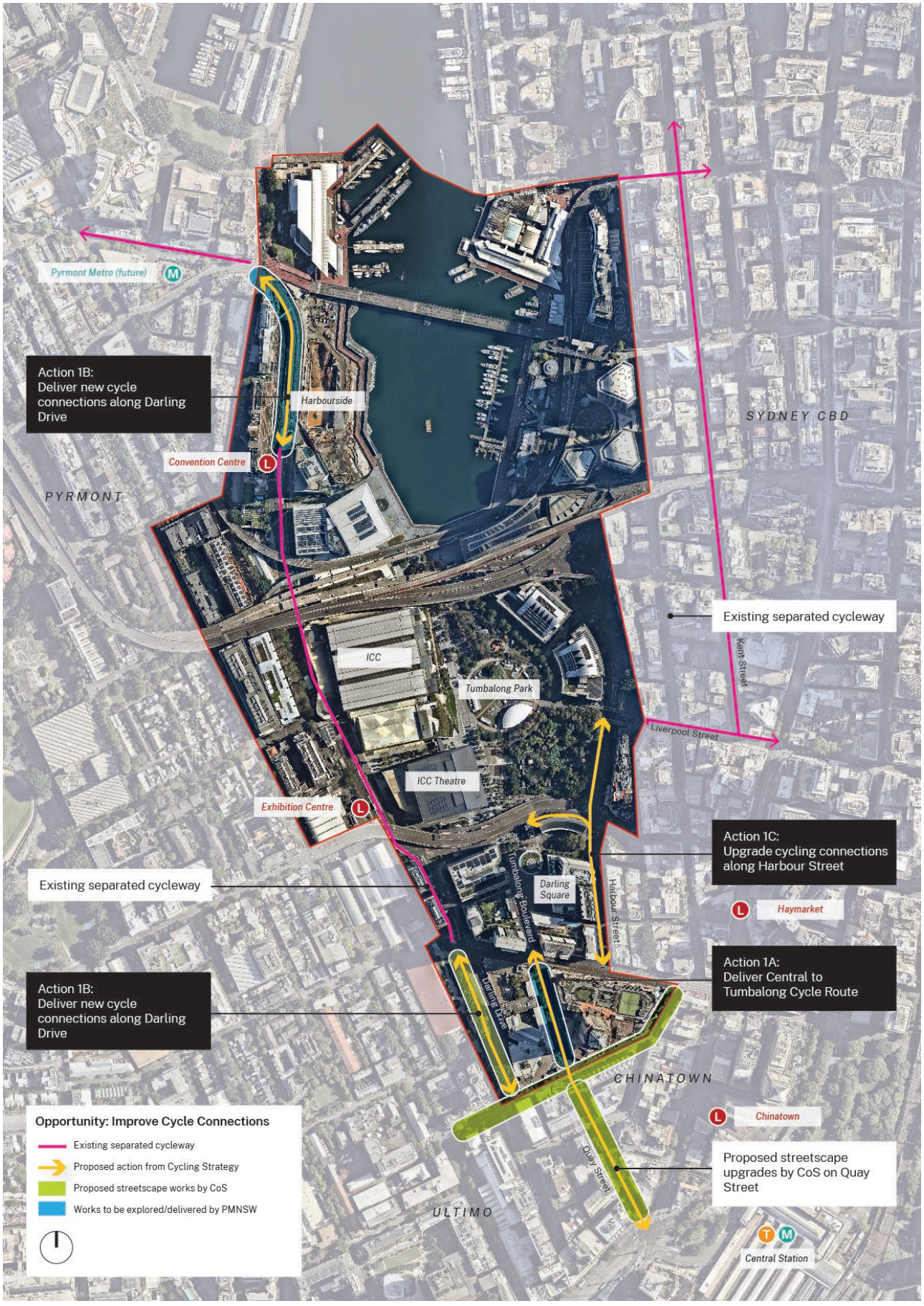


Figure 4.1: Opportunity 1: Improve North- South Connections

(Source: Placemaking NSW)

Action 1A –Enhance new Central to Tumbalong Boulevard Cycle Route

City of Sydney are proposing **traffic calming, shared path, shared zone and cycleway** measures on Quay Street between George Street to Ultimo Road (**Figure 4.2**).The Goods Line already provides a high-quality route separated from traffic that is sufficiently wide to avoid conflicts between people walking and cycling and is a destination itself.

This will be an additional route to connect the Darling Harbour precinct to the surrounding cycling network north and south.

Recommendation: Explore opportunities to improve cycle infrastructure on Quay Street between Ultimo Road and Darling Harbour

This could be achieved by extending the CoS streetscape approach north-wards between Ultimo Road and Hay Street. Any future intervention should consider:

- Interaction and safe pedestrian crossing of the light rail corridor
- Ongoing management servicing requirements for Market City off Quay Street
- Evolving uses of UTS Building 5
- Connectivity into the Darling Drive shared path

Figure 4.2: Proposed Street upgrades on Quay Street between George Street and Ultimo Road

(Source: City of Sydney)

Action 1B –New cycle connections along Darling Drive

The central section of Darling Drive benefits from a shared path leading from Hay Street to the Convention Centre light rail stop on the western side of the road, providing safe movement for riders travelling to and from Pyrmont along this north-south route.

Deteriorated conditions further along however, act as a major deterrent and last-mile barrier to riders making use of this route. Conditions currently include unseparated and narrow painted cycle lanes between the Convention Centre light rail with inadequate separation or protection from vehicular traffic (**Figure 4.3**) along this same north-south route.

The result is that cyclists instead make use of the Sydney Harbour foreshore promenade adjacent to Harbourside, creating movement conflicts with people mingling and walking slowly on this promenade.

Recommendation: a new cycle connection along Darling Drive

- Deliver new separated cycleways (1.5-2m wide) on Darling Drive from Union Street to the Convention Centre Light Rail stop. This should connect into existing separated cycleways on western side of Darling Drive immediately next to the light rail stop.
- Upgrade the existing cycleway around the Darling Drive roundabout to a protected cycleway. through the roundabout.

Figure 4.3: Existing Conditions, Darling Drive (Source: Google maps)

Action 1C – Upgrade cycling connections along Harbour Street

Although Harbour Street does not fall within Placemaking NSW's responsibility, it nonetheless functions as a key north-south transport link from the southern end of Darling Harbour northwards towards the Sydney city centre. As such, the provision of safe and dedicated cycling facilities along this street should be delivered to:

- Allow cyclists to bypass high intensity, heavily used public domain spaces within Darling Harbour
- Increase its utility and attractiveness to commuter cyclists coming from Central or residents in Darling Square/Chinatown

Recommendation: upgrade cycling connections along Harbour Street

Seek opportunities to collaborate with City of Sydney and TfNSW to:

- Install a bi-directional separated cycleway on the western kerbside lane on Harbour Street between Hay Street and Liverpool Street.
- Connect the new Harbour Street cycleway into the surrounding network including the existing separated cycleways on Liverpool and Kent Streets; and the proposed pedestrian and cycling works along Hay Street to George Street.

Interim Works

Understanding the actions to deliver improved cycle connections will take some time to deliver, in the interim, improvements to the existing north-south cycling route along Tumbalong Boulevard should be prioritised to better manage conflicts and support safety. See *Opportunity 2: Reduce Speed and Increase Safety*.

Opportunity 2 – Reduce Speed and Increase Safety

This opportunity focuses on the locations of high place value and intensity throughout Darling Harbour that overlap with significant movement activity by bicycle. This includes:

- Tumbalong Boulevard
- The Cockle Bay Wharf promenade
- The Harbourside promenade
- Tumbalong Park

Bicycle movements are commuter cycling as well as delivery riders, who can conflict with people enjoying a slower pace of activity. Although separation of modes between faster cycling movements and other activities could be an optimised solution, Opportunity 2 recognises that in these locations, mode separation is not appropriate, so measures such as **paving treatment** and **furniture layout** can indicate to people cycling that they are entering a zone with high walking activity.

Recommendation: Encourage reduced speeds and increase safety where locations of high place value and pedestrian activity overlap with significant cycling movements.

Recommended treatments include:

- Textured pavement treatments that still allow for comfortable access by people walking, on wheelchairs, cycling and emergency vehicles,
- Greater coverage of seating and planting,
- Distinct walking and cycling zones demarcated by different paving (especially through Tumbalong Park through to Liverpool Street).

The aim of these recommendations is not to discourage cycling but rather embed visual and physical demarcation of spaces for different uses and modes of travel, better manage movement conflicts and slow down travel speed in high-use areas.

These would complement ongoing speed management through police and PMNSW rangers within Darling Harbour.

Tumbalong Boulevard is characterised by a linear path with consistent paving, and while there is the presence of some trees and street furniture, this is also done in a relatively segregated manner to provide sufficient space for emergency and service vehicle access along this route. Understanding these constraints and requirements, the following figures provide examples of paving treatment variations and furniture layouts that could be adopted to lower cycling speeds and indicate that walking activity is of a higher order than cycling activity.

Highlighting areas of high activity, **Figure 4.8** outlines recommended treatment approaches that draw from the examples given in **Figure 4.6** to **4.9**. This recommendation is focussed on food outlets that will both attract clusters of people and fast-moving delivery riders.

Figure 4.4: Pavement and furniture variation example

David H Koch Plaza, New York by OLIN clearly identifies seating zones and movement zones using paving and groves of trees.

Figure 4.5: Pavement variation example

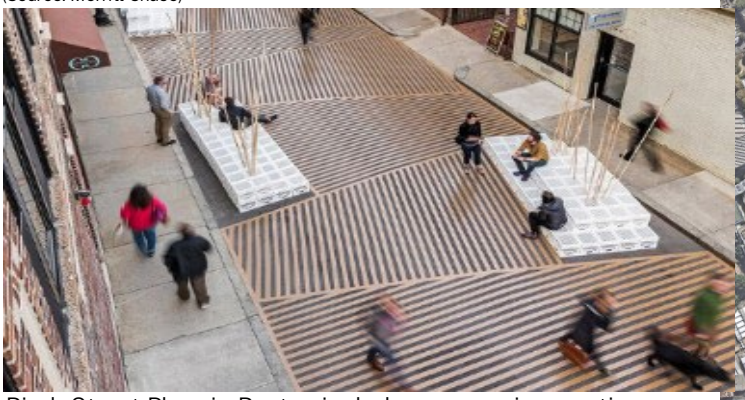
Tubinger Street, Stuttgart has high contrast paving differentiation and speed limits for a central movement corridor

Figure 4.6: Pavement texture variation example

Figure 4.7: Pavement texture variation example

Source: https://www.archdaily.com/932373/how-to-choose-pavements-for-high-traffic-public-spaces

Monument Circle Park in Indianapolis has a series of green circles to provide diverse spaces for play, food, drink and separate space for movement
(Source: Merritt Chase)



Birch Street Plaza in Boston includes new paving, seating, planting and trees to provide separation
(Source: Merritt Chase)

Figure 4.8: Proposed pavement and furniture treatments for Opportunity 2

Opportunity 3 – Enhance the King Street Bridge and Connections

This opportunity recognises the significant movement functions that the King Street Bridge (i.e., the bridge clipped to the Western Distributor connecting Pyrmont Bridge to the separated cycleway on King Street) provides for people cycling. This facility provides the east-west cycling connection between Pyrmont and the city centre for which there is no reliable alternative. As indicated in **Table 3.3** of the existing conditions review, this bridge is a conflict point between people walking and cycling, as both share a relatively narrow 2.0 m wide (approx.) wide space. This conflict is exacerbated during peak commuting periods.

Recommendation: Widen King Street Bridge to use as a shared path

The option for extending the bridge to 4.0m and using it as a shared path can result in an optimal outcome, if walking and cycling are provided separate space (as shown in **Figure 4.11**)

- The separation would provide safe space for pedestrians and cyclists and avoid potential conflicts.
- It will align with the existing functionality of Pyrmont Bridge as a shared path, and the proposed recommendation of a delineated cycleway. Therefore, transition for both user groups travelling from Pyrmont Bridge to King St Bridge will be smoother and less confusing.
- For a safe movement from the Pyrmont Bridge to King St Bridge effective signage and floor treatments for a “transition zone” needs to be implemented between both the bridges. For further reference refer to **Figure 4.14**

Based on 2018-2019 City of Sydney walking and cycling counts data:

- Approximately 2,000 – 2,400 people cycle between the Pyrmont side of Pyrmont Bridge and the King Street cycleway end of the King Street Bridge each day.
- An approximate five per cent dissipation occurs in the cycling counts from the two count sites (i.e., around five per cent of people cycling on Pyrmont Bridge do not continue to Kent Street).
- An average of 17,451 people walk on each weekday in spring near the Pyrmont end of Pyrmont Bridge
- As there was no equivalent walking count at King Street, an application of an assumed dissipation rate of five per cent would result in around 16,500 people walking through King Street Bridge daily on weekdays in spring. This results in people cycling making up around 15 per cent of the total volume of people walking through King Street Bridge each day.

As outlined in **Table 4.5,** the strategy explored two options and recommended a final option to alter the King Street Bridge that would improve east-west movement connections for people cycling between the Sydney city centre and Pyrmont via Darling Harbour. The explored options and recommended option are summarised below. They are explored in detail in the following pages.

Advantages	Disadvantages
To improve conditions for active transport, this bridge should be widened to around 4.0 m in width, to allow for people walking and cycling to comfortably pass each other with 2.0 m width in each direction.	The latest guidance from TfNSW's Cycleway Design Toolbox (version 0.1, December 2020) suggests that shared paths are not a suitable infrastructure typology, even if the bridge was widened. To quote the Cycleway Design Toolbox: "Shared paths may be considered where demand for both pedestrian and bicycle facilities exist but predicted walking and/or cycling volumes are sufficiently low that separate facilities are not justified. Shared paths provide lower levels of service to both people walking and people cycling than a separated facility due to the potential for conflicts with pedestrians, which must be carefully managed." The King Street bridge is currently used by large volumes of people cycling and walking, therefore, having regard to the Cycleway Design Toolbox, a shared facility would lead to poor outcomes for both user groups due to the need to share a common movement corridor, as opposed to having dedicated facilities for both user groups. To mitigate this issue, recommendation of separating both the modes is proposed and outlined below.

Table 4.4: Advantages and Disadvantages of Recommendation

Discounted Explorations for Opportunity 3 – Enhance the King Street Bridge and Connections

The following options were also considered for the King Street Bridge and ultimately discounted because due to likely safety and behavioural change issues.

Opportunity	Explorations (discounted)	Recommendation
Opportunity 3 – Enhance the King Street Bridge and Connections	A - Widen the King St Bridge to 4.0m as a Cycleway	Widen the King St bridge to 4.0m as a Shared Path *It is expected that extensive consultation with the City of Sydney and Transport for NSW would be required to enable them to understand the wider implications on their walking and cycling network as part of this recommendation.*
	B - Make existing King St Bridge a Cycling-Only Path	

Table 4.5: Opportunity 3 Explorations and Recommendations

Discounted Exploration A – Widen the King St Bridge to 4.0m as a Cycleway

To improve conditions for cycling, this bridge could be widened to around 4.0 m in width, to allow for people cycling to comfortably pass each other with 2.0 m width in each direction.

The advantages and disadvantages of this idea are outlined in **Table 4.6.**

Figure 4.9: Separate lanes for walking and cycling on a shared path bridge

Source: Victoria Park to Perth CBD, Main Roads WA

Widen the Bridge to 4.0m and use as Cycleway

Advantages	Disadvantages
For people cycling - King St is the only route available and making it a two-way cycleway would enable seamless east-west cycling connections across Darling Harbour and provide safe connections for people cycling to the city centre's separated cycleway network.	• These recommendations involve diverting pedestrians away from a highly used route with which they are familiar, where up to 85 per cent of users are estimated to be pedestrians. This is likely to result in displeasure and opposition from these users, especially through any public consultation process. • This has a potential for high-speed movement on and off the bridge, especially with commuter cyclists choosing to access Sydney CBD through Darling Harbour. • The transition from Pyrmont Bridge (shared path) to King St (cycleway) would create confusion amongst different users
For people walking – They have 3 other route options, none of which are any discernibly any longer than current walking route along King St bridge. Those routes are outlined below and shown in **Figure 4.8: Proposed pavement and furniture treatments for Opportunity 2.** • Pyrmont Bridge to King Street via the Market Street bridge, Market Street and Sussex Street (suitable for people walking and on wheelchairs) • Pyrmont Bridge to King Street via the Market Street bridge, Market Street and Kent Street (suitable for people walking and on wheelchairs) • Pyrmont Bridge to King Street via stairs, escalator or lift down to Cockle Bay Wharf promenade, along footpath next to Wheat Road, up the stairs or lift to the bridge between King Street and King Street Wharf (this route is the most convoluted, so it is unlikely to attract many people walking or on wheelchairs, but is nonetheless an alternative)	

Table 4.6: Advantages and Disadvantages of Exploration 1

Discounted Exploration B – Make existing King St Bridge a Cycling-Only Path

This idea involves widening the bridge but retaining its function as a shared path for cycling and walking. The advantages and disadvantages of this explored idea are outlined **Table 4.7**.

Make existing King Street Bridge a Cycling-Only Path

Advantages	Disadvantages
• Making the existing bridge a cycling-only path would provide a seamless east to west connection for cyclists • It will remove potential conflicts between pedestrians and cyclists	• This has a potential for high-speed movement on and off the bridge, especially with commuter cyclists choosing to access Sydney CBD through Darling Harbour • These recommendations involve diverting pedestrians away from a highly used route with which they are familiar, where up to 85 per cent of users are estimated to be pedestrians. This is likely to result in displeasure and opposition from these users, especially through any public consultation process.

Table 4.7: Advantages and Disadvantages of Exploration

Explorations for New Infrastructure for East West Connection

Whilst the above-mentioned explorations and recommendation seeks the most optimal outcome for pedestrians, cyclists and the wider community; there are financial constraints to the delivery of improvements to this infrastructure. As there are alternative routes and desire lines available for pedestrians and cyclists to reach Sydney CBD and the wider network, this strategy outlines a high-level option for new infrastructure which could be explored under the objective of improving the east-west active transport connections.

With potential future redevelopment of adjacent sites, there may be opportunities for delivery of a more direct east-west connection between Pyrmont Bridge and Sydney CBD along a different alignment. This should be considered as part of strategic planning explorations in coordination with TfNSW, City of Sydney and adjacent landholders as these opportunities arise.

Opportunity 4 – Improve the Clarity of Functions to Pyrmont Bridge

Pyrmont Bridge is a significant layered movement corridor which supports cycling and walking but is also a place for people to dwell and enjoy views of both Darling and Sydney Harbour. Due to lack of alternative east-west routes for pedestrians and cyclists between Pyrmont and the Sydney city centre, and the bridge's significance as a destination, it is imperative to retain the functionality as a shared space.

Recommendation: Provide delineation of modes

- Delineate the bridge's centre as a clear route for cycling and to reduce conflicts with people engaging in other activities. The route could be delineated with coloured line marking and operate under the current advised speed limit.
- Where possible, provide more seating and planting down both sides of the bridge to indicate these are people-priority spaces.
- Explore treating bridge approaches with visually obvious elements and treatments to remind all users they are entering a shared zone and to watch for other modes of transport.

The implementation of these recommendations do not discourage walking or lingering on Pyrmont Bridge.

By delineating transport modes, the bridge can be used more safely by all users, while balancing the place character and movement roles of the bridge. This recommendation focuses on how **delineation** between people cycling and people walking or lingering can be achieved as much as possible within the bridge's confines. The recommended approach is to provide a clear cycling path at centre of the bridge for safe east-west access. A concept diagram of the delineated path is shown in **Figure 4.14** and its indicative cross-section is shown in **Figure 4.15.**

Table 4.8 outlines two different explorations and one recommendation for the functionality of the Pyrmont Bridge and are explained in detail below:

Opportunity	Explorations (discounted ideas)	Recommendation
Opportunity 4 – Improve the Clarity of Functions to Pyrmont Bridge	A: Retain its use as mixed traffic	Provide delineation of modes
	B: Provide separation of modes	

Table 4.8: Opportunity 4 – Explorations and Recommendations

Figure 4.12: Delineation on Bicentennial Bikeway, Brisbane

(Source: Australian Broadcasting Corporation)

Figure 4.13: Delineation on bridge example

(Extreme separation of modes on the High Loop in Shanghai by 100Architects)

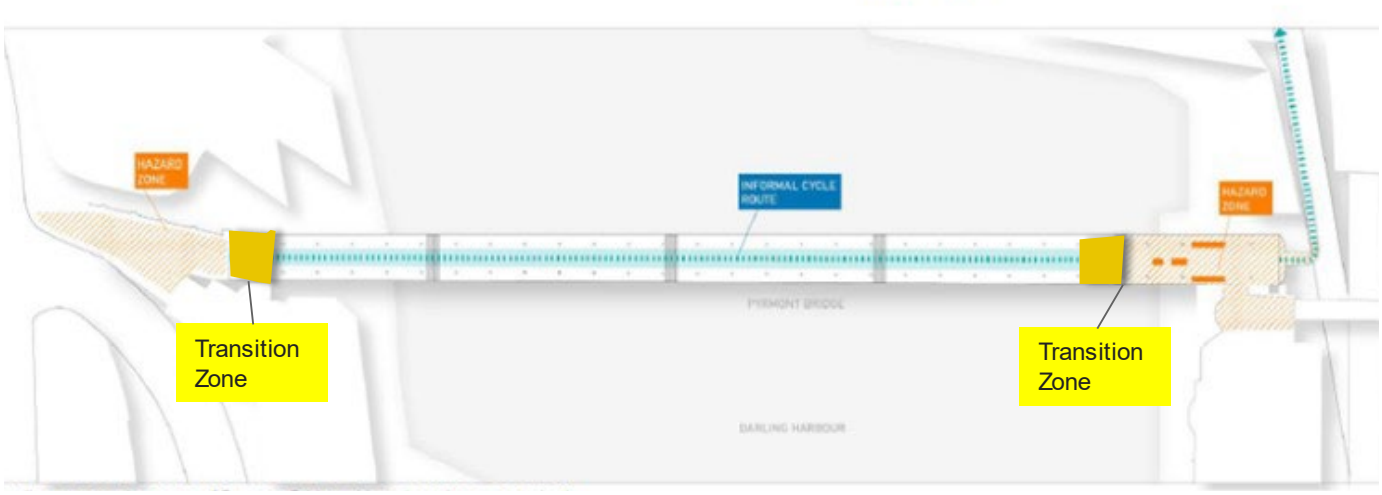


Figure 4.10: Recommended approach for Pyrmont Bridge

(Source: Tyrell Studio)

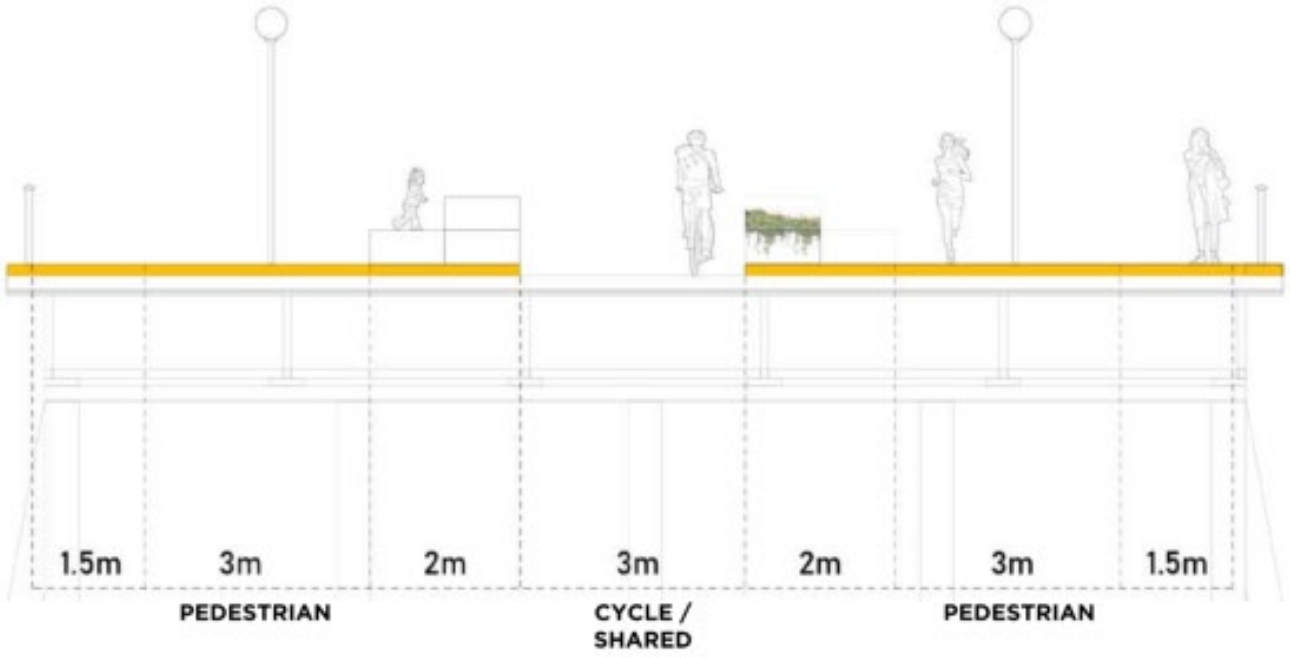


Figure 4.11: Indicative cross section of Pyrmont Bridge

(Source: Tyrell Studio)

Table 4.9 outlines the key benefits and issues related to this opportunity.

Action	Benefits	Issues
Provide Delineation of modes	• It will result in significant reduction of potential conflicts • Since pedestrians and cyclists have separate infrastructure, it avoids confusion on who has right of way	• Most of the separation is not possible due to Pyrmont Bridge being a heritage listed structure • Transition zones between shared areas at the ends of the bridge and the delineated centre need to be managed carefully to reduce conflict. • It could incur a very high implementation cost

Table 4.9: Recommendation 4 and its benefits and issues

Discounted Explorations for Opportunity 4 – Improve the Clarity of Functions to Pyrmont Bridge

The following options were also considered for the Pyrmont Bridge and ultimately discounted because of safety, practicality, delivery and cost considerations.

A: Retain its use as a Mixed Traffic

This idea explored the opportunity to retain Pyrmont Bridge's use as a mixed traffic lane, which also helps continue the movement and destination travel patterns on the bridge (as shown in **Figure 4.17**). It was discounted post analysis because it does not mitigate the potential conflicts between cyclists and pedestrians.

Explored Idea	Benefits	Issues
Retain the use of Pyrmont Bridge as Mixed Traffic	• There is low implementation cost • It is a quick implementation process	• It has the potential for higher conflicts between both user groups • It is difficult to manage, especially when the volumes are higher during peak hours

Table 4.10: Discounted Idea and its benefits and issues

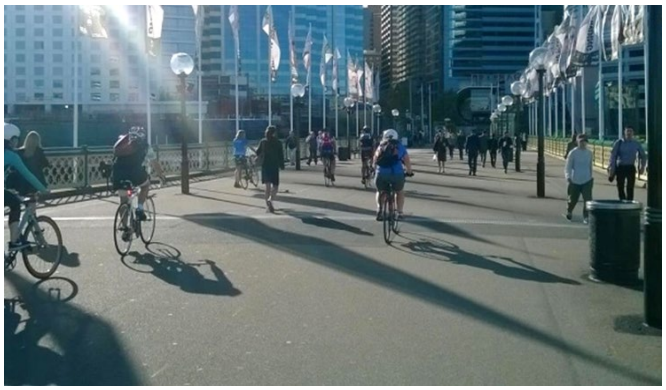


Figure 4.16: Existing Pyrmont Bridge traffic

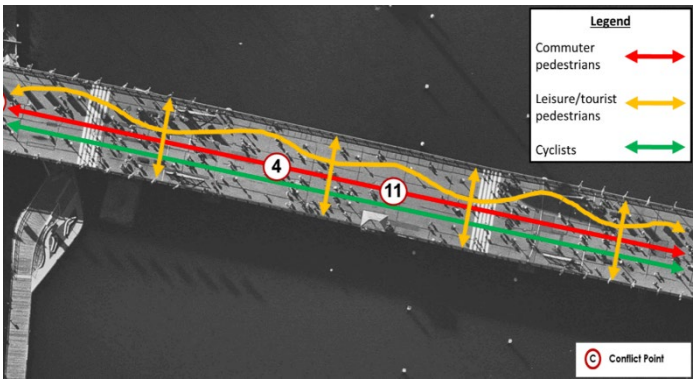


Figure 4.17: Mixed traffic movement patterns on Pyrmont Bridge

B: Provide Separation of modes

This idea explored the opportunity to propose a separate cycleway along Pyrmont Bridge (as shown in **Figure 4.18** and **Figure 4.19**). Although this idea completely removes all conflicts between pedestrians and cyclists, it requires construction of a new structure on a heritage listed Pyrmont Bridge that would have to work with the existing swing span nature of Pyrmont Bridge and would affect its character and create further complications.

Table 4.11: Discounted Idea and its benefits and issues

Action	Benefits	Issues
Provide Separation of modes	• It will result in significant reduction of potential conflicts • Separate infrastructure for cyclists and pedestrians avoids confusion regarding rights of way	• Most of the separation is not possible due to Pyrmont Bridge being a heritage listed structure • It will incur in a very high implementation cost

Figure 4.18: Sydney Harbour Bridge Cycleway

(Source: Transport for NSW)

Figure 4.12: Ravenel Bridge, South Carolina, US

(https://discoversouthcarolina.com/articles/bike-across-the-ravenel-bridge)

5

Conclusion and next steps

Placemaking NSW is committed to the delivery of a welcoming and safe cycle-friendly precinct that also supports the needs of pedestrians, communities and the wider Sydney LGA. Supporting cycling is an important element to embedding equitable access to the precinct's free spaces and ongoing calendar of free events.

The Strategy functions as a guiding document for all future development, upgrades and activities that occur within the precinct. All public and private sector parties undertaking projects in Darling Harbour will be encouraged to be consistent with the principles, opportunities and recommendations of the Strategy. This includes through stages of design, delivery, maintenance and renewal. Key to the delivery of all the recommendations will be collaboration with local stakeholders including City of Sydney and TfNSW.

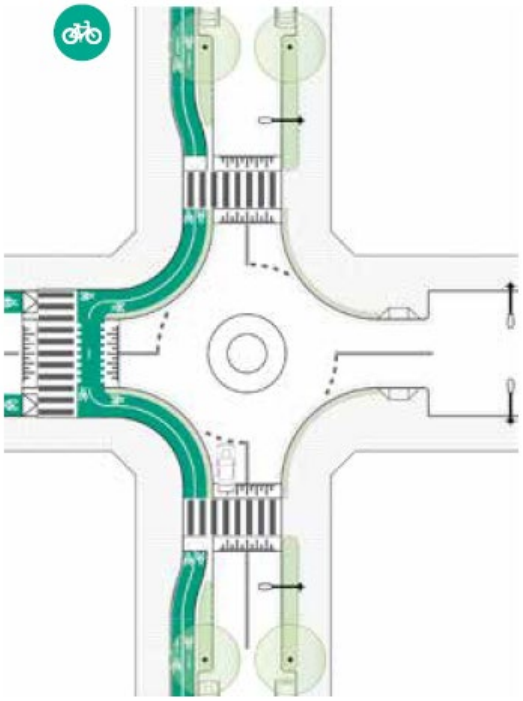
Figure 5.1 Darling Harbour Playground

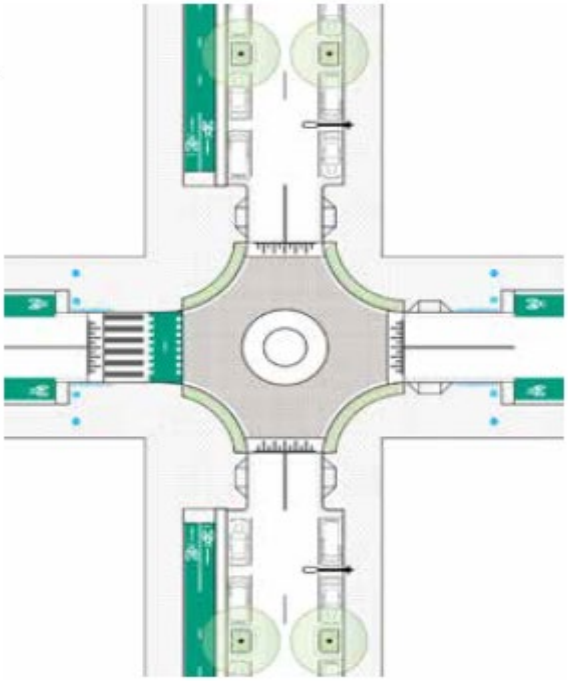
Figure 5.2 Cyclist on Tumbalong Boulevard/Moriarty Walk

6

Photographic glossary of cycling facilities

Facility type	Typology	Example Image
On-road Bicycle Facilities	**Separated bidirectional or unidirectional cycleway** Separated cycleways are located within the road reserve but are exclusive to bicycles. They are completely separated (often by a physical barrier) from parked cars, vehicle traffic and pedestrians. These facilities provide bi-directional travel along one side of the road or unidirectional travel on both sides of the road and are highly desirable and safer than other on-road options. These facilities often require substantial engineering works to implement which needs to be balanced relative to competing demands for space within the road reserve, this type of facility is the preferred infrastructure type for major routes. This facility type attracts interested and concerned, enthused and confident riders. Strong and fearless riders may use the road instead of the cycleway based on crowding and ease of use.	 Kent Street, Sydney
On-road Bicycle Facilities	**Shared zones** Shared zones are special low speed, mixed-traffic environments which are legally controlled by signs and line markings that restrict the speed limit to 10km/h. Parking is restricted to marked spaces to afford priority to people walking. Typically, the street environment is designed with special pavements, speed controls and landscaping, with few or no distinguishable footpaths and preferably no kerbs. Approval for all shared zones must be sought from Transport for NSW and must achieve the standards set in the Safer Speeds SS/12/01 policy. Any formally designated shared zone attracts interested and concerned, enthused and confident and strong and fearless riders.	 Bunda Street, Canberra
On-road Bicycle Facilities	**Intersection transition** This treatment provides an appropriate transition for cycle lanes that span across an intersection or driveway. The transition can be designed to require cars to give way to people cycling (Surry Hills example), and is flush with the footpath and cycleway to provide a continuous footpath and cycleway.	 Surry Hills

Facility type	Typology	Example Image
Off-road Bicycle Facilities	**Shared paths (Footpath)** Shared paths can be located adjacent to a road through the widening of a footpath or within the existing footprint of a wide footpath. They are used by both cyclists and pedestrians with line marking and/or signage designating their legal status as a shared path and helping to encourage safe use by both user groups. Pedestrians have the right of way on shared paths. There is the potential for conflict between user types when volumes of pedestrians and cyclists are high or when the path width is narrow. This type of facility can generally be implemented wherever there is sufficient width to accommodate a minimum 3.0m wide path. Wider paths may be required depending on the volume of cyclists and pedestrians. This facility type attracts interested but concerned, enthused and confident and, to a lesser extent, strong and fearless riders, dependent on alternative on-road routes.	 Shared Path in Redfern
Intersection facilities	**Protected roundabout for bidirectional cycleway** This protected roundabout provides a high degree of safety for people cycling to cycle through a roundabout alongside other forms of traffic. Space is also provided for people walking to cross from the footpath through the use of zebra crossings. This type of intersection is employed at Moray Street, South Melbourne, VIC, although as two one-way cycleways through a roundabout.	 Source: Cycleway Design Toolbox, Transport for NSW

Facility type	Typology	Example Image
Intersection facilities	**Protected roundabout for bidirectional cycleway, with shared path on the approaches** Similar to the preceding example but cyclists cycle through a shared zone on the approach to a roundabout as opposed to a dedicated cycleway	 Source: Cycleway Design Toolbox, Transport for NSW

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