HARBOURSIDE PEDESTRIAN STUDY

AMENDED CONCEPT

URBIS

OCTOBER 2020
PREPARED FOR MIRVAC

CONTENTS

EXECUTIVE SUMMARY

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Urbis was engaged by Mirvac to advise on optimisation of pedestrian connections for the Stage 1 DA. This report provides a response to submissions (as relevant) and assessment of the proposed amended Concept Proposal in relation to the State Significant Development (SSD) Development Application (DA) for the redevelopment of the Harbourside Shopping Centre (Harbourside) (SSD 7874).

As Darling Harbour has undergone significant development and repositioning, new connections in and out of Darling Harbour from all key directions should align with the vision for seamless pedestrian connections, which includes Harbourside. Urban renewal precincts surround Harbourside including Darling Spare (complete) the Bays Market Precinct (planning) and the Central to Eveleigh Corridor (planning). Harbourside is centrally located to all, and as such can play an important linking role between the precincts.

The amended concept features two new public spaces, Guardian Square and the High-Line, for the benefit of workers, residents and tourists. Both spaces are well connected to the ground from Level 2.

Valuable connection elements included in previous concepts have been retained, namely the Bunn Street bridge, the Ribbon Stairs and a widened boulevard at the waterfront level

The new Harbourside development will provide residents and visitors with a quality retail and leisure experience. A new connection can provide branding and identity opportunities for Harbourside and help create a sense of arrival.

As part of the proposed development, Mirvac is proposing to remove the bridge from the carpark at the rear of the Novotel, though will retain the bridge at the northern end adjacent to the monorail station. To supplement the removal of the carpark bridge, Mirvac proposes to build a new improved pedestrian connection from Bunn Street. The proposed bridge connection from Bunn Street to Harbourside will provide the following benefits to those living, working or staying in the Bunn Street walking catchment:

- Access to quality publicly accessible landscaped space within Harbourside, and the public domain at the waterfront
- Access to retail amenity
- Improved access for residents to key employment hubs to the south including the International Convention Centre (ICC), Darling Quarter, Darling Square, Haymarket and University of Technology Sydney (UTS)
- Provides a better entry into Darling Harbour for Ibis and Novotel hotel guests.

A new through-site link connects the waterfront to the Bunn Street Bridge on Level 3 via Levels 1 and 2. This adds a transparent connection from the foreshore to Pyrmont. A substantially stronger public connection for those coming from the waterfront and Pyrmont will be provided by the Bunn Street and through-site link connection.

EXECUTIVE SUMMARY CONT.

The Bunn Street connection has direct benefits for residents and workers in the immediate catchment as well as addressing key design principles around connectivity and permeability, specifically:

- Provides direct and straight link down to the waterfront via the through-site link
- A new view corridor from street level
- Creation of a new east-west connection to help knit neighbourhoods and the precinct together
- Integration and linkages with the site with surrounding modes of public transport
- Creates new an improved pedestrian connections with the surrounding pedestrian network

Bridge pedestrian modelling shows the future peak hour pedestrian volume is 1,087, 408 of which are generated by hotel visitors. The bridge has capacity for 20,000 movements per hour in both directions and thus adequate for the projected activity.

The proposed replacement connection is a better outcome than the current bridge from the carpark below the Novotel because it:

- Provides at-grade access from the street
- Provides a direct sight line between the street and the waterfront
- Links publicly accessible spaces and not carparks.

The Bunn Street walking catchment is projected to have 10,400 residents and workers in 2021, forecast to increase to 13,600 in 2031. The catchment is an urban environment characterised by high density residential development. A lack of open space means limited opportunities within their neighbourhood to enjoy quality urban space. The Darling Harbour foreshore can provide an extension to this neighbourhood, provided access is simple.

Harbourside's walk-in trade area is estimated to have 81,300 people in 2021, which is forecast to increase to 94,600 in 2031. The main segments are affluent 30-35 year old singles and couples, most likely with high disposable incomes. These characteristics point towards strong demand for a quality retail, café, bar and restaurant offer, aspirations that Harbourside can most likely meet.

The visitor market is also an important segment for Harbourside. Ease of access from nearby hotels and business visitors to the International Convention Centre (ICC) should be considered in the design.

The performance of upper levels at Harbourside is contingent on an attractive offer and a critical mass of retail on the upper levels. The strength of street connections, bridge connections and vertical integration can have implications for the performance of upper level retail at Harbourside. An entry and connection point direct from Bunn Street provides a simple access for pedestrian in this catchment and carpark users.

INTRODUCTION

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This letter/report provides a response to submissions (as relevant) and assessment of the proposed amended Concept Proposal in relation to the State Significant Development (SSD) Development Application (DA) for the redevelopment of the Harbourside Shopping Centre (SSD 7874).

The SSD DA was publicly exhibited for a second time from 2 April to 29 April 2020. During this time, six (6) submissions were received from government agencies and City of Sydney Council and 57 submissions were received from the general public and organisations.

This report should be read in conjunction with previous assessments prepared by Urbis and dated January 2020, August 2018 and April 2016 to support the Harbourside Concept Proposal.

As part of the proposed demolition and redevelopment of the Harbourside Shopping Centre Urbis has prepared this pedestrian study to define and assess the existing and proposed pedestrian routes.

As part of the planning, connections between Harbourside and the broader area are being considered particularly in light of existing connections being removed. Harbourside can act as a new link in the future between Darling Harbour and the Bays Precinct.

One potential pedestrian route investigated in this report is a bridge connection from Bunn Street to Harbourside. This report provides an assessment of how a potential Bunn Street link would operate and to consider its overall benefit to the community and other users.

Other pedestrian pathways considered in this report are:

- Flow and movement along the foreshore, from the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP) and beyond
- Flow and access from the northern part of Pyrmont to Darling Harbour.

RESPONSE TO SUBMISSIONS

Key Issue DPIE Submissions	Response and Document Reference
Northern Podium Provide the opportunity for a significant area of publicly accessible space	The concept includes a new public space area on the podium roof, Guardian Square. Refer section 1 of report, page 12,13,15,18,22-24
Pyrmont Peninsula Place Strategy (PPPS) Address how the proposal is consistent with the PPPS	Alignment with key directions and vision of the Strategy are outlined. Refer section 1 of the report, pages 14-15
Open Space/Pubic Domain Clarify the width of the proposed promenade	The report refers to the process to determine the width. Section 1, page 13
Transport and Access Confirm the pedestrian capacity of the Bunn Street connection	Pedestrian modelling has been completed to determine volumes. Refer to section 4 of the report, pages 40-42

Key Issue City of Sydney Submissions	Response and Document Reference
Pedestrian Amenity RTS stresses the need for through-site links	The amended concept has replaced the previous through-site link with a new substantially wider link that provides access from the waterfront to Level 3, and thus from the foreshore to Pyrmont via Bunn Street Bridge. Refer section 1 of report, pages 13,17-21
Public Domain Interface Concerns over public access to the Ribbon Stairs	Access to the Ribbon Stairs from the foreshore via the new site through link to Level 2 and High Line s illustrated in various images and plans. Refer section 1 of report, pages 17, 21-22
Pedestrian Connections Pedestrian modelling and foreshore capacity	Location and connection benefits of the proposed Bunn Street Bridge and bridge pedestrian modelling. Refer to section 4 of the report, pages 40-42 Suitability of the boulevard width for capacity. Refer section 1 of the report, pages 13.

REPORT SECTIONS

This report includes the following sections.

Section 1 provides renders of the proposed development

Section 2 provides an overview of the role of Darling Harbour and mapping of key attractors within Darling Harbour and other foreshore precinct

Section 3 illustrates the main transport modes servicing Darling Harbour and pedestrian routes from each mode

Section 4 outlines the changes to existing pedestrian bridge connections, the proposed new Bunn Street connection and impacts of the changes on pedestrians

Section 5 profiles the catchment who will benefit from a new connection at Bunn Street

Section 6 summarises the existing research on Harbourside and Darling Harbour

1. PROPOSED DEVELOPMENT

PROPOSED HARBOURSIDE DEVELOPMENT

Following the second exhibition of the proposal in April 2020 and given the nature and range of submissions made from agencies and the public, Mirvac has again reviewed the overall approach and elements of the Concept Proposal. This has accordingly led to developing a Further Amended Concept Proposal. This further and final Concept Proposal therefore includes amendments made my Mirvac pursuant to Clause 55 of the Environmental Planning & Assessment Regulation, in the main to address matters raised in the submissions and deliver an overall significantly improved outcome on the site and for the broader Darling Harbour precinct and Pyrmont Peninsula.

In addition to the further amendments made to the Concept Proposal, Mirvac are also now including detailed Stage 1 Early Works, comprising demolition of existing site improvements down to ground slab level (no ground disturbance). Revised SEARs were accordingly issued by the Department on 12 May 2020.

The following further key amendments have been made to the Concept Proposal since its April 2020 public exhibition:

Increased height of the Tower

The height of the tower has been increased to be consistent with the height originally proposed (from RL 153.75 to RL 166.95). The tower height has been increased in order to better align with the place outcomes identified within the Draft Pyrmont Place Strategy for Harbourside. This opportunity for additional height is supported with the provision of additional public benefit through the creation of a new significant public accessible area of open space on the northern podium rooftop.

Reduction in Height of the Northern Podium

A portion of the podium height at its northern extent has been further reduced from RL 25 to part RL 17.6 and part 13.75. The reduction in height provides for an improved relationship to the state heritage listed Pyrmont Bridge, further improve view sharing from 50 Murray Street, along with providing an opportunity to create a new publicly accessible open space area.

Gross Floor Area / Land Use Mix

The amended proposal retains the same overall 87,000sqm of GFA, however there is a minor adjustment in the split between non-residential and residential. The final proposal now includes:

Non-residential uses floor space – 45,000sqm; and

Residential uses floor space – 42,000sqm

In response to market demand and the focus of local and regional strategic planning policies, it is proposed for the podium to now include predominantly commercial land uses along with supporting retail. Indicatively, comprising ~28,000sqm net lettable area of commercial office and ~8,500sqm gross lettable area of retail.

The podium enables large campus sized commercial floor plates that are favoured by large multinational tech, media, finance and professional services companies.

PROPOSED HARBOURSIDE DEVELOPMENT CONT.

Apartment Numbers

No change is proposed to the indicative number of apartments (357), with the minor increase in the tower height resulting in a review of the mix and sizing of apartments. Note, this yield is on the 'Indicative Design' only and will be subject to future design development and a Stage 2 DA. This Stage 1 DA only seeks approval for land uses and the building envelope comprising a total of 87,000sqm GFA.

Car Parking

The overall footprint of the basement has been reduced, but there is proposed to be an additional basement level of parking (increase from 3 levels to 4 levels). There is no change to proposed indicative parking spaces, remaining at 306 spaces. As above, this is based on the 'Indicative Design' only.

Landscaped Open Space and Public Domain

The key concepts and public benefits as originally proposed are retained under the amended Concept Proposal, with the addition of a new significant area of publicly accessible open space created on the rooftop of the northern podium (referred to as "Guardian Square").

Final Description of Development

The Harbourside Shopping Centre Redevelopment application will include a Concept Proposal and detailed Stage 1 Early Works. The final Concept Proposal seeks approval for the following key components and development parameters:

- A network of open space areas and links generally as shown within the Public Domain Concept Proposal, to facilitate re-integration of the site into the wider urban context;
- Building envelopes;
- Land uses across the site, non-residential and residential uses;
- A maximum total Gross Floor Area (GFA) across the Harbourside site of 87,000sqm for mixed use development (45,000sqm non-residential and 42,000sqm residential development);
- Basement car parking;
- Car parking rates to be utilised in subsequent detailed (Stage 2) Development Applications);
- Urban Design and Public Realm Guidelines to guide future development and the public domain; and
- Strategies for utilities and services provision, drainage and flooding, and ecological sustainable development.

The Stage 1 Early Works comprises:

Demolition of the existing site improvements, including the Harbourside Shopping Centre, obsolete monorail infrastructure, and associated tree removal.

BENEFITS OF THE PROPOSED CONCEPT

New public domain and pedestrian link benefits

The key changes in this amendment are the addition of Guardian Square, public space adjacent to the Pyrmont Bridge, and the High-Line traversing the site north to south. The benefits of the changes are:

- **Guardian Square** provides a gateway from Pyrmont linking Pyrmont Bridge and Pyrmont down to the waterfront via the Ribbon Stairs. Guardian Square is well-located to be a meeting place or stopover point for pedestrians using the proposed Metro and Pyrmont Bridge. It will add much needed green space to the area breaking up the build-form and hardscapes. It will be valued by residents and workers for the views and the seamless integration with transport, cafes, shops and services.
- Further vertical linkages to the waterfront are created by the seamless connection between Guardian Square and the High-Line and vertical transport from Level 2, down to Level 1 and then to ground/waterfront.

Retained links radiating to the broader precinct

As per the previous DA, the widened boulevard is retained facilitating easy north-south pedestrian access along the waterfront. In the previous amended concept plan, the boulevard outside Harbourside has been widened which will improve visual wayfinding between the north and south. The increased building setback give a sense of space and will draw pedestrians to the area and help overcome the congestion.

The width of the boulevard was driven by the landowner Place Management NSW who Mirvac has worked with for a number of years

The boulevard width was determined in order to achieve:

- Better integration with the adjacent ICC forecourt / plaza
- Improved permeability along the waterfront
- Providing opportunities for the overlay of events / activation.

A new through-site link facilitates active pedestrian movement between the waterfront and the Bunn Street Bridge to Pyrmont.

The Ribbon Stairs provide access for pedestrians moving between the CBD and the waterfront, or between the waterfront and Pyrmont. This link benefits all users, Pyrmont based residents and workers, and Darling Harbour based residents, workers and visitors using the light rail and bus routes from Pyrmont.

The Bunn Street bridge is retained facilitating easy connection between the waterfront into Pyrmont residential streets and beyond to the Fish Markets.

The Bunn Street link provides an accessible for all users between Murray Street and the waterfront via the bridge and the centre's vertical transport.

Retained public domain

The event steps/Ribbon Stairs deliver dual public domain and connectivity benefits. The stairs can be used by the public as well as providing amenity for workers and residents on a day to day basis, and for programmed events.

Resident amenity and access

There are 2 key access points for tower residents which are largely separate to the public pathways, these being:

- Entry from the basement carpark into a private lift lobby
- Entry from the porte cochere into the residential lift lobby.

ALIGNMENT WITH THE PYRMONT VISION

The development concept aligns with the early directions identified in the NSW Government's ***Directions for the Pyrmont Peninsula Place Strategy.***

Development that complements or enhances the area

The development concept adds dynamic and interesting spaces – Ribbon Stairs, Guardian Square and High-Line.

Jobs and Industries of the Future

The widened boulevard and site links to the CBD and transport facilitate ease of movement between the job precincts of Darling Square, Pyrmont and University of Technology.

Centres for Residents, Workers and Visitors

The proposed concept mixes work environments, shops and cultural areas making this an attractive proposition for other investment.

A tapestry of greener public spaces and experiences

The development concept includes interesting public spaces by way of rooftop green spaces such as the High-Line and event stairs that will be unique to Sydney.

The NSW Government has outlined a 20-year vision for the Pyrmont Peninsula. Transformative projects including a Metro Station, a new sports and entertainment venue and expanded and better public spaces are central to Pyrmont's evolution.

The Fish Markets redevelopment has been approved and when completed will be a more compelling destination than it is today. Opening up the Blackwattle Bay foreshore for active transport and recreation will further enhance the precinct's appeal. The proposed Bunn Street Bridge, the Ribbon Stairs and Harbourside vertical connections will make it easy to move between the levels to Pyrmont and onto the Fish Markets.

The ***Pyrmont Peninsula Economic Development Strategy*** identifies strong growth in jobs of an additional 3,000 workers by 2041, necessitating an additional 600,000 to 800,000 sq.m in commercial floorspace.

A Metro Station as part of Sydney Metro West will bring approximately 10,000 workers to Pyrmont. Based on the pedestrian modelling by Urbis there will be an additional 2,175 trips per day due to the Metro in 2036.

Additional amenity will be required to meet the needs of this change in worker population. Darling Harbour and Harbourside will be an important link in the amenity chain. The Harbourside development concept supports the expansion of the Pyrmont workforce with public space, shops, services and importantly connections between the waterfront and Pyrmont.

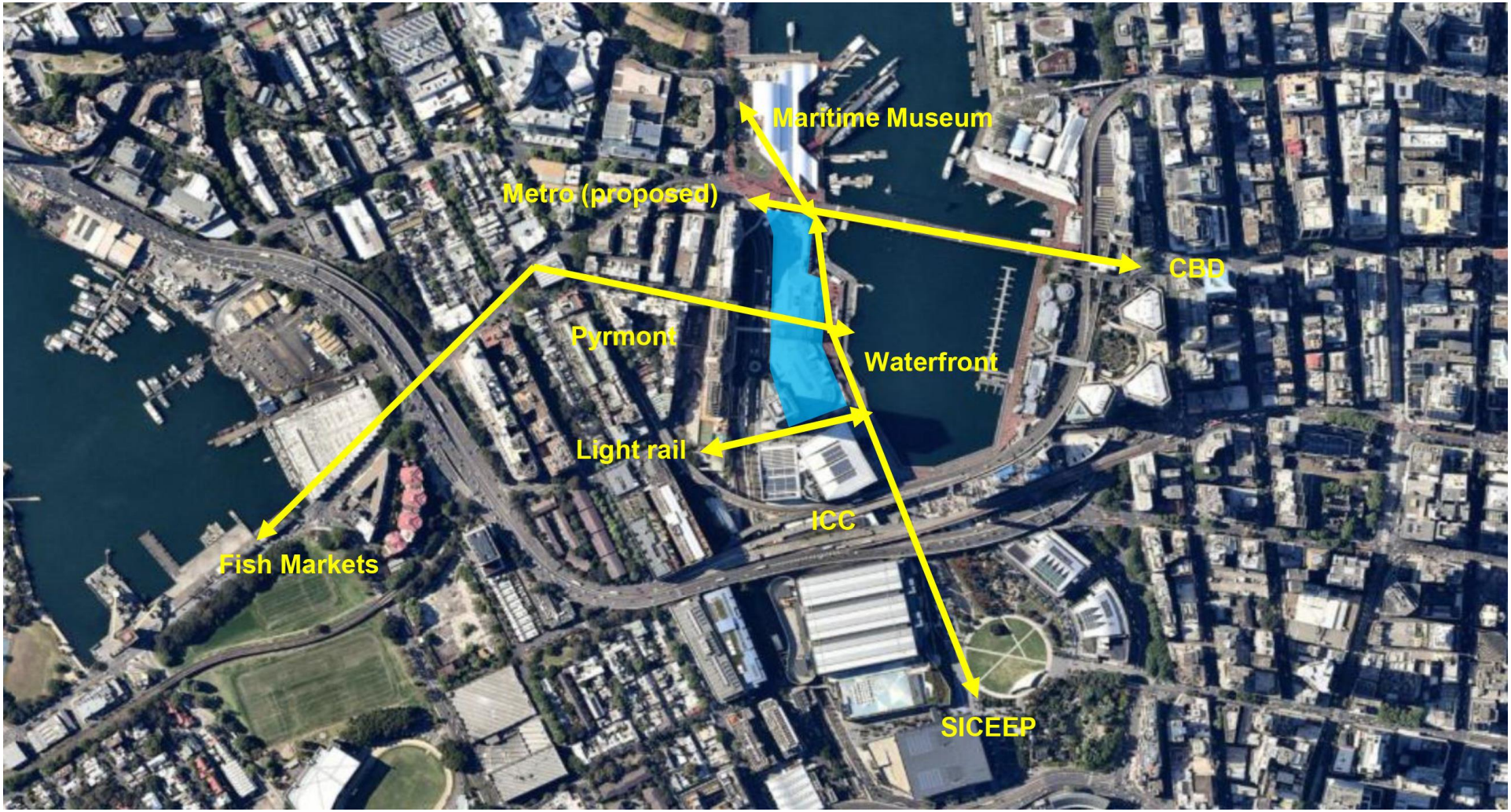
Images and plans on pages 16-24 provide an indicative illustration of the role of new public domain in facilitating movement through the Darling Harbour and surrounding precinct, notably the pedestrian connectivity both north to south, and east to west.

ALIGNMENT WITH THE PYRMONT PLACE STRATEGY PEDESTRIAN OBJECTIVES

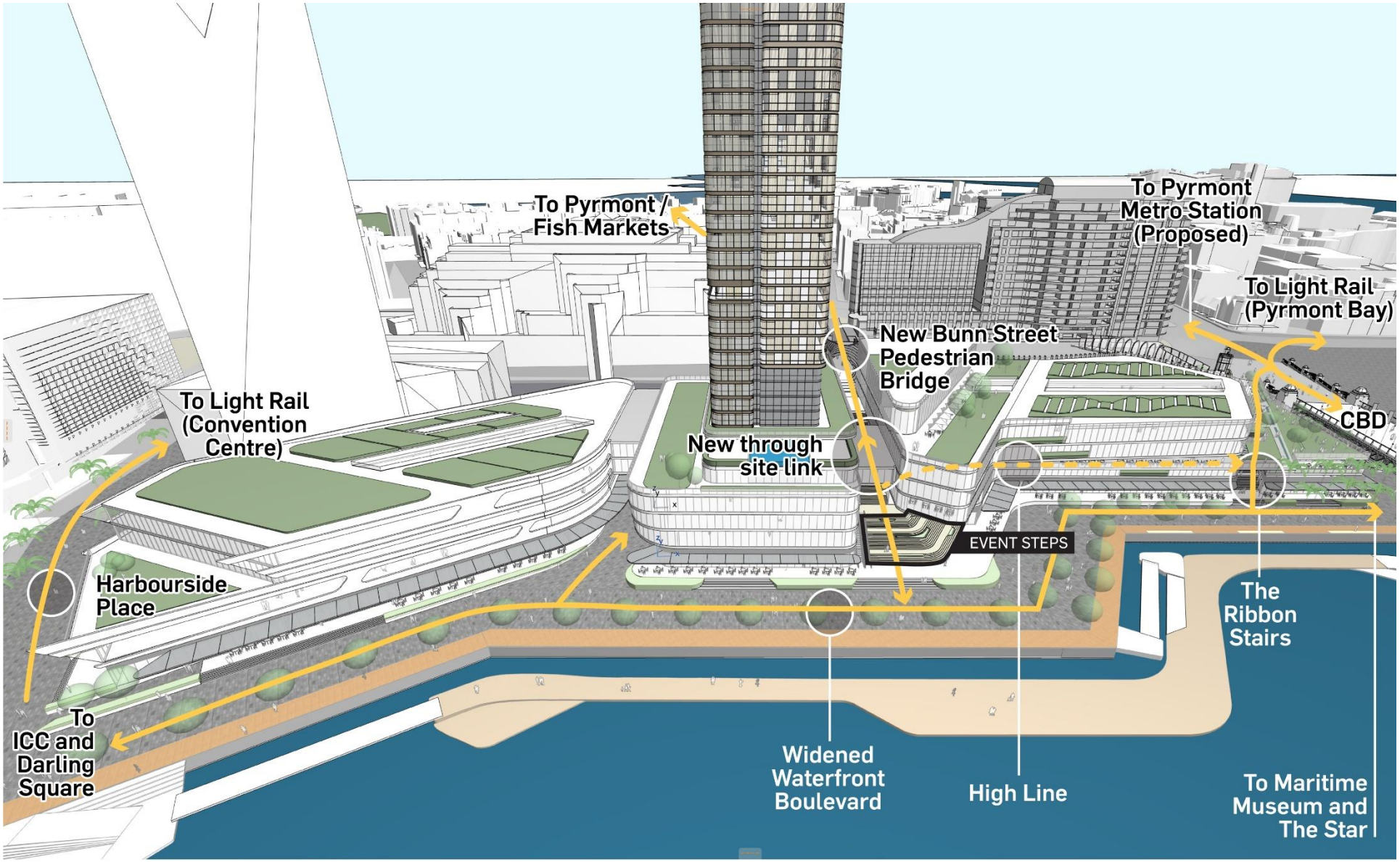
Pedestrian specific objectives from NSW Government's ***Pyrmont Peninsula Place Strategy*** *(PPPS)* are shown in the table below and alignment with the Harbourside concept.

PPPS Reference	Objective	Concept Alignment
Framework for Key Sites	Deliver an appropriate built-form outcome to Pyrmont Bridge	Ribbon Stairs, Guardian Square.
Framework for Key Sites	Improve and enhance east-west connections from Harris Street through to the waterfront through large sites.	Bunn Street Bridge.
Big Move 1	Create a world-class continuous harbour foreshore walk from Walsh Bay to the new Fish Market.	Widened boulevard.
Make it Easier to Move Around	Prioritise walking and cycling as the preferred mode for local trips, making it easier to cross roads, service and transit corridors.	Bunn Street Bridge, Through-Site Link
Make it Easier to Move Around	Encourage walking and cycling through strategic site redevelopments.	Bunn Street Bridge, Through-Site Link, High-Line, Ribbon Stairs.
Make it Easier to Move Around	Prioritise walking and cycling links that connect people to other parts of the Innovation Corridor and to the foreshore promenade.	Widened boulevard.
Blackwattle Bay Place Priorities	Provide improved active transport connections from Blackwattle Bay to other parts of the Peninsula.	Bunn Street Bridge.
Tumbalong Park Place Priorities	Improve east-west active transport connections from Tumbalong Park into the Peninsula addressing the barriers of light rail and back-of-house functions on Darling Drive.	Bunn Street Bridge.

IMPROVED PRECINCT CONNECTIVITY

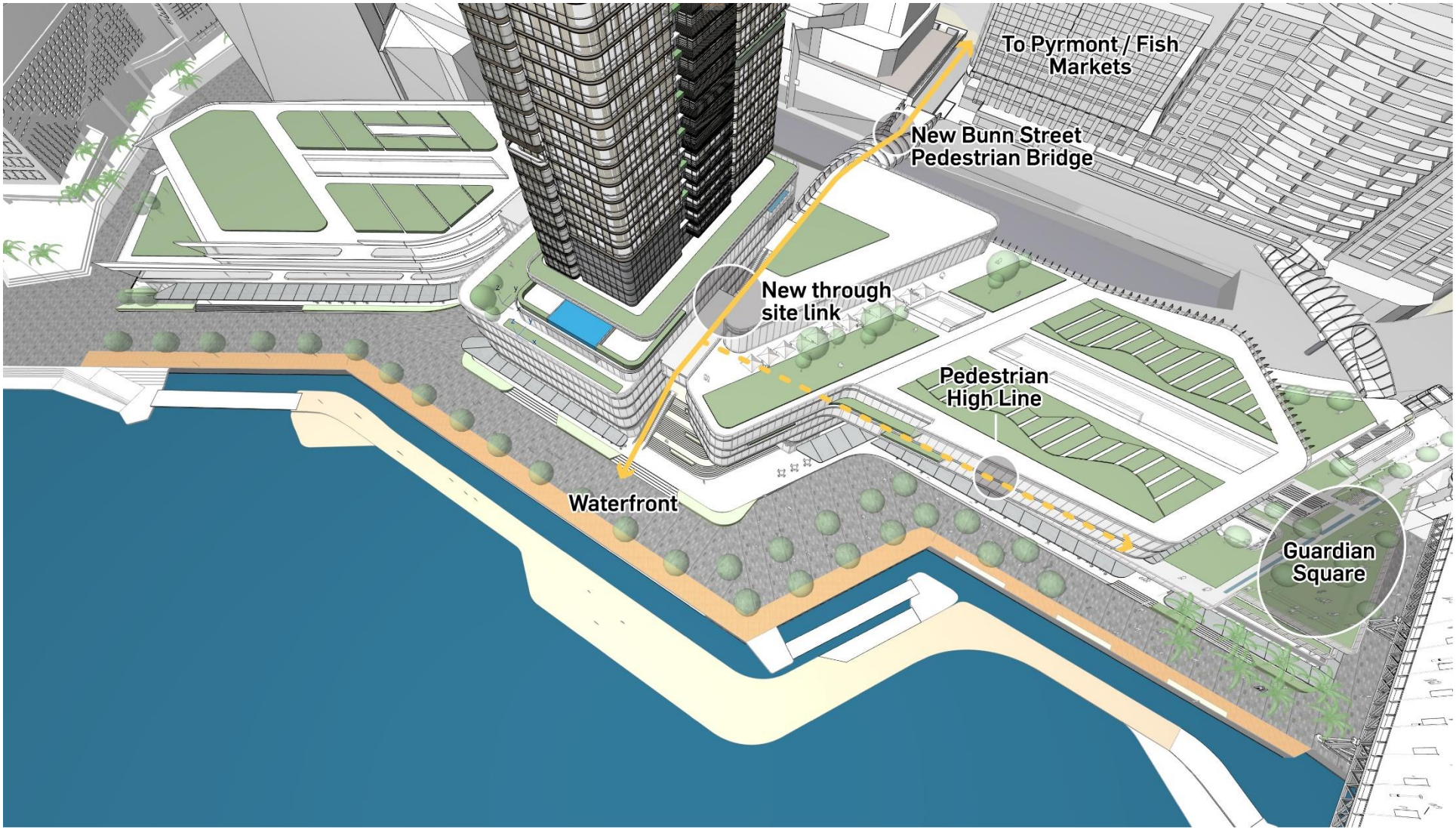


LINKAGES RADIATING FROM HARBOURSIDE TO THE BROADER PRECINCT



Indicative design only. Final design subject to future design excellence and stage 2 DA.

LINKAGES RADIATING FROM HARBOURSIDE TO THE BROADER PRECINCT CONT.



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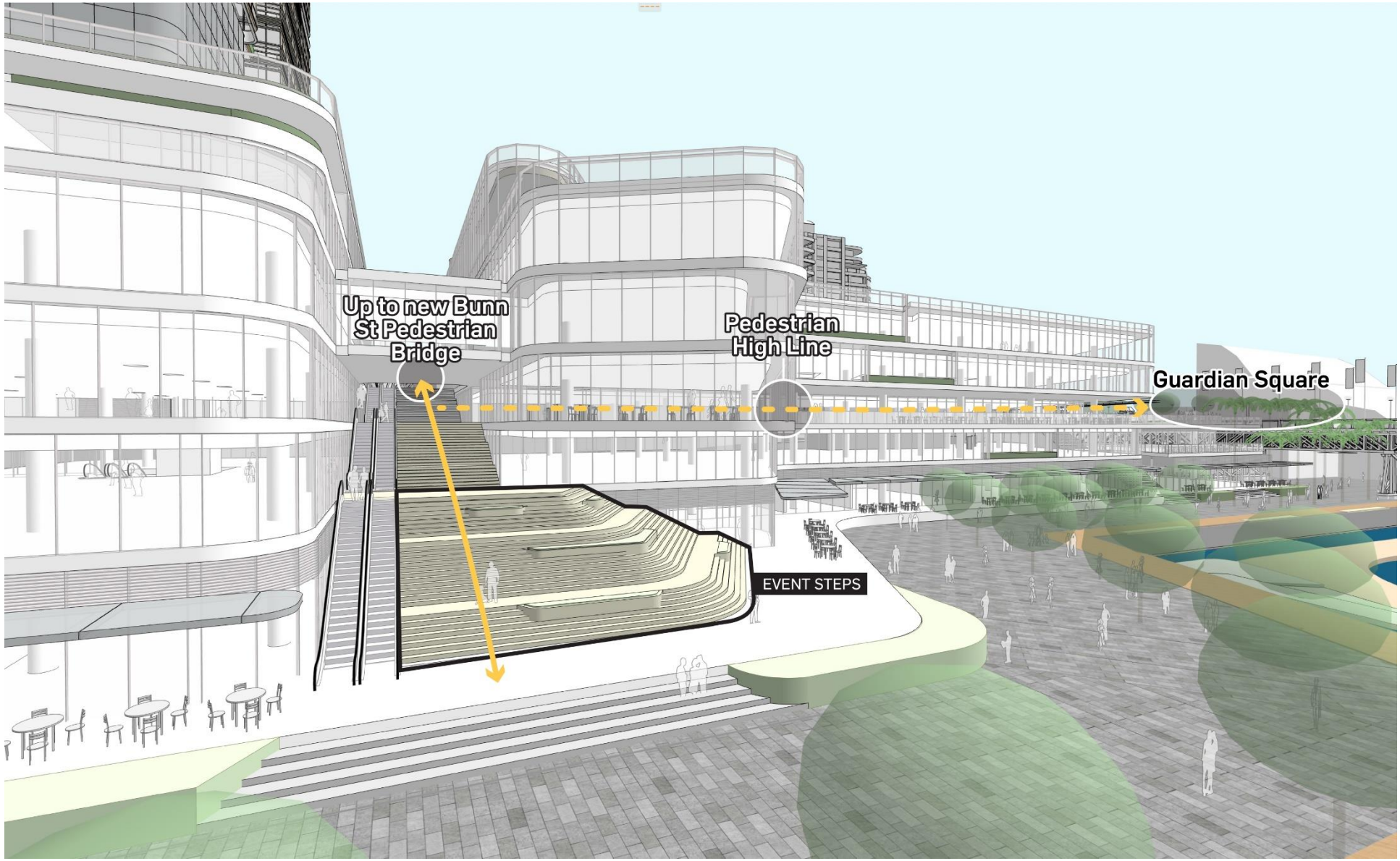
NEW PUBLIC DOMAIN SPACES – GUARDIAN SQUARE AND EVENT STEPS



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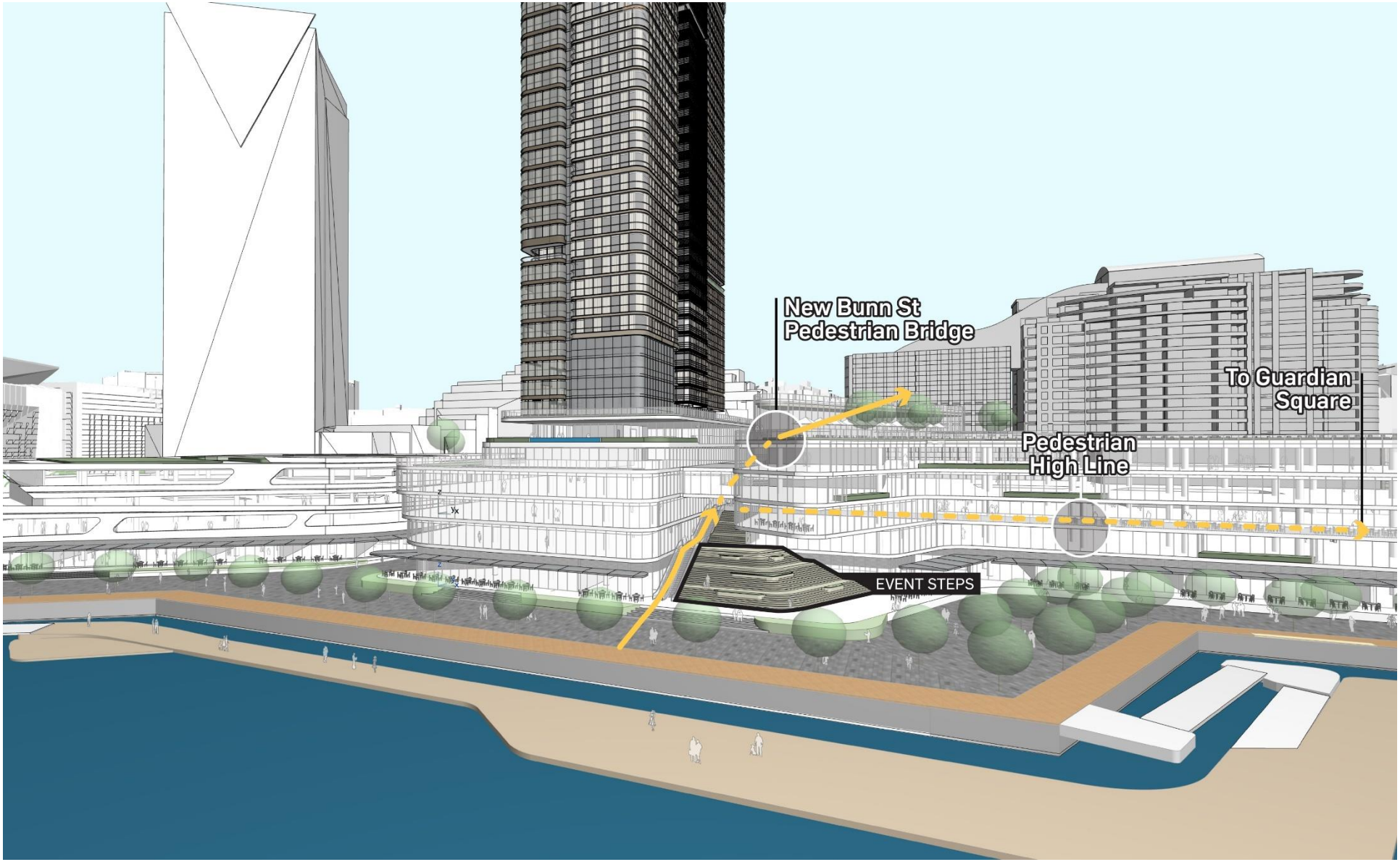
NEW PUBLIC DOMAIN SPACES – GUARDIAN SQUARE AND EVENT STEPS CONT.



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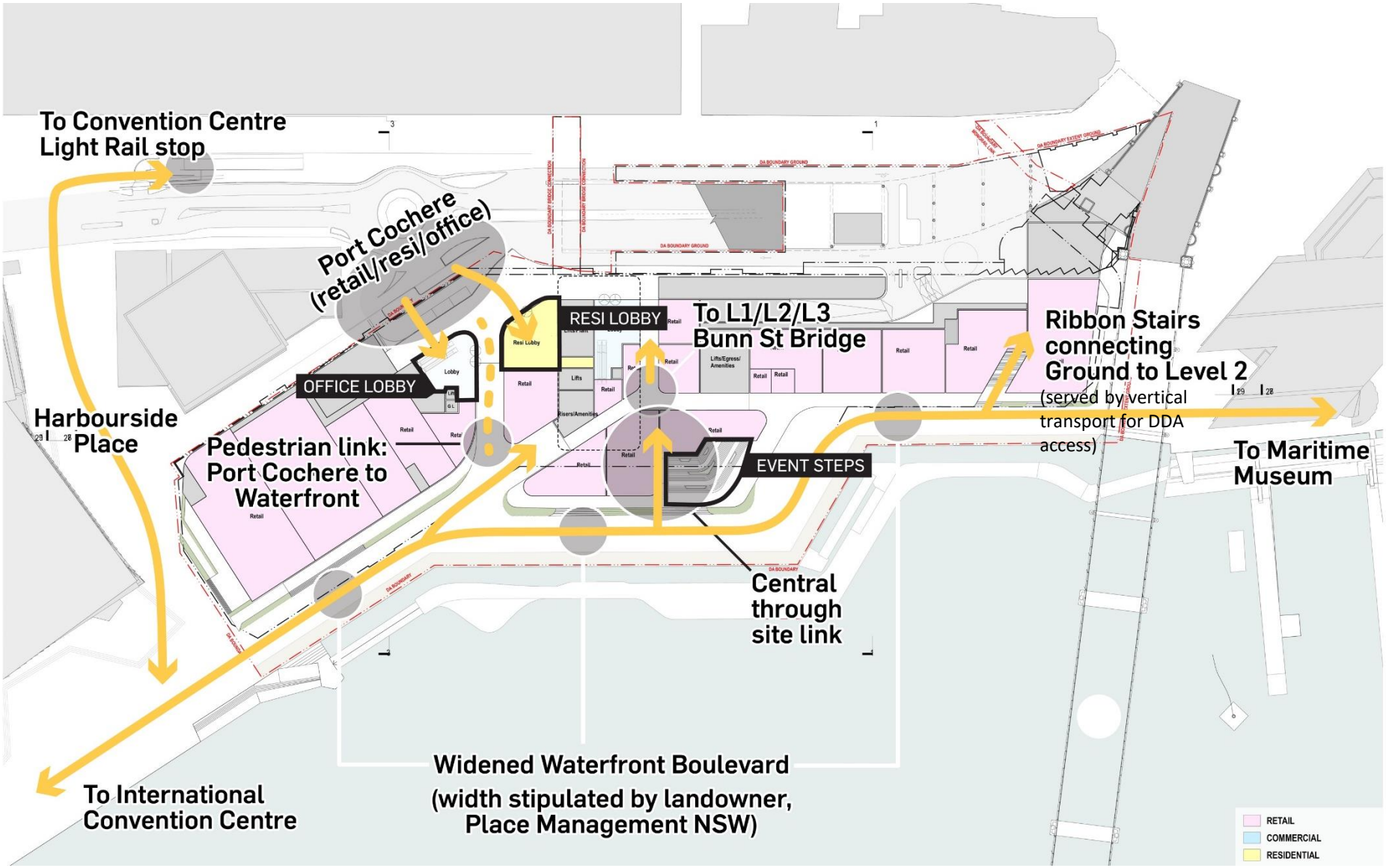
VERTICAL CONNECTIONS BETWEEN WATERFRONT AND PYRMONT FROM GROUND FLOOR



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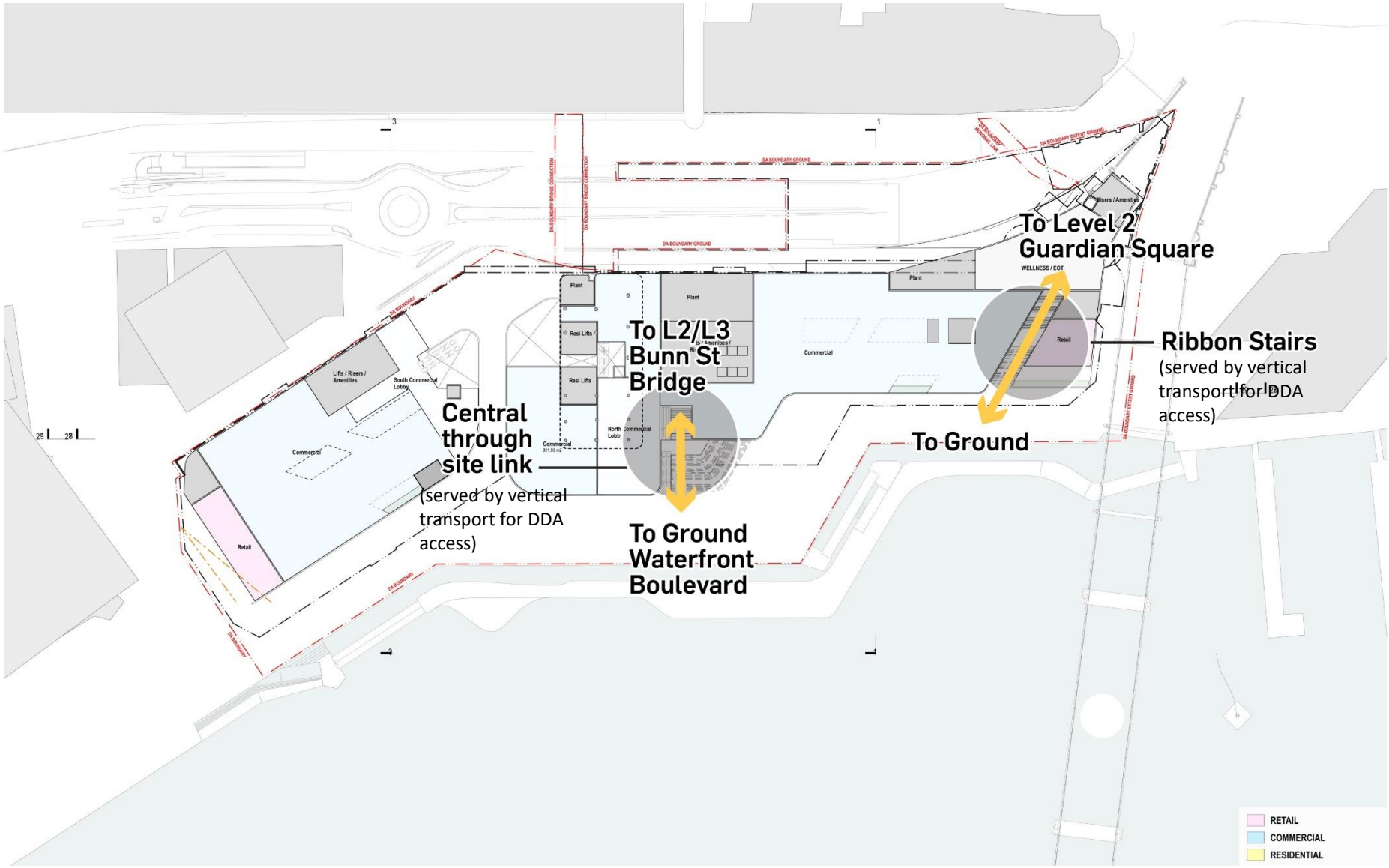
VERTICAL CONNECTIONS BETWEEN WATERFRONT AND PYRMONT (L2) FROM LEVEL 1



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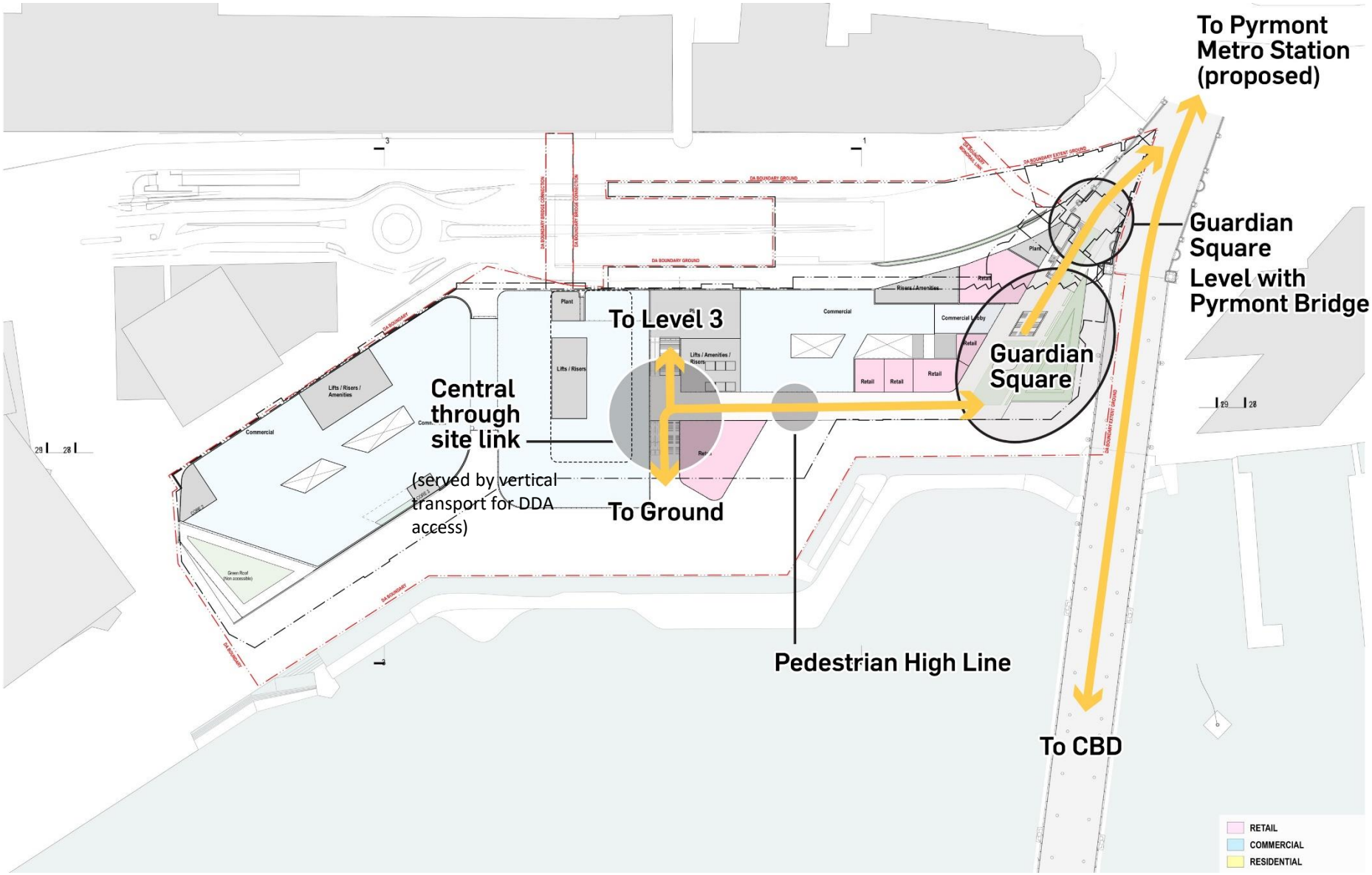
ACCESS TO LEVEL 2 RETAIL AND COMMERCIAL



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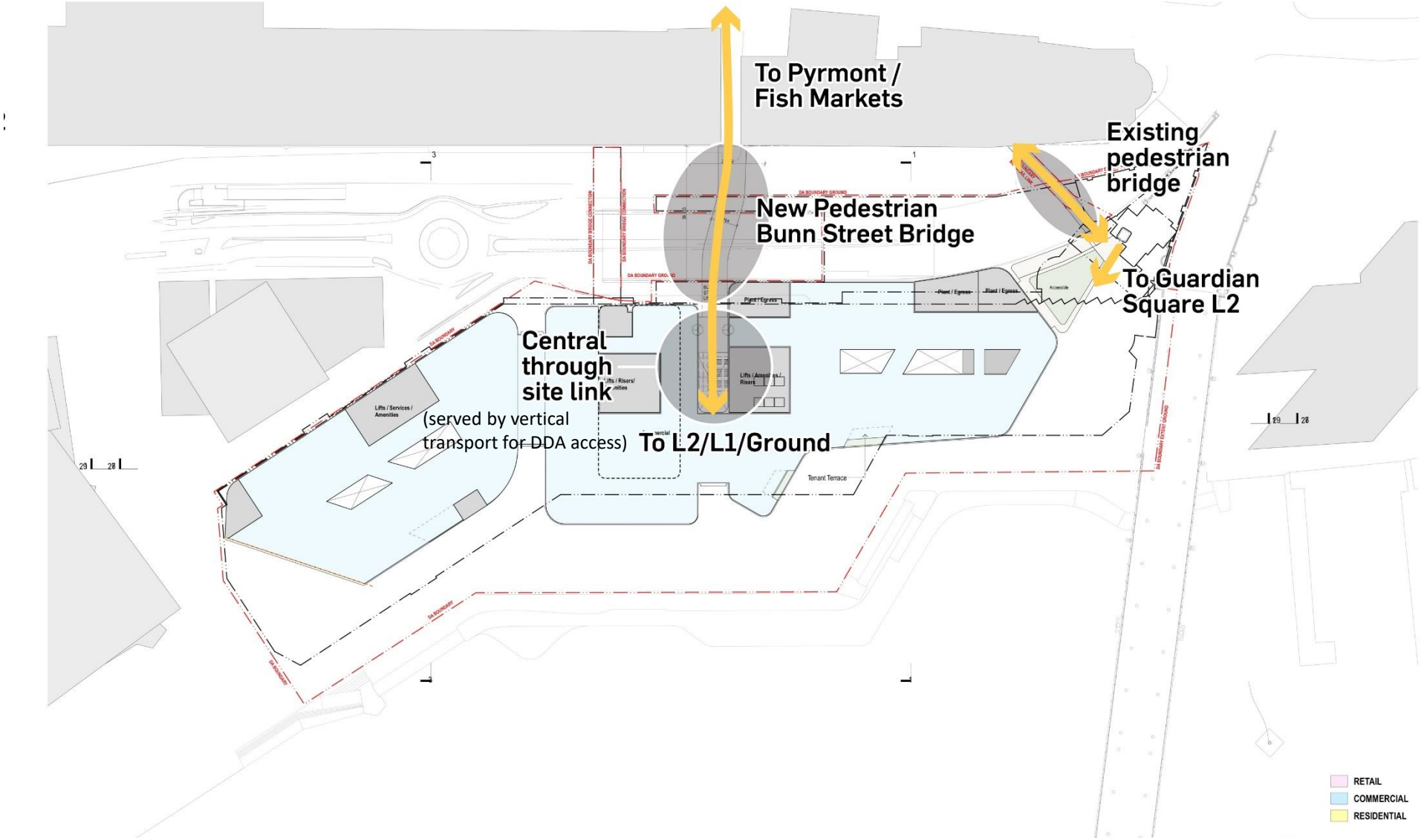
VERTICAL CONNECTIONS BETWEEN WATERFRONT AND PYRMONT FROM LEVEL 3



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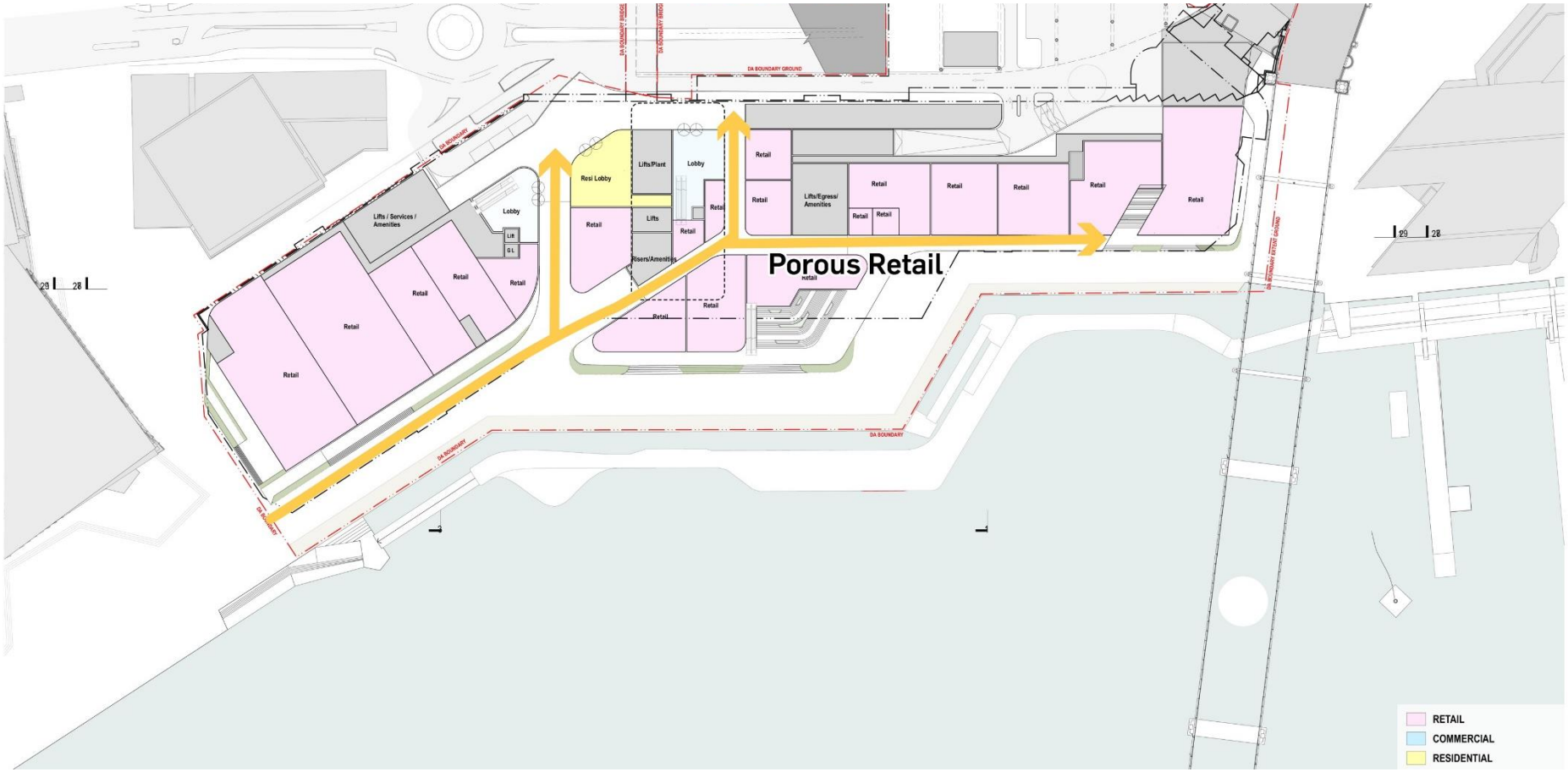
FLOW THROUGHOUT THE CENTRE AND POROUS RETAIL

- The seamless linkages and connectivity result in a porous retail and associated benefits of:
  - Large internal circulation
  - Multiple entry and exit points
  - Visual links across multiple floors.
- A path along the water's edge at ground floor level will have footpaths that are flush with entry points to the centre providing accessible grades for all pedestrians.



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2. CURRENT AND FUTURE ATTRACTORS

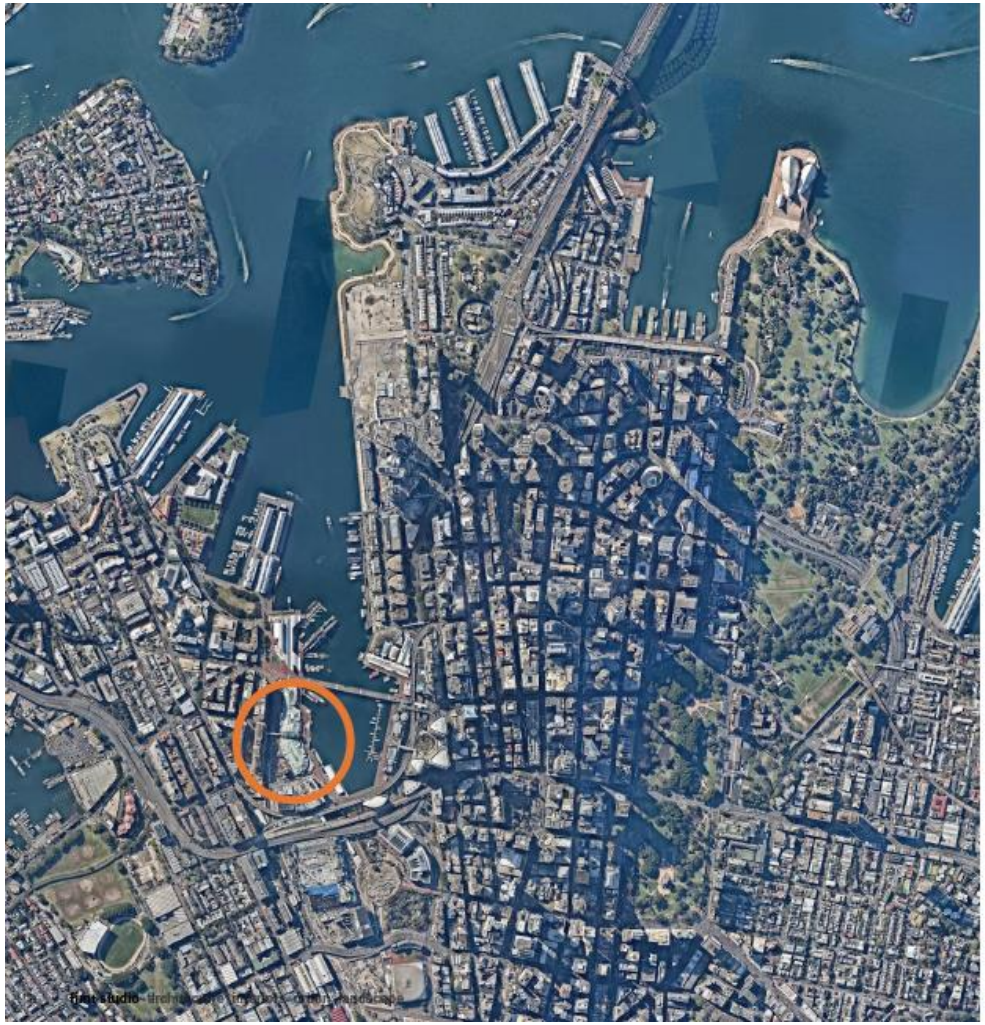
DARLING HARBOUR AT A GLANCE

Darling Harbour is located on the western edge of the Sydney CBD. The precinct has primarily an entertainment role, comprising the following key attractions:

- Sydney Aquarium and Wildlife Zoo
- National Maritime Museum
- International Convention Centre Sydney (ICC)
- Harbourside.

Darling Harbour is bordered to the east by the western corridor of the Sydney CBD and Cockle Bay Wharf, to the south by Darling Quarter and ICC redevelopment precinct and to the west by The Star Sydney casino, Maritime Museum and the commercial precinct along Jones and Pyrmont Bay.

The ICC was completed in 2017 along with a revamped Tumbalong Park. Nearby The Star has proposed redevelopment plans to transform the casino.



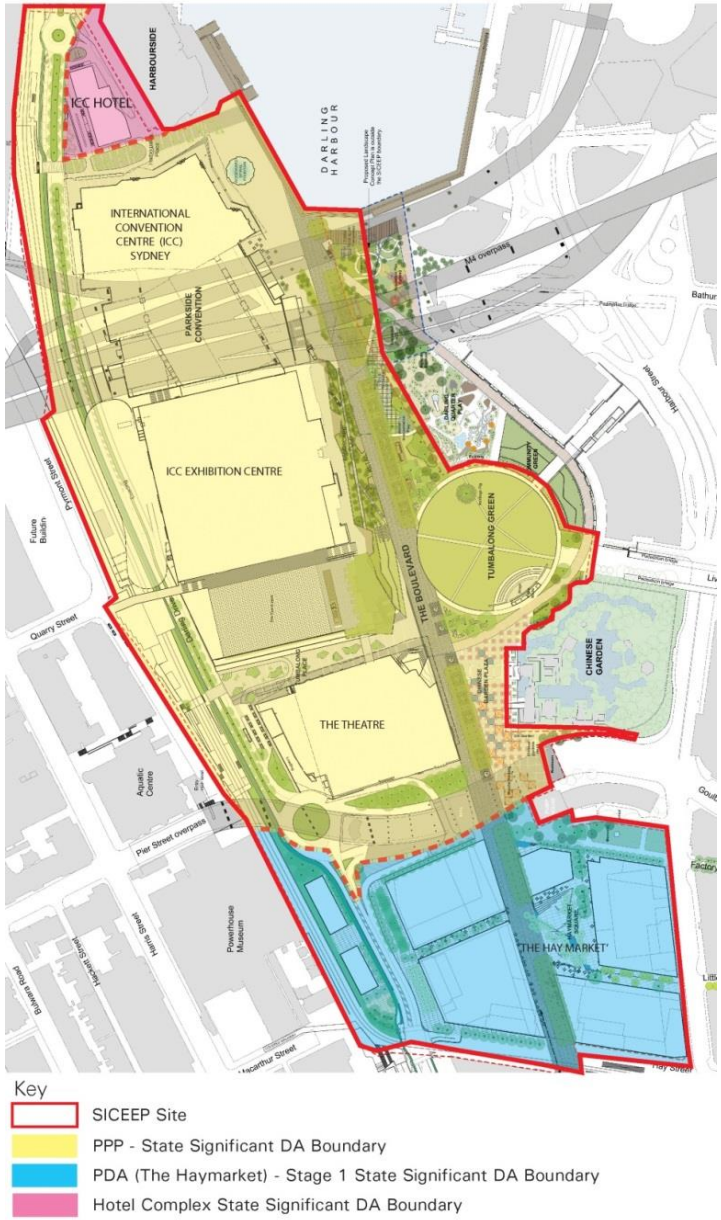
DARLING HARBOUR AT A GLANCE CONT.

The revitalisation of Darling Harbour has created memorable public spaces on Sydney's foreshore. In 2015-2016 pedestrian numbers in Darling Harbour were 26,887,320,000 (Property NSW).

Central to the precinct strategy is the principle of creating seamless pedestrian connections throughout Darling Harbour, and with the nearby communities. The precinct is defined around 5 main principles namely:

- The north-south boulevard
- The 3 primary public opens spaces (The Waterfront, Tumbalong Park and a new urban space)
- Harbourside Place and Tumbalong Place
- The ICC buildings
- Terraced landscape over the ICC Exhibition Centre.

Implication: Connections in and out of Darling Harbour from all key directions should align with the vision for seamless pedestrian connections.

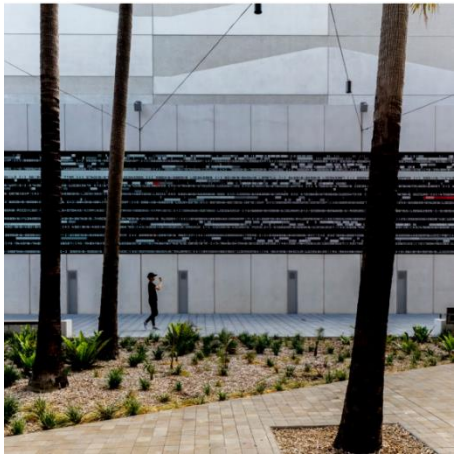


THE REPOSITIONING OF DARLING HARBOUR

While Darling Harbour will have a pivotal tourism role, the upgraded precinct provides exceptional amenity for residents on its doorstep, mainly from the suburbs of Ultimo and Pyrmont. This amenity includes Tumbalong Park and Darling Harbour Children's Playground. The City of Sydney's 'Sustainable Sydney 2030' creates a vision for central Sydney to be easy to get around, and with good transit routes connecting the villages and city centre.

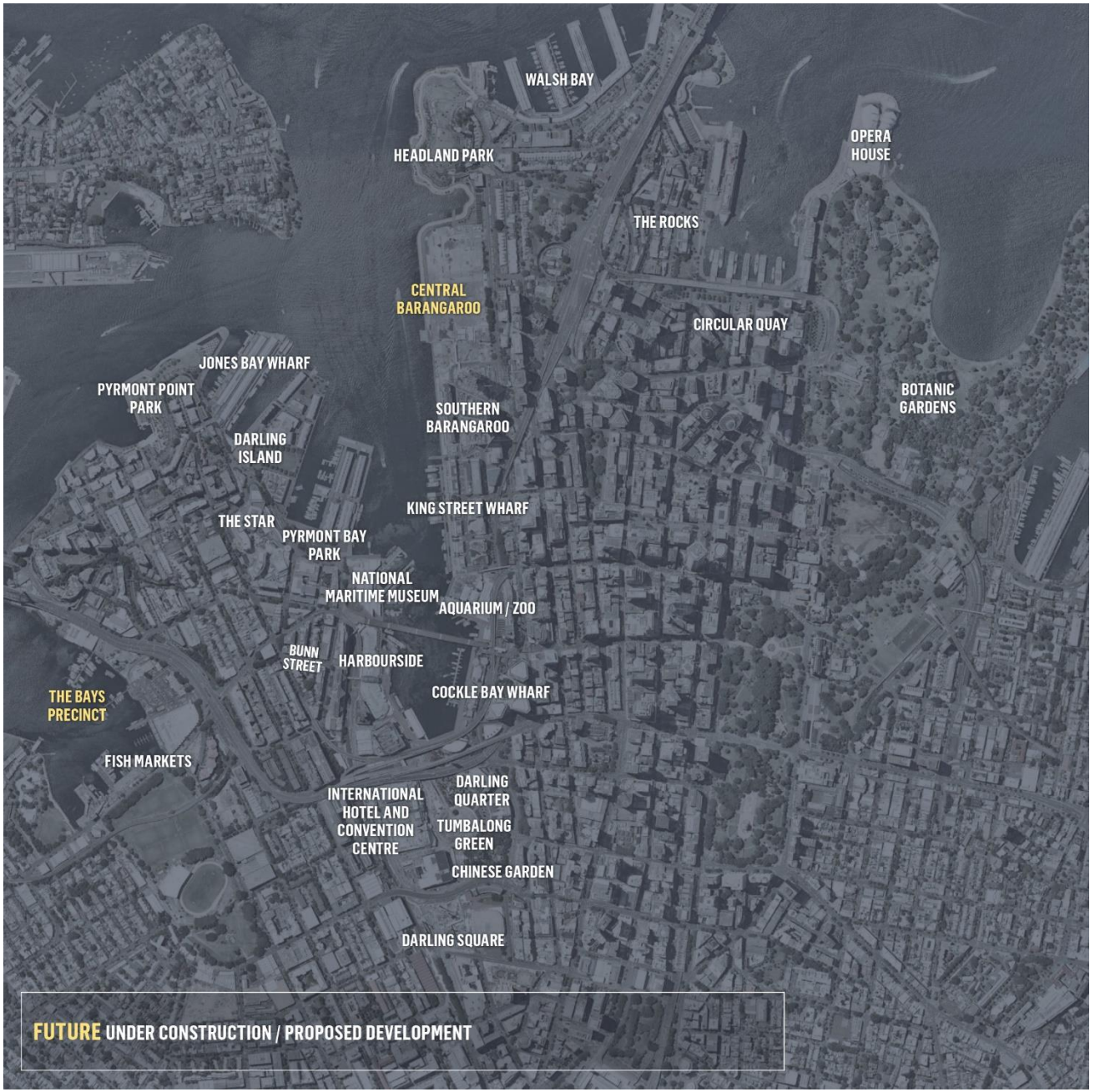
The following pages show Darling Harbour attractors and nearby harbour precincts, and the foreshore loop connections of which Harbourside is part of.

Implication: Clear connection routes between Sydney's urban villages and city attractions are central to a 'Sustainable Sydney'.



Source: ICC Sydney 2018/19 Annual Performance Review

SYDNEY AND DARLING HARBOUR ATTRACTORS



SYDNEY FORESHORE PEDESTRIAN ROUTES

SYDNEY ATTRACTORS

Facilitating pedestrian links to attractions with Darling Harbour is important. At a broader level, connections between established and future precincts including the future Bays Market Precinct and Central to Eveleigh Corridor will be important. Strengthening connections in Darling Harbour is therefore important for connectivity more broadly, of which Harbourside is well positioned to be a key link.

Source: Sydney Fish Markets.

3. TRANSPORT MODES AND PEDESTRIAN PATHS

ACCESS TO DARLING HARBOUR

Darling Harbour can be accessed via public transport, car and on foot. The most relevant train station is Town Hall, which provides access to the southern end of Darling Harbour. Central Station is also connected to Darling Harbour via the Devonshire Street pedestrian tunnel and Ultimo pedestrian network. There are Light Rail Stations at:

- Exhibition Centre
- International Convention Centre
- Pyrmont Bay
- The Star.

Bus services can be accessed in the following locations:

- Harris Street and Pirrama Road
- CBD locations (mainly Clarence Street, QVB, Town Hall House/Druitt Street)

Ferry services operate into Darling Harbour, Pyrmont Bay and King Street Wharf.

Metro Station (proposed)

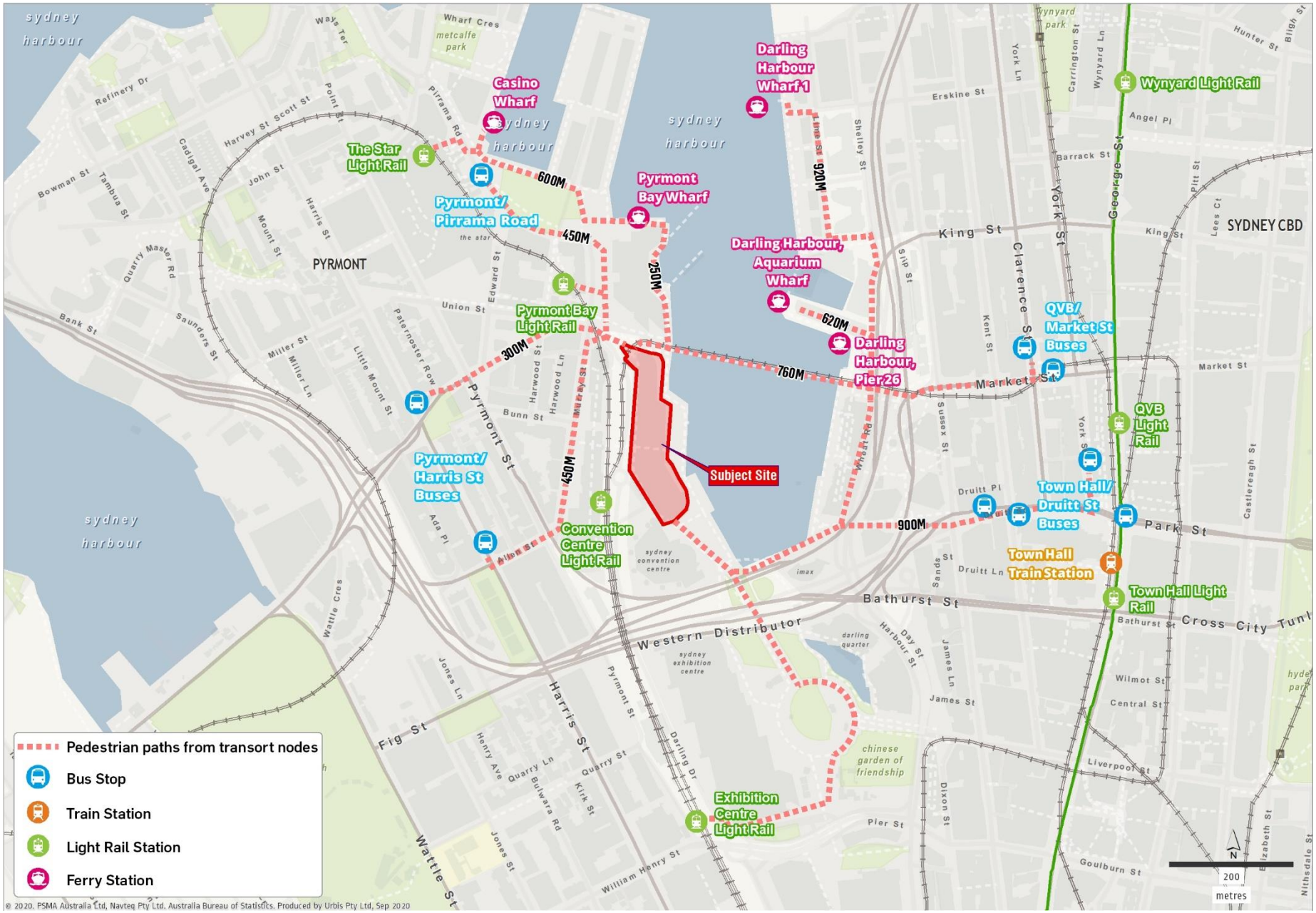
- Metro station is located in close proximity to commercial (north end of site) and walking distance to the retail.

Car access points are Murray Street primarily for the Wilson Harbourside Carpark, and limited passenger set down opportunities on Pyrmont Bridge Road.

The precinct is accessed on foot via Pyrmont Bridge, Murray Street, Pyrmont Bridge Road and pedestrian paths from the southern part of Darling Harbour and Darling Quarter. The current footbridge linking the Wilson Harbourside Carpark is not strongly visible from Murray Street or Pyrmont Street, and mainly provides access for carpark users.

Implication: Future connections for pedestrian traffic from Bunn Street should be highly visible to maximise usage.

PEDESTRIAN ACCESS FROM TRANSPORT NODES



4. IMPACT OF CHANGES TO PEDESTRIAN BRIDGES

REMOVAL OF PEDESTRIAN CONNECTIONS

-EXISTING CONDITIONS

As part of the future redevelopment of the Harbourside precinct, the current pedestrian bridge between the Harbourside Carpark at Murray Street and Harbourside level 3 will be removed. This link has limited relevance only to those that park in the carpark, and does little to encourage pedestrian movement, or visual connection to the waterfront.

With the removal of this connection, a new replacement connection is important to address access for pedestrians between the Harbourside Carpark, the retail centre and Darling Harbour.

Implication: ***If there is no replacement bridge, the only access point will be the monorail bridge behind the Ibis Hotel.***

REMOVAL OF PEDESTRIAN CONNECTIONS CONT.

The above images illustrate the difficulty for pedestrians in navigating different levels between the street and Harbourside, which includes the light rail tracks and Darling Drive. Removal of the current bridge will have implications for the following groups with regards to future access of Darling Harbour:

- Workers in the Bunn Street Catchment
- Residents in the Bunn Street Catchment
- Harbourside Carpark users
- Ibis and Novotel hotel guests
- Pedestrians using the footbridge between Harris Street, Pyrmont Street and Harbourside Carpark and pedestrians accessing the Bays Market Precinct. The bridge will still provide ability for pedestrians to access the carpark below Novotel.

As such, access to Darling Harbour for all these groups need to be considered.

Implication: Lack of easy access to amenity can have detrimental impacts on the connectedness and liveability of communities affected.

BUNN STREET BRIDGE LINKS PUBLIC (STREET) AND PUBLIC (WATERFRONT)

The proposed bridge at Bunn Street will provide an east-west pedestrian a link direct from street level from Bunn and Murray Streets to Harbourside and Darling Harbour. The current bridge connections require pedestrians accessing Harbourside to use stairs. Retention of the monorail bridge and integration with the retail centre at level three will provide better vertical access opportunities. Visitors will be able to use escalators and lifts within the centre to access different levels of Darling Harbour.

The two existing bridges link private spaces with public, i.e. from carpark and hotels, and subsequently there is limited public benefit. By comparison the Bunn Street connection links a public space, i.e. street with a publicly accessible space in the Harbourside rooftop.

The new Bunn Street bridge is a better outcome than the current access because:

- The new bridge will provide on-grade access from the street
- Provides a sight line between the street and the foreshore
- Links publicly accessible spaces.

Changes to the pedestrian network connections will impact on pedestrian flows within the vicinity. An analysis of the pedestrian network within and surrounding the site is required to ensure there is sufficient capacity to accommodation future demands.

Detailed modelling to assess pedestrian volumes shows the bridge is appropriately sized for the projected pedestrian traffic.

Indicative design only. Final design subject to future design excellence and stage 2 DA.

BUNN STREET BRIDGE PROPOSED PEDESTRIAN VOLUMES

To analyse the capacity of the proposed pedestrian bridge, we carried out the following steps:

Step 1: We selected the SA1s (Statistical Area 1s) and DZNs (Destination Zones) within each of the four areas shown in Figure 1.

Step 2: Using Journey-to-Work (JTW) data in the ABS table builder (from 2016 Census), we developed 4 Origin-Destination matrices as follows (by filtering the mode of JTW travel to 'walk'):

a. FROM SA1s in area A, TO DZNs in area B
b. FROM SA1s in area B, TO DZNs in area A
c. FROM SA1s in area C, TO DZNs in area D
d. FROM SA1s in area D, TO DZNs in area C

Step 3: For Path 1, we assigned trips from matrices (a) and (b) above. For Path 2, we assigned trips from matrices (c) and (d) above.

Step 4: Since JTW data only represents commute (by 'walk' mode) trips, we grew these volumes to represent all trips using the Household Travel Survey (HTS) 2016/17 data. HTS data for 2016/17 for Sydney LGA states that commute trips represent 25.4% of the total trips by purpose. Therefore, we multiplied the JTW (walk only) volumes by a factor of 3.94 (= 1 / 25.4%).

Step 5: Establish peak hour volumes. Each peak hour (AM and PM) were assumed to account for 12% of the total daily trips. The AM peak hour trips were first calculated along with the directionality of these flows (since these are JTW trips, they are from each SA1 to DZN). The PM peak hour trips were assumed to flow in the opposite direction to the AM peak hour trips.

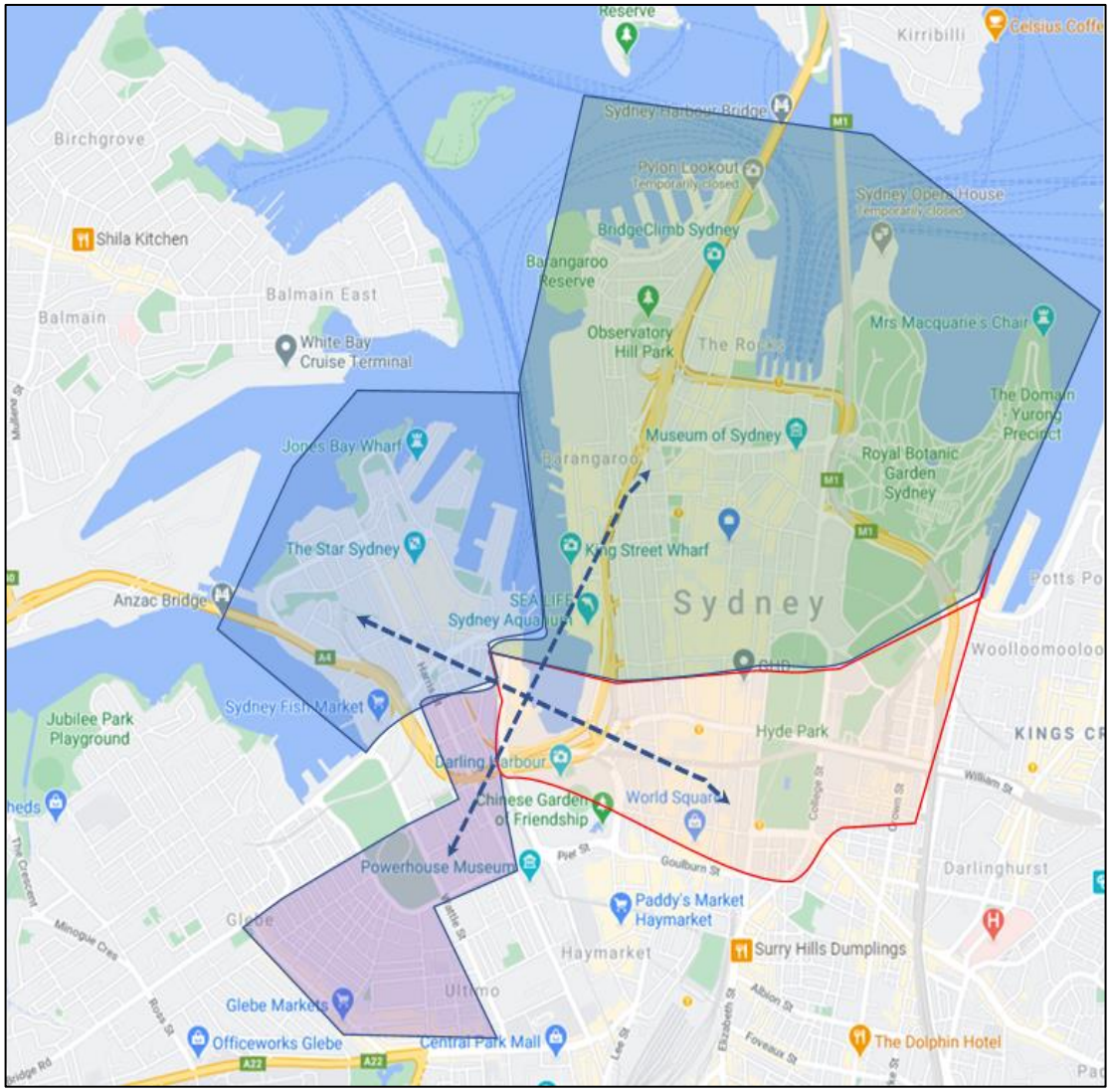


Figure 1: Walking catchment area considered in the analysis

BUNN STREET BRIDGE PROPOSED PEDESTRIAN VOLUMES CONT.

Step 6: To forecast the future pedestrian volumes, we applied a growth factor to the 2016 trip volumes. These growth factors were obtained from the employment (EMP) and residential population (ERP) forecasts presented in tables 4 and 5 of the *Pyrmont Peninsula – Place-Based Transport Strategy (Part A)* document for the year 2056:

- ERP 2056 / ERP 2016 = 1.826
- EMP 2056 / EMP 2016 = 1.695

Step 7: By applying the above growth factors to the base trip volumes established for 2016 scenario, future trip volumes for 2056 AM and PM peak scenarios were obtained. **Table 1** shows the summary of calculations as per the above steps.

Step 8: To establish the expected Level of Service (LoS) on the proposed pedestrian bridge, we used the flow rate based LoS criteria developed by Fruin (1971).

The proposed pedestrian bridge is shown in **Figure 2**. Fruin LoS Criteria is shown in **Table 2** and visually in **Figure 3**.

Step 9: The following parameters were considered in the Fruin LoS calculation:

- Gross width of the pedestrian bridge = 7.784 m
- The effective width of the pedestrian bridge = 6.884 m (allowance has been made for 300 mm clearance for infrastructure + 150 mm for movement clearance, on either side)
- Peak hour flow in both directions = 679 pedestrians (AM peak 2056 scenario, B to A and C to D, as per **Table 1**)
- Pedestrians / minute / metre width = 1.64 **(LoS A)**

Table 1: Calculation summary

From	To	Volume (from JTW representing walk mode)	After HTS factor (x3.94) – representing ALL trips	AM peak (2016 Scenario)	PM peak (2016 Scenario)	Factor for 2056 Scenario	AM Peak (2056 Scenario)	PM Peak (2056 Scenario)
SA1s in area A	DZNs in area B	15	60	8	237	1.695	14	433
SA1s in area B	DZNs in area A	499	1967	237	8	1.826	433	14
SA1s in area C	DZNs in area D	202	796	96	33	1.826	176	56
SA1s in area D	DZNs in area C	68	268	33	96	1.695	56	176

BUNN STREET BRIDGE PROPOSED PEDESTRIAN VOLUMES CONT.

Step 10: Since JTW data does not capture the trips by tourists, this was estimated based on the total number of visitors staying at one of the following hotels (which are located within the Bunn Street walking catchment): (1) Sofitel Darling Harbour, (2) Novotel, and (3) Ibis. The total number of visitors to Bunn Street catchment, arriving from the above 3 hotels are estimated to be **298,037 per annum** (refer to page 48 for details). Dividing by 365, we obtain a total of 816 daily tourist visits. It was further assumed that 50% of these tourists will travel towards the City in the AM peak hour through the Bunn Street pedestrian bridge (and in opposite direction during the PM peak hour).

Step 11: The LoS for the 2056 scenario was established by adding 50% of the 816 daily tourist trips calculated above, to the base trips calculated in Step 9 (679 pedestrians), as follows:

- Base pedestrian volume (both directions) = 679 per peak hour
- Additional trips by the tourists = 50% * 816 = 408 per peak hour
- Future total pedestrian volume = 1,087 per peak hour
- Pedestrians / minute / metre width = 2.63 **(LoS A)**

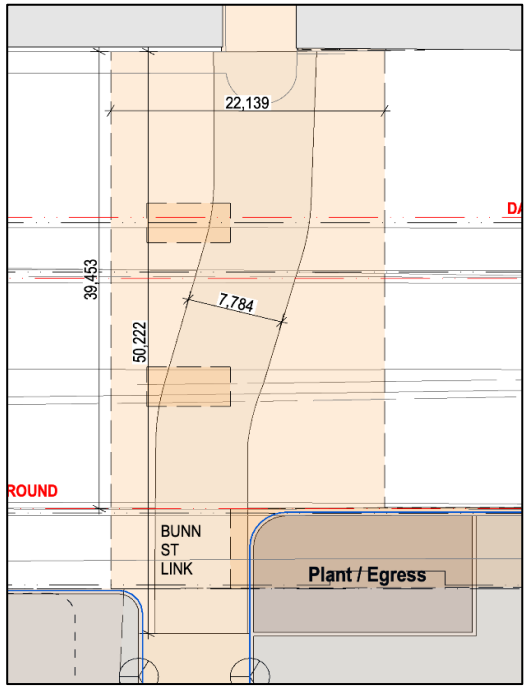


Figure 2: Proposed pedestrian bridge

Results Summary

1. Local + tourist demand: The proposed pedestrian bridge will continue to operate at **LoS A** in 2056,
2. Bridge capacity: Based on **LoS D**, for the proposed width, the bridge capacity is 20,000 pedestrian movements per hour (in both directions).

Table 2: Fruin LoS criteria

Level of Service	Flow Rate *(pedestrian/minute/meter)*	Density *(pedestrian per squared meter)*
A	≤ 7	≤ 0.08
B	7 - 23	0.08 - 0.27
C	23 - 33	0.27 - 0.45
D	33 - 49	0.45 - 0.69
E	49 - 82	0.69 - 1.66
F	≥ 82	≥ 1.66

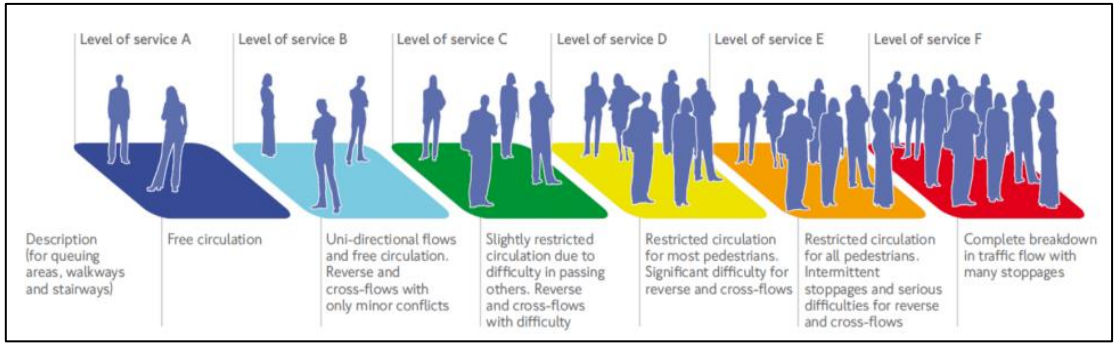


Figure 3: Visualised Fruin LoS criteria

5. PEDESTRIAN CATCHMENT ASSESSMENT

BUNN STREET WALKING CATCHMENT

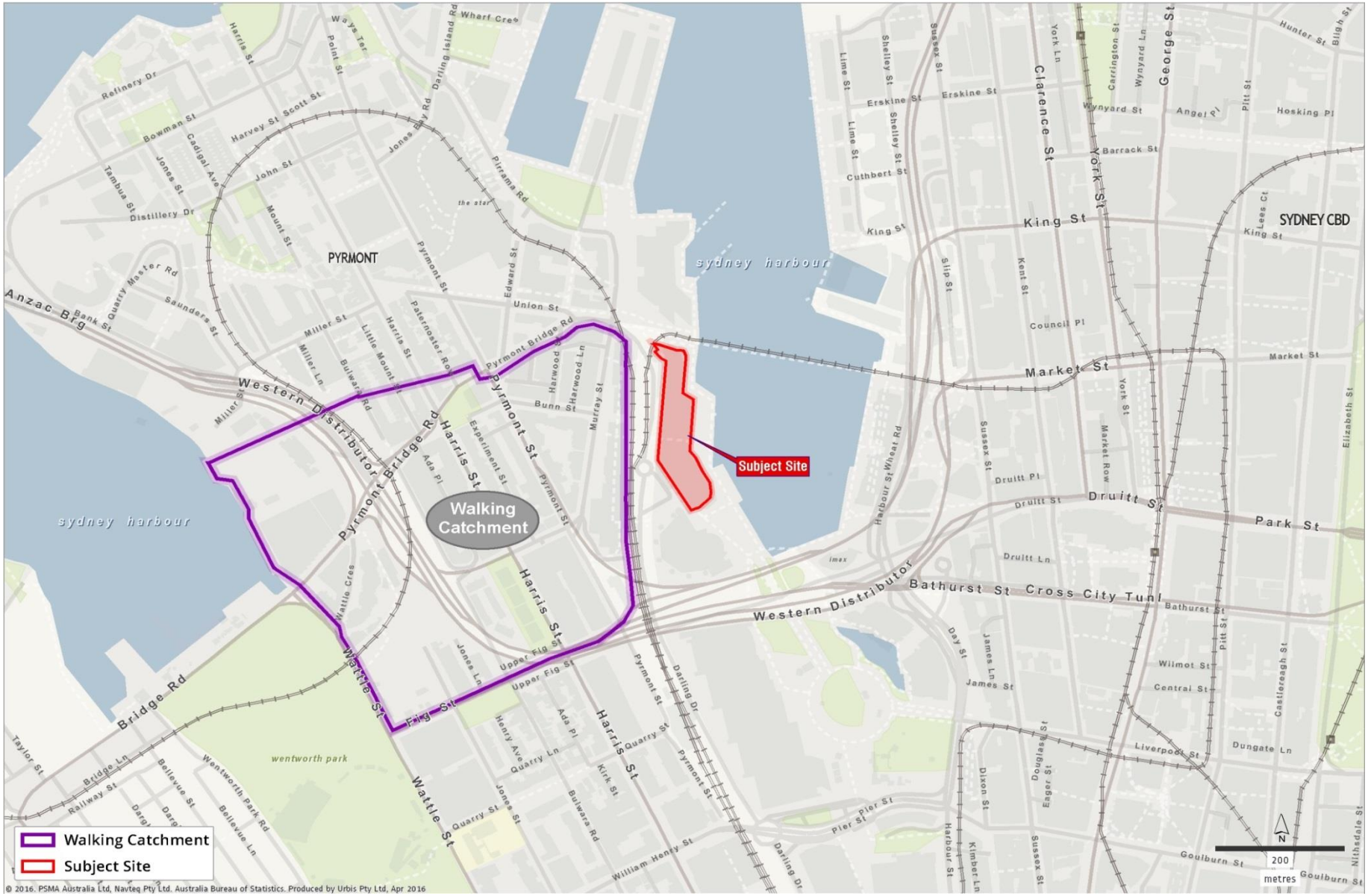
For the purpose of investigating the impact of a bridge connection from Bunn Street directly to Harbourside, a walking catchment has been defined based on which segments would benefit from this future connection. The trade area is defined by:

- Bound by Wattle Street and the Fish Markets to the west
- Bound by Murray Street to the east
- Pyrmont Bridge Road to the north.

Residents and workers in this catchment currently access Darling Harbour and the CBD via one of the following route combinations:

- Pyrmont Bridge Road and Pyrmont Bridge
- Rear of the Ibis Hotel and monorail footbridge
- Wilson Harbourside Carpark and Harbourside
- Footbridge from Harris Street to Wilson Harbourside Carpark and Harbourside.

BUNN STREET WALKING CATCHMENT



CHARACTERISTICS OF THE BUNN STREET CATCHMENT

The Bunn Street catchment is largely residential in focus developed with medium rise apartment buildings and some office based employment. Bunn Street itself has some retail activation primarily focussed on locals. Some of the key characteristics of the catchment are:

- Urban with a high density of development
- Limited open space
- Predominately hard spaces / limited green space
- High density residential
- High traffic roads, i.e. Harris Street, Pyrmont Bridge Road, Western Distributor.

The lack of open space means that catchment residents and workers have limited opportunity to enjoy quality urban space. The Darling Harbour waterfront provides enjoyment opportunities for quality urban spaces.

BUNN STREET WALKING CATCHMENT POPULATION

Resident and worker forecast numbers Bunn Street Catchment			
	2021	2026	2031
Residents	6,900	8,500	9,000
Workers	3,500	3,800	4,600

Source: NSW BTS Travel Data 2016, based on TZ geography TZs 88, 153, 154, 155, 156.
Resident forecast numbers: 1) Assume 10% of TZ 153 residents. 2) For the Bays Market Precinct area within the walking catchment, assume site area of 45,000 sq.m of which 50% are for residential use, FSR 1.5, average apartment size 80 sq.m, 2.23 household size.
Worker forecast numbers: 1) Assumes wholesale workers in TZ153 2) For the Bays Market Precinct area within the walking catchment, the worker numbers will double due to the redevelopment of the fish market.

BUNN STREET WALKING CATCHMENT USERS

In addition to residents and workers in the Bunn Street walking catchment, guests and carpark users also form part of this catchment. The size of these segments is shown in the table by annual visitors.

The tourism element is important for the broader Darling Harbour and Bays Precinct. Improving connections from these hotels is likely to assist in generating additional trips into Darling Harbour, optimising tourism expenditure opportunities.

Annual Visitors Bunn Street Catchment	
Sofitel Darling Harbour guests	128,258
Novotel guests	114,128
Ibis guests	55,651

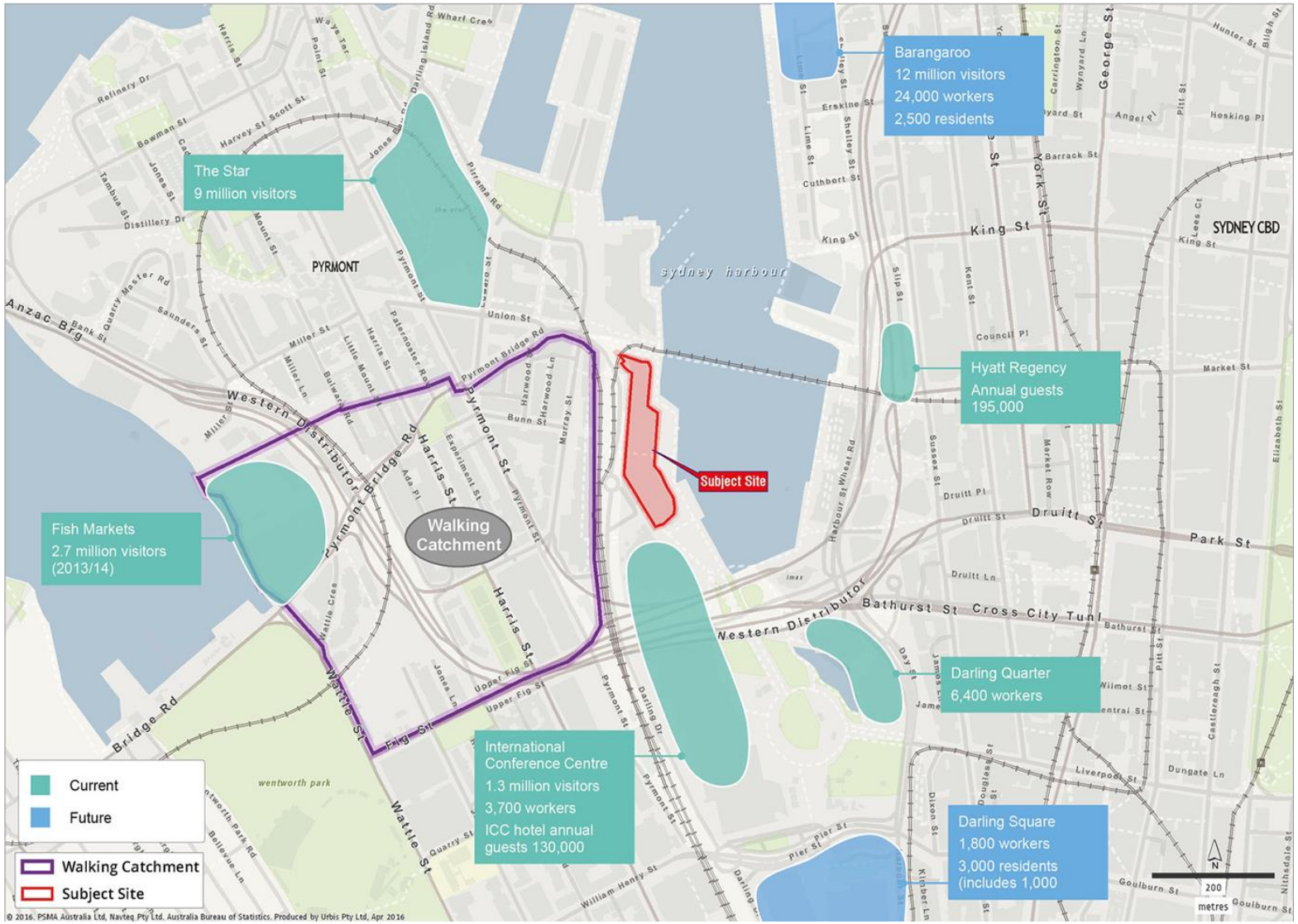
Source: ABS, Urbis , Accor Hotels

CURRENT AND FUTURE PATRONAGE NUMBERS OF FORESHORE PRECINCTS

The map shows other groups who interact with the foreshore and may benefit from a connection at Bunn Street. All of the locations on the map represent key sites for residents, workers or visitors, or a combination of these groups, which may generate trips to Harbourside and beyond. A proportion of these groups could benefit however it is not possible to quantify. One important factor that will influence the use of the proposed connection is the appeal and drawcard factor of the new Bays Market Precinct.

Nonetheless, these numbers combined indicate increased movement in the foreshore precincts located west of the Sydney CBD.

Irrespective of future developments, there is already existing high visitation of the two main attractions in Pyrmont, i.e. The Star Casino and Sydney Fish Markets.



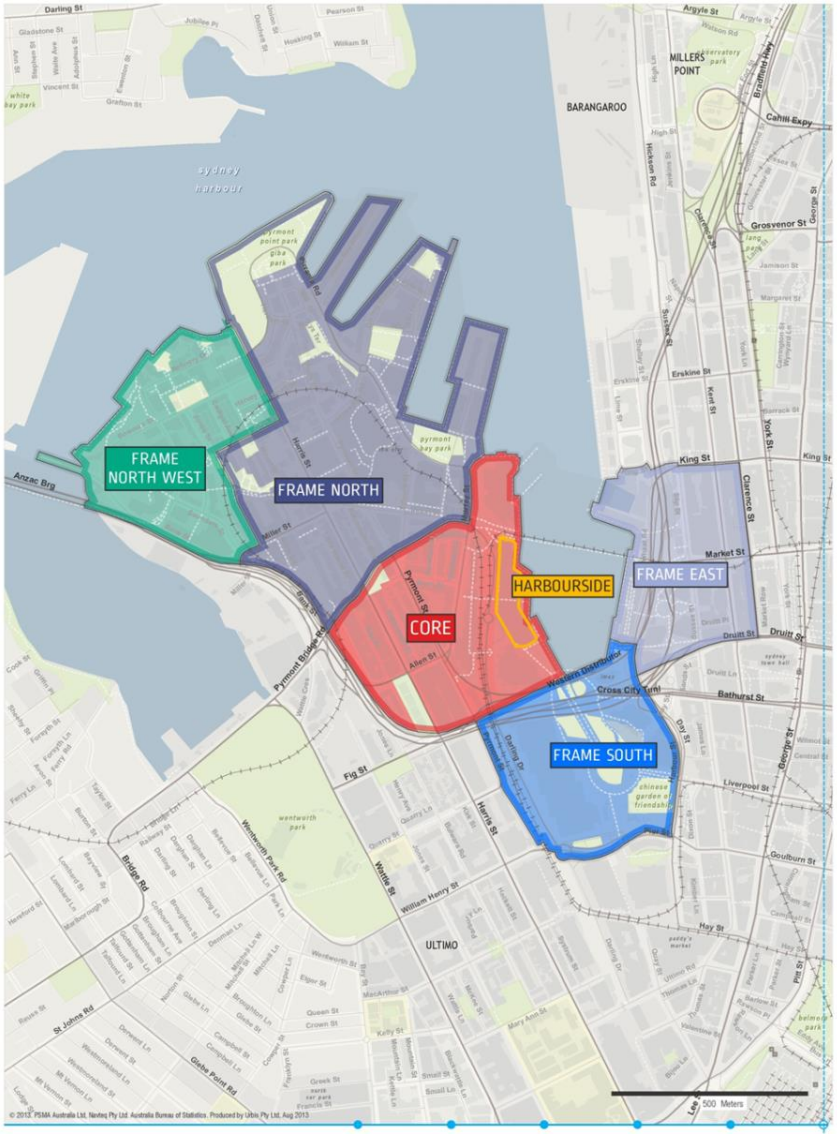
6. HARBOURSIDE MARKET SEGMENTS

KEY HARBOURSIDE MARKET SEGMENTS

The map on this page shows a walk-in retail trade area for Harbourside. This is a historical trade area based on the centre's current offer. This trade area is likely to expand to reflect the draw of a different offer, particularly if improved to address the needs of local residents, and as connectivity is improved. Similarly, the trade area could change if there is additional competition in the future.

The trade area has been defined with regard to distance, topography, and competing retail facilities, particularly major food and beverage precincts.

Harbourside's key market segments can be summarised as workers and residents who work and live within walking distance of Harbourside. The map on this page shows there is a core walk-in catchment and four secondary walk-in areas identified as 'frame' segments in the map.



KEY HARBOURSIDE MARKET SEGMENTS CONT.

The residents and worker forecast numbers for Harbourside's walk-in trade catchment are shown in the table below, which shows growth in both segments though more notably among workers. The growth in workers is driven by a number of proposed developments that includes the approved new Darling Park office tower (approx. 60,000 sq.m) and potential future office and retail development above the proposed Pyrmont Metro Station (proposed).

Resident and workers Harbourside Walk-In Trade Area			
	2021	2026	2031
Residents	15,700	19,100	21,100
Workers	65,600	73,000	77,100

Source: NSW Transport for NSW Travel Zone Projections 2016. Assumes additional onsite workers and new residents will move in 2026 (indicative timeframe)

KEY HARBOURSIDE MARKET SEGMENTS

Other core market segments to consider are:

- Hotel guests staying in Darling Harbour hotels (Ibis, Novotel and Sofitel)
- Conference delegates attending events at the International Convention Centre (ICC) Sydney
- Future residents and workers in the Bays Precinct redevelopment, and these numbers are included in the walking catchment population table on page 47.

In addition, Harbourside also attracts Sydney residents from beyond the catchment, and tourists not based in Darling Harbour.

Annual hotel visitors	
Sofitel Darling Harbour guests	128,260
Novotel guests	114,130
Ibis guests	55,650

Source: ABS, Urbis

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