

HARBOURSIDE SHOPPING CENTRE

Traffic and Transport Impact Assessment

28 SEPTEMBER 2016

Incorporating



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MIRVAC PROJECTS PTY LTD HARBOURSIDE SHOPPING CENTRE

Traffic and Transport Impact Assessment

Stage 1 DA

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CONTENTS

1 INTRODUCTION.....	6
1.1 Background	6
1.2 Site Description	6
1.3 Planning Approvals Strategy.....	8
2 PURPOSE OF THIS REPORT.....	10
3 EXISTING TRANSPORT CONDITIONS.....	12
3.1 Road Network	12
3.2 Traffic and Pedestrian Volumes	13
3.2.1 Observed Peak Periods at Intersections	13
3.2.2 Traffic volume trends.....	14
3.2.3 Peak Hour traffic Volumes at Key Roads	16
3.3 Parking.....	16
3.4 Public Transport	18
3.4.1 Cityrail Suburban Rail Services	18
3.4.2 Light Rail	18
3.4.3 Existing Public Bus Services	19
3.4.4 Ferry Services	20
3.5 Pedestrian Network	21
3.6 Cycle Network.....	22
3.7 Mode Share.....	24
3.8 Private Coach Access.....	24
3.9 Taxi Zones	26
4 OVERVIEW OF PROPOSED DEVELOPMENT.....	27
4.1 Parking Provision	27
4.1.1 Basement Parking.....	27
4.1.2 Bicycle Parking	27
4.2 Pedestrian Network	27
4.3 Cycle Network.....	28
4.4 Servicing.....	29
4.4.1 Vehicular Drop-off.....	29
4.4.2 Loading Dock.....	29
4.4.3 Waste Management.....	30
4.4.4 Emergency Vehicle Access	30

5 TRAFFIC IMPACT ASSESSMENT	31
5.1 Traffic Generation and Trip Distribution.....	31
5.1.1 Harbourside Development.....	31
5.1.2 SICEEP Development.....	33
5.1.3 Trip Distribution.....	33
5.2 Network Capacity and Level of Service.....	34
5.2.1 Existing Intersection Operation.....	34
5.2.2 Future Operational Performance.....	38
5.2.3 Future Operational Performance with SICEEP	40
5.2.4 Impact on Intersection Performance.....	42
5.3 Impact on Light Rail and Ferry Operations	42
6 CONSTRUCTION TRAFFIC IMPACT AND MANAGEMENT	44
6.1 Background.....	44
6.2 Site Boundary	44
6.3 Construction Staging.....	44
6.3.1 Site Establishment	44
6.4 Construction Works.....	45
6.5 Construction Vehicle Access	45
6.6 Parking.....	46
6.7 Pedestrian Access.....	47
6.8 Traffic Management Measures.....	47
6.9 Cumulative Construction Traffic Impacts.....	47
7 SUMMARY.....	49
7.1 Conclusions.....	49
7.2 Recommendations.....	50

FIGURES

Figure 1: Site Location Context Plan

Figure 2: Site Location Plan

Figure 3: Key Roads Location Plan

Figure 4: Locations of Car Parking in the vicinity of the Harbourside Development

Figure 5: Sydney Light Rail Coverage Map

Figure 6: Bus Service Coverage Map in Sydney CBD

Figure 7: Ferry Service Coverage Map adjacent to the site and in Sydney

Figure 8: Existing cycle network

Figure 9: Key plan of adjacent transport facilities

Figure 10: Proposed Pedestrian Bridge Location Plan

Figure 11: Indicative Plan of Drop-off facility

Figure 12: Traffic Survey Location Plan
Figure 13: Site Development Plan
Figure 14: Construction Routes and Access Location

TABLES

Table 1: Secretary’s Environmental Assessment Requirements
Table 2: Observed AM and PM Peak Periods at the Key Intersections
Table 3: Peak Hour Traffic Volumes at Key Roads
Table 4: Carpark Availability
Table 5: Travel Modes
Table 6: Key transport facilities adjacent to Harbourside
Table 7: Development Components
Table 8: Level of Service (LoS) Criteria
Table 9: Existing Intersection Performance
Table 10: Future Intersection Performance

1 INTRODUCTION

This report supports a State Significant Development Application (SSDA) submitted to the Minister for Planning and Infrastructure pursuant to Part 4 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Mirvac Projects Pty. Ltd. (Mirvac) is seeking to secure approval to establish concept proposal details for the redevelopment of the Harbourside Shopping Centre (Harbourside), including a new retail shopping centre, residential tower and substantial public domain improvements.

The project supports the realisation of the NSW State Government's vision for an expanded 'cultural ribbon' spanning from Barangaroo, around to Darling Harbour and Pyrmont. The project importantly will add further renewed diversity in tourism and entertainment facilities to reinforce Sydney's Central Business District (CBD) being Australia's pre-eminent tourist destination.

1.1 Background

Mirvac acquired Harbourside, a key location within the Darling Harbour precinct, in November 2013. Harbourside, which was opened in 1988 as part of the Bicentennial Program, has played a key role to the success of Darling Harbour as Australia's premier gathering and entertainment precinct.

Despite its success, with an annual pedestrian visitation of around 13 million people, Harbourside is now outdated and in decline. The building lacks a quality interface to the Darling Harbour public domain and Cockle Bay and does not integrate well with the major transformation projects underway and planned for across Darling Harbour.

Harbourside is at risk of being left behind and undermining the significant investment being made in Darling Harbour that will see it return to the world stage as a destination for events and entertainment.

Accordingly, Mirvac are taking a carefully considered and staged approach to the complete revitalisation of the site and its surrounds.

1.2 Site Description

The Site is located within Darling Harbour. Darling Harbour is a 60 hectare waterfront precinct on the south-western edge of the Sydney CBD that provides a mix of functions including recreational, tourist, entertainment and business.

More generally the site is bound by Pyrmont Bridge to the north, the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP) to the south, Darling Drive and the alignment of the Light Rail to the west and Cockle Bay to the east.

A locational context area plan and location plan are provided in **Figure 1** and **Figure 2**, respectively.

The Darling Harbour precinct is undergoing significant redevelopment as part of the SICEEP, Darling Square, and IMAX renewal projects. The urban, built form and public transport / pedestrian context for Harbourside will fundamentally change as these developments are progressively completed.

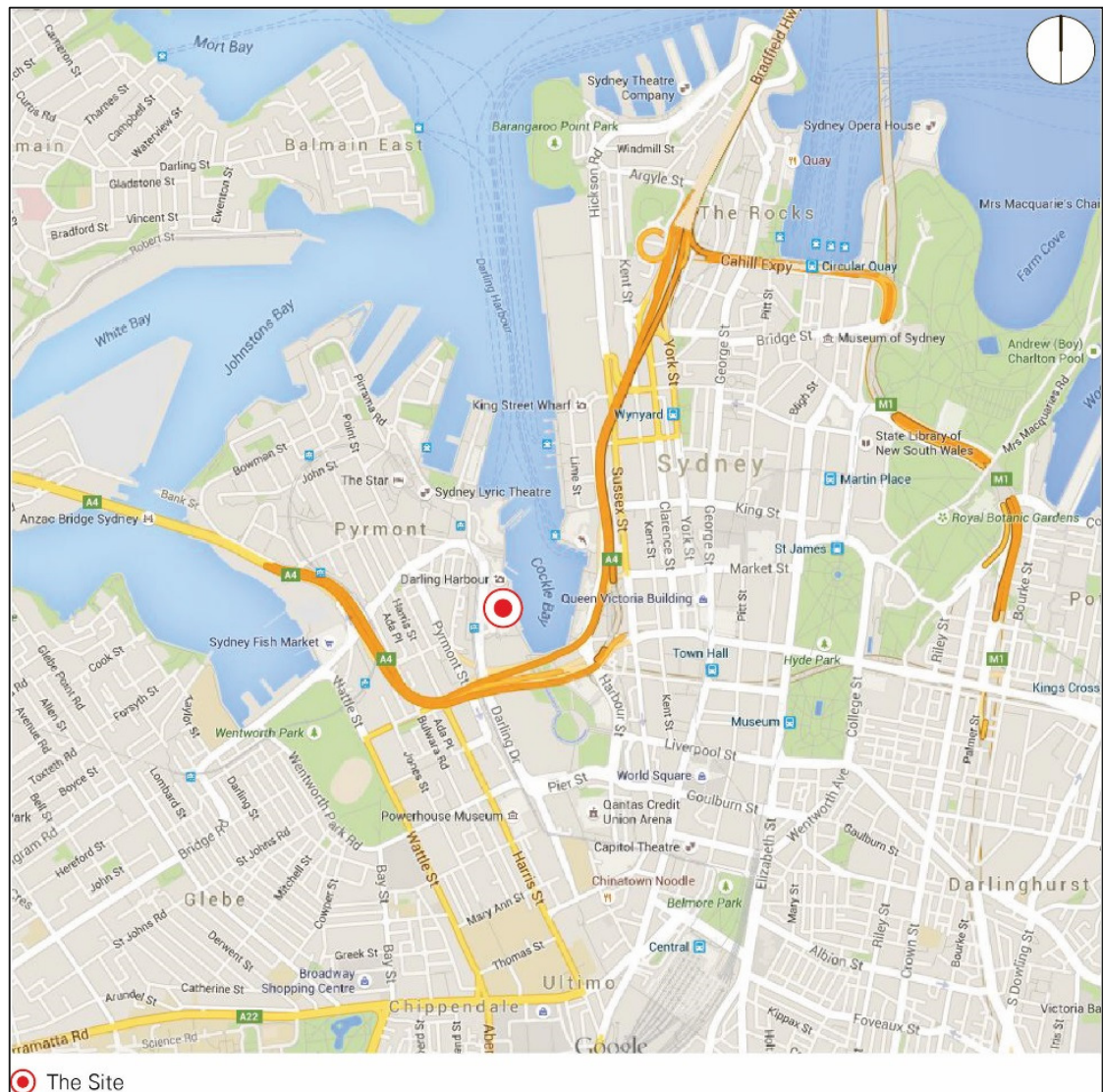


Figure 1 – Location Context Area Plan

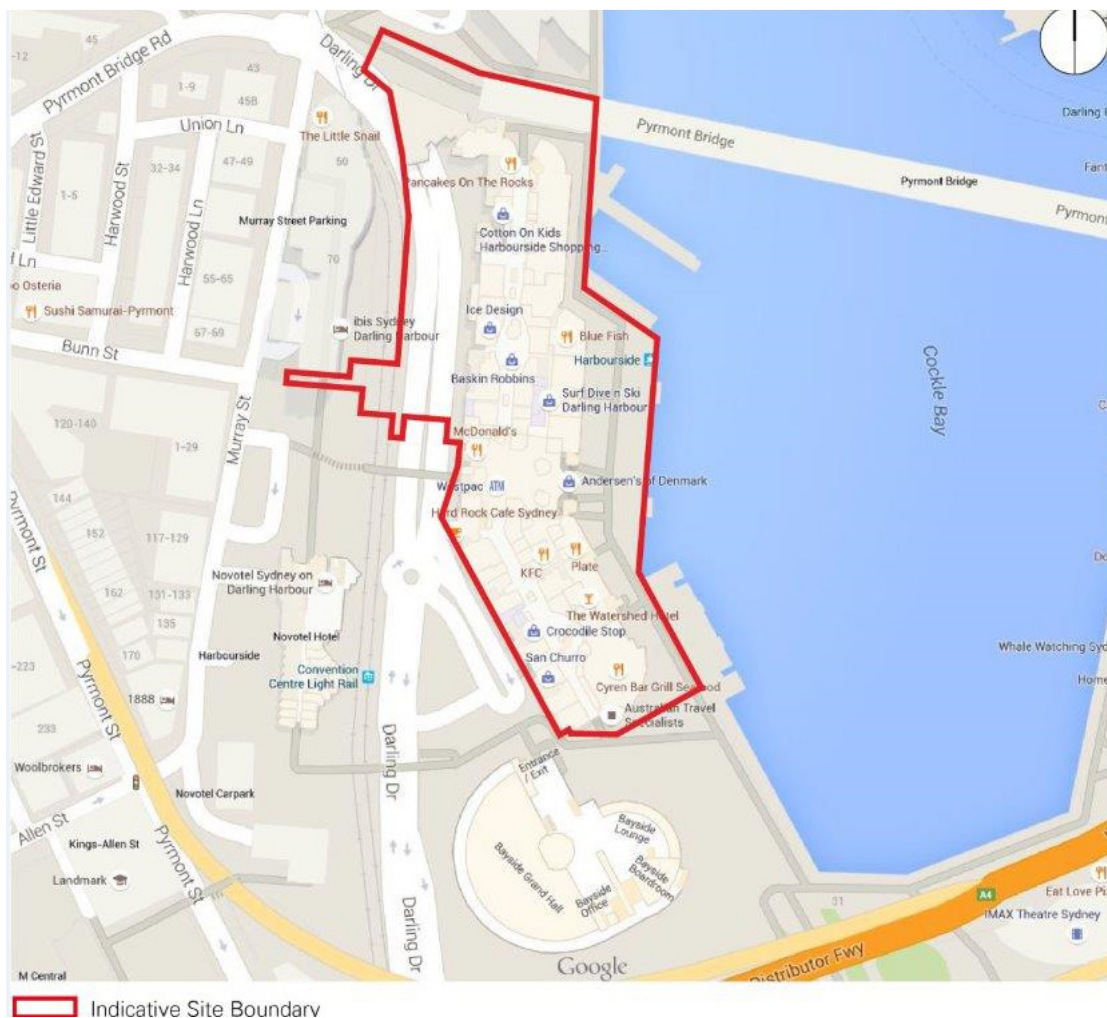


Figure 2 – Site Location Plan

1.3 Planning Approvals Strategy

The Site is located within the Darling Harbour precinct, which is identified as a State Significant Site in Schedule 2 of *State Environmental Planning Policy (State and Regional Development) 2011*. As the proposed development will have a capital investment exceeding \$10 million, it is declared to be State Significant Development (SSD) for the purposes of the *Environmental Planning and Assessment Act 1979* (EP&A Act), with the Minister for Planning the consent authority for the project.

This State Significant Development Application (DA) is a staged development application made under section 83B of the EP&A Act. It seeks approval for the concept proposal for the entire site and its surrounds.

More specifically this staged DA includes establishing land uses, gross floor area, building envelopes, public domain concept, pedestrian and vehicle access and circulation arrangements and associated car parking provision.

Detailed development application/s (Stage 2 DAs) will accordingly follow seeking approval for the detailed design and construction of all or specific aspects of the proposal in accordance with the approved staged development application.

The Department of Planning and Environment provided the Secretary's Environmental Assessment Requirements (SEARs) to the applicant for the preparation of an Environmental Impact Statement for the proposed development on 3 August 2016. This report has been prepared having regard to the SEARs as relevant.

2 PURPOSE OF THIS REPORT

This report has been prepared to accompany the Stage 1 DA for Harbourside. It addresses the relevant requirements of the Draft SEARs for the project, issued on the 30 August 2016. A summary of the relevant SEARs is listed below.

Table 1 Secretary's Environmental Assessment Requirements (SEARS)

SEARs Reference	Key Assessment Requirement	Relevant Section in This Report	Comment
6, Transport & Accessibility (Construction and Operation)	Current daily and peak hour vehicle, public transport, pedestrian and bicycle movements, together with the cumulative impacts of existing, proposed and approved developments in the area, and existing traffic and transport infrastructure provided adjacent to the proposed development.	3 & 5	
6, Transport & Accessibility (Construction and Operation)	Operation of existing and future transport networks, including the light rail, ferry and bus networks and the CBD and South East light Rail (CSELR), and their ability to accommodate the forecast number of trips to and from the development.	3	
6, Transport & Accessibility (Construction and Operation)	Existing and future performance of key intersections providing access to the site and any road/intersection upgrades required to accommodate the development. The assessment needs to be supported by appropriate modelling and analysis to the satisfaction of the Roads and Maritime Services (RMS). Existing and future performance of key intersections providing access to the site and any road/intersection upgrades required to accommodate development, using modelling and analysis supported by RMS	3 & 5	
6, Transport & Accessibility (Construction and Operation)	Measures to be implemented to encourage users of the development to make sustainable travel choices, including walking, cycling, public transport and car sharing, such as the provision of end of trip facilities.	4 & 5	
6, Transport & Accessibility	Appropriate provision, design and location of on-site bicycle parking, and	4	

SEARs Reference	Key Assessment Requirement	Relevant Section in This Report	Comment
(Construction and Operation)	how bicycle provision will be integrated with the existing cycle network.		
6, Transport & Accessibility (Construction and Operation)	Existing and proposed vehicle access (such as onto Bunn Street and Pyrmont Bridge) and parking arrangements (car, coaches/buses, taxi) for residents, employees and visitors, including compliance with appropriate parking controls.	3	
6, Transport & Accessibility (Construction and Operation)	The proposed loading dock and servicing provisions, including access arrangements to the loading docks.	4	
6, Transport & Accessibility (Construction and Operation)	Detail potential impacts of the development on the capacity and operation of the light rail and ferry network and modelling of the impacts of key pedestrian routes on nearby light rail and ferry stops.	5	
6, Transport & Accessibility (Construction and Operation)	Likely impacts of the proposal during construction.	6	
6, Transport & Accessibility (Construction and Operation)	Likely future service requirements.	4	

3 EXISTING TRANSPORT CONDITIONS

This section establishes the existing transport network conditions in the study area around the Harbourside development. An investigation of existing network capacity is being undertaken to identify key issues with regard to network deficiencies at key roads and intersections.

3.1 Road Network

The key roads that provide access to the development site include:

1. Pyrmont Street – is a north-south road parallel to Murray Street to the east and Harris Street to the west, running one-way southbound;
2. Pyrmont Bridge Road – is a State Road (west of Harris Street) connecting the Glebe area to Darling Drive near the western end of Pyrmont Bridge;
3. Harris Street - is a 50 km/h State Road (south of Pyrmont Bridge Street) running parallel to Pyrmont Street. Parking is permitted on both sides of the street and regulated through parking ticket meters. During peak hour, no parking zones operate;
4. Darling Drive – is the main arterial road that the development is accessed from; and
5. Harbour Street – is classified as a State Road aligned in the north-south direction, parallel to Darling Drive and to the east of Darling Harbour

Figure 3 below outlines the above five key road locations.

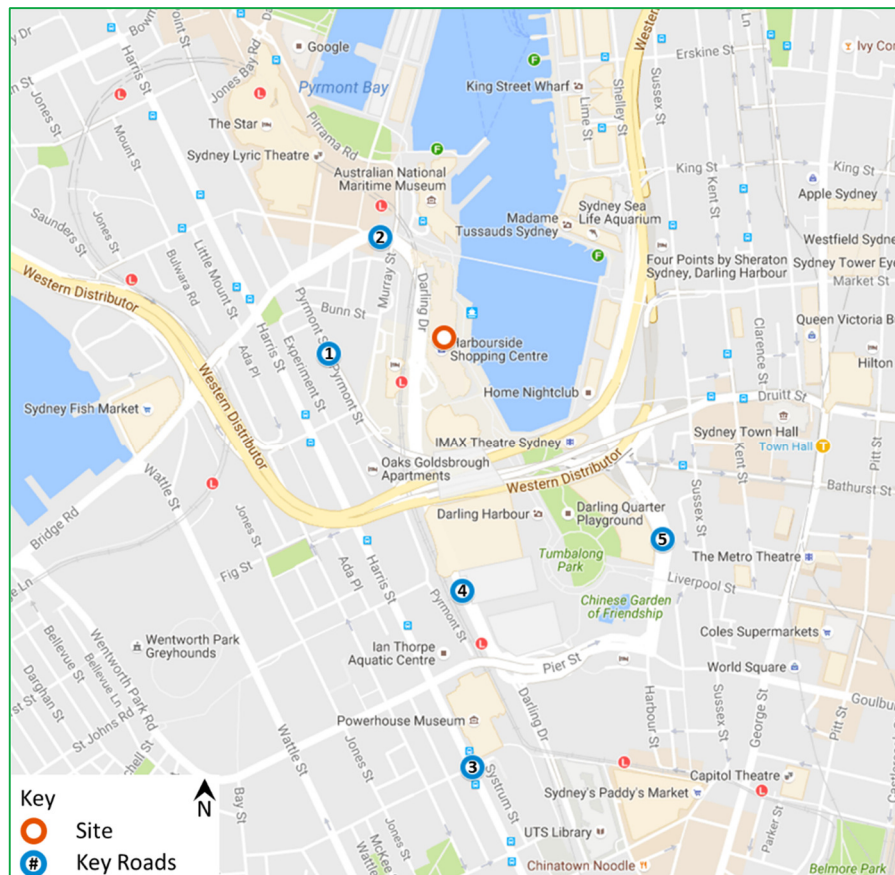


Figure 3 – Key Roads Location Plan

3.2 Traffic and Pedestrian Volumes

Traffic surveys were undertaken to collect new traffic data for key intersections and road corridors in the vicinity of the site. Intersection turning movement counts and mid-block surveys were carried out on the second week of February 2016.

Intersection turning movement counts and pedestrian counts were undertaken at three key intersections for a three hour AM (6:00-9:00 a.m.) and PM (4:00-7:00 p.m.) period. These intersections are located on the direct access routes to the site. The survey locations include:

- Pyrmont Bridge Road / Darling Drive / Murray Street intersection;
- Harbour Street / Pier Street intersection; and
- Darling Drive / Ultimo Road intersection.

Mid-block counts were also undertaken for a seven day period (24/7) along key road corridors leading to the site. The locations include:

- Pyrmont Bridge Road (west of Murray Street);
- Harbour Street (north of Pier Street); and
- Darling Drive (south of Pier Street).

It should be noted that surveys along Darling Drive between Pier Street and Murray Street have been excluded due to the ongoing construction of the Sydney International Convention Exhibition & Entertainment Precinct (SICEEP) development, which is still in the construction phase. There are currently road/lane closures north of Pier Street with restricted access to construction zones for construction related traffic. The traffic volumes on that section of Darling Drive will not be representative of regular weekday or weekend traffic.

3.2.1 Observed Peak Periods at Intersections

For each of the three intersections, peak one-hour periods were identified. The intersection turning movement data was used to identify the current capacity problems during the peak hour at key intersections. **Table 2** summarises the highest peak hour observed at each of the surveyed intersections.

Table 2 Observed AM and PM Peak Periods at the Key Intersections

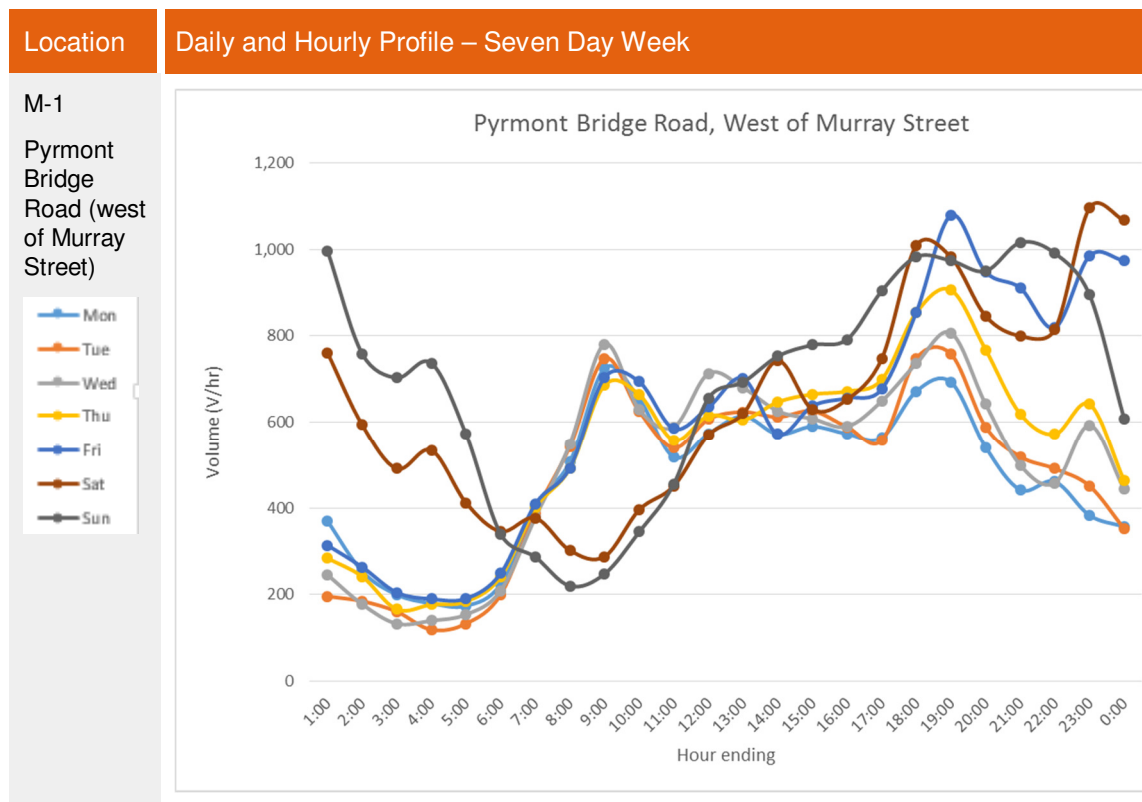
Intersection	Control Type	AM Peak Hour	PM Peak Hour
Pyrmont Bridge Road / Murray Street / Darling Drive	Traffic Signal	8:00 – 9:00	17:45 – 18:45
Harbour Street / Pier Street	Traffic Signal	8:00 – 9:00	17:45 – 18:45
Darling Drive / Ultimo Road	Traffic Signal	8:00 – 9:00	17:00 – 18:00

3.2.2 Traffic volume trends

The mid-block counts showed the following trends:

- Monday to Thursday follow similar trends and volume profiles throughout the day with the Friday afternoon peak manifesting the highest weekday peak volumes at Pymont Bridge Road and Darling Drive
- Morning peak hour is generally between 8:00-9:00 a.m.
- The weekday evening peak was observed to generally occur between 6:00-7:00 pm
- Midnight traffic volumes are highest at Pymont Bridge Road on a Friday and Saturday
- Weekend traffic volumes have mid-day and evening peaks.

Figure 3 Daily and Hourly Vehicle Profile at key Mid-Block Locations

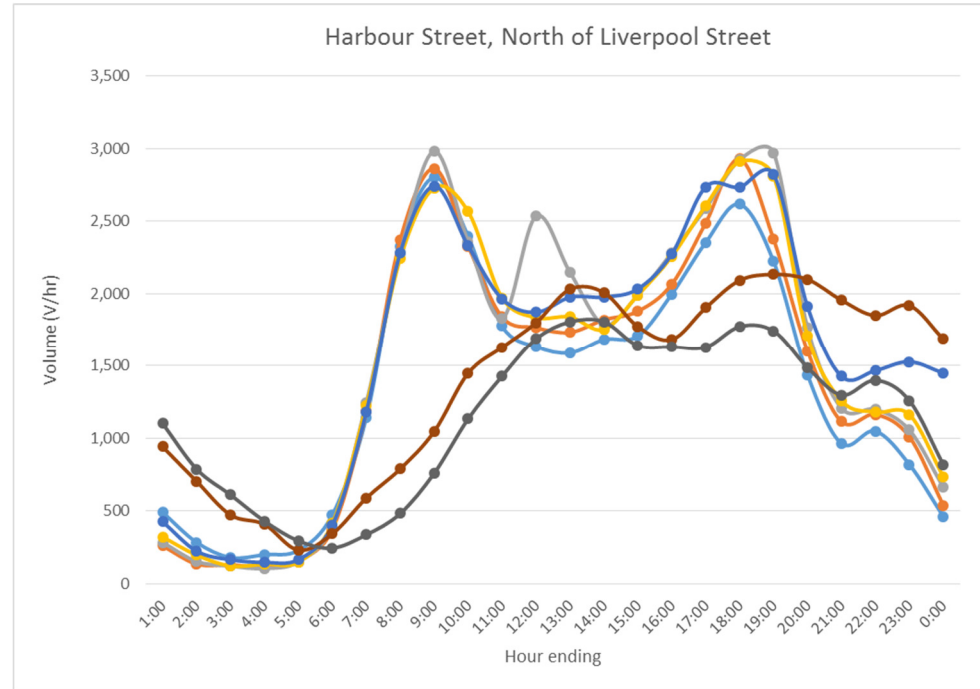
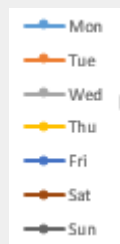


Location

Daily and Hourly Profile – Seven Day Week

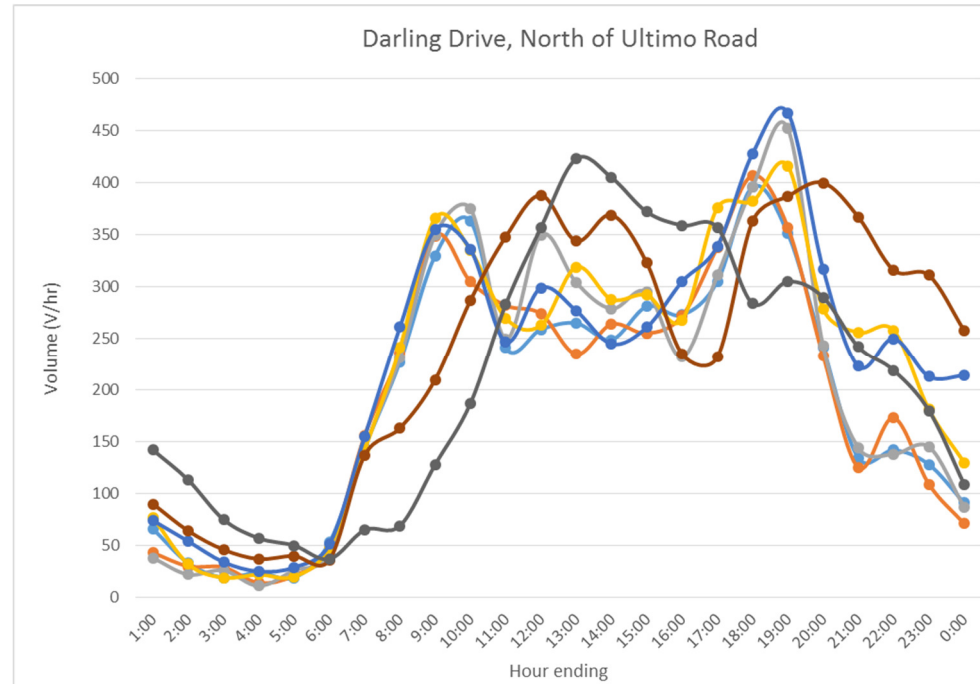
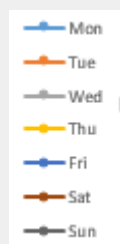
M-2

Harbour Street
(north of
Liverpool Street)



M-3

Darling Drive
(north of
Ultimo Road)



3.2.3 Peak Hour traffic Volumes at Key Roads

This section summarises the peak hour traffic flows on key intersections within the study area. **Table 3** summarises the AM and PM peak hour traffic volumes observed on key roads in the study area.

Table 3 Peak Hour Traffic Volumes at Key Roads

Road	Location	AM Peak			PM Peak		
		NB/EB	SB/WB	Two-way	NB/EB	SB/WB	Two-way
Pymont Road	West of Murray Street	507	222	729	379	461	840
Harbour Street	North of Pier Street	1,674	1,191	2,865	1,859	856	2,715
Harbour Street	South of Pier Street	1,436	1,279	2,715	1,355	999	2,354
Darling Drive	South of Pier Street	160	190	350	226	176	402

3.3 Parking

There are several public car parks located within walking distance to the Harbourside development. The three car parks listed in the table have a total capacity of approximately 4,000 parking bays.

Table 4 Carpark Availability

Public Carpark	Location	Distance	Bays
1- Wilson Parking - Harbourside	100 Murray Street, Pymont	120 metres west	1,387
Harbourside Carpark	117 Murray Street, Pymont	180 metres west	
2- Secure Parking - Harris Street	300 Harris Street	350 metres south west	260
3- InterPark – Edward Street	Edward Street	300 metres north west	2,500
Total			4,147

Furthermore, on completion later this year, the SICEEP development will provide additional parking capacity for approximately 1,226 car spaces, provided over three new public car parks, located in the new Exhibition Centre (ref. 4), Entertainment Centre (ref 5) and the Haymarket development (ref 6).

Although these SICEEP car parks will likely be at capacity during events, there will likely be spare parking capacity during non-event times.

Figure 4 below outlines the location of the above car parks. The dashed circles represent 5 and 10 minute walking distances.

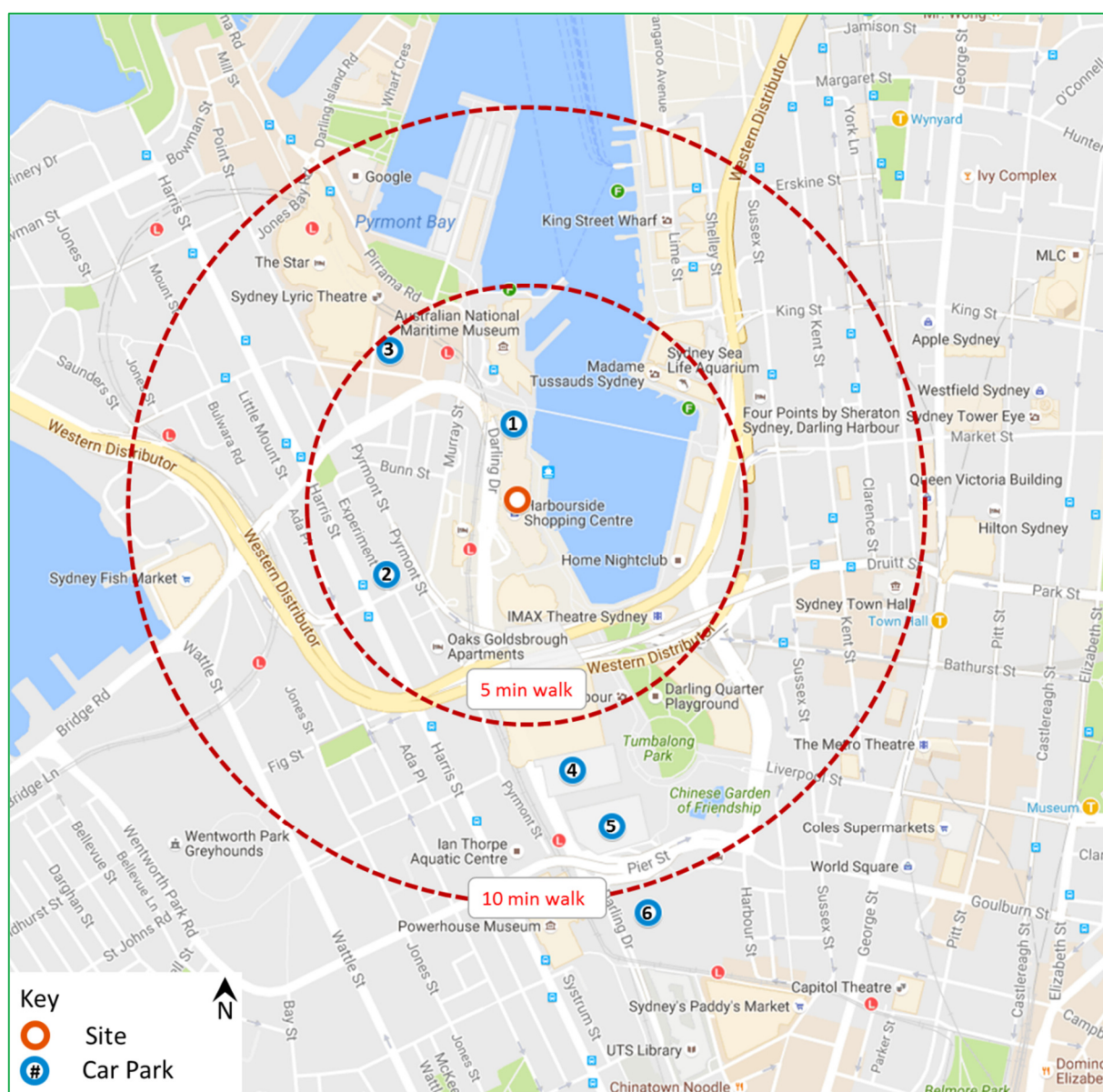


Figure 4 – Locations of Car Parking in the vicinity of the Harbourside Development

3.4 Public Transport

3.4.1 Cityrail Suburban Rail Services

The site is within close proximity to public transport and is within walking distance to the rail network serving the Sydney CBD. Town Hall Station (approximately 500 m) is a 15-minute walk via Cockle Bay Wharf and Central Station (approximately 1 km) can be reached in 25 minutes by walking from the site.

3.4.2 Light Rail

The closest public transport service is the light rail station at Convention Centre, which is a two to three minute walk away, providing a direct connection from both the Inner West and Central railway station to Darling Harbour South. The light rail provides transport solutions for commuters travelling to and from the CBD and the inner southern and eastern suburbs. **Figure 5** contains a map of the Sydney light rail coverage for the development area.



Figure 5: Sydney Light Rail Coverage Map (Source: www.sydneylightrail.transport.nsw.gov.au)

The light rail operates from 6am to 11pm daily between Central Station and Lilyfield with a service frequency of 8-10 minutes during the peak hour and 15 minute intervals during the off-peak and inter-peak periods. The light rail operates 24hrs daily between Central Station and Star Casino with a night service operating at 30 minute intervals. Extended hours are also observed on the Central Station to Lilyfield route during Fridays and Saturdays.

Both the existing Convention Centre and Exhibition Centre light rail stops are currently proposed to be upgraded with longer platforms to accommodate the new longer light rail trains, which will increase capacity at both of these stops.

The ongoing construction of the Sydney CBD and South East Light Rail project (CSELR) will expand the light rail network to Circular Quay along George Street to Central Station, through Surry Hills, Moore Park, Kensington and Kingsford via Anzac Parade and Randwick via Alison Road and High Street. The CSELR is expected to be completed in 2019.

3.4.3 Existing Public Bus Services

The closest bus stop is located at the Maritime Museum approximately a 5 minutes walking distance from the Harbourside site and is being serviced by bus route 389 which operates between Pyrmont and North Bondi via the City, Paddington and Bondi junction.

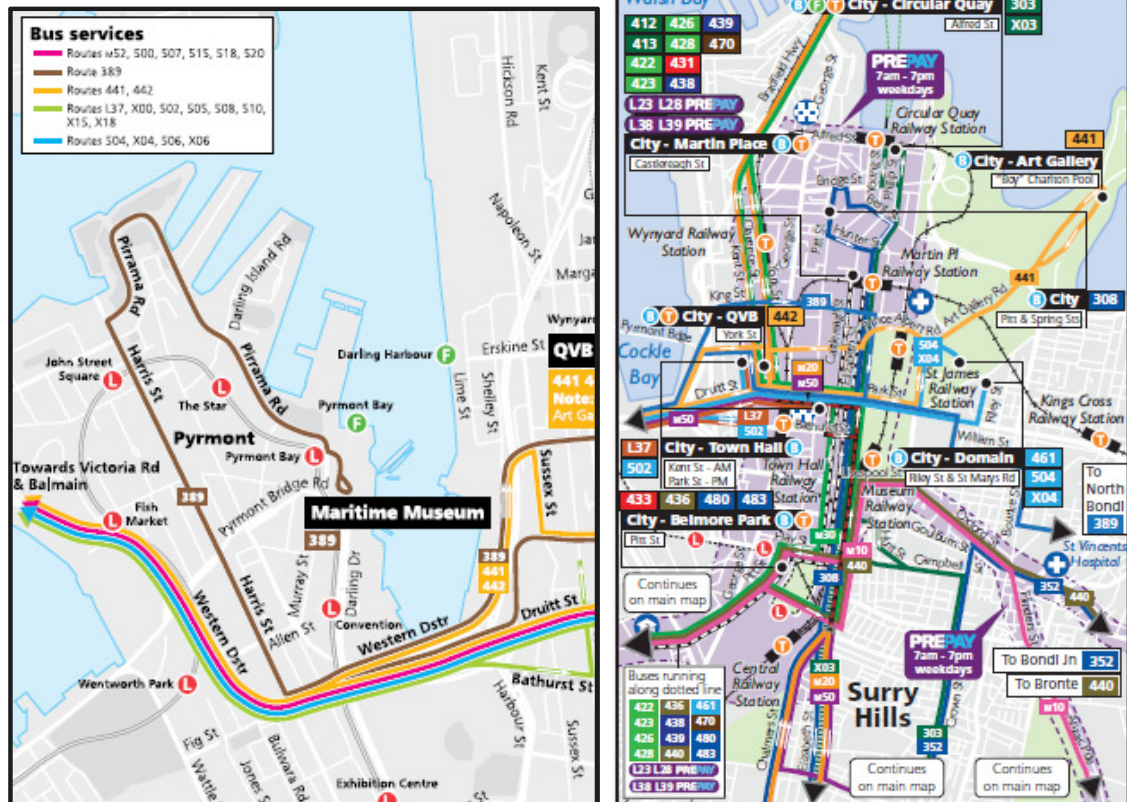


Figure 6: Bus Service Coverage Map adjacent to the site and in Sydney CBD (Source: Sydney Buses)

3.4.4 Ferry Services

Sydney Ferries operates ferry services between Circular Quay and Darling Harbour via Milson Point, McMahon's Point, Balmain East and stops at Sydney Aquarium and Pyrmont Bay. Both stops are approximately 5-10 minutes walking distance to the Harbourside development. The ferry services at Pyrmont Bay Wharf has a service frequency of every 30 minutes and operates from 6:30 AM to 8:00 PM. **Figure 7** below contains a coverage map of ferry services adjacent to the site and in the CBD district.

In addition, water taxis operate in Sydney Harbour and provide pickup or drop off at any accessible wharf or waterfront location.

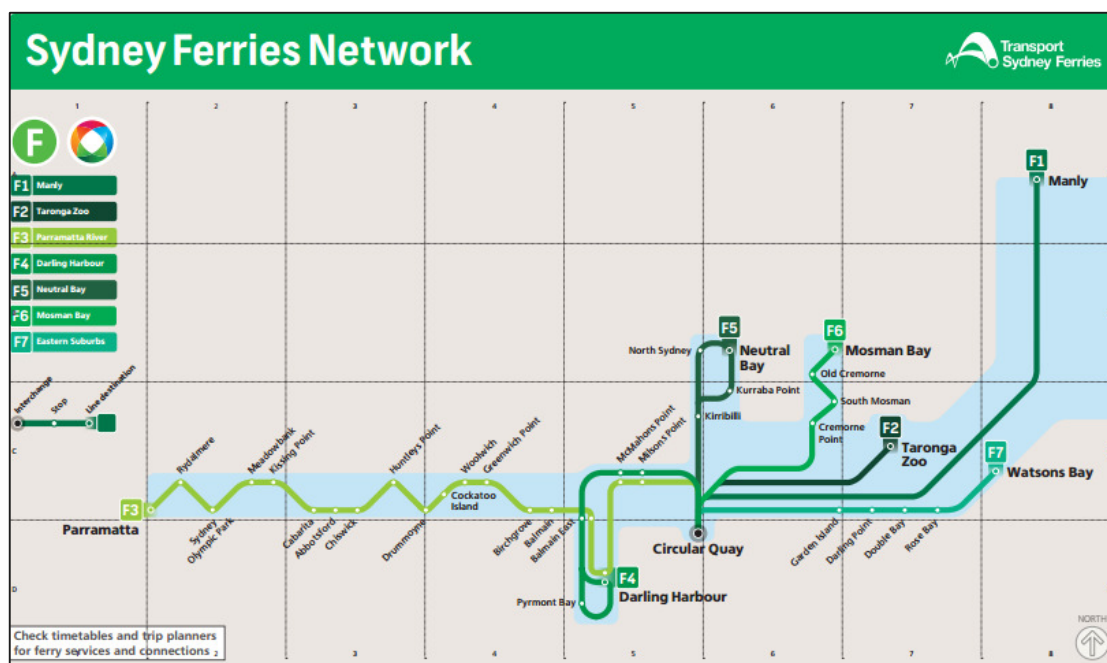


Figure 7: Ferry Service Coverage Map adjacent to the site and in Sydney CBD (Source: Sydney Ferries)

3.5 Pedestrian Network

The area surrounding the site has a well-established pedestrian network and is characterised with high levels of pedestrian activity as a result of the commercial, retail and tourist land uses. The pedestrian network consists of footpaths alongside major roads and multiple road crossings or overhead walkways including steps, ramps or lifts. There are a number of pedestrian access routes to and from the site. These routes are linked to the public domain areas within Tumbalong Park and Darling Harbour and to the various trip attractors within Darling Harbour and surrounding the site.

The major pedestrian links to the Harbourside site include connections to Sydney CBD, Town Hall and Central Station and adjacent areas via Pyrmont Pedestrian Bridge, pedestrian overpasses, footpaths along major roads and at-grade pedestrian crossings. The principal routes to and from Town Hall are Druiett Street and Bathurst Street. From Central Station, a direct route exists along Quay Street and through the Darling Harbour precinct. In addition, the Ultimo Pedestrian Network transformed the Goods Line into an active transport link, connecting cultural and educational institutions, and improving pedestrian access from Central Station and Railway Square through to Pyrmont and Darling Harbour. The Goods Line opened in August 2015.

From Central Station, a direct route exists along Quay Street but is under-utilised as linkages close to Central Station are poor. The Goods Line provides the alternate and improved route linking Central Station to Darling Harbour and Pyrmont.

The SICEEP development when completed will also include a new nominally 20m wide pedestrian Boulevard, linking Chinatown to Darling Harbour, the proposed Harbourside Development and Cockle Bay Wharf.

3.6 Cycle Network

The Sydney CBD Cycleway network consists of on-street marked cycle lanes, and separated at-grade cycleways. However, the majority of the routes in the Sydney CBD are shared routes on roads containing medium to high levels of vehicular traffic.

The north-south off road cycle path along Darling Drive provides access to the broader cycling network. North of the Darling Drive / Pier Street roundabout a new dual lane two-way segregated cycle-way is provided along the western side of Darling Drive up to a proposed signalised scramble crossing in the northern sector by the ICC and ICC Hotel. At this junction the cycle-way utilises the signalised scramble crossing to allow a safe connection to the existing single lane, one-way cycle way network, on the eastern side of Darling Drive.

The improved dual lane two-way segregated cycle path on the west side of Darling Drive will tie into a shared space zone, in the southern sector, south of the Darling Drive / Pier Street roundabout. Within this shared space zone, the dual cycle way will split and link into the existing single lane, one-way cycle way network, on either side of Darling Drive.

The enhancement of the cycle network along Darling Drive and provision of end-of-trip facilities in the form of bike racks was part of the SICEEP development and was aimed at encouraging the use of cycling and to increase the cycle mode share in accordance with current targets for sustainable transport.

Figure 8 contains a plan of the existing Sydney CBD cycleway network in the vicinity of the Harbourside development.

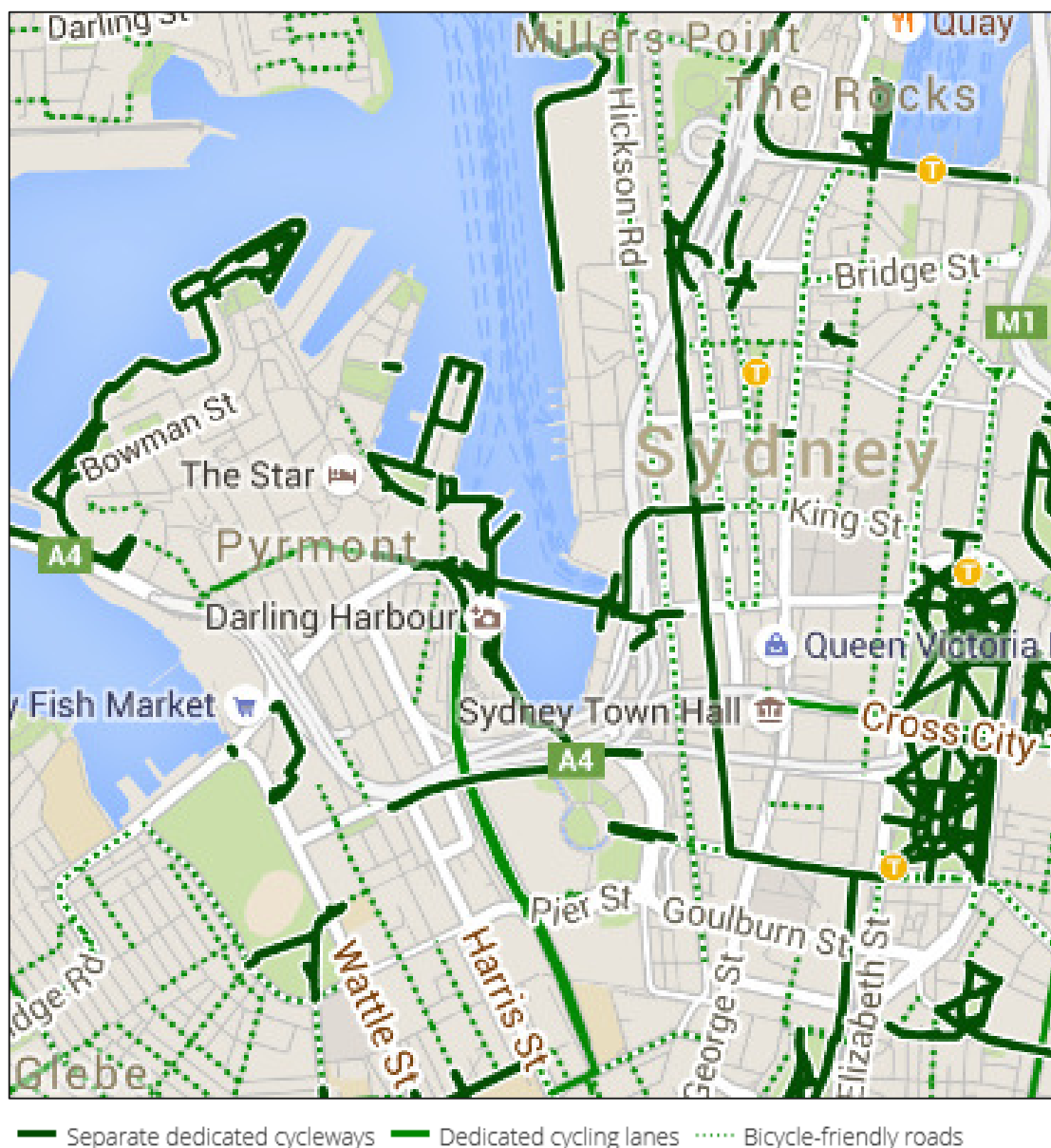


Figure 8: Existing cycle network (www.sydneycycleways.net)


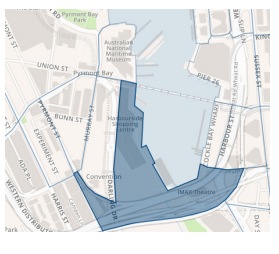
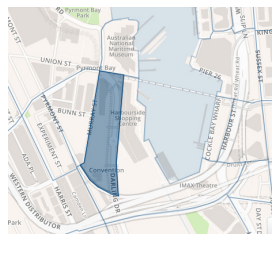
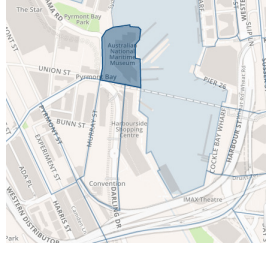
The peak hour traffic count undertaken at the intersection of Pyrmont Bridge Road/Murray Street/Darling Drive revealed there is a heavy influx of cyclists eastbound towards the city along Pyrmont Bridge Road in the AM peak. A total of 727 cyclists were counted over a three hour period from 6:00 AM to 9:00 AM with 406 cyclists observed during the peak hour. In the PM peak, the opposite flow (westbound) was heavier with 519 cyclists counted over the three hour period from 4:00 PM to 7:00 PM with 252 cyclists observed during the peak hour.

3.7 Mode Share

The existing mode share distribution within the surrounding road network was analysed by referencing the 2011 Census Journey to Work (JTW) data obtained from the Bureau of Transport Statistics, 2013. The JTW data provides information relating to the origin and destination of journeys to and from work for a travel zone, including modes of travel.

To understand the current mode share for trips to work in the study area, travel to and from the existing Harbourside development and to the adjacent zones were analysed.

Table 5 Travel Modes

Travel Mode	Zone 89	Zone 88	Zone 78
			
Train	35%	43%	40%
Vehicle driver	31%	32%	23%
Walk	15%	9%	7%
Bus	14%	5%	18%
Vehicle passenger	2%	7%	-
Ferry	1%	4%	7%
Other mode	1%	-	4%
Not stated	1%	-	1%

The data revealed that the dominant modes of travel to work on the site and for areas immediately adjacent to the site are train (35-43%), car (23-32%), bus (5-18%) and walk (7-15%). Public transport accounts for approximately 50% of the trips. Walking trips are also observed to be relatively high.

3.8 Private Coach Access

The proposed SICEEP development which is due to be completed in September 2016, will provide on-street bus parking drop-off bays, which will be located along the southbound lane of Darling Drive, north of the proposed signalised Convention Centre scramble crossing. This zone can accommodate two 14.5m private coaches, and is located adjacent to the proposed ICC

Hotel and Harbourside development. Another bus bay is provided on the opposite side of Darling Drive on the northbound lane.

Furthermore, the proposed shared space zone that will be located within the SICEEP development, between the ICC Convention Centre and the ICC Hotel has been designed to allow access for 14.5m coaches, for pick-up and drop-off purposes. This shared zone area is also located adjacent to the Harbourside development.

Figure 9 contains a key plan of adjacent transport facilities to the Harbourside development.

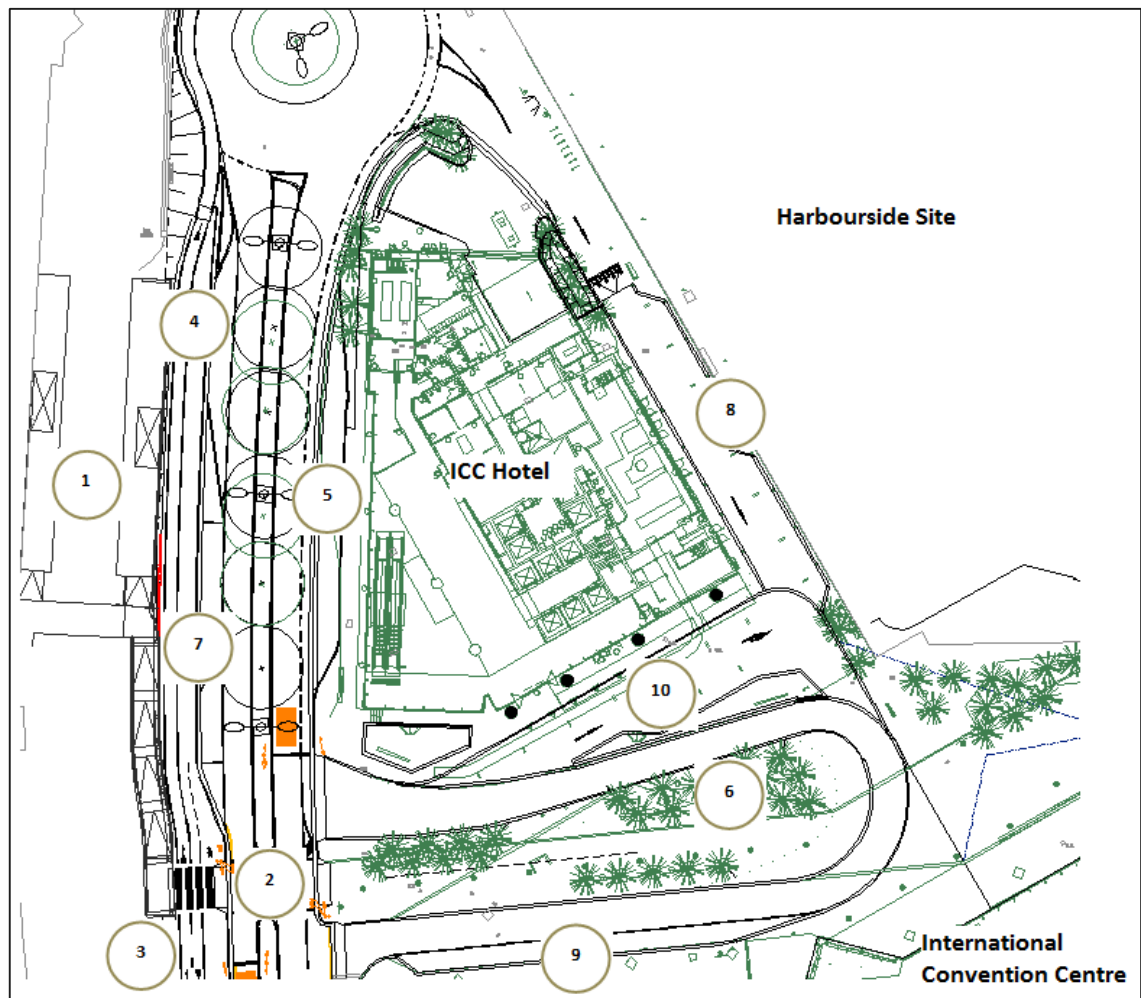


Figure 9: Key plan of adjacent transport facilities

Table 6: Key transport facilities adjacent to Harbourside

Key Reference No.	Transport Facility
1	Improved Convention Light Rail Stop Platforms
2	Proposed Signalised Pedestrian Crossing
3	Dual segregated cycleway
4	1 x 14.5m coach bay
5	2 x 14.5m Coach bays
6	Harbourside Place Shared Zone – Coach drop-off and pick-up
7	Taxi Zone
8	Taxi Zone
9	Taxi drop-off and pick-up
10	Porte Cohere

3.9 Taxi Zones

The SICEEP development will provide multiple taxi zones within the development, which will be located adjacent to the Harbourside development. These include new taxi zones located;

- Along the northbound lane of Darling Drive (5 spaces);
- Within the shared zone (Harbourside Place) located between the ICC Convention Centre and the ICC hotel – drop-off and pick-up (5 spaces)
- A porte cohere located as part of the ICC Hotel – drop-off and pick-up; and
- Along the access lane located between the ICC Hotel and the Harbourside development – 5 spaces

4 OVERVIEW OF PROPOSED DEVELOPMENT

The proposal relates to a staged development application and seeks to establish concept proposal details for the renewal and re-imagining of Harbourside.

The concept proposal establishes the vision and planning and development framework which will be the basis for the consent authority to assess future detailed development proposals.

The Harbourside site is to be developed for a mix of non-residential uses, including retail and restaurants, residential and open space.

The Concept Proposal seeks approval for the following key components and development parameters:

- Demolition of existing site improvements, including the Harbourside Shopping Centre, pedestrian bridge link across Darling Drive, obsolete monorail infrastructure, and associated tree removal;
- 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;
- A maximum total Gross Floor Area (GFA) across the Harbourside site of 87,000m² for mixed use development (non-residential and 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.

A more detailed and comprehensive description of the proposal is contained in the Environmental Impact Statement (EIS) prepared by JBA.

4.1 Parking Provision

4.1.1 Basement Parking

The proposed development will provide approximately 295 car parking spaces in the basement. Final car parking provision will be determined at the detailed design stage.

4.1.2 Bicycle Parking

Bicycle parking facilities are proposed and will be confirmed during the detailed design stage of the proposed development.

4.2 Pedestrian Network

The proposed pedestrian network will link up with the existing pedestrian network and the initiatives developed under the SICEEP development mainly consisting of the main boulevard

that will be up to 20m wide and will have sufficient capacity to cater for peak pedestrian demand anticipated during events at the precinct. The main boulevard will provide the main linkage from the south between Chinatown and Darling Square in Haymarket, Darling Central and Bayside within the SICEEP development and the Harbourside development and Cockle Bay, in the north.

Pedestrian linkages to the west of Harbourside will be improved by the relocation of the pedestrian bridge connecting the now closed Convention Centre monorail station to the Novotel Hotel carpark to an improved connection from the Harbourside development with Bunn Street. Connectivity to the Sydney CBD to the east of Harbourside will be maintained via Pyrmont Bridge Road, the existing pedestrian overpasses and at-grade pedestrian crossings. Please refer to **Figure 10** for a location plan of the existing and proposed pedestrian bridge over Darling Drive and the light rail. The new pedestrian bridge will consider all relevant limited in height stratum associated with the light rail catenary infrastructure.

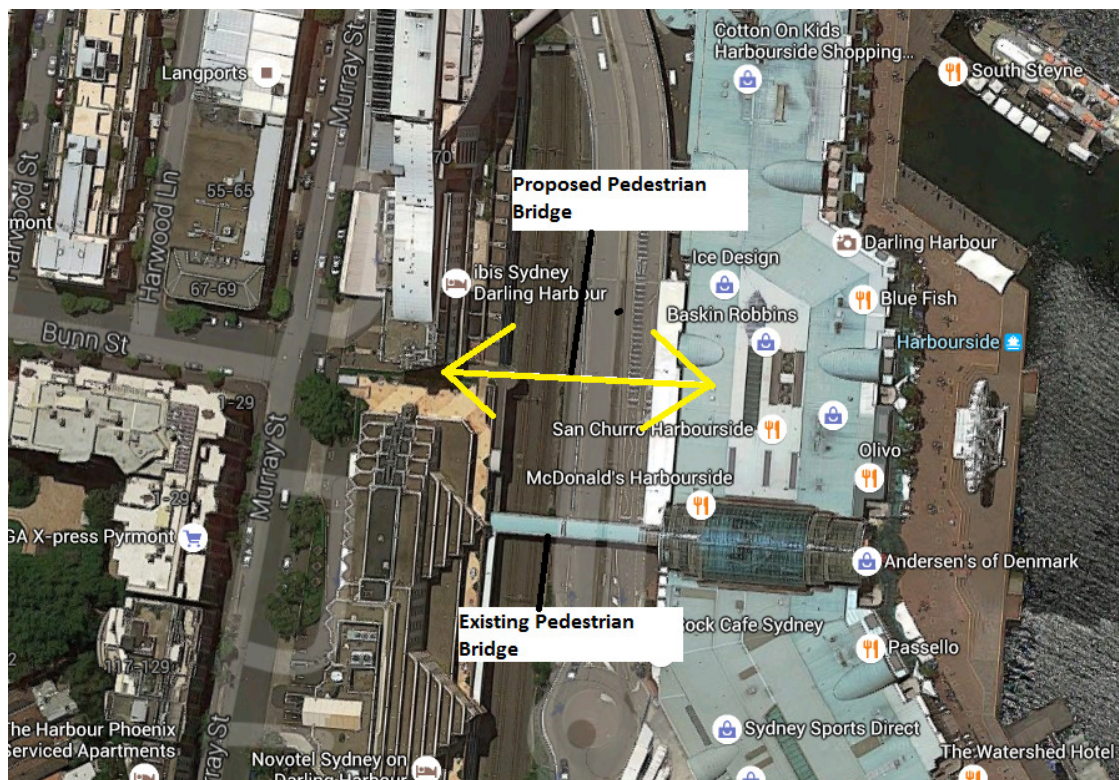


Figure 10: Proposed Pedestrian Bridge Location Plan

4.3 Cycle Network

The cycle network will be consistent with the existing cycle network together with the improved network provided with the SICEEP development. The proposed cycle access for the Harbourside development will include the Darling Drive cycle network and the internal cycle route with the Darling harbour Precinct via Tumbalong Park. Access to the development will be enhanced at key entry points for cyclists with facilities provided where necessary. No new cycle routes will be developed.

4.4 Servicing

4.4.1 Vehicular Drop-off

A new drop-off facility is proposed that will provide car, taxi and coach drop-off facility to the proposed Harbourside development, which will be provided off the existing Darling Drive up-ramp, located between the roundabout and Pymont Bridge Road intersection. This drop-off facility will be designed in accordance with best practice road design guidelines and it will be DDA compliant, to consider mobility impaired patrons. Consultation with the Roads and Maritime Services (RMS) and City of Sydney is recommended during the design development phase with regard to the drop-off facility.

Please refer to **Figure 11** for an indicative location of this drop-off facility.

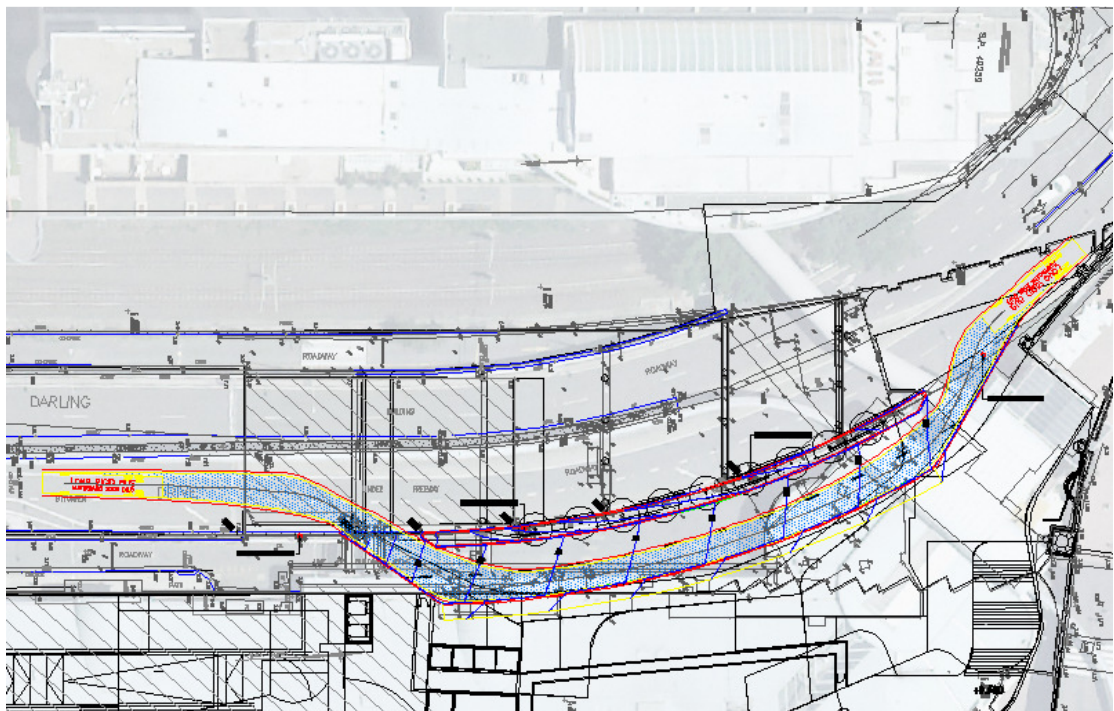


Figure 11: Indicative Plan of Drop-off facility

4.4.2 Loading Dock

The current Harbourside Shopping Centre development contains the following capacity within its loading dock:

- 7 x HRV bays
- 3 x SRV bays
- 5 x Small service vehicle bays

The proposed loading dock will be accessed via the access road from Darling Drive roundabout that is currently used by the existing loading dock.

Given the increase in size of the retail area it is anticipated that the proposed loading dock will cater for the following in the proposed loading dock:

- 9 x HRV bays;
- 2 x SRV bays; and
- 4 x Small service vehicle bays

However, numbers are subject to change in the detailed design stage.

The expected percentage usage of the loading dock is split as follows:

- 70% HRV;
- 20% LRV; and
- 10% SRV

It is recommended that a loading dock management plan is developed by the operator at a future date. A swept path assessment was undertaken to demonstrate access and maneuverability within the loading dock. The swept path diagrams are shown in **Appendix A**.

The final loading dock layout will be confirmed during future detailed design stages of the proposed development.

4.4.3 Waste Management

The current waste management facility is provided within the service yard located adjacent to the existing loading dock. It is proposed that a similar arrangement will be maintained for the future operation mode of the proposed development.

4.4.4 Emergency Vehicle Access

Emergency vehicle access will be provided for ambulance and aerial fire trucks to the proposed development, via:

- Darling Drive;
- Harbourside Place;
- the proposed access for the loading dock; and,
- the proposed access lane located between the ICC Hotel and the Harbourside development.

5 TRAFFIC IMPACT ASSESSMENT

5.1 Traffic Generation and Trip Distribution

5.1.1 Harbourside Development

The proposed Harbourside development will consist of retail and residential land use and open space.

Table 7 summarises development yield information provided in the Concept Plan.

Table 7 Development Components

Land Use Category	Area
Residential	35,000m ² Gross Floor Area (GFA)
Retail	52,000m ² GFA
Total	87,00m ² GFA

It should be noted that the site currently consists of an existing retail land use of approximately 21,000 m² GFLA. The development proposes to expand on the existing retail land use resulting in a net increase of approximately 5,000 m² GFLA. The future retail land use is expected to be similar in purpose and intent. Hence, for this assessment only the net increase in GLFA is expected to generate the additional traffic attributed to the retail component of the development.

An indication of the peak hour traffic generation potential of the future development has been based on the "Roads and Traffic Authority Guide to Traffic Generating Developments" (2002). The Roads and Maritime's Guide provides a series of traffic generation rates for a variety of land uses based on generic surveys undertaken by the Roads and Maritime. These rates are generally applied to the Gross Floor Area (GFA) or GLFA.

Roads and Maritime TDT 2013/04a, released in the latter part of 2013, provides updated traffic generation rates for residential, retail and office/commercial developments blocks. The generation rates are based on new surveys conducted in 2010-12 on various developments within Sydney, with locations close to public transport. The PM peak period is selected as the more critical peak period due to the nature of the surrounding adjacent developments.

The average peak hour traffic generation rates suggested in Roads and Maritime TDT 2013/04a for the proposed land uses are as follows:

- High density residential flat dwelling evening peak vehicle trips: 0.19 vehicle trips per hour per unit in the AM peak and 0.15 vehicle trips per hour per unit in the PM peak
- Retail (shopping centre) evening peak hour vehicle trips: 5.6 vehicle trips per hour per 100sqm GLFA for a total floor area range of 20,000-30,000m² (GLFA)

The above trip generation rates assumes that each land use is independent of the other and that the activities of the site are not linked to adjacent development.

However, in reality, the incidence of linked and multi-purpose trips will reduce the overall trip generation. A linked trip is a trip taken as a side-track from another trip while a multi-purpose trip is where more than one facility is visited. Hence, trip discounts would generally apply.

It should be noted that the two main components of the Harbourside development can be treated differently in terms of traffic generation potential.

a) Peak hour generation

The residential development is considered to generate a higher AM peak generation compared to the PM peak while the retail component of the development is likely to generate peak traffic volumes outside the regular AM road network peak but can potentially coincide with the PM network peak (weekdays) and midday peak on weekends.

b) Peak hour distribution

The residential development is expected to have a distribution of 25% in / 75% out in the AM peak and 60% in / 40% out in the PM peak.

The retail development is expected to have a distribution of 60% in / 40% out in the AM peak and 50% in / 50% out in the PM peak.

c) Link and Multi-Purpose Trips

A 20% discount is applied to the residential development further considering close proximity to the light rail station and enhanced pedestrian and cycle connectivity of the site.

The retail trip generation also has the potential to consist of linked and multi-purpose trips rather than stand-alone trips. With this in mind, a discount rate is applied to the retail trips. A discount of 25% is applied to trip generation rates for retail development considering that the trips to and from the retail component will generally attract patronage from visitors already within the Darling Harbour precinct.

Application of the traffic generation rates and the trip discounts on the proposed development yields a weekday peak period total traffic generation potential of 144 In / 135 Out during the evening peak period.

Table 8 Trip Generation Potential

Land Use Category	Area	Gross Traffic Generation (AM/PM)	Discount	Net Traffic Generation (AM/PM)	AM Peak Generation	PM Peak Generation
Residential	35,000 GFA	69/55	20%	55/44	14 In / 41 Out	26 In / 17 Out
Net Retail ¹	Net 5,000 ¹ m ² GFLA	314/314	25%	236/236	142 In / 94 Out	118 In / 118 Out
Total peak hour generation					155 In / 136 Out	144 In / 135 Out

¹ Existing retail for Harbourside is approximately 21,000 m² GFLA

5.1.2 SICEEP Development

Inclusion of the traffic generation potential of the SICEEP development is an important consideration in the assessment of future cumulative traffic. Traffic generation for the SICEEP development was estimated based on the future accommodation potential of the proposed individual facilities. The whole of precinct development of the SICEEP development consists of the PPP (Exhibition Centre, Convention Centre, and Theatre), Darling Square (NW Plot, West, SW Plot, North, NE and SE) and ICC Hotel. An assessment was undertaken on the future traffic generation attributed to the whole of precinct of the SICEEP development and the resulting impacts to the key intersections. For the purpose of this assessment, a future scenario is assessed taking into account the cumulative impact of the operations of both the Harbourside and SICEEP developments.

5.1.3 Trip Distribution

For the assessment, the following traffic distribution was assumed. This distribution is assumed to still be valid for the current assessment.

- 30% trips anticipated to arrive from western suburbs via M4 Western Distributor;
- 10% trips anticipated to arrive from western suburbs via Great Western Highway;
- 30% trips anticipated to arrive from northern suburbs via M4 Western Distributor and then through Harbour Street and Pier Street;
- 20% trips anticipated to arrive from southern suburbs by using Eastern Distributor and then through Goulburn Street and Pier Street; and,
- 10% trips anticipated to arrive from southern suburbs by using Great Western Highway and then through Ultimo Road.

5.2 Network Capacity and Level of Service

5.2.1 Existing Intersection Operation

The criteria for evaluating the operational performance of intersections are provided by the *RTA Guide to Traffic Generating Developments, Version 2.2, October 2002*. The criterion is based on a qualitative measure (i.e. Level of Service), which is applied to each average delay band.

The 'Level of Service' is the standard used to measure the performance of the intersection operation. This is defined as the qualitative assessment of the quantitative effect of factors such as speed, traffic volume, geometric features, delays and freedom of movement.

The intersections were assessed for existing operational performance using SIDRA Intersection Analysis. SIDRA Intersection calculates the amount of delay experienced by vehicles using an intersection, and gives a 'Level of Service' rating. The 'Level of Service' (LoS) indicates the relative performance of that intersection with regard to the average delay (in seconds per vehicle) experienced by vehicles at the intersection.

At a signalised intersection, the LoS criteria are related to average intersection delay measured in seconds per vehicle. The RMS Guide has recommended that with roundabout, "Stop" and "Give Way" sign control intersections, the LoS value is determined by the critical movement with the highest average delay.

Table 9 summarises intersection LoS criteria used to assess the intersection performance.

Table 9 LOS Criteria

Level of Service	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing

In general, SIDRA predicts intersection performance for the following key parameters:

- Degree of saturation (DoS);
- Average delays to intersection;
- Level of service (LoS) determined from LoS criteria; and
- Queue length.

Intersection analysis of the key intersections adjacent to the site was undertaken. The results of the modelling for existing traffic are shown in **Table 10** and **Table 11**, for the AM and PM peak periods, respectively. The results of the modelling reveal that overall the key intersections perform at an acceptable LoS on a typical Friday or Saturday PM peak. **Figure 12** contains key plan of the traffic survey locations.

Table 10 and **Table 11** present the summary of existing LoS for the key intersections of the precinct.

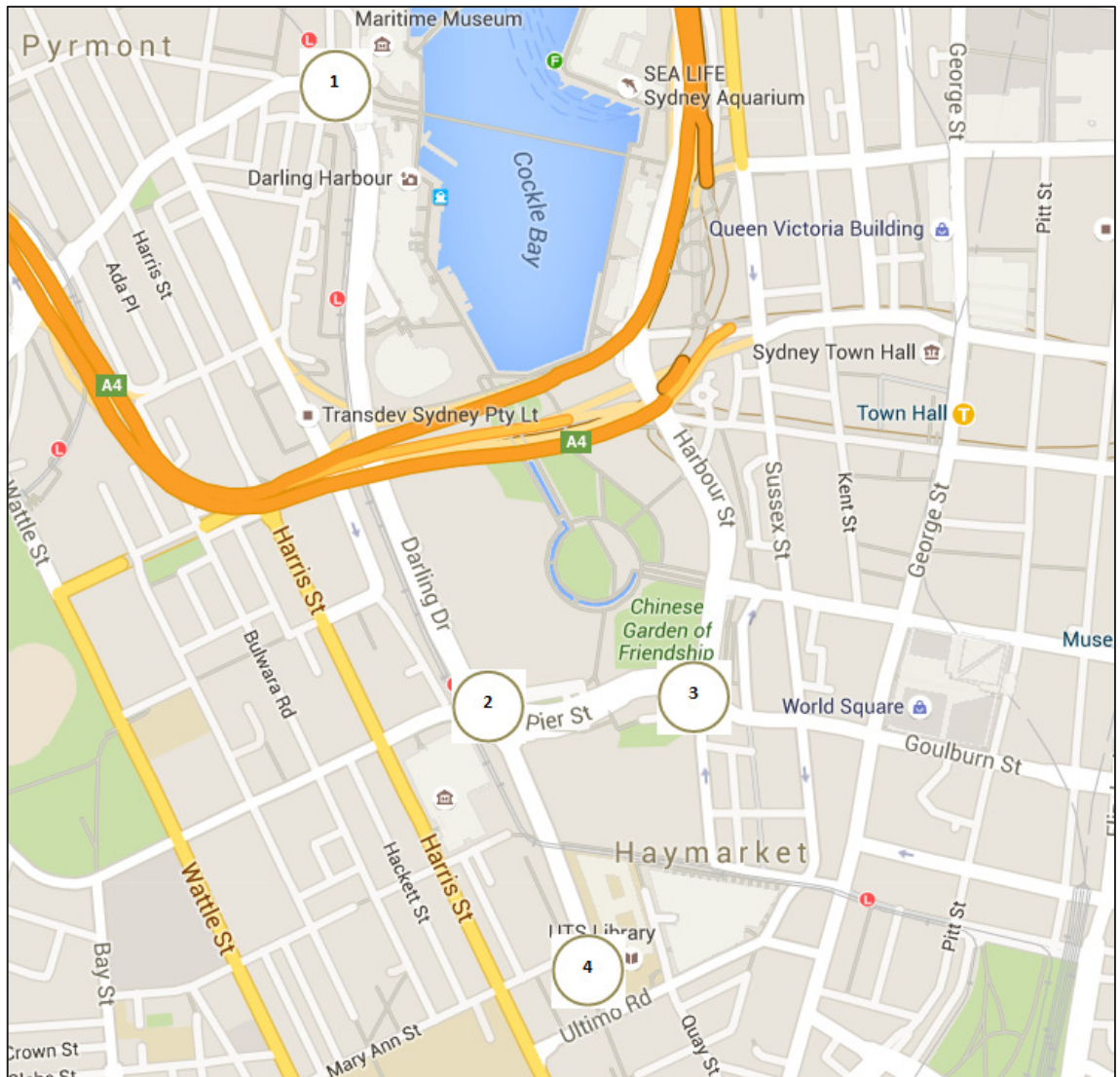


Figure 12: Traffic Survey locations

Table 10 Existing Level of Service for AM Peak

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
Murray St / Pyrmont Bridge Road	Signalised	Murray Street North	48	LOS D	37	LOS C
		Darling Drive	36	LOS C		
		Murray Street South	48	LOS D		
		Pyrmont Road West	31	LOS C		
Darling Dr / Pier Street*	Roundabout	Darling Dr North	5	LOS A	8	LOS A
		Pier St (off-ramp) East	9	LOS A		
		Darling Drive South	11	LOS A		
Pier St / Harbour St / Goulburn St	Signalised	Harbour St North	31	LOS C	33	LOS C
		Goulburn St East	38	LOS C		
		Harbour St South	46	LOS D		
		Pier St West	29	LOS C		
Darling Dr / Ultimo Road	Signalised	Darling Drive North	31	LOS C	19	LOS B
		Ultimo Road East	15	LOS B		
		Darling Drive South	26	LOS B		
		Ultimo Road West	16	LOS B		

Table 11 Existing Level of Service for PM Peak

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
Murray St / Pyrmont Bridge Road	Signalised	Murray Street North	56	LOS D	55	LOS D
		Darling Drive	78	LOS F		
		Murray Street South	50	LOS D		
		Pyrmont Road West	29	LOS C		
Darling Dr / Pier Street*	Roundabout	Darling Dr North	5	LOS A	8	LOS A
		Pier St (off-ramp) East	9	LOS A		
		Darling Drive South	10	LOS A		
Pier St / Harbour St / Goulburn St	Signalised	Harbour St North	53	LOS D	50	LOS D
		Goulburn St East	58	LOS E		
		Harbour St South	52	LOS D		
		Pier St West	35	LOS C		
Darling Dr / Ultimo Road	Signalised	Darling Drive North	36	LOS C	19	LOS B
		Ultimo Road East	17	LOS B		
		Darling Drive South	34	LOS C		
		Ultimo Road West	18	LOS B		

Note: Traffic volumes for the Darling Drive and Pier Street roundabout have used 2013 traffic counts. A comparison of traffic data collected in 2013 with results from the current traffic counts revealed that traffic volumes observed previously

appeared to be higher than the current traffic conditions recorded at the other three traffic survey locations. Due to the ongoing SICEEP construction, a traffic survey carried out at this time would not be reflective of a base case.

5.2.2 Future Operational Performance

The results of the modelling for the future network with the proposed development are presented in **Table 12** and **Table 13** for the AM and PM peak periods, respectively.

Table 12 Future Intersection Performance – AM Peak

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
Murray St / Pyrmont Bridge Road	Signalised	Murray Street North	48	LOS D	37	LOS C
		Darling Drive	35	LOS C		
		Murray Street South	48	LOS D		
		Pyrmont Road West	32	LOS C		
Darling Dr / Pier Street*	Roundabout	Darling Dr North	5	LOS A	8	LOS A
		Pier St (off-ramp) East	9	LOS A		
		Darling Drive South	9	LOS A		
Pier St / Harbour St / Goulburn St	Signalised	Harbour St North	34	LOS C	35	LOS C
		Goulburn St East	38	LOS C		
		Harbour St South	46	LOS D		
		Pier St West	30	LOS C		
Darling Dr / Ultimo Road	Signalised	Darling Drive North	31	LOS C	19	LOS B
		Ultimo Road East	15	LOS B		

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
		Darling Drive South	26	LOS B		
		Ultimo Road West	17	LOS B		

Table 13 Future Intersection Performance – PM Peak

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
Murray St / Pyrmont Bridge Road	Signalised	Murray Street North	37	LOS C	42	LOS C
		Darling Drive	40	LOS C		
		Murray Street South	44	LOS D		
		Pyrmont Road West	47	LOS D		
Darling Dr / Pier Street*	Roundabout	Darling Dr North	5	LOS A	8	LOS A
		Pier St (off-ramp) East	9	LOS A		
		Darling Drive South	11	LOS A		
Pier St / Harbour St / Goulburn St	Signalised	Harbour St North	67	LOS E	55	LOS D
		Goulburn St East	57	LOS E		
		Harbour St South	52	LOS D		
		Pier St West	37	LOS C		
Darling Dr / Ultimo Road	Signalised	Darling Drive North	35	LOS C	19	LOS B

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
		Ultimo Road East	17	LOS B		
		Darling Drive South	34	LOS C		
		Ultimo Road West	18	LOS B		

5.2.3 Future Operational Performance with SICEEP

Future modelling of the Darling Harbour Precinct was undertaken as part of the SICEEP project. The post development traffic conditions were assessed with microsimulation modelling using AIMSUN. Friday evening peak was deemed to be the critical peak period. The results of the AIMSUN modelling on post development intersection performance were reported in the traffic and transport report accompanying the development application.

Forecast future traffic attributed to the SICEEP development (Friday PM peak with event traffic) was extracted from the SICEEP Traffic and Transport report that was publicly exhibited during the development application phase. Modelling of cumulative traffic with SICEEP and Harbourside developments were undertaken using SIDRA modelling. The results are presented in **Table 14**.

Table 14 Future Intersection Performance with SICEEP – PM Peak

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
Murray St / Pyrmont Bridge Road	Signalised	Murray Street North	98	LOS F	85	LOS F
		Darling Drive	131	LOS F		
		Murray Street South	49	LOS D		
		Pyrmont Road West	36	LOS C		
Darling Dr / Pier Street*	Roundabout	Darling Dr North	7	LOS A	11	LOS A

Intersection	Intersection Control	Approach	Average Delay Approach (sec/veh)	Approach LoS	Overall Average Delay (sec/veh)	Overall LoS
		Pier St (off-ramp) East	11	LOS A		
		Darling Drive South	20	LOS B		
Pier St / Harbour St / Goulburn St	Signalised	Harbour St North	85	LOS F	67	LOS E
		Goulburn St East	78	LOS F		
		Harbour St South	56	LOS D		
		Pier St West	36	LOS C		
Darling Dr / Ultimo Road	Signalised	Darling Drive North	26	LOS B	17	LOS B
		Ultimo Road East	10	LOS A		
		Darling Drive South	33	LOS C		
		Ultimo Road West	39	LOS C		

It should be noted that the above SIDRA modelling results are indicative of the intersection performance in isolation of the adjoining intersections. The microsimulation modelling undertaken for the SICEEP project has considered the network as a whole and has assessed the performance of the intersections relative to its adjoining intersection. Hence, it is anticipated that this assessment has considered the worst scenario.

A comparison of the traffic count data collected for this project with traffic count data from 2013 SICEEP project revealed that overall the total traffic volume based on 2016 survey counts is approximately 90% of that obtained in 2013. In addition, there has been a redistribution of traffic movements between the two years, with one intersection experiencing a through movement of over double that of 2013. Movements with an increase of traffic are presented below:

Murray St / Pyrmont Bridge Road

- Right turn movement from Murray Street (N) to Pyrmont Bridge Road (W) has increased by 32%.
- Through movement from Murray Street (N) to Murray Street (S) has increased by 5%.

- Through movement from Murray Street (S) to Murray Street (N) has increased by 112%.
- Left turn movement from Murray Street (S) to Pyrmont Bridge Road (W) has increased by 25%.
- Left turn movement from Pyrmont Bridge Road (W) to Murray Street (S) has increased by 18%.

Pier St / Harbour St / Goulburn St

- Right turn movement from Harbour Street (N) to Pier Street (W) has increased by 38%.
- Left turn movement from Harbour Street (N) to Goulburn Street (E) has increased by 17%.
- Through movement from Pier Street (W) to Goulburn Street (E) has increased by 10%.

Darling Dr / Ultimo Road

- Through movement from Ultimo Road (E) to Ultimo Road (W) has increased by 6%.

It is acknowledged that the surveys carried out for this study were conducted during the ongoing construction and hence is perceived not to be representative of existing. The differences in traffic flows and the redistribution is attributed to the temporary closure of Darling Drive. However, a sensitivity assessment was undertaken by applying the 2013 volumes in place of the 2016 and the likely outcomes of the intersection modelling has revealed that the outcomes are not likely to differ significantly than what has been reported with the application of 2016 traffic volumes.

5.2.4 Impact on Intersection Performance

The results of the intersection modelling indicate that the Harbourside development does not impose conditions on the intersections worse than the current intersection performance with existing traffic.

The results indicate:

- The overall performance of the intersections are maintained in and close to “status quo” and hence, no adverse impact on intersection performance is expected from the development; and
- There is no significant impact on the key intersections adjoining the Harbourside development for the peak periods investigated and assessed.

The assessment of cumulative development traffic of Harbourside and SICEEP indicate a slight deterioration on the individual intersection performance. However, it is anticipated that the overall network performance will not be adversely impacted with the development of Harbourside and SICEEP combined.

5.3 Impact on Light Rail and Ferry Operations

The Harbourside development is expected to introduce additional patronage for the Light Rail and Ferry Services adjacent to the development. The proximity of the Harbourside development to Pyrmont Bay and Convention Centre Light Rail stations and the Pyrmont Bay Wharf is anticipated to further encourage public transport usage among the future staff and visitors to the Harbourside. Data from the journey to work data set revealed that approximately 60-65% currently use public transport (train, bus and ferry).

With the completion of the construction of the adjacent developments in the SICEEP, service frequency of the light rail is anticipated to improve to every 5 minutes initially during the peak hour but is also forecasted to eventually be operating at this frequency for the whole day. The increased service frequency is expected to provide additional capacity to cater to the increased demand in light rail ridership.

There are planned upgrades for the ferry wharves and ferry services as part of the NSW Government's Transport Access Program. The Pyrmont Bay Wharf is included in the wharf modernisation program. In the Sydney Ferries Future document of the NSW Government, it is also stated that there is an opportunity to link the Rose Bay / Watsons Bay route as part of a cross harbour service to Pyrmont and by extending to Manly in the off-peak weekdays and on weekends, as part of the expansion of services to provide for growth.

With the planned upgrade of the Pyrmont Bay Wharf, it is anticipated that additional capacity will be available to cater to any increase in ferry usage and patronage at the wharf. This improvement will benefit the Harbourside development and encourage additional patronage in the future.

6 CONSTRUCTION TRAFFIC IMPACT AND MANAGEMENT

6.1 Background

A Preliminary Construction & Environment Management Plan (CEMP) has been prepared by Mirvac. The document outlines the indicative management plans relating to the construction works associated with SSDA6.

This section presents excerpts from the above document relevant to Traffic and Pedestrian Management during construction of the Harbourside development, including description and layouts of the planned mitigation arrangements demonstrating how, during the development, the pedestrian and vehicular movements will be addressed to minimise impact.

6.2 Site Boundary

Figure 13 below depicts the various hoarding locations proposed for the Harbourside development site.

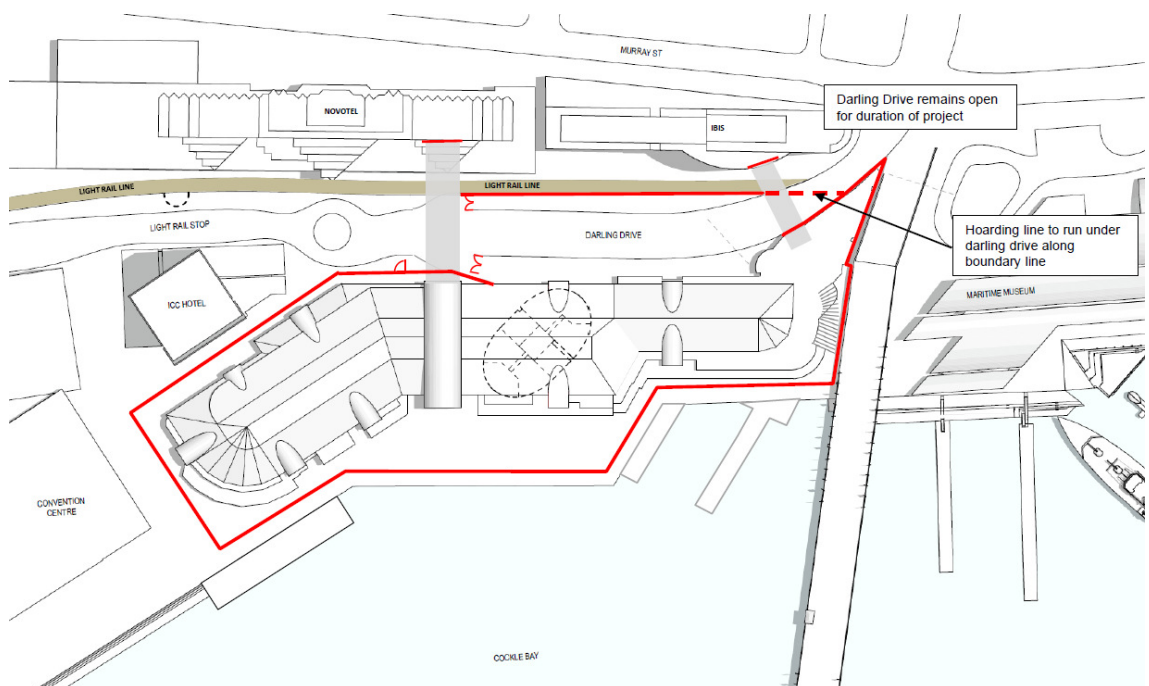


Figure 13: Site Development Plan

6.3 Construction Staging

6.3.1 Site Establishment

To maintain safe public egress between the Maritime Museum and Darling Harbour, a “B” class hoarding will be erected on the eastern perimeter of the site along Cockle Bay. Pedestrians will be able to walk under the hoarding in this location.

Type “A” Hoardings will be erected along the other site boundaries to fully segregate the site from the public.

6.4 Construction Works

For details of the Construction activities refer to the Construction & Environment Management Plan that forms part of the Stage 1 DA submission.

Following site establishment and demolition / removal of existing fixtures or services, the construction sequence will entail retention piling, bulk excavation of basement, trenching and establishment of essential services followed by building construction works, fit-out and external / landscaping works.

6.5 Construction Vehicle Access

The primary construction heavy vehicle access and egress will be via the Darling Drive network to the west of the development. This will involve vehicles accessing Darling Drive from the North using Pyrmont Bridge Road, Pyrmont and vehicles accessing Darling Drive from the South using Ultimo Road and Harris Street, Ultimo.

The main entry for construction materials and vehicles shall be from the north, off Darling Drive, and exit from the southwest corner of the site onto Darling Drive (heading south only).

Figure 14 below depicts the construction access locations.

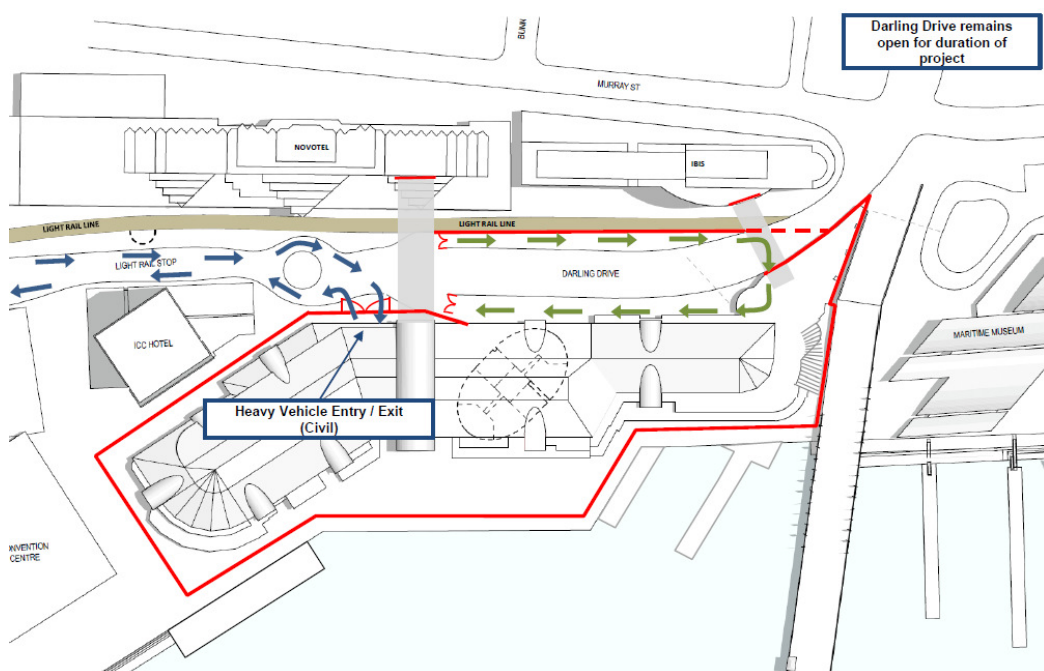


Figure 14: Construction routes and access locations

It is anticipated that the construction works will not prevent Darling Drive from remaining operational at all times during the construction phase of the development.

On site construction access routes will be established, within the construction boundary, to facilitate materials handling for tower/crawler cranes and forklifts. Hoists will transport personnel and lighter materials within the building.

It is advised that traffic to Darling Drive and the surrounding road network as a result of construction activities would be best suited to non-peak hour times. This will be reviewed during further detailed design stages of the project.

All vehicles accessing the site will conform to the "Traffic controls at work sites" manual, and Australian Standard 1742 – Traffic control, and only certified traffic controllers shall be used to direct vehicles outside of the construction boundaries. The main access for construction deliveries shall be the entry and exit gates as illustrated in 14.

On site construction access routes will be established within the construction boundaries with hoists transporting personnel and materials within the building.

The truck movements anticipated will be spread evenly throughout the construction programme. During the course of the development we anticipate vehicle movements for such trades as Demolition, Civil, Piling, Detail Excavation, Structure, Facade, Internal Finishes & Public Domain works.

Based on the programme and volume of materials required, it is estimated that approximately 3-4 trucks per hour will access the site for the duration of the development. In such instances such as concrete pours, this volume will increase, but shall be controlled to alleviate any congestion to the surrounding traffic network.

It is noted, however, that the construction vehicle movements will not exceed the recent construction vehicular movements associated from the recent development of the Sydney International Convention Exhibition & Entertainment Precinct (SICEEP), which adopted similar construction access traffic routes and used Darling Drive for access.

The control of vehicle logistics to and from the site shall be managed as follows:

- Traffic Management Plan to form part of tender documents and ultimately part of the Subcontract &/or Supplier Agreements
- Traffic Management Plan will form part of the subcontractor inductions, both on site and in some instances held in the Subcontractor / Supplier place of business.
- Subcontractors / Suppliers will be required to submit a formal delivery booking request 5 business days prior to delivery. All bookings will be registered and controlled by the various manned gates. Predetermined routes and times shall be agreed as part of this process to ensure non congestion of traffic.
- Established holding areas for urgent & emergency vehicles within the development.

6.6 Parking

Onsite parking will not be encouraged during construction. Measures will be implemented to encourage the use of good public transport systems already in place for construction staff and workers. This will be conveyed through all subcontract documentation and site inductions.

Timetables shall be provided for all bus routes and the three closest railway stations serviced by bus routes.

6.7 Pedestrian Access

Pedestrian access during construction will generally be adopting the following principles:

- Hoardings will be erected to prevent public entry into constructions areas;
- Public access along existing desire lines around construction areas will maintained where possible;
- Pedestrian access along Darling Drive will be controlled (and may need to be limited periodically) during demolition and services relocation works to ensure public safety;
- Pedestrian movement diversions as detailed shall be in place to ensure that the Public are diverted safely around the site; and,
- “B” Class hoardings shall provide overhead protection where the general public come into close contact with construction activities. Pedestrians will be able to walk under this type of hoarding.

6.8 Traffic Management Measures

Appropriate directional signage and traffic control will be provided to ensure vehicles enter and leave the site with minimal disturbance to other road users and so they are advised of any changes in road conditions.

Temporary road closures, single lane access and relocations during the construction period will be subject to coordination with the appropriate authorities. All traffic related issues and changes shall also be presented to Stakeholders as part of the consultation process. These will, wherever and whenever possible, are carried out in non-peak periods.

The traffic and pedestrian management plan outlined in the Construction and Environment Management Plan is generally aimed at mitigating any potential impacts that may be attributed to the construction works. Risks to the public and the construction crew would be minimised through the implementation of the construction management plans specifically prepared for the Harbourside development. The Plan will be regularly updated to address any new outcomes identified through constant monitoring as the works progress.

6.9 Cumulative Construction Traffic Impacts

The Core Facilities of the SICEEP development are now complete and this development is due to be fully open to the public in December 2016. The ICC Hotel is due to be completed and open by December 2016, and construction of the Darling Square development located in the Haymarket is anticipated for completion in 2019.

As such, given that construction works for the Harbourside development are not anticipated before 2018, the potential for cumulative construction traffic impacts with the SICEEP developments is limited with an overlap of construction activities for the Haymarket development in 2018 and 2019.

The redevelopment of the IMAX site is expected to commence in 2017. However, access to this development site is expected to be from the other side of Darling Harbour to that of the Harbourside development.

7 SUMMARY

7.1 Conclusions

This transport assessment of the Harbourside development focusses on access and the connectivity of the site with the external network for all modes of transport and cites the key features of the development that will contribute to this. Key elements of the proposal include:

Public Transport

- The location of the Harbourside site is accessible by public transport (particularly the light rail) via the pedestrian linkages between the public transport nodes and the development
- The design generally provides enhanced access to the public transport services through the creation of more direct pedestrian access walkways.

Parking Provision

- Parking provision within Harbourside will be provided.

Road Network/Intersection Operational Performance

- The operational performances of the intersections relevant to the Harbourside development have been demonstrated to be satisfactory
- The results of modelling indicate that the impact of the Harbourside development does not impose conditions on the intersections worse than what would have otherwise occurred through existing traffic and modelled future traffic.

Pedestrian

- The development will provide improved pedestrian linkages within the Public Realm linking the development to the Darling Harbour Live precinct to the south and Sydney CBD to the east.
- The improved pedestrian linkages via the shared zone and the signalised pedestrian crossing on Darling Drive cater for pedestrian desire lines from the west of Darling Drive.

Cycleway

- Cycle connections are available to Harbourside via the existing cycleways on Darling Drive, the improved new cycleway on the west side of Darling Drive, new east-west linkages and completion of the new boulevard running north-south through the precinct, developed as part of the SICEEP.

SEARs

- The requirements of the SEARs have been adequately assessed in the overall Transport and Traffic Impact Assessments for the Harbourside development.

7.2 Recommendations

Pedestrian

- It is recommended that the proposed pedestrian routes be enhanced through wayfinding and signage to facilitate connectivity in all directions
- Interfacing with the improved external pedestrian network will enhance accessibility of Harbourside and further strengthen linkages with public transport.

Travel Demand Management

It is recommended that the development of a Travel Management Plan is investigated in the detailed design stage of the development.

