



## Traffic and Transport Report

# Planning Proposal for 20 Berry Street

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## SMEC Company Details

Approved by:	Colin Henson		
Address:	20 Berry Street, North Sydney		
Signature:	Click or tap here to enter text.		
Tel:	61 2 9926 5555	Fax:	
Email:	Colin.henson@smec.com	Website:	<a href="http://www.smec.com">www.smec.com</a>

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# 1 Introduction

SMEC was commissioned by Turner Studio to undertake a Traffic and Transport study to assess the impacts of the Planning Proposal for the proposed redevelopment of 20 Berry Street, North Sydney. The subject site currently has a 14-storey building containing primarily office space as well as a childcare nursery. The existing building gross floor area (GFA), (Turner Studios proposal), is 9,720 sqm with a typical floor area of 760 sqm. The proposed redevelopment is a 25-storey building with a GFA of approximately 23,500 sqm, and a typical floor area of 400-1200 sqm.

The objectives of this traffic and transport report are to present the following information:

- Review previous traffic and transport studies in and around the vicinity of the site
- Review surrounding road network infrastructure, parking facilities and available loading dock
- Review available existing car park inventory, and occupancy
- Describe the post-construction impacts of the project, including impact of estimated traffic generation on surrounding roads, expected active/public transport usage, and available infrastructure change.

This report is to support the Planning Proposal stage. The structure of the report is as follows:

- Section 1 – Provides an introduction to the proposal and report
- Section 2 – Provides a summary of relevant guidelines to be followed
- Section 3 – Describes the existing site and existing road network conditions around the site
- Section 4 – Provides an overview of the proposed developments' projected impacts on transport conditions
- Section 5 – Summary of report outcome.



## 2 Regulatory Guidelines

A review of key authorities and guidelines was undertaken to understand existing and future plans for the area, including:

- Operation and connections to the future Victoria Cross Metro Station, expected to open in 2024
- New kiss and ride bays, and a taxi zone on McLaren Street Turner Studio/Holdmark
- Bus stops on Miller Street with easy connections to the station
- Over-station development (OSD) and other redevelopment in North Sydney
- Proposed pedestrian activation of Miller Street, using up to \$1 million place making funding from the NSW government. The proposed metro station and development has been estimated to attract many thousands of extra pedestrians.
- Future traffic plans for Berry Street as the link from the Pacific Highway to the upgraded Warringah Expressway and Western Harbour Tunnel and Beaches Link. The eastern end of Berry Street would become a major traffic access to Sydney's regional motorways.

In writing this report, guidelines have been considered. A brief description of these is provided below. Refer to the relevant documentation for more detail.

### North Sydney Local Environment Plan and North Sydney Development Control Plan 2013 (DCP)

- Includes parking provision rates for cars and bicycles

### State Environmental Planning Policy (Infrastructure) 2007

- Development on a classified Road (Pacific Highway) must be referred to TfNSW (Clause 102-2)
- The consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that: (a) where practicable and safe, vehicular access to the land is provided by a road other than the classified road, and (b) the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result

### Greater Sydney Region Plan and North District Plan

- North Sydney is an integral part of the Harbour CBD: "Objective 18: Harbour CBD is stronger and more competitive", including a growth in jobs.

### Future Transport Strategy 2056

- Transport to North Sydney will include a Western Harbour road tunnel and Metro Rail lines, including Southern Cross metro station

### Sustainable Sydney 2030

- Active transport including walking and cycling and public transport is favoured as more sustainable than private car use.

### Sydney Metro Planning Study – Crows Nest and North Sydney including OSD Detailed SSD DA – Traffic and Transport Impact Assessment - Cross Over Station Development, Arcadis, 2019

- The Metro rail line and Metro stations under construction will support higher density development and a liveable pedestrian environment around Metro stations

### Sydney Metro Chatswood to Sydenham EIS. Chapter 8: Construction traffic and transport

- An integrated Metro rail station at Victoria Cross

### North Sydney Integrated Traffic and Parking Strategy, North Sydney Council, 2015

- Creates an over-arching transport planning and management framework for the whole of Council
- A modal hierarchy of: 1. walking, 2. Cycling, 3. Public transport, 4. Local Deliveries and Freight, 5. Private Vehicles

### Western Harbour Tunnel and Warringah Freeway Upgrade Environmental Impact Statement (EIS) TfNSW, 2020 (incl Chapter 9 Operational Traffic and Transport, and Appendix F: Traffic and Transport).

- Traffic and Transport Impacts on the Warringah Freeway and intersecting roads

### Ward Street Precinct Masterplan, Draft, NSCC, 2017

- Public Domain Plan for the precinct north of Berry Street

### North Sydney Council Traffic and Parking Area Scheme and Action Plan, Tapas Zone 2, and Zone 3, 2017



- Traffic and Parking Area Scheme (TAPAS) Action Plans are area-wide traffic plans which take into account the current and future traffic and parking situation in the area and recommend traffic and parking measures to protect, maintain and improve access and parking.

**Other Relevant Policies and Guidelines:**

The following documents have also been considered in the development of this report:

- Guide to Traffic Generating Developments (Roads and Maritime Services [Roads and Maritime], 2002) and Technical Direction 2013/04a: Guide to Traffic Generating Developments – Updated traffic surveys (Roads and Maritime, 2013) which were used to inform the traffic assessment undertaken for this project
- Guide to Traffic Management – Part 12: Traffic impacts of developments (Austroads, 2019), which was used to develop the methodology for assessing the traffic impact of the development
- Australian Standards AS2890 Parking Facilities Parts 1 to 6
- NSW Planning Guidelines for Walking and Cycling
- Sydney's Bus Future (Transport for NSW, 2013b)
- Sydney's Cycling Future (Transport for NSW, 2013c)
- Sydney's Walking Future (Transport for NSW, 2013d)

### 3 Existing Site and Transport Conditions

This section provides a description of the existing site and summarises the existing transport conditions present in and around the site, including surrounding road network infrastructure, active transport accessibility, and available public transport. The existing traffic and road network conditions of the proposed redevelopment were investigated via a desktop study, and a site visit conducted on Tuesday 24<sup>th</sup> of November 2020.

#### 3.1 Site, Context and Existing Use

The building sits at the north-eastern corner of Pacific Highway and Berry Street, located in close proximity to the North Sydney Train Station, Greenwood Plaza, and planned Victoria Cross Station currently a construction site. It is a 14-storey high precast concrete building with total area of 9,720 sqm and typical floor area of 760 sqm. The building contains three levels of above ground floor parking (operated by Wilson Parking). The third level of the building has undergone a recent podium refurbishment and is currently being utilised as a childcare nursery.



Figure 3-1: Existing Building Location

The building contains end of trip facilities (showering) at the third floor, and a gym and a café (with associated seating facilities) at the foyer. There is otherwise limited activation presence at the street level, Figure 3-2. Access to the

building's basement parking is via Angelo Street, which is a one-way street, running in the southbound direction parallel to the Pacific Highway, from McLaren Street to Berry Street. There are two pedestrian entrances to the building, via Pacific Highway and Berry Street. The building can also be accessed via the car park on Angelo Street. The building is closed off to visitors after hours.



Figure 3-2: Existing Site Street Level Activation(UPDATE IMAGE)

### 3.2 Road Network

The building sits at the north-eastern corner of Pacific Highway and Berry Street. Pacific Highway runs in the north/south direction with Berry Street in the east/west direction. Access to the buildings' basement parking is via Angelo Street. Angelo Street serves as a connection between McLaren Street to Berry Street, and is utilised as follows:

- Light vehicles and pedestrians and cyclists using it as an alternative to travel via Pacific Highway and/or Miller Street
- Rear parking access and loading facility for buildings along Pacific Highway from McLaren Street to Berry Street, and a loading dock to Monte Sant' Angelo Mercy College
- Active transport (cyclists and pedestrian) access going up and down
- Parking facilities for light vehicles including motorcycles
- Drop off point for Monte Sant' Angelo Mercy College, which has doors onto Angelo Street.

Nearby intersections of particular importance are Berry Street/Pacific Highway; Angelo Street/McLaren Street; Angelo Street/Berry Street; Berry Street/Miller Street. Figure 3-3 shows the current site location, surrounding road network, and nearby intersections.



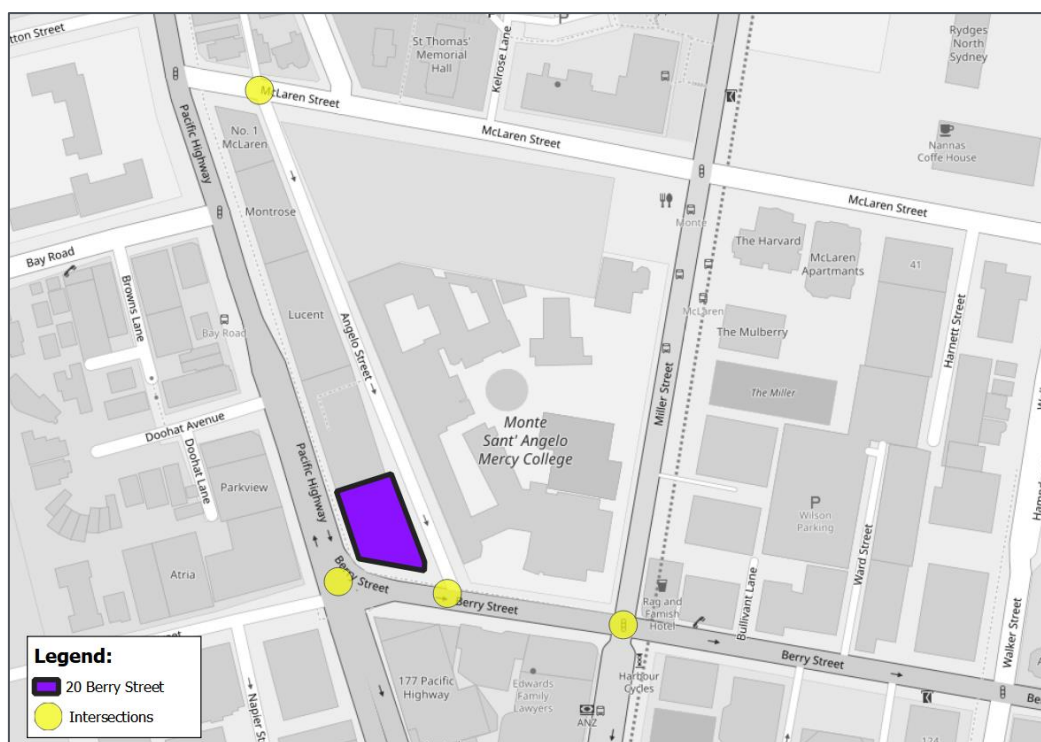


Figure 3-3: Existing site and surrounding road network

A summary of roads around the site and their classifications are listed in Table 3-1.

Table 3-1: Road hierarchy around 20 Berry Street

Street	Hierarchy	Description
Pacific Highway	Arterial	Two-way state road with generally three lanes of traffic in each direction. Parking is generally permitted in the kerbside lane, subject to time and clearway restrictions. 60km/h approaching Berry Street from the north. Designated school zones along sections of the road; of relevance is a zone between West Street and Bay Road.
Miller Street	Regional Road (NSC Collector)	Two-way road with predominantly two lanes in each direction, running in the north-south direction, connecting with local east-west roads. Kerbside parking is subject to time restriction. Ancillary turning lanes at some key intersections within kerbside lane. 40 km/h speed between McLaren Street and Berry Street with school zone designation. High pedestrian activity area.
Berry Street	Regional Road	One-way state road with three to four traffic lanes, running in the eastbound direction. Provides connection to M1 Motorway and Sydney Harbour Bridge. Kerbside lanes subject to time restriction. 40 km/h speed throughout section, high pedestrian activity area.
McLaren Street	Local Road	Two-way road with generally two lanes of traffic in each direction. Kerbside parking subject to time restriction. 40 km/h throughout with school zone designation at different sections, including between Berry Street and Miller Street. High pedestrian activity area.
Angelo Street	Local Road	One-way road two lane road running in the southbound direction. Provides connection between McLaren Street and Berry Street. Kerbside lane parking permitted subject to time restriction.

Table 3-2 and Table 3.3 list traffic volumes on key roads surrounding the site. These have been sourced from the Sydney Metro Chatswood to Sydenham EIS and Western Harbour Tunnel and Warringah Freeway Upgrade EIS 2020. These are considered reliable base traffic data for the current 2021 situation, by comparison with other spot counts. New survey data has not been collected due to the atypical nature of recent traffic volumes and patterns during the COVID-19 pandemic in 2020 and 2021.

Table 3-2: Peak Hour Traffic Volumes on Key Roads; 2015

Location	Direction	AM Peak (Vehicles/hour)	PM Peak (Vehicles/hr)
Pacific Highway	Southbound	1,390	1,060
Between McLaren and Berry Street	Northbound	1,000	790
Pacific Highway	Southbound	520	620
Between Berry and Miller Street	Northbound	1,210	1,160
Miller Street	Southbound	630	530
Between McLaren and Berry Street	Northbound	470	500
Miller Street	Southbound	540	370
Between Berry Street and Pacific Highway	Northbound	550	640
McLaren Street	Eastbound	240	190
Between Pacific Highway and Miller Street	Westbound	290	250
Berry Street	Eastbound	1,220	940
Between Pacific Highway and Miller Street	Eastbound	1,280	1,700
Berry Street	Eastbound	1,280	1,700
Between Miller and Walker Street	Southbound	160	100
Walker Street	Southbound	160	100
Between Arthur and Mount Street	Northbound	1,170	940

Source: Chatswood to Sydenham EIS; Chapter 8: Construction traffic and transport

Table 3-3: Peak hour traffic volumes on key roads (2016)

Table 4-11 Year 2016 peak hour traffic volumes – Warringah Freeway and surrounds

Road	Direction	Morning peak hour		Evening peak hour	
		Volume (vehicles)	Heavy vehicle percentage	Volume (vehicles)	Heavy vehicle percentage
Pacific Highway south of Walker Street	Northbound	2100	4%	1410	11%
	Southbound	380	13%	580	6%
Pacific Highway south of Bay Road	Northbound	690	8%	800	7%
	Southbound	1100	7%	950	3%
Bay Road west of Pacific Highway	Eastbound	230	2%	260	1%
	Westbound	380	4%	280	2%
Berry Street east of Walker Street	Eastbound	1650	7%	2390	4%
	Westbound	-	-	-	-
Falcon Street east of Miller Street	Eastbound	1250	2%	1350	6%

Source: Western Harbour Tunnel and Warringah Freeway Upgrade EIS Appendix F- Technical working paper – Traffic and Transport

Pacific Highway experiences high northbound volumes for the surveyed sections, from Miller Street to McLaren Street. There is a slight decrease in northbound volumes as vehicles turn from Pacific Highway onto Berry Street. Southbound volumes along Pacific Highway are high between McLaren Street and Berry Street, with a significant decrease in volume south of Berry Street as vehicles turn left onto Berry Street. This is the main contributor to high volumes along Berry Street. Significantly lower volumes are observed on Miller Street, with even lower volumes on McLaren Street. It should be noted that as this data was collected in 2015, these conclusions are only indicative, more recent surveys should be undertaken to better understand the existing conditions.

Peak hour flows of vehicles turning from Angelo Street onto Berry Street are presented in Table 3-4. More detail on collected data can be found in Appendix A. Volumes in the AM peak are higher than in the PM peak, around 190 vehicles and 120 vehicles respectively. The maximum queue in the AM peak is significantly higher than in the PM peak, 18 vehicles compared to 5 vehicles. These higher volumes and queues can be, at least partially, attributed to vehicles using Angelo Street as a drop off point for the nearby school in the AM Peak.

This data was collected in November 2020, hence impacts of COVID-19 on travel patterns may be present.

Table 3-4: Peak Hour Volumes Along Angelo Street; November 2020

Location	Direction	AM Peak (Vehicles/hour)	PM Peak (Vehicles/hr)	Max Queue AM Peak (Vehicles)	Max Queue PM Peak (Vehicles)
Angelo Street	Southbound	187	118	18	5

### 3.3 Intersection Performance

The performance of an intersection can be measured by the average delay per vehicle which corresponds to a Level of Service (LOS) measure for the intersection.

Performance of an intersection is measured in accordance with the Austroads Guide to Traffic Management-Part 3: Traffic Studies and Analysis (2013). The guidelines recommend that for roundabouts and priority-controlled intersections, the LOS value is determined by the critical movement with the highest delay, whereas for a signalised intersection, LOS criteria are related to the average overall intersection delay measured in seconds per vehicle.

The standard Roads and Maritime Services Level of Service criteria for intersections are listed in Table 3-5.

Table 3-5: Modelling Guidelines Level of Services for intersections

Level of Service	Average Delay per Vehicle (sec/vehicle)	Traffic Signal & 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 addition to the LOS, the performance of intersections can also be measured in terms of Degree of Saturation (DOS) for each movement. The DOS is a measure of how much demand there is for a movement in comparison to the total capacity. DOS above 1.0, for example, represents oversaturated conditions where demand flows exceed capacity, and degree of saturation below 1.0 represents under saturated conditions where demand flows are below capacity.

Table 3-6 lists practical degree of saturation for different intersection types. If the value is greater than the corresponding values provided in the table for any movement, then the intersection requires appropriate treatment to maintain acceptable level of DOS.

Table 3-6 – Maximum practical Degree of Saturation

Intersection type	Maximum practical degree of saturation
Signalised intersections	0.90
Roundabouts	0.85
priority intersections	0.80

Source: SIDRA Software and the RMS Traffic Modelling Guidelines

Table 3-7 and Table 3-8 lists the 2015 AM and PM peak intersection performance for intersections near the site. These have been sourced (before the atypical COVID 19 condition) from the *Victoria Cross Over Station Development Traffic and Transport Impact Assessment*.

Table 3-7: 2015 Intersection Performance - AM Peak

Intersection	Degree of Saturation	Level of Service	Average Delay (seconds)	95% Back of Queue (metres)
Miller Street/ Pacific Highway	0.62	C	29.0	105
Berry Street/ Pacific Highway	0.82	B	14.7	135
Miller Street/ Berry Street	0.74	C	37.7	138



Intersection	Degree of Saturation	Level of Service	Average Delay (seconds)	95% Back of Queue (metres)
Berry Street/ Denison Street	0.11	A	6.7	3
Berry Street/ Denison Street	0.90	C	32.0	255
Miller Street/ McLaren Street	0.57	B	23.6	92

Source: Victoria Cross OSD Traffic and Transport Report

Table 3-8: 2015 Intersection Performance - PM Peak

Intersection	Degree of Saturation	Level of Service	Average Delay (seconds)	95% Back of Queue (metres)
Miller Street/ Pacific Highway	0.52	C	30.2	85
Berry Street/ Pacific Highway	0.78	A	12.1	107
Miller Street/ Berry Street	0.72	C	29.9	141
Berry Street/ Denison Street	0.29	A	7.4	6
Berry Street/ Denison Street	0.87	C	32.2	185
Miller Street/ McLaren Street	0.69	B	21.8	82

Source: Victoria Cross OSD Traffic and Transport Report

The above results indicate that intersections around the site generally perform at an acceptable level of service in both the AM and PM peaks, operating at a LOS of C or higher. Of specific importance is Pacific Highway/Berry Street intersection which performs at a LOS C in the AM peak and LOS A in the PM peak, operating under maximum capacity, with queues of 138 metres (in the AM Peak). The intersection of Berry and Miller Street performs satisfactorily in both peaks, operating at a LOS of C with queues of around 140 metres.

Pedestrian levels of service are estimated to be similarly acceptable.

It should be noted that as these results were based on data collected in 2015, they are only indicative, updated analysis should be undertaken in due course to better understand existing conditions.

### 3.4 Public Transport Services

The site and surrounding area are serviced by frequent bus services as well as train services via North Sydney Station. Existing bus stop locations near the site are presented in Figure 3-4, while Figure 3-5 shows the existing bus routes near the site. These figures show the area serves as a major thoroughway for buses, with several services running, many of which run throughout the entire day. Several bus stops are located along Miller Street and Pacific Highway, both north and south of Berry Street. There are no bus stops however along the entire length of Berry Street.

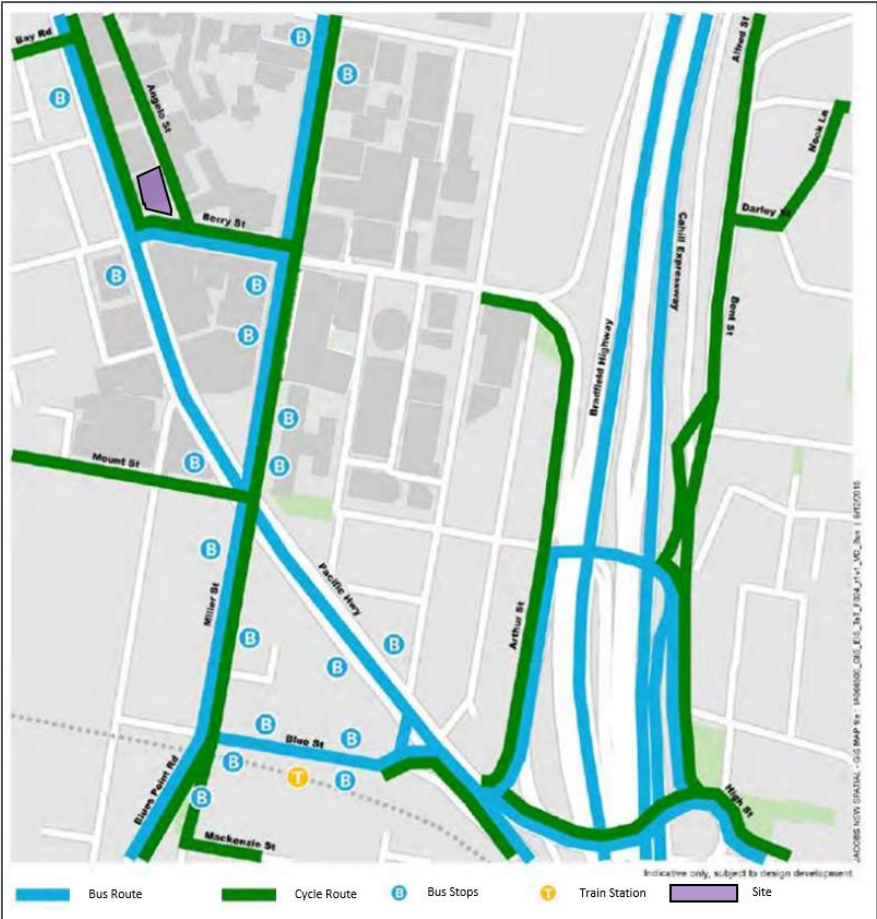


Figure 3-4: Existing bus conditions in the vicinity of the site (Source: Victoria OSD TIA)

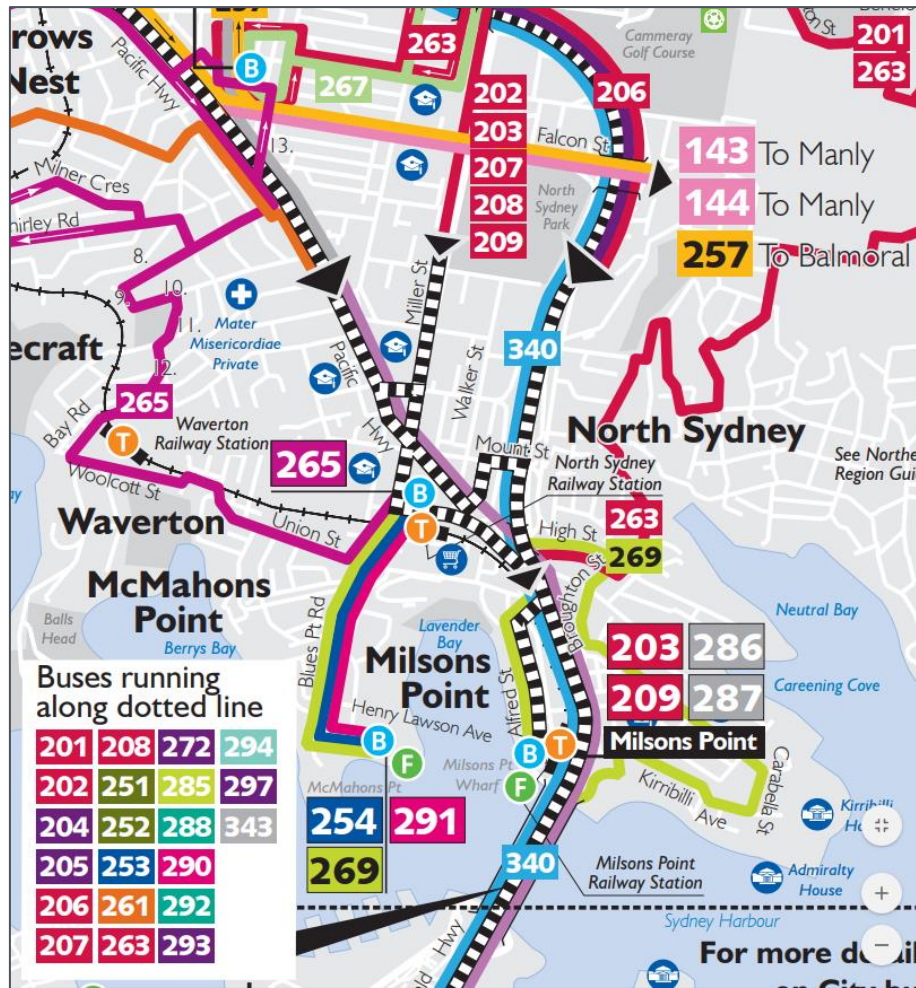


Figure 3-5: Existing bus routes near the site (Source: TfNSW)

North Sydney station is located around a 550 metres radius from the site. Access to the station is either via Blue Street or through Greenwood Plaza. A summary of service frequencies for the station are listed in Table 3-9.

Table 3-9: Services and train frequencies

Route	Service Frequency (trains per minute)		
	Peak Hour	Off-peak	Weekends/public holidays
T1 - City to Berowra, via Gordon	3-5	4-10	
T1 - Berowra to City, via Gordon	3	5-10	5-8
T9 - Gordon to Hornsby, via Strathfield	15	15	15
T9 - Hornsby to Gordon, via Strathfield	15	15	15
CCN - Central to Newcastle, via Strathfield or Gordon	15	No services at North Sydney	No services at North Sydney
CCN - Newcastle to Central, via Strathfield or Gordon	15	No services at North Sydney	No services at North Sydney

Source: Victoria Cross OSD Traffic and Transport Report – 2019

### 3.5 Pedestrian Access

Pedestrian activity around the site is high and serves as an integral mode of transport in the area. Figure 3-6 shows pedestrian activity in North Sydney roads around the site. This shows that activity along Berry Street is significant, with the major using being along the southern portion from Pacific Highway to Miller Street, and at eastern side of Berry and Miller Street, as vehicles cross to go to/from the station. Main desire lines according to the *Victoria Cross OSD Traffic and Transport Impact Assessment (TIA)*, are those that are used to access the station, these being Pacific Highway, Miller Street, Denison Street, Mount Street and Walker street. The key generators are the educational precincts, west of the Pacific Highway and north of Berry Street and retail/restaurants and cafes in Greenwood Plaza, and along Mount and Walker Street.

According to the *North Sydney Local Area Traffic Management Action Plan*, the area is “well served by the provision of footpaths and pedestrian facilities. Nevertheless, there is room for improvement particularly at key intersections throughout the North Sydney CBD”.

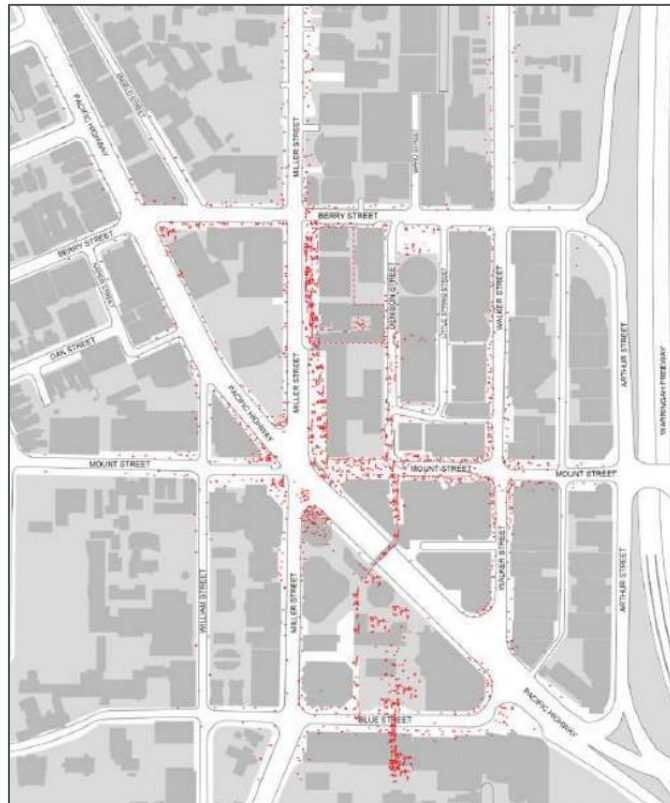


Figure 3-6: Pedestrian Activity (Source: Victoria OSD TIA, 2019)

Pedestrians can access the building via Pacific Highway or Berry Street, as well as access via the car park. These entrances are closed off to visitors after hours. It should be noted that since the beginning of COVID-19 the building management has stated via signage that the Berry Street entrance is to be used for entry only while the Pacific Highway entry is to be used for exit only.

The following are the crossing facilities at important nearby intersection:

- Berry Street/Pacific Highway: Signalised crossing on east and south approaches. Zebra crossing on west approach
- Angelo Street/McLaren Street: Dropped kerb pedestrian crossing
- Angelo Street/Berry Street: Dropped kerb pedestrian crossing
- Berry Street/Miller Street: Signalised crossing on all approaches.

Angelo Street has footpaths on either side of the road, which vary in width throughout the section. This is particularly true on the western side as footpaths share use with loading zones of the several buildings. The road is frequently used by pedestrians wishing to access the various developments (including commercial buildings, residential buildings, and school zones), access cars parking in kerbside lane, and as an alternative to using the Pacific Highway. As there



are no dedicated crossing facilities present along the length of the section, frequent informal crossing occurs for pedestrians that wish to go from one side of the road to the other. (figure)

### 3.6 Bicycle Access

A summary of the existing cycling network infrastructure around the site is presented in Figure 3-7, below. This shows that Berry Street (between Angelo Street and Miller Street) and Miller Street (between Berry Street) are on-road cycleways with general traffic. Angelo Street is also an on-road cycleway with mixed traffic. Bicycle parking facilities are currently provided near the site, three O-rings at the buildings entrance, Figure 3-8, and a bicycle rack in the car park that accommodates approximately twelve bicycles, Figure 3-9.

Counts showed that the bicycle parking outside the building was used by one bicycle in the early morning (7:30 AM), mid-day (12:30 PM), and late afternoon (4:00 PM). Bicycle parking inside the building was used by one vehicle in the morning, four at midday and five in the late afternoon. This shows a low current occupancy for bicycle parking around the site.



Figure 3-7: North Sydney cycling infrastructure (Source: North Sydney Integrated Cycling Strategy)



Figure 3-8: Bicycle Parking at 20 Berry Street entrance (UPDATE IMAGE)

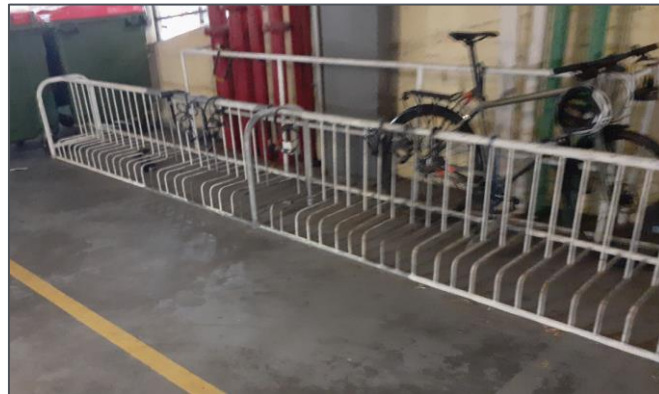


Figure 3-9: Bicycle Parking within Wilson Car Park (UPDATE IMAGE)

### 3.7 Taxi Service Facilities

No taxi facilities are located at the site. The nearest Taxi Rank is in Miller Street south of Berry Street, easily walkable.

### 3.8 On-street parking

Time-restricted kerbside parking is available along specific segments of roads around the site. Parking is not permitted at all times of the day on Pacific Highway frontage and, for instance along Berry Street vehicles must clear from 6 AM - 10 AM and 3 PM - 7 PM. Of significant importance is Angelo Street, which accommodates around 31 cars and 15 motorcycles, Figure 3-10. Counts showed that cars utilised the parking at a rate of around 90% in the morning (7:30 AM), 60% at mid-day (12:30 PM) and 50% in the afternoon (4:00 PM). Motorcycles utilised the parking at a rate of around 90% in the morning, full occupancy at mid-day and 80% in the afternoon.



Figure 3-10: Angelo Street Kerbside Parking (UPDATE IMAGE)

### 3.9 Private Off-Street Parking

The building contains three levels of above ground floor parking (designated as Ground Floor, Level 1, Level 2) and is operated by Wilson Parking. In addition to car parking spaces, the ground floor facilities space for approximately 8 motorcycles, with a floor bicycle parking rack available providing approximately 12 bicycle parking spaces. A total of 99 car parking spaces is available, a portion of which are reserved for building management and company occupants of the building. Counts showed that cars utilised the parking at a rate of around 50% post-peak (9:30 AM), 60% at mid-day (12:30 PM) and 50% in the afternoon (4:00 PM). Occupancy of motorcycles was around 50% in the morning, and 90% at mid-day and in the afternoon. These numbers show generally low occupancy of vehicles within the car park, with an additional capacity of around 40% available.

Service vehicles that service 20 Berry Street can enter the car park, with a dedicated space of four vehicles available, this is restricted for their use only. The ground floor which serves as the entry point has reserved loading dock facilities, which can accommodate four vehicles of equivalent light vehicle size, parking perpendicular. A single longer vehicle may be accommodated by parking parallel, provided it meets car park entry restrictions. Alternatively, larger vehicles can use the kerbside loading zone, further detail in Section 3.10.

It should be noted that as with all other counts these are reflective of conditions in a COVID-19 environment. Additionally, parking in the building has been discounted and is currently at a rate of \$15 per day for certain occupants of the building, providing increase in incentive of use. These effects may potentially impact occupancy in a post-COVID environment.

The entry to the car park functions as a one-way, meaning exiting and entering vehicles cannot enter/exit at the same time, Figure 3-12. There is no gate restricting/controlling flow at the entry, as such if a vehicle is exiting the car park (commonly via the ramp), an entering vehicle may only notice this once it has started to enter and may need to reverse back onto Angelo Street to allow flow of the exiting vehicle. An approximate queuing length of two vehicles is available.

The two ramps (Ground Floor to Level 1, and from Level 1 to Level 2) also function as one-way only. There are two rising arms present at the lower ramp for ticket collection purposes, Figure 3-11. The lower ramp is approximately 23m in length with width of 4.5m width for vehicles dedicated 1.1m width for pedestrians, located at the side of the rising arm facility.





Figure 3-11: Ramp from Ground Floor to Level 1



Figure 3-12: Wilson Car Park Entry



Figure 3-13: Two-way entry/exit for parking facility along Angelo Street (211 Pacific Highway)

### 3.10 Service Vehicle Access

Along the length of Angelo Street, loading docks are right of the footpath as shown in Figure 3-14. Alternatively, circular barriers are located at the side of these footpaths, these can be removed once loading vehicles dock, Figure 3-14. In the existing condition of the site, there is a kerbside loading zone outside of the car park along Angelo Street, extending from the car park exit to the building entrance kerb, Figure 3-16.



Figure 3-14: Loading Zone along Angelo Street





Figure 3-15: Loading Dock along Angelo Street - Removable Barriers



Figure 3-16: Kerbside Loading Zone outside of Wilson Car Park

### 3.11 Crashes

In 2017 there were 203 crashes including one fatality in North Sydney LGA (NSC Crash Analysis Report 2013-2017). 47% of casualties were motor vehicle drivers, 17% were motorcycle casualties, and pedestrians were 11% of casualties. Speed was the greatest contributing factor at 5.4% of all crashes.

A summary of road user reported crash data for the five-year period between October 2012 and September 2017 on roads that could be substantially affected by the Western Harbour Tunnel and Warringah Freeway Upgrade projects were given in the Western Harbour Tunnel EIS. Appendix F Table 4-14. No crashes were reported in Berry Street.

## 4 Impacts of the Proposed Development

### 4.1 Proposed Development

The proposed redevelopment of 20 Berry Street, as per the Turner Studio Planning Proposal, will see a building of 25 storeys with an approximate GFA of 23,500 sqm, typical floor area of 1200-400 sqm and height of 101m. The proposed development is shown in Figure 4.1. and Figure 4.2.



Figure 4-1: Proposed 20 Berry Street Redevelopment - View from East on Berry Street (Source: Turner Studio)



Figure 4-2: Proposed 20 Berry Street Redevelopment - View from South on Pacific Highway (Source: Turner Studio)



It is also proposed to increase the utilisation at street level in the form of a new Special Area at the corner of Berry Street and Angelo Street with outdoor seating and planting. A rendering of this area is shown in Figure 4-3. The proposed development will generate a certain amount of traffic on the road network. The impact of this on the different user groups will be assessed and compared to the observed impact of the current development.



Figure 4-3: New Special Area (corner of Berry Street and Angelo Street) (Source: Turner Studio)

## 4.2 Trip Generation

### 4.2.1 Vehicle Trip Generation

Traffic generation of the current development can be obtained via counts of vehicles going in and out of the car park. These are based on November 2020 data, refer to Appendix A for more detail.

The proposed land use for the development is 23,500m<sup>2</sup> GFA of Grade 1 office building. This development will generate traffic on the road network that is proportional land use scale. Estimates for the vehicle trip generation off the proposed development are based off trip generation rates provided by RMS for office blocks.

The rates used for trip generation are based on the *RMS Guide to Traffic Generating Development, Updated Traffic Surveys 2013*. The appropriate approach, which was used in Studies for TfNSW in estimating the Sydney Metro Crows Nest OSD's trip generation, is to use the rate obtained from the survey for a North Sydney CBD office block, from the same RMS guide, *as shown in italics in the following Table 4.2*.

The guidelines also provide an average trip rate for Office Blocks in NSW. Using this average rate provides an estimated peak trip generation rate that well exceeds the parking space provided in the proposed development.

A third rate can be obtained based on the trip generation of the existing development, from counts. This approach will lead to a more conservative result (higher trip generation rate) relative to using the North Sydney Office Block survey rate, however, this does not consider factors such as future modal travel patterns and the potential existing COVID-19 bias of counts. An additional factor of importance is the planned Victoria Cross Metro Station which may impact travel pattern in favour of pedestrian mode of travel. Additionally, as discussed in Section 4.6, the development will require a significant increase, relative to the current development, in bicycle parking and associated end of trip facilities which may further impact travel mode distribution.

Distribution for peak entry and exit into the development has been estimated based on the distribution of counts for the existing development, Table 4-1. In the absence of total daily counts for the existing development, equal distribution for daily trips has been assumed.

A summary of the traffic generated by the existing development, and estimated traffic for the proposed development based on the different rates is presented

Table 4-2.

Table 4-1: Entry and exit trip distribution

	AM Peak			PM Peak		
	Total	In	Out	Total	Out	In
Volume	38	30	8	43	7	36
Percent		79% (~80%)	21% (~20)		16% (~15%)	84% (~85%)

Table 4-2: Estimated future development traffic development based on three rates, and existing generation counts

Building	Scale (m <sup>2</sup> GFA)	AM				PM				Daily			
		Rate (per 100m <sup>2</sup> )	Total	In	Out	Rate (per 100m <sup>2</sup> )	Total	In	Out	Rate (per 100m <sup>2</sup> )	Total	In	Out
Existing Development (Counts)(office and child care)	9,720		38	30	8		43	7	36				
Existing Building (used as office)	9,026	0.17	16			0.14	13						
Compliant Proposal (used as office)	13,260	0.17	23			0.14	19						
Current Planning Proposal (used as office)	22,750	0.17	39			0.14	32						
Proposed Development (North Sydney Office Block Rate)	23,500	0.17	40	32	6	0.14	33	5	28	1.23	289	145	145

The above results indicate that, based on the North Sydney Office Block Rate survey the development is likely to generate a similar amount of traffic as that of the current site. The AM Peak development is slightly higher in the proposed development as compared to the current site, 40 vs 38, with a difference of two vehicles, while in the PM peak the proposed development is estimated to generate less traffic than the current development, 33 compared to 43.

Under the use of the above trip generation assumption, no adverse traffic impacts are expected on the local road network as a result of the proposed development.

#### 4.2.2 Pedestrian and Bicycle Trip Generation

Pedestrian activity for the surrounding site area, is expected to further increase in the future, particularly with the construction of the Victoria Cross Metro Station and associated new floor area in over-station development and nearby site developments.

Trip generation for the subject development at 20 Berry Street would be expected to exceed the existing development due to the large comparative scale increase. In addition, the proposed development will be developed with more

street level activation compared to the current site, which may increase the attraction for travel by foot. Similarly bicycle trip generation is expected to increase as compared to the current development. This is due to the increase in building scale, as well as the significant increase in facilities provided (as required by Council).

The road network around the site is not expected change in a way that may negatively impact pedestrian and cyclist's activity. This is also the case for active transport access to the proposed development car parking facility.

### 4.3 Road Safety

The proposed subject development and new Special Area on the corner of Angelo Street and Berry Street will further improve the pedestrian safety, level of service and amenity in the vicinity, improving seating, improving pedestrian choice between footpaths and through the foyer of the building, improving sight lines at the corner, and in general support of the wider pedestrianised CBD.

Although not a direct requirement generated by the subject proposed development, pedestrian safety could be enhanced by:

- installing a pedestrian crossing where there is currently no crossing on the Pacific Highway north approach to Berry Street, or a "barn dance" pedestrian crossing of the type previously mooted for the Pacific Highway/Miller Street intersection. This would likely slightly reduce the vehicle traffic capacity from Pacific Highway into Berry Street.
- installing textured pavement in Angelo Street approach to Berry Street to increase left turning driver's awareness of the need for slowing and giving way to pedestrians.

### 4.4 On-Street Parking

On-street parking facility along Angelo Street is expected to remain generally unchanged. No significant impact of the development on an increase in utilisation of the on-street parking is expected. This is because Angelo Street kerbside parking is time restricted, meaning no long-term staff parking (i.e. for the workday) is expected.

Additionally, from the site visit it was observed that on the section of Angelo Street near the car park entrance, vehicles stopped for a short period off to drop off children at the child care nursery (which may potentially not be present in the future development due to a Commercial Use Designation).

The current kerbside loading zone on the western side of Angelo Street outside of the car park is expected to be unchanged as part of the future development.

### 4.5 Car Share Schemes

The North Sydney Council, as per the DCP recognizes the role of car share schemes in supporting sustainable modes of transport (i.e. walking, cycling and public transport) by providing access to a vehicle on a as needed basis, circumventing the parking space provisions and the high cost of owning a vehicle. Table 4-3 states the car sharing scheme objectives and provisions as per the North Sydney DCP.

Table 4-3: Car Sharing Schemes Objectives and Provisions

Objective Number	Description
O1	To minimise the negative impacts of vehicular traffic associated with new development on the safety and efficiency of existing roads and the amenity of the North Sydney community.
Provision Number	Description
P1	Council supports the provision of car share parking in residential, mixed use and commercial developments. Where a car share scheme is to be provided: <ol style="list-style-type: none"> <li>The number of car share parking spaces provided does not replace more than 25% of the maximum off-street parking requirement if those car share spaces had not been provided, excluding any residential visitor parking spaces; and</li> </ol>



Objective Number	Description
	b) Each car share space does not replace less than 3 or more than 4 of the maximum residential and/or non-residential parking space requirements.
P2	Where car share spaces are to be provided on private land, they must be: <ul style="list-style-type: none"> <li>a) Publicly accessible 24 hours a day, 7 days a week.</li> <li>b) Located as close as practical to site's entry to the public road.</li> <li>c) Where more than one space is to be provided, located adjacent to one another.</li> <li>d) Clearly marked for use by car share scheme vehicles only; and</li> <li>e) Identified as common property on any registered title of land and not sold or leased to an individual.</li> </ul>

\*Source: North Sydney DCP

## 4.6 Proposed Parking Facility

### 4.6.1 Council Parking Facility Requirements

New developments must satisfy certain requirements as to provided parking facilities. For developments in the North Sydney area, these are dictated by the North Sydney Existing Development Control Plan (DCP). This regulates the maximum amount of car parking, loading requirements, and minimum bicycle parking/end of trip facilities. Table 4-4 lists the parking provision requirements and assumptions for the proposed development. A comparison of the existing parking facilities, proposed DCP required is summarised in Table 4-5.

Table 4-4: Parking Provision Regulations

Parking Type	Assumption	Requirement
Car Parking	Non residential; rate applicable for both B3-Commercial Core and B4-Mixed Use	Maximum parking rate: 1/400m <sup>2</sup> GFA
Loading Requirements	In consultation with council	
Bicycle Parking	Commercial Premis; office premises/ business premise	Minimum bicycle parking rate: 1/150m <sup>2</sup> GFA for Occupants, 1/400 m <sup>2</sup> GFA for Visitors
End of Trip Facilities	Based on required minimum bicycle parking spaces	As per DCP

Source: North Sydney DCP

The following proposed parking spaces based on a subject floor area of 22,750m<sup>2</sup> GFA are proposed over 3 levels of site basement, with the bicycle parking for occupants and end of trip facilities located conveniently on Basement 01 closest to the street access. Bicycle parking for visitors would be provided at ground level.

Table 4-5: Proposed Parking Spaces

Parking Type	Existing Development	Proposed Spaces	North Sydney DCP Requirement
Car Parking -site basement	99	57	Maximum: 57
Bicycle Parking - for Occupants in site basement	~12	151	Minimum: 151

### 4.6.2 Service Vehicle Access and Internal Circulation

The proposed development will include two levels of parking with parking spaces for cars, motorcycles, and bicycles, as well as end of trip facilities. The car park will contain a two-way driveway entry with a one -way ramp system

allowing vehicles to enter and exit the basement upper basement level. Traffic on the ramp will be controlled by sensors and traffic signals to enforce safe queueing to give way to oncoming traffic. The proposed car park will be for the use of authorised tenants and authorised visitors and will therefore not have peak queueing often associated with public car parking. The proposed car park is therefore estimated to operate better and with less queueing than the existing satisfactory car park which has a one-lane ramp with boom gates for combined one-lane entry and exit.

An internal turntable will allow for the movement of pre-booked authorised service vehicles to enter the site in a forward gear onto a truck lift, a truck turntable to facilitate loading, and re-enter the truck lift and exit the site in a forward gear. The proposed facility will provide internal access for loading. This will see the allowance of Medium Rigid Vehicles (MRV) of maximum clearance height of 4.5m (or 3.6m?) and turning radius of 10m.

An additional bicycle lift will be provided within the parking facility to ease pressure on the car ramp.

## 4.7 Other Future Development

### 4.7.1 Other Development in North Sydney

North Sydney centre is designated for future growth in NSW government policy. This policy includes increases in employment and floorspace and population, and associated upgrades to the multi-modal transport system. These are discussed as follows.

#### 4.7.2 Southern Cross Station and Over Station Development (OSD) and other future development.

Sydney Metro is Australia's biggest public transport project. Services started in May 2019 in the city's North West with a train every four minutes in the peak. Metro rail will be extended into the CBD and beyond to Bankstown in 2024. There will be new metro railway stations underground at Crows Nest, Victoria Cross, Barangaroo, Martin Place, Pitt Street, Waterloo, and new metro platforms under Central. The Victoria Cross metro Station will include OSD with 61,500 square metres GFA of commercial tower, and 4,500 square metres GFA for station retail. The effect of the metro will increase the mode share to public transport and active transport. The EIS included the effects of the metro station, OSD, and other future development on the transport network, and concluded that:

"The analysis undertaken shows the impact of increased Victoria Cross population due to the proposed OSD can be accommodated without negatively impacting existing transport or pedestrian infrastructure and systems. The design of the Sydney Metro station has been designed to specifically incorporate the increased OSD pedestrian demand."

#### 4.7.3 Western Harbour Tunnel and Warringah Freeway Upgrade

The key changes affecting the subject site are a proposed on-ramp from Berry Street to the southbound mainline tunnel, and the removal of the existing direct link from Berry Street to the left turn off-ramp to Falcon Street westbound. There will be connections from Warringah Freeway and Beaches Link northbound on ramp from Berry Street to Beaches Link: This on ramp would provide an alternative for travel to the Warringah Road or Pittwater Road corridors, which are currently accessible via existing corridors including Falcon Street, Ernest Street, and Brook Street/Willoughby Road.

#### Traffic Impacts during Construction of the Warringah Freeway Upgrade

The Western Harbour Tunnel and Warringah Freeway Upgrade EIS Appendix F Table 5.12 indicates the same Level of Service (LOS) in year 2022 on Berry Street east of Walker Street as the base case in the morning peak and the evening peak. Table 8.22 shows some reduction of the Level of Service of Berry Street with Miller Street and with Walker Street by 2027.

During Construction of the Western Harbour Tunnel and Warringah Freeway Upgrade (EIS Appendix F) The potential closure of the Warringah Freeway during off-peak times would increase traffic volumes on alternative routes. Traffic and demand management would be required to mitigate these impacts. The approach would be consistent with the management measures currently employed to mitigate the impacts of regular closures on the Warringah Freeway and Bradfield Highway as part of scheduled maintenance works for the Sydney Harbour Bridge and Sydney Harbour Tunnel.

The assessment of the impacts of Western Harbour Tunnel construction activities on the land-based public transport network indicates acceptable performance, with adjustments required to some bus stops in North Sydney and a minor increase in bus travel times for some customers. The assessment of the impacts of Warringah Freeway Upgrade construction activities on the land-based public transport network also indicates acceptable performance, with a minor increase in bus travel times and some short-term adjustments to bus priority infrastructure, such as the

temporary short-term closures of on/off ramp bus lanes and adjustments of bus stops. The assessment of Warringah Freeway Upgrade construction activities on the active transport network also indicates that impacts would be relatively minor and manageable.

#### Traffic Impacts During Operation of the Warringah Freeway Upgrade

The EIS states that: Increased traffic demands and delays for traffic in the North Sydney area would be minimised through the proposed changes to road access and network arrangements in North Sydney Central Business District (CBD), as well as the ongoing development of the North Sydney Integrated Transport Program by Transport for NSW. The broader network travel time and reliability benefits delivered by the project are expected to outweigh increases to localised delays. Key local adverse impacts on public and active transport would include the potential for travel times on bus routes through North Sydney to generally increase in the absence of further mitigation measures.

## 5 Conclusion

This assessment of the potential transport related impacts resulting from a Planning Proposal seeking to allow for the development of a commercial use building concluded:

- The development is proposed to be serviced by basement parking for bicycles and cars and trucks accessed via Angelo Street. No vehicular access to Pacific Highway or Berry Street is proposed;
- The road network surrounding the subject site currently provides motorists, pedestrians and cyclists with a reasonable level of service and is capable of accommodating additional demands during peak weekday and weekend periods;
- The subject site is located within walking distance to a wide range of existing and planned future public transport infrastructure and is therefore compliant with recent government strategic policy of locating developments within close proximity to public transport;
- The development is capable of generating approximately 40 peak hour vehicle trips to and from the site which is similar to the existing traffic generation from the site.
- Assessment of the traffic generating ability of other potential development sites in the immediate vicinity of the subject site has also been incorporated through studies for Victoria Cross metro rail station and Over-Station-Development and road network changes proposed in the planning for the Western Harbour Tunnel and Warringah Expressway Upgrade and Beaches Link transport schemes.
- The surrounding city centre road network has been assessed to be capable of accommodating the traffic projected to be generated by the Planning Proposal and other potential redevelopment sites in a safe and efficient manner.
- The new Special Area on the corner of Angelo Street and Berry Street will further improve the pedestrian level of service and amenity in the vicinity, improve seating, improve pedestrian choice between footpaths and through the foyer of the building, improve sight lines at the corner, and will complement the wider pedestrianised CBD.
- The site access strategy is considered to facilitate safe and efficient arrangements with respect to local traffic and pedestrian and cyclist considerations.

Based on contents of this assessment and the above conclusions, there are no traffic, parking and transport related issues associated with the Planning Proposal which would prevent recommending it for approval.

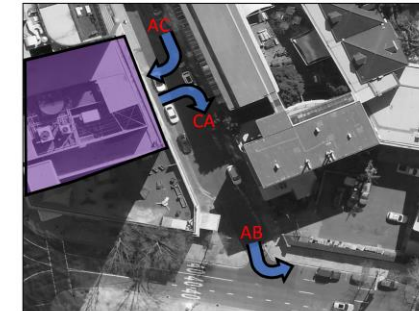
# Appendix A Existing Development Counts

## 20 Berry Street Data Collection

Tuesday 23rd November, 2020

### Turning Counts

App Code	Approach: Angelo Street to Car Park				Approach: Car Park to Angelo Street				Approach: Angelo Street to Berry Street				Max Queue
	Light	Heavy	Bicycle	Total	Light	Heavy	Bicycle	Total	Light	Heavy	Bicycle	Total	
8:00	7	0	0	7	2	0	0	2	67	0	5	72	9
8:15	9	0	0	9	2	0	0	2	65	0	2	67	18
8:30	9	0	1	10	1	0	0	1	22	0	4	26	4
8:45	5	0	0	5	3	0	0	3	33	0	2	35	3
16:30	0	0	0	0	4	0	0	4	15	0	1	16	1
16:45	2	0	0	2	6	0	0	6	37	0	0	37	5
17:00	4	0	0	4	11	0	1	12	32	0	0	32	2
17:15	1	0	0	1	15	0	1	16	34	0	0	34	2
<b>TOTAL</b>	<b>37</b>	<b>0</b>	<b>1</b>	<b>38</b>	<b>44</b>	<b>0</b>	<b>2</b>	<b>46</b>	<b>305</b>	<b>0</b>	<b>14</b>	<b>319</b>	<b>18</b>
AM Peak	30	0	1	31	8	0	0	8	187	0	13	200	18
PM Peak	7	0	0	7	36	0	2	38	118	0	1	119	5



### Wilson Car Park Inventory/Occupancy

Inventory:	Level 1	Cars	Motorcycle	Bicycle	Loading Dock
	Level 2	11	1 Strip ~ 8	Floor Parking Rack ~ 12	4 Vels
Level 3	47				
<b>Total</b>		<b>99</b>	incl reserved spaces		

Period	Time	Occupancy					
		Total			Percentage		
		Car	Motorcycle	Bike	Car	Motorcycle	Bike
Pre-AM	9:30 AM	50	5	2	51%	63%	17%
Intra Peak	12:30 PM	58	7	4	59%	88%	33%
Pre-PM	4:00 PM	47	7	5	47%	88%	42%

9:30	Car	Motorcycle	Bike	Dock
Level 1	8	5	2	1
Level 2	27			
Level 3	15			

12:30	Car	Motorcycle	Bike	Dock
Level 1	11	7	4	1
Level 2	28			
Level 3	19			

4:30	Car	Motorcycle	Bike	Dock
Level 1	7	7	5	0
Level 2	24			
Level 3	16			

### On-street Parking (Parallel to Wilson Car Park)

Inventory:	Car	31
	Motorcycle (~)	15

Period	Time	Occupancy		Occupancy	
		Car	Motorcycle	Car	Motorcycle
Pre-AM	7:30 AM	28	14	90%	93%
Intra Peak	12:30 PM	19	15	61%	100%
Pre-PM	4:00 PM	16	12	52%	80%



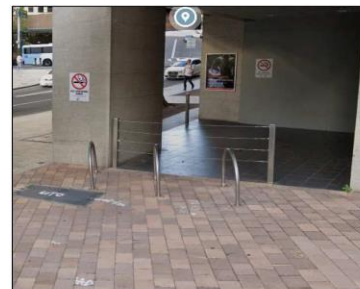
### Bicycle

Inventory:	3
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Period	Time	Occupancy	
		Total	Percentage
Pre-AM	7:30 AM	1	33%
Intra Peak	12:30 PM	1	33%
Pre-PM	4:00 PM	1	33%

### Site Measurements (all values are approximate)

Measurement	
Bicycle Rack	12 bicycles
Pedestrian Ramp Width	1.1m
Vehicle Ramp Width	4.5m
Available Queuing Length	11m (~2 cars)
Total Ramp Length	23m
Ramp Incline	5°
Skye Parking Entrance Width	7m



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