East Walker Street Precinct

Transport Assessment

Prepared for:

Avenor Pty Ltd

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JMT Consulting

Document History

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JMT Consulting

J Milston Transport Consulting Pty Ltd

ABN: 32635830054
ACN: 635830054
23 Leonard Avenue
Kingsford NSW 2032
Australia

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1 Introduction

1.1 Overview

JMT Consulting has been engaged by Avenor Pty Limited to carry out a traffic and transport assessment for a new high density development at 173-179 Walker Street and 11-17 Hampden Street, North Sydney ('the site'). The Planning Proposal seeks to increase the height and FSR to deliver approximately 250 residential dwellings on the site.

Figure 1 Precinct context

1.2 Background to transport assessment

A transport assessment was previously undertaken by Arup Pty Ltd for the site in March 2019 as part of the initial submission of the Planning Proposal to North Sydney Council. JMT Consulting has since been engaged to prepare an updated assessment of the proposal following the Gateway Determination for the proposal issued from the Department of Planning Industry and Environment (DPIE). The Arup transport assessment was undertaken principally by the same consultant who now operates as JMT Consulting.

2 Existing Conditions

2.1 Site location

The East Walker Street Precinct is located in North Sydney and is bounded by Walker Street to the west and Hampden Street to the north as shown in Figure 2 below.

Figure 2 Site location

2.2 Existing road network

The East Walker Street Precinct is conveniently located with respect to the arterial and local road network serving the region. It is therefore able to effectively distribute traffic onto the wider road network, minimising local traffic impacts. The key local roads influenced by the application include:

- Warringah Freeway – a TfNSW classified Freeway (F1) that generally runs in a north-south direction in the vicinity of the Site and forms a principal arterial link between the Sydney Harbour Bridge and Willoughby Road, Naremburn. The Warringah Freeway is subject to an 80 km/h speed zoning and generally carries at least 4 lanes of traffic in either direction within a divided carriageway. Traffic volumes along the Freeway are in the order of 100,000 vehicles per day (vpd).
- Pacific Highway – a TfNSW classified Highway (A1) that generally runs in a northwest-southeast direction in the vicinity of the Precinct and forms a major arterial link between the Sydney CBD and Hornsby to the north. The Pacific Highway carries about 60,000 vpd local to the Precinct. It is subject to a 60 km/h speed zoning and generally carries 3 lanes of traffic in either direction within an undivided carriageway.
- Miller Street – a local collector road that generally runs in a north-south direction to the west of the Precinct, providing a key link between Falcon Street (to the north) and the Pacific Highway (to the south). Miller Street is subject to a 50 km/h speed zoning and generally carries 1 lane of traffic in either direction with a parking lane on both sides of the street. Clearway restrictions apply along Miller Street, during peak periods, increasing the street's capacity to 2 southbound lanes in the morning peak and 2 northbound lanes in the evening peak.
- Walker Street – a local road that runs in a north-south direction to the west of the Precinct, carrying 1 lane of traffic in either direction with parking provided on both sides of the street. The road is generally subject to a 50 km/h speed zoning however, 40 km/h School Zone speed limits apply in the morning and afternoon for school drop-off and pick-up and drop-off at Wenona School.
- McLaren Street – a local road that runs in an east-west direction along the northern frontage of the Precinct, carrying 1 lane of traffic in either direction along an undivided carriageway. Parking is provided on both sides of McLaren Street with the road subject to a 50 km/h speed zoning. 40 km/h School Zone speed limits apply along McLaren Street between Miller Street and Walker Street.

The road network surrounding the precinct is illustrated in Figure 3.

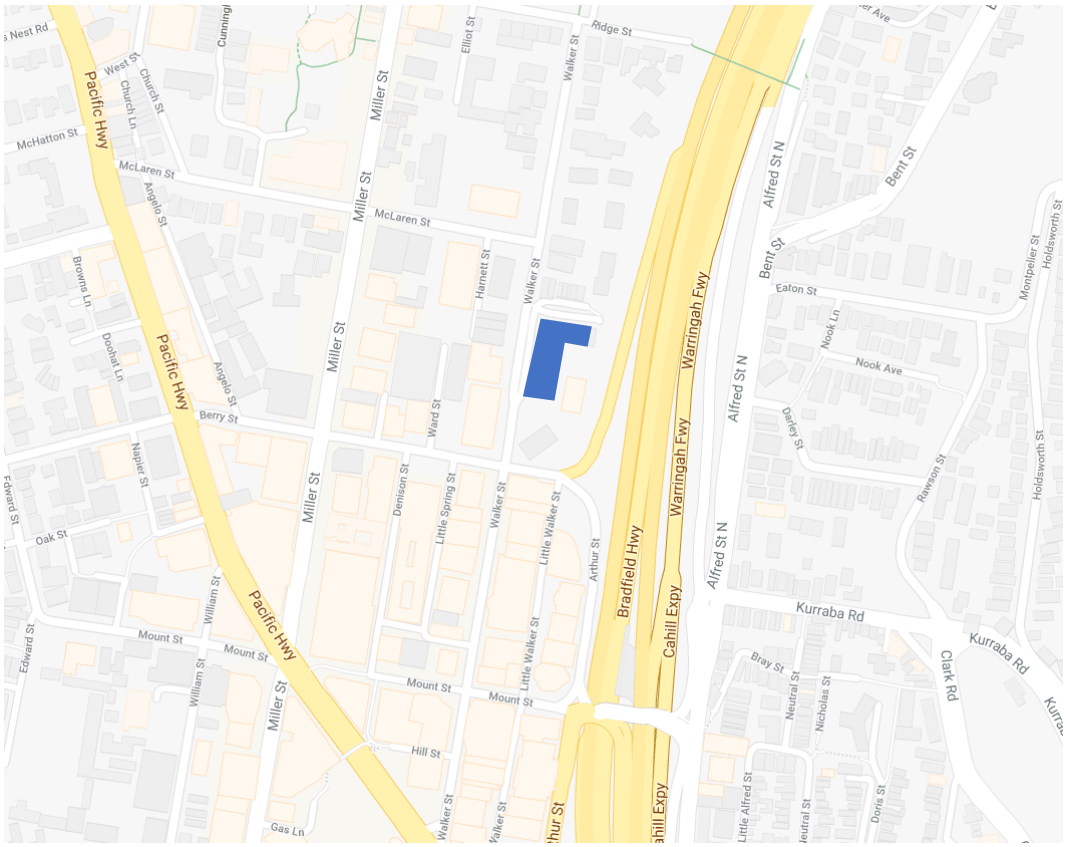


Figure 3 Road network surrounding East Walker Street precinct

2.3 Pedestrian and cycle network

The pedestrian network generally consists of the footpaths running along both sides of the roads along the surrounding road network. There is little permeability through the Ward Street Precinct at present. Pedestrian crossings are provided on three arms of the Berry Street/Walker Street intersection and on all arms of most other intersections.

There is adequate pedestrian accessibility to key local facilities and transport facilities to and from the Precinct. Pedestrian footpaths are provided on both sides of Walker Street and on Hampden Street providing access to destinations such as the North Sydney Commercial Core, North Sydney Station and North Sydney Oval and the future Sydney Metro Station.

North Sydney train station is within the 10 minute walking catchment of the development site, while the nearest bus stop is located on Miller Street, just over 5 minutes by foot from the development site.

North Sydney is served by a network of local and regional bicycle routes as shown in Figure 4 below. The Precinct has good access to the local bicycle network. The Precinct is located close to Off-road bike paths located along Miller Street to the south and Ridge Street to the north. These paths link to the wider cycling network providing a convenient route to Neutral Bay, Lane Cove and the Sydney CBD."

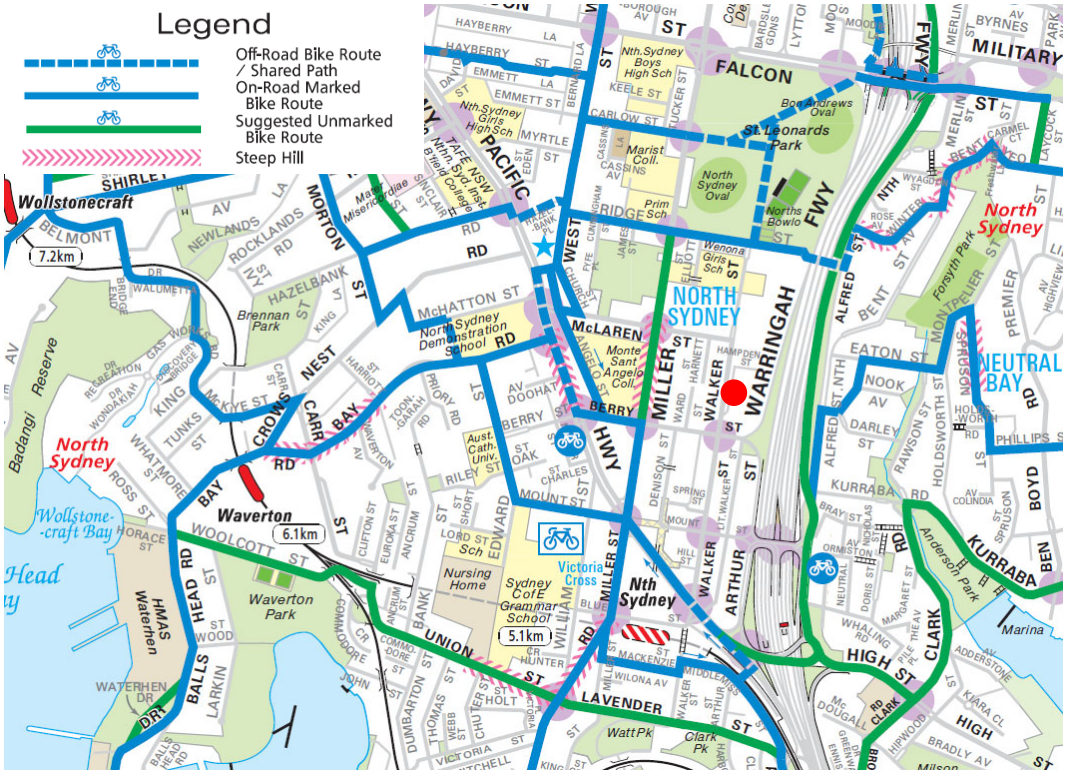


Figure 4 Existing bicycle network

2.4 Public transport network

The public transport network in the vicinity of the site consists of bus and rail services. A large number of bus routes within a 5 minute walk of the site (along Miller Street) with additional services available from the Pacific Highway while T1 northern line train services are available from North Sydney Train Station (10 minutes by foot).

The 15, 30 and 45 minute journey time catchment of the site by public transport is presented in Figure 5.

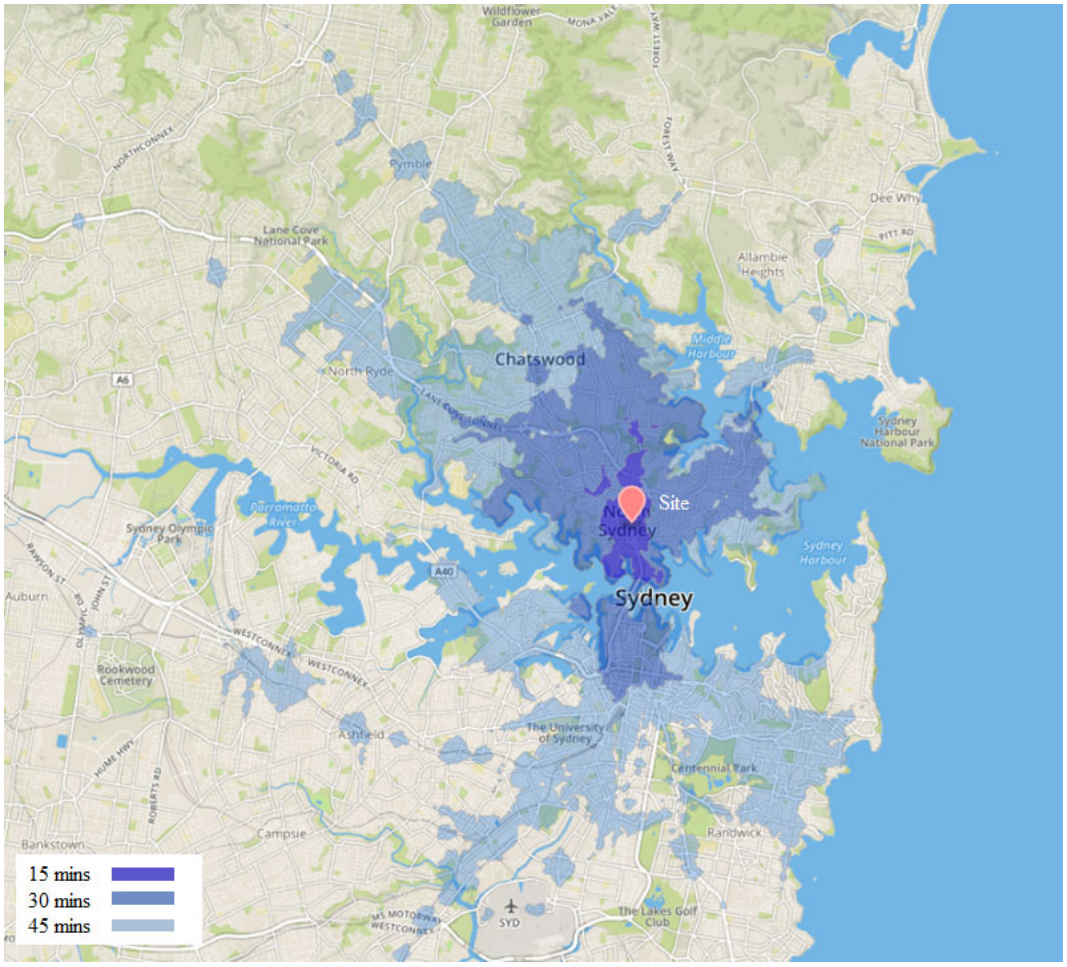


Figure 5 Public transport catchment

2.5 Mode split

The most recent 2016 Journey to Work Census data for residents living the in the block surrounded by Berry Street, Walker Street, Hampden Street and Warringah Freeway (Statistical Area 1141730) is presented in Figure 6. The data shows that approximately 40% of residents travel to work by public transport (train and bus), with only 20% of residents choosing to drive to work. It is expected this proportion of people choosing to drive will only decrease further following the introduction of the Sydney Metro project.

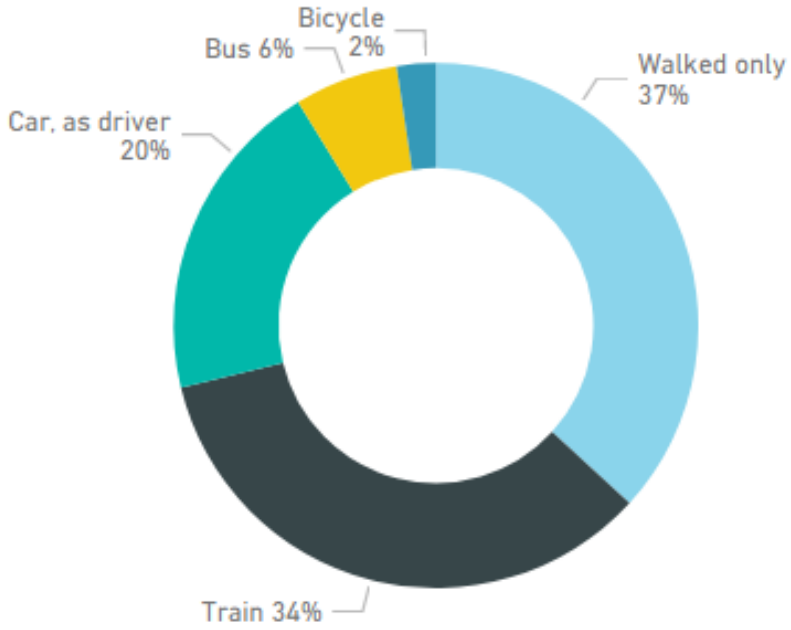


Figure 6 Journey to work mode split for residents of North Sydney

2.6 On-Street parking

On-street parking is presently located along the eastern side of Walker Street and southern side of Hampden Street as shown in Figure 7. These spaces are currently signposted as '*2P Meter, 8.30am – 6pm Mon-Fri, permit holders excepted*'.

The precinct currently accommodates 44 residential dwellings with limited off street parking available and has entitlement to approximately 44 on-street parking permits under the North Sydney Council policy which is based on RMS guidelines for resident parking. The 24 apartments in 173-179 Walker Street and 17 Hampden Street currently have no off street parking

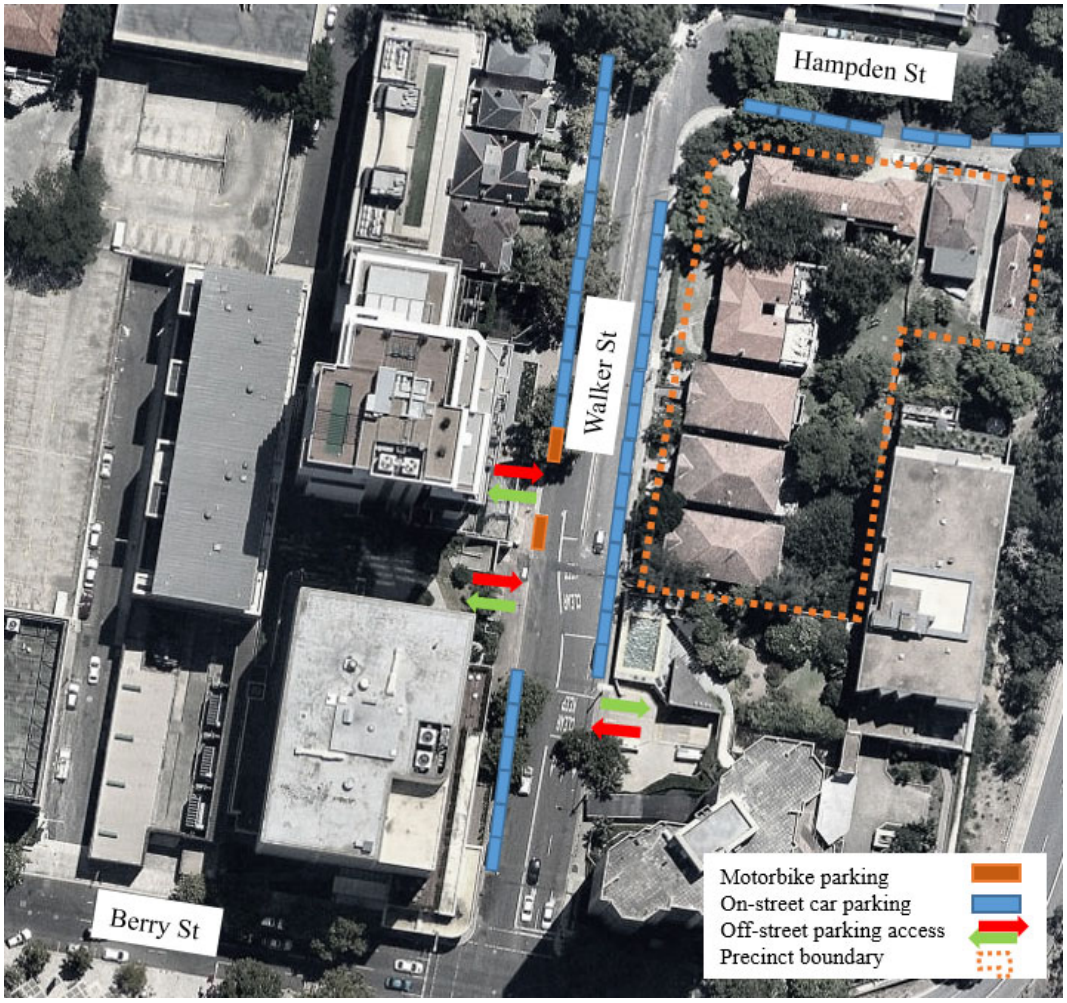


Figure 7 Existing on-street parking

3 Proposed Development

3.1 New reference design

Following the recommendations of the Sydney North Planning Panel (the appointed Planning Proposal Authority) and advice from the Department of Planning, Industry and Environment (DPIE) the Planning Proposal has been revised for lodgement with the DPIE for Exhibition following Gateway Determination in July 2020. The plan includes a total GFA of 24,088sqm and 254 apartments plus 80sqm of retail.

Figure 8 New reference design

Source: SJB, July 2020

3.2 Vehicular access

Vehicle entrance points within the Precinct are proposed at the southern end of Walker Street and the eastern end of Hampden Street – consistent with the previous designs.

The swept path of a large (10.24m) vehicle accessing the precinct from the southern end of Walker Street was previously drawn by Arup Pty Ltd for the original Planning Proposal and is provided in Appendix A of this document.

3.3 Car parking

The maximum residential car parking rate, as set out in Table B-10.2 of the North Sydney Development Control Plan 2013 (and as amended in 2015), permits the maximum parking rates as shown in Table 1 for residential development in zones other than B4 (development is located in Zone R4). Table 1 also summarises the parking rates recommended by TfNSW for metropolitan centres.

Table 1 Proposed parking rates

Apartment schedule	DCP Parking Rate (maximum rate)	TfNSW parking rates for metropolitan centres	Proposed parking rates for East Walker Street precinct
1 bedroom	1 / unit	0.4 / unit	0.5 / unit
2 bedroom	1 / unit	0.7 / unit	1 / unit
3+ bedroom	1.5 / unit	1.2 / unit	1 / unit
Visitor	1 space / 4 units	1 space / 7 units	0 / unit
Retail	1 / 400m^2	n / a	n/a

Parking rates to be adopted for the precinct are lower than those recommended by both North Sydney Council (for development in Zone R4) and TfNSW. This also aligns with the feedback previously received by TfNSW in December 2018 as part of initial consultation undertaken for this Planning Proposal.

The actual number of parking spaces to be provided would be detailed as part of a future development application for the precinct, following the finalisation of dwelling yield and mix.

Based on the current indicative dwelling mix, the potential number of parking spaces that could be achieved is outlined in Table 2 below.

Table 2 Potential parking provision

Apartment schedule	Parking rate	Number of apartments	Potential no. of parking spaces
1 bedroom	0.5 / unit	93	47
2 bedroom	1 / unit	112	112
3 bedroom	1 / unit	49	49
Total		**254**	**208**

No parking for the retail component of the precinct is proposed given only 80m^2 of floor space is envisaged under the planning proposal, less than the rate of 1 space / 400m^2 outlined in the North Sydney DCP.

Clause 10.2.1, P6 of the North Sydney DCP-Part B stipulates that each adaptable residential apartment is required to be allocated an accessible car parking space. These spaces will be allocated as the design progresses towards a development application. Additionally, Clause 10.3.1, P2 of the North Sydney DCP-Part B stipulates that 1- 2% of all non-residential car parking is required to be provided as accessible parking. Given no parking associated with non-residential uses are proposed, no accessible car parking will be provided in this respect.

3.4 Bicycle parking

Clause 10.5.1, P1 of the North Sydney DCP-Part B requires bicycle parking to be provided at the following rates:

Residential Land Use:

- 1 bicycle space per dwelling, plus
- 1 bicycle space per 10 units for visitors

Application of the above rates to the Proposal results in a requirement for a total of 233 bicycle spaces comprising 208 residential spaces.

The development would provide a total of 233 bicycle spaces including 208 spaces within a designated bicycle parking area on Basement Level 1 and storage lockers that are large enough to accommodate a bicycle and hence, can be regarded as bicycle parking spaces in accordance with Clause 10.5.1, P1(a) of the North Sydney DCP-Part B. Compliance with Council's parking requirements will be further investigated at DA stage noting that it is likely this can be achieved.

3.5 Motorcycle parking

The North Sydney DCP requires the provision of motorcycle parking at the rate of 1 space per 10 car spaces, or part thereof. Future development applications for the precinct would comply with this requirement.

3.6 Car share

As the proposal moves towards development application stage, details around car share provision will be provided. Allowance has been made within the basement and/or on Walker Street to accommodate car share vehicles.

3.7 Service area

The North Sydney Development Control Plan 2013 requires that for developments with more than 60 dwellings, that at least two Medium Rigid Vehicle (MRV) bays be provided. Future development applications will provide these two MRV bays within the site. Vehicles will be able to enter/exit the site from street level in a forward direction.

3.8 Waste collection

Following discussions with North Sydney Council undertaken for the original Planning Proposal, it is understood that waste collection for residential developments is to be undertaken on-street and not within the development itself. In accordance with the DCP, a bin storage area will be provided within the site boundary which can be accessed via the street network. These arrangements will be further detailed in subsequent development applications for the site.

This waste collection process is already in place for the Walker Street and Hampden Street and is successful and it is reasonable to maintain the process for future development. TfNSW was previously consulted on the proposal and was generally comfortable with the capacity for future development to meet Waste Collection requirements

The existing waste collection arrangements for the precinct are shown in Figure 9. These arrangements would not change under the proposal.

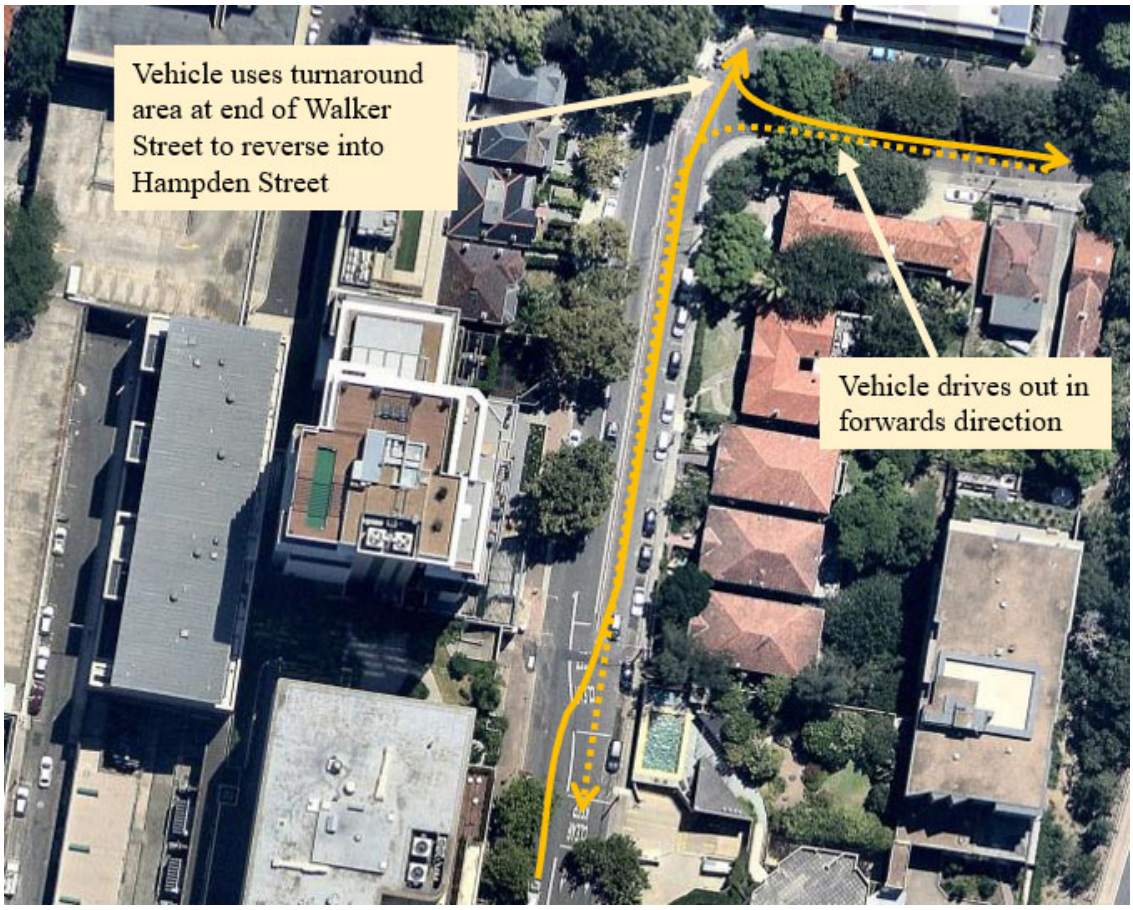


Figure 9 Existing waste collection arrangements

4 Future Context

4.1 Ward Street Precinct Masterplan

North Sydney Council has prepared a Masterplan for the Ward Street precinct which is adjacent to the site. The Precinct is bound by McLaren Street to the north, Berry Street to the south, Miller Street to the west and includes a number of properties on the eastern side of Walker Street, south of Hampden Street.

Within the precinct is a variety of commercial, mixed use and residential development. The precinct also contains the Ward Street car park, which is Council owned and privately operated under a long term lease. The upcoming expiry of the lease, in combination with the arrival of the Metro, brings the opportunity for Council to re-imagine how these facilities work for the community.

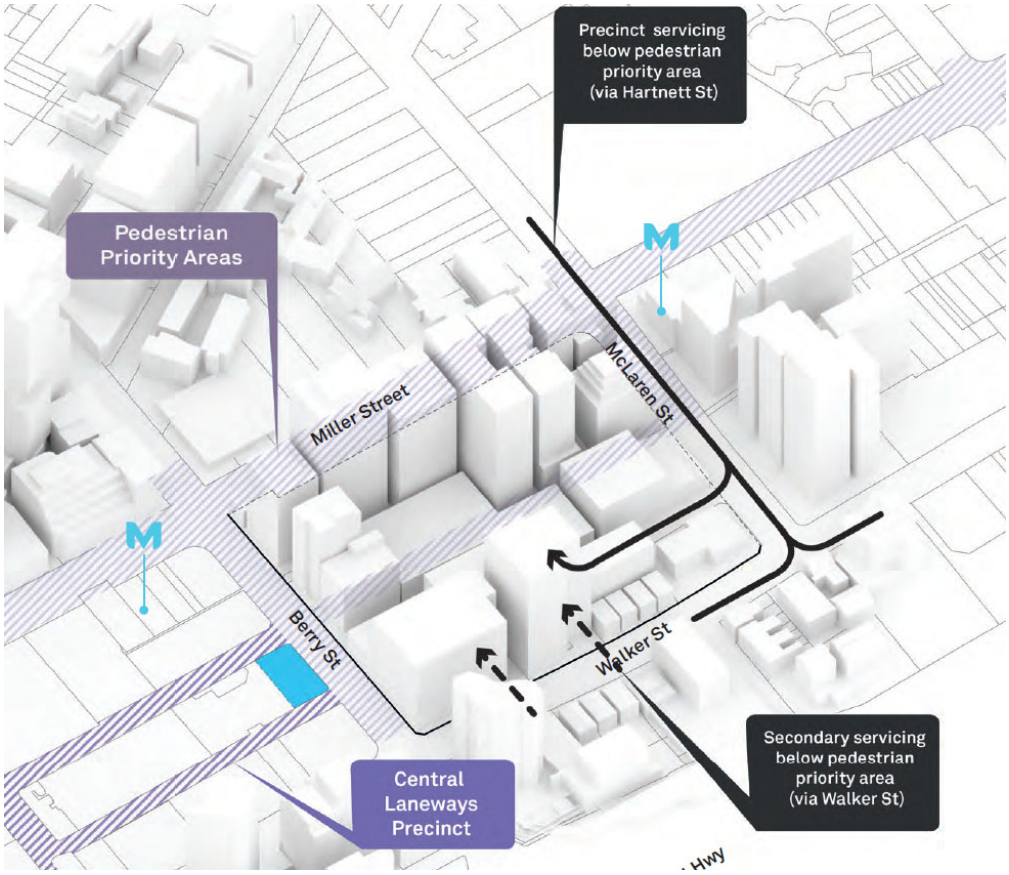


Figure 10 Ward Street Precinct Masterplan

The masterplan identifies Walker Street as being of a lower order in terms of pedestrian priority when compared with McLaren Street, Berry Street and Miller Street.

Of particular benefit to the East Walker Street Precinct will be the increased permeability of the precinct which will reduce walk times to bus services along Miller Street.

4.2 Civic Precinct planning study

In May 2020 North Sydney Council placed the Civic Precinct Planning Study on exhibition for public comment. The Civic Precinct stretches from the north of the North Sydney CBD through to Crows Nest and includes the East Walker Street precinct.

A transport assessment was prepared to support to the Civic Precinct study, and specifically considered the proposal for the East Walker Street precinct, with key findings including:

- Recommended upgrades of pavement due to the proposed shared street environment.
- Consideration be given to a pedestrian through-site link from the Ward Street Precinct to the west to create better east-west connections for pedestrians across Walker Street. It should be noted that TfNSW advised against this initiative during consultation held in December 2018 for the East Walker Street precinct Planning Proposal.
- The proposed residential parking provision is below the maximum allowable number of spaces permitted under Council's DCP and results in very low vehicular trip generation and minimal traffic impacts.

Therefore the findings of the transport assessment for the Civic Precinct study align with the intent of the new reference design and confirms that the proposal will have minimal traffic impacts on the surrounding road network.

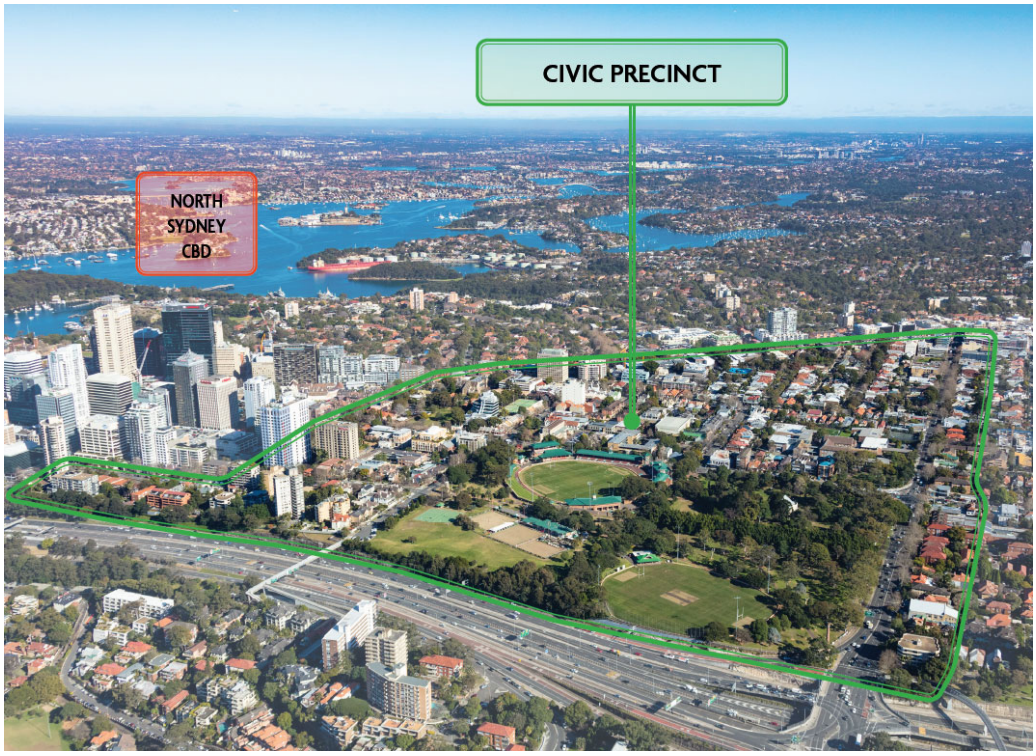


Figure 11 North Sydney Civic Precinct

Source: North Sydney Council

4.3 Sydney Metro & Victoria Cross Metro station

Sydney Metro is the next major rail project identified in Sydney's Rail Future. Sydney Metro scope has been developed to meet the Project objectives and deliver key elements of Stages 4 and 5 of Sydney's Rail Future.

In June 2014 the NSW Government announced the Sydney Metro concept, including the Sydney Harbour Crossing and Western Extension to Bankstown proposals. The project would extend rapid transit under Sydney Harbour, through the central business district (CBD) of Sydney and west to Bankstown, with capacity to run up to 30 trains per hour in each direction.

The Project represents a major increase in the capacity of Sydney's rail network, providing a 60 per cent increase in the number of trains in the peak periods and catering for an extra 100,000 customers per hour. Sydney Metro will significantly improve reliability across the rail network by addressing current and emerging constraints such as train crowding, platform and station crowding, and network complexity.

The NSW Government has commenced construction on a new station in North Sydney, known as Victoria Cross, as part of the Sydney Metro project. The station is located beneath Miller Street (to the north of the Pacific Highway) between McLaren Street and south of Berry Street. Station access and entry is via the pedestrian plaza opening to Miller, Denison and Berry streets. Residents of the proposed development will benefit from the future northern access point into Victoria Cross station located at the corner of Miller and McLaren Street.

Key employment centres will be easily accessible from Victoria Cross station, with 9 minutes travel time to Central Station and 5 minutes travel time to Martin Place metro station. Station access and entry is via the pedestrian plaza opening to Miller, Denison and Berry streets, and via the proposed northern services building on McLaren Street. The station includes:

- New bike parking near the corner of Miller and Berry streets
- New kiss and ride bays on Berry Street
- Existing bus stops close to the station retained on Miller Street
- Wayfinding signage and Sydney Metro information within the North Sydney CBD

The new metro station is located within a 5 minute walk (~200m) of the East Walker Street precinct, and will be operational from 2024, and is within equal distance of both North and South entrances to Victoria Cross Metro Station. The metro will provide a high frequency, high capacity public transport service in close proximity to the East Walker Street precinct, which will have the effect of reducing reliance on private vehicles, lowering on-street parking demands and reducing traffic movements generated by existing and future residents.

4.4 Western Harbour Tunnel and Beaches Link

In March 2017 the NSW Government announced the Western Harbour Tunnel and Beaches Link (WHTBL) motorway project. In January 2020 the Environmental Impact Statement (EIS) for the Western Harbour Tunnel and Warringah Freeway Upgrade Project was released by TfNSW.

The current tunnel design involves the construction of a north-bound tunnel opening north of Hampden Street, and an additional lane of road widening along the Warringah Freeway adjacent to East Walker Street. These works do not directly impact the subject property although they move the boundary of the Warringah Freeway, as confirmed by the concept drawings released as part of the EIS package.

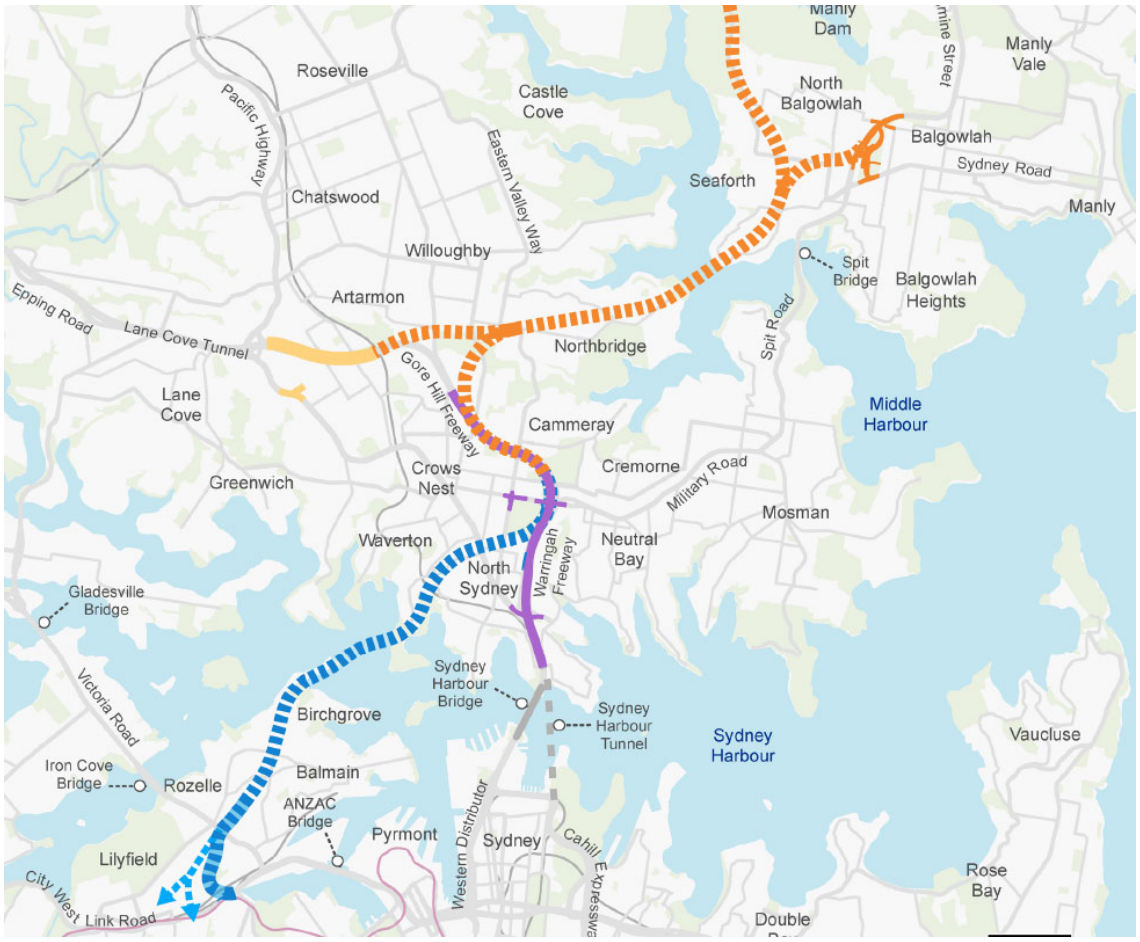


Figure 12 Western Harbour Tunnel and Beaches Link project

Source: TfNSW

4.5 Summary of future planning context

In regards to the planned transport and land use changes in the vicinity of the East Walker Street Precinct, specifically:

- Pedestrian improvements identified under the Ward Street masterplan;
- Provision of a new metro station within 200m walk of the precinct; and
- Enhanced road infrastructure through the Western Harbour Tunnel and Beaches Link project

the proposal is well suited to take advantage of the new infrastructure upon its completion in 2024. The improved access to transport services would ensure that future residents have a wide range of options, in addition to the numerous existing transport options, as alternatives to private vehicle use.

5 Transport Assessment

5.1 Trip generation

Recent surveys undertaken by the TfNSW of high density residential developments indicates a person trip generation rate of approximately 0.6 trips / dwelling. Applying this rate to the dwelling yield of 254 apartments possible under the planning proposal, 152 trips would be generated. Using the existing mode splits previously noted in Section 2.52.5, and applying adjustments based on the site's proximity to the future metro station, the forecast number of trips by mode can be determined. This is outlined in Table 3 below.

Table 3 Mode share and peak period person trips

Mode Share		**New Reference Design**	
		AM Peak Hour Trips	PM Peak Hour Trips
Car Driver	18%	27	27
Car Passenger	1%	2	2
Train / metro	36%	55	55
Bus	6%	9	9
Walk	37%	56	56
Cycling/Other	2%	3	3
Total	**100%**	**152**	**152**

5.2 Road network impacts

The analysis indicates that the site may generate up to 27 vehicle trips during peak hours. In this AM peak hour, this would equate to approximately 22 vehicle trips leaving the development in the morning (assuming an 80% of trip are egress), the majority of which would be directly accessing either the Warringah Freeway or the Pacific Highway. This is approximately 1 vehicle every three minutes during the peak period and is considered to be of negligible impact.

It should also be noted that the existing 44 residential dwellings within the precinct would currently generate traffic during peak periods. Therefore the *net* changes in traffic movements associated with the Planning Proposal is likely to be less than 20 vehicles per hour.

Traffic generation of this magnitude would not impact access for people travelling to/from the nearby Victoria Cross metro station.

5.3 Vehicle access arrangements

To support the Planning Proposal analysis has been undertaken to confirm the suitability of the existing road network to accommodate traffic flows into the site. Specifically, the analysis has focused on the potential of the northbound lanes on Walker Street to queue back to Berry Street if a vehicle is waiting to turn right into the driveway of the proposed development.

A SIDRA model was developed to understand the maximum queue that is likely to form behind vehicles waiting to turn right into the proposed driveway. The analysis considered up to 22 vehicles turning right into the Walker Street driveway during the PM peak hour, in line with the trip generation forecasts. It should be noted however that not all of these vehicles will necessarily use the access off Walker Street, given an access point off Hampden Street may also be provided.

The modelling demonstrates that the maximum queue length that is likely to form in the PM peak hour behind right turning traffic is no more than one vehicle. This is illustrated in Figure 13, and confirms the proposed development will not cause northbound lanes on Walker Street to queue back to Berry Street.

Traffic modelling outputs are provided in Appendix B.

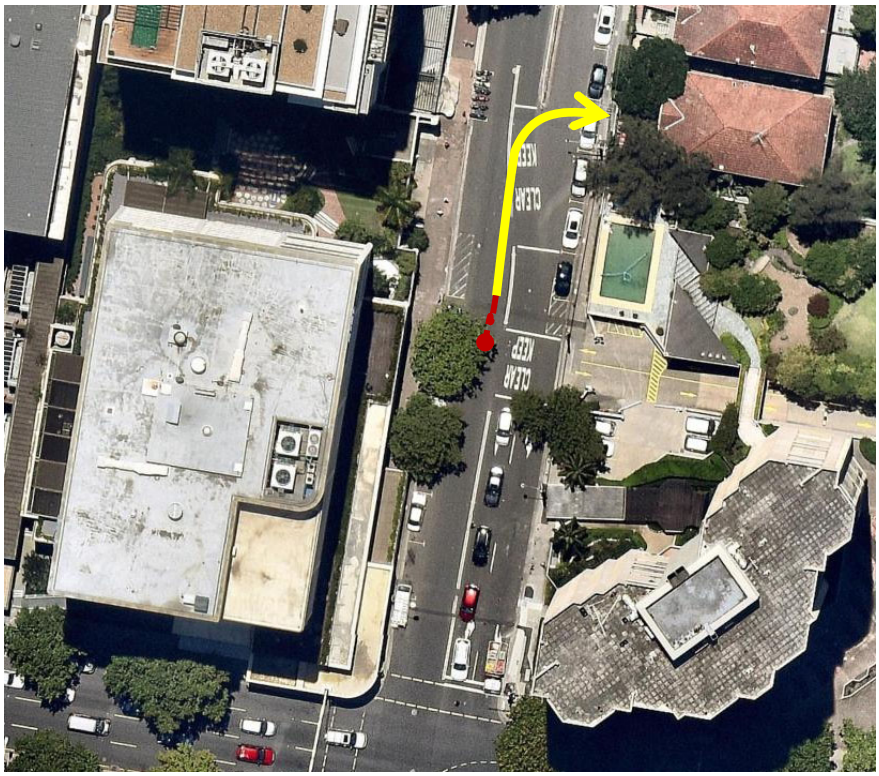


Figure 13 Forecast maximum queue length

Other locations for the driveway were considered in the study, however, it was determined that the location at the southern end of the Precinct was justified as being the optimum location for a number of further reasons:

- Given the constrained width of the lower side of Walker Street, it is preferable to have vehicles enter the precinct immediately as they enter Walker Street rather than travelling the full length of the road. Vehicles travelling north on Walker Street may be required to wait a longer time for larger vehicles (e.g. waste collection vehicles, loading vehicles) to pass which would create localised congestion.
- If vehicles are waiting in traffic to exit the precinct from Hampden Street, vehicles seeking to enter would be able to pass between waiting vehicles into the driveway, in turn assisting with the reduction of any potential congestion.
- The planning proposal seeks to retain the local character of the northern end of the precinct towards Hampden Street and create a safe pedestrian environment, and by locating the driveway at the southern end of the precinct it limits the amount of traffic movements within the precinct.
- The planning proposal seeks to provide well connected open space within the precinct which is provided as a continuous stretch of open space along the Walker Street frontage in order to maximise the pedestrian connectivity, safety and usability of the open space. If the driveway was located further north, it could result in splitting the open space unnecessarily, reducing the usability of the space by providing further vehicle curtilage to ensure safety.
- The swept path of vehicles entering at the southern end of the Precinct allows for a wider arc and in turn there is less impact on the removal of on street parking. Given the width of the lower part of Walker Street further north, the vehicle swept path may require removal of more on street parking.
- There is no need to locate the driveway north as the analysis demonstrates that:
    - the low level of traffic generation by the development will not cause queuing back to Berry Street with a maximum PM peak hour queue estimated to be less than 1 vehicle
    - The existing traffic arrangement allows for north bound vehicles to pass any vehicles that are waiting to turn into the Precinct

The location of the southern driveway is therefore justified as being the optimum location.

It should also be noted that northbound vehicles have the ability to pass traffic waiting to turn right into the site. Figure 14 (previously prepared by Arup) shows a medium rigid vehicle waiting to turn right with a B99 vehicle travelling northbound passing the waiting vehicle, without impacting any of the existing on-street car parking or motorcycle parking.

Figure 14 Ability for northbound vehicles to pass traffic waiting to turn right

Source: Arup, 2019

5.4 Public transport

The site is forecast to generate demand for up to 55 trips by train/metro and 9 trips by bus during the AM peak hour. As shown in Figure 15, the distance to the train station is less than 600m, while the bus stops on Miller Street are approximately 200m away.

There are a high number of bus services serving the stops on Miller Street during the morning peak period, while trains operate at a 3 minute frequency through North Sydney. Once operational, the Sydney Metro is expected to operate at a 4 minute frequency.

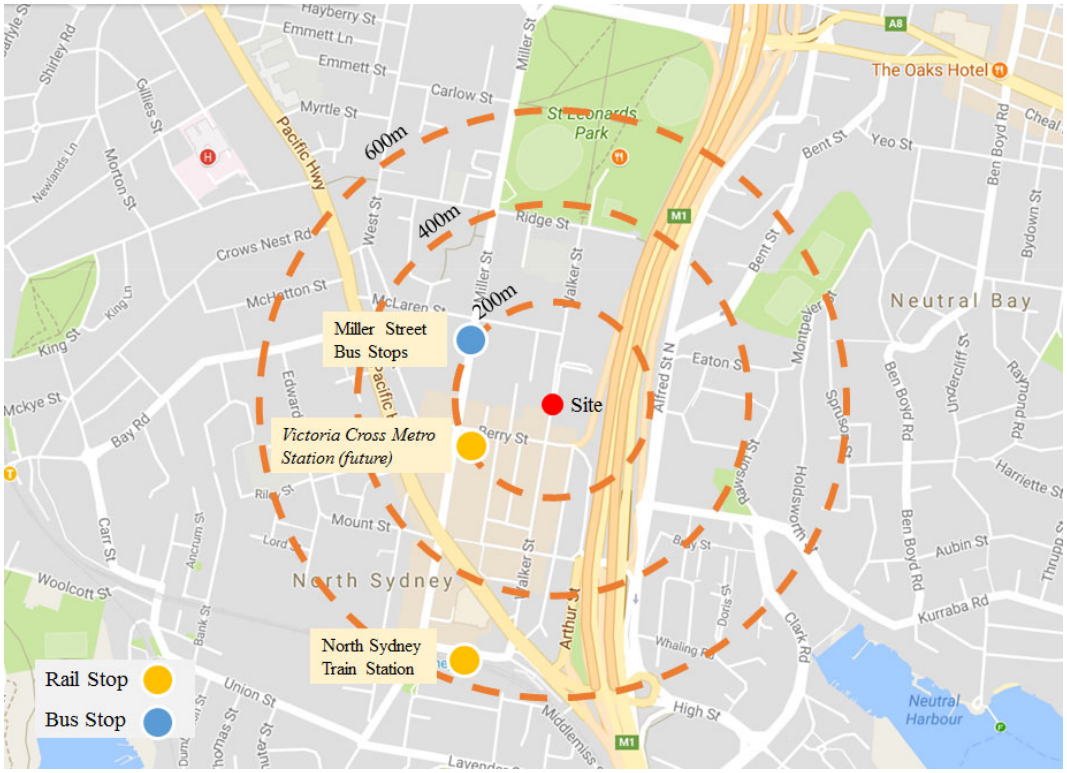


Figure 15 Distance to public transport stops

5.5 On-street car parking

The proposed location of the driveways into the precinct, as well as the pocket park on Hampden Street, will result in the estimated loss off of 6 on-street parking spaces – 3 each on Walker Street and Hampden Street. These changes are presented in Figure 16.

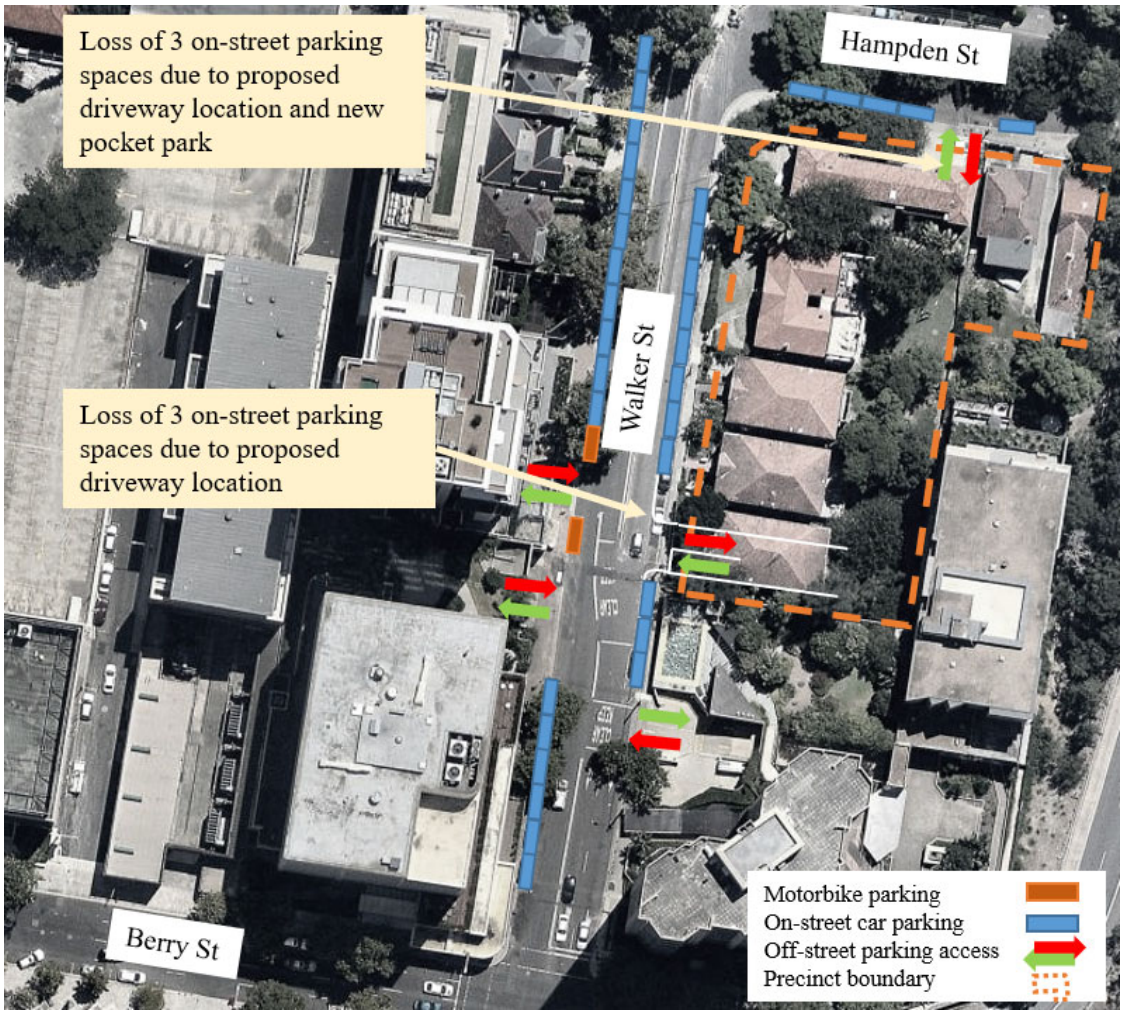


Figure 16 Proposed on-street parking

While it is acknowledged parking demand is high in the area, the proposed loss of on-street parking spaces is considered acceptable given that:

- The existing residential dwellings on Walker Street and Hampden Street which make up the proposed site do not have any off-street parking. Each of these existing dwellings would be entitled to a residential parking permit
- Total demand for on-street parking in the vicinity of the site will reduce should the development proceed, as residents of the dwellings would no longer be competing for parking spaces.
- The existing residential dwellings at 173-179 Walker Street and 17 Hampden Street which make up the proposed Precinct do not have any off-street parking. Each of these existing dwellings would be entitled to a residential on street parking permit, or currently park vehicles on the surrounding road network. There is also limited parking for residents at 11 Hampden Street.
- The amended Planning Proposal does not result in any greater loss of on street car parking than the previous reference design assessed by the Sydney North Planning Panel in February 2020.

5.6 Pedestrians

The development of the precinct provides an opportunity to enhance the safety and efficiency of pedestrian movements. This includes an upgraded public domain with wider setbacks and a new pocket park to provide a more amenable pedestrian environment.

The capacity for inclusion of pedestrian crossings of Walker Street to improve pedestrian access was investigated as part of this study. Key locations considered were at the northern end of the heritage wall near the access stairs to Hampden Street and to the southern end of the heritage wall near the proposed driveway location. The investigation found that the proposed development does not require such crossings in order to meet compliant pedestrian access requirements.

Previous feedback received from TfNSW however indicated that it would not be their preference for a pedestrian crossing in these locations. Further, the Ward Street precinct masterplan identifies Walker Street as being of a lower order in terms of pedestrian priority when compared with McLaren Street, Berry Street and Miller Street

Inclusion of a ramp for less mobile road users near the Hampden Stairs was considered, however, it is deemed not required for the compliant servicing of the proposed development.

5.7 Green travel plan

North Sydney Council previously requested for a Draft Travel Plan or a Draft Green Travel Plan to be produced to support the Planning Proposal lodged in March 2019. This report also includes a Draft Travel Plan Summary identifying some key items to be addressed in the subsequent production of the Plan, however, it is too early for such a detailed plan to be produced. This would be completed in DA stage of planning.

5.7.1 Background

A Green Travel Plan (GTP) is a package of measures put in place by the development occupants to try and encourage more sustainable travel. It is a means for a development to demonstrate a commitment and take a pro-active step towards improving the environmental sustainability of its activities.

More generally, the principles of a GTP are applied to all people travelling to and from a site. Government authorities are placing increasing emphasis on the need to reduce the number and lengths of motorised journeys and in doing so encourage greater use of alternative means of travel with less negative environmental impacts than the car.

5.7.2 Objectives

The main objectives of the GTP are to reduce the need to travel and promotion of sustainable means of transport. The more specific objectives include:

- High mode share for public transport, cycling and walking to work journeys;
- Ensuring adequate facilities are provided at the site to enable the tenants and visitors of the development to commute by sustainable transport modes;
- Reduce the number of car journeys associated with business travel;
- Facilitate the sustainable and safe travel of occupants; and
- Raise awareness of sustainable transport amongst residents of the development.

5.7.3 Potential measures

A suite of potential measures is described below to be implemented as part of the GTP, which can be developed further as the development progresses.

Table 4 List of potential GTP measures

Action	Responsibility
Cycling	
Provide sufficient cycle parking to meet needs, which is easily accessible and secure	Developer
Provide adequate cycle parking facilities for visitors	Developer

Action	Responsibility
Ensure cycle parking is clearly visible or provide signage to direct people to cycle bays	Building manager
Produce a map showing cycle routes and bike stands in the area	Building manager
Walking	
Produce a map showing safe walking routes to and from the site with times, distances to local facilities, such as shops and bus stops	Building manager
Public Transport	
Develop a map showing public transport routes in the area	Building manager
Put up a noticeboard with leaflets and maps showing the main public transport routes to and from the site	Building manager
Carshare / Carpooling	
Put a poster on the noticeboard where residents would register their interest in carpooling by indicating their work location	Building manager
Develop a map showing car-share spots in the area	Building manager
General actions	
Promotion including: • an events calendar – 3-4 events per year. Best in conjunction with statewide events such as National Bike Week and Bike2Work Day, National Walk to Work Day. • Display boards in prominent locations to show public transport maps and timetables.	Building manager

5.7.4 Monitoring and review

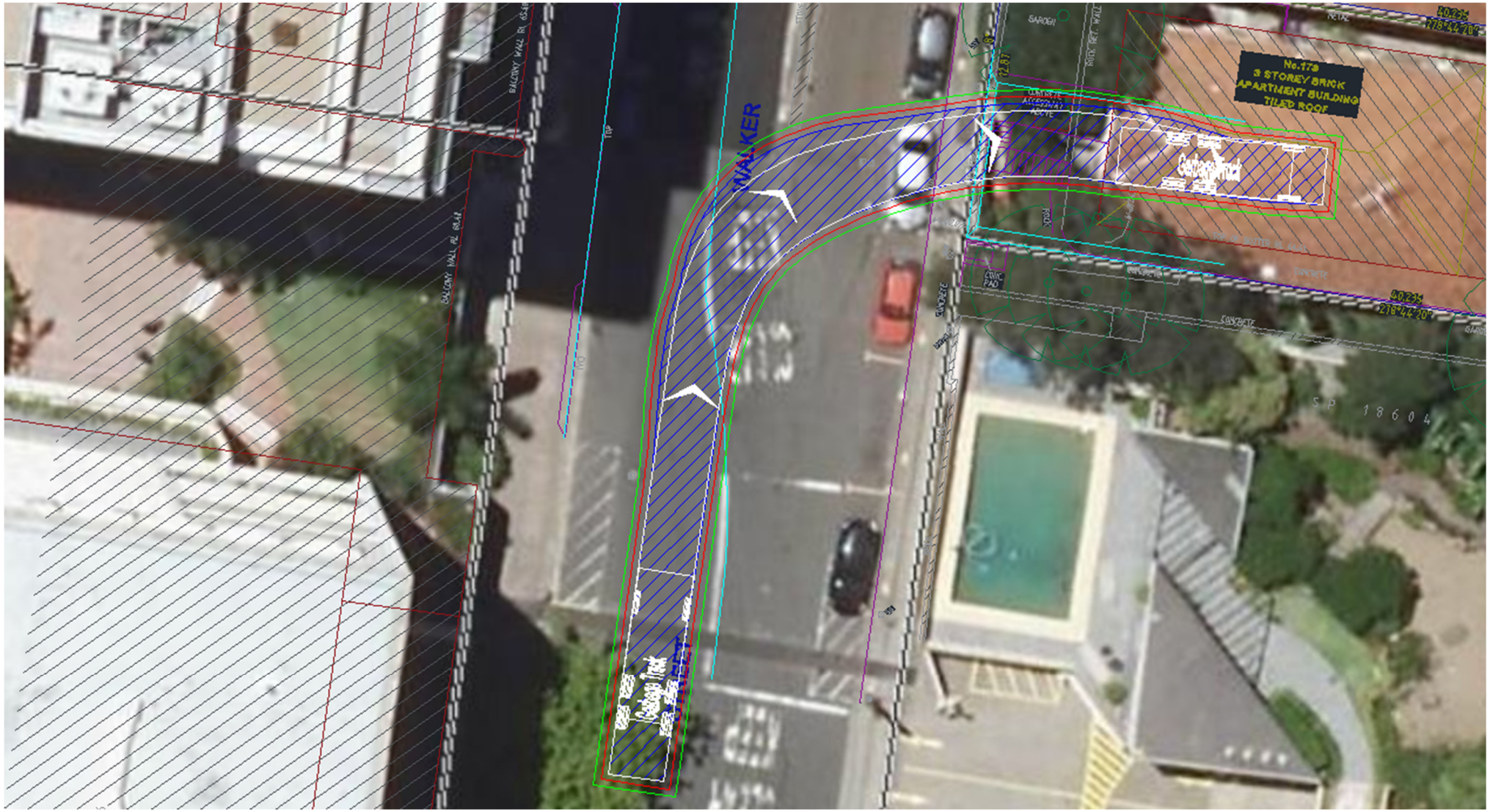
In order for the GTP to be effective, it must be reviewed on a regular basis. It is important to ensure that the GTP is meeting its objectives and having the intended impact on car use and transport choices. The GTP should be reviewed on a yearly basis by undertaking resident and other users of the building travel surveys. It is recommended that the mode shares are first reviewed at least 18 months after occupation, to allow activity levels to settle at the site.

6 Summary

JMT Consulting has prepared this updated transport assessment on behalf of Avenor Pty Limited of their proposed high density residential development at 173-179 Walker Street and 11-17 Hampden Street, North Sydney – known as the East Walker Street Precinct. Key findings of the study are as follows:

- The provision of an access driveway on Walker Street and Hampden Street will result in the loss of approximately six on-street car parking bays, which are currently used by residents of the subject site. It is acknowledged parking demand is high in the area, however this loss of spaces is considered acceptable given that:
    - The existing residential dwellings on Walker Street and Hampden Street which make up the proposed site do not have any off-street parking. Each of these existing dwellings would be entitled to a residential parking permit
    - Total demand for on-street parking in the vicinity of the site will reduce should the development proceed, as residents of the dwellings would no longer be competing for parking spaces.
    - Residents of the future site will not have access to residential parking permits. Therefore there would be a reduction in the number of parking permits issued in the area, despite the estimate loss of six on-street parking spaces.
- The proposal will provide bicycle parking in line with rates outlined in the North Sydney DCP, and car parking at rates below the DCP given the proximity of the precinct to public transport.
- Due to the location of the site in close proximity to public transport, in particular the future Victoria Cross metro station, only a maximum of 27 vehicle trips during peak hours are forecast. In this AM peak hour, this would equate to approximately 22 vehicle trips leaving the development in the morning which is less than 1 vehicle every two minutes during the peak period and is considered to be of negligible impact
- The future measures proposed under the Ward Street Precinct Masterplan and the Victoria Cross Metro Station will significantly improve the accessibility of the development by foot and by public transport.

Appendix A: Vehicle Swept Path Analysis



Swept path of 10.24m vehicle entering the precinct from Walker Street

Appendix B: Traffic Modelling Outputs

MOVEMENT SUMMARY

Site: 101 [East Walker Street Precinct (Site Folder: PM Peak Hour)]

Walker Street Access Point
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street (S)														
2	T1	415	1.0	437	1.0	0.246	0.2	LOS A	0.3	1.8	0.07	0.03	0.07	59.4
3	R2	22	0.0	23	0.0	0.246	7.6	LOS A	0.3	1.8	0.07	0.03	0.07	57.2
Approach		437	0.9	460	0.9	0.246	0.5	NA	0.3	1.8	0.07	0.03	0.07	59.3
East: Site Access														
4	L2	7	0.0	7	0.0	0.009	7.0	LOS A	0.0	0.2	0.44	0.61	0.44	52.2
6	R2	1	0.0	1	0.0	0.009	10.3	LOS A	0.0	0.2	0.44	0.61	0.44	51.7
Approach		8	0.0	8	0.0	0.009	7.4	LOS A	0.0	0.2	0.44	0.61	0.44	52.1
North: Walker Street (N)														
7	L2	1	0.0	1	0.0	0.222	5.6	LOS A	0.0	0.0	0.00	0.00	0.00	58.3
8	T1	407	1.0	428	1.0	0.222	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		408	1.0	429	1.0	0.222	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		853	1.0	898	1.0	0.246	0.4	NA	0.3	1.8	0.04	0.02	0.04	59.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.