Sydney Metro

52 McLaren Street, North Sydney - Planning Proposal
Traffic and Parking Impact Assessment

August 2022

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1. Introduction

1.1 Overview

This Traffic and Parking Impact Assessment has been prepared by GHD Pty Ltd to support the proposed development at 52 McLaren Street, North Sydney. The subject site is adjacent to the site of the entrance portal of the future Sydney Metro Victoria Cross Station. The proposed development consists of a mixture of residential and commercial uses across two buildings, including a childcare centre as well as underground parking facilities accessed via McLaren Street. The proposed development will include public realm enhancements, including the provision of pedestrian access between McLaren Street and Elliot Street to the north.

This report assesses the potential traffic and parking impacts of the development on the surrounding road network.

1.2 Site location and proposed development

1.2.1 Site location

The site is located within the North Sydney Council Local Government Area (LGA) and consists of LOT 2 in DP218407, located at 52 McLaren Street, North Sydney.

Primary access to the site is via McLaren Street and the connecting roads of Miller Street and Walker Street, as shown in Figure 1-1. The site is also proposed to be accessible via Elliot Street to the north for pedestrian thoroughfare, which then connects to Ridge Street, providing pedestrian connection to Berry Street via the future pedestrian promenade.

Figure 1-1 Site location

Source: SIX Maps – Modified by GHD

1.2.2 Proposed development summary

The proposal is a high-density residential development consisting of two buildings. The front building with frontage to McLaren Street is 24 storeys and contains commercial, ground floor retail and residential uses, while the rear building is 8 storeys and contains residential dwellings, commercial uses and a childcare centre. Access is proposed via McLaren Street to a basement car park facility over three levels. Key parameters of the proposed development are outlined in Table 1-1

Table 1-1 Proposed development key features

Component	Proposed use breakdown
Residential	Studio: 21 dwellings 1 bed: 63 dwellings 2 bed: 62 dwellings 3 bed: 26 dwellings **Total: 172 dwellings**
Commercial office	2,573 m^2 GFA
Retail	427 m^2 GFA
Childcare	460 m^2 GFA (internal) 450 m^2 (external amenity)
Car Parking	Residential: • 104 (including 34 accessible spaces) *
	Residential Visitors: • No residential visitor parking provision, in line with North Council DCP
	Childcare: • 2 x all-day designated car spaces for staff (Health and Work Safety requirement) • 4 x additional car spaces (including 1 accessible) for drop off during the hours of 7:30 am-9:30 am and pick-up between 4:00 pm and 6:00 pm (10-minute parking limit)
	Retail/Commercial: • 7 spaces (including 1 accessible space).
	Total: 117
Motorcycle Parking	• 12 spaces
Bicycle Parking	• Bicycle storage for residents will be provided as a combination of individual storage cages and common compounds with bicycle racks. • A separate common compound will be provided for commercial, retail, and childcare centre employees, with racks at ground level for retail customers and visitors. • Provision to align with Council DCP. To be detailed in future design stages.
Car wash bay	• 2 spaces
Car share	• 4 spaces

Component	Proposed use breakdown
Service vehicle	Loading dock upon entry to the site to cater for, minimum: • 2 Medium rigid vehicle (8.8 m) – in tandem • 1 Heavy rigid vehicle (12.5 m) Additionally, short term parking for deliveries can utilise the childcare visitor parking.

* *Car parking assumes reduction of DCP rates, excluding accessible spaces required as per the code.*

Note: DCP = Development Control Plan (refer to North Sydney DCP 2013)

1.3 Assumptions and limitations

The following assumptions were made as part of this study:

- A future state-base model was developed for 2030, allowing ten-year future growth and assumed a growth rate of one percent per annum.
- Traffic surveys conducted by Matrix Traffic and Transport Data Pty Ltd at the following intersections on Saturday 5 December 2020 between 10:30 am and 1:30 pm, and Tuesday 8 December 2020 between 6:30 am and 9:30 am, and 3:30 pm and 6:30 pm:
  - McLaren Street / Miller Street
  - McLaren Street / Walker Street
- Traffic distribution assumptions in relation to arrivals and departure profiles were based on existing traffic movement determined from the traffic intersection surveys.
- The analysis is a desktop study with no site visits undertaken.
- The conditions of the surrounding network are based on information supplied by the traffic surveys and Google Maps / Streetview.
- Trip generation rates for both the existing and future developments have been taken from the Roads and Maritime (now known as Transport for NSW) Guide to Traffic Generating Developments, 2002 (the “guide”) or, where relevant, the amendment TDT 2013/04a.
- This report and assessment for the proposed development is based on the development proposal information provided by GHD Woodhead *Planning Proposal - Urban Design Report* Rev B dated July 2021.

1.4 Study scope

This Traffic and Parking Impact Assessment addresses the following:

- Existing Conditions – a review of the existing road and transport conditions, adjacent developments, traffic volumes and crash data.
- Proposed Development – a review of the proposed development and its access arrangements.
- Traffic Impact Assessment – an assessment of the trip generation characteristics of the proposed facility and the performance of the intersections following its development.
- Parking Provision – an assessment of potential parking demand that will be generated by the development with reference to North Sydney DCP and a review of its parking arrangement.

- Mitigation measures – an introduction to the implementation of a Green Travel Plan to provide information to encourage people to consider alternative means to access the development rather than by private motor vehicle. The GTP developed as part of this TIA should be used as a basis of consideration for future versions to promote walking and cycling and reduction of vehicle usage.

2. Existing conditions

2.1 Overview

This section outlines the existing traffic and transport conditions on roads in the vicinity of the site. This includes the existing transport and accessibility conditions and the existing road network performance.

2.2 Existing road network characteristics

Roads within NSW are categorised in the following two ways:

- By classification (ownership)
- By the function that they perform.

Road Classification

Roads are classified (as defined by the *Roads Act 1993*) based on their importance to the movement of people and goods within NSW (as a primary means of communication).

The classification of a road allows Transport for NSW (TfNSW) to exercise authority of all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways and Transitways.

For management purposes, TfNSW has three administrative classes of roads. These are:

- **State Roads –** Major arterial links throughout NSW and within major urban areas. They are the principal traffic carrying roads and fully controlled by TfNSW with maintenance fully funded by TfNSW. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- **Regional Roads** – Roads of secondary importance between State Roads and Local Roads which, together with State Roads provide the main connections to and between smaller towns and perform a sub arterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though TfNSW funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under delegation by local government. Regional Roads maybe all or part of a Main Road, Secondary Road, Tourist Road or State Highway; or other roads as determined by TfNSW.
- **Local Roads** – The remainder of roads are council controlled roads. Local Roads are the responsibility of councils for maintenance funding. TfNSW may fund some maintenance and improvements based on specific programs (e.g. urban bus routes, road safety programs). Traffic management on Local Roads is controlled under the delegation by local government.

Functional Hierarchy

Functional road classification involves the relative balance of the mobility and access functions. TfNSW define four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility, to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – generally controlled by TfNSW, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – can be managed by either TfNSW or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to

carry traffic between specific areas in a sub region, or provide connectivity from arterial road routes (regional links).

- **Collector Roads** – provide connectivity between local roads and the-arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

The surrounding road network is shown in Figure 2-1.

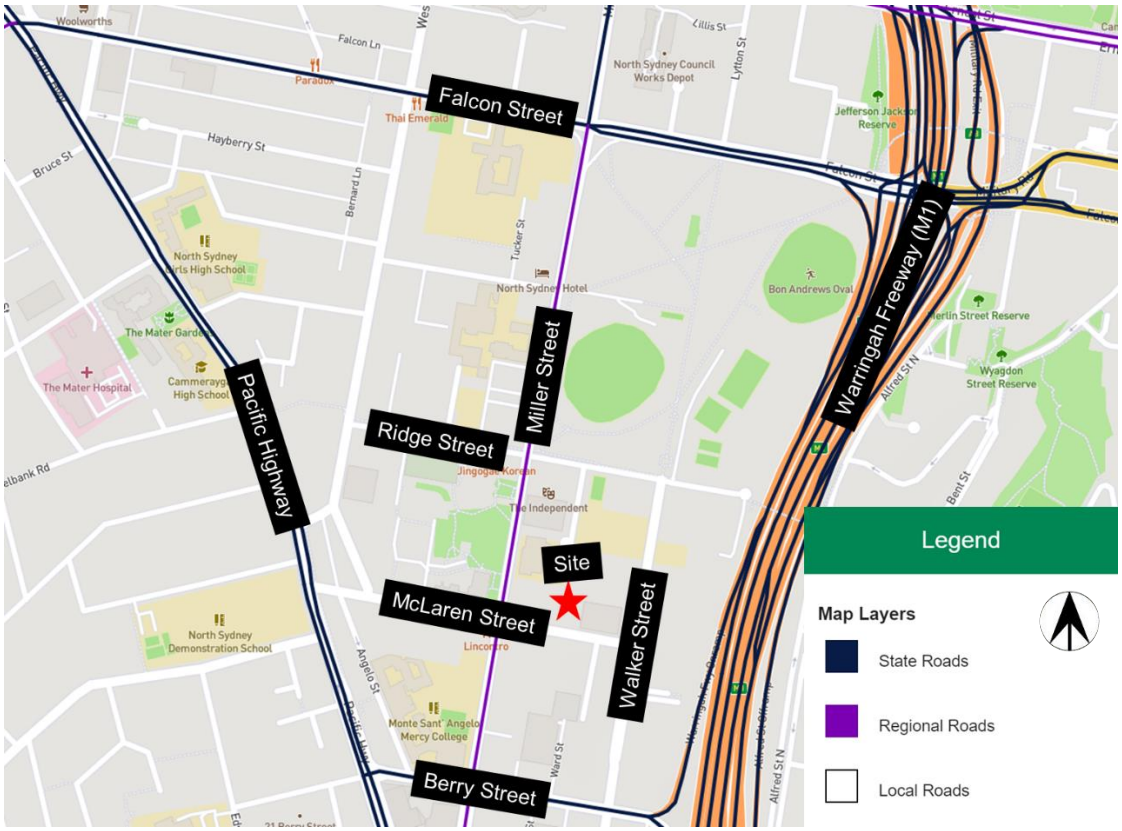


Figure 2-1 Surrounding road network

2.2.1 McLaren Street

McLaren Street is a local road that connects Miller Street and Walker Street in an east-west direction. The site is located on the northern side of McLaren Street in between Miller Street and Walker Street. Table 2-1 provides further details of the key features of McLaren Street.

Table 2-1 McLaren Street key features

Feature	Description
Carriageway	Undivided carriageway with one travel lane in each direction
Parking	Parking available on both sides of the road. Motorcycle parking available on the western end near Miller Street. **Northern kerb:** 0.5P Meter Mon – Fri 8:30 am to 6:00 pm (west of the site) 1P Meter Mon – Fri 8:30 am to 6:00 pm, Sat 8:30 am to 12:30 pm (east of the site) Motorcycle parking near Miller Street **Southern kerb:** 1P Meter Mon – Fri 8:30 am to 6:00 pm, Sat 8:30 am to 12:30 pm 0.25P Meter Mon – Fri 8:30 am to 6:00 pm, Sat 8:30 am to 12:30 pm near Miller Street
Speed Limit	Generally 40 km/h (signposted for high pedestrian activity area) School Zone in operation Mon – Fri 8:00 am to 9:30 am and 2:30 pm to 4:00 pm: • Within 50 metres of Walker Street intersection. • Within 50 metres of the Pacific Highway intersection, and along McLaren Street to 50 metres east of Miller Street intersection
Pedestrian Facilities	Pedestrian footpaths provided on both sides of McLaren Street Raised pedestrian crossing at the intersection with Church Street. Signalised pedestrian crossings at the intersection with Miller Street and Pacific Highway
Bicycle Facilities	No existing bicycle facilities. McLaren Street between Pacific Highway and Church Street is listed as a “hard difficulty” on-road route on NSW Cycleway Finder.
Public Transport	No existing public transport facilities. Go-Get car pod near Miller Street Future key transport: Sydney Metro Victoria Cross Station adjacent to the subject site

Figure 2-2 McLaren Street viewed in east direction

Source: Google maps Streetview

2.2.2 Miller Street

Miller Street is a regional road that connects Berry Street and Ridge Street in a north-south direction. The road crosses McLaren Street at a signalised intersection. Table 2-2 provides further details of the key features of Miller Street.

Table 2-2 Miller Street key features

Feature	Description
Carriageway	Undivided carriageway with one travel lane in each direction (clearways in operation during peak hours adding one extra lane)
Parking	Parking available on both sides of the road. Motorcycle parking available. Clearway western kerb 3:00 pm to 7:00 pm Clearway eastern kerb 6:00 am to 10:00 am **Eastern kerb:** 1P Meter Mon – Fri 8:30 am to 3:00 pm, Sat 8:30 am to 12:30 pm (south of McLaren Street) 2P Meter Mon – Fri 7:00 pm to 12:00 am (south of McLaren Street) 1P Meter Mon – Fri 8:30 am to 3:00 pm, Sat 8:30 am to 2:30 pm (north of McLaren Street) **Western kerb:** 0.5P Meter Mon – Fri 10:00 am to 6:00 pm, Sat 8:30 am to 12:30 pm (south of McLaren Street) 2P Meter Mon – Fri 6:00 pm to 12:00 am (south of McLaren Street) 1P Meter Mon – Fri 10:00 am to 6:00 pm, Sat 8:30 am to 2:30 pm (north of McLaren Street)
Speed Limit	Generally 50 km/h north of McLaren Street Generally 40 km/h south of McLaren Street (signposted for high pedestrian activity are) School Zone in operation Mon – Fri 8:00 am to 9:30 am and 2:30 pm to 4:00 pm: • Miller Street between Berry Street and Ridge Street
Pedestrian Facilities	Pedestrian footpaths provided on both sides of Miller Street Signalised pedestrian crossings at the intersection with McLaren Street, Berry Street and Ridge Street
Bicycle Facilities	No existing bicycle facilities. Miller Street between Pacific Highway and Church Street is listed as a “moderate difficulty” on-road route on NSW Cycleway Finder.

Feature	Description
Public Transport	Bus facilities: Miller Street at McLaren Street (ID 206047) – northbound services to Terry Hills, Mosman and Manly Miller Street after McLaren Street (ID 206019) – southbound services to North Sydney and Sydney CBD

Figure 2-3 Miller Street viewed in south direction

Source: Google maps Streetview

2.2.3 Walker Street

Walker Street is a local road that connects Berry Street and Ridge Street in a north-south direction. The road crosses McLaren Street at a priority control (stop) T-intersection, with Walker Street traffic having priority. Table 2-3 provides further details of the key features of Walker Street.

Table 2-3 Walker Street key features

Feature	Description
Carriageway	Undivided carriageway with one travel lane in each direction
Parking	Parking available on both sides of the road. Motorcycle parking available. **Western kerb:** 2P Meter Mon – Fri 8:30 am to 6:00 pm: permit holders excepted (south of McLaren Street) 1P Meter Mon – Fri 8:30 am to 11:00 pm, Sat 6:00 am to 11:00 pm: permit holders excepted (north of McLaren Street) **Eastern kerb:** 2P Meter Mon – Fri 8:30 am to 6:00 pm: permit holders excepted (south of McLaren Street) 2P Meter Mon – Fri 8:30 am to 6:00 pm: permit holders excepted (north of McLaren Street) Motorcycle parking near McLaren Street (north of McLaren street)
Speed Limit	Generally 40 km/h north and south of McLaren Street (signposted for high pedestrian activity are) School Zone in operation Mon – Fri 8:00 am to 9:30 am and 2:30 pm to 4:00 pm: • Ridge Street to the south of McLaren Street
Pedestrian Facilities	Pedestrian footpaths provided on both sides of Walker Street Raised pedestrian crossing 100 metres north of McLaren Street
Bicycle Facilities	No existing bicycle facilities with the exception of on-road cycling logos
Public Transport	Go-Get car pod north and south of McLaren Street

Figure 2-4 Walker Street viewed in south direction

Source: Google maps Streetview

2.3 Existing road network performance

This section provides an understanding of current traffic volumes.

2.3.1 Existing peak hour traffic volumes

GHD engaged Matrix Traffic and Transport Data Pty Ltd to undertake intersection traffic turning counts on Saturday 5 December 2020 and Tuesday 8 December 2020. The surveys were undertaken during the following time periods:

- Weekday AM peak (three hours): 6:30 am to 9:30 am.
- Weekday PM peak (three hours): 3:30 pm to 6:30 pm.
- Weekend (three hours): 10:30 am to 1:30 pm.

The intersection turning count surveys within the immediate vicinity of the site were performed at the following intersections as illustrated in Figure 2-5:

- Site 1: McLaren Street / Miller Street (Signalised).
- Site 2: McLaren Street / Walker Street (Stop-priority controlled).

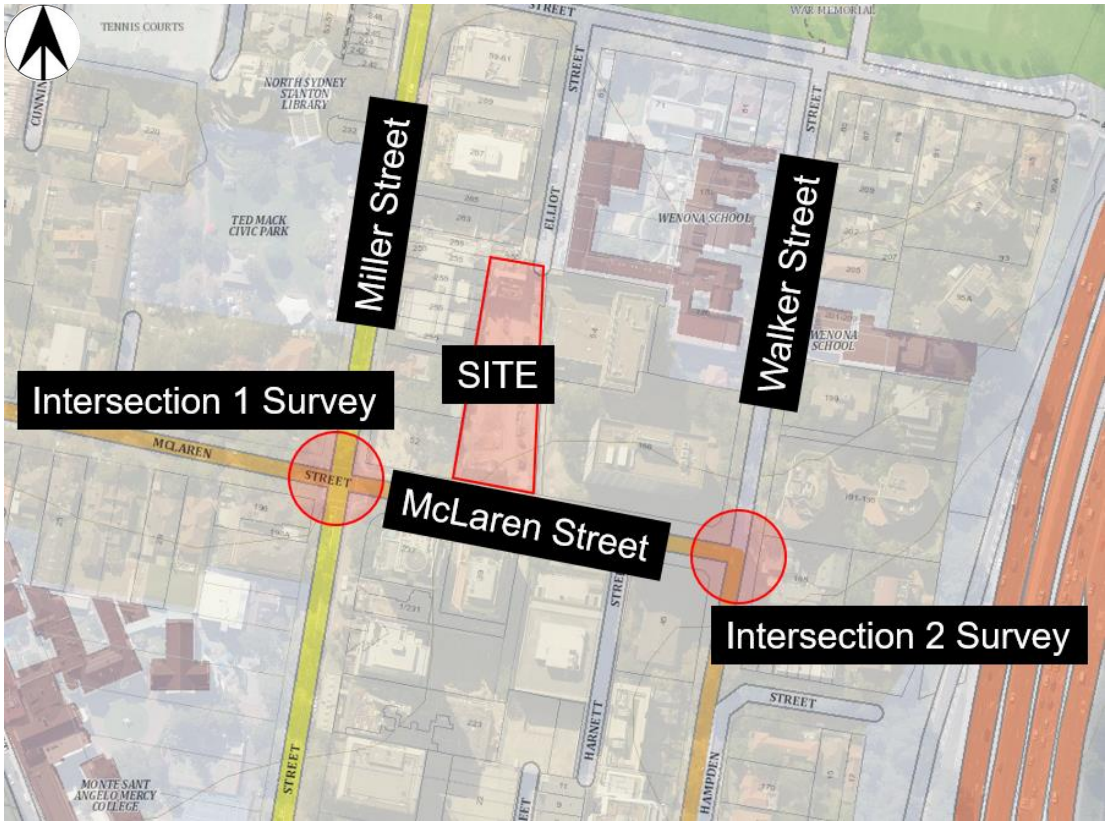


Figure 2-5 Intersections traffic surveys locations

Source: Six maps – Modified by GHD

The traffic surveys indicated the following peak hour periods on the road network adjacent to the subject site:

- Weekday AM peak: 8.00 am to 9.00 am.
- Weekday PM peak hour: 5.00 pm to 6.00 pm.
- Weekend peak hour: 10.30 am to 11.30 pm.

These peak periods were adopted for the assessment of the surrounding road network. Table 2-4 summarises the average peak hour traffic volumes along the road networks with traffic survey data included in Appendix A.

Table 2-4 Survey traffic volumes (each direction)

Location	Road classification	Direction	AM Peak Hour (veh/h)*	PM Peak Hour (veh/h)*	Satrday Peak Hour (veh/h)*
McLaren Street	Local	Eastbound	105	100	81
		Westbound	122	170	121
		Total	***227***	***270***	***202***
Miller Street	Regional	Northbound	334	402	304
		Southbound	538	341	307
		Total	***872***	***743***	***611***
Walker Street	Local	Northbound	89	218	108
		Southbound	201	203	130
		Total	***290***	***421***	***238***

Notes:
(*) veh/h = vehicles per hour

2.3.2 Functional classification

The classification of roads within a network can be used as an indication of the functional role each road plays with respect to the volume of traffic they should appropriately carry. Transport for NSW have developed a set of road hierarchy classifications detailed in Table 2-5, which indicate typical nominal average annual daily traffic (AADT) volumes for the various classes of roads.

Table 2-5 Functional classification of roads

Location	Traffic Volume (veh/d*)	Peak Hour Volume (veh/h*)
Motorway/Freeway	>15,000	>5,600
Arterial Road	>15,000	1,500 – 5,600
Sub-Arterial Road	5,000 – 20,000	500 – 2,000
Collector Road	2,000 – 10,000	200 – 1,000
Local Road	<2,000	0 – 200

Source: NSW Roads and Maritime Service (formerly NSW RTA), Road Design Guide and AMCORD
**Note veh/d = vehicles per day, veh/h = vehicles per hour*

Based upon the survey results outlined in Table 2-4, the peak hour traffic volumes generally fall within the criteria provided in Table 2-5 for the relevant classification for the road network in proximity to the subject site.

2.3.3 Heavy and light vehicle ratio

Based on the traffic survey data, the average heavy vehicle percentage for each road within the immediate vicinity of the site is outlined in Table 2-6.

Table 2-6 Peak hour heavy vehicle ratio

Location	% Heavy Vehicles		
	AM	PM	Saturday
McLaren Street	4%	1%	4%
Miller Street	6%	1%	4%
Walker Street	2%	<1%	5%

The data in Table 2-6 indicates that heavy vehicles constitute one percent to six percent of the overall traffic volumes on the surrounding road network.

2.4 Existing site traffic generation

The existing site currently operates as a construction site for the future Sydney Metro Victoria Cross Station. Traffic generation of the construction site is unknown, but the current activity has been captured in the traffic surveys.

Therefore, for a worst-case scenario in the traffic impact assessment component, no allowance has been made to remove the potential trip generation of the construction site from the recorded traffic surveys undertaken.

2.5 Existing intersection performance

2.5.1 Intersection capacity

The performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points. SIDRA 9 intersection modelling software was used to assess the peak hour operational performance of the intersections within immediate proximity of the site.

The criteria for evaluating the operational performance of intersections is provided by the Guide to Traffic Generating Developments (Transport for NSW, 2002) and reproduced in Table 2-7. The criteria for evaluating the operational performance of intersections is based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

Table 2-7 Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (seconds/veh)	Traffic Signals, Roundabouts	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 modes	At capacity, requires other control mode
F	> 70	Over Capacity Unstable operation	Over Capacity Unstable operation

Source: Guide to Traffic Generating Developments (Transport for NSW 2002)

2.5.2 Existing intersection performance

Existing (base 2020) traffic models were developed using the AM, PM weekday and Saturday peak hour surveyed data results. Existing traffic flows at key intersections were analysed using SIDRA 9 to obtain the current operating performance of the key intersections. A summary of the results is outlined in Table 2-8 and detailed in Appendix B.

Table 2-8 Existing intersection operations (2020)

Intersection		AM Peak			PM Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	18	LoS B	0.45	17	LoS B	0.43
Site 2: McLaren Street / Walker Street	Stop-Priority control	8	LoS A	0.12	10	LoS A	0.21

Intersection		Saturday Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	17	LoS B	0.48
Site 2: McLaren Street / Walker Street	Stop-Priority control	8	LoS A	0.12

Notes:

- *The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.*
- *The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.*
- *The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.*

- *Average delay is given in seconds per vehicle.*

Table 2-8 indicates that each of the analysed intersections currently operate with an acceptable Level of Service (i.e., better than Level of Service E) with spare capacity in both the weekday morning and evening peak periods and on the weekend.

Detailed SIDRA results of these intersections are provided in Appendix B.

2.6 Existing parking arrangements

The existing site currently operates as a construction site for the future Sydney Metro Victoria Cross Station adjacent to the subject site, with the existing parking within the site is unknown.

2.7 Crash data review

Crash data was obtained from the Transport for NSW Centre for Road Safety website for roads within the vicinity of the site. The data has been analysed for the five-year period between 2015 and 2019. The location of recorded crashes are shown in Figure 2-6.

Figure 2-6 Crash locations

Source: https://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tablga=4 modified by GHD

There were six crashes recorded between 2015 and 2019 on McLaren Street in the vicinity of the subject site. A summary of the five-year crash data is outlined in Table 2-9.

Table 2-9 Crash summary (2015 – 2019)

Location	Number of injuries				No injury crashes
	Fatal	Serious	Moderate	Minor	
McLaren Street / Miller Street Intersection	0	1	2	0	3
McLaren Street / Walker Street Intersection	0	0	0	0	1

Predominate Crash Type	RUM Code	Number of Crashes
Right through	21	2
Right rear	32	1
Rear end	30	1
Cross traffic	10	1
Parked vehicle runaway into vehicle	94	1
TOTAL		**6**

2.8 Public and active transport

In reviewing the site and its accessibility to public transport opportunity, reference was made to the NSW Planning Guidelines for Walking and Cycling (2004). This document outlines a recommended walkable distance of 400 m to 800 m to public transport and other local amenities or a 1.5 km bicycle riding distance.

The following information outlines the key public transport within 800 m of the site, with details of the accessibility to public transport, walking and bicycle riding access is provided in the following sections.

2.8.1 Bus services

Bus stops are located along Miller Street (south of McLaren Street), approximately 100 m southwest of the site) as shown in Figure 2-7. The bus service operating from these bus stops are outlined in Table 2-10.

Table 2-10 Bus services

Route	Coverage
154X	Dee Why to Milsons Point (Express service)
202	Northbridge to City Bridge St via North Sydney
203	Castlecrag to North Sydney
207	East Lindfield to City Bridge St via North Sydney
208	East Lindfield to City Bridge St via Northbridge & North Sydney
209	East Lindfield to Milsons Point via Nth Sydney
228	Clifton Gardens to Milsons Point
229	Beauty Point to Milsons Point via Balmoral Heights
230	Mosman Wharf to Milsons Point via North Sydney
260	Terrey Hills to North Sydney
144N	Manly to North Sydney (Night Service)

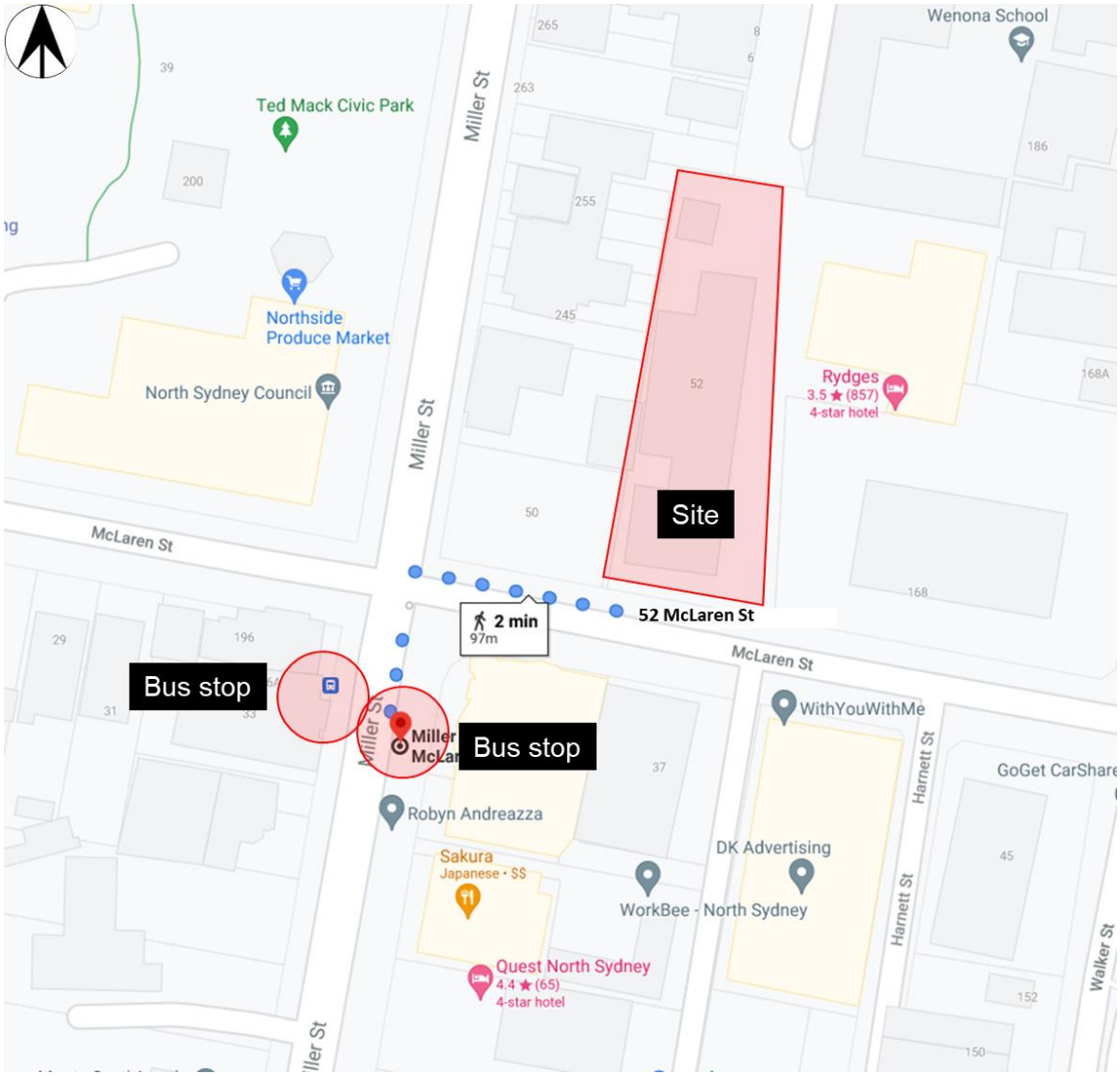


Figure 2-7 Bus stops

Source: Google maps – Modified by GHD

2.8.2 Rail services

The nearest rail station is North Sydney train station, located approximately 800 m south of the site, as shown in Figure 2-8, which is within acceptable walking distance. Rail services typically operate at regular intervals during the AM, PM peak periods and off-peak periods, providing access to the Sydney CBD and North Shore on the following train lines.

- T1 – North Shore Line
- T9 – Northern line (to Gordon)

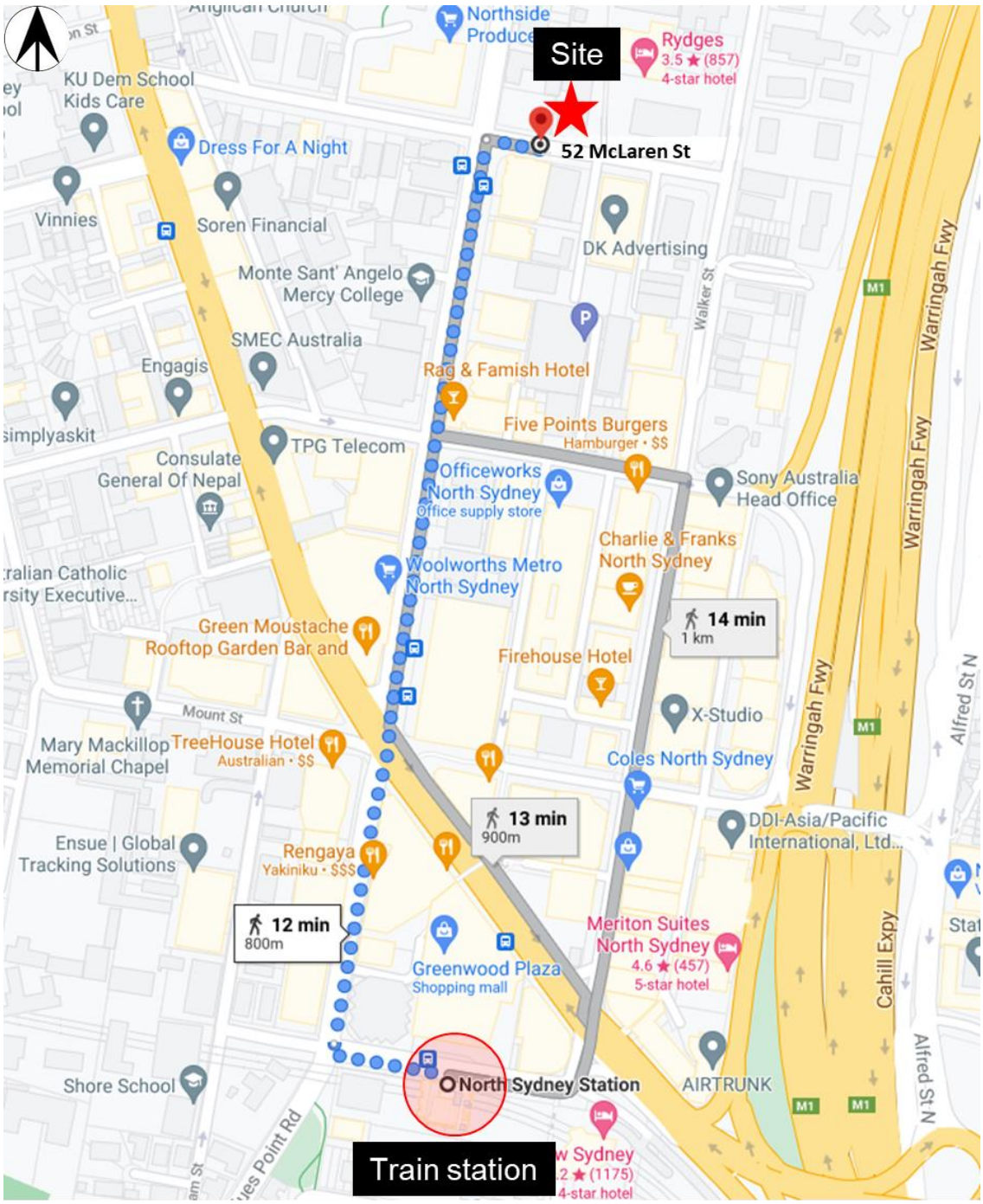


Figure 2-8 North Sydney train station

Source: Google maps – Modified by GHD

2.8.3 Existing pedestrian facilities

As outlined in section 2.2, key pedestrian facilities in the study area include:

- Pedestrian footpaths on both side of the road network in proximity to the subject site.
- Raised pedestrian crossing at the intersection with McLaren Street / Church Street.
- Signalised pedestrian crossings at intersection with McLaren Street, Berry Street and Ridge Street.
- Raised pedestrian crossing 100 metres north of McLaren Street on Walker Street.
- Signalised pedestrian crossing at the intersection of Waker Street / Ridge Street.

2.8.4 Existing cycling network

Figure 2-9 illustrates the current cycle path network facilities/routes in proximity to the subject site as outlined in Transport for NSW Cycleway Finder website. The site does not currently provide bicycle parking facilities. However, an on-road cycle route on Miller Street (moderate difficulty) is identified in both directions to provide a connection to the wider cycle network.

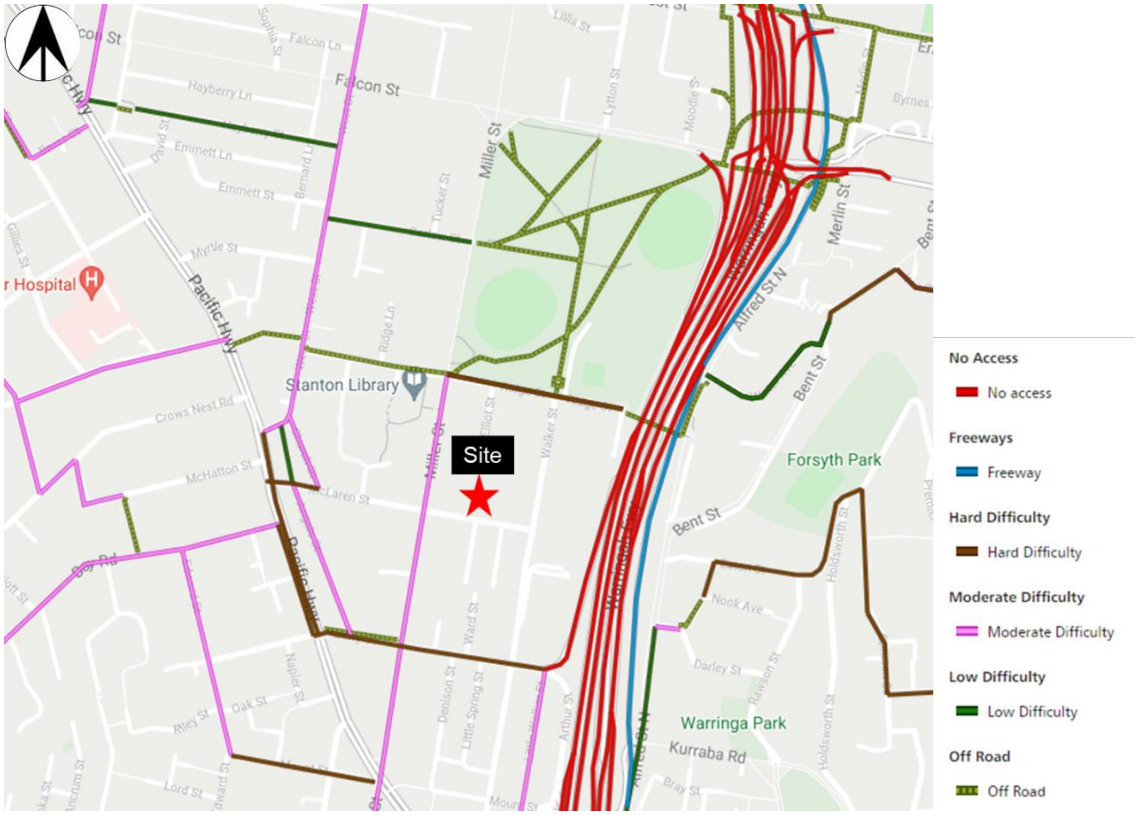


Figure 2-9 Existing cycle network

Source: Transport for NSW Cycleway Finder website – Modified by GHD

2.8.5 Car share

North Sydney Council supports car sharing because it is sustainable, practical and popular with city business owners and residents. The increase in car sharing will support the following opportunities:

- Use street parking more efficiently.
- Reduce greenhouse emissions.
- Support the economy.
- Reduce congestion.
- Reduce the growth of private vehicle ownership.

It was noted that there are five existing car share pods (*Source: Go-Get.com.au*) located within 150 m to walking distance from the site (as shown in Figure 2-10), providing an opportunity for residents and visitors of the proposed development to utilise this alternative transport option.

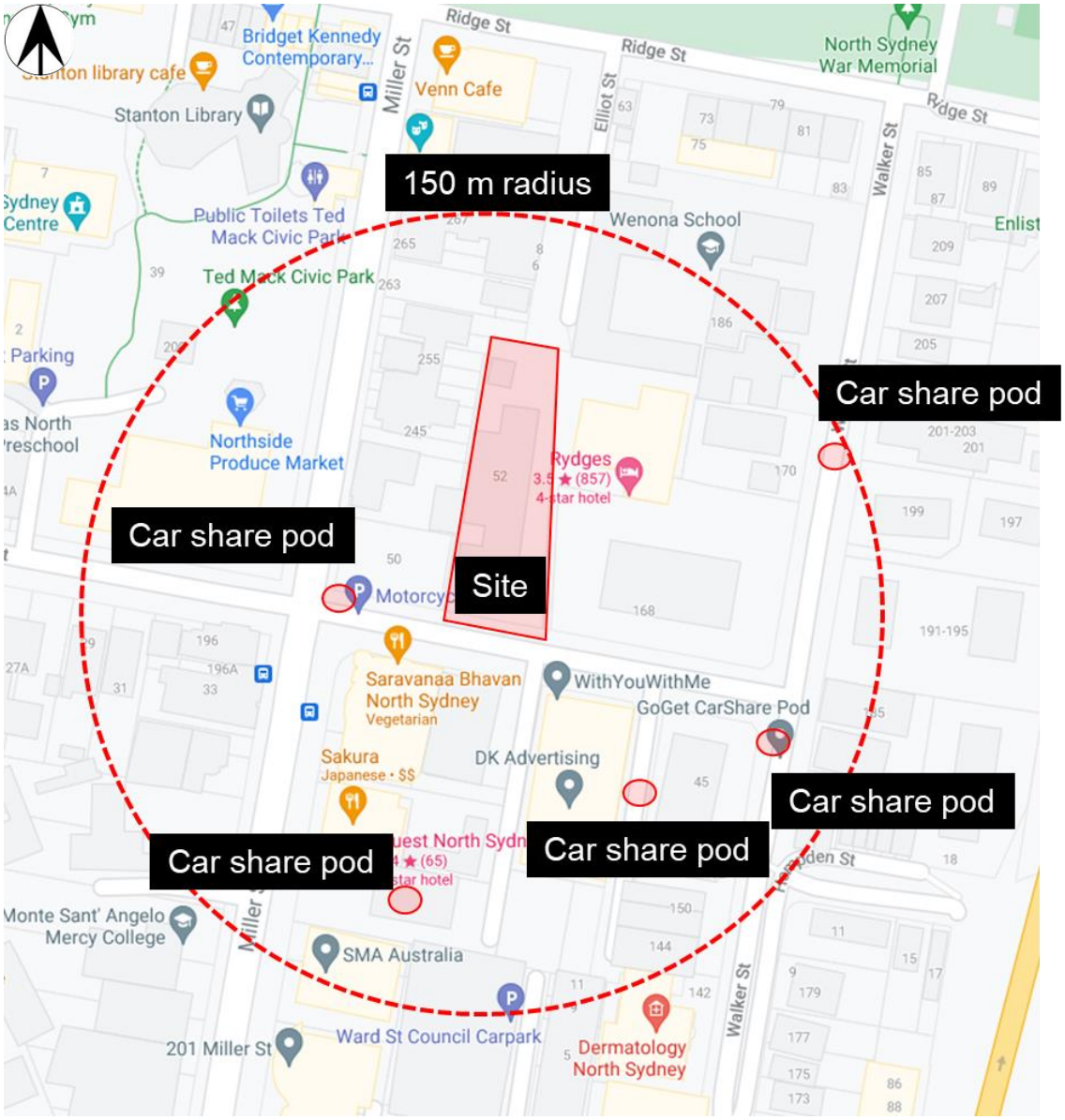


Figure 2-10 Car share locations

Source: Google maps and "Go-Get"– Modified by GHD

2.8.6 Motorcycle parking

On-street designated motorcycle parking is available on the northern kerb of McLaren Street near the intersection with Miller Street, approximately 75 m west of the site. This facility can generally park four motorcycles.

2.9 Future public transport options – Sydney Metro

The subject site is adjacent to the site of the entrance portal of the future Sydney Metro Victoria Cross Station.

The New South Wales (NSW) Government is implementing *Sydney's Rail Future*, a plan to transform and modernise Sydney's rail network so that it can grow with the city's population and meet the needs of customers in the future. Sydney Metro is a new standalone rail network identified in *Sydney's Rail Future*.

Sydney Metro is Australia's biggest public transport project, consisting of Sydney Metro Northwest (Stage 1), which was completed in 2019 and Sydney Metro City & Southwest (Stage

2), which is due for completion in 2024. Sydney Metro West is expected to be operational in the late 2020s. Refer to Figure 2-11 for the broader expanse of the Sydney Metro system.

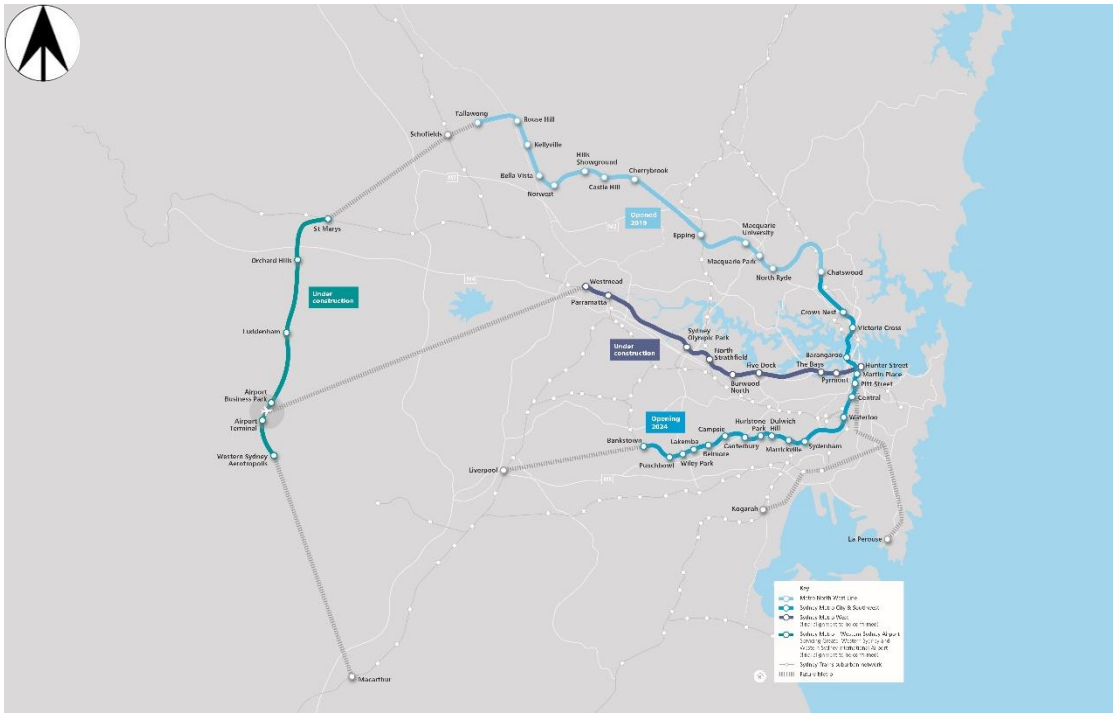


Figure 2-11 Sydney Metro alignment map

Source: Sydney Metro

Stage 2 of Sydney Metro includes the construction and operation of a new metro rail line from Chatswood, under Sydney Harbour, through Sydney's Central Business District (CBD) to Sydenham and on to Bankstown through the conversion of the existing line to metro standards.

The project also involves the delivery of seven new metro stations, including Victoria Cross Station located adjacent to the subject site. Once completed, Sydney Metro will have the capacity for 30 trains an hour (one every two minutes) through the CBD in each direction, a service level that has never been provided before in Sydney.

The close proximity of Victoria Cross Station to the subject site will greatly assist in alternate transport opportunity for the development, provide efficient access to the city and northwest Sydney and consequently reducing parking demand and private vehicle use.

3. Traffic impact assessment

This section outlines the proposed development and summarises the traffic and parking impact analysis of the proposed development.

3.1 Overview of the proposed development

The proposal for the site would provide a mixed-use development, consisting of two buildings containing retail shops, residential apartments and a childcare centre. Basement car parking is proposed for the use of residents and visitors with entry and exit via McLaren Street. Basement 1 is for the use of visitors, residents, retail and childcare facilities, with lower basements for residential occupants of the development.

A loading dock is proposed, which should accommodate a minimum of two vehicles, up to 12.5 m in length (Heavy Rigid Vehicles), with the use of a mechanical turntable or a hammerhead turn configuration to provided access and egress in a forward direction on McLaren Street. Details of the loading dock to be confirmed in later design stages, however, a preliminary allowance has been made for a loading dock to accommodate two Heavy Rigid Vehicles.

The proposed development will be mixed-used with retail/commercial and residential uses. Details of the proposed building development is summarised in Table 1-1.

3.2 Projected traffic generation

3.2.1 Trip generation rates

Estimates of traffic generation were determined from the *Transport for NSW Guide to Traffic Generating Developments, 2002* (The Guide) and, *Updated Traffic Surveys TDT 2013/04A*.

Residential dwellings

Transport for NSW *Updated Traffic Surveys TDT 2013/04A* outlines trip generation rates for high-density residential facilities (more than 20 dwellings). TDT 2013/04A outlines that the high-density residential flats surveyed were close to public transport, typically greater than six storeys and almost exclusively residential in nature.

The proposal is considered high density (greater than 20 dwellings) and is well served by public transport, with North Sydney Rail Station located within an acceptable walking distance from the development. Additionally, the future Sydney Metro Victoria Cross Station will be located adjacent to the site. It is therefore considered appropriate to adopt the Transport for NSW *Updated Traffic Surveys TDT 2013/04A* trip generation rates for the proposed development, namely:

- AM Peak: 0.19 vehicle trips per unit.
- PM Peak: 0.15 vehicle trips per unit.

The guide does not provide trip generation rates for weekend peak periods for the residential component. For a conservative assumption, the AM rate has been adopted for assessment purposes.

The site trip generation was distributed on the application of 80% of the trip generation departing the site (outbound) and 20% entering the site (inbound) during the AM period and vice-versa during the PM period. For the weekend period, the trip generation was distributed on the application of 50% of the trip generation departing the site (outbound) and 50% entering the site (inbound) as summarised in Table 3-3.

Commercial (office)

Transport for NSW) *Updated Traffic Surveys TDT 2013/04A* outlines the following average trip generation for office block on surveys in Sydney urban area, Newcastle and Wollongong. Average peak hour trip generation rates are as follows

- AM Peak: 1.6 trips per 100 m^2 GFA
- PM Peak: 1.2 trips per 100 m^2 GFA

The guide has not provided trip generation rates for the weekend period for office developments. Commercial office areas are typical non operational during weekend period. Therefore, it has been assumed that no inclusion be made for trip generation during the weekend period analysis.

Retail

Transport for NSW *Updated Traffic Surveys TDT 2013/04A* outlines the following average trip generation for retail centres based on surveys in 1978, 1990 and 2011 within the Sydney metropolitan area and Mittagong, Shellharbour and Tuggerah. Average peak hour trip generation rates are as follows

- Thursday PM: 12.3 trips per 100 m^2 GLFA (where GLFA is 0-10,000 m^2)
- Saturday peak: 16.3 trips per 100 m^2 GLFA (where GLFA is 0-10,000 m^2)

The generation rates given are based on Gross Leasable Floor Area (GFLA) which provides a better indication of trip generation than gross floor area. As a general guide, 100 m^2 gross floor area equals 75 m^2 gross leasable floor area.

The guide has not provided trip generation rates for the AM period for retail developments. For a conservative assessment, the AM peak has been assumed to be a similar amount of traffic will be generated as the PM peak. However, it should be noted that typically retail trip generation would be significantly lower in the AM period when compared to the PM period.

Childcare

Transport for NSW *Guide to Traffic Generating Development (2002)* outlines the following trip generation for childcare centres. Details of the childcare facility children's numbers are not defined at this stage. Therefore, the mean floor area per child rates as outline in the guidance have been utilised to estimate the number of children for trip generation.

- Pre Schools: 6.7 m^2 per child
- Long Day care: 7.8 m^2 per child
- Before/after care: 3.2 m^2 per child.

The assumed trip generated has been based on the following rates to coincide with the road network peak period.

- AM period: 7 am to 9 am
- PM period: 4 pm to 6 pm

Table 3-1 Childcare facility trip generation comparison

Centre Type	GLA (m^2)	Estimated number of children	Peak Vehicle trips / child			Assumed Trips Generated (per peak hour)*	
			7 am to 9 am	2:30 pm to 4 pm	4 pm to 6 pm	AM	PM
Pre-school	450	67	1.4	0.8	-	47	-
Long Day Care	450	58	0.8	0.3	0.7	23	20
Before/after care	450	140	0.5	0.2	0.7	35	49

Note: (*) Peak hour based on even distribution of 2-hour peak vehicle trips

Source: RTA Traffic Modelling Guideline

For a worst-case scenario, the long day centre children trip generation rates have been adopted and assumed to be distributed evenly over the two-hour period for the peak one-hour period for the traffic modelling analysis.

The estimated number of children was based on the RTA Traffic Modelling Guideline, average floor area per child, with consideration to North Sydney DCP maximum student number. It is noted that the estimated number of children for the long day care centre children's rates generally aligned with the maximum recommended student number (of up to 75) outlined in North Sydney DCP Section 5.4. The long day centre trip generation rate is also greater, for a robust assessment.

3.2.2 Overall trip generation comparison

Table 3-2 summarises the trip generation for the development based upon the rates identified in section 3.2.1.

Table 3-2 Future development peak hour trip generation

Facility Type	Quantity	Assumed Trips Generated		
		AM	PM	Saturday Peak
Residential	172 dwellings	33	26	33
Commercial (office)	2,573 m^2 GFA	41	31	0
Retail	427 m^2 GFA #	39^	39	65
Childcare	Refer Table 3-1 *	23	20	0
	TOTAL	**136**	**116**	**98**

Notes:
(#) GLFA = 0.75 x GFA
(^) The AM peak adopted as per the PM peak. It should be noted that typically retail trip generation would be significantly lower in the AM period when compared to the PM period.
(*) Based on Long Day centre trip generation

The above trip generation was utilised in the preparation of the traffic modelling for the impact assessment of the proposed development on the surrounding road network.

It should be noted that the adopted trip generation, particularly for the retail and commercial (office) components, would be considered an overestimate of the likely demand when considering the adjoining site will be the future Sydney Metro Victoria Cross Station and the site is subject to maximum parking provision limit in line with the North Sydney DCP (Section 10.1.1), which has the objective to ensure:

- *"existing levels of traffic generation are contained and reduced.*

- *public transport, including walking and cycling, is the main form of travel mode.*
- *parking is adequate and managed in a way that maintains pedestrian safety and the quality of the public domain whilst minimising traffic generation.*
- *parking is limited to minimise impacts on surrounding areas.*
- *minimal impacts occur on the provision of on-street parking".*

The capped parking provision will decrease the typical trip generation when compared to the referenced guidelines. However, notwithstanding the above, trip generation as defined in referenced documents has been utilised in the traffic assessment for a worst-case scenario.

3.2.3 Development traffic distribution

Traffic to and from the proposed development has been distributed using the following assumptions for the weekday AM, PM and Saturday peak periods as shown in Table 3-3.

Table 3-3 Future development peak hour trip distribution factors (inbound and outbound)

Facility Type	Assumed Trips Generated Distribution		
	AM (inbound/ outbound)	PM (inbound/ outbound)	Saturday Peak (inbound outbound)
Residential	20% / 80%	80% / 20%	50 % / 50 %
Commercial (office)	80% / 20%	20% / 80%	N/A
Retail	80% / 20%	20% / 80%	50 % / 50 %
Childcare	50% / 50%	50% / 50%	N/A

The trips associated with the proposed development were distributed on the surrounding road network based on the ratio of turn movements at the adjoining intersections determined by the 2020 traffic surveys.

A summary of the post-development road network traffic volume based on 2020 survey data and the adopted e post-development trip generation for weekday AM, PM and Saturday peak periods are shown in , Figure 3-2 and Figure 3-3 respectively.

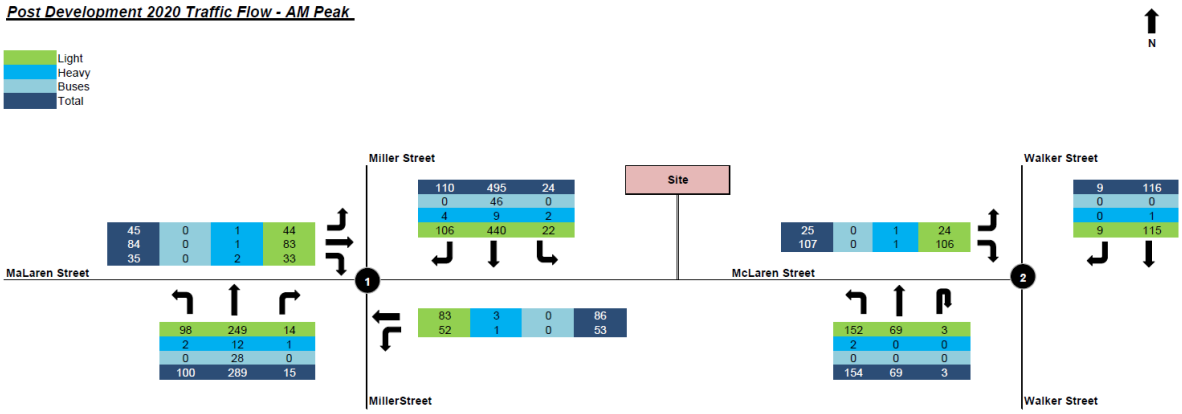


Figure 3-1 AM peak post-development traffic flow (2020)

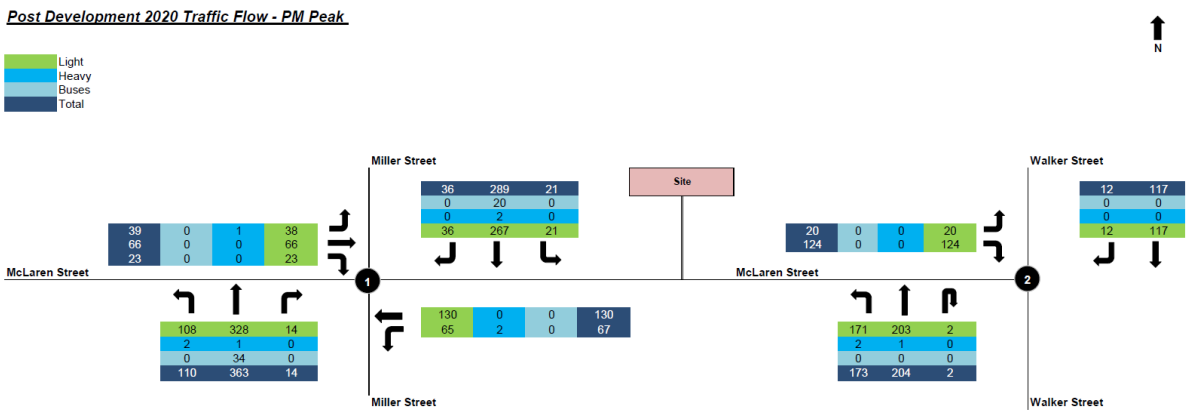


Figure 3-2 PM peak post-development traffic flow (2020)

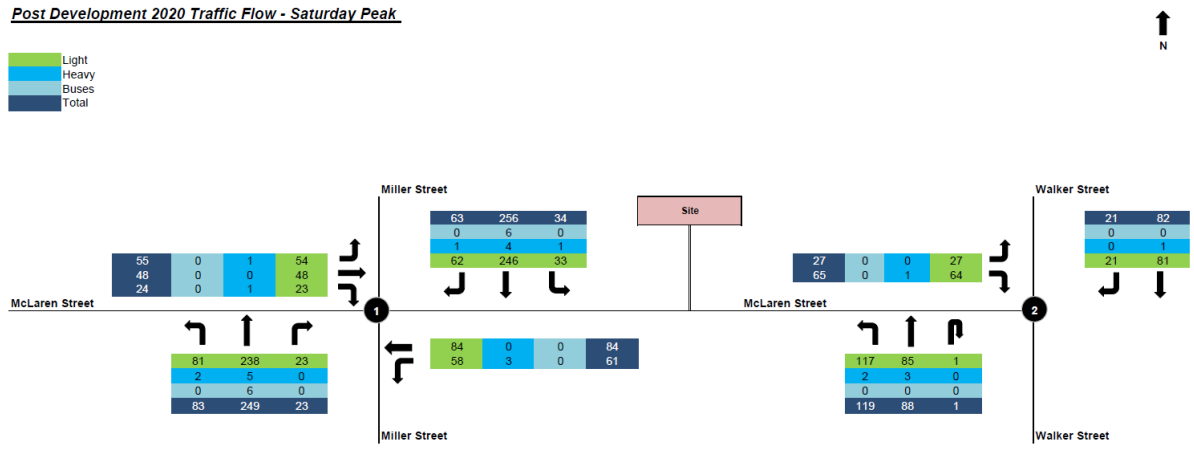


Figure 3-3 Saturday peak post-development traffic flow (2020)

A summary of the assumed “No build” (without development) and post-development 2030 future year road network traffic volume based on 2020 survey data, background traffic growth of one percent per annum and the adopted post-development trip generation for weekday AM, PM and Saturday peak periods are shown in Figure 3-4 to Figure 3-9.

Additionally, an allowance has been made within the analysis to increase current pedestrian demands identified in the 2020 surveys by 100 percent for the future 2030 traffic analysis as a provision for the likely increase in pedestrian activity in the area.

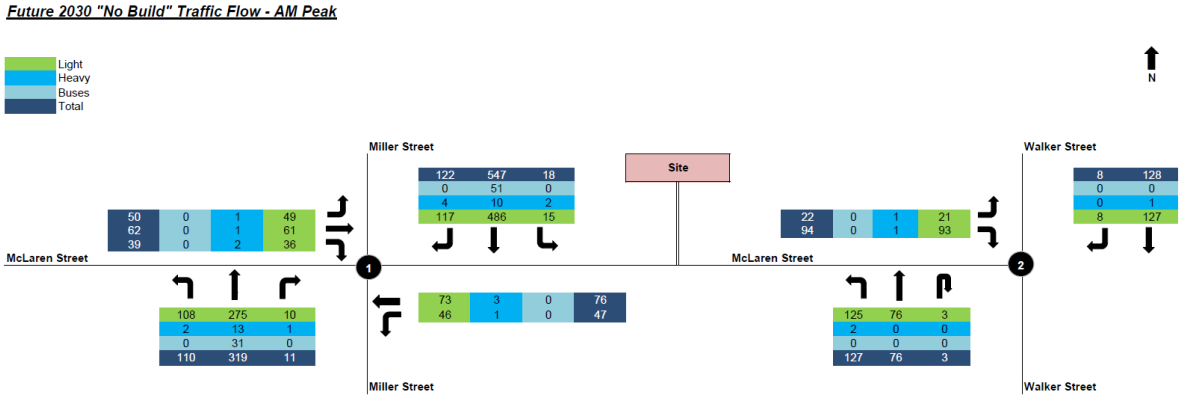


Figure 3-4 AM peak “No build” scenario traffic flow (2030)

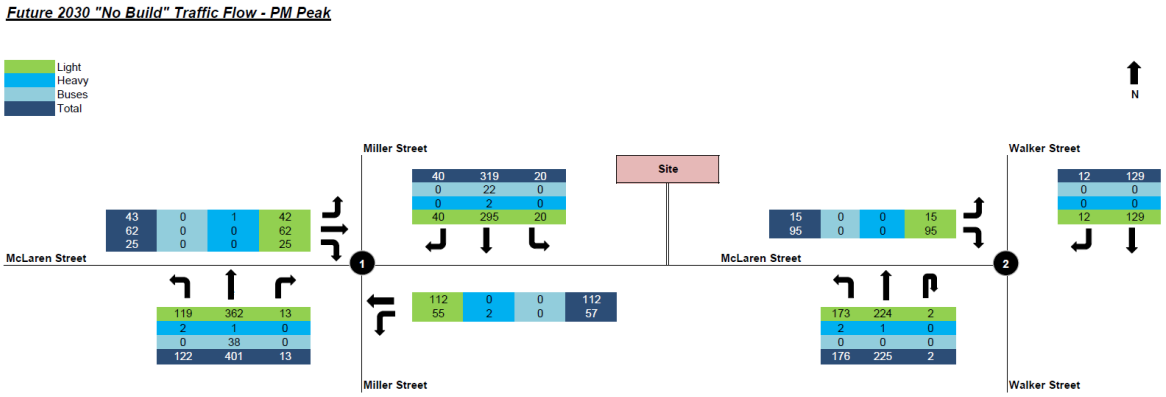


Figure 3-5 PM peak "No build" traffic flow (2030)

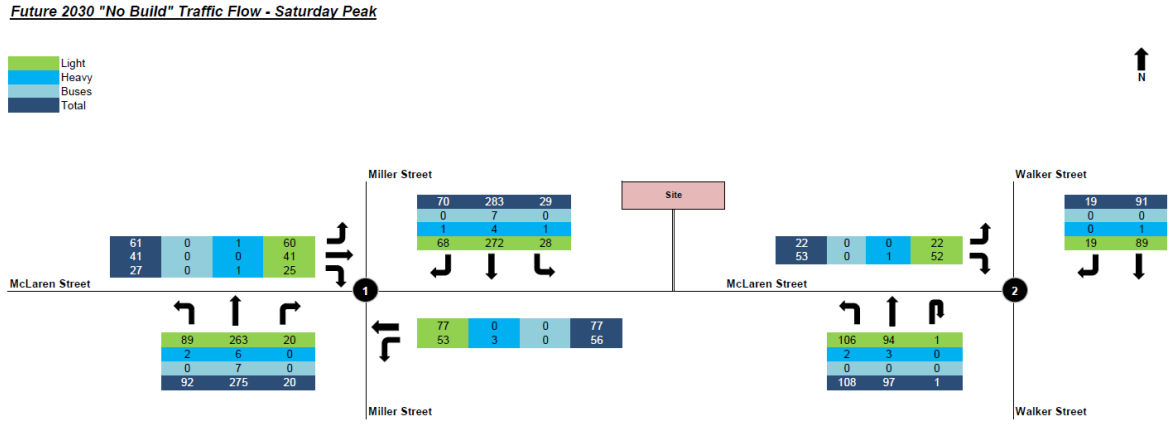


Figure 3-6 Saturday peak "No build" traffic flow (2030)

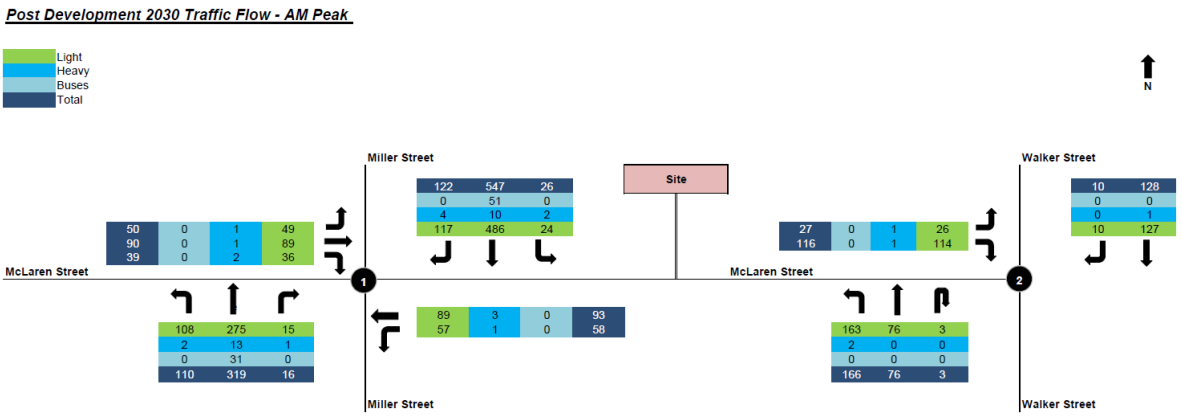


Figure 3-7 AM peak post-development traffic flow (2030)

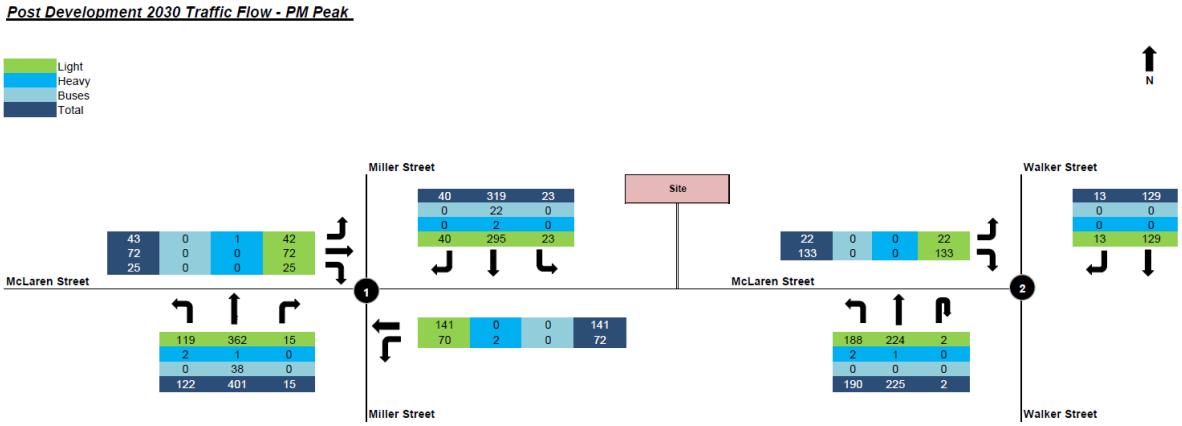


Figure 3-8 PM peak post-development traffic flow (2030)

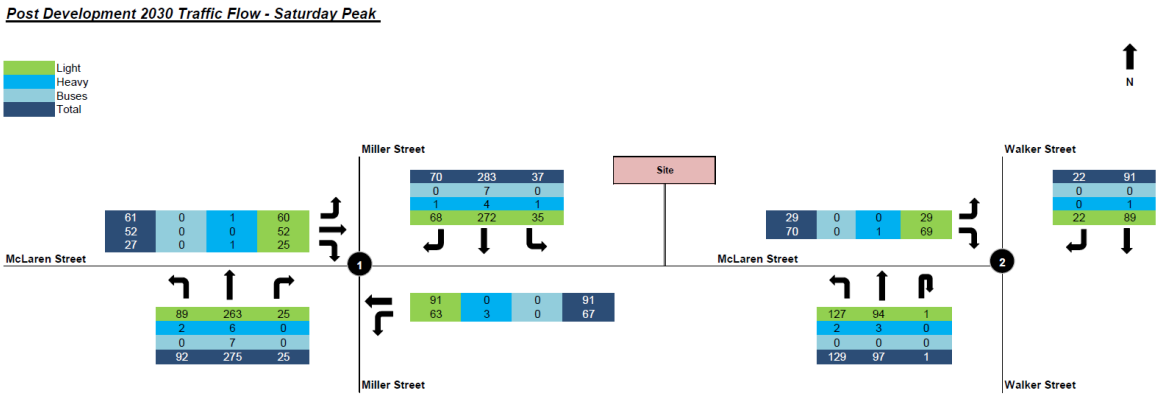


Figure 3-9 Saturday peak post-development traffic flow (2030)

3.3 Intersection performance

The performance of the road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. SIDRA 9 intersection modelling software was used to assess the proposed peak hour operating performance of intersections on the surrounding road network. The criteria for evaluating the operational performance of intersections are provided by the Guide to Traffic Generating Developments (Transport for NSW, 2002) and reproduced in Table 2-7. The criteria for

evaluating the operational performance of intersections are based on a qualitative measure (i.e. Level of Service), which is applied to each band of average vehicle delay.

3.3.1 2020 post-development scenario (existing geometric layout)

The post-development traffic volumes incorporating base 2020 traffic volumes at the intersections were analysed using SIDRA 9 to obtain the proposed operational performance as summarised in Table 3-4.

Table 3-4 Intersection operations (2020) – Post-development (existing layout)

Intersection		AM Peak			PM Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	19	B	0.53	18	B	0.44
Site 2: McLaren Street / Walker Street	Stop Priority control	8	A	0.15	10	A	0.21

Intersection		Saturday Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	17	B	0.57
Site 2: McLaren Street / Walker Street	Stop Priority control	8	A	0.12

Notes:

- *The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.*
- *The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.*
- *The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.*
- *Average delay is given in seconds per vehicle.*

Table 3-4 indicates that each of the analysed intersections have an acceptable Level of Service (i.e. better than Level of Service E) with spare capacity in both the weekday morning, evening weekday and weekend peak periods in the 2020 post-development scenario with road network operation being comparable to existing conditions. Detailed SIDRA results of these intersections are provided in Appendix B.

3.3.2 2030 "No Build" scenario (existing geometric layout)

The future "no build" traffic volumes, incorporating the 2030 background traffic growth volumes (assuming an increase of one percent from the existing traffic volumes) and an increase in 100 percent of pedestrian activity, were assessed under the existing intersection geometric layouts. Each intersection was analysed using SIDRA 9 to obtain the proposed operational performance as summarised in Table 3-5.

Table 3-5 Intersection operations (2030) – "No Build" scenario (existing layout)

Intersection		AM Peak			PM Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	19	B	0.59	19	B	0.54
Site 2: McLaren Street / Walker Street	Stop Priority control	8	A	0.13	10	B	0.23

Intersection		Saturday Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	19	B	0.55
Site 2: McLaren Street / Walker Street	Stop Priority control	8	A	0.12

Notes:

- *The average delay for priority-controlled intersections is selected from the movement on the approach with the highest average delay.*
- *The level of service for priority-controlled intersections is based on the highest average delay per vehicle for the most critical movement.*
- *The degree of saturation is defined as the ratio of the arrival flow (demand) to the capacity of each approach.*
- *Average delay is given in seconds per vehicle.*

Table 3-5 indicates that each of the analysed intersections have an acceptable Level of Service (i.e. better than Level of Service E) with spare capacity in both the weekday morning, evening, weekday and weekend peak periods in the future 2030 post-development. Detailed SIDRA results of these intersections are provided in Appendix B.

3.3.3 2030 post-development scenario (existing geometric layout)

The post-development traffic volumes, incorporating the 2030 background traffic growth volumes (assuming an increase of one percent from the existing traffic volumes), an increase in 100 percent of pedestrian activity and post-development trip generation, were assessed under the existing intersection geometric layouts. Each intersection was analysed using SIDRA 9 to obtain the proposed operational performance as summarised in Table 3-6.

Table 3-6 Intersection operations (2030) – Post-development (existing layout)

Intersection		AM Peak			PM Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	20	B	0.61	19	B	0.55
Site 2: McLaren Street / Walker Street	Stop Priority control	9	A	0.16	10	A	0.23

Intersection		Saturday Peak		
	Control Type	Average Delay (s)	LoS	Degree of Saturation
Site 1: McLaren Street / Miller Street	Signals	19	B	0.57
Site 2: McLaren Street / Walker Street	Stop Priority control	8	A	0.13

Table 3-6 indicates that the analysed intersections have an acceptable Level of Service (i.e. better than Level of Service E) with spare capacity in both the weekday morning, evening weekday and weekend peak periods in the future 2030 post-development scenario with road network operation being comparable to future bases 2030 (no build) conditions. Detailed SIDRA results of these intersections are provided in Appendix B.

3.4 Cumulative traffic impacts

It is understood that the adjacent site to the west (168 Walker Street, North Sydney) is currently under construction. To review the potential cumulative impacts associated with the surrounding development, reference was made to the *Traffic Impact Assessment Report by Ason Group* dated 18 December 2015 and subsequently recent update *Transport Statement S4.55 modification* dated 26 February 2021.

The *Traffic Impact Assessment Report* concluded that:

> *"The existing commercial development currently generates traffic at levels generally consistent with that proposed under this application. Accordingly, no change in the operation of key intersections in the locality is expected as a consequence of the development."*

The updated *Transport Statement S4.55 modification* statement reviewed the proposed changes of land use within the site and concluded:

> *"Peak hourly traffic associated with the development will largely remain unchanged as a result of the current changes. This assessment acknowledges that the total number of residential units and non-residential parking provisions shall remain unchanged."*

With consideration given to the traffic impact assessment outlined in section 3.3, which has assessed that the intersection operation will continue to operate at a Level of Service B or better, it is reasonable to conclude that the intersections will continue to operate within acceptable levels of operation (i.e. better than Level of Service E) with spare capacity in both the weekday morning, evening weekday and weekend peak periods.

4. Parking provision

A review of the parking requirements has been undertaken in relation to the proposed application with regards to both North Sydney Council *Development Control Plan 2013* (DCP) and State Environmental Planning Policy No 65 (SEPP 65) – Design Quality of Residential Developments.

4.1 Car parking provision

4.1.1 Residential component

The parking provision for the residential component of the development has been established with reference to the requirements presented in North Sydney Development Control Plan 2013 (DCP) and State Environmental Planning Policy No 65 (SEPP 65) – Design Quality of Residential Developments.

Parking requirements set out in North Sydney Council's DCP Section 10 Car Parking and Transport outlines the following **maximum** parking provision rates (based on the Residential Flat Buildings; B4 - mixed use):

- Studio/ One-bedroom units: 0.5 spaces per unit
- Two- or more bedroom units: one space per unit;
- Visitors: No requirements in B4 - mixed use North Sydney City Centre.

In reference to SEPP 65, the car parking provision is based on proximity to public transport in Sydney Metropolitan Regional area.

The SEPP 65 can be applied to residential developments in the following locations:

- *On sites that are within 800 m of a railway station or light rail stop in Sydney Metropolitan area; or*
- *On land zoned, as sites within 400 m of land zones B3 Commercial cores, B4 Mixed use or equivalent in a nominated regional centre.*

The SEPP 65, in association with the Apartment Design Guide can be applied to the residential component of this development. SEPP 65 and the Apartment Design Guide states that:

"*The minimum car parking requirement for residents and visitors is set out in the Guide to Traffic Generating Developments (GTTGD), or the car parking requirement prescribed by the relevant council,* ***whichever is less.****"*

The GTTGD prescribes car parking rates based on the centre's classification as a Metropolitan Regional Centre (CBD) or Metropolitan Subregional Centre. Although not defining these terms in detail, SEPP 65 outlines that centres defined in 'A Plan for Growing Sydney as a CBD' as a Regional City Centre or Strategic Centre should apply the Metropolitan Regional Centre (CBD) rates of the GTTGD.

Therefore, 'A Plan for Growing Sydney as a CBD' classifies North Sydney as a Strategic Centre and as such, the development has been assessed with **the parking rate of a Metropolitan Regional (CBD) centre as outlined in GTTGD**.

The rate applied in accordance with the GTTGD, is as follows:

- One-bedroom units: 0.4 space per unit
- Two-bedroom units: 0.7 space per unit
- Three- (and larger) bedroom units: 1.2 space per unit

- Visitors: 1 space per 7 units

4.1.2 Commercial / Retail component

Parking requirements set out in North Sydney Council's DCP 2013 Section 10 Car Parking and Transport outlines the following **maximum** parking provision rates for the retail component as:

- One space per 400 m^2 GFA.

4.1.3 Childcare component

Parking requirements set out in North Sydney Council's DCP 2013 Section 10 Car Parking and Transport outlines the following **maximum** parking provision rates for *Childcare facilities* as:

- Staff: 1 space per 2 employees with a maximum of 3 spaces
- Parents:
  - < 24 places – 2 spaces
  - > 24 places – 3 spaces

4.1.4 Car parking requirement summary

Table 4-1 summarises the minimum and maximum parking rates and requirements outlined in Council DCP and SEPP 65 for development.

Table 4-1 Car parking requirements summary

Component	Use Type	Units/GFA	DCP Requirement Part E11		SEPP 65 Requirements	
			Rate	Maximum Car Spaces required	Rate	Minimum Car Spaces required
Residential	1 (and studio) bed dwelling	84 dwellings	0.5 space per unit	42	0.4 spaces per unit	34
	2 bed dwelling	62 dwellings	1 space per unit	62	0.7 spaces per unit	43
	3 bed dwelling	26 dwellings	1 space per unit	26	1.20 spaces per unit	31
	Visitors	172 dwellings	On street only	0	1 space per 7 units	25
Residential Subtotal				***130***		***133 (including 25 visitors)***
Commercial	Office	2,573 m^2	1 space per 400 m^2	6	N/A – refer to DCP rate	N/A – refer to DCP rate
Retail	Retail	427 m^2	1 space per 400 m^2	1	N/A – refer to DCP rate	N/A – refer to DCP rate
Retail Subtotal				***7***		***7***
Childcare Services *	Staff	Assumed minimum 6 employees	1 space per 2 employees with a maximum of 3 spaces	3	N/A – refer to DCP rate	N/A – refer to DCP rate

Component	Use Type	Units/GFA	DCP Requirement Part E11		SEPP 65 Requirements	
			Rate	Maximum Car Spaces required	Rate	Minimum Car Spaces required
	Parents	Assumed >24 places	< 24 places – 2 spaces >24 places – 3 spaces	3	N/A – refer to DCP rate	N/A – refer to DCP rate
Childcare Services subtotal				**6**		**6**
Total Maximum car spaces required				***143***		***146***

Note: Source: DCP requirements – North Sydney Council DCP 2013 (Section 10)
Source SEPP 65 requirements – Transport for NSW Guide to Traffic Generating Developments Section 5.4.3
(*) Assumed greater than 24 places (RMS Guide estimate greater than 24) and minimum six employees

The planning proposal provisional parking is to adhere to the maximum car parking provision outlined in North Sydney DCP 2013 Section 10 and with consideration to the minimum requirements of SEPP 65 for the residential parking component, as long as it does not exceed the maximum permitted parking outlined in the DCP and summarised below.

- Residential: Maximum 130 spaces
- Office/Retail: Maximum 7 spaces
- Childcare: Maximum 6 spaces

The planning proposal includes the provision of the following car parking facilities

- Residential: 104 spaces (including 34 accessible spaces)
- Office/Retail: 7 spaces (including 1 accessible space)
- Childcare: 6 spaces (including 1 accessible space)

Such provision is less than the maximum parking permissible under North Sydney DCP 2013 to meet the objectives of reduced car dependency, increase sustainable transport use and improved community amenity.

It should be noted that The North Sydney Council DCP Section 10.2.2 outlines:

> *"(a) 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*
>
> *(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."*

The proposal includes the provision of four car shares spaces as outlined in section 4.6.2.

The planning proposal seeks a reduction of 20 percent of the maximum parking provision associated with the residential parking component. The site can be classified as a transit oriented development given its proximity to North Sydney central business district and train station, existing bus services on Miller Street and the future Sydney Metro Victoria Cross station access located adjacent to the site.

The planning proposal parking provision is in line with the intent of the North Sydney DCP objectives to reduce the parking provision and to encourage the use of alternative transport opportunities (ie public and active transport located near the site), thereby reducing traffic generation within the road network. As part of future applications on this site, a future developer

should apply, as a minimum, the same 20 percent reduction in parking as applied in the planning proposal concept design.

4.2 Accessible parking

North Sydney Council DCP 2013 has the following requirement for accessible parking:

- Residential:
  - One space per each adaptable dwelling (section 12.4.9)
- Commercial/Retail/Childcare
  - Not defined, however reference is made for to Building Code Australia (BCA) Table 3.5 for such use: Two percent of the total spaces

A summary of the minimum accessible parking provision required is outlined in Table 4-2, assuming the maximum parking provision is provided. Note a reduction in the parking provision for the commercial / retail and childcare components will reduce the required number of accessible parking spaces as per the above rates.

Table 4-2 Accessible parking provision

Land use	Total car parking provided	Required Accessible Parking Spaces
Residential	34 accessible units #	34 spaces
Commercial / Retail	7 spaces	1 space
Childcare	6 spaces	1 space ^
Total		**36 spaces**

Note:

(#) Assumed 20% of the residential units would be accessible

^ Consideration could be given to combining the proposed accessible parking for the retail/commercial/childcare components, if all land use parking provision is within the same area.

The planning proposal provisional parking is to adhere to the required accessible car parking provision outlined in North Sydney DCP 2013 Section 12 and BCA based on the maximum car parking provision for the commercial / retail and childcare components and the percent adaptable residential units (20 percent).

The accessible car parking configuration is to be in accordance with *AS2890.6: Parking Facilities: Off-street parking for people with disabilities.*

The planning proposal includes the provision of the 34 accessible car parking spaces for the residential component of the development. Additionally, a total of 2 accessible spaces for the commercial / retail and childcare components of the development to align with the North Sydney DCP requirements.

4.3 Bicycle parking

To encourage alternative and sustainable transport opportunities, North Sydney Council 2013 DCP (Section 10.5) outlines the bicycle parking rates to be provided within developments. A summary of the rates and application of these rates to the development is outlined in Table 4-3.

Table 4-3 Bicycle parking requirement summary

Component	Use Type	Units/ GFA	DCP 2013 Rate (Occupant)	DCP 2013 Rate (Visitor/Customer)	Minimum bike spaces required	
					Occupant	Visitor / Customer
Residential	Units	172	1 space per 1 unit	1 space per 10 dwellings	172	17
Retail	Retail	427 m^2	1 space per 250 m^2	2 + 1 space per 250 m^2 over 100 m^2	2	2
Office	Office	2,573 m^2	1 space per 150 m^2	1 space per 400 m^2	17	6
Childcare	Childcare	Refer note *	1 space per 10 staff	2 per centre	1	2
TOTAL					**192**	**27**

Notes:
(*) Assuming up to 10 staff

The development proposes to provide the following bicycle facilities with details to be developed in future design stages in line with the North Sydney DCP:

- Bicycle storage for residents as a combination of individual storage cages and communal compounds with bicycle racks.
- A separate communal compound for commercial, retail, and childcare centre employees, with racks at ground level for retail customers and visitors.

Storage cages to be utilised to facilitate the storage of bicycles and bike racks are to be designed and constructed in accordance with *AS 2890.3 Parking facilities: Bicycle parking*.

The provision of the proposed storage cages and bicycle facilities for both residents and visitor use offers opportunities to encourage alternate sustainable transport opportunities, reducing car dependency and vehicle trip generation.

4.3.1 End-of-trip facilities

The North Sydney Council DCP 2013 (Section 10.5) outlines the requirement for end of trip facilities to support active transport options for non-residential components of the development.

The following end of trip facilities are to be provided at the following rates:

- One personal locker for each bicycle parking space.
- One shower and change cubicle for up to 10 bicycle parking spaces.
- Two shower and change cubicles for 11 to 20 bicycle parking spaces are provided.
- Two additional shower and change cubicles for each additional 20 bicycle parking spaces or part thereof.

Showers and change facilities may be provided in the form of shower and change cubicles in a unisex area or in both female and male change rooms (if necessary).

Locker, change room and shower facilities are to be located close to the bicycle parking area, entry/exit points, and within an area of security camera surveillance where there are such building security systems.

The required number of lockers and shower/change cubicles for development is outlined in Table 4-4 and should be incorporated in ongoing design for the development.

Table 4-4 Bicycle end-of-trip facilities requirement summary – Development

Facility	Number of bicycle spaces (occupants only)	DCP 2013 Rate	Minimum facility required
Lockers	20	1 per bicycle space	20
Shower and change Cubical	20	2 per bicycle space up to 20 plus 2 per additional 20 (or part thereof)	2

End-of-trip bicycle facilities to be detailed in future design stages in line with the North Sydney DCP.

4.4 Motorcycle parking

North Sydney Council DCP 2013 (Section 10.2.1) outlines parking requirements for motorcycles as follows to provide alternative transport options:

- One motorcycle parking space per 10 car spaces.

A summary of the minimum motorcycle parking provision required is outlined in Table 4-5, assuming the maximum parking provision is provided. Note a reduction in the parking provision will reduce the required number of motorcycle parking spaces as per the above rates.

Table 4-5 Motorcycle parking provision

	Total car parking provided	Required Motorcycle Parking Spaces
Overall	117 spaces	12 spaces

The motorcycle parking configuration is to be in accordance with *AS2890.1: Parking Facilities: Off-street car parking.*

A provisional allowance has been made for 12 motorcycle spaces within the residential car parking area. This further supports the alternate transport option and parking demand associated with private vehicle use.

Consideration should be given to the provision of motorcycle parking spaces within the public accessible parking area for the use of short-term deliveries via motorcycles.

4.5 Service vehicle and loading facility

North Sydney Council DCP 2013 (Section 10.2.4) outlines the following service parking requirements:

- Residential: Developments containing more than 60 dwellings must provide at least 1 service delivery space, capable of accommodating at least:
  - (a) 1 Heavy Rigid Vehicle (12.5 m); or
  - (b) 2 Medium Rigid Vehicles (8.8 m).
- Retail: No specified number.

- Childcare: No specified number.

Given the mix use of the development, the service vehicle parking provision should be accompanied by a loading dock management plan to manage the use of the loading dock. The management plan should outline the use of the loading dock and provide an opportunity to pre-arrange vehicular access to the loading dock, such as removalist vehicles, deliveries or waste vehicles. To minimise the impact, consideration should be given to the use of the larger vehicles outside peak operation operational hours of the development. These service vehicle parking provisions can also be utilised by vehicles such as utes and vans that may be required for short-term maintenance works within the development.

The development proposal loading dock should be supported with the implementation of a Loading Dock Management Plan, which will outline roles and responsibilities for the use of the loading dock and scheduling/booking systems in place to facilitate the efficient use of the loading dock.

The planning proposal development has considered the provision of loading within the public accessible basement for:

- 1 Heavy Rigid Vehicle (12.5 m) and
- 2 Medium Rigid Vehicles (8.8 m) – in tandem

Additionally, the short-term visitor parking spaces (three spaces) associated with the childcare facility could also be used to facilitate short term deliveries to the development (e.g. cars, vans, utes etc). This provides efficient use of the available car spaces. To maintain accessibility to the spaces, parking restriction of up to 15 minutes is recommended to provide sufficient time for deliveries for the development or drop off / pick up of children to the childcare centre.

A high-level review of the service provision has been undertaken, based on provisional survey data provided by TfNSW, which outlines that delivery activity for mixed use development is in the order of 0.17/unit/day. With consideration given to residential development which is assumed would produce the higher regular delivery demand peak periods, such could generate up to 30 deliveries per day. Assuming such deliveries is over an assumed typical 10-hour day (to incorporate morning and evening periods), this equates on average three vehicles an hour. It is anticipated the proposed provision of three spaces within the loading could facilitate such demand and be further supported with the use of the short-term parking spaces in conjunction with the childcare visitor parking. Longer term parking use of the loading dock (such as removalist vehicles) will need to be co-ordinated in conjunction with three Loading Dock Management Plan procedures, via a booking system.

It is noted that the proposed loading dock provision is in line the North Sydney Council DCP 2013.

Details of the loading dock are to be undertaken in ongoing design stages and may include a mechanical turntable or hammerhead arrangement (the latter preferred to minimise alternate loading procedures during maintenance of a turntable), to allow the services to exit and enter the site in a forward direction. The loading dock configuration and its access route is to be in accordance with *AS2890.2: Parking Facilities: Off-street commercial vehicle facilities* and accommodate the minimum design vehicle, Heavy Rigid Vehicle (12.5 m in length). Additionally, it is recommended they loading dock traffic management facilities such as convex mirrors and activated audible and visual lighting (when loading dock is in use) be provided to provide improved safety and advise the loading dock in use.

4.6 Other parking provisions

4.6.1 Car wash bay

The North Sydney Council DCP 2013 (Section 10.2.1) outlines the requirement for a car wash bay as follows to provide amenity to residents:

For residential developments containing four or more dwellings, a car wash bay is to be provided within the visitor parking area.

The development is to provide one car wash space, which will be detailed in the ongoing design process.

4.6.2 Car share

As outlined in section 2.8.5, Council supports the provision of car share parking in residential, mixed use and commercial developments, however it does not mandate such should be required.

The development proposes to implementation car share facilitate for four vehicles to support the proposed parking provision, reduce car ownership and support the alternative transport option for residents and visitors to the development.

The above car share provision further supports the existing five car share pods currently located within 150 m of the site.

4.6.3 On-street parking

The proposed parking provision within the basement car park of the development will meet the maximum requirements outlined in North Sydney Council DCP 2013 Section 10. As such, it is presumed that the proposed off-street parking provisions are suitable for the proposed development as to not have an adverse impact on the on-street parking within proximity of the site as the parking provisions align with the planning controls specified within Council's DCP.

Additionally, the proposed new access driveway is located to generally align with the existing driveway extent, which will result in maintaining comparative on-street parking provisions.

5. Access and parking layout

5.1 Carpark arrangement

5.1.1 General Layout

During the ongoing stage of design development, the parking layout configuration is to be in accordance with the following Australian Standards:

- AS2890.1: Parking Facilities: Off-street parking.
- AS2890.2: Parking Facilities: Off-street commercial vehicle facilities
- AS2890.3: Parking Facilities: Bicycle parking facilities.
- AS2890.6: Parking Facilities: Off-street parking for people with disabilities.

The following key minimum criteria are outlined in Table 5-1.

Table 5-1 Site parking layout key criteria

Description	Design Parameter	Comment
Facility Classification [1]	Class 1 (or Class 1A)	Residential
	Class 2	Medium term parking
	Class 3	Short term parking
Headroom [1, 2, 4]	2.2 m	Minimum within basement
	2.5 m	Minimum above accessible car spaces
	4.5 m	Loading dock
Standard Parking Space (90 degree) [1]	2.4 m wide 5.4 m long 6.2 m aisle width	Class 1: Residential – Class 1 *(Note: Class 1A minimum aisle width 5.8 m)*
	2.5 m wide 5.4 m long 5.8 m aisle width	Class 2: Retail – Medium term duration
	2.6 m wide 5.4 m long 5.8 m aisle width	Class 3: Childcare – Short term duration *Note: wider spaces (3.2 m) can be provided to further assist in ease of accessibility to the vehicle*
Accessible Parking Space (90 degree parking) [4]	2.4 m wide 5.4 m long With adjacent 2.4 m x 5.4 m shared space 6.2 m aisle width	
Ramp grades (car park) [1]	1:5 (20%) maximum	Maximum change in grade 1:8 (12.5%) – minimum 2 m transition length
Ramp widths (car park) [1]	Minimum 3.0 m (with minimum additional 300 mm clearance on each side)	Straight sections (one way)
	Minimum 5.5 m (with minimum additional 300 mm clearance on each side)	Straight sections (undivided two way)
Ramp grades (loading dock) [2]	1:6.5 (15.4%) maximum	Maximum change in grade 1:16 (6.25%) over 7 m of travel

Description	Design Parameter	Comment
Ramp widths (loading dock) [2]	3.5 m	One way on straight alignment
Service Bay dimensions (loading dock) [2]	3.5 m wide 8.8 m long (MRV) 12.5 m long (HRV)	
Motorcycle parking [1]	1.2 m wide 2.5 m long	
Bicycle parking (90 degree parking) [3]	Rails at 1.0 m centres Space 1.8 m long Aisle 1.5 m width	Alternatively individual cages/lockers for the residential component

Notes:

1: AS 2890.1 – Parking Facilities-Part 1: Off-street car parking

2: AS 2890.2 – Parking Facilities-Part 2: Off-street commercial facilities

3: AS 2890.3 – Parking Facilities-Part 3: Bicycle Parking

4: AS 2890.6 – Parking Facilities-Part 6: Off-Street parking for people with disabilities

A preliminary review of the planning proposal indicated such parking layout could generally be achieved within the basement envelope and should continue to be reviewed in line with the relevant Australians Standards throughout the ongoing design.

5.1.2 Circulation

During the ongoing design stages, consideration should be given to the provision of convex mirrors within the circulation areas are provided to assist in visibility to oncoming traffic (e.g., ramp areas), where required.

Additionally, there is the opportunity for the provision of real-time parking availability system in the retail/commercial basement parking level to advise motorists prior to entry the number of car spaces available within the basement and direct motorists to such available spaces. This will assist in general circulation improvement and advise motorists of whether parking spaces are available (notably in the blind aisle at the southern end of the basement).

A detailed assessment of the swept path of the access ramps and circulation aisles will be undertaken in later design stages with the use of Autoturn computer simulation package to review the access and circulation within the basement parking area. A preliminary desktop review indicates there is the ability to maintain suitable circulation and flow within the development, however such should continue to be reviewed in line with the relevant Australian Standards throughout the ongoing design.

5.2 Site access review

The sight distance requirements are described in Section 3.2 of AS2890.1 and are prescribed on the basis of the signposted speed limit or 85th percentile vehicle speeds along the frontage road.

Egress from the site is on McLaren Street has a posted speed limit of 40 km/h. Assuming an approach speed of 40 km/h to the driveways, the desirable visibility distance is 55 m, and a minimum distance is 30 m. Observations of the traffic movements along McLaren Street indicate that 40 km/h speed limit would be adhered to, with the general kerbside parking and moderate lane widths. Such infrastructure would slow and maintain such intended vehicle travel speeds.

The proposed driveway is located on the straight sections of the road alignment with no permanent obstructions to the north to affect the visibility from the driver when exiting the site.

5.3 Pedestrian and cycle access

It is proposed to create a pedestrian promenade in a north-south direction along the eastern side of the site. Detail of the promenade will be undertaken in the ongoing design process. Consideration should be given to mobility and the visually impaired, convey on pedestrian movement (from heavy/light vehicles) and create a sense of “place”.

Consideration will need to be given to the cycle access route through the promenade and bicycle parking facilities within the site to maintain safe speeds and minimise undue interaction with pedestrian and other vehicles where possible.

6. Mitigation measures

6.1 Green Travel Plan

6.1.1 Background

To encourage and promote alternate transport opportunities to the development, the Green Travel Plan (GTP) developed as part of this TIA should be used as a basis of consideration for future versions to promote walking and cycling and reduction of vehicle usage. The GTP summarises alternate transport options to access the development, outlining where and how these services can be accessed and the frequency of the service.

Sound planning for the provision of high quality facilities for pedestrians and cyclists constitute a crucial element of the transport strategy for the development. The proposed development will be developed on the basis that there will be safe, amenable and attractive pedestrian environment linking the site to nearby facilities such as the North Sydney business area and public transport nodes.

6.1.2 Objectives

The primary objectives of the GTP are to:

- Promote alternate sustainable transport options for access to the development.
- Discourage private vehicle use to the development, including alternatives to a single occupant motor vehicle.
- Define travel mode targets for the development and outline the requirements for monitoring and reviewing the GTP targets.
- Provide transport access information to the occupants of the development.

6.1.3 Transport access options

The GTP will identify existing and future alternate sustainable transport options surrounding the site. In addition, it will outline the facilities provided within the development site. Such alternate sustainable transport options include:

Existing services surrounding the development

- Public transport
  - Bus service – Miller Street: Refer to section 2.8.1.
  - Train service – North Sydney Station: Refer to section 2.8.2.
- Active transport
  - Pedestrian facilities: Refer to section 2.8.3.
  - Bicycle routes: Refer to section 2.8.4.
- Car share: Refer to section 2.8.5.

Future services surrounding the development

- Sydney Metro services: Victoria Cross Metro Station: Refer to section 2.9.

Services within the development

- Bicycle parking and end of trip facilities: Refer to section 4.3.
- Car share facilities: Refer to section 4.6.2.

6.1.4 Travel mode targets

The GTP will outline travel mode targets for the development, including the process of monitoring and reviewing of the targets and the plan, to ensure the objective of the GTP are achieved.

6.1.5 Methods of communication

Residents, staff and visitors should be encouraged to utilise such facilities, with the GTP provided to visitors to the facility and advertised in prominent visitation areas. Providing the GTP to staff could be included as part of staff inductions for new employees and raised at regular team meetings and internal messaging systems (i.e. email or text), with the GTP provided to residents (owners and tenants) via Annual General Meetings or similar.

To assist with the communication, the GTP will include a Transport Access Guide (TAG) outlining the alternate transport options to access the development, including where and how these services can be readily accessed. Copies of the TAG will be issued to future residents and businesses and displayed within communal areas such as the lobby or communicated via internal messaging systems (i.e. email).

6.1.6 Summary

The development is extremely well serviced by existing and future alternative transport options, in addition to the facilities proposed to be contained within the development. In conjunction with the GTP, these transport options will reduce car dependency and associated vehicle trip generation within the surrounding road network and create opportunities for healthier lifestyles and a more vibrant, cohesive and accessible community.

The GTP developed as part of this TIA should be used to promote and increase sustainable travel choices such as public transport, cycling, walking and car sharing.

7. Summary and conclusion

7.1 Overview

This traffic and parking impact assessment has investigated the potential traffic and parking impacts of a proposed development at 52 McLaren Street, North Sydney. The planning proposal includes a mixed-use development of high density multi-storey apartments, retail/commercial, and childcare facility.

7.2 Key findings

The key findings of the report are as follows:

Accessibility

- The proposed development is within walking distance to North Sydney Station (approximately 800 m). Bus services operate on Miller Street (approximately 100 m southwest of the site) and will be adjacent to the future Sydney Metro Victoria Cross Station, providing public transport opportunities to the CBD, local districts and the greater transport system area. This can be supported with the future provision of a GTP and TAG for the development.

Traffic generation

- Based on reference guidelines, the proposed development may generate up to an additional 136 trips in the morning peak, 116 trips in the evening peak on a typical weekday and 98 trip on a peak weekend period.
- It should be noted that the adopted trip generation (based on reference documents), particularly for the retail and commercial (office) component, would be considered an overestimate of the likely demand when considering the adjoining site will be the future Sydney Metro Victoria Cross Station and the site is subject to maximum parking provision limit in line with the North Sydney DCP. The capped parking provision will decrease the typical trip generation when compared to the referenced guidelines.
- Notwithstanding the above, analysis of the reference document trip generation indicate no adverse traffic impact has been identified in the 2020 and 2030 future base case and post-development scenarios, with road network operations being comparable and having an acceptable Level of Service (i.e., better than Level of Service E). There is spare capacity in both the morning, evening weekday and weekend peak periods, with consideration also given to cumulative impacts associated with the adjoining development at 168 Walker Street, North Sydney, currently under construction.

Parking and servicing

- Preliminary details of the car parking, bicycle parking, motorcycle parking and loading dock provision in conjunction with car wash facilities have been outlined line for the proposed development within this assessment. The parking provision is to be in accordance with North Sydney Council DCP maximum and minimum parking rates, with the design in line with the relevant Australian Standards. Preliminary review indicates that the parking provision can be accommodated in line with the North Sydney Council DCP and relevant Australian Standards within future design stages.
- The planning proposal seeks a reduction of 20 percent of the maximum parking provision associated with the residential parking component. This is in line with the intent of the North Sydney DCP objectives to reduce the parking provision and to encourage the use of alternative transport opportunities, thereby reducing traffic generation within the road

network. The site can be classified as a transit oriented development given its proximity to North Sydney central business district and train station, existing bus services on Miller Street and the future Sydney Metro Victoria Cross station access located adjacent to the site.

- Car share facility for the provision of four vehicles has been provided within the public accessible basement to support the development proposed parking provision, reduce car ownership and support the alternative transport option for residents and visitors to the development.
- A loading dock management plan will be produced for the development which will outline roles and responsibilities for the use of the loading dock and scheduling/booking systems in place to facilitate the efficient use of the loading dock. Short term loading/unloading activities could also supplement the loading dock via the use of the childcare visitor parking for improved efficiency of use of available parking spaces.
- Traffic management facilities to assist in the safety and circulation of vehicles could include convex mirrors, real time parking occupancy (including the loading dock) prior to entry to the development and use of visual and audible warning sound for loading dock activity.

Green travel plan (GTP)

A GTP (incorporating a TAG) developed as part of this TIA should be used as a basis of consideration for future versions to promote walking and cycling and reduction of vehicle usage. The GTP identifies existing and future alternate sustainable transport options surrounding the site to reduce car dependency and associated vehicle trip generation within the surrounding road network and create opportunities for healthier lifestyles and a more vibrant, cohesive and accessible community.

7.3 Conclusion

Based on the assumptions and findings outlined in this report, it is considered that the proposed development will satisfy the planning requirements on traffic engineering grounds. The planning proposal parking provisions are to align with Council DCP and relevant Australian standards and guidelines. Additionally, a Green Travel Plan (including a Transport Access Guide) is prepared as part of this TIA to promote and increase sustainable travel choices such as public transport, cycling, walking and car sharing.

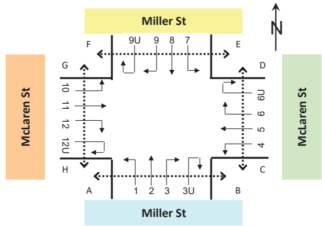
Appendices

Appendix A – Traffic Survey Data

Site 1 – McLaren Street and Miller Street: 2020 Survey Data

Job No. : N6108
Client : GHD
Suburb : McLaren St
Location : 1. McLaren St / Miller St

Day/Date : Sat, 5th December 2020
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



Approach: Miller St

Time Period	Direction 1 (Left Turn)					Direction 2 (Through)					Direction 3 (Right Turn)					Direction 3U (U Turn)				
	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total
10:30 to 11:30	81	2	0	1	**84**	238	5	6	23	**272**	18	0	0	0	**18**	0	0	0	0	**0**
10:45 to 11:45	70	3	0	1	**74**	218	5	6	16	**245**	18	0	0	0	**18**	0	0	0	0	**0**
11:00 to 12:00	70	3	0	0	**73**	225	5	6	18	**254**	16	0	0	0	**16**	0	0	0	0	**0**
11:15 to 12:15	85	3	0	0	**88**	220	5	6	13	**244**	9	0	0	0	**9**	0	0	0	0	**0**
11:30 to 12:30	78	2	0	0	**80**	219	4	6	14	**243**	8	0	0	0	**8**	0	0	0	0	**0**
11:45 to 12:45	79	0	0	1	**80**	213	6	6	12	**237**	7	0	0	0	**7**	0	0	0	0	**0**
12:00 to 13:00	71	0	0	1	**72**	201	5	6	16	**228**	6	0	0	0	**6**	0	0	0	0	**0**
12:15 to 13:15	53	0	0	1	**54**	190	4	6	17	**217**	9	0	0	0	**9**	0	0	0	0	**0**
12:30 to 13:30	61	0	0	1	**62**	188	3	6	13	**210**	8	0	0	0	**8**	0	0	0	0	**0**
Total	**220**	**4**	**0**	**2**	**226**	**645**	**12**	**18**	**50**	**725**	**34**	**0**	**0**	**0**	**34**	**0**	**0**	**0**	**0**	**0**

Approach: McLaren St

Time Period	Direction 4 (Left Turn)					Direction 5 (Through)					Direction 6 (Right Turn)					Direction 6U (U Turn)				
	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total
10:30 to 11:30	48	3	0	0	**51**	70	0	0	1	**71**	0	0	0	0	**0**	0	0	0	0	**0**
10:45 to 11:45	54	2	0	0	**56**	78	0	0	1	**79**	1	0	0	0	**1**	0	0	0	0	**0**
11:00 to 12:00	58	1	0	0	**59**	81	0	0	1	**82**	2	0	0	0	**2**	0	0	0	0	**0**
11:15 to 12:15	47	1	0	0	**48**	71	0	0	1	**72**	3	0	0	0	**3**	0	0	0	0	**0**
11:30 to 12:30	41	0	0	0	**41**	74	0	0	0	**74**	4	0	0	0	**4**	0	0	0	0	**0**
11:45 to 12:45	32	0	0	0	**32**	69	0	0	0	**69**	3	0	0	0	**3**	0	0	0	0	**0**
12:00 to 13:00	28	0	0	0	**28**	58	0	0	0	**58**	2	0	0	0	**2**	0	0	0	0	**0**
12:15 to 13:15	30	0	0	0	**30**	63	0	0	0	**63**	1	0	0	0	**1**	0	0	0	0	**0**
12:30 to 13:30	33	0	0	0	**33**	54	0	0	0	**54**	1	0	0	0	**1**	0	0	0	0	**0**
Total	**122**	**3**	**0**	**0**	**125**	**198**	**0**	**0**	**1**	**199**	**5**	**0**	**0**	**0**	**5**	**0**	**0**	**0**	**0**	**0**

Approach: Miller St

Time Period	Direction 7 (Left Turn)					Direction 8 (Through)					Direction 9 (Right Turn)					Direction 9U (U Turn)				
	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total
10:30 to 11:30	25	1	0	0	**26**	246	4	6	8	**264**	62	1	0	0	**63**	0	0	0	0	**0**
10:45 to 11:45	33	1	0	0	**34**	238	3	6	13	**260**	61	0	0	0	**61**	0	0	0	0	**0**
11:00 to 12:00	32	1	0	0	**33**	228	2	6	12	**248**	58	0	0	0	**58**	0	0	0	0	**0**
11:15 to 12:15	32	1	0	0	**33**	225	3	5	12	**245**	50	0	0	0	**50**	0	0	0	0	**0**
11:30 to 12:30	32	1	0	0	**33**	232	2	6	10	**250**	44	0	0	0	**44**	0	0	0	0	**0**
11:45 to 12:45	26	1	0	0	**27**	225	4	6	3	**238**	43	0	0	0	**43**	0	0	0	0	**0**
12:00 to 13:00	24	0	0	0	**24**	242	4	6	3	**255**	44	0	0	0	**44**	0	0	0	0	**0**
12:15 to 13:15	22	0	0	0	**22**	233	4	7	4	**248**	49	0	0	0	**49**	0	0	0	0	**0**
12:30 to 13:30	25	0	0	0	**25**	213	4	7	5	**229**	52	0	0	0	**52**	0	0	0	0	**0**
Total	**82**	**2**	**0**	**0**	**84**	**691**	**10**	**19**	**23**	**743**	**158**	**1**	**0**	**0**	**159**	**0**	**0**	**0**	**0**	**0**

Approach: McLaren St

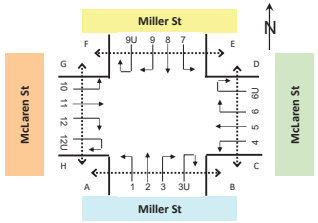
Time Period	Direction 10 (Left Turn)					Direction 11 (Through)					Direction 12 (Right Turn)					Direction 12U (U Turn)				
	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total
10:30 to 11:30	54	1	0	1	**56**	37	0	0	0	**37**	23	1	0	1	**25**	1	0	0	0	**1**
10:45 to 11:45	47	1	0	2	**50**	36	0	0	0	**36**	24	1	0	1	**26**	0	0	0	0	**0**
11:00 to 12:00	44	0	0	1	**45**	36	0	0	0	**36**	21	1	0	1	**23**	0	0	0	0	**0**
11:15 to 12:15	49	1	0	1	**51**	32	0	0	0	**32**	23	1	0	2	**26**	0	0	0	0	**0**
11:30 to 12:30	47	1	0	1	**49**	30	0	0	1	**31**	19	1	0	2	**22**	0	0	0	0	**0**
11:45 to 12:45	50	1	0	0	**51**	32	2	0	1	**35**	20	1	0	3	**24**	0	0	0	0	**0**
12:00 to 13:00	47	1	0	0	**48**	33	2	0	1	**36**	23	1	0	2	**26**	0	0	0	0	**0**
12:15 to 13:15	40	0	0	0	**40**	45	3	0	1	**49**	19	1	0	1	**21**	0	0	0	0	**0**
12:30 to 13:30	36	0	0	0	**36**	43	3	0	0	**46**	22	0	0	3	**25**	0	0	0	0	**0**
Total	**137**	**2**	**0**	**2**	**141**	**110**	**3**	**0**	**1**	**114**	**64**	**2**	**0**	**6**	**72**	**1**	**0**	**0**	**0**	**1**

Crossing Pedestrians

Time Period	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
10:30 to 11:30	30	47	81	114	55	87	100	99	**613**
10:45 to 11:45	39	50	72	95	47	68	109	82	**562**
11:00 to 12:00	42	52	55	82	30	71	111	77	**520**
11:15 to 12:15	39	38	53	64	31	60	99	66	**450**
11:30 to 12:30	39	30	45	59	17	47	95	65	**397**
11:45 to 12:45	31	26	43	59	19	42	93	57	**370**
12:00 to 13:00	30	19	41	62	25	29	79	45	**330**
12:15 to 13:15	29	21	49	66	22	23	62	36	**308**
12:30 to 13:30	34	29	49	55	23	22	53	27	**292**
Total	**103**	**106**	**175**	**228**	**95**	**156**	**248**	**191**	**1,302**

Job No. : N6108
Client : GHD
Suburb : McLaren St
Location : 1. McLaren St / Miller St

Day/Date : Tue, 8th December 2020
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



MATRIX Traffic and Transport Data

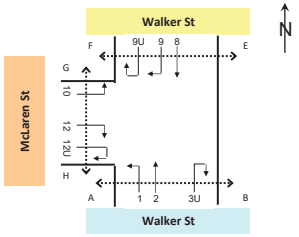
Approach	Miller St																				McLaren St																					
Direction	Direction 1 (Left Turn)					Direction 2 (Through)					Direction 3 (Right Turn)					Direction 3U (U Turn)					Direction 4 (Left Turn)					Direction 5 (Through)					Direction 6 (Right Turn)					Direction 6U (U Turn)				
Time Period	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total
6:30 to 7:30	49	1	0	0	**50**	106	6	10	8	**130**	8	0	0	0	**8**	0	0	0	0	**0**	18	2	0	0	**20**	24	0	0	0	**24**	3	0	0	0	**3**	0	0	0	0	**0**
6:45 to 7:45	55	1	0	0	**56**	122	9	9	12	**152**	8	0	0	1	**9**	0	0	0	0	**0**	28	1	0	0	**29**	35	0	0	0	**35**	3	0	0	0	**3**	0	0	0	0	**0**
7:00 to 8:00	61	1	0	0	**62**	139	14	14	17	**184**	4	0	0	1	**5**	0	0	0	0	**0**	31	1	0	0	**32**	44	1	0	0	**45**	2	0	0	0	**2**	0	0	0	0	**0**
7:15 to 8:15	73	1	0	0	**74**	169	14	18	19	**220**	7	0	0	1	**8**	0	0	0	0	**0**	30	0	0	0	**30**	51	1	0	0	**52**	0	0	0	0	**0**	0	0	0	0	**0**
7:30 to 8:30	83	1	0	0	**84**	196	17	22	20	**255**	7	1	0	1	**9**	0	0	0	0	**0**	41	0	0	0	**41**	54	3	0	0	**57**	0	0	0	0	**0**	0	0	0	0	**0**
7:45 to 8:45	85	1	0	0	**86**	229	16	28	18	**291**	8	1	0	0	**9**	0	0	0	0	**0**	35	1	0	0	**36**	58	3	0	0	**61**	0	0	0	0	**0**	0	0	0	0	**0**
8:00 to 9:00	98	2	0	0	**100**	249	12	28	19	**308**	9	1	0	0	**10**	0	0	0	0	**0**	42	1	0	0	**43**	66	3	0	0	**69**	0	0	0	0	**0**	0	0	0	0	**0**
8:15 to 9:15	85	3	0	0	**88**	232	12	25	14	**283**	8	1	0	0	**9**	0	0	0	0	**0**	64	1	0	0	**65**	71	3	0	0	**74**	0	0	0	0	**0**	0	0	0	0	**0**
8:30 to 9:30	87	4	0	0	**91**	208	9	22	9	**248**	6	0	0	0	**6**	0	0	0	0	**0**	63	3	0	0	**66**	70	1	0	0	**71**	0	0	0	0	**0**	0	0	0	0	**0**
AM Totals	**219**	**6**	**0**	**0**	**225**	**510**	**32**	**54**	**37**	**633**	**21**	**1**	**0**	**1**	**23**	**0**	**0**	**0**	**0**	**0**	**122**	**5**	**0**	**0**	**127**	**148**	**4**	**0**	**0**	**152**	**3**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**
15:30 to 16:30	81	0	0	0	**81**	187	1	47	16	**251**	12	0	4	0	**16**	0	0	0	0	**0**	51	2	0	0	**53**	69	0	0	0	**69**	0	0	0	0	**0**	0	0	0	0	**0**
15:45 to 16:45	83	1	0	1	**85**	207	0	28	20	**255**	13	0	0	0	**13**	0	0	0	0	**0**	49	1	0	0	**50**	78	0	0	0	**78**	0	0	0	0	**0**	0	0	0	0	**0**
16:00 to 17:00	81	1	0	2	**84**	228	0	28	28	**284**	16	0	0	0	**16**	0	0	0	0	**0**	41	0	0	0	**41**	89	0	0	0	**89**	0	0	0	0	**0**	0	0	0	0	**0**
16:15 to 17:15	93	1	0	2	**96**	272	1	29	35	**337**	12	0	0	0	**12**	0	0	0	0	**0**	52	0	0	0	**52**	84	0	0	0	**84**	0	0	0	0	**0**	0	0	0	0	**0**
16:30 to 17:30	107	1	0	2	**110**	301	1	32	38	**372**	12	0	0	0	**12**	0	0	0	0	**0**	54	1	0	0	**55**	101	0	0	0	**101**	0	0	0	0	**0**	0	0	0	0	**0**
16:45 to 17:45	110	1	0	3	**114**	314	1	34	47	**396**	10	0	0	0	**10**	0	0	0	0	**0**	52	1	0	0	**53**	104	0	0	0	**104**	2	0	0	0	**2**	0	0	0	0	**0**
17:00 to 18:00	108	2	0	3	**113**	328	1	34	57	**420**	12	0	0	0	**12**	0	0	0	0	**0**	50	2	0	0	**52**	101	0	0	0	**101**	2	0	0	0	**2**	0	0	0	0	**0**
17:15 to 18:15	95	2	0	4	**101**	303	0	36	64	**403**	18	0	0	0	**18**	0	0	0	0	**0**	32	2	0	0	**34**	116	0	0	0	**116**	2	0	0	0	**2**	0	0	0	0	**0**
17:30 to 18:30	86	2	0	5	**93**	282	0	34	75	**391**	21	0	0	0	**21**	0	0	0	0	**0**	35	1	0	0	**36**	103	0	0	1	**104**	2	0	0	0	**2**	0	0	0	0	**0**
PM Totals	**274**	**3**	**0**	**7**	**284**	**770**	**2**	**113**	**129**	**1,014**	**45**	**0**	**4**	**0**	**49**	**0**	**0**	**0**	**0**	**0**	**140**	**4**	**0**	**0**	**144**	**273**	**0**	**0**	**1**	**274**	**2**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**0**	**0**

Approach	Miller St																				McLaren St																				Crossing Pedestrians								
Direction	Direction 7 (Left Turn)					Direction 8 (Through)					Direction 9 (Right Turn)					Direction 9U (U Turn)					Direction 10 (Left Turn)					Direction 11 (Through)					Direction 12 (Right Turn)					Direction 12U (U Turn)													
Time Period	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	B to A	A to B	D to C	C to D	F to E	E to F	H to G	G to H	Total
6:30 to 7:30	15	1	0	0	**16**	191	8	24	14	**237**	37	1	1	1	**40**	0	0	0	0	**0**	12	0	0	0	**12**	22	1	0	0	**23**	15	1	0	3	**19**	0	0	0	0	**0**	22	25	35	53	9	7	42	44	**237**
6:45 to 7:45	14	1	0	0	**15**	247	6	39	19	**311**	46	1	1	1	**49**	0	0	0	0	**0**	15	1	0	0	**16**	23	0	0	0	**23**	18	1	0	2	**21**	0	0	0	0	**0**	23	35	35	67	11	6	45	45	**267**
7:00 to 8:00	12	2	0	0	**14**	288	9	55	18	**370**	56	1	1	1	**59**	0	0	0	0	**0**	18	1	0	0	**19**	26	0	0	0	**26**	23	0	0	5	**28**	0	0	0	0	**0**	27	37	29	77	11	5	49	52	**287**
7:15 to 8:15	7	2	0	0	**9**	349	8	61	25	**443**	62	3	0	1	**66**	0	0	0	0	**0**	19	1	0	0	**20**	28	0	0	0	**28**	27	1	0	3	**31**	0	0	0	0	**0**	37	48	35	99	10	11	65	56	**361**
7:30 to 8:30	7	1	0	0	**8**	388	7	62	33	**490**	79	3	0	0	**82**	0	0	0	0	**0**	27	1	0	0	**28**	39	0	0	1	**40**	32	2	0	5	**39**	0	0	0	0	**0**	42	66	48	103	10	13	57	67	**406**
7:45 to 8:45	10	2	0	0	**12**	410	7	57	28	**502**	95	3	0	0	**98**	0	0	0	0	**0**	41	0	0	0	**41**	51	0	0	1	**52**	31	2	0	5	**38**	0	0	0	0	**0**	49	93	61	99	17	14	66	74	**473**
8:00 to 9:00	14	2	0	0	**16**	440	9	46	30	**525**	106	4	0	0	**110**	0	0	0	0	**0**	44	1	0	0	**45**	55	1	0	1	**57**	33	2	0	2	**37**	0	0	0	0	**0**	57	111	66	111	19	17	70	79	**530**
8:15 to 9:15	18	2	0	0	**20**	408	7	44	20	**479**	116	3	0	0	**119**	0	0	0	0	**0**	42	1	0	0	**43**	55	2	0	1	**58**	39	1	0	3	**43**	0	0	0	0	**0**	58	112	66	105	22	14	55	85	**517**
8:30 to 9:30	19	2	0	0	**21**	358	8	40	9	**415**	108	2	0	0	**110**	0	0	0	0	**0**	35	1	0	0	**36**	48	5	0	0	**53**	36	0	0	1	**37**	0	0	0	0	**0**	50	93	48	92	22	14	50	80	**449**
AM Totals	**41**	**4**	**0**	**0**	**45**	**937**	**23**	**126**	**56**	**1,142**	**224**	**6**	**1**	**1**	**232**	**0**	**0**	**0**	**0**	**0**	**74**	**2**	**0**	**0**	**76**	**109**	**6**	**0**	**1**	**116**	**83**	**3**	**0**	**9**	**95**	**0**	**0**	**0**	**0**	**0**	**114**	**184**	**131**	**248**	**41**	**34**	**149**	**191**	**1,092**
15:30 to 16:30	13	0	0	0	**13**	196	2	19	5	**222**	42	0	5	1	**48**	0	0	0	0	**0**	29	0	0	0	**29**	35	0	0	0	**35**	17	0	0	0	**17**	0	0	0	0	**0**	36	30	46	65	10	8	48	57	**300**
15:45 to 16:45	15	1	0	0	**16**	194	0	20	6	**220**	35	0	2	1	**38**	0	0	0	0	**0**	29	0	1	0	**30**	38	0	0	0	**38**	18	0	0	0	**18**	0	0	0	0	**0**	36	29	49	72	7	9	41	61	**304**
16:00 to 17:00	18	1	0	0	**19**	194	1	23	7	**225**	33	0	0	0	**33**	0	0	0	0	**0**	24	0	1	0	**25**	36	0	0	0	**36**	20	0	0	0	**20**	0	0	0	0	**0**	39	28	49	71	5	6	41	72	**311**
16:15 to 17:15	20	1	0	0	**21**	213	1	22	8	**244**	24	0	0	0	**24**	0	0	0	0	**0**	23	0	1	0	**24**	41	0	0	0	**41**	26	0	0	0	**26**	0	0	0	0	**0**	42	31	66	82	10	12	43	70	**356**
16:30 to 17:30	18	1	0	0	**19**	229	1	22	10	**262**	30	0	0	0	**30**	0	0	0	0	**0**	31	1	1	0	**33**	46	0	0	0	**46**	28	0	0	0	**28**	0	0	0	0	**0**	47	48	88	103	16	18	43	80	**443**
16:45 to 17:45	23	0	0	0	**23**	241	3	23	9	**276**	30	0	0	0	**30**	0	0	0	0	**0**	33	1	0	0	**34**	49	0	0	0	**49**	26	0	0	0	**26**	0	0	0	0	**0**	55	57	111	106	21	19	55	96	**520**
17:00 to 18:00	18	0	0	0	**18**	267	2	20	7	**296**	36	0	0	0	**36**	0	0	0	0	**0**	38	1	0	1	**40**	56	0	0	0	**56**	23	0	0	0	**23**	0	0	0	0	**0**	58	69	125	110	27	23	63	102	**577**
17:15 to 18:15	19	0	0	0	**19**	257	3	20	10	**290**	43	0	0	0	**43**	0	0	0	0	**0**	35	1	0	1	**37**	56	0	0	0	**56**	17	0	0	1	**18**	0	0	0	0	**0**	56	69	129	97	26	18	51	100	**546**
17:30 to 18:30	20	0	0	0	**20**	265	5	19	11	**300**	42	1	0	0	**43**	0	0	0	0	**0**	30	0	0	1	**31**	50	0	0	0	**50**	13	0	0	1	**14**	0	0	0	0	**0**	52	52	126	87	22	15	41	95	**490**
PM Totals	**51**	**1**	**0**	**0**	**52**	**690**	**8**	**60**	**26**	**784**	**114**	**1**	**5**	**1**	**121**	**0**	**0**	**0**	**0**	**0**	**90**	**1**	**1**	**1**	**93**	**131**	**0**	**0**	**0**	**131**	**58**	**0**	**0**	**1**	**59**	**0**	**0**	**0**	**0**	**0**	**135**	**130**	**260**	**255**	**48**	**41**	**132**	**232**	**1,233**

Site 2 – McLaren Street and Walker Street: 2020 Survey Data

Job No. : N6108
Client : GHD
Suburb : McLaren St
Location : 2. McLaren St / Walker St

Day/Date : Sat, 5th December 2020
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



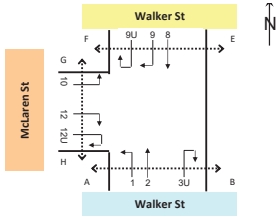
MATRIX Traffic and Transport Data

Approach	Walker St														
Direction	Direction 1 (Left Turn)					Direction 2 (Through)					Direction 3U (U Turn)				
Time Period	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total
10:30 to 11:30	96	2	0	0	**98**	85	3	0	0	**88**	1	0	0	0	**1**
10:45 to 11:45	111	2	0	0	**113**	94	2	0	0	**96**	1	0	0	0	**1**
11:00 to 12:00	113	1	0	0	**114**	102	1	0	0	**103**	0	0	0	0	**0**
11:15 to 12:15	93	1	0	0	**94**	105	1	0	0	**106**	0	0	0	0	**0**
11:30 to 12:30	94	0	0	0	**94**	99	0	0	0	**99**	1	0	0	0	**1**
11:45 to 12:45	76	0	0	1	**77**	93	0	0	0	**93**	2	0	0	0	**2**
12:00 to 13:00	76	0	0	1	**77**	88	0	0	0	**88**	3	0	0	0	**3**
12:15 to 13:15	82	0	0	1	**83**	95	0	0	0	**95**	3	0	0	0	**3**
12:30 to 13:30	74	1	0	1	**76**	98	0	0	0	**98**	2	0	0	0	**2**
Total	**264**	**3**	**0**	**1**	**268**	**282**	**3**	**0**	**0**	**285**	**4**	**0**	**0**	**0**	**4**

Approach	Walker St															McLaren St												Crossing Pedestrians										
Direction		Direction 8 (Through)					Direction 9 (Right Turn)					Direction 9U (U Turn)					Direction 10 (Left Turn)						Direction 12 (Right Turn)					Direction 12U (U Turn)										
Time Period		Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total		Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	B to A	A to B		F to E	E to F	H to G	G to H	Total
10:30 to 11:30		81	1	0	0	**82**	17	0	0	0	**17**	1	0	0	0	**1**	20	0	0	0	**20**		47	1	0	0	**48**	0	0	0	0	**0**	7	9		4	3	33	17	**73**
10:45 to 11:45		79	0	0	0	**79**	13	0	0	0	**13**	1	0	0	0	**1**	23	0	0	0	**23**		49	1	0	0	**50**	0	0	0	0	**0**	8	7		3	3	26	22	**69**
11:00 to 12:00		69	0	0	0	**69**	12	0	0	0	**12**	1	0	0	0	**1**	21	1	0	0	**22**		51	0	0	0	**51**	0	0	0	0	**0**	8	6		2	3	29	18	**66**
11:15 to 12:15		72	0	0	0	**72**	9	0	0	0	**9**	0	0	0	0	**0**	23	1	0	0	**24**		48	0	0	0	**48**	0	0	0	0	**0**	7	4		1	2	19	20	**53**
11:30 to 12:30		79	1	0	0	**80**	8	0	0	0	**8**	0	0	0	0	**0**	18	1	0	0	**19**		53	0	0	1	**54**	0	0	0	0	**0**	8	8		2	2	13	21	**54**
11:45 to 12:45		80	1	0	0	**81**	10	0	0	0	**10**	0	0	0	0	**0**	18	1	0	0	**19**		53	2	0	2	**57**	0	0	0	0	**0**	7	5		2	2	14	15	**45**
12:00 to 13:00		72	1	0	3	**76**	9	0	0	2	**11**	0	0	0	0	**0**	17	0	0	0	**17**		59	2	0	2	**63**	0	0	0	0	**0**	7	8		1	1	12	18	**47**
12:15 to 13:15		74	1	0	3	**78**	10	0	0	2	**12**	0	0	0	0	**0**	16	0	0	0	**16**		68	3	0	2	**73**	0	0	0	0	**0**	6	8		1	1	13	14	**43**
12:30 to 13:30		66	0	0	3	**69**	11	0	0	2	**13**	0	0	0	0	**0**	14	0	0	0	**14**		68	3	0	1	**72**	0	0	0	0	**0**	4	4		0	0	10	13	**31**
Total		**226**	**2**	**0**	**3**	**231**	**36**	**0**	**0**	**2**	**38**	**1**	**0**	**0**	**0**	**1**	**52**	**1**	**0**	**0**	**53**		**168**	**4**	**0**	**2**	**174**	**0**	**0**	**0**	**0**	**0**	**19**	**21**		**6**	**5**	**56**	**51**	**158**

Job No. : N6108
Client : GHD
Suburb : McLaren St
Location : 2. McLaren St / Walker St

Day/Date : Tue, 8th December 2020
Weather : Fine
Description : Classified Intersection Count
: Hourly Summary



MATRIX Traffic and Transport Data

Approach	Walker St															
Direction	Direction 1 (Left Turn)					Direction 2 (Through)					Direction 3U (U Turn)					
Time Period	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	
6:30 to 7:30	56	2	0	0	**58**	52	1	0	1	**54**	1	0	0	0	**1**	
6:45 to 7:45	69	2	0	0	**71**	57	0	0	0	**57**	1	0	0	0	**1**	
7:00 to 8:00	74	1	0	0	**75**	65	1	0	0	**66**	2	0	0	0	**2**	
7:15 to 8:15	76	1	0	0	**77**	66	1	0	1	**68**	3	0	0	0	**3**	
7:30 to 8:30	98	1	0	0	**99**	68	1	0	1	**70**	4	0	0	0	**4**	
7:45 to 8:45	98	2	0	1	**101**	68	1	0	1	**70**	5	0	0	0	**5**	
8:00 to 9:00	113	2	0	2	**117**	69	0	0	1	**70**	3	0	0	0	**3**	
8:15 to 9:15	137	2	0	2	**141**	73	0	0	0	**73**	2	0	0	0	**2**	
8:30 to 9:30	122	3	0	2	**127**	70	0	0	0	**70**	2	0	0	0	**2**	
AM Totals	**276**	**6**	**0**	**2**	**284**	**190**	**2**	**0**	**2**	**194**	**7**	**0**	**0**	**0**	**7**	
15:30 to 16:30	111	3	0	2	**116**	88	1	0	5	**94**	2	0	0	0	**2**	
15:45 to 16:45	113	2	0	2	**117**	118	1	0	7	**126**	2	0	0	0	**2**	
16:00 to 17:00	123	1	0	2	**126**	135	0	0	10	**145**	2	0	0	0	**2**	
16:15 to 17:15	136	1	0	1	**138**	152	0	0	10	**162**	0	0	0	0	**0**	
16:30 to 17:30	154	1	0	1	**156**	176	1	0	9	**186**	0	0	0	0	**0**	
16:45 to 17:45	161	1	0	1	**163**	183	1	0	7	**191**	1	0	0	0	**1**	
17:00 to 18:00	157	2	0	1	**160**	203	1	0	7	**211**	2	0	0	0	**2**	
17:15 to 18:15	149	2	0	1	**152**	201	1	0	8	**210**	3	0	0	0	**3**	
17:30 to 18:30	132	1	0	0	**133**	180	0	0	9	**189**	5	0	0	0	**5**	
PM Totals	**397**	**5**	**0**	**3**	**405**	**444**	**2**	**0**	**23**	**469**	**7**	**0**	**0**	**0**	**7**	

Approach	Walker St															McLaren St										Crossing Pedestrians									
Direction	Direction 8 (Through)					Direction 9 (Right Turn)					Direction 9U (U Turn)					Direction 10 (Left Turn)					Direction 12 (Right Turn)					Direction 12U (U Turn)									
Time Period	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	Lights	Heavies	Buses	Cyclists	Total	B to A	A to B		F to E	E to F	H to G	G to H	Total
6:30 to 7:30	64	0	0	9	**73**	5	0	0	0	**5**	0	0	0	0	**0**	11	0	0	0	**11**	34	1	0	0	**35**	0	0	0	0	**0**	4	5		1	1	28	15	**54**
6:45 to 7:45	68	0	1	12	**81**	8	0	0	0	**8**	0	0	0	0	**0**	11	0	0	0	**11**	50	1	0	0	**51**	0	0	0	0	**0**	3	8		1	1	35	14	**62**
7:00 to 8:00	75	0	1	11	**87**	6	0	0	0	**6**	0	0	0	0	**0**	9	0	0	0	**9**	53	1	0	0	**54**	0	0	0	0	**0**	1	15		1	1	41	22	**81**
7:15 to 8:15	80	0	1	9	**90**	7	0	0	0	**7**	0	0	0	0	**0**	8	0	0	0	**8**	60	1	0	0	**61**	0	0	0	0	**0**	5	25		0	3	57	21	**111**
7:30 to 8:30	84	0	1	9	**94**	9	0	0	0	**9**	1	0	0	0	**1**	14	0	0	0	**14**	67	0	0	0	**67**	0	0	0	0	**0**	4	35		0	2	68	22	**131**
7:45 to 8:45	101	0	0	7	**108**	6	0	0	0	**6**	1	0	0	0	**1**	17	1	0	0	**18**	79	0	0	0	**79**	0	0	0	0	**0**	8	37		0	2	85	23	**155**
8:00 to 9:00	115	1	0	14	**130**	7	0	0	0	**7**	1	0	0	0	**1**	19	1	0	0	**20**	84	1	0	0	**85**	0	0	0	0	**0**	13	35		0	2	85	22	**157**
8:15 to 9:15	111	3	0	14	**128**	8	0	0	0	**8**	1	0	0	0	**1**	17	1	0	0	**18**	82	1	0	0	**83**	0	0	0	0	**0**	13	28		0	0	72	15	**128**
8:30 to 9:30	113	3	0	11	**127**	8	0	0	0	**8**	0	0	0	0	**0**	13	1	0	0	**14**	67	2	0	0	**69**	0	0	0	0	**0**	13	19		1	0	64	25	**122**
AM Totals	**261**	**3**	**1**	**29**	**294**	**22**	**0**	**0**	**0**	**22**	**1**	**0**	**0**	**0**	**1**	**38**	**1**	**0**	**0**	**39**	**168**	**3**	**0**	**0**	**171**	**0**	**0**	**0**	**0**	**0**	**21**	**59**		**2**	**3**	**160**	**62**	**307**
15:30 to 16:30	104	1	0	1	**106**	12	0	0	0	**12**	0	0	0	0	**0**	8	0	4	0	**12**	49	1	0	0	**50**	0	0	0	0	**0**	5	6		3	1	36	41	**92**
15:45 to 16:45	100	1	0	2	**103**	12	0	0	0	**12**	0	0	0	0	**0**	12	0	0	0	**12**	50	1	0	0	**51**	0	0	0	0	**0**	6	3		1	1	23	40	**74**
16:00 to 17:00	100	1	0	2	**103**	8	0	0	0	**8**	0	0	0	0	**0**	10	0	0	0	**10**	58	1	0	0	**59**	0	0	0	0	**0**	6	3		1	0	24	33	**67**
16:15 to 17:15	92	1	0	3	**96**	10	0	0	0	**10**	0	0	0	0	**0**	11	0	0	0	**11**	70	1	0	0	**71**	0	0	0	0	**0**	5	4		0	2	34	63	**108**
16:30 to 17:30	108	1	0	3	**112**	13	0	0	0	**13**	1	0	0	0	**1**	14	0	0	0	**14**	80	0	0	0	**80**	0	0	0	0	**0**	5	3		0	3	32	72	**115**
16:45 to 17:45	115	1	0	3	**119**	12	0	0	0	**12**	1	0	0	0	**1**	11	0	0	0	**11**	90	0	0	0	**90**	0	0	0	0	**0**	7	6		0	3	42	82	**140**
17:00 to 18:00	117	0	0	3	**120**	11	0	0	0	**11**	1	0	0	0	**1**	14	0	0	0	**14**	86	0	0	1	**87**	0	0	0	0	**0**	9	10		0	3	45	94	**161**
17:15 to 18:15	124	0	0	2	**126**	8	0	0	0	**8**	2	0	0	0	**2**	19	0	0	0	**19**	76	0	0	1	**77**	0	0	0	0	**0**	11	8		0	2	32	64	**117**
17:30 to 18:30	118	1	0	2	**121**	7	0	0	0	**7**	1	0	0	0	**1**	18	0	0	0	**18**	71	0	0	1	**72**	0	0	0	0	**0**	13	7		0	4	35	57	**116**
PM Totals	**330**	**3**	**0**	**6**	**339**	**32**	**0**	**0**	**0**	**32**	**2**	**0**	**0**	**0**	**2**	**40**	**0**	**4**	**0**	**44**	**200**	**1**	**0**	**1**	**202**	**0**	**0**	**0**	**0**	**0**	**23**	**16**		**3**	**8**	**103**	**170**	**323**

Appendix B – SIDRA Results

2020 Existing SIDRA results

MOVEMENT SUMMARY

Site: 1 [2020_Base_AM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2020_Base_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2020_Base_AM Peak_Miller Street and McLaren Street
Site Category: 2020_Base_AM
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 80 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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: Miller Street (South)														
1	L2	103	0.0	103	0.0	0.167	15.8	LOS B	2.8	23.5	0.58	0.63	0.58	29.5
2	T1	304	13.8	304	13.8	0.341	14.0	LOS B	7.0	50.9	0.66	0.58	0.66	28.9
3	R2	11	10.0	11	10.0	0.341	17.6	LOS B	7.0	50.9	0.67	0.58	0.67	23.1
Approach		418	10.3	418	10.3	0.341	14.5	LOS B	7.0	50.9	0.64	0.59	0.64	29.0
East: McLaren Street (East)														
4	L2	45	2.3	45	2.3	0.211	38.9	LOS D	1.7	11.9	0.93	0.73	0.93	18.7
5	T1	73	4.3	73	4.3	* 0.209	29.5	LOS C	2.4	17.6	0.87	0.68	0.87	22.3
Approach		118	3.6	118	3.6	0.211	33.1	LOS C	2.4	17.6	0.90	0.70	0.90	20.8
North: Miller Street (North)														
7	L2	17	12.5	17	12.5	* 0.454	18.2	LOS B	10.0	79.1	0.70	0.62	0.70	22.8
8	T1	521	11.1	521	11.1	0.454	15.5	LOS B	10.0	79.1	0.72	0.64	0.72	28.0
9	R2	116	3.6	116	3.6	0.454	21.4	LOS C	7.5	53.4	0.76	0.70	0.76	27.1
Approach		654	9.8	654	9.8	0.454	16.6	LOS B	10.0	79.1	0.73	0.65	0.73	27.7
West: McLaren Street (West)														
10	L2	47	2.2	47	2.2	0.076	23.3	LOS C	1.3	9.0	0.71	0.67	0.71	25.7
11	T1	59	1.8	59	1.8	0.212	22.8	LOS C	2.9	20.7	0.81	0.66	0.81	19.2
12	R2	37	5.7	37	5.7	* 0.212	26.3	LOS C	2.9	20.7	0.81	0.66	0.81	25.1
Approach		143	2.9	143	2.9	0.212	23.9	LOS C	2.9	20.7	0.78	0.66	0.78	23.3
All Vehicles		1333	8.7	1333	8.7	0.454	18.2	LOS B	10.0	79.1	0.72	0.64	0.72	26.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	177	34.5	LOS D	0.4	0.4	0.93	0.93	199.7	214.8	1.08
East: McLaren Street (East)											
P2	Full	186	34.5	LOS D	0.4	0.4	0.93	0.93	199.7	214.8	1.08
North: Miller Street (North)											

P3 Full	53	34.3	LOS D	0.1	0.1	0.93	0.93	199.5	214.8	1.08
West: McLaren Street (West)										
P4 Full	157	34.5	LOS D	0.3	0.3	0.93	0.93	199.7	214.8	1.08
All Pedestrians	573	34.5	LOS D	0.4	0.4	0.93	0.93	199.7	214.8	1.08

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2020_Base_PM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2020_Base_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Base_PM Peak_Miller Street and McLaren Street
Site Category: 2020_Base_PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	116	1.8	116	1.8	0.395	18.8	LOS B	3.3	26.2	0.77	0.70	0.77	28.3
2	T1	382	9.6	382	9.6	0.395	15.4	LOS B	3.5	24.9	0.78	0.68	0.78	28.0
3	R2	13	0.0	13	0.0	0.395	18.9	LOS B	3.5	24.9	0.79	0.67	0.79	22.2
Approach		511	7.6	511	7.6	0.395	16.2	LOS B	3.5	26.2	0.78	0.68	0.78	28.0
East: McLaren Street (East)														
4	L2	55	3.8	55	3.8	0.242	30.5	LOS C	0.9	6.8	0.93	0.73	0.93	21.3
5	T1	106	0.0	106	0.0	* 0.255	20.9	LOS C	1.6	11.3	0.85	0.67	0.85	25.6
Approach		161	1.3	161	1.3	0.255	24.2	LOS C	1.6	11.3	0.88	0.69	0.88	24.0
North: Miller Street (North)														
7	L2	19	0.0	19	0.0	0.185	18.4	LOS B	1.4	11.2	0.73	0.61	0.73	22.2
8	T1	304	7.6	304	7.6	* 0.431	16.2	LOS B	3.6	25.2	0.79	0.67	0.79	27.7
9	R2	38	0.0	38	0.0	0.431	19.9	LOS B	3.6	25.2	0.81	0.70	0.81	28.3
Approach		361	6.4	361	6.4	0.431	16.7	LOS B	3.6	25.2	0.79	0.67	0.79	27.6
West: McLaren Street (West)														
10	L2	41	2.6	41	2.6	0.056	15.3	LOS B	0.5	3.2	0.64	0.65	0.64	29.2
11	T1	59	0.0	59	0.0	0.144	13.7	LOS B	1.0	7.1	0.73	0.59	0.73	24.1
12	R2	24	0.0	24	0.0	* 0.144	17.1	LOS B	1.0	7.1	0.73	0.59	0.73	29.4
Approach		124	0.8	124	0.8	0.144	14.9	LOS B	1.0	7.1	0.70	0.61	0.70	27.3
All Vehicles		1157	5.6	1157	5.6	0.431	17.3	LOS B	3.6	26.2	0.79	0.67	0.79	27.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	134	24.4	LOS C	0.2	0.2	0.91	0.91	189.7	214.8	1.13
East: McLaren Street (East)											
P2	Full	247	24.6	LOS C	0.4	0.4	0.91	0.91	189.8	214.8	1.13
North: Miller Street (North)											

P3 Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	189.6	214.8	1.13
West: McLaren Street (West)										
P4 Full	174	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
All Pedestrians	607	24.5	LOS C	0.4	0.4	0.91	0.91	189.7	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2020_Base_Saturday Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2020_Base_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Base_Saturday Peak_Miller Street and McLaren Street
Site Category: 2020_Base_Saturday Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	87	2.4	87	2.4	0.124	14.6	LOS B	1.0	7.6	0.63	0.66	0.63	29.8
2	T1	262	4.4	262	4.4	0.359	12.4	LOS B	3.4	23.9	0.71	0.61	0.71	29.8
3	R2	19	0.0	19	0.0	0.359	15.9	LOS B	3.4	23.9	0.71	0.61	0.71	24.2
Approach		368	3.7	368	3.7	0.359	13.1	LOS B	3.4	23.9	0.69	0.62	0.69	29.7
East: McLaren Street (East)														
4	L2	54	5.9	54	5.9	0.482	36.4	LOS D	1.0	7.7	1.00	0.75	1.03	19.5
5	T1	74	0.0	74	0.0	* 0.247	24.6	LOS C	1.2	8.4	0.91	0.70	0.91	24.0
Approach		127	2.5	127	2.5	0.482	29.6	LOS C	1.2	8.4	0.95	0.72	0.96	22.0
North: Miller Street (North)														
7	L2	27	3.8	27	3.8	0.164	16.1	LOS B	1.4	10.3	0.68	0.58	0.68	23.7
8	T1	269	3.9	269	3.9	* 0.381	13.7	LOS B	3.2	22.5	0.73	0.63	0.73	28.9
9	R2	66	1.6	66	1.6	0.381	17.5	LOS B	3.2	22.5	0.75	0.66	0.75	29.3
Approach		363	3.5	363	3.5	0.381	14.5	LOS B	3.2	22.5	0.73	0.64	0.73	28.7
West: McLaren Street (West)														
10	L2	58	1.8	58	1.8	0.099	19.6	LOS B	0.7	5.3	0.74	0.68	0.74	27.3
11	T1	39	0.0	39	0.0	0.154	18.1	LOS B	0.9	6.5	0.81	0.63	0.81	21.4
12	R2	25	4.2	25	4.2	* 0.154	21.5	LOS C	0.9	6.5	0.81	0.63	0.81	27.1
Approach		122	1.7	122	1.7	0.154	19.5	LOS B	0.9	6.5	0.78	0.66	0.78	25.8
All Vehicles		981	3.2	981	3.2	0.482	16.6	LOS B	3.4	23.9	0.75	0.65	0.75	27.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	81	24.4	LOS C	0.1	0.1	0.90	0.90	189.6	214.8	1.13
East: McLaren Street (East)											
P2	Full	205	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
North: Miller Street (North)											

P3 Full	149	24.5	LOS C	0.2	0.2	0.91	0.91	189.7	214.8	1.13
West: McLaren Street (West)										
P4 Full	209	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
All Pedestrians	645	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [2020_Base_AM Peak_McLaren Street and Walker Street - Import (Site Folder: General)]

Network: N101 [2020_Base_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2020_Base_AM Peak_McLaren Street and Walker Street
Site Category: AM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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														
1	L2	121	1.7	121	1.7	0.105	3.4	LOS A	0.0	0.0	0.00	0.29	0.00	36.1
2	T1	73	0.0	73	0.0	0.105	0.0	LOS A	0.0	0.0	0.00	0.29	0.00	37.9
Approach		194	1.1	194	1.1	0.105	2.2	NA	0.0	0.0	0.00	0.29	0.00	37.1
North: Walker Street														
8	T1	122	0.9	122	0.9	0.068	0.1	LOS A	0.1	0.4	0.04	0.03	0.04	39.6
9	R2	7	0.0	7	0.0	0.068	4.1	LOS A	0.1	0.4	0.04	0.03	0.04	39.3
Approach		129	0.8	129	0.8	0.068	0.3	NA	0.1	0.4	0.04	0.03	0.04	39.6
West: McLaren Street														
10	L2	21	5.0	21	5.0	0.016	7.1	LOS A	0.1	0.4	0.13	0.92	0.13	33.8
12	R2	89	1.2	89	1.2	0.115	8.2	LOS A	0.4	2.5	0.29	0.92	0.29	32.7
Approach		111	1.9	111	1.9	0.115	8.0	LOS A	0.4	2.5	0.26	0.92	0.26	32.9
All Vehicles		434	1.2	434	1.2	0.115	3.1	NA	0.4	2.5	0.08	0.37	0.08	36.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2020_Base_PM Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2020_Base_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Base_PM Peak_McLaren Street and Walker Street
Site Category: PM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	167	1.3	167	1.3	0.205	3.5	LOS A	0.0	0.0	0.00	0.20	0.00	37.2
2	T1	215	0.5	215	0.5	0.205	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	38.5
Approach		382	0.8	382	0.8	0.205	1.5	NA	0.0	0.0	0.00	0.20	0.00	38.1
North: Walker Street														
8	T1	123	0.0	123	0.0	0.072	0.2	LOS A	0.0	0.3	0.10	0.04	0.10	39.3
9	R2	12	0.0	12	0.0	0.072	4.9	LOS A	0.0	0.3	0.10	0.04	0.10	38.6
Approach		135	0.0	135	0.0	0.072	0.6	NA	0.0	0.3	0.10	0.04	0.10	39.2
West: McLaren Street														
10	L2	15	0.0	15	0.0	0.012	7.5	LOS A	0.0	0.1	0.25	0.87	0.25	33.6
12	R2	91	0.0	91	0.0	0.141	9.5	LOS A	0.2	1.2	0.41	0.95	0.41	31.8
Approach		105	0.0	105	0.0	0.141	9.3	LOS A	0.2	1.2	0.39	0.94	0.39	32.1
All Vehicles		622	0.5	622	0.5	0.205	2.6	NA	0.2	1.2	0.09	0.29	0.09	37.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2020_Base_Saturday Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2020_Base_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Base_Saturday Peak_McLaren Street and Walker Street
Site Category: Base Saturday Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	103	2.0	103	2.0	0.107	3.5	LOS A	0.0	0.0	0.00	0.24	0.00	36.6
2	T1	93	3.4	93	3.4	0.107	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	38.2
Approach		196	2.7	196	2.7	0.107	1.8	NA	0.0	0.0	0.00	0.24	0.00	37.6
North: Walker Street														
8	T1	86	1.2	86	1.2	0.057	0.2	LOS A	0.1	0.4	0.12	0.08	0.12	38.9
9	R2	18	0.0	18	0.0	0.057	4.1	LOS A	0.1	0.4	0.12	0.08	0.12	37.9
Approach		104	1.0	104	1.0	0.057	0.9	NA	0.1	0.4	0.12	0.08	0.12	38.8
West: McLaren Street														
10	L2	21	0.0	21	0.0	0.016	7.0	LOS A	0.0	0.2	0.15	0.90	0.15	33.8
12	R2	51	2.1	51	2.1	0.064	8.0	LOS A	0.1	0.5	0.26	0.92	0.26	32.8
Approach		72	1.5	72	1.5	0.064	7.7	LOS A	0.1	0.5	0.23	0.91	0.23	33.1
All Vehicles		372	2.0	372	2.0	0.107	2.7	NA	0.1	0.5	0.08	0.33	0.08	36.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2020_Base_Saturday Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2020_Base_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Base_Saturday Peak_McLaren Street and Walker Street
Site Category: Base Saturday Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	103	2.0	103	2.0	0.107	3.5	LOS A	0.0	0.0	0.00	0.24	0.00	36.6
2	T1	93	3.4	93	3.4	0.107	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	38.2
Approach		196	2.7	196	2.7	0.107	1.8	NA	0.0	0.0	0.00	0.24	0.00	37.6
North: Walker Street														
8	T1	86	1.2	86	1.2	0.057	0.2	LOS A	0.1	0.4	0.12	0.08	0.12	38.9
9	R2	18	0.0	18	0.0	0.057	4.1	LOS A	0.1	0.4	0.12	0.08	0.12	37.9
Approach		104	1.0	104	1.0	0.057	0.9	NA	0.1	0.4	0.12	0.08	0.12	38.8
West: McLaren Street														
10	L2	21	0.0	21	0.0	0.016	7.0	LOS A	0.0	0.2	0.15	0.90	0.15	33.8
12	R2	51	2.1	51	2.1	0.064	8.0	LOS A	0.1	0.5	0.26	0.92	0.26	32.8
Approach		72	1.5	72	1.5	0.064	7.7	LOS A	0.1	0.5	0.23	0.91	0.23	33.1
All Vehicles		372	2.0	372	2.0	0.107	2.7	NA	0.1	0.5	0.08	0.33	0.08	36.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

2020 Post-development SIDRA results

MOVEMENT SUMMARY

Site: 1 [2020_Post Dev_AM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2020_Post Dev_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2020_Post Dev__AM Peak_Miller Street and McLaren Street
Site Category: 2020_Post Dev__AM
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 70 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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: Miller Street (South)														
1	L2	103	0.0	103	0.0	0.190	17.0	LOS B	2.8	23.2	0.65	0.65	0.65	28.9
2	T1	304	13.8	304	13.8	0.410	15.6	LOS B	7.1	51.7	0.74	0.65	0.74	28.1
3	R2	16	6.7	16	6.7	0.410	19.2	LOS B	7.1	51.7	0.75	0.65	0.75	22.0
Approach		423	10.2	423	10.2	0.410	16.1	LOS B	7.1	51.7	0.72	0.65	0.72	28.1
East: McLaren Street (East)														
4	L2	56	1.9	56	1.9	0.227	33.4	LOS C	1.8	12.6	0.92	0.73	0.92	20.3
5	T1	91	3.5	91	3.5	* 0.226	24.3	LOS C	2.6	18.6	0.85	0.67	0.85	24.1
Approach		146	2.9	146	2.9	0.227	27.8	LOS C	2.6	18.6	0.88	0.69	0.88	22.6
North: Miller Street (North)														
7	L2	25	8.3	25	8.3	* 0.532	19.8	LOS B	10.2	80.1	0.79	0.69	0.79	21.7
8	T1	521	11.1	521	11.1	0.532	17.2	LOS B	10.2	80.1	0.81	0.71	0.81	27.1
9	R2	116	3.6	116	3.6	0.532	23.3	LOS C	7.4	52.9	0.84	0.75	0.84	26.3
Approach		662	9.7	662	9.7	0.532	18.3	LOS B	10.2	80.1	0.81	0.72	0.81	26.8
West: McLaren Street (West)														
10	L2	47	2.2	47	2.2	0.069	19.2	LOS B	1.0	7.4	0.67	0.66	0.67	27.5
11	T1	88	1.2	88	1.2	0.240	18.5	LOS B	3.2	22.8	0.79	0.64	0.79	21.3
12	R2	37	5.7	37	5.7	* 0.240	22.0	LOS C	3.2	22.8	0.79	0.64	0.79	27.0
Approach		173	2.4	173	2.4	0.240	19.5	LOS B	3.2	22.8	0.76	0.65	0.76	24.7
All Vehicles		1404	8.2	1404	8.2	0.532	18.8	LOS B	10.2	80.1	0.78	0.69	0.78	26.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	177	29.5	LOS C	0.3	0.3	0.92	0.92	194.7	214.8	1.10
East: McLaren Street (East)											
P2	Full	186	29.5	LOS C	0.3	0.3	0.92	0.92	194.7	214.8	1.10
North: Miller Street (North)											

P3 Full	53	29.3	LOS C	0.1	0.1	0.92	0.92	194.6	214.8	1.10
West: McLaren Street (West)										
P4 Full	157	29.4	LOS C	0.3	0.3	0.92	0.92	194.7	214.8	1.10
All Pedestrians	573	29.5	LOS C	0.3	0.3	0.92	0.92	194.7	214.8	1.10

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2020_Post Dev_PM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2020_Post Dev_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Post Dev_PM Peak_Miller Street and McLaren Street
Site Category: 2020_Post Dev_PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	116	1.8	116	1.8	0.398	18.9	LOS B	3.3	26.4	0.77	0.70	0.77	28.3
2	T1	382	9.6	382	9.6	0.398	15.4	LOS B	3.6	24.9	0.78	0.68	0.78	27.9
3	R2	15	0.0	15	0.0	0.398	18.9	LOS B	3.6	24.9	0.79	0.67	0.79	22.1
Approach		513	7.6	513	7.6	0.398	16.3	LOS B	3.6	26.4	0.78	0.68	0.78	27.9
East: McLaren Street (East)														
4	L2	71	3.0	71	3.0	0.310	30.9	LOS C	1.2	8.8	0.94	0.75	0.94	21.2
5	T1	137	0.0	137	0.0	* 0.328	21.3	LOS C	2.1	14.8	0.87	0.70	0.87	25.4
Approach		207	1.0	207	1.0	0.328	24.6	LOS C	2.1	14.8	0.90	0.72	0.90	23.9
North: Miller Street (North)														
7	L2	22	0.0	22	0.0	0.188	19.2	LOS B	1.4	11.4	0.75	0.62	0.75	21.6
8	T1	304	7.6	304	7.6	* 0.437	16.4	LOS B	3.6	25.6	0.80	0.68	0.80	27.6
9	R2	38	0.0	38	0.0	0.437	20.0	LOS B	3.6	25.6	0.81	0.70	0.81	28.3
Approach		364	6.4	364	6.4	0.437	16.9	LOS B	3.6	25.6	0.79	0.67	0.79	27.4
West: McLaren Street (West)														
10	L2	41	2.6	41	2.6	0.056	15.3	LOS B	0.5	3.2	0.64	0.65	0.64	29.2
11	T1	69	0.0	69	0.0	0.162	14.5	LOS B	1.2	8.3	0.75	0.60	0.75	23.6
12	R2	24	0.0	24	0.0	* 0.162	17.9	LOS B	1.2	8.3	0.75	0.60	0.75	29.0
Approach		135	0.8	135	0.8	0.162	15.4	LOS B	1.2	8.3	0.72	0.61	0.72	26.8
All Vehicles		1219	5.4	1219	5.4	0.437	17.8	LOS B	3.6	26.4	0.80	0.68	0.80	26.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	134	24.4	LOS C	0.2	0.2	0.91	0.91	189.7	214.8	1.13
East: McLaren Street (East)											
P2	Full	247	24.6	LOS C	0.4	0.4	0.91	0.91	189.8	214.8	1.13
North: Miller Street (North)											

P3 Full	53	24.4	LOS C	0.1	0.1	0.90	0.90	189.6	214.8	1.13
West: McLaren Street (West)										
P4 Full	174	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
All Pedestrians	607	24.5	LOS C	0.4	0.4	0.91	0.91	189.7	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2020_Post Dev_Saturday Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2020_Post Dev_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Post Dev_Saturday Peak_Miller Street and McLaren Street
Site Category: 2020_Post Dev_Saturday Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	87	2.4	87	2.4	0.124	14.6	LOS B	1.0	7.6	0.63	0.66	0.63	29.8
2	T1	262	4.4	262	4.4	0.369	12.5	LOS B	3.4	24.5	0.71	0.62	0.71	29.8
3	R2	24	0.0	24	0.0	0.369	16.0	LOS B	3.4	24.5	0.72	0.62	0.72	24.1
Approach		374	3.7	374	3.7	0.369	13.2	LOS B	3.4	24.5	0.69	0.63	0.69	29.5
East: McLaren Street (East)														
4	L2	64	4.9	64	4.9	0.573	37.0	LOS D	1.3	9.2	1.00	0.80	1.12	19.3
5	T1	88	0.0	88	0.0	* 0.296	24.8	LOS C	1.5	10.2	0.92	0.71	0.92	23.9
Approach		153	2.1	153	2.1	0.573	29.9	LOS C	1.5	10.2	0.95	0.75	1.00	21.9
North: Miller Street (North)														
7	L2	36	2.9	36	2.9	0.168	16.2	LOS B	1.4	10.4	0.68	0.59	0.68	23.5
8	T1	269	3.9	269	3.9	* 0.392	13.8	LOS B	3.3	23.4	0.73	0.64	0.73	28.8
9	R2	66	1.6	66	1.6	0.392	17.5	LOS B	3.3	23.4	0.76	0.67	0.76	29.3
Approach		372	3.4	372	3.4	0.392	14.7	LOS B	3.3	23.4	0.73	0.64	0.73	28.6
West: McLaren Street (West)														
10	L2	58	1.8	58	1.8	0.099	19.6	LOS B	0.7	5.3	0.74	0.68	0.74	27.3
11	T1	51	0.0	51	0.0	0.177	18.3	LOS B	1.1	7.8	0.82	0.64	0.82	21.4
12	R2	25	4.2	25	4.2	* 0.177	21.7	LOS C	1.1	7.8	0.82	0.64	0.82	27.1
Approach		134	1.6	134	1.6	0.177	19.5	LOS B	1.1	7.8	0.78	0.66	0.78	25.5
All Vehicles		1032	3.1	1032	3.1	0.573	17.0	LOS B	3.4	24.5	0.76	0.66	0.76	27.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	81	24.4	LOS C	0.1	0.1	0.90	0.90	189.6	214.8	1.13
East: McLaren Street (East)											
P2	Full	205	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
North: Miller Street (North)											

P3 Full	149	24.5	LOS C	0.2	0.2	0.91	0.91	189.7	214.8	1.13
West: McLaren Street (West)										
P4 Full	209	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
All Pedestrians	645	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [2020_Post Dev_AM Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2020_Post Dev_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2020_Post Dev_AM Peak_McLaren Street and Walker Street
Site Category: AM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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														
1	L2	162	1.3	162	1.3	0.127	3.4	LOS A	0.0	0.0	0.00	0.32	0.00	35.7
2	T1	73	0.0	73	0.0	0.127	0.0	LOS A	0.0	0.0	0.00	0.32	0.00	37.7
Approach		235	0.9	235	0.9	0.127	2.4	NA	0.0	0.0	0.00	0.32	0.00	36.6
North: Walker Street														
8	T1	122	0.9	122	0.9	0.070	0.1	LOS A	0.1	0.6	0.06	0.04	0.06	39.5
9	R2	9	0.0	9	0.0	0.070	4.3	LOS A	0.1	0.6	0.06	0.04	0.06	39.0
Approach		132	0.8	132	0.8	0.070	0.4	NA	0.1	0.6	0.06	0.04	0.06	39.5
West: McLaren Street														
10	L2	26	4.0	26	4.0	0.020	7.1	LOS A	0.1	0.5	0.13	0.92	0.13	33.8
12	R2	113	0.9	113	0.9	0.148	8.4	LOS A	0.5	3.2	0.30	0.93	0.30	32.5
Approach		139	1.5	139	1.5	0.148	8.1	LOS A	0.5	3.2	0.27	0.93	0.27	32.8
All Vehicles		505	1.0	505	1.0	0.148	3.4	NA	0.5	3.2	0.09	0.41	0.09	36.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2020_Post Dev_PM Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2020_Post Dev_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Post Dev_PM Peak_McLaren Street and Walker Street
Site Category: PM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	182	1.2	182	1.2	0.213	3.5	LOS A	0.0	0.0	0.00	0.21	0.00	37.0
2	T1	215	0.5	215	0.5	0.213	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	38.4
Approach		397	0.8	397	0.8	0.213	1.6	NA	0.0	0.0	0.00	0.21	0.00	38.0
North: Walker Street														
8	T1	123	0.0	123	0.0	0.073	0.2	LOS A	0.1	0.4	0.11	0.05	0.11	39.2
9	R2	13	0.0	13	0.0	0.073	5.0	LOS A	0.1	0.4	0.11	0.05	0.11	38.5
Approach		136	0.0	136	0.0	0.073	0.7	NA	0.1	0.4	0.11	0.05	0.11	39.2
West: McLaren Street														
10	L2	21	0.0	21	0.0	0.018	7.5	LOS A	0.0	0.2	0.26	0.86	0.26	33.6
12	R2	131	0.0	131	0.0	0.205	9.8	LOS A	0.3	1.9	0.44	0.96	0.44	31.7
Approach		152	0.0	152	0.0	0.205	9.5	LOS A	0.3	1.9	0.41	0.95	0.41	31.9
All Vehicles		684	0.5	684	0.5	0.213	3.2	NA	0.3	1.9	0.11	0.34	0.11	36.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2020_Post Dev_Saturday Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2020_Post Dev_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2020_Post Dev__Saturday Peak_McLaren Street and Walker Street
Site Category: 2020_Post Dev_ Saturday Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	125	1.7	125	1.7	0.119	3.5	LOS A	0.0	0.0	0.00	0.27	0.00	36.3
2	T1	93	3.4	93	3.4	0.119	0.0	LOS A	0.0	0.0	0.00	0.27	0.00	38.0
Approach		218	2.4	218	2.4	0.119	2.0	NA	0.0	0.0	0.00	0.27	0.00	37.3
North: Walker Street														
8	T1	86	1.2	86	1.2	0.060	0.2	LOS A	0.1	0.5	0.15	0.10	0.15	38.6
9	R2	22	0.0	22	0.0	0.060	4.2	LOS A	0.1	0.5	0.15	0.10	0.15	37.5
Approach		108	1.0	108	1.0	0.060	1.0	NA	0.1	0.5	0.15	0.10	0.15	38.5
West: McLaren Street														
10	L2	28	0.0	28	0.0	0.021	7.0	LOS A	0.0	0.2	0.15	0.90	0.15	33.8
12	R2	68	1.5	68	1.5	0.088	8.2	LOS A	0.1	0.7	0.27	0.92	0.27	32.7
Approach		97	1.1	97	1.1	0.088	7.8	LOS A	0.1	0.7	0.24	0.92	0.24	33.0
All Vehicles		423	1.7	423	1.7	0.119	3.1	NA	0.1	0.7	0.09	0.37	0.09	36.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

2030 “No Build” SIDRA results

MOVEMENT SUMMARY

Site: 1 [2030_Future No Build_AM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2030_Future No Build_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2030_Future No Build_Base_AM Peak_Miller Street and McLaren Street
Site Category: 2030_Future No Build_AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 70 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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: Miller Street (South)														
1	L2	116	1.8	116	1.8	0.214	17.1	LOS B	3.1	26.4	0.65	0.66	0.65	28.8
2	T1	336	13.8	336	13.8	0.436	15.8	LOS B	7.8	56.7	0.75	0.66	0.75	28.0
3	R2	12	9.1	12	9.1	0.436	19.4	LOS B	7.8	56.7	0.76	0.66	0.76	21.9
Approach		463	10.7	463	10.7	0.436	16.2	LOS B	7.8	56.7	0.73	0.66	0.73	28.1
East: McLaren Street (East)														
4	L2	49	2.1	49	2.1	0.202	33.3	LOS C	1.6	11.1	0.92	0.73	0.92	20.3
5	T1	80	3.9	80	3.9	* 0.201	24.1	LOS C	2.3	16.4	0.85	0.66	0.85	24.2
Approach		129	3.3	129	3.3	0.202	27.6	LOS C	2.3	16.4	0.87	0.68	0.87	22.6
North: Miller Street (North)														
7	L2	18	11.8	18	11.8	* 0.592	20.3	LOS C	11.9	93.2	0.82	0.72	0.82	21.4
8	T1	576	11.2	576	11.2	0.592	17.8	LOS B	11.9	93.2	0.83	0.73	0.83	26.9
9	R2	127	3.3	127	3.3	0.592	24.6	LOS C	8.0	57.0	0.88	0.78	0.88	25.7
Approach		721	9.8	721	9.8	0.592	19.1	LOS B	11.9	93.2	0.84	0.74	0.84	26.5
West: McLaren Street (West)														
10	L2	53	2.0	53	2.0	0.080	20.0	LOS C	1.2	8.5	0.69	0.67	0.69	27.1
11	T1	65	1.6	65	1.6	0.213	18.4	LOS B	2.7	19.1	0.78	0.64	0.78	21.2
12	R2	40	5.3	40	5.3	* 0.213	21.8	LOS C	2.7	19.1	0.78	0.64	0.78	27.0
Approach		158	2.7	158	2.7	0.213	19.8	LOS B	2.7	19.1	0.75	0.65	0.75	25.1
All Vehicles		1472	8.7	1472	8.7	0.592	19.0	LOS B	11.9	93.2	0.80	0.70	0.80	26.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	354	29.7	LOS C	0.7	0.7	0.93	0.93	194.9	214.8	1.10
East: McLaren Street (East)											
P2	Full	373	29.7	LOS C	0.7	0.7	0.93	0.93	194.9	214.8	1.10
North: Miller Street (North)											

P3 Full	76	29.3	LOS C	0.1	0.1	0.92	0.92	194.6	214.8	1.10
West: McLaren Street (West)										
P4 Full	314	29.6	LOS C	0.6	0.6	0.93	0.93	194.9	214.8	1.10
All Pedestrians	1116	29.7	LOS C	0.7	0.7	0.93	0.93	194.9	214.8	1.10

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2030_Future No Build_PM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2030_Future No Build_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future No Build_PM Peak_Miller Street and McLaren Street
Site Category: 2030_Future No Build_PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	127	1.7	127	1.7	0.483	20.8	LOS C	4.0	31.3	0.83	0.73	0.83	27.4
2	T1	422	9.7	422	9.7	0.483	17.4	LOS B	4.2	29.4	0.84	0.72	0.84	26.9
3	R2	14	0.0	14	0.0	0.483	21.0	LOS C	4.2	29.4	0.84	0.72	0.84	20.9
Approach		563	7.7	563	7.7	0.483	18.3	LOS B	4.2	31.3	0.83	0.72	0.83	26.9
East: McLaren Street (East)														
4	L2	60	3.5	60	3.5	0.212	28.3	LOS C	1.0	7.0	0.90	0.73	0.90	22.1
5	T1	118	0.0	118	0.0	* 0.247	19.1	LOS B	1.7	12.0	0.82	0.66	0.82	26.4
Approach		178	1.2	178	1.2	0.247	22.2	LOS C	1.7	12.0	0.85	0.68	0.85	24.8
North: Miller Street (North)														
7	L2	21	0.0	21	0.0	0.232	20.2	LOS C	1.6	13.4	0.78	0.64	0.78	21.1
8	T1	336	7.5	336	7.5	* 0.540	18.8	LOS B	4.3	30.3	0.85	0.72	0.85	26.4
9	R2	42	0.0	42	0.0	0.540	23.0	LOS C	4.3	30.3	0.89	0.75	0.89	26.9
Approach		399	6.3	399	6.3	0.540	19.3	LOS B	4.3	30.3	0.85	0.72	0.85	26.3
West: McLaren Street (West)														
10	L2	45	2.3	45	2.3	0.059	14.7	LOS B	0.5	3.5	0.62	0.64	0.62	29.5
11	T1	65	0.0	65	0.0	0.145	12.2	LOS B	1.1	7.4	0.70	0.57	0.70	25.1
12	R2	26	0.0	26	0.0	* 0.145	15.7	LOS B	1.1	7.4	0.70	0.57	0.70	30.2
Approach		137	0.8	137	0.8	0.145	13.7	LOS B	1.1	7.4	0.68	0.60	0.68	28.0
All Vehicles		1277	5.6	1277	5.6	0.540	18.7	LOS B	4.3	31.3	0.83	0.70	0.83	26.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	267	24.6	LOS C	0.4	0.4	0.91	0.91	189.8	214.8	1.13
East: McLaren Street (East)											
P2	Full	495	24.8	LOS C	0.8	0.8	0.92	0.92	190.0	214.8	1.13
North: Miller Street (North)											

P3 Full	105	24.4	LOS C	0.2	0.2	0.90	0.90	189.6	214.8	1.13
West: McLaren Street (West)										
P4 Full	347	24.7	LOS C	0.5	0.5	0.91	0.91	189.9	214.8	1.13
All Pedestrians	1215	24.7	LOS C	0.8	0.8	0.91	0.91	189.9	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2030_Future No Build_Saturday Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2030_Future No Build_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future No Build_Saturday Peak_Miller Street and McLaren Street
Site Category: 2030_Future No Build_Saturday Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	96	2.2	96	2.2	0.169	18.2	LOS B	1.3	9.7	0.72	0.69	0.72	28.0
2	T1	289	4.4	289	4.4	0.497	16.9	LOS B	4.4	31.2	0.83	0.71	0.83	27.4
3	R2	21	0.0	21	0.0	0.497	20.4	LOS C	4.4	31.2	0.84	0.71	0.84	21.2
Approach		406	3.6	406	3.6	0.497	17.4	LOS B	4.4	31.2	0.81	0.71	0.81	27.3
East: McLaren Street (East)														
4	L2	59	5.4	59	5.4	0.234	29.4	LOS C	1.0	7.2	0.92	0.73	0.92	21.7
5	T1	81	0.0	81	0.0	* 0.181	19.6	LOS B	1.2	8.2	0.82	0.64	0.82	26.2
Approach		140	2.3	140	2.3	0.234	23.7	LOS C	1.2	8.2	0.86	0.68	0.86	24.2
North: Miller Street (North)														
7	L2	31	3.4	31	3.4	0.238	20.2	LOS C	1.9	13.8	0.78	0.65	0.78	21.1
8	T1	298	3.9	298	3.9	* 0.553	18.8	LOS B	4.1	29.3	0.85	0.72	0.85	26.3
9	R2	73	1.4	73	1.4	0.553	23.1	LOS C	4.1	29.3	0.89	0.76	0.89	26.6
Approach		401	3.4	401	3.4	0.553	19.7	LOS B	4.1	29.3	0.85	0.72	0.85	26.1
West: McLaren Street (West)														
10	L2	64	1.6	64	1.6	0.091	16.7	LOS B	0.7	5.3	0.67	0.67	0.67	28.7
11	T1	43	0.0	43	0.0	0.129	13.6	LOS B	0.9	6.1	0.73	0.59	0.73	23.9
12	R2	27	3.8	27	3.8	* 0.129	17.0	LOS B	0.9	6.1	0.73	0.59	0.73	29.3
Approach		135	1.6	135	1.6	0.129	15.8	LOS B	0.9	6.1	0.70	0.63	0.70	27.7
All Vehicles		1082	3.1	1082	3.1	0.553	18.9	LOS B	4.4	31.2	0.82	0.70	0.82	26.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	162	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
East: McLaren Street (East)											
P2	Full	411	24.7	LOS C	0.6	0.6	0.92	0.92	190.0	214.8	1.13
North: Miller Street (North)											

P3 Full	299	24.6	LOS C	0.5	0.5	0.91	0.91	189.8	214.8	1.13
West: McLaren Street (West)										
P4 Full	419	24.7	LOS C	0.7	0.7	0.92	0.92	190.0	214.8	1.13
All Pedestrians	1291	24.7	LOS C	0.7	0.7	0.91	0.91	189.9	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [2030_Future No Build_AM Peak_McLaren Street and Walker Street - Import (Site Folder: General)]

Network: N101 [2030_Future No Build_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2030_Future No Build_AM Peak_McLaren Street and Walker Street
Site Category: 2030_Future No Build_AM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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														
1	L2	134	1.6	134	1.6	0.116	3.4	LOS A	0.0	0.0	0.00	0.29	0.00	36.1
2	T1	80	0.0	80	0.0	0.116	0.0	LOS A	0.0	0.0	0.00	0.29	0.00	37.9
Approach		214	1.0	214	1.0	0.116	2.2	NA	0.0	0.0	0.00	0.29	0.00	37.1
North: Walker Street														
8	T1	135	0.8	135	0.8	0.075	0.1	LOS A	0.1	0.5	0.05	0.03	0.05	39.6
9	R2	8	0.0	8	0.0	0.075	4.2	LOS A	0.1	0.5	0.05	0.03	0.05	39.2
Approach		143	0.7	143	0.7	0.075	0.3	NA	0.1	0.5	0.05	0.03	0.05	39.6
West: McLaren Street														
10	L2	23	4.5	23	4.5	0.018	7.1	LOS A	0.1	0.5	0.14	0.91	0.14	33.8
12	R2	99	1.1	99	1.1	0.131	8.4	LOS A	0.4	2.8	0.31	0.93	0.31	32.6
Approach		122	1.7	122	1.7	0.131	8.2	LOS A	0.4	2.8	0.28	0.92	0.28	32.8
All Vehicles		479	1.1	479	1.1	0.131	3.1	NA	0.4	2.8	0.09	0.37	0.09	36.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2030_Future No Build_PM Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2030_Future No Build_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future No Build_PM Peak_McLaren Street and Walker Street
Site Category: 2030_Future No Build_PM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	184	1.1	184	1.1	0.225	3.5	LOS A	0.0	0.0	0.00	0.20	0.00	37.2
2	T1	237	0.4	237	0.4	0.225	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	38.5
Approach		421	0.7	421	0.7	0.225	1.5	NA	0.0	0.0	0.00	0.20	0.00	38.1
North: Walker Street														
8	T1	136	0.0	136	0.0	0.080	0.2	LOS A	0.1	0.4	0.11	0.04	0.11	39.2
9	R2	13	0.0	13	0.0	0.080	5.1	LOS A	0.1	0.4	0.11	0.04	0.11	38.6
Approach		148	0.0	148	0.0	0.080	0.7	NA	0.1	0.4	0.11	0.04	0.11	39.2
West: McLaren Street														
10	L2	16	0.0	16	0.0	0.014	7.6	LOS A	0.0	0.1	0.26	0.86	0.26	33.6
12	R2	100	0.0	100	0.0	0.164	10.0	LOS B	0.2	1.4	0.45	0.97	0.45	31.5
Approach		116	0.0	116	0.0	0.164	9.7	LOS A	0.2	1.4	0.43	0.95	0.43	31.8
All Vehicles		685	0.5	685	0.5	0.225	2.7	NA	0.2	1.4	0.10	0.29	0.10	37.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2030_Future No Build_Saturday Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2030_Future No Build_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future No Build_Saturday Peak_McLaren Street and Walker Street
Site Category: 2030_Future No Build_Saturday Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	112	1.9	112	1.9	0.116	3.5	LOS A	0.0	0.0	0.00	0.24	0.00	36.7
2	T1	102	3.1	102	3.1	0.116	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	38.2
Approach		214	2.5	214	2.5	0.116	1.8	NA	0.0	0.0	0.00	0.24	0.00	37.6
North: Walker Street														
8	T1	95	1.1	95	1.1	0.063	0.2	LOS A	0.1	0.5	0.13	0.08	0.13	38.8
9	R2	20	0.0	20	0.0	0.063	4.2	LOS A	0.1	0.5	0.13	0.08	0.13	37.8
Approach		115	0.9	115	0.9	0.063	0.9	NA	0.1	0.5	0.13	0.08	0.13	38.7
West: McLaren Street														
10	L2	23	0.0	23	0.0	0.018	7.0	LOS A	0.0	0.2	0.15	0.90	0.15	33.8
12	R2	56	1.9	56	1.9	0.073	8.2	LOS A	0.1	0.6	0.27	0.92	0.27	32.7
Approach		79	1.3	79	1.3	0.073	7.9	LOS A	0.1	0.6	0.24	0.91	0.24	33.0
All Vehicles		407	1.8	407	1.8	0.116	2.7	NA	0.1	0.6	0.08	0.33	0.08	36.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

2030 Post-development SIDRA results

MOVEMENT SUMMARY

Site: 1 [2030_Future Post Dev_AM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2030_Future Post Dev_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2030_Future Post Dev_Base_AM Peak_Miller Street and McLaren Street
Site Category: 2030_Future Post Dev_AM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 70 seconds (Network Optimum Cycle Time - Minimum Delay)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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: Miller Street (South)														
1	L2	116	1.8	116	1.8	0.214	17.1	LOS B	3.1	26.4	0.65	0.66	0.65	28.8
2	T1	336	13.8	336	13.8	0.463	16.6	LOS B	8.2	59.4	0.77	0.68	0.77	27.5
3	R2	17	6.3	17	6.3	0.463	20.3	LOS C	8.2	59.4	0.78	0.68	0.78	21.3
Approach		468	10.6	468	10.6	0.463	16.9	LOS B	8.2	59.4	0.74	0.67	0.74	27.7
East: McLaren Street (East)														
4	L2	61	1.7	61	1.7	0.249	33.6	LOS C	1.9	13.8	0.93	0.74	0.93	20.2
5	T1	97	3.3	97	3.3	* 0.242	24.4	LOS C	2.8	20.0	0.86	0.67	0.86	24.1
Approach		158	2.7	158	2.7	0.249	27.9	LOS C	2.8	20.0	0.88	0.70	0.88	22.5
North: Miller Street (North)														
7	L2	27	7.7	27	7.7	* 0.613	20.6	LOS C	12.4	96.8	0.83	0.73	0.83	21.3
8	T1	576	11.2	576	11.2	0.613	18.2	LOS B	12.4	96.8	0.85	0.75	0.85	26.7
9	R2	127	3.3	127	3.3	0.613	25.5	LOS C	8.0	57.5	0.89	0.79	0.89	25.3
Approach		731	9.7	731	9.7	0.613	19.6	LOS B	12.4	96.8	0.85	0.75	0.85	26.3
West: McLaren Street (West)														
10	L2	53	2.0	53	2.0	0.080	20.0	LOS C	1.2	8.5	0.69	0.67	0.69	27.1
11	T1	95	1.1	95	1.1	0.260	18.7	LOS B	3.5	24.7	0.80	0.65	0.80	21.2
12	R2	40	5.3	40	5.3	* 0.260	22.1	LOS C	3.5	24.7	0.80	0.65	0.80	26.9
Approach		187	2.2	187	2.2	0.260	19.8	LOS B	3.5	24.7	0.77	0.66	0.77	24.6
All Vehicles		1544	8.3	1544	8.3	0.613	19.6	LOS B	12.4	96.8	0.81	0.71	0.81	26.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	354	29.7	LOS C	0.7	0.7	0.93	0.93	194.9	214.8	1.10
East: McLaren Street (East)											
P2	Full	373	29.7	LOS C	0.7	0.7	0.93	0.93	194.9	214.8	1.10
North: Miller Street (North)											

P3	Full	76	29.3	LOS C	0.1	0.1	0.92	0.92	194.6	214.8	1.10
West: McLaren Street (West)											
P4	Full	314	29.6	LOS C	0.6	0.6	0.93	0.93	194.9	214.8	1.10
All Pedestrians		1116	29.7	LOS C	0.7	0.7	0.93	0.93	194.9	214.8	1.10

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2030_Future Post Dev_PM Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2030_Future Post Dev_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future Post Dev_PM Peak_Miller Street and McLaren Street
Site Category: 2030_Future Post Dev_PM Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	127	1.7	127	1.7	0.485	20.9	LOS C	4.0	31.4	0.83	0.73	0.83	27.4
2	T1	422	9.7	422	9.7	0.485	17.4	LOS B	4.2	29.6	0.84	0.72	0.84	26.9
3	R2	16	0.0	16	0.0	0.485	21.0	LOS C	4.2	29.6	0.84	0.72	0.84	20.9
Approach		565	7.6	565	7.6	0.485	18.3	LOS B	4.2	31.4	0.83	0.73	0.83	26.9
East: McLaren Street (East)														
4	L2	76	2.8	76	2.8	0.266	28.6	LOS C	1.2	9.0	0.91	0.74	0.91	22.0
5	T1	148	0.0	148	0.0	* 0.311	19.5	LOS B	2.2	15.4	0.84	0.68	0.84	26.2
Approach		224	0.9	224	0.9	0.311	22.6	LOS C	2.2	15.4	0.86	0.70	0.86	24.7
North: Miller Street (North)														
7	L2	24	0.0	24	0.0	0.234	21.0	LOS C	1.7	13.7	0.79	0.65	0.79	20.6
8	T1	336	7.5	336	7.5	* 0.546	19.1	LOS B	4.4	30.8	0.86	0.73	0.86	26.3
9	R2	42	0.0	42	0.0	0.546	23.0	LOS C	4.4	30.8	0.89	0.76	0.89	26.8
Approach		402	6.3	402	6.3	0.546	19.6	LOS B	4.4	30.8	0.86	0.73	0.86	26.1
West: McLaren Street (West)														
10	L2	45	2.3	45	2.3	0.059	14.7	LOS B	0.5	3.5	0.62	0.64	0.62	29.5
11	T1	76	0.0	76	0.0	0.161	13.0	LOS B	1.2	8.5	0.72	0.58	0.72	24.6
12	R2	26	0.0	26	0.0	* 0.161	16.4	LOS B	1.2	8.5	0.72	0.58	0.72	29.9
Approach		147	0.7	147	0.7	0.161	14.1	LOS B	1.2	8.5	0.69	0.60	0.69	27.5
All Vehicles		1339	5.3	1339	5.3	0.546	19.0	LOS B	4.4	31.4	0.83	0.71	0.83	26.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	267	24.6	LOS C	0.4	0.4	0.91	0.91	189.8	214.8	1.13
East: McLaren Street (East)											
P2	Full	495	24.8	LOS C	0.8	0.8	0.92	0.92	190.0	214.8	1.13
North: Miller Street (North)											

P3 Full	105	24.4	LOS C	0.2	0.2	0.90	0.90	189.6	214.8	1.13
West: McLaren Street (West)										
P4 Full	347	24.7	LOS C	0.5	0.5	0.91	0.91	189.9	214.8	1.13
All Pedestrians	1215	24.7	LOS C	0.8	0.8	0.91	0.91	189.9	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2030_Future Post Dev_Saturday Peak_Miller Street and McLaren Street (Site Folder: General)]

Network: N101 [2030_Future Post Dev_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future Post Dev_Saturday Peak_Miller Street and McLaren Street
Site Category: 2030_Future Post Dev_Saturday Peak
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60 seconds (Site Practical Cycle Time)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Miller Street (South)														
1	L2	96	2.2	96	2.2	0.169	18.3	LOS B	1.3	9.7	0.72	0.69	0.72	28.0
2	T1	289	4.4	289	4.4	0.514	17.1	LOS B	4.5	32.0	0.84	0.72	0.84	27.3
3	R2	26	0.0	26	0.0	0.514	20.5	LOS C	4.5	32.0	0.84	0.72	0.84	21.1
Approach		412	3.6	412	3.6	0.514	17.6	LOS B	4.5	32.0	0.81	0.71	0.81	27.2
East: McLaren Street (East)														
4	L2	69	4.5	69	4.5	0.275	29.6	LOS C	1.2	8.5	0.92	0.74	0.92	21.6
5	T1	96	0.0	96	0.0	* 0.214	19.8	LOS B	1.4	9.8	0.83	0.65	0.83	26.1
Approach		165	1.9	165	1.9	0.275	23.9	LOS C	1.4	9.8	0.87	0.69	0.87	24.1
North: Miller Street (North)														
7	L2	38	2.8	38	2.8	0.243	20.3	LOS C	1.9	13.8	0.78	0.66	0.78	20.9
8	T1	298	3.9	298	3.9	* 0.566	18.9	LOS B	4.3	30.3	0.86	0.73	0.86	26.2
9	R2	73	1.4	73	1.4	0.566	23.2	LOS C	4.3	30.3	0.89	0.77	0.89	26.6
Approach		408	3.4	408	3.4	0.566	19.8	LOS B	4.3	30.3	0.86	0.73	0.86	25.9
West: McLaren Street (West)														
10	L2	64	1.6	64	1.6	0.091	16.7	LOS B	0.7	5.3	0.67	0.67	0.67	28.7
11	T1	55	0.0	55	0.0	0.146	13.7	LOS B	1.0	7.1	0.73	0.60	0.73	24.0
12	R2	27	3.8	27	3.8	* 0.146	17.2	LOS B	1.0	7.1	0.73	0.60	0.73	29.3
Approach		146	1.4	146	1.4	0.146	15.7	LOS B	1.0	7.1	0.71	0.63	0.71	27.5
All Vehicles		1132	3.0	1132	3.0	0.566	19.1	LOS B	4.5	32.0	0.82	0.71	0.82	26.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Miller Street (South)											
P1	Full	162	24.5	LOS C	0.3	0.3	0.91	0.91	189.7	214.8	1.13
East: McLaren Street (East)											
P2	Full	411	24.7	LOS C	0.6	0.6	0.92	0.92	190.0	214.8	1.13
North: Miller Street (North)											

P3 Full	299	24.6	LOS C	0.5	0.5	0.91	0.91	189.8	214.8	1.13
West: McLaren Street (West)										
P4 Full	419	24.7	LOS C	0.7	0.7	0.92	0.92	190.0	214.8	1.13
All Pedestrians	1291	24.7	LOS C	0.7	0.7	0.91	0.91	189.9	214.8	1.13

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 2 [2030_Future Post Dev_AM Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2030_Future Post Dev_AM Peak_ Millers St & Maclarens Street & Walkers Street (Network Folder: General)]

2030_Future Post Dev_AM Peak_McLaren Street and Walker Street
Site Category: 2030_Future Post Dev_AM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL 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														
1	L2	174	1.2	174	1.2	0.138	3.4	LOS A	0.0	0.0	0.00	0.31	0.00	35.8
2	T1	80	0.0	80	0.0	0.138	0.0	LOS A	0.0	0.0	0.00	0.31	0.00	37.7
Approach		254	0.8	254	0.8	0.138	2.4	NA	0.0	0.0	0.00	0.31	0.00	36.7
North: Walker Street														
8	T1	135	0.8	135	0.8	0.077	0.1	LOS A	0.1	0.7	0.07	0.04	0.07	39.5
9	R2	11	0.0	11	0.0	0.077	4.3	LOS A	0.1	0.7	0.07	0.04	0.07	39.0
Approach		145	0.7	145	0.7	0.077	0.4	NA	0.1	0.7	0.07	0.04	0.07	39.4
West: McLaren Street														
10	L2	28	3.7	28	3.7	0.022	7.1	LOS A	0.1	0.6	0.14	0.92	0.14	33.8
12	R2	121	0.9	121	0.9	0.164	8.6	LOS A	0.5	3.6	0.32	0.94	0.32	32.4
Approach		149	1.4	149	1.4	0.164	8.3	LOS A	0.5	3.6	0.28	0.93	0.28	32.7
All Vehicles		548	1.0	548	1.0	0.164	3.5	NA	0.5	3.6	0.09	0.41	0.09	36.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2030_Future Post Dev_PM Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2030_Future Post Dev_PM Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future Post Dev_PM Peak_McLaren Street and Walker Street
Site Category: 2030_Future Post Dev_PM Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	200	1.1	200	1.1	0.234	3.5	LOS A	0.0	0.0	0.00	0.21	0.00	37.0
2	T1	237	0.4	237	0.4	0.234	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	38.4
Approach		437	0.7	437	0.7	0.234	1.6	NA	0.0	0.0	0.00	0.21	0.00	38.0
North: Walker Street														
8	T1	136	0.0	136	0.0	0.081	0.3	LOS A	0.1	0.4	0.12	0.05	0.12	39.2
9	R2	14	0.0	14	0.0	0.081	5.2	LOS A	0.1	0.4	0.12	0.05	0.12	38.4
Approach		149	0.0	149	0.0	0.081	0.7	NA	0.1	0.4	0.12	0.05	0.12	39.1
West: McLaren Street														
10	L2	23	0.0	23	0.0	0.020	7.6	LOS A	0.0	0.2	0.27	0.86	0.27	33.6
12	R2	140	0.0	140	0.0	0.233	10.3	LOS B	0.3	2.1	0.48	0.98	0.48	31.4
Approach		163	0.0	163	0.0	0.233	9.9	LOS A	0.3	2.1	0.45	0.97	0.45	31.7
All Vehicles		749	0.4	749	0.4	0.234	3.2	NA	0.3	2.1	0.12	0.34	0.12	36.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [2030_Future Post Dev_Saturday Peak_McLaren Street and Walker Street (Site Folder: General)]

Network: N101 [2030_Future Post Dev_Sat Peak_ Millers Street & McLarens Street & Walkers Street (Network Folder: General)]

2030_Future Post Dev_Saturday Peak_McLaren Street and Walker Street
Site Category: 2030_Future Post Dev_Saturday Peak
Stop (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Walker Street														
1	L2	136	1.6	136	1.6	0.129	3.5	LOS A	0.0	0.0	0.00	0.26	0.00	36.4
2	T1	102	3.1	102	3.1	0.129	0.0	LOS A	0.0	0.0	0.00	0.26	0.00	38.0
Approach		238	2.2	238	2.2	0.129	2.0	NA	0.0	0.0	0.00	0.26	0.00	37.4
North: Walker Street														
8	T1	95	1.1	95	1.1	0.065	0.3	LOS A	0.1	0.5	0.16	0.10	0.16	38.6
9	R2	23	0.0	23	0.0	0.065	4.3	LOS A	0.1	0.5	0.16	0.10	0.16	37.5
Approach		118	0.9	118	0.9	0.065	1.0	NA	0.1	0.5	0.16	0.10	0.16	38.5
West: McLaren Street														
10	L2	31	0.0	31	0.0	0.023	7.1	LOS A	0.0	0.2	0.15	0.90	0.15	33.8
12	R2	74	1.4	74	1.4	0.098	8.4	LOS A	0.1	0.8	0.29	0.93	0.29	32.6
Approach		104	1.0	104	1.0	0.098	8.0	LOS A	0.1	0.8	0.25	0.92	0.25	32.9
All Vehicles		460	1.6	460	1.6	0.129	3.1	NA	0.1	0.8	0.10	0.37	0.10	36.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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		Name	Signature	Name	Signature	Date
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