



Vivien Place, Castle Hill

Traffic Impact Assessment

14 October 2019

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1 Introduction

1.1 Background

Mott MacDonald have been engaged by Castle 7 Pty Ltd to prepare a traffic and transport assessment to support a Planning Proposal for the re-development of 11 lots in Castle Hill to 220 residential units.¹

The Planning Proposal seeks to amend the current LEP zoning of R2-Low Density Residential to R4-High Density Residential. The Site is located on the northern boundary of the Castle Hill North Precinct and is approximately 500m north of Castle Hill Metro station.

1.1.1 Purpose of Report

The purpose of this report is to:

- Review existing traffic and transport infrastructure at and around the 11 lots site in Vivien Place, Castle Hill (hereafter referred to as “the Site”)
- Assess the potential traffic and transport impacts of the proposed development (hereafter referred to as “the Development”) and surrounding developments that make up the Castle Hill North Precinct Plan
- Address relevant traffic and transport issues identified in previous planning and traffic and transport review submissions.

To assist in preparation of the masterplan, Mott MacDonald has undertaken the following tasks:

- Review of the previous Traffic Impact Assessment for the Development
- Review of existing site access and surrounding road network;
- Identification of current parking availability and restrictions;
- Study of existing bus and rail services and walking and cycling facilities;
- Analysis of travel behaviours including a review of current journey to work mode shares, origins and destinations;
- Assessment of the trip rates traffic distribution for the Development
- Analysis of the surrounding intersections for the existing and future scenarios.

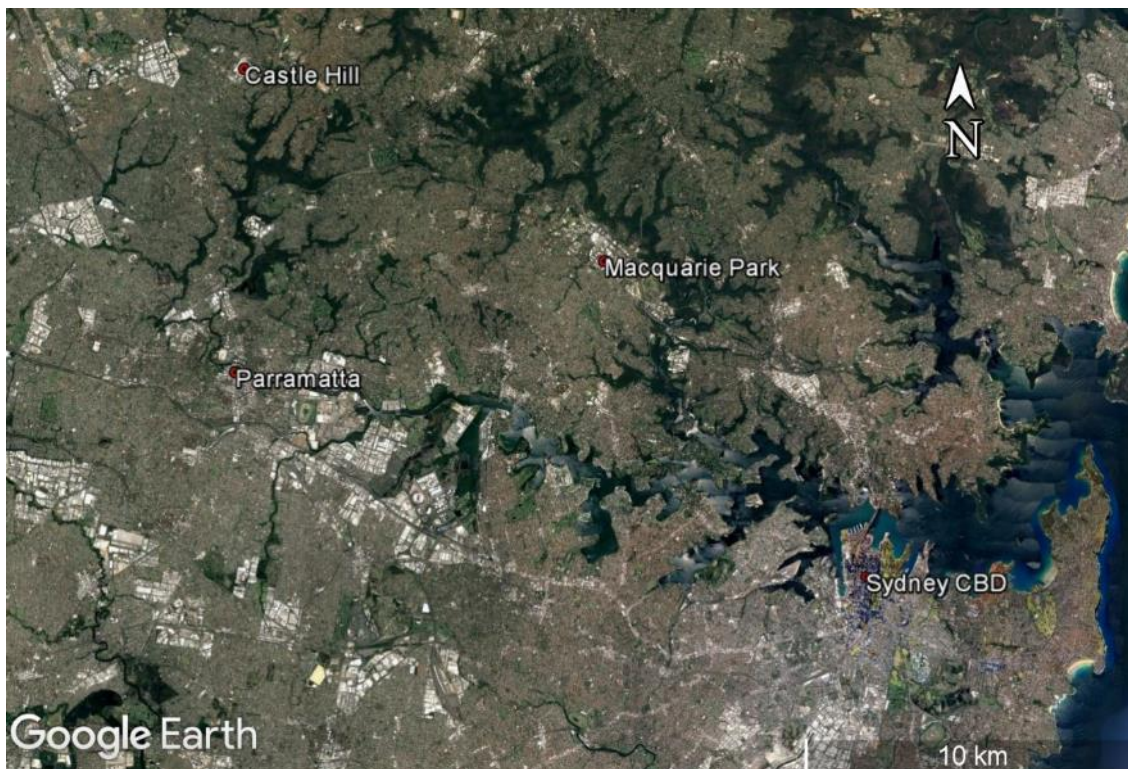
¹ The individual properties that encompass the planning proposal are 1-6 Vivien Place, 1,3,5 and 7 Gay Street and 12 Gilham Street.

2 Location and Site

2.1 Regional Context

The Site is located within the suburb of Castle Hill, approximately 25km north-west of Sydney CBD as shown in Figure 2.1. It lies within the Hills Shire Council Local Government Area (LGA) and the nearest train station is Castle Hill Metro Station, approximately 500m south of the Site.

Figure 2.1: Regional Context

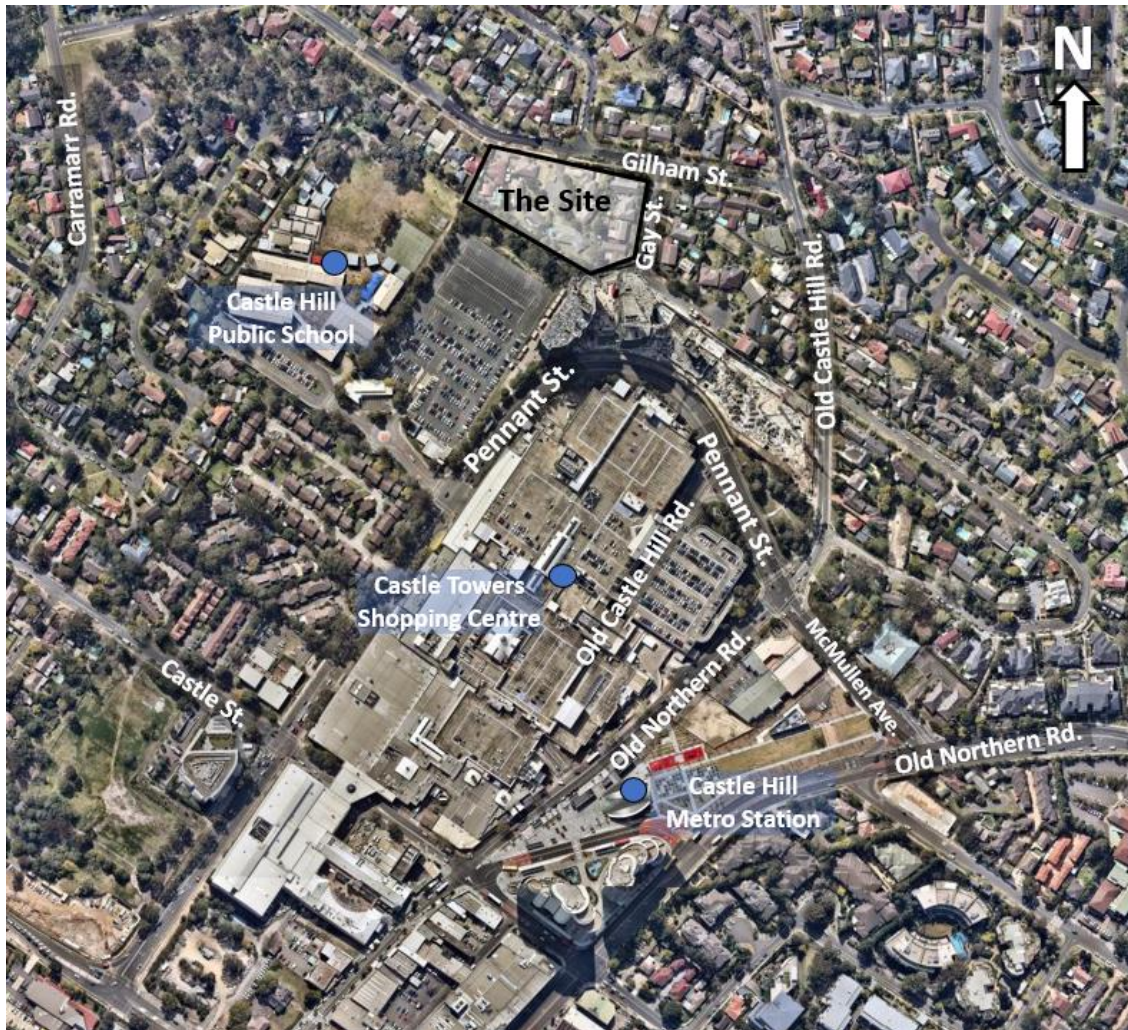


Source: Google Earth (2019)

2.2 Local Context

The Site is approximately 1.1 ha in size and is currently occupied by 11 detached dwellings. It is surrounded by a mixture of land uses and facilities, with residential land to the north, east and west, and a school directly to the south. Castle Towers Shopping Centre, a significant retail/commercial facility is located approximately 150m south of the Site. Existing vehicular access to the Site is via the dwelling frontages to Gilham Street as shown in Figure 2.2.

Figure 2.2: Site Overview



Source: Google Earth (2019)

2.3 Strategic Context

2.3.1 Castle Hill North Precinct Plan

In November 2015, the Hills Shire Council released the Castle Hill North Precinct Plan to provide a “way to increase residential densities in proximity to the core of the centre to support its role and function of the premier centre in the Hills Shire into the future.”² The construction of the Sydney Metro Northwest created an opportunity to increase density to take advantage of the new high frequency transport service.

The Plan notes that appropriate traffic management treatments will be required in order to achieve a safe pedestrian, cycle and road network to support future development. More specifically the Plan proposes upgrades to Carramar Road / Castle Street, Gilham Street / Carramar Road, Gilham Street / Old Castle Hill Road and McMullen Ave / Old Northern Road.

² Castle Hill North Precinct Plan, November 2015. Available online at https://www.thehills.nsw.gov.au/files/sharedassets/public/ecm-website-documents/page-documents/building/castle_hill_north_precinct_plan.pdf

The Plan also identifies Carramarr Road, Gilham Street, Castle Street, Pennant Street and Old Castle Road as potential locations for shared pedestrian / bicycle paths.

2.3.2 The Hills Development Control Plan (DCP)

In June 2018, the Hills Shire Council produced an update to the Hills DCP to provide guidance to all development within the Castle Hill North Precinct. The DCP provides a proposed indicative layout for the street network for the precinct as well as the proposed cycleway network. Refer to Figure 2.3 and Figure 2.4 for the proposed Castle Hill North Precinct road and cycle networks. Further details on the existing and proposed transport infrastructure are provided in Sections 3 and 4 respectively.

Figure 2.3: Indicative Street Network and Hierarchy



Source: The Hills DCP 2012 (June 2018 Update)

2.4 Proposed Development

The proposal also includes the construction of a basement car park with a capacity of approximately 264 car parking spaces for resident and visitors.

The proposed layouts are illustrated in Figure 2.5 and Figure 2.6.

Figure 2.5: Proposed concept layout

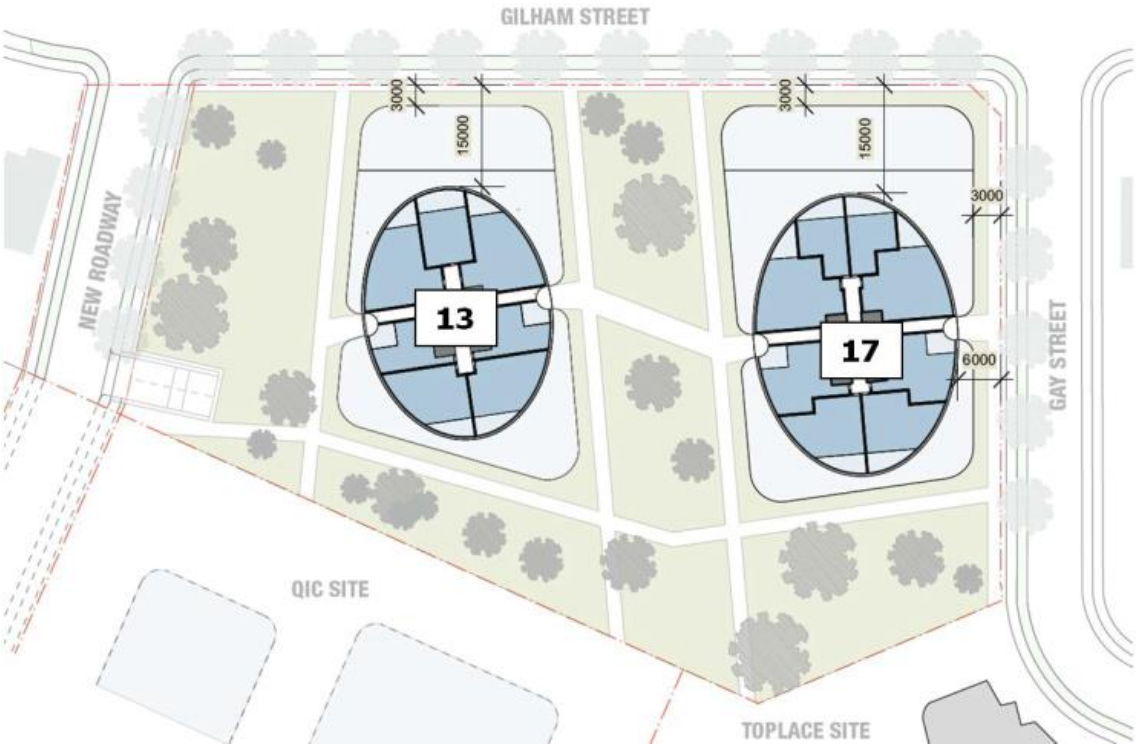
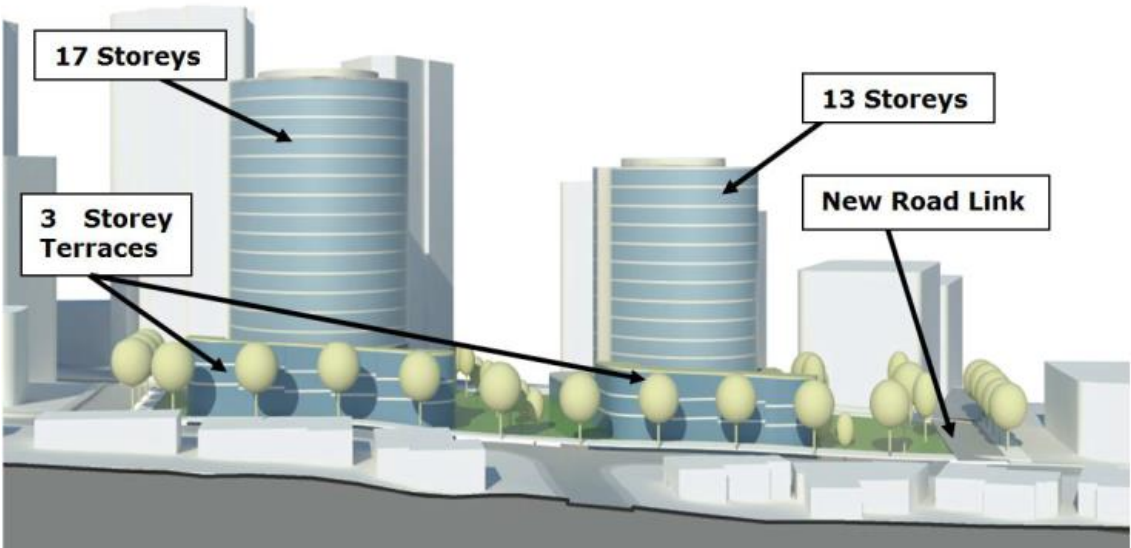


Figure 2.6: View from North of the site

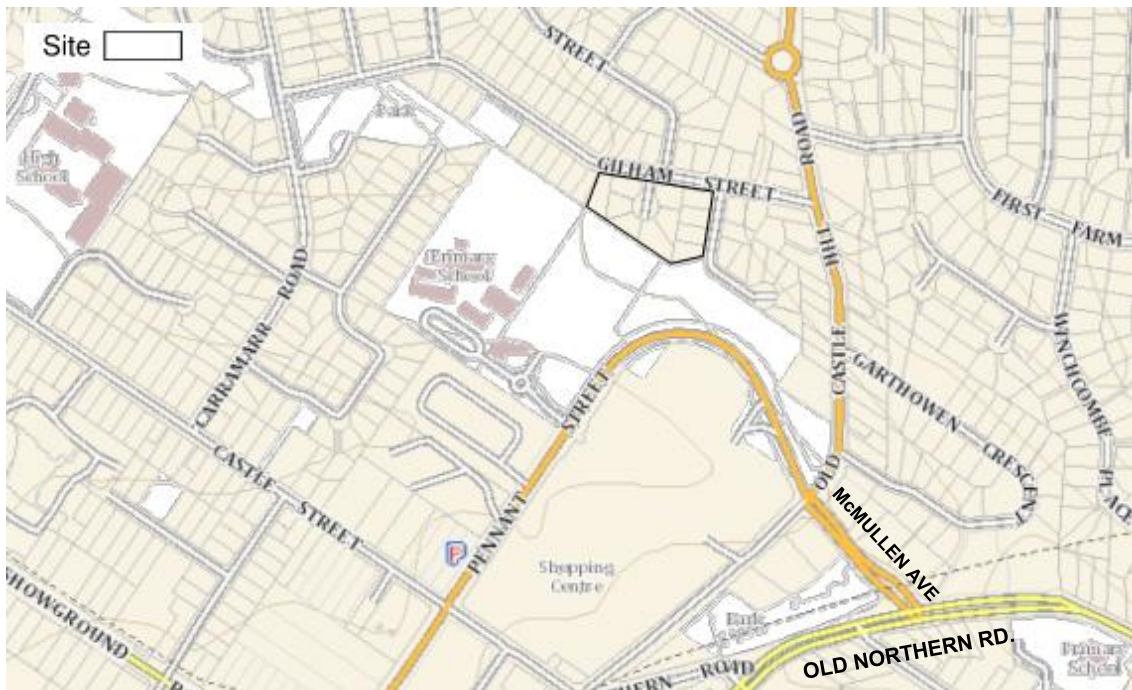


3 Existing Traffic Conditions

3.1 Existing Road Network

The existing road network in the vicinity of the Site is illustrated in Figure 3.1 and described in further detail below.

Figure 3.1: Existing Road Network



Source: SIXMaps (2019)

The key transport corridors are described below:

- **Gilham Street:** a local road on the northern frontage of the Site, with one travel lane in each direction and a 50km/hr speed limit. The road is part of a school zone and a reduced speed limit of 40km/hr is in force between 8:00-09:30 and 14:30-16:00 on school days. Unrestricted parking is permitted on both sides of the carriageway.
- **Old Castle Hill Road:** a collector road running from north to south to the east of the Site, with one travel lane in each direction and a 50km/hr speed limit. Unrestricted parking is permitted on both sides of the carriageway.
- **Pennant Street / McMullen Avenue:** a RMS classified State Road (672) south of the site, with generally two travel lanes in each direction and a speed limit of 60km/hr. The road traverses the boundary of the Castle Towers Shopping Centre and carries vehicles between Old Northern Road and Showground Road. No kerbside parking is permitted on either side of the carriageway.
- A network of local roads, generally low-speed and serving residences, including Carramarr Road, Castle Street and Rowallan Avenue will also provide vehicular access to the site.

3.2 Key Intersections

Further to correspondence with RMS and Council, eight intersections in the surrounding road network were identified as integral to assisting travel to and from the Site. These are listed in Table 3.1 and shown in Figure 3.2.³

Table 3.1: Key Intersections

Intersection	Governance	Main Carriageway
1-Gilham St / Carramarr Rd	Priority	Carramarr Rd
2-Gilham St / Old Castle Hill Rd*	Priority	Old Castle Hill Rd
3-Old Castle Hill Rd / Pennant St / McMullen Ave	Signalised	Pennant St / McMullen Ave
4-McMullen Ave / Old Northern Rd	Signalised	Old Northern Rd
5-Gay St / Gilham St	Priority	Gilham St
6-Castle St / Pennant St	Signalised	Pennant St
7-Les Shore Pl / Castle Towers Access / Pennant St	Signalised	Pennant St
8-Castle Towers Northern Access / Pennant St	Signalised	Pennant St

*Intersection to be converted to a roundabout. Refer to Section 4.1.

3.3 Existing Traffic Volumes

A 7-day traffic survey was undertaken on Gilham Street between Gay Street and Old Castle Hill Road over the period 23-29 July 2019 inclusive. This location is immediately north of the site and was selected for consistency with the previous 7-day survey undertaken in the July 2016 traffic study.

The 7-day survey identified Tuesday as the peak weekday. Turning Movement Surveys were then undertaken on Tuesday 6 August 2019 at the eight intersections over the period 06:00-09:00 and 15:00-19:00. The network peak hours were then identified as 08:00-09:00 and 15:00—16:00.

The survey results are included in Appendix A.

³ The previous traffic study (prepared in July 2016) considered 4 of the 8 intersections listed in Table 3.1. Upon reviewing this study, Council and RMS requested that a revised study include a further four intersections. Refer to Ordinary Meeting of Council, 27 November 2018, page 251.

Figure 3.2: Surveyed Intersections



Source: Google Earth

3.4 Parking

There are currently significant opportunities for parking within and surrounding the Site. Figure 3.3 illustrates the on-street parking that is currently available within 150m of the site.

Figure 3.3: Existing On-Street Parking Provisions



Source: Google Maps (2019)

3.5 Public and Active Transport

3.5.1 Rail Services and Facilities

The closest railway station to the Site is the newly opened Castle Hill Metro Station, located approximately 500m south-east of the Site.

Castle Hill is situated on the Sydney Metro North West Line, between Hills Showground Station and Cherrybrook Station. The Metro North West Line operates between Tallawong Station and Chatswood Station, where commuters can switch trains and continue towards either Hornsby or Sydney CBD. Metro headways in each direction are every 10 minutes during off peak periods and every 4 minutes during the peak.

Castle Hill station is wheelchair accessible and encourages arrivals and departures from the station by other public transport modes, with no general parking available. Bike racks and a locked facility are provided which should assist the attractiveness of cycling. The facilities available for the station are provided below:

- Bike racks;
- Bike shed (15 spaces);
- Kiss and Ride stopping area;

- Parents room;
- Taxi rank; and
- Toilets.

3.5.2 Bus Services and Facilities

There are five bus routes that service two bus stops (Stop ID: 2154125 and 2154146) located within 150m of the Site, on Old Castle Hill Road. The details of each bus route are tabulated in Table 3.2 below.

Table 3.2: Existing Bus Routes

Service	End Point 1	End Point 2	Peak Hour Frequency ¹
604	Dural	Parramatta	4
610X	Kellyville	City QVB	5
632	Rouse Hill	Pennant Hills	2
633	Rouse Hill	Pennant Hills	2
662	Parramatta	Castle Hill	3

As shown in Figure 3.4, the infrastructure at the bus stops identified above varies from posts only, to a high-quality shelter.

Figure 3.4: Bus Stop Infrastructure



Stop ID: 2154125

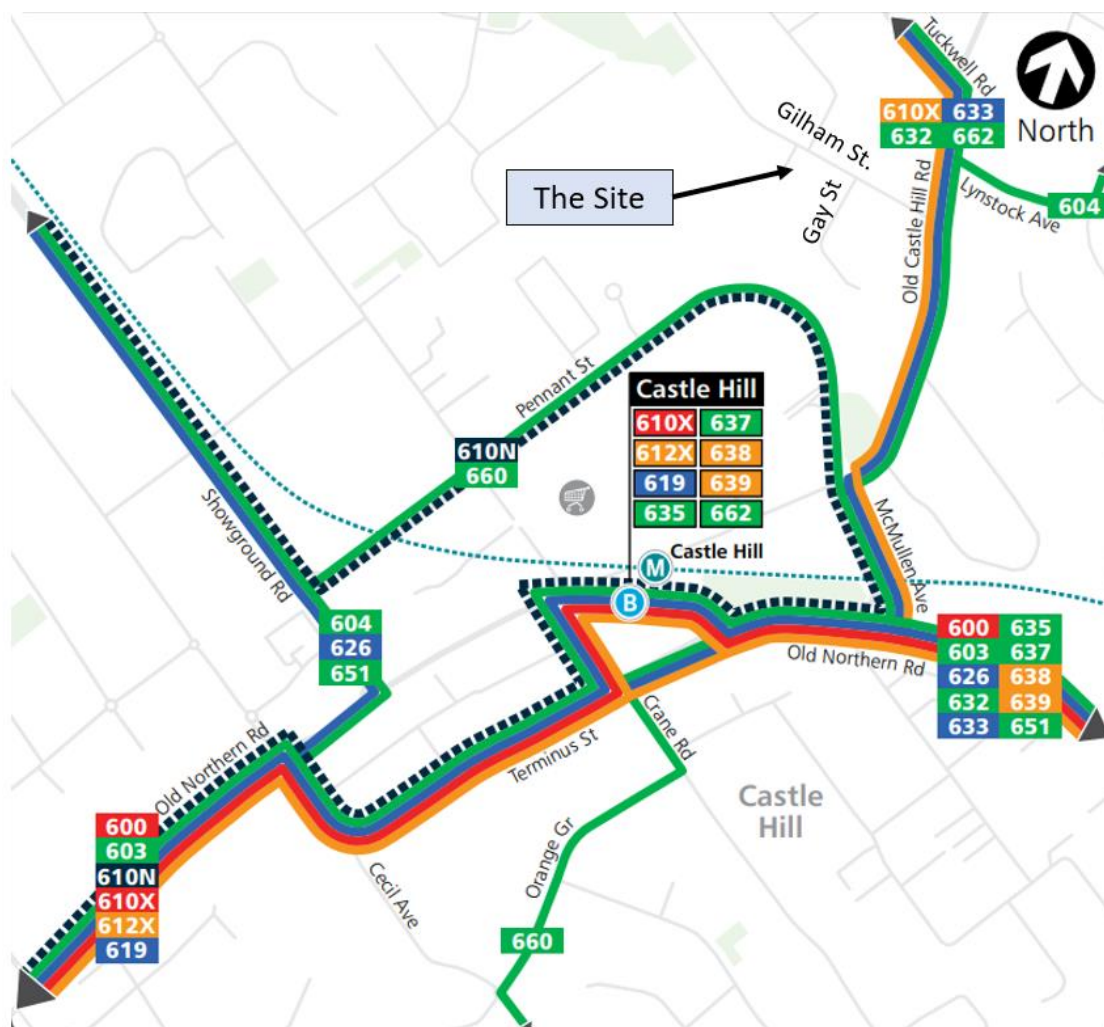
Source: Google Maps (2019)



Stop ID: 2154146

Additional to the bus routes servicing these two local bus stops, Castle Hill Metro Station is serviced by eighty-three bus routes. Within the AM peak hour, there are approximately forty bus departures from the metro station. The local bus network is illustrated in Figure 3.5.

Figure 3.5: Bus services around Castle Hill



Source: Hillsbus timetables and maps.⁴

3.5.3 Active Transport

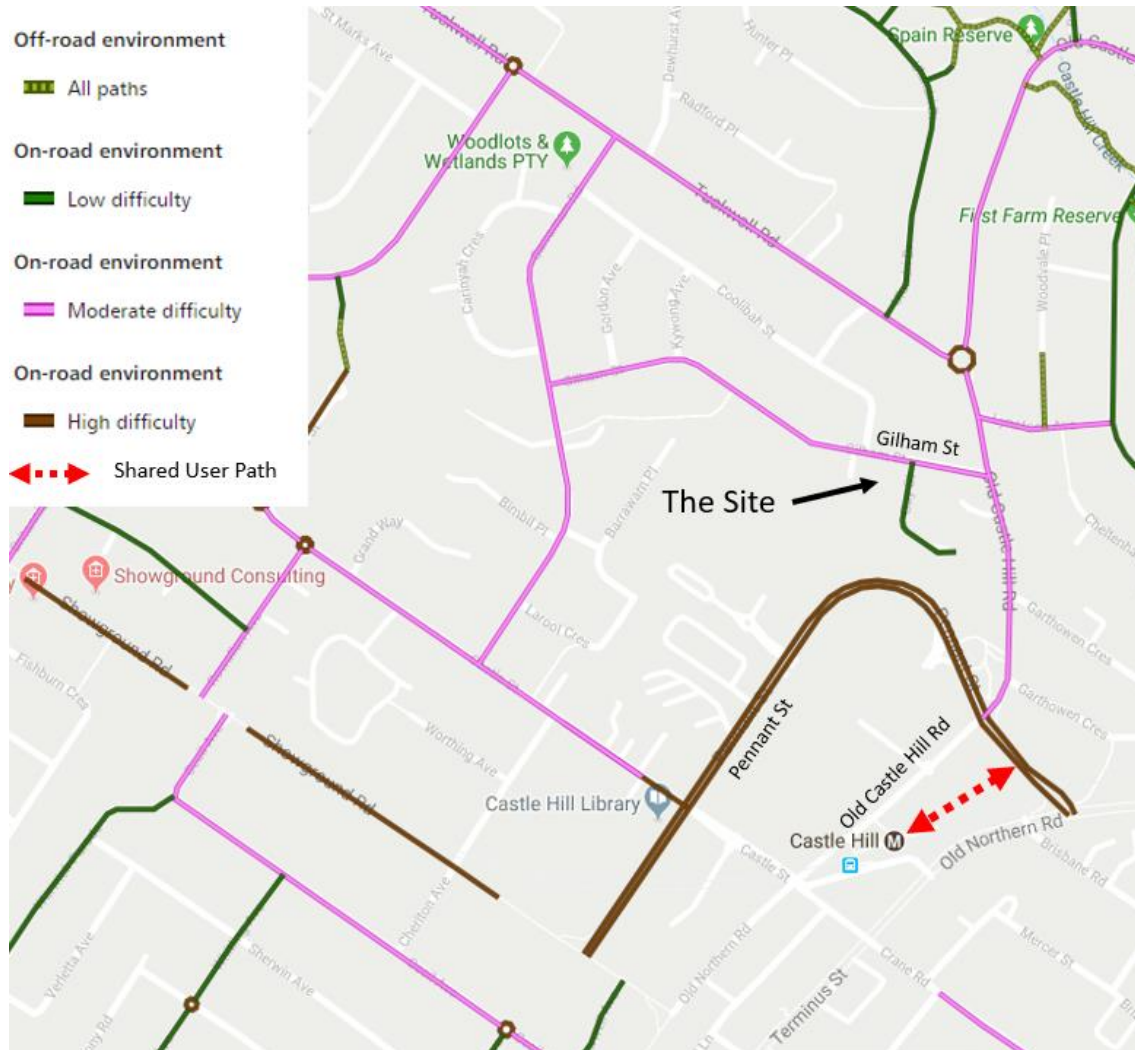
The current pedestrian point of access to the Site is via a footpath on the southern side of Gilham Street. This footpath links with the pedestrian footpath on the western side of Old Castle Hill Road as well as the eastern footpath via a pedestrian refuge island. This local network provides sufficient infrastructure for residents to safely access the Castle Towers Shopping Centre and Castle Hill Metro Station. The other local streets in the immediate area surrounding the Site do not currently have any pedestrian infrastructure.

The Site appears to have good access to the network of cycleways in the area. The majority of the network is made up of on-road routes which are not line marked. The other local roads surrounding the Site are likely to be fairly accessible to cyclists as they mostly serve residential

⁴ Available online at: <http://www.cdcbus.com.au/images/files/maps/hillsbus/28072019/network-map.pdf>

purposes with low speed limits and traffic volumes. The existing cycling network is presented in Figure 3.6.

Figure 3.6: Existing Cycleway Map



Source: RMS Cycleway Finder (2019). Modified to include Share User Path.

4 Future Traffic Conditions

4.1 Future Road Network

The Castle Hill North Precinct Plan identifies a number of road network improvements that are required to accommodate future growth in the Castle Hill precinct. These include:

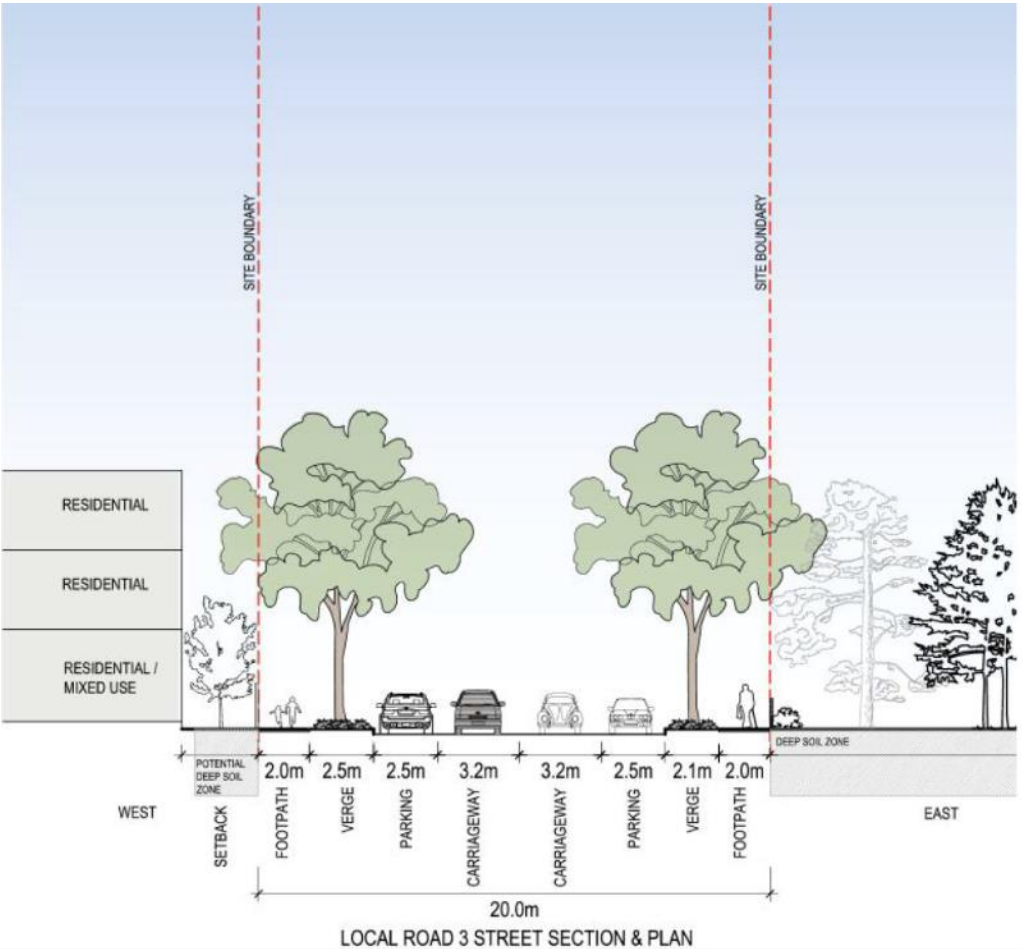
- Conversion of the Gilham Street/Old Castle Hill Road intersection from a priority intersection to a roundabout (labelled as intersection 2 in Figure 3.2).
- The construction of a new road connecting Gilham Street and Les Shore Place as shown in Figure 4.1. The road is proposed to have one travel lane in each direction and two parking lanes. The proposed cross section is shown in Figure 4.2. There is an opportunity to allow on-street cycling on this new link road to enhance cycling connectivity to and from the Development.

The desirability of these two upgrades to the road network were confirmed in the ordinary meeting of council on 27 November 2018.

Figure 4.1: New road link identified in Castle Hill North Precinct Plan



Figure 4.2: Proposed cross section for new road link.

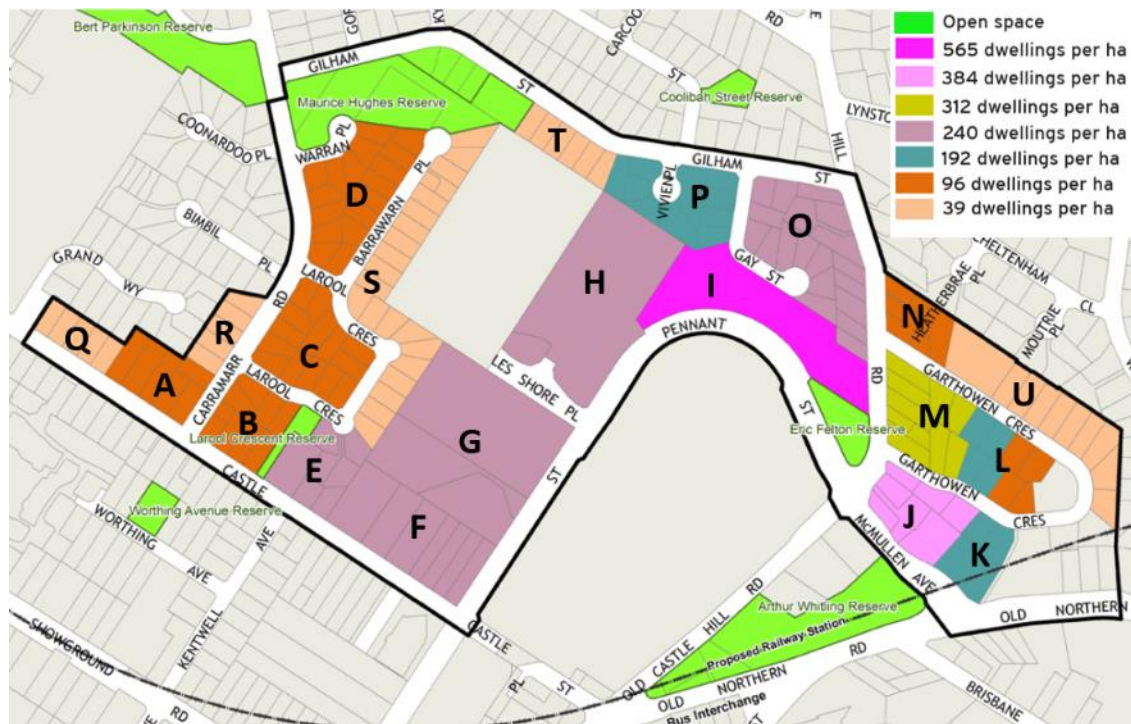


For the purposes of this study, it is assumed that the two road network upgrades described above will be constructed and form part of the future road network.

4.2 Future Development

As well as the Development (Vivien Place), a number of additional developments are proposed as outlined in the Castle Hill North Precinct Plan. These are presented in Figure 4.3. The proposed densities of each site are presented in Table 4.1.

Figure 4.3: Future Developments



Source: Castle Hill North Precinct Plan, November 2015.

Table 4.1: Number of dwellings proposed in Castle Hill North Precinct Plan

Location*	Dwellings per hectare	No. of Dwellings
Site A	96	74
Site B	96	90
Site C	96	143
Site D	96	142
Site E	240	165
Site F	240	373
Site G	240	670
Site H	240	410
Target site (Site I)	565	923
Site J	384	337
Site K	192	88
Site L	192	107
Site M	312	351
Site N	96	50
Site O	240	295
The Development (Site P)	192	220
Site Q	39	14
Site R	39	14

Location*	Dwellings per hectare	No. of Dwellings
Site S	39	58
Site T	39	16
Site U	39	48
Total		4,588

Traffic generated by each of the sites (A to S) are described in Section 6.

5 Parking Requirements

5.1 Parking Controls

5.1.1 Vehicles

The car parking requirements identified in this rezoning application are based on the proposed land uses (refer to Section 2.4 of this report) and parking rates stipulated within The Hills Development Control Plan (DCP) 2012 Part D Section 20 - Castle Hill North Precinct.

The parking controls adopted for the development are outlined in Table 5.1 below.

Table 5.1: The Hills DCP 2012 Car Parking Rates

Land Use	Category	Parking Rate
Residential flat buildings, and dwellings in shop top housing	Residents	1 resident space per unit
	Visitors	1 visitor space per 5 units

Application of the rates in Table 5.1 to the proposed development results in a total car parking requirement of 264 spaces as shown in Table 5.2.

Table 5.2: Car Parking Requirements

Category	No. of Dwellings	Spaces per dwelling	No. of Parking Bays Required
Parking for Residents	220	1	220
Parking for Visitors	220	0.2	44
Total	-	-	264

The design of the parking areas will be undertaken in accordance with both Council and Australian Standards at the DA stage of the project.

5.1.2 Bicycles

The bicycle parking provided in The Hills DCP 2012 are as follows:

- 1 bicycle space per 3 residential apartments for residents; and
- 1 bicycle space per 12 residential apartments for visitors.

Based on the above and the proposed land uses (refer to Section 2.4), the bicycle parking requirement within the proposed development consists of 74 spaces for residents and 19 spaces for visitors.

To encourage the increased use of cycling by residents, it is recommended that secure bicycle parking and/or lockers are provided in locations that are both undercover and on the ground floor of the development near the building access points. Design details associated with the location and type of bicycle parking and end of trip facility provision will be developed as part of the DA stage for this development.

6 Traffic Assessment

This section presents the traffic assessment undertaken to evaluate the impact of the Development on the surrounding road network. Traffic associated with other future developments outlined in the Castle Hill North Precinct Plan (Refer to Section 4.2) are also included in the assessment.

6.1 Model Study Area and Scenarios

A SIDRA⁵ network model was developed which comprised of the eight surveyed intersections shown in Figure 3.2. Traffic assessment for the following scenarios was undertaken:

- **Scenario 1 (Existing Conditions)** – This scenario represents the existing road network with existing traffic volumes (obtained from surveys in August 2019). Traffic generated by future developments are **not** included in this scenario.
- **Scenario 2** – This represents the future road network with existing traffic volumes (obtained from surveys in August 2019) plus traffic generated by sites that have densities of 240 dwellings per ha and above (refer to Figure 4.3). Sites with these densities are the most likely to be re-developed given that they have a greater viability.
- **Scenario 3** – This scenario represents Scenario 3 with the addition of traffic generated by the Development (Vivien Place).
- **Scenario 4** – This scenario represents Scenario 4 with the addition of traffic generated by all remaining sites within the Castle Hill North Precinct (refer to Figure 4.3). The viability of these proposed low to medium density sites is understood to be less certain and it is anticipated that not all of them will be re-developed.

Figure 6.1 illustrates the road network modelled in Scenario 1 while Figure 6.2 illustrates the road network modelled in Scenarios 2, 3 and 4. Table 6.1 presents a summary of the road network and development traffic associated with each scenario.

Table 6.1: Summary of traffic modelled within each scenario

	Scenario 1 (Existing)	Scenario 2	Scenario 3	Scenario 4
Road Network				
Existing Road Network	✓			
Future Road Network		✓	✓	✓
Traffic Conditions				
2019 Observed Traffic Volumes	✓	✓	✓	✓

⁵ SIDRA is a modelling software with the capability to undertake detailed assessment of intersections.

	Scenario 1 (Existing)	Scenario 2	Scenario 3	Scenario 4
Traffic Generated by Sites with 240 dwellings per ha and above		✓	✓	✓
Traffic generated by Vivien Place			✓	✓
Sites with less 0-239 dwellings per ha				✓

6.2 Modelling Methodology and Assumptions

The following modelling assumptions have been made:

- The AM and PM peak modelled time periods are 08:00-09:00 and 15:00-16:00. These were identified as the network peak hours from intersection surveys (refer to Section 3.3).
- For scenario 1, the phasing plan obtained from RMS was input for the signalised intersections
- For scenarios 2, 3 and 4, the phasing plans were modified to ensure more optimal intersection performance. However, the cycle times in all cases were set at 120 seconds as advised by RMS.⁶
- Scenarios 2, 3 and 4 are expected to occur in 2024 and the following assumptions were made for this:
 - Given the scale of development planned for the area, observed pedestrian volumes from the 2019 survey were increased by 120% in Scenarios 2 and 3. This equates to an average annual growth rate of 17% between 2019 and 2024. A further 30% increase in pedestrian volumes were applied for Scenario 4 compared to Scenarios 2 and 3.
 - Future traffic volumes in 2024 were assumed to comprise of 2019 observed volumes plus traffic volumes generated by the new developments. That is, a background growth factor has not been applied to the 2019 traffic volumes as all growth is assumed to come from the construction of new developments described in Section 4.2.
- The proportion of heavy vehicles used in the SIDRA models has been derived from the 2019 surveys at each intersection.

⁶ As stated in Ordinary Meeting of Council, Post Exhibition-Planning Proposal and Draft Voluntary Planning Agreement-Vivien Place, Castle Hill (2/2017/PLP). 27 November 2018. Available online [here](#).

Figure 6.1: Modelled road network, Scenario 1



Figure 6.2: Modelled Road Network, Scenarios 2, 3 and 4.

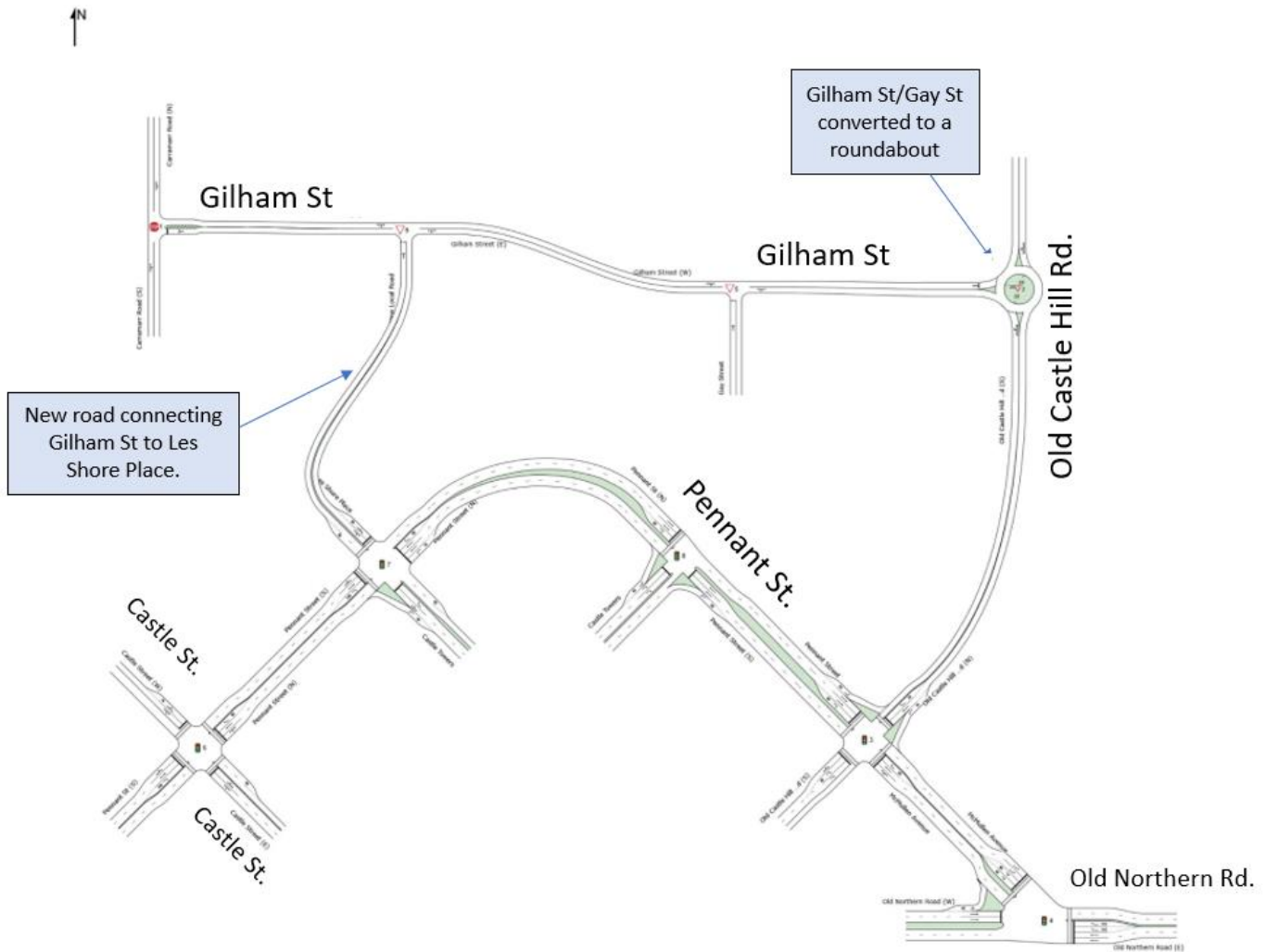


Table 6.2 presents details on the number of dwellings associated with each scenario for each site.

Table 6.2: Summary of number of dwellings included within each scenario

Location*	Dwellings per hectare	Number of Dwellings			
		Scenario 1 (Existing)	Scenario 2	Scenario 3	Scenario 4
Site A	96	0	0	0	74
Site B	96	0	0	0	90
Site C	96	0	0	0	143
Site D	96	0	0	0	142
Site E	240	0	165	165	165
Site F	240	0	373	373	373
Site G	240	0	670	670	670

Location*	Dwellings per hectare	Number of Dwellings			
		Scenario 1 (Existing)	Scenario 2	Scenario 3	Scenario 4
Site H	240	0	410	410	410
Target site (Site I)	565	0	923	923	923
Site J	384	0	337	337	337
Site K	192	0	0	0	88
Site L	192	0	0	0	107
Site M	312	0	351	351	351
Site N	96	0	0	0	50
Site O	240	0	295	295	295
The Development (Site P)		0	0	220	220
Site Q	39	0	0	0	14
Site R	39	0	0	0	14
Site S	39	0	0	0	58
Site T	39	0	0	0	16
Site U	39	0	0	0	48
Total		0	3,524	3,744	4,588

*Refer to Figure 4.3 for location of each site

6.3 Proposed Traffic Generation

The traffic generation rates in this assessment is based on RMS Guide to Traffic Generating Developments Surveys, TDT 2013/04a⁷. This guide specifies the following rates for high density developments:

- AM Peak: 0.19 trips per dwelling
- PM Peak: 0.15 trips per dwelling

6.3.1 The Development

The application of the RMS trip rates above to the proposed development, results in the traffic generation shown in Table 6.3. Separate vehicle movement splits (inbound / outbound movement) for the proposed land use have been applied as per the following:

- AM – 20% inbound and 80% outbound
- PM – 80% inbound and 20% outbound

Table 6.3: Traffic Generated by the Proposed Development

Location	No. of Dwellings	AM			PM		
		Inbound	Outbound	Total	Inbound	Outbound	Total
The Development (Vivien Place)	220	9	34	43	27	7	34

NOTE: Inbound and outbound trips have been rounded up.

⁷ Available online at: <https://www.rms.nsw.gov.au/trafficinformation/downloads/td13-04a.pdf>

6.3.2 Precinct & Cumulative

Using the same trip rates presented in Section 6.3, the traffic generated by the remaining developments proposed in the Castle Hill North Precinct (refer to Figure 4.3) was calculated. Table 6.4 and Table 6.5 presents the AM and PM peak traffic generation for each scenario respectively.

Table 6.4: AM Peak Traffic Generated by the Castle Hill North Precinct by Scenario

Location*	No. of Dwellings	Dwellings per Ha	Scenario 1 (Existing 2019)	Scenario 2	Scenario 3	Scenario 4
A	74	96	-	-	-	15
B	90	96	-	-	-	18
C	143	96	-	-	-	28
D	142	96	-	-	-	28
E	165	240	-	33	33	33
F	373	240	-	72	72	72
G	670	240	-	128	128	128
H	410	240	-	79	79	79
I (Target Site)	923	565	-	177	177	177
J	337	384	-	65	65	65
K	88	192	-			18
L	107	192	-			22
M	351	312	-	68	68	68
N	50	96	-	-	-	10
O	295	240	-	57	57	57
P (Vivien Place)	220		-	-	43	43
Q	14	39	-	-	-	4
R	14	39	-	-	-	4
S	58	39	-	-	-	12
T	16	39	-	-	-	4
U	48	39	-	-	-	10
Total	4,588		0	679	722	895

*Refer to Figure 4.3 for location of each site

Table 6.5: PM Peak Traffic Generated by the Castle Hill North Precinct by Scenario

Location*	No. of Dwellings	Dwellings per Ha	Scenario 1 (Existing 2019)	Scenario 2	Scenario 3	Scenario 4
A	74	96	-	-	-	12
B	90	96	-	-	-	14
C	143	96	-	-	-	23
D	142	96	-	-	-	23

Location*	No. of Dwellings	Dwellings per Ha	Scenario 1 (Existing 2019)	Scenario 2	Scenario 3	Scenario 4
E	165	240	-	25	25	25
F	373	240	-	57	57	57
G	670	240	-	102	102	102
H	410	240	-	63	63	63
I (Target Site)	923	565	-	139	139	139
J	337	384	-	52	52	52
K	88	192	-			14
L	107	192	-			17
M	351	312	-	54	54	54
N	50	96	-	-	-	8
O	295	240	-	45	45	45
P (Vivien Place)	220		-	-	34	34
Q	14	39	-	-	-	3
R	14	39	-	-	-	3
S	58	39	-	-	-	9
T	16	39	-	-	-	3
U	48	39	-	-	-	8
Total	4,588		0	537	571	708

*Refer to Figure 4.3 for location of each site

6.4 Traffic Distribution

Trip distribution is based on Census Journey to Work data extracted from the 2016 Australian Bureau of Statistics (ABS) website for Castle Hill North SA2 (115011555). The data has been used to determine direction of travel to and from the Development, for people using private vehicles. The below traffic distribution was applied to traffic generated by the Development and that generated by the new developments within the precinct shown in Table 6.4 and Table 6.5.

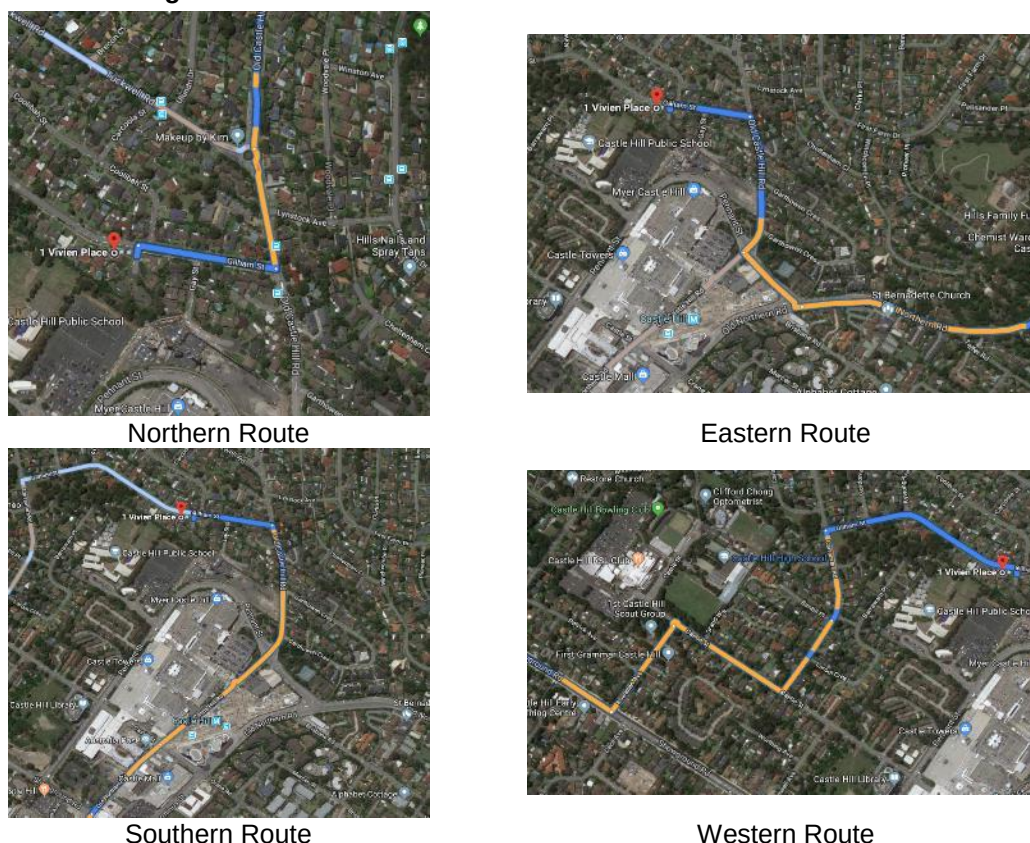
Table 6.6: Castle Hill North Traffic Distribution

Direction	Major Approach Carriageway	Percentage of Trips (%)
North	Old Castle Hill Rd	10
South	Old Northern Rd (S)	30
East	Old Northern Rd (E)	42
West	Showground Rd	18
Total	-	100

Specific routes of travel have been set based on assumed travel directions between the proposed site and peoples' place of work or usual residence, as stated in the 2016 ABS data and given in Table 6.6.

This is illustrated in Figure 6.3.

Figure 6.3: Existing Route of Travel



6.4.1 Future Route of Travel

As mentioned in Section 4.1, the Castle Hill North Precinct Plan references the commitment to a new link road between Gilham Street and Les Shore Place. This link road will provide an additional route for traffic travelling to the Development from the South and from the West as

shown in Figure 6.4 and Figure 6.5. For the purposes of this assessment, the new link road is assumed to attract 50% of traffic from the South and 50% from the West.

Figure 6.4: Routes from south after construction of new link road.



Figure 6.5: Routes from west after construction of new link road.



Refer to Appendix B for traffic volume maps used in the modelling.

6.5 Peak Period Intersection Performances

Intersection performance for Scenarios 1 to 5 is presented in Table 6.7 for the AM peak (08:00-09:00) and Table 6.8 for the PM peak (15:00-16:00).

The results presented for all intersections are 'network' results rather than 'isolated' intersection results. The effect of any queues blocking back from an upstream intersection to one downstream are therefore modelled and accounted for in the results.

For signalised intersections, the average intersection Degree of Saturation (DoS) and Level of Service (LoS) has been reported (as per RMS Guidelines⁸). For roundabouts and priority control intersections, the reported DoS and LoS are for the movements with the highest delay.

6.5.1 AM Peak Performance

The AM peak modelling results in Table 6.7 indicate the following:

- Under all scenarios, the DoS of all intersections is less than 1 (worse case 0.94) and the Level of Service is A-D.
- The increase in DoS and intersection delay from Scenario 2 (without the Development) to Scenario 3 (with the Development) is negligible. The intersection LoS is maintained in all cases.
- The five unsignalised intersections have reserve capacity under all scenarios.
- Under Scenario 4 (full development of all sites), the intersection of Old Castle Hill Road/McMullen Avenue/Pennant street is the most saturated with a DoS of 0.94 and a LoS of D.

6.5.2 PM Peak Performance

The PM peak modelling results in Table 6.8 indicate the following:

- For any given scenario, intersection performance is generally better in the PM peak compared the AM peak. Under all scenarios, the DoS of all intersections is less than 1 (worse case 0.92) and the Level of Service is A-D.
- The increase in DoS and intersection delay from Scenario 2 (without the Development) and Scenario 3 (with the Development) is negligible. Similar to the AM peak, intersection LOS is maintained in all cases.
- The five unsignalised intersections have reserve capacity under all scenarios.
- Under Scenario 4 (full development of all sites), the intersection of Les Shore PI / Castle Towers / Pennant St is the most saturated with a DoS of 0.92 and a LoS of D.

⁸ RTA Guide to Traffic Generating Developments, 2002. Available online at: <https://www.rms.nsw.gov.au/business-industry/partners-suppliers/documents/guides-manuals/guide-to-generating-traffic-developments.pdf>

Table 6.7: Intersection Performance, AM Peak

Intersection	Governance	Scenario 1 (Existing network, 2019 surveyed volumes)					Scenario 2					Scenario 3					Scenario 4				
		Traffic Volume	DoS	Delay	LoS	95% Queue length (m)	Traffic Volume (Demand)	DoS	Delay	LoS	95% Queue Length (m)	Traffic Volume (Demand)	DoS	Delay	LoS	95% Queue Length (m)	Traffic Volume (Demand)	DoS	Delay	LoS	95% Queue Length (m)
1-Gilham St / Carramarr Rd	Priority	387	0.09	8.5 (East)	A	3 (South)	463	0.13	8.7 (East)	A	4 (East)	472	0.14	8.7 (East)	A	4 (East)	484	0.14	8.8 (East)	A	4 (East)
2-Gilham St / Old Castle Rd	Priority / Roundabout*	1060	0.33	11.2 (West)	A	5 (West)	1235	0.50	8.9 (West)	A	29 (North)	1260	0.51	8.9 (West)	A	30 (North)	1280	0.51	8.9 (West)	A	30 (North)
3-Old Castle Hill Rd / McMullen Ave / Pennant St	Signalised	2651	0.77	31.3	C	193 (South-East)	2936	0.93	40.3	C	200 (South-East)	2956	0.94	40.9	C	199 (South-East)	3005	0.94	38.7	C	191 (South-East)
4-McMullen Ave / Old Northern Rd	Signalised	4352	0.80	26.4	B	221 (West)	4489	0.85	25.8	B	234 (West)	4499	0.85	25.7	B	233 (West)	4533	0.81	25.8	B	230 (West)
5-Gay St / Gilham St	Priority	245	0.07	5.9 (South)	A	<1 (South)	524	0.18	5.9 (South)	A	5 (South)	549	0.18	6.1 (South)	A	5 (South)	562	0.18	6.1 (South)	A	5 (South)
6-Castle St / Pennant St	Signalised	2447	0.61	28.7	C	144 (South-West)	2786	0.75	26.6	B	157 (South-West)	2805	0.75	26.5	B	160 (South-West)	2897	0.82	28.9	C	167 (South-West)
7-Les Shore PI / Castle Towers / Pennant St	Signalised	2225	0.72	25.9	B	125 (South-West)	2533	0.89	43	D	204 (South-West)	2552	0.93	46.3	D	213 (South-West)	2571	0.87	44.7	D	201 (South-West)
8-Castle Towers / Pennant St	Signalised	1707	0.27	4.1	A	78 (South-East)	1799	0.31	2.6	A	28 (North-West)	1799	0.31	2.5	A	21 (North-West)	1818	0.32	3.0	A	54 (North-West)
9-Gilham St / New Local Rd	Priority	Intersection does not exist in this Scenario					442	0.12	5.4 (South)	A	2 (South)	469	0.13	5.9 (South)	A	2 (South)	482	0.13	5.9 (South)	A	2 (South)

Table 6.8: Intersection Performance, PM Peak

Intersection	Governance	Scenario 1 (Existing network, 2019 surveyed volumes)					Scenario 2					Scenario 3					Scenario 4				
		Traffic Volume	DoS	Delay	LoS	95% Queue length (m)	Traffic Volume (Demand)	DoS	Delay	LoS	95% Queue Length (m)	Traffic Volume (Demand)	DoS	Delay	LoS	95% Queue Length (m)	Traffic Volume (Demand)	DoS	Delay	LoS	95% Queue Length (m)
1-Gilham St / Carramarr Rd	Priority	353	0.10	8 (East)	A	2 (South)	414	0.12	8.6 (East)	A	3 (South)	420	0.13	8.6 (East)	A	4 (South)	431	0.13	8.6 (East)	A	4 (South)
2-Gilham St / Old Castle Rd	Priority / Roundabout*	995	0.26	10 (South)	A	6 (West)	1136	0.37	10.3 (West)	A	18 (South)	1157	0.38	10.3 (West)	A	18 (South)	1173	0.39	10.2 (West)	A	19 (South)
3-Old Castle Hill Rd / McMullen Ave / Pennant St	Signalised	2900	0.70	33.3	C	165 (South-East)	3125	0.88	35.1	C	154 (North-West)	3142	0.87	34.8	C	155 (North-West)	3183	0.91	37.4	C	171 (South-West)
4-McMullen Ave / Old Northern Rd	Signalised	4248	0.74	23.5	B	185 (West)	4386	0.74	25.0	B	185 (West)	4395	0.74	24.9	B	188 (West)	4428	0.74	25.2	B	190 (West)
5-Gay St / Gilham St	Priority	192	0.05	5.4 (South)	A	1 (South)	413	0.10	6.0 (South)	A	3 (West)	434	0.11	6.1 (South)	A	3 (West)	444	0.11	6.1 (South)	A	3 (West)
6-Castle St / Pennant St	Signalised	2891	0.82	31.1	C	159 (North-East)	3133	0.82	28.1	B	161 (South-West)	3147	0.83	27.9	B	161 (South-West)	3218	0.84	28.3	B	174 (South-West)
7-Les Shore Pl / Castle Towers / Pennant St	Signalised	2368	0.62	21.5	B	98.4 (North-East)	2619	0.79	38.1	C	170 (South-West)	2634	0.77	36.5	C	169 (South-West)	2646	0.92	42.7	D	192 (South-West)
8-Castle Towers / Pennant St	Signalised	1886	0.29	50.1 (South-West)	D	80.6 (South-East)	1963	0.35	6.4	A	38 (North-West)	1963	0.35	6.1	A	28 (South-East)	1976	0.38	6.5	A	43 (North-West)
9-Gilham St / New Local Rd	Priority	Intersection does not exist in this Scenario					283	0.07	5.2 (South)	A	2 (South)	304	0.09	5.2 (South)	A	2 (South)	315	0.09	5.3 (South)	A	2 (South)

7 Summary and Conclusions

7.1 Summary

This Traffic Impact Assessment has been prepared to support the re-zoning of Vivien Place from R2-Low Density Residential to R4 High Density Residential. The key features of this study are as follows:

- The Development is located in Castle Hill approximately 25km north west of Sydney CBD. The Development has good public transport connections with a number of bus services and the Castle Hill metro station approximately 500m south of the site.
- The existing Vivien Place site comprises of 11 lots while the proposed Development comprises of 220 residential units.
- The estimated traffic generation for the development is 43 trips in the AM peak (08:00-09:00) and 34 trips in the PM peak (15:00-16:00)
- A number of other residential developments are proposed in the surrounding area. Together with the Vivien Place Development, 4,588 additional dwellings are proposed. The associated traffic generation for all these developments (including the Vivien Place Development) is 895 trips in the AM peak and 708 trips in the PM peak.
- A new link road of 270m length is proposed on the western edge of the Development to connect Gilham Road to Les Shore place. This road will provide enhance connectivity within the area.
- The intersection of Gilham Street/Old Castle Hill road is proposed to be converted from a priority intersection to a roundabout.

A network model using SIDRA was developed for eight intersections surrounding the proposed Development. The modelling demonstrates that:

- If only the sites with the highest densities are developed (those with densities of 240 dwellings per hectare and above), all intersections will operate within acceptable LOS of grade D or better. The impact of the Development on the surrounding network is negligible. (Refer to Scenario 3 results in Section 6).
- If all sites are developed (i.e. those with densities of less than 240 dwellings per hectare as well as those with 240 dwellings per hectare and above), all intersections will still operate with LOS of grade D or better. The intersection of Old Castle Hill Road/McMullen Avenue/Pennant street is the worst performing intersection in the AM peak with DoS of 0.94 and LoS C. It is understood that RMS have plans to upgrade this intersection subject to being able to acquire adjacent properties. For the purposes of this report however, the intersection has been modelled as per its existing layout.

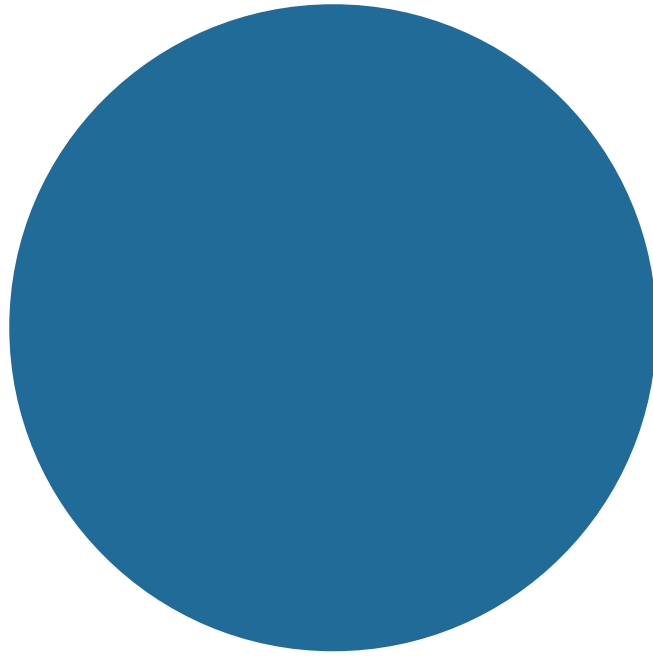
Given its proximity to a metro station and the Castle Towers Shopping Centre, travel to and from the proposed development is expected to favour public transport modes and walking and cycling. This is consistent with the State Government's 2056 Future Transport Strategy.⁹

7.2 Recommendations

The following key recommendations have been identified as part of this study:

- **Car parking provision** - The Development adopt the parking rates stipulated within the The Hills Development Control Plan (DCP) 2012 Part D Section 20 - Castle Hill North Precinct. This results in a total parking requirement of 264 bays. The majority of parking is to be provided within basement levels.
- **Bicycle Parking** - the Development will provide both secure parking for 93 bicycles (74 for residents and 13 for visitors) in line with the rates provided in The Hill DCP, 2012.
- **Pedestrian walkways** - The surrounding footpaths adjacent to the Development can cater for high pedestrian demand, and the future concept design for the proposed development should seek to retain and / or improve and offer suitable connections to surrounding areas.

⁹ NSW Government, Future Transport Strategy 2056, Available online at:
https://future.transport.nsw.gov.au/sites/default/files/media/documents/2018/Future_Transport_2056_Strategy.pdf



Appendices

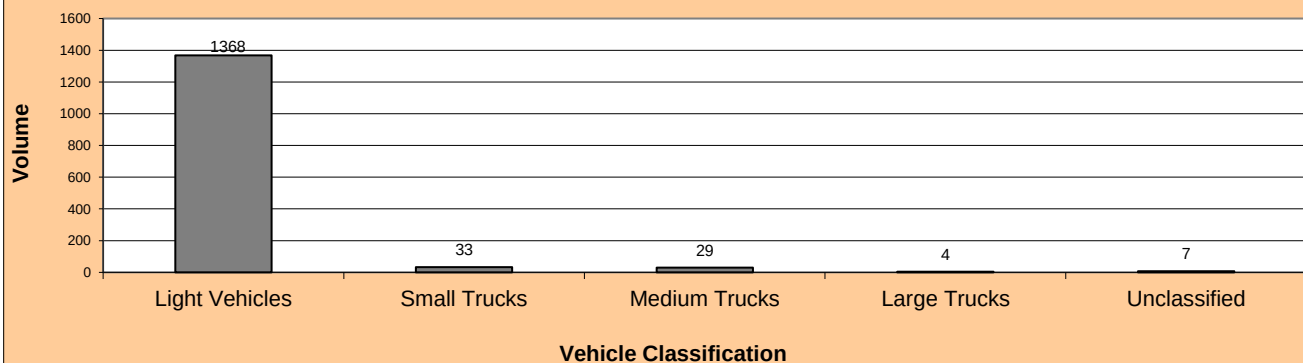
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A. Observed Traffic Volumes

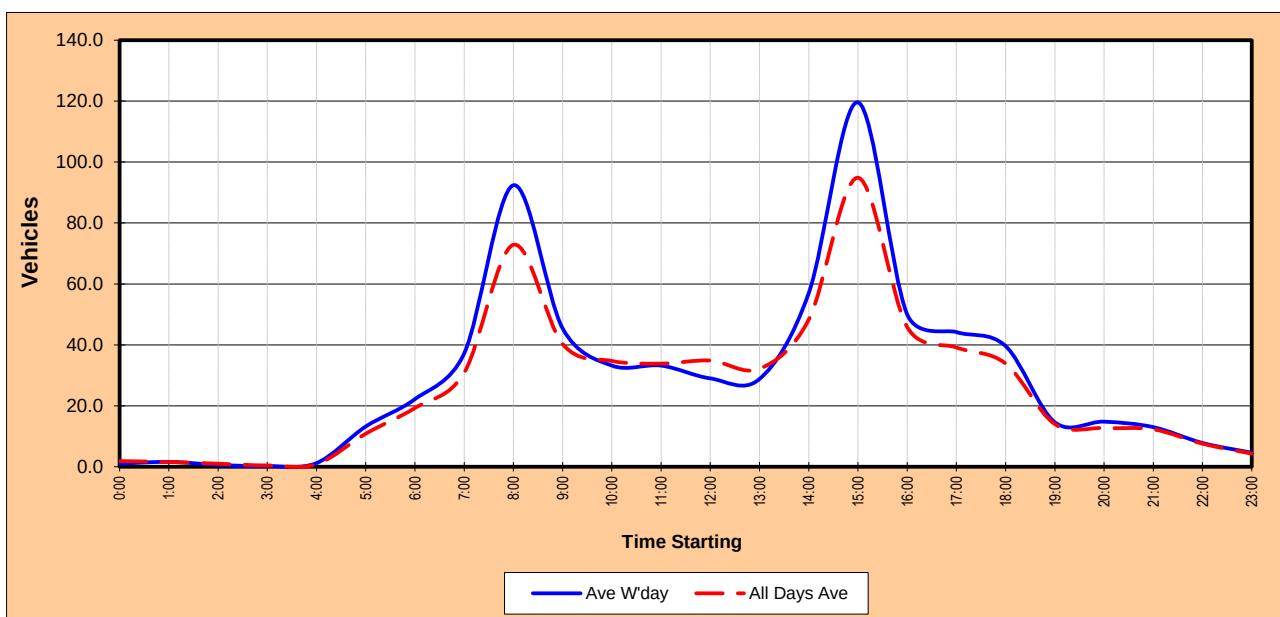
Road	Gilham Street	Light Vehicles	94.9%
Location	Between Gay St & Old Castle Hill Road	Small Trucks	2.3%
Suburb	Castle Hill	Medium Trucks	2.0%
Site No.	8752_1	Large Trucks	0.3%
Start Date	Tuesday 23/07/2019	Unclassified	0.5%
Displayed	WeekDay Avg Two ways	AM Peak	8:00 205.0
		PM Peak	15:00 172.0

Time Starting	Vehicle Classification					Hour Total
	Light Vehicles	Small Trucks	Medium Trucks	Large Trucks	Unclassified	
0:00	3.6	0.0	0.0	0.0	0.2	3.8
1:00	2.4	0.0	0.0	0.0	0.0	2.4
2:00	0.8	0.0	0.0	0.0	0.2	1.0
3:00	0.2	0.0	0.0	0.0	0.0	0.2
4:00	2.4	0.0	0.2	0.0	0.0	2.6
5:00	21.4	0.8	0.0	0.0	0.0	22.2
6:00	126.0	0.8	1.6	0.2	1.0	129.6
7:00	71.0	1.0	1.8	0.8	1.0	75.6
8:00	197.2	4.2	2.4	0.2	1.0	205.0
9:00	73.6	2.8	3.0	0.4	0.4	80.2
10:00	50.6	2.6	2.6	0.4	0.2	56.4
11:00	55.6	4.0	4.0	0.6	0.8	65.0
12:00	52.4	3.2	5.4	0.8	0.2	62.0
13:00	49.8	2.2	4.6	0.6	0.6	57.8
14:00	123.0	2.8	2.4	0.2	0.0	128.4
15:00	167.6	2.8	0.8	0.0	0.8	172.0
16:00	86.6	1.6	0.4	0.0	0.0	88.6
17:00	86.8	1.8	0.0	0.0	0.2	88.8
18:00	72.8	1.8	0.0	0.0	0.4	75.0
19:00	40.8	0.0	0.0	0.0	0.2	41.0
20:00	32.4	0.2	0.0	0.0	0.0	32.6
21:00	27.0	0.0	0.0	0.0	0.0	27.0
22:00	15.4	0.2	0.0	0.0	0.0	15.6
23:00	8.6	0.2	0.0	0.0	0.0	8.8
Total	1368	33	29	4	7	1442



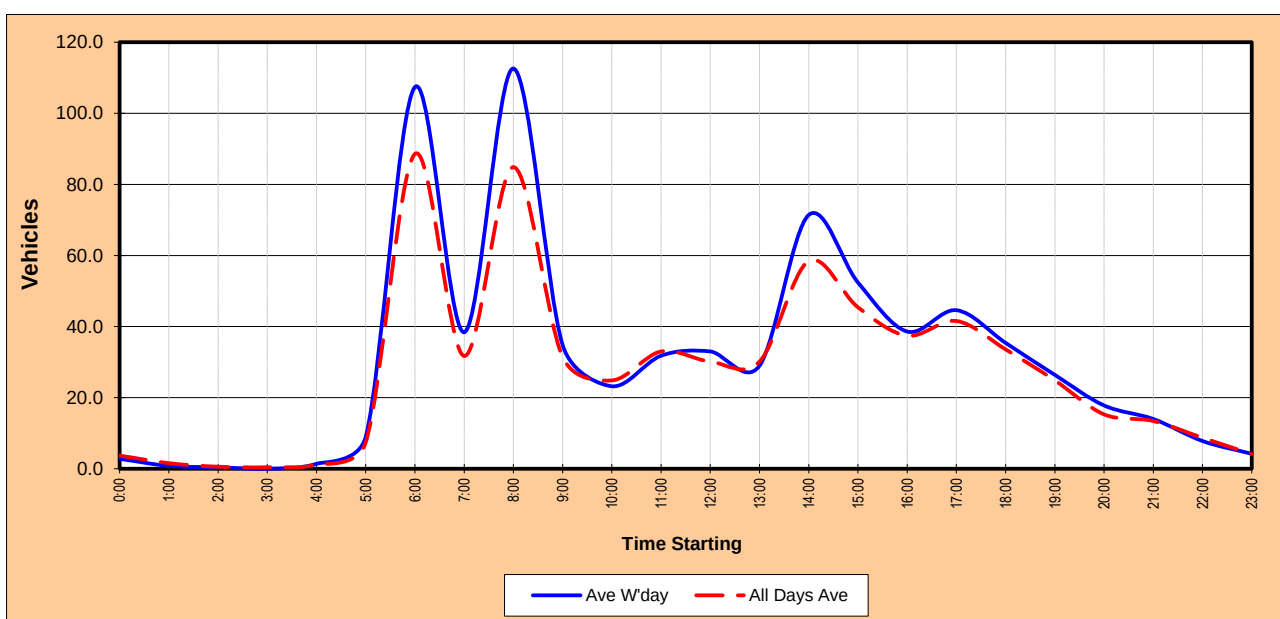
Road	Gilham Street		
Location	Between Gay St & Old Castle Hill Road	Average Weekday	704
Suburb	Castle Hill	All Day Average	628
Site No.	8752_1	Weekday Heavy's	4.9%
Start Date	Tuesday 23/07/2019	All Day Heavy's	4.4%
Direction	Eastbound		

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul		
AM Peak	89	94	103	90	86	51	26		
PM Peak	107	124	119	116	132	69	36		
0:00	0	1	2	1	1	5	3	1	2
1:00	0	1	4	1	2	2	1	2	2
2:00	1	0	1	0	1	2	2	1	1
3:00	0	0	1	0	0	2	0	0	0
4:00	1	0	0	3	2	0	0	1	1
5:00	15	12	13	13	13	5	5	13	11
6:00	23	24	21	25	18	15	9	22	19
7:00	42	32	37	38	37	21	9	37	31
8:00	89	94	103	90	86	32	16	92	73
9:00	47	53	42	35	50	31	24	45	40
10:00	28	46	28	29	35	51	26	33	35
11:00	27	47	26	31	35	50	21	33	34
12:00	24	27	28	22	44	69	30	29	35
13:00	27	31	20	32	34	56	25	29	32
14:00	63	60	53	54	55	31	22	57	48
15:00	107	124	119	116	132	40	26	120	95
16:00	53	52	52	42	51	35	36	50	46
17:00	44	55	43	47	32	23	30	44	39
18:00	33	45	42	39	39	26	13	40	34
19:00	14	18	13	9	19	12	13	15	14
20:00	14	11	15	22	12	7	8	15	13
21:00	11	18	13	12	11	13	8	13	12
22:00	7	8	8	10	6	9	5	8	8
23:00	3	4	6	5	5	3	4	5	4
Total	673	763	690	676	720	540	336	704	628
% Heavies	4.0%	5.8%	3.3%	4.3%	7.1%	2.4%	2.1%	4.9%	4.4%



Road	Gilham Street		
Location	Between Gay St & Old Castle Hill Road	Average Weekday	737
Suburb	Castle Hill	All Day Average	652
Site No.	8752_1	Weekday Heavy's	4.3%
Start Date	Tuesday 23/07/2019	All Day Heavy's	3.9%
Direction	Westbound		

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Jul	23-Jul	24-Jul	25-Jul	26-Jul	27-Jul	28-Jul		
AM Peak	114	109	109	111	129	82	28		
PM Peak	73	70	70	73	71	38	37		
0:00	0	3	1	5	5	4	8	3	4
1:00	0	0	2	1	1	4	3	1	2
2:00	0	1	0	0	1	1	1	0	1
3:00	0	0	0	0	0	1	2	0	0
4:00	2	0	2	3	0	0	1	1	1
5:00	10	10	10	8	7	6	1	9	7
6:00	114	109	109	96	109	82	1	107	89
7:00	36	38	36	43	39	24	6	38	32
8:00	113	103	107	111	129	23	8	113	85
9:00	27	40	28	37	42	29	17	35	31
10:00	16	20	21	29	30	37	21	23	25
11:00	39	37	22	34	27	44	28	32	33
12:00	22	38	37	26	42	24	22	33	30
13:00	28	33	28	26	30	38	28	29	30
14:00	73	70	70	73	71	19	33	71	58
15:00	47	54	55	52	54	30	26	52	45
16:00	41	31	49	35	37	33	36	39	37
17:00	45	52	32	56	38	31	37	45	42
18:00	27	46	37	40	27	37	21	35	34
19:00	23	27	25	27	30	22	20	26	25
20:00	11	17	17	28	16	9	9	18	15
21:00	11	16	15	16	12	14	10	14	13
22:00	8	11	7	8	5	16	6	8	9
23:00	3	4	4	1	9	6	2	4	4
Total	696	760	714	755	761	534	347	737	652
% Heavies	3.3%	7.0%	2.9%	2.4%	5.7%	3.2%	0.3%	4.3%	3.9%





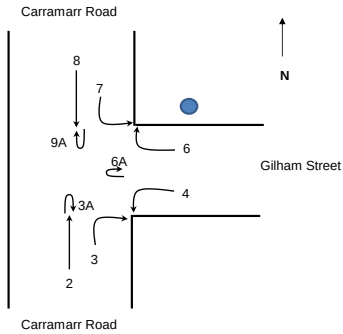
8752 - Vivien Place, Castle Hill

Tuesday, August 6, 2019

JOB NUMBER	8752
JOB NAME	Vivien Place, Castle Hill
CLIENT	Mott MacDonald
SURVEY LOCATIONS	1. Gilham Street & Carramarr Road 2. Gilham Street & Old Castle Hill Road 3. Old Castle Hill Road & Pennant Street & McMullen Avenue 4. Old Northern Road & McMullen Avenue 5. Gilham Street & Gay Street 6. Pennant Street & Castle Street 7. Pennant Street & Les Shore Place 8. Pennant Street & Castle Towers car park northern entry
SURVEY TYPE	Intersection Count
SURVEY DATE	Tuesday, August 6, 2019
SURVEY PERIOD	6:00 AM - 9:00 AM 3:00 PM - 7:00 PM
WEATHER	Fine



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Carramarr Road
 Weather : Fine



AM

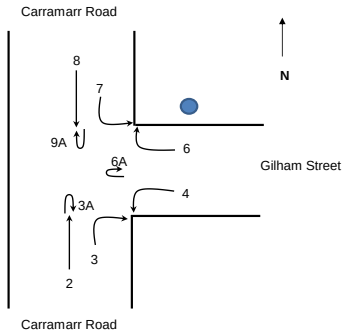
Time Period	Movement 2			Movement 3			Movement 3A			Movement 4			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		6:00 - 7:00	92
6:00 - 6:15	3	0	3	5	0	5	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	8	0	8	0	0	0	17		
6:15 - 6:30	5	0	5	3	0	3	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	9	0	9	0	0	0	18	6:15 - 7:15	107
6:30 - 6:45	6	0	6	0	0	0	0	0	0	4	0	4	0	0	0	0	0	0	1	0	1	10	0	10	0	0	0	21	6:30 - 7:30	130
6:45 - 7:00	7	0	7	7	1	8	0	0	0	3	0	3	0	0	0	0	0	0	3	0	3	15	0	15	0	0	0	36	6:45 - 7:45	165
7:00 - 7:15	10	0	10	6	0	6	0	0	0	4	0	4	1	0	1	0	0	0	1	0	1	10	0	10	0	0	0	32	7:00 - 8:00	184
7:15 - 7:30	14	0	14	2	0	2	0	0	0	3	0	3	2	0	2	0	0	0	1	0	1	18	1	19	0	0	0	41	7:15 - 8:15	192
7:30 - 7:45	10	0	10	7	0	7	0	0	0	7	0	7	1	0	1	0	0	0	2	0	2	29	0	29	0	0	0	56	7:30 - 8:30	236
7:45 - 8:00	16	0	16	6	0	6	0	0	0	4	0	4	1	0	1	0	0	0	0	0	0	28	0	28	0	0	0	55	7:45 - 8:45	303
8:00 - 8:15	6	0	6	5	0	5	0	0	0	1	0	1	3	1	4	0	0	0	5	0	5	19	0	19	0	0	0	40	8:00 - 9:00	368
8:15 - 8:30	11	1	12	12	1	13	0	0	0	17	0	17	3	0	3	0	0	0	6	0	6	33	1	34	0	0	0	85	AM Peak	368
8:30 - 8:45	14	0	14	26	0	26	0	0	0	28	0	28	7	0	7	0	0	0	8	0	8	40	0	40	0	0	0	123		
8:45 - 9:00	24	0	24	24	0	24	0	0	0	21	0	21	11	0	11	0	0	0	9	0	9	30	1	31	0	0	0	120		
Total	126	1	127	103	2	105	0	0	0	93	0	93	29	1	30	0	0	0	37	0	37	249	3	252	0	0	0	644		
AM Peak	55	1	56	67	1	68	0	0	0	67	0	67	24	1	25	0	0	0	28	0	28	122	2	124	0	0	0	368		

PM

Time Period	Movement 2			Movement 3			Movement 3A			Movement 4			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		15:00 - 16:00	335
15:00 - 15:15	41	1	42	10	0	10	0	0	0	17	0	17	13	0	13	0	0	0	4	0	4	27	0	27	0	0	0	113		
15:15 - 15:30	35	1	36	15	0	15	0	0	0	14	0	14	7	0	7	0	0	0	2	0	2	21	0	21	0	0	0	95	15:15 - 16:15	289
15:30 - 15:45	27	1	28	4	0	4	0	0	0	9	0	9	3	0	3	0	0	0	0	0	0	19	0	19	0	0	0	63	15:30 - 16:30	249
15:45 - 16:00	26	0	26	7	0	7	0	0	0	3	0	3	1	0	1	0	0	0	1	0	1	26	0	26	0	0	0	64	15:45 - 16:45	246
16:00 - 16:15	29	0	29	8	0	8	0	0	0	7	0	7	2	0	2	0	0	0	1	0	1	20	0	20	0	0	0	67	16:00 - 17:00	250



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
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 Survey Location : Gilham Street & Carramarr Road
 Weather : Fine



AM

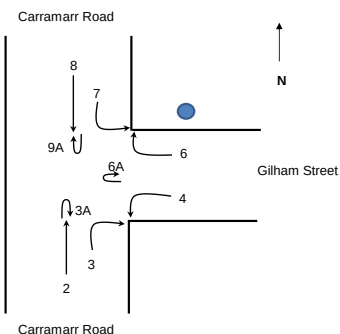
Time Period	Movement 2			Movement 3			Movement 3A			Movement 4			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
16:15 - 16:30	17	0	17	6	0	6	0	0	0	6	0	6	3	1	4	0	0	0	2	0	2	20	0	20	0	0	0	55	16:15 - 17:15	270
16:30 - 16:45	30	0	30	5	0	5	0	0	0	5	0	5	6	0	6	0	0	0	2	0	2	12	0	12	0	0	0	60	16:30 - 17:30	278
16:45 - 17:00	37	1	38	4	0	4	0	0	0	6	0	6	3	0	3	0	0	0	0	0	0	17	0	17	0	0	0	68	16:45 - 17:45	285
17:00 - 17:15	56	0	56	9	0	9	0	0	0	5	0	5	3	0	3	0	0	0	1	0	1	13	0	13	0	0	0	87	17:00 - 18:00	279
17:15 - 17:30	37	0	37	5	0	5	0	0	0	4	0	4	3	0	3	0	0	0	0	0	0	14	0	14	0	0	0	63	17:15 - 18:15	268
17:30 - 17:45	28	0	28	6	0	6	0	0	0	11	0	11	4	0	4	0	0	0	1	0	1	17	0	17	0	0	0	67	17:30 - 18:30	258
17:45 - 18:00	27	0	27	6	0	6	0	0	0	3	0	3	4	0	4	0	0	0	0	0	0	22	0	22	0	0	0	62	17:45 - 18:45	249
18:00 - 18:15	42	0	42	6	0	6	0	0	0	9	0	9	2	0	2	0	0	0	0	0	0	17	0	17	0	0	0	76	18:00 - 19:00	244
18:15 - 18:30	22	0	22	6	0	6	0	0	0	6	0	6	2	0	2	0	0	0	2	0	2	15	0	15	0	0	0	53	PM Peak	335
18:30 - 18:45	26	0	26	10	0	10	0	0	0	3	0	3	1	0	1	0	0	0	1	0	1	17	0	17	0	0	0	58		
18:45 - 19:00	29	0	29	0	0	0	0	0	0	6	1	7	0	0	0	0	0	0	0	0	0	21	0	21	0	0	0	57		
Total	509	4	513	107	0	107	0	0	0	114	1	115	57	1	58	0	0	0	17	0	17	298	0	298	0	0	0	1108		
PM Peak	129	3	132	36	0	36	0	0	0	43	0	43	24	0	24	0	0	0	7	0	7	93	0	93	0	0	0	335		

HOURLY FLOW

TIME PERIOD	Movement 2			Movement 3			Movement 3A			Movement 4			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
6:00 - 7:00	21	0	21	15	1	16	0	0	0	8	0	8	0	0	0	0	0	0	5	0	5	42	0	42	0	0	0	91	1	92
6:15 - 7:15	28	0	28	16	1	17	0	0	0	12	0	12	1	0	1	0	0	0	5	0	5	44	0	44	0	0	0	106	1	107
6:30 - 7:30	37	0	37	15	1	16	0	0	0	14	0	14	3	0	3	0	0	0	6	0	6	53	1	54	0	0	0	128	2	130
6:45 - 7:45	41	0	41	22	1	23	0	0	0	17	0	17	4	0	4	0	0	0	7	0	7	72	1	73	0	0	0	163	2	165
7:00 - 8:00	50	0	50	21	0	21	0	0	0	18	0	18	5	0	5	0	0	0	4	0	4	85	1	86	0	0	0	183	1	184
7:15 - 8:15	46	0	46	20	0	20	0	0	0	15	0	15	7	1	8	0	0	0	8	0	8	94	1	95	0	0	0	190	2	192



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
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 Weather : Fine



AM

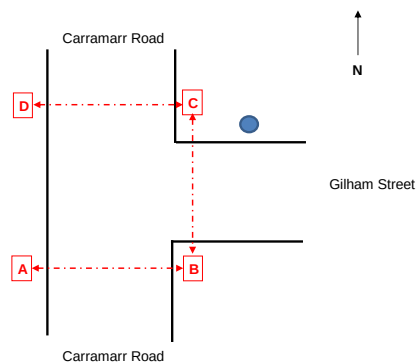
Time Period	Movement 2			Movement 3			Movement 3A			Movement 4			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
7:30 - 8:30	43	1	44	30	1	31	0	0	0	29	0	29	8	1	9	0	0	0	13	0	13	109	1	110	0	0	0	232	4	236
7:45 - 8:45	47	1	48	49	1	50	0	0	0	50	0	50	14	1	15	0	0	0	19	0	19	120	1	121	0	0	0	299	4	303
8:00 - 9:00	55	1	56	67	1	68	0	0	0	67	0	67	24	1	25	0	0	0	28	0	28	122	2	124	0	0	0	363	5	368

HOURLY FLOW

TIME PERIOD	Movement 2			Movement 3			Movement 3A			Movement 4			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
15:00 - 16:00	129	3	132	36	0	36	0	0	0	43	0	43	24	0	24	0	0	0	7	0	7	93	0	93	0	0	0	332	3	335
15:15 - 16:15	117	2	119	34	0	34	0	0	0	33	0	33	13	0	13	0	0	0	4	0	4	86	0	86	0	0	0	287	2	289
15:30 - 16:30	99	1	100	25	0	25	0	0	0	25	0	25	9	1	10	0	0	0	4	0	4	85	0	85	0	0	0	247	2	249
15:45 - 16:45	102	0	102	26	0	26	0	0	0	21	0	21	12	1	13	0	0	0	6	0	6	78	0	78	0	0	0	245	1	246
16:00 - 17:00	113	1	114	23	0	23	0	0	0	24	0	24	14	1	15	0	0	0	5	0	5	69	0	69	0	0	0	248	2	250
16:15 - 17:15	140	1	141	24	0	24	0	0	0	22	0	22	15	1	16	0	0	0	5	0	5	62	0	62	0	0	0	268	2	270
16:30 - 17:30	160	1	161	23	0	23	0	0	0	20	0	20	15	0	15	0	0	0	3	0	3	56	0	56	0	0	0	277	1	278
16:45 - 17:45	158	1	159	24	0	24	0	0	0	26	0	26	13	0	13	0	0	0	2	0	2	61	0	61	0	0	0	284	1	285
17:00 - 18:00	148	0	148	26	0	26	0	0	0	23	0	23	14	0	14	0	0	0	2	0	2	66	0	66	0	0	0	279	0	279
17:15 - 18:15	134	0	134	23	0	23	0	0	0	27	0	27	13	0	13	0	0	0	1	0	1	70	0	70	0	0	0	268	0	268
17:30 - 18:30	119	0	119	24	0	24	0	0	0	29	0	29	12	0	12	0	0	0	3	0	3	71	0	71	0	0	0	258	0	258
17:45 - 18:45	117	0	117	28	0	28	0	0	0	21	0	21	9	0	9	0	0	0	3	0	3	71	0	71	0	0	0	249	0	249
18:00 - 19:00	119	0	119	22	0	22	0	0	0	24	1	25	5	0	5	0	0	0	3	0	3	70	0	70	0	0	0	243	1	244



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
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 Weather : Fine

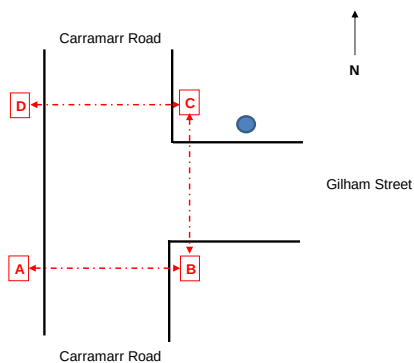


AM

Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			
6:00 - 6:15	0	0	0	0	0	0			0	6:00 - 7:00	0
6:15 - 6:30	0	0	0	0	0	0			0	6:15 - 7:15	0
6:30 - 6:45	0	0	0	0	0	0			0	6:30 - 7:30	1
6:45 - 7:00	0	0	0	0	0	0			0	6:45 - 7:45	2
7:00 - 7:15	0	0	0	0	0	0			0	7:00 - 8:00	4
7:15 - 7:30	0	0	0	1	0	0			1	7:15 - 8:15	4
7:30 - 7:45	0	1	0	0	0	0			1	7:30 - 8:30	3
7:45 - 8:00	0	0	0	0	2	0			2	7:45 - 8:45	2
8:00 - 8:15	0	0	0	0	1	0			1	8:00 - 9:00	22
8:15 - 8:30	1	1	0	0	2	0			4	AM Peak	22
8:30 - 8:45	7	4	0	0	5	0			16		
8:45 - 9:00	0	1	0	0	0	0			1		
Total	8	7	0	1	10	0			26		
AM Peak	8	6	0	0	8	0			22		



Client : Mott MacDonald
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 Weather : Fine



AM

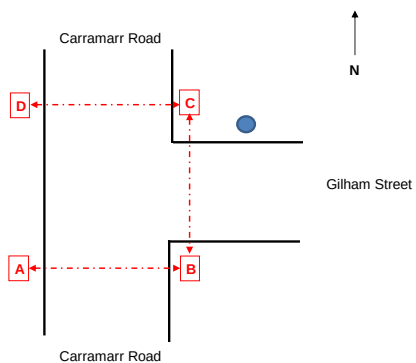
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			

PM

Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination		
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D				
15:00 - 15:15	7	7	1	1	0	8			24	15:00 - 16:00	28	
15:15 - 15:30	0	0	0	0	0	2			2	15:15 - 16:15	4	
15:30 - 15:45	1	1	0	0	0	0			2	15:30 - 16:30	2	
15:45 - 16:00	0	0	0	0	0	0			0	15:45 - 16:45	3	
16:00 - 16:15	0	0	0	0	0	0			0	16:00 - 17:00	4	
16:15 - 16:30	0	0	0	0	0	0			0	16:15 - 17:15	4	
16:30 - 16:45	1	0	0	1	1	0			3	16:30 - 17:30	4	
16:45 - 17:00	0	1	0	0	0	0			1	16:45 - 17:45	1	
17:00 - 17:15	0	0	0	0	0	0			0	17:00 - 18:00	0	
17:15 - 17:30	0	0	0	0	0	0			0	17:15 - 18:15	1	
17:30 - 17:45	0	0	0	0	0	0			0	17:30 - 18:30	3	
17:45 - 18:00	0	0	0	0	0	0			0	17:45 - 18:45	6	
18:00 - 18:15	0	1	0	0	0	0			1	18:00 - 19:00	6	
18:15 - 18:30	0	0	0	2	0	0			2	PM Peak	28	
18:30 - 18:45	1	0	2	0	0	0			3			
18:45 - 19:00	0	0	0	0	0	0			0			
Total	10	10	3	4	1	10			38			
PM Peak	8	8	1	1	0	10			28			



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AM

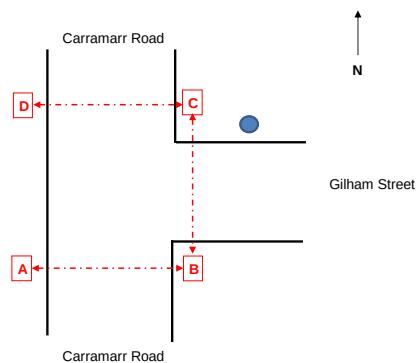
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
6:00 - 7:00	0	0	0	0	0	0			0
6:15 - 7:15	0	0	0	0	0	0			0
6:30 - 7:30	0	0	0	1	0	0			1
6:45 - 7:45	0	1	0	1	0	0			2
7:00 - 8:00	0	1	0	1	2	0			4
7:15 - 8:15	0	1	0	1	2	0			4
7:30 - 8:30	0	1	0	0	2	0			3
7:45 - 8:45	0	0	0	0	2	0			2
8:00 - 9:00	8	6	0	0	8	0			22



Client : Mott MacDonald
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AM

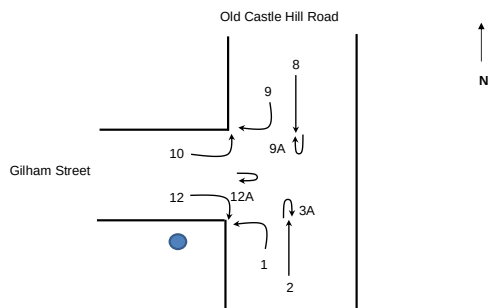
Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
15:00 - 16:00	8	8	1	1	0	10			28
15:15 - 16:15	1	1	0	0	0	2			4
15:30 - 16:30	1	1	0	0	0	0			2
15:45 - 16:45	1	0	0	1	1	0			3
16:00 - 17:00	1	1	0	1	1	0			4
16:15 - 17:15	1	1	0	1	1	0			4
16:30 - 17:30	1	1	0	1	1	0			4
16:45 - 17:45	0	1	0	0	0	0			1
17:00 - 18:00	0	0	0	0	0	0			0
17:15 - 18:15	0	1	0	0	0	0			1
17:30 - 18:30	0	1	0	2	0	0			3
17:45 - 18:45	1	1	2	2	0	0			6
18:00 - 19:00	1	1	2	2	0	0			6



Client : Mott MacDonald
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AM

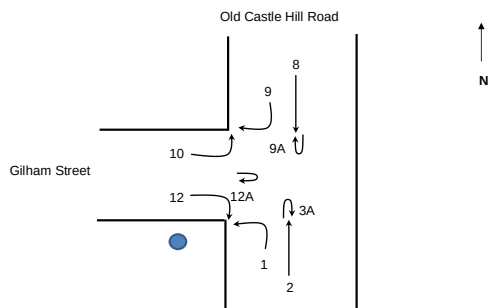
Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				
6:00 - 6:15	12	0	12	5	2	7	0	0	0	32	4	36	0	0	0	0	0	0	2	0	2	4	0	4	0	0	0	61	6:00 - 7:00	415	
6:15 - 6:30	31	2	33	5	4	9	0	0	0	32	3	35	2	0	2	0	0	0	0	0	0	3	0	3	0	0	0		82	6:15 - 7:15	486
6:30 - 6:45	35	0	35	22	2	24	0	0	0	66	5	71	3	0	3	0	0	0	0	0	0	6	0	6	0	0	0		139	6:30 - 7:30	562
6:45 - 7:00	28	0	28	19	2	21	0	0	0	62	4	66	7	0	7	0	0	0	0	0	0	10	1	11	0	0	0		133	6:45 - 7:45	585
7:00 - 7:15	13	0	13	25	4	29	0	0	0	75	4	79	1	0	1	0	0	0	4	0	4	6	0	6	0	0	0		132	7:00 - 8:00	656
7:15 - 7:30	8	0	8	29	1	30	1	0	1	96	7	103	5	0	5	0	0	0	2	0	2	8	0	8	1	0	1		158	7:15 - 8:15	741
7:30 - 7:45	6	0	6	33	4	37	0	0	0	100	3	103	4	0	4	0	0	0	4	0	4	8	0	8	0	0	0		162	7:30 - 8:30	852
7:45 - 8:00	10	2	12	54	3	57	0	0	0	113	4	117	5	0	5	0	0	0	4	0	4	9	0	9	0	0	0		204	7:45 - 8:45	949
8:00 - 8:15	8	3	11	54	3	57	0	0	0	125	3	128	2	0	2	1	0	1	5	0	5	12	1	13	0	0	0	217	8:00 - 9:00	1008	
8:15 - 8:30	18	0	18	69	2	71	0	0	0	140	5	145	9	0	9	0	0	0	8	0	8	17	1	18	0	0	0		269	AM Peak	1008
8:30 - 8:45	23	3	26	50	4	54	0	0	0	131	5	136	14	0	14	0	0	0	10	0	10	17	2	19	0	0	0		259		
8:45 - 9:00	16	1	17	53	4	57	0	0	0	123	4	127	20	0	20	0	0	0	16	0	16	25	1	26	0	0	0		263		
Total	208	11	219	418	35	453	1	0	1	1095	51	1146	72	0	72	1	0	1	55	0	55	125	6	131	1	0	1	2079			
AM Peak	65	7	72	226	13	239	0	0	0	519	17	536	45	0	45	1	0	1	39	0	39	71	5	76	0	0	0	1008			

PM

Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
15:00 - 15:15	9	1	10	105	1	106	0	0	0	71	3	74	7	0	7	0	0	0	14	0	14	38	1	39	0	0	0	250	15:00 - 16:00	945
15:15 - 15:30	7	5	12	110	0	110	0	0	0	103	3	106	2	0	2	0	0	0	6	0	6	19	3	22	0	0	0	258	15:15 - 16:15	951
15:30 - 15:45	7	0	7	107	6	113	0	0	0	81	2	83	3	0	3	0	0	0	2	0	2	23	2	25	0	0	0	233	15:30 - 16:30	900
15:45 - 16:00	6	2	8	93	5	98	0	0	0	74	4	78	0	0	0	0	0	0	6	0	6	12	2	14	0	0	0	204	15:45 - 16:45	904
16:00 - 16:15	5	4	9	140	3	143	0	0	0	80	5	85	1	0	1	0	0	0	6	0	6	11	1	12	0	0	0	256	16:00 - 17:00	925



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Old Castle Hill Road
 Weather : Fine



AM

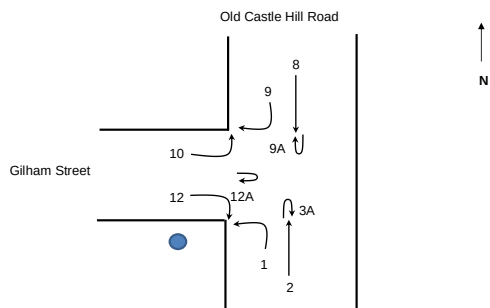
Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
16:15 - 16:30	8	0	8	113	1	114	0	0	0	66	2	68	2	1	3	0	0	0	1	0	1	11	2	13	0	0	0	207	16:15 - 17:15	858
16:30 - 16:45	10	0	10	137	5	142	0	0	0	73	2	75	1	0	1	0	0	0	3	0	3	4	2	6	0	0	0	237	16:30 - 17:30	872
16:45 - 17:00	6	2	8	130	3	133	0	0	0	64	3	67	4	0	4	0	0	0	2	0	2	9	2	11	0	0	0	225	16:45 - 17:45	873
17:00 - 17:15	12	3	15	118	4	122	0	0	0	37	1	38	3	0	3	0	0	0	4	0	4	5	2	7	0	0	0	189	17:00 - 18:00	858
17:15 - 17:30	11	3	14	117	3	120	0	0	0	70	2	72	4	0	4	0	0	0	2	0	2	7	2	9	0	0	0	221	17:15 - 18:15	846
17:30 - 17:45	12	0	12	135	5	140	0	0	0	73	2	75	1	0	1	0	0	0	5	0	5	4	1	5	0	0	0	238	17:30 - 18:30	812
17:45 - 18:00	11	1	12	130	2	132	0	0	0	46	2	48	4	0	4	0	0	0	3	0	3	9	2	11	0	0	0	210	17:45 - 18:45	751
18:00 - 18:15	10	0	10	83	4	87	0	0	0	64	3	67	0	0	0	0	0	0	4	0	4	9	0	9	0	0	0	177	18:00 - 19:00	688
18:15 - 18:30	6	0	6	99	3	102	0	0	0	58	3	61	4	0	4	0	0	0	2	0	2	12	0	12	0	0	0	187	PM Peak	951
18:30 - 18:45	8	0	8	92	5	97	0	0	0	52	1	53	2	0	2	0	0	0	7	0	7	10	0	10	0	0	0	177		
18:45 - 19:00	5	0	5	66	3	69	0	0	0	55	4	59	4	0	4	0	0	0	2	0	2	5	3	8	0	0	0	147		
Total	133	21	154	1775	53	1828	0	0	0	1067	42	1109	42	1	43	0	0	0	69	0	69	188	25	213	0	0	0	3416		
PM Peak	25	11	36	450	14	464	0	0	0	338	14	352	6	0	6	0	0	0	20	0	20	65	8	73	0	0	0	951		

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
6:00 - 7:00	106	2	108	51	10	61	0	0	0	192	16	208	12	0	12	0	0	0	2	0	2	23	1	24	0	0	0	386	29	415
6:15 - 7:15	107	2	109	71	12	83	0	0	0	235	16	251	13	0	13	0	0	0	4	0	4	25	1	26	0	0	0	455	31	486
6:30 - 7:30	84	0	84	95	9	104	1	0	1	299	20	319	16	0	16	0	0	0	6	0	6	30	1	31	1	0	1	532	30	562
6:45 - 7:45	55	0	55	106	11	117	1	0	1	333	18	351	17	0	17	0	0	0	10	0	10	32	1	33	1	0	1	555	30	585
7:00 - 8:00	37	2	39	141	12	153	1	0	1	384	18	402	15	0	15	0	0	0	14	0	14	31	0	31	1	0	1	624	32	656
7:15 - 8:15	32	5	37	170	11	181	1	0	1	434	17	451	16	0	16	1	0	1	15	0	15	37	1	38	1	0	1	707	34	741



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Old Castle Hill Road
 Weather : Fine



AM

Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
7:30 - 8:30	42	5	47	210	12	222	0	0	0	478	15	493	20	0	20	1	0	1	21	0	21	46	2	48	0	0	0	818	34	852
7:45 - 8:45	59	8	67	227	12	239	0	0	0	509	17	526	30	0	30	1	0	1	27	0	27	55	4	59	0	0	0	908	41	949
8:00 - 9:00	65	7	72	226	13	239	0	0	0	519	17	536	45	0	45	1	0	1	39	0	39	71	5	76	0	0	0	966	42	1008

HOURLY FLOW

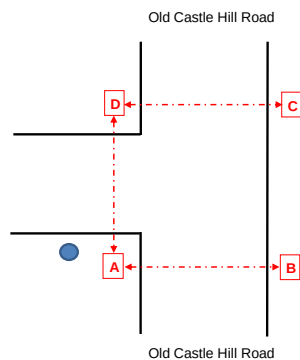
TIME PERIOD	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
15:00 - 16:00	29	8	37	415	12	427	0	0	0	329	12	341	12	0	12	0	0	0	28	0	28	92	8	100	0	0	0	905	40	945
15:15 - 16:15	25	11	36	450	14	464	0	0	0	338	14	352	6	0	6	0	0	0	20	0	20	65	8	73	0	0	0	904	47	951
15:30 - 16:30	26	6	32	453	15	468	0	0	0	301	13	314	6	1	7	0	0	0	15	0	15	57	7	64	0	0	0	858	42	900
15:45 - 16:45	29	6	35	483	14	497	0	0	0	293	13	306	4	1	5	0	0	0	16	0	16	38	7	45	0	0	0	863	41	904
16:00 - 17:00	29	6	35	520	12	532	0	0	0	283	12	295	8	1	9	0	0	0	12	0	12	35	7	42	0	0	0	887	38	925
16:15 - 17:15	36	5	41	498	13	511	0	0	0	240	8	248	10	1	11	0	0	0	10	0	10	29	8	37	0	0	0	823	35	858
16:30 - 17:30	39	8	47	502	15	517	0	0	0	244	8	252	12	0	12	0	0	0	11	0	11	25	8	33	0	0	0	833	39	872
16:45 - 17:45	41	8	49	500	15	515	0	0	0	244	8	252	12	0	12	0	0	0	13	0	13	25	7	32	0	0	0	835	38	873
17:00 - 18:00	46	7	53	500	14	514	0	0	0	226	7	233	12	0	12	0	0	0	14	0	14	25	7	32	0	0	0	823	35	858
17:15 - 18:15	44	4	48	465	14	479	0	0	0	253	9	262	9	0	9	0	0	0	14	0	14	29	5	34	0	0	0	814	32	846
17:30 - 18:30	39	1	40	447	14	461	0	0	0	241	10	251	9	0	9	0	0	0	14	0	14	34	3	37	0	0	0	784	28	812
17:45 - 18:45	35	1	36	404	14	418	0	0	0	220	9	229	10	0	10	0	0	0	16	0	16	40	2	42	0	0	0	725	26	751
18:00 - 19:00	29	0	29	340	15	355	0	0	0	229	11	240	10	0	10	0	0	0	15	0	15	36	3	39	0	0	0	659	29	688



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Old Castle Hill Road
 Weather : Fine

Comment : Movements A-B & B-A are not visible to count

Gilham Street



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AM

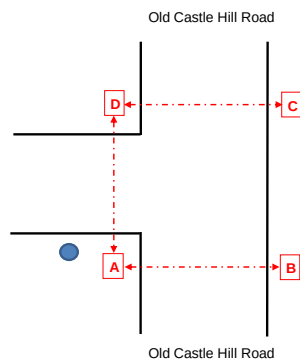
Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			
6:00 - 6:15	0	0			0	0	3	2	5	6:00 - 7:00	8
6:15 - 6:30	0	0			0	0	1	0	1	6:15 - 7:15	6
6:30 - 6:45	0	0			0	0	0	0	0	6:30 - 7:30	11
6:45 - 7:00	0	0			0	0	2	0	2	6:45 - 7:45	14
7:00 - 7:15	0	0			0	2	1	0	3	7:00 - 8:00	14
7:15 - 7:30	0	1			1	3	1	0	6	7:15 - 8:15	11
7:30 - 7:45	0	1			0	0	2	0	3	7:30 - 8:30	5
7:45 - 8:00	0	0			0	0	2	0	2	7:45 - 8:45	2
8:00 - 8:15	0	0			0	0	7	0	7	8:00 - 9:00	25
8:15 - 8:30	0	0			0	0	8	1	9	AM Peak	25
8:30 - 8:45	0	0			0	0	6	0	6		
8:45 - 9:00	0	0			0	0	3	0	3		
Total	0	2			1	5	36	3	47		
AM Peak	0	0			0	0	24	1	25		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Old Castle Hill Road
 Weather : Fine

Comment : Movements A-B & B-A are not visible to count

Gilham Street



N



AM

Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			

PM

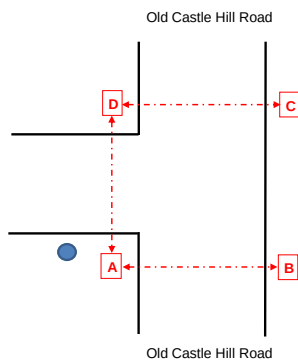
Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			
15:00 - 15:15	5	0			0	0	1	2	8	15:00 - 16:00	36
15:15 - 15:30	12	0			0	0	0	1	13	15:15 - 16:15	35
15:30 - 15:45	0	0			0	0	0	6	6	15:30 - 16:30	32
15:45 - 16:00	0	0			1	0	1	7	9	15:45 - 16:45	33
16:00 - 16:15	1	0			0	0	3	3	7	16:00 - 17:00	33
16:15 - 16:30	1	0			1	0	1	7	10	16:15 - 17:15	26
16:30 - 16:45	4	1			0	0	0	2	7	16:30 - 17:30	19
16:45 - 17:00	4	0			0	0	1	4	9	16:45 - 17:45	17
17:00 - 17:15	0	0			0	0	0	0	0	17:00 - 18:00	17
17:15 - 17:30	1	0			0	0	0	2	3	17:15 - 18:15	19
17:30 - 17:45	0	0			0	0	0	5	5	17:30 - 18:30	18
17:45 - 18:00	0	0			0	0	1	8	9	17:45 - 18:45	15
18:00 - 18:15	0	0			0	0	0	2	2	18:00 - 19:00	8
18:15 - 18:30	0	0			0	0	0	2	2	PM Peak	36
18:30 - 18:45	0	0			0	0	0	2	2		
18:45 - 19:00	0	0			0	0	0	2	2		
Total	28	1			2	0	8	55	94		
PM Peak	17	0			1	0	2	16	36		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Old Castle Hill Road
 Weather : Fine

Comment : Movements A-B & B-A are not visible to count

Gilham Street



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N



AM

Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

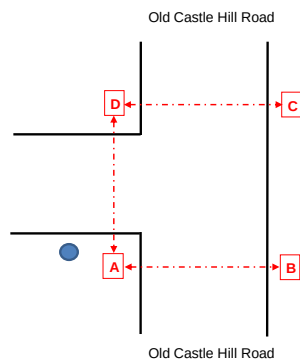
TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
6:00 - 7:00	0	0			0	0	6	2	8
6:15 - 7:15	0	0			0	2	4	0	6
6:30 - 7:30	0	1			1	5	4	0	11
6:45 - 7:45	0	2			1	5	6	0	14
7:00 - 8:00	0	2			1	5	6	0	14
7:15 - 8:15	0	2			1	3	5	0	11
7:30 - 8:30	0	1			0	0	4	0	5
7:45 - 8:45	0	0			0	0	2	0	2
8:00 - 9:00	0	0			0	0	24	1	25



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Old Castle Hill Road
 Weather : Fine

Comment : Movements A-B & B-A are not visible to count

Gilham Street



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AM

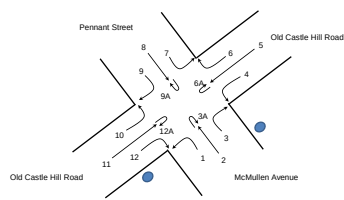
Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
15:00 - 16:00	17	0			1	0	2	16	36
15:15 - 16:15	13	0			1	0	4	17	35
15:30 - 16:30	2	0			2	0	5	23	32
15:45 - 16:45	6	1			2	0	5	19	33
16:00 - 17:00	10	1			1	0	5	16	33
16:15 - 17:15	9	1			1	0	2	13	26
16:30 - 17:30	9	1			0	0	1	8	19
16:45 - 17:45	5	0			0	0	1	11	17
17:00 - 18:00	1	0			0	0	1	15	17
17:15 - 18:15	1	0			0	0	1	17	19
17:30 - 18:30	0	0			0	0	1	17	18
17:45 - 18:45	0	0			0	0	1	14	15
18:00 - 19:00	0	0			0	0	0	8	8



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Old Castle Hill Road & Pennant Street & McMullen Avenue
Weather : Fine

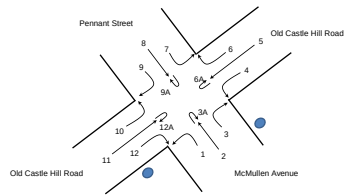


Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total													
6:00 - 6:15	1	0	1	57	2	59	9	3	12	0	0	0	30	5	35	7	0	7	2	0	2	0	0	0	3	0	3	113	15	128	0	0	0	0	0	0	1	1	2	7	0	7	2	0	2	0	0	0	258	6:00 - 7:00	1418	
6:15 - 6:30	2	0	2	57	6	63	16	3	19	0	0	0	29	3	32	4	0	4	3	0	3	0	0	0	8	2	10	138	15	153	0	0	0	0	0	0	4	0	4	11	1	12	3	0	3	0	0	0	305	6:15 - 7:15	1584	
6:30 - 6:45	7	0	7	90	4	94	30	2	32	0	0	0	50	4	54	15	0	15	5	0	5	0	0	0	10	0	10	148	14	162	0	0	0	0	0	0	0	1	1	15	0	15	7	0	7	0	0	0	402	6:30 - 7:30	1783	
6:45 - 7:00	4	0	4	117	6	123	26	2	28	0	0	0	50	5	55	18	0	18	9	0	9	0	0	0	9	0	9	165	12	177	0	0	0	0	0	0	0	9	1	10	12	0	12	8	0	8	0	0	0	453	6:45 - 7:45	1829
7:00 - 7:15	8	1	9	119	8	127	15	4	19	0	0	0	44	4	48	21	0	21	9	0	9	0	0	0	11	0	11	146	12	158	0	0	0	0	0	0	3	0	3	14	0	14	5	0	5	0	0	0	424	7:00 - 8:00	2062	
7:15 - 7:30	7	0	7	149	6	155	18	1	19	0	0	0	65	5	70	38	0	38	13	0	13	0	0	0	10	1	11	144	7	151	3	0	3	0	0	0	0	6	1	7	12	0	12	18	0	18	0	0	0	504	7:15 - 8:15	2197
7:30 - 7:45	21	0	21	185	8	193	11	3	14	0	0	0	54	5	59	49	0	49	7	0	7	0	0	0	9	1	10	148	6	154	3	0	3	0	0	0	0	6	3	9	18	0	18	11	0	11	0	0	0	548	7:30 - 8:30	2296
7:45 - 8:00	20	0	20	201	12	213	21	6	27	0	0	0	66	4	70	39	0	39	13	1	14	0	0	0	15	1	16	123	9	132	3	0	3	0	0	0	0	4	2	6	34	0	34	12	0	12	0	0	0	586	7:45 - 8:45	2429
8:00 - 8:15	12	0	12	165	4	169	28	5	33	0	0	0	92	4	96	33	0	33	16	1	17	0	0	0	9	3	12	127	12	139	0	0	0	0	0	0	1	0	1	29	0	29	15	3	18	0	0	0	0	559	8:00 - 9:00	2518
8:15 - 8:30	18	0	18	192	8	200	36	3	39	0	0	0	94	7	101	39	0	39	24	1	25	0	0	0	12	1	13	108	7	115	1	0	1	0	0	0	6	1	7	38	0	38	7	0	7	0	0	0	603	AM Peak	2518	
8:30 - 8:45	37	0	37	263	11	274	43	6	49	0	0	0	68	8	76	46	0	46	28	3	31	0	0	0	11	3	14	110	10	120	1	0	1	0	0	0	5	0	5	18	1	19	8	1	9	0	0	0	681			
8:45 - 9:00	48	1	49	199	6	205	34	6	40	0	0	0	84	6	90	45	0	45	32	1	33	0	0	0	13	1	14	129	3	132	6	0	6	0	0	0	0	7	1	8	31	1	32	21	0	21	0	0	0	675		
Total	185	2	187	1794	81	1875	287	44	331	0	0	0	726	60	786	354	0	354	161	7	168	0	0	0	120	13	133	1599	122	1721	17	0	17	0	0	0	52	11	63	239	3	242	117	4	121	0	0	0	5996			
AM Peak	115	1	116	819	29	848	141	20	161	0	0	0	338	25	363	163	0	163	100	6	106	0	0	0	45	8	53	474	32	506	8	0	8	0	0	0	19	2	21	116	2	118	51	4	55	0	0	0	2518			

Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total									
15:00 - 15:15	28	0	28	184	12	196	45	2	47	0	0	0	53	2	55	23	0	23	31	2	33	0	0	0	28	1	29	136	4	140	1	0	1	0	0	0	22	3	25	45	0	45	80	1	81	0	0	0	703	15:00 - 16:00	2755
15:15 - 15:30	21	0	21	198	13	211	46	1	47	0	0	0	76	5	81	31	0	31	19	1	20	0	0	0	29	2	31	156	4	160	3	0	3	0	0	0	19	0	19	44	0	44	60	0	60	0	0	0	728	15:15 - 16:15	2718
15:30 - 15:45	28	0	28	187	10	177	46	6	52	0	0	0	49	3	52	36	0	36	29	1	30	0	0	0	18	0	18	143	3	146	3	0	3	0	0	0	16	3	19	48	0	48	53	0	53	0	0	0	662	15:30 - 16:30	2660
15:45 - 16:00	35	0	35	201	5	206	38	3	41	0	0	0	31	3	34	26	0	26	22	2	24	0	0	0	25	3	28	135	2	137	2	0	2	0	0	0	15	1	16	40	0	40	73	0	73	0	0	0	662	15:45 - 16:45	2690
16:00 - 16:15	26	0	26	164	8	172	42	4	46	0	0	0	51	5	56	27	0	27	23	1	24	0	0	0	56	4	60	131	3	134	4	0	4	0	0	0	12	1	13	48	0	48	56	0	56	0	0	0	666	16:00 - 17:00	2685
16:15 - 16:30	30	1	31	180	2	182	43	1	44	0	0	0	45	4	49	18	0	18	11	1	12	0	0	0	33	0	33	169	5	174	3	0	3	0	0	0	11	2	13	49	0	49	62	0	62	0	0	0	670	16:15 - 17:15	2645
16:30 - 16:45	25	0	25	181	5	186	55	5	60	0	0	0	39	2	41	29	0	29	16	2	18	0	0	0	35	0	35	132	3	135	3	0	3	0	0	0	14	1	15	65	0	65	80	0	80	0	0	0	692	16:30 - 17:30	2612
16:45 - 17:00	24	0	24	166	2	168	56	4	60	0	0	0	42	3	45	16	0	16	16	0	16	0	0	0	29	1	30	164	1	165	3	0	3	0	0	0	4	1	5	59	0	59	66	0	66	0	0	0	657	16:45 - 17:45	2548
17:00 - 17:15	22	0	22	148	2	150	53	3	56	0	0	0	25	2	27	14	0	14	8	2	10	0	0	0	33	1	34	152	4	156	1	0	1	0	0	0	10	3	13	47	1	48	95	0	95	0	0	0	626	17:00 - 18:00	2562
17:15 - 17:30	24	0	24	169	2	171	54	3	57	0	0	0	42	2	44	23	0	23	17	1	18	0	0	0	33	3	36	145	2	147	1	0	1	0	0	0	7	1	8	51	0	51	57	0	57	0	0	0	637	17:15 - 18:15	2497
17:30 - 17:45	21	0	21	132	7	139	41	5	46	0	0	0	38	3	41	24	0	24	17	0	17	0	0	0	33	0	33	138	0	138	3	0	3	0	0	0	13	2	15	75	0	75	76	0	76	0	0	0	628	17:30 - 18:30	2412
17:45 - 18:00	35	0	35	180	3	183	68	2	70	0	0	0	33	3	36	12	0	12	17	1	18	0	0	0	35	1	36	141	5	146	1	0	1	0	0	0	11	0	11	44	0	44	78	1	79	0	0	0	671	17:45 - 18:45	2290
18:00 - 18:15	22	0	22	142	2	144	31	4	35	0	0	0	36	2	38	28	0	28	15	1	16	0	0	0	24	1	25	146	1	147	1	0	1	0	0	0	6	1	7	37	0	37	61	0	61	0	0	0	561	18:00 - 19:00	2069
18:15 - 18:30	23	0	23	151	2	153	53	3	56	0	0	0	45	4	49	21	0	21	11	1	12	0	0	0	22	0	22	138	3	141	1	0	1	0	0	0	3	1	4	35	0	35	35	0	35	0	0	0	552	PM Peak	2755
18:30 - 18:45	11	0	11	153	1	154	45	4	49	0	0	0	33	1	34	22	0	22	9	1	10	0	0	0	16	2	18	102	2	104	2	0	2	0	0	0	14	1	15	49	0	49	38	0	38	0	0	0	506		
18:45 - 19:00	16	0	16	137	2	139	35	4	39	0	0	0	34	7	41	19	0	19	9	0	9	0	0	0	12	0	12	108	2	110	1	0	1	0	0	0	14	1	15	23	0	23	26	0	26	0	0	0	450		
Total	391	1	392	2653	78	2731	751	54	805	0	0	0	672	51	723	369	0	369	270	17	287	0	0	0	461	19	480	2236	44	2280	33	0	33	0	0	0	191	22	213	759	1	760	996	2	998	0	0	0	10071		
PM Peak	112	0	112	750	40	790	175	12	187	0	0	0	209	13	222	116	0	116	101	6	107	0	0	0	100	6	106	570	13	583	9	0	9	0	0	0	72	7	79	177	0	177	266	1	267	0	0	0	2755		



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Old Castle Hill Road & Pennant Street & McMullen Avenue
Weather : Fine



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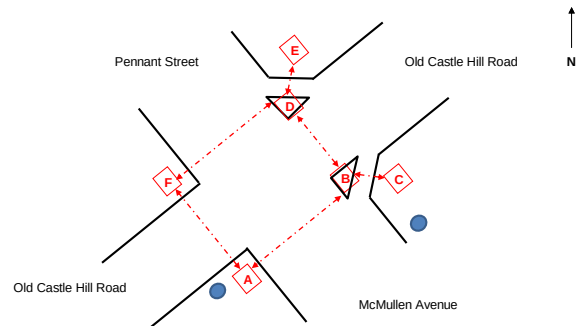
Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total												
7:30 - 8:30	71	0	71	743	32	775	96	17	113	0	0	0	306	20	326	160	0	160	60	3	63	0	0	0	45	6	51	506	34	540	7	0	7	0	0	0	17	6	23	119	0	119	45	3	48	0	0	0	2175	121	2296
7:45 - 8:45	87	0	87	821	35	856	128	20	148	0	0	0	320	23	343	157	0	157	81	6	87	0	0	0	47	8	55	468	38	506	5	0	5	0	0	0	16	3	19	119	1	120	42	4	46	0	0	0	2291	138	2429
8:00 - 9:00	115	1	116	919	29	948	141	20	161	0	0	0	338	25	363	163	0	163	100	6	106	0	0	0	45	8	53	474	32	506	8	0	8	0	0	0	19	2	21	116	2	118	51	4	55	0	0	0	2389	129	2518

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total						
15:00 - 16:00	112	0	112	750	40	790	175	12	187	0	0	0	209	13	222	116	0	116	101	6	107	0	0	0	100	6	106	570	13	583	9	0	9	0	0	0	72	7	79	177	0	177	266	1	267	0	0	0	2657	98	2755
15:15 - 16:15	110	0	110	730	36	766	172	14	186	0	0	0	207	16	223	120	0	120	93	5	98	0	0	0	128	9	137	565	12	577	12	0	12	0	0	0	62	5	67	180	0	180	242	0	242	0	0	0	2621	97	2718
15:30 - 16:30	119	1	120	712	25	737	169	14	183	0	0	0	176	15	191	107	0	107	85	5	90	0	0	0	132	7	139	578	13	591	12	0	12	0	0	0	54	7	61	185	0	185	244	0	244	0	0	0	2573	87	2660
15:45 - 16:45	116	1	117	726	20	746	178	13	191	0	0	0	166	14	180	100	0	100	72	6	78	0	0	0	149	7	156	567	13	580	12	0	12	0	0	0	52	5	57	202	0	202	271	0	271	0	0	0	2611	79	2690
16:00 - 17:00	105	1	106	691	17	708	196	14	210	0	0	0	177	14	191	90	0	90	66	4	70	0	0	0	153	5	158	596	12	608	13	0	13	0	0	0	41	5	46	221	0	221	264	0	264	0	0	0	2613	72	2685
16:15 - 17:15	101	1	102	675	11	686	207	13	220	0	0	0	151	11	162	77	0	77	51	5	56	0	0	0	130	2	132	617	13	630	10	0	10	0	0	0	39	7	46	220	1	221	303	0	303	0	0	0	2581	64	2645
16:30 - 17:30	95	0	95	664	11	675	218	15	233	0	0	0	148	9	157	82	0	82	57	5	62	0	0	0	130	5	135	593	10	603	8	0	8	0	0	0	35	6	41	222	1	223	298	0	298	0	0	0	2550	62	2612
16:45 - 17:45	91	0	91	615	13	628	204	15	219	0	0	0	147	10	157	77	0	77	58	3	61	0	0	0	128	5	133	599	7	606	8	0	8	0	0	0	34	7	41	232	1	233	294	0	294	0	0	0	2487	61	2548
17:00 - 18:00	102	0	102	629	14	643	216	13	229	0	0	0	138	10	148	73	0	73	59	4	63	0	0	0	134	5	139	576	11	587	6	0	6	0	0	0	41	6	47	217	1	218	306	1	307	0	0	0	2497	65	2562
17:15 - 18:15	102	0	102	623	14	637	194	14	208	0	0	0	149	10	159	87	0	87	66	3	69	0	0	0	125	5	130	570	8	578	6	0	6	0	0	0	37	4	41	207	0	207	272	1	273	0	0	0	2438	59	2497
17:30 - 18:30	101	0	101	605	14	619	193	14	207	0	0	0	152	12	164	85	0	85	60	3	63	0	0	0	114	2	116	563	9	572	6	0	6	0	0	0	33	4	37	191	0	191	250	1	251	0	0	0	2353	59	2412
17:45 - 18:45	91	0	91	626	8	634	197	13	210	0	0	0	147	10	157	83	0	83	52	4	56	0	0	0	97	4	101	527	11	538	5	0	5	0	0	0	34	3	37	165	0	165	212	1	213	0	0	0	2236	54	2290
18:00 - 19:00	72	0	72	583	7	590	164	15	179	0	0	0	148	14	162	90	0	90	44	3	47	0	0	0	74	3	77	494	8	502	5	0	5	0	0	0	37	4	41	144	0	144	160	0	160	0	0	0	2015	54	2069



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
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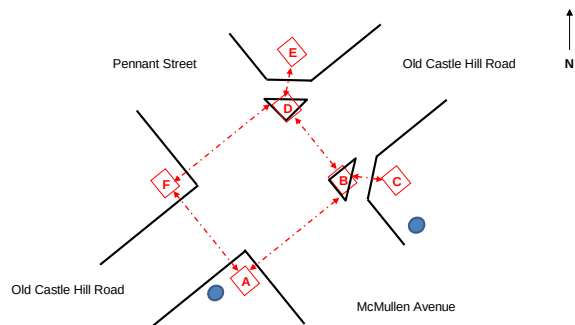


AM

Time Period	PEDESTRIAN MOVEMENTS												Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F			
6:00 - 6:15	0	2	0	2	0	0	0	1	2	0	0	0	7	6:00 - 7:00	51
6:15 - 6:30	0	1	0	1	0	0	0	1	0	0	0	0	3	6:15 - 7:15	69
6:30 - 6:45	1	6	1	6	0	0	5	2	2	5	1	1	30	6:30 - 7:30	97
6:45 - 7:00	0	2	0	2	0	0	0	2	2	0	2	1	11	6:45 - 7:45	88
7:00 - 7:15	0	5	0	7	3	0	2	2	4	2	0	0	25	7:00 - 8:00	110
7:15 - 7:30	0	9	0	9	0	0	2	3	3	2	1	2	31	7:15 - 8:15	122
7:30 - 7:45	0	6	1	6	0	1	0	3	3	1	0	0	21	7:30 - 8:30	133
7:45 - 8:00	0	10	0	10	0	0	0	6	6	0	0	1	33	7:45 - 8:45	147
8:00 - 8:15	0	11	0	14	1	0	1	5	5	0	0	0	37	8:00 - 9:00	172
8:15 - 8:30	1	13	1	11	0	0	0	8	8	0	0	0	42	AM Peak	172
8:30 - 8:45	0	6	0	11	5	0	5	4	4	0	0	0	35		
8:45 - 9:00	0	10	1	13	3	1	3	12	11	0	1	3	58		
Total	2	81	4	92	12	2	18	49	50	10	5	8	333		
AM Peak	1	40	2	49	9	1	9	29	28	0	1	3	172		



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AM

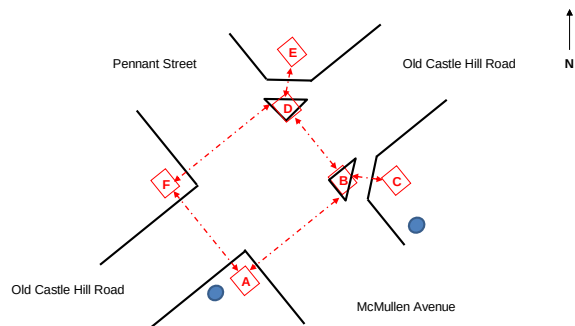
Time	PEDESTRIAN MOVEMENTS												Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F		

PM

Time	PEDESTRIAN MOVEMENTS												Total of all Movements	Peak Hour Volume Determination	
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F			
15:00 - 15:15	2	0	4	6	7	2	3	2	8	4	2	0	40	15:00 - 16:00	144
15:15 - 15:30	1	0	3	1	2	2	3	5	3	3	4	0	27	15:15 - 16:15	143
15:30 - 15:45	3	1	2	2	3	0	9	1	0	6	0	2	29	15:30 - 16:30	157
15:45 - 16:00	5	5	8	5	0	1	6	2	3	7	3	3	48	15:45 - 16:45	152
16:00 - 16:15	4	2	4	2	0	2	2	8	7	2	5	1	39	16:00 - 17:00	132
16:15 - 16:30	4	2	5	2	0	0	11	1	1	10	1	4	41	16:15 - 17:15	107
16:30 - 16:45	4	0	4	0	0	0	4	0	0	7	0	5	24	16:30 - 17:30	112
16:45 - 17:00	4	2	7	2	0	3	3	1	1	3	2	0	28	16:45 - 17:45	133
17:00 - 17:15	2	0	3	0	0	1	3	0	0	4	1	0	14	17:00 - 18:00	139
17:15 - 17:30	11	2	12	3	0	1	3	3	3	4	0	4	46	17:15 - 18:15	157
17:30 - 17:45	3	2	4	1	0	1	15	1	1	16	0	1	45	17:30 - 18:30	142
17:45 - 18:00	10	0	10	0	0	0	6	1	1	6	0	0	34	17:45 - 18:45	137
18:00 - 18:15	9	0	9	0	0	1	5	1	1	6	0	0	32	18:00 - 19:00	137
18:15 - 18:30	6	0	8	0	0	2	6	0	0	9	0	0	31	PM Peak	157
18:30 - 18:45	6	0	5	0	1	1	8	5	5	7	2	0	40		
18:45 - 19:00	9	3	7	3	1	1	3	2	0	2	2	1	34		
Total	83	19	95	27	14	18	90	33	34	96	22	21	552		
PM Peak	16	10	19	11	3	3	28	12	11	25	9	10	157		



Client : Mott MacDonald
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AM

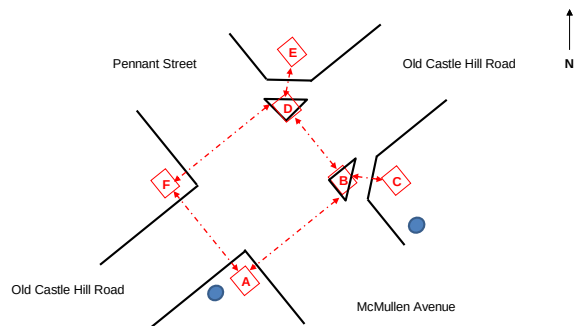
Time	PEDESTRIAN MOVEMENTS												Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS												Grand Total
	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F	
6:00 - 7:00	1	11	1	11	0	0	5	6	6	5	3	2	51
6:15 - 7:15	1	14	1	16	3	0	7	7	8	7	3	2	69
6:30 - 7:30	1	22	1	24	3	0	9	9	11	9	4	4	97
6:45 - 7:45	0	22	1	24	3	1	4	10	12	5	3	3	88
7:00 - 8:00	0	30	1	32	3	1	4	14	16	5	1	3	110
7:15 - 8:15	0	36	1	39	1	1	3	17	17	3	1	3	122
7:30 - 8:30	1	40	2	41	1	1	1	22	22	1	0	1	133
7:45 - 8:45	1	40	1	46	6	0	6	23	23	0	0	1	147
8:00 - 9:00	1	40	2	49	9	1	9	29	28	0	1	3	172



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AM

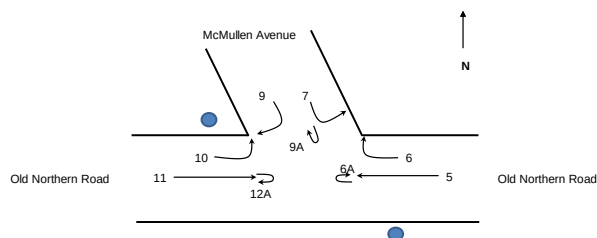
Time	PEDESTRIAN MOVEMENTS												Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS												Grand Total
	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	D - F	F - D	F - A	A - F	
15:00 - 16:00	11	6	17	14	12	5	21	10	14	20	9	5	144
15:15 - 16:15	13	8	17	10	5	5	20	16	13	18	12	6	143
15:30 - 16:30	16	10	19	11	3	3	28	12	11	25	9	10	157
15:45 - 16:45	17	9	21	9	0	3	23	11	11	26	9	13	152
16:00 - 17:00	16	6	20	6	0	5	20	10	9	22	8	10	132
16:15 - 17:15	14	4	19	4	0	4	21	2	2	24	4	9	107
16:30 - 17:30	21	4	26	5	0	5	13	4	4	18	3	9	112
16:45 - 17:45	20	6	26	6	0	6	24	5	5	27	3	5	133
17:00 - 18:00	26	4	29	4	0	3	27	5	5	30	1	5	139
17:15 - 18:15	33	4	35	4	0	3	29	6	6	32	0	5	157
17:30 - 18:30	28	2	31	1	0	4	32	3	3	37	0	1	142
17:45 - 18:45	31	0	32	0	1	4	25	7	7	28	2	0	137
18:00 - 19:00	30	3	29	3	2	5	22	8	6	24	4	1	137



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Old Northern Road & McMullen Avenue
Weather : Fine



AM

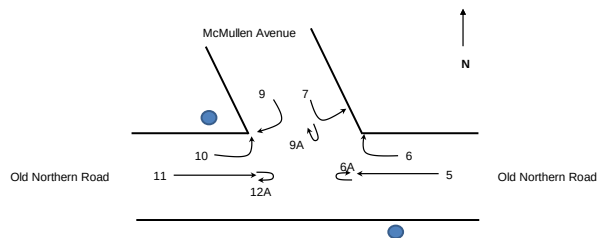
Time Period	Movement 5			Movement 6			Movement 6A			Movement 7			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12A			Total of all Movements	Peak Hour Volume Determination		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				
6:00 - 6:15	86	14	100	59	4	63	0	0	0	131	15	146	14	5	19	0	0	0	8	1	9	121	7	128	0	0	0	465	6:00 - 7:00	243	
6:15 - 6:30	105	16	121	62	5	67	0	0	0	154	14	168	12	3	15	0	0	0	13	3	16	137	9	146	0	0	0		533	6:15 - 7:15	279
6:30 - 6:45	141	15	156	110	4	114	0	0	0	165	14	179	35	4	39	0	0	0	19	2	21	190	14	204	0	0	0		713	6:30 - 7:30	310
6:45 - 7:00	149	23	172	132	4	136	0	0	0	191	13	204	25	5	30	0	0	0	17	4	21	146	13	159	0	0	0		722	6:45 - 7:45	329
7:00 - 7:15	220	22	242	125	6	131	0	0	0	178	12	190	24	5	29	0	0	0	19	7	26	192	16	208	0	0	0		826	7:00 - 8:00	358
7:15 - 7:30	192	23	215	152	4	156	0	0	0	178	8	186	51	4	55	0	0	0	23	3	26	201	7	208	0	0	0		846	7:15 - 8:15	373
7:30 - 7:45	221	15	236	203	8	211	0	0	0	158	4	162	42	6	48	0	0	0	22	4	26	203	16	219	0	0	0		902	7:30 - 8:30	394
7:45 - 8:00	298	22	320	208	12	220	0	0	0	151	8	159	64	6	70	0	0	0	26	5	31	194	14	208	0	0	0		1008	7:45 - 8:45	413
8:00 - 8:15	278	21	299	170	6	176	0	0	0	152	16	168	76	3	79	0	0	0	36	3	39	204	17	221	0	0	0	982	8:00 - 9:00	413	
8:15 - 8:30	305	19	324	195	9	204	0	0	0	127	7	134	69	8	77	0	0	0	54	3	57	237	21	258	0	0	0		1054	AM Peak	413
8:30 - 8:45	312	16	328	275	12	287	0	0	0	133	8	141	51	7	58	0	0	0	72	5	77	186	9	195	0	0	0		1086		
8:45 - 9:00	269	12	281	221	8	229	0	0	0	152	4	156	87	8	95	0	0	0	63	5	68	171	12	183	0	0	0		1012		
Total	2576	218	2794	1912	82	1994	0	0	0	1870	123	1993	550	64	614	0	0	0	372	45	417	2182	155	2337	0	0	0	10149			
AM Peak	1164	68	1232	861	35	896	0	0	0	564	35	599	283	26	309	0	0	0	225	16	241	798	59	857	0	0	0	4134			

PM

Time Period	Movement 5			Movement 6			Movement 6A			Movement 7			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		15:00 - 16:00	4036
15:00 - 15:15	236	9	245	190	11	201	0	0	0	201	6	207	78	1	79	0	0	0	68	2	70	215	10	225	0	0	0	1027		
15:15 - 15:30	272	17	289	208	14	222	0	0	0	203	3	206	95	6	101	0	0	0	43	0	43	192	8	200	0	0	0	1061	15:15 - 16:15	3955
15:30 - 15:45	235	19	254	201	11	212	0	0	0	186	3	189	51	1	52	0	0	0	42	7	49	160	19	179	0	0	0	935	15:30 - 16:30	3941
15:45 - 16:00	245	21	266	249	4	253	0	0	0	185	3	188	56	6	62	0	0	0	36	4	40	187	17	204	0	0	0	1013	15:45 - 16:45	4003
16:00 - 16:15	258	10	268	190	7	197	0	0	0	191	4	195	63	4	67	0	0	0	47	5	52	152	15	167	0	0	0	946	16:00 - 17:00	4010
16:15 - 16:30	301	10	311	205	2	207	0	0	0	191	3	194	58	4	62	0	0	0	47	2	49	212	12	224	0	0	0	1047	16:15 - 17:15	4113
16:30 - 16:45	226	11	237	223	5	228	0	0	0	206	3	209	61	3	64	0	0	0	40	5	45	204	10	214	0	0	0	997	16:30 - 17:30	4057
16:45 - 17:00	263	10	273	187	2	189	0	0	0	209	1	210	76	4	80	0	0	0	43	4	47	210	11	221	0	0	0	1020	16:45 - 17:45	4078
17:00 - 17:15	302	11	313	199	2	201	0	0	0	220	2	222	53	4	57	0	0	0	42	4	46	197	13	210	0	0	0	1049	17:00 - 18:00	4064



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
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Weather : Fine



AM

Time Period	Movement 5			Movement 6			Movement 6A			Movement 7			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12A			Total of all Movements	Peak Hour Volume Determination																
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		17:15 - 18:15	17:30 - 18:30															
17:15 - 17:30	246	5	251	197	0	197	0	0	0	196	1	197	57	2	59	0	0	0	29	4	33	247	7	254	0	0	0	991			17:15 - 18:15	3907													
17:30 - 17:45	269	12	281	183	6	189	0	0	0	197	0	197	54	4	58	0	0	0	32	7	39	238	16	254	0	0	0		1018	17:30 - 18:30			3760												
17:45 - 18:00	243	8	251	232	3	235	0	0	0	204	4	208	51	4	55	0	0	0	37	2	39	208	10	218	0	0	0							1006	17:45 - 18:45	3575									
18:00 - 18:15	212	8	220	186	1	187	0	0	0	173	1	174	55	3	58	0	0	0	33	4	37	203	13	216	0	0	0										892	18:00 - 19:00	3310						
18:15 - 18:30	229	8	237	173	2	175	0	0	0	179	0	179	50	7	57	0	0	0	35	3	38	151	7	158	0	0	0													844	PM Peak	4113			
18:30 - 18:45	211	9	220	171	0	171	0	0	0	149	1	150	45	2	47	0	0	0	32	5	37	198	10	208	0	0	0																833		
18:45 - 19:00	192	10	202	158	0	158	0	0	0	135	2	137	37	5	42	0	0	0	31	5	36	162	4	166	0	0	0																		
Total	3940	178	4118	3152	70	3222	0	0	0	3025	37	3062	940	60	1000	0	0	0	637	63	700	3136	182	3318	0	0	0	15420																	
PM Peak	1092	42	1134	814	11	825	0	0	0	826	9	835	248	15	263	0	0	0	172	15	187	823	46	869	0	0	0		4113																

HOURLY FLOW

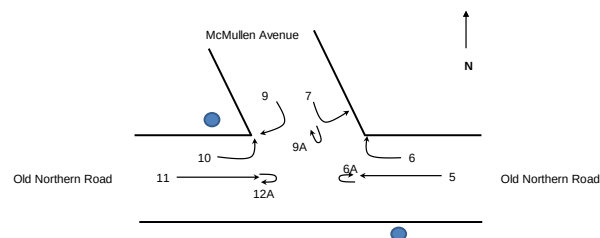
TIME PERIOD	Movement 5			Movement 6			Movement 6A			Movement 7			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
6:00 - 7:00	481	68	549	363	17	380	0	0	0	641	56	697	86	17	103	0	0	0	57	10	67	594	43	637	0	0	0	2222	211	2433
6:15 - 7:15	615	76	691	429	19	448	0	0	0	688	53	741	96	17	113	0	0	0	68	16	84	665	52	717	0	0	0	2561	233	2794
6:30 - 7:30	702	83	785	519	18	537	0	0	0	712	47	759	135	18	153	0	0	0	78	16	94	729	50	779	0	0	0	2875	232	3107
6:45 - 7:45	782	83	865	612	22	634	0	0	0	705	37	742	142	20	162	0	0	0	81	18	99	742	52	794	0	0	0	3064	232	3296
7:00 - 8:00	931	82	1013	688	30	718	0	0	0	665	32	697	181	21	202	0	0	0	90	19	109	790	53	843	0	0	0	3345	237	3582
7:15 - 8:15	989	81	1070	733	30	763	0	0	0	639	36	675	233	19	252	0	0	0	107	15	122	802	54	856	0	0	0	3503	235	3738
7:30 - 8:30	1102	77	1179	776	35	811	0	0	0	588	35	623	251	23	274	0	0	0	138	15	153	838	68	906	0	0	0	3693	253	3946
7:45 - 8:45	1193	78	1271	848	39	887	0	0	0	563	39	602	260	24	284	0	0	0	188	16	204	821	61	882	0	0	0	3873	257	4130
8:00 - 9:00	1164	68	1232	861	35	896	0	0	0	564	35	599	283	26	309	0	0	0	225	16	241	798	59	857	0	0	0	3895	239	4134

HOURLY FLOW

TIME PERIOD	Movement 5			Movement 6			Movement 6A			Movement 7			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
15:00 - 16:00	988	66	1054	848	40	888	0	0	0	775	15	790	280	14	294	0	0	0	189	13	202	754	54	808	0	0	0	3834	202	4036
15:15 - 16:15	1010	67	1077	848	36	884	0	0	0	765	13	778	265	17	282	0	0	0	168	16	184	691	59	750	0	0	0	3747	208	3955



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
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 Weather : Fine

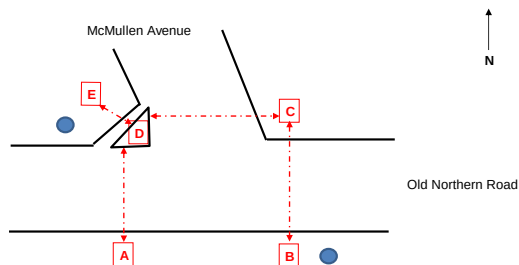


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Time Period	Movement 5			Movement 6			Movement 6A			Movement 7			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
15:30 - 16:30	1039	60	1099	845	24	869	0	0	0	753	13	766	228	15	243	0	0	0	172	18	190	711	63	774	0	0	0	3748	193	3941
15:45 - 16:45	1030	52	1082	867	18	885	0	0	0	773	13	786	238	17	255	0	0	0	170	16	186	755	54	809	0	0	0	3833	170	4003
16:00 - 17:00	1048	41	1089	805	16	821	0	0	0	797	11	808	258	15	273	0	0	0	177	16	193	778	48	826	0	0	0	3863	147	4010
16:15 - 17:15	1092	42	1134	814	11	825	0	0	0	826	9	835	248	15	263	0	0	0	172	15	187	823	46	869	0	0	0	3975	138	4113
16:30 - 17:30	1037	37	1074	806	9	815	0	0	0	831	7	838	247	13	260	0	0	0	154	17	171	858	41	899	0	0	0	3933	124	4057
16:45 - 17:45	1080	38	1118	766	10	776	0	0	0	822	4	826	240	14	254	0	0	0	146	19	165	892	47	939	0	0	0	3946	132	4078
17:00 - 18:00	1060	36	1096	811	11	822	0	0	0	817	7	824	215	14	229	0	0	0	140	17	157	890	46	936	0	0	0	3933	131	4064
17:15 - 18:15	970	33	1003	798	10	808	0	0	0	770	6	776	217	13	230	0	0	0	131	17	148	896	46	942	0	0	0	3782	125	3907
17:30 - 18:30	953	36	989	774	12	786	0	0	0	753	5	758	210	18	228	0	0	0	137	16	153	800	46	846	0	0	0	3627	133	3760
17:45 - 18:45	895	33	928	762	6	768	0	0	0	705	6	711	201	16	217	0	0	0	137	14	151	760	40	800	0	0	0	3460	115	3575
18:00 - 19:00	844	35	879	688	3	691	0	0	0	636	4	640	187	17	204	0	0	0	131	17	148	714	34	748	0	0	0	3200	110	3310



Client : Mott MacDonald
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 Weather : Fine

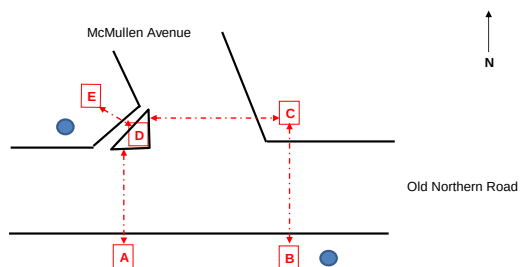


AM													
Time Period	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - E	E - D	D - A	A - D			
6:00 - 6:15			0	0	0	0	0	0	0	0	0	6:00 - 7:00	22
6:15 - 6:30			0	0	0	1	0	1	0	0	2	6:15 - 7:15	24
6:30 - 6:45			0	1	2	1	2	1	0	0	7	6:30 - 7:30	38
6:45 - 7:00			1	0	5	0	6	0	0	1	13	6:45 - 7:45	39
7:00 - 7:15			0	0	0	0	1	0	0	1	2	7:00 - 8:00	42
7:15 - 7:30			2	0	7	0	7	0	0	0	16	7:15 - 8:15	40
7:30 - 7:45			2	0	3	0	3	0	0	0	8	7:30 - 8:30	24
7:45 - 8:00			2	1	5	2	4	2	0	0	16	7:45 - 8:45	16
8:00 - 8:15			2	0	8	2	9	2	0	0	23	8:00 - 9:00	67
8:15 - 8:30			2	3	5	1	5	1	0	0	17	AM Peak	67
8:30 - 8:45			6	0	6	0	6	0	0	0	18		
8:45 - 9:00			3	0	2	1	1	1	0	1	9		
Total			20	5	43	8	44	8	0	3	131		
AM Peak			13	3	21	4	21	4	0	1	67		

PM													
Time Period	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - E	E - D	D - A	A - D			
15:00 - 15:15			1	0	1	2	1	3	1	0	9	15:00 - 16:00	52
15:15 - 15:30			1	1	0	6	0	5	0	0	13	15:15 - 16:15	58
15:30 - 15:45			0	4	2	8	2	8	0	0	24	15:30 - 16:30	52
15:45 - 16:00			0	0	3	0	3	0	0	0	6	15:45 - 16:45	43
16:00 - 16:15			3	2	2	3	2	3	0	0	15	16:00 - 17:00	64



Client : Mott MacDonald Old Northern Road
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Old Northern Road & McMullen Avenue
 Weather : Fine

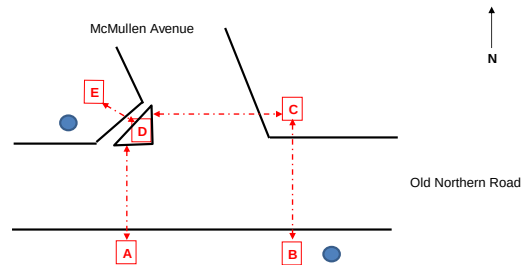


AM													
Time Period	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - E	E - D	D - A	A - D			
16:15 - 16:30			0	0	2	0	3	1	0	1	7	16:15 - 17:15	57
16:30 - 16:45			0	2	1	6	1	5	0	0	15	16:30 - 17:30	76
16:45 - 17:00			0	5	4	7	4	7	0	0	27	16:45 - 17:45	74
17:00 - 17:15			2	0	0	2	0	3	1	0	8	17:00 - 18:00	69
17:15 - 17:30			0	1	4	7	3	10	1	0	26	17:15 - 18:15	65
17:30 - 17:45			0	2	1	5	1	4	0	0	13	17:30 - 18:30	52
17:45 - 18:00			1	1	5	5	5	5	0	0	22	17:45 - 18:45	50
18:00 - 18:15			0	0	0	2	0	2	0	0	4	18:00 - 19:00	47
18:15 - 18:30			2	1	0	5	0	5	0	0	13	PM Peak	76
18:30 - 18:45			0	1	4	1	4	1	0	0	11		
18:45 - 19:00			0	5	0	5	0	8	1	0	19		
Total			10	25	29	64	29	70	4	1	232		
PM Peak			2	8	9	22	8	25	2	0	76		

HOURLY FLOW											
TIME PERIOD	PEDESTRIAN MOVEMENTS										Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - E	E - D	D - A	A - D	
6:00 - 7:00			1	1	7	2	8	2	0	1	22
6:15 - 7:15			1	1	7	2	9	2	0	2	24
6:30 - 7:30			3	1	14	1	16	1	0	2	38
6:45 - 7:45			5	0	15	0	17	0	0	2	39
7:00 - 8:00			6	1	15	2	15	2	0	1	42
7:15 - 8:15			6	1	15	2	14	2	0	0	40
7:30 - 8:30			4	1	8	2	7	2	0	0	24



Client : Mott MacDonald
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AM

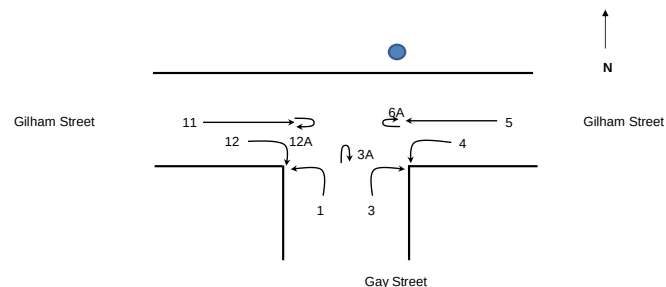
Time Period	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
	A - B	B - A	B - C	C - B	C - D	D - C	D - E	E - D	D - A	A - D		
7:45 - 8:45			2	1	5	2	4	2	0	0	16	
8:00 - 9:00			13	3	21	4	21	4	0	1	67	

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS										Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - E	E - D	D - A	A - D	
15:00 - 16:00			2	5	6	16	6	16	1	0	52
15:15 - 16:15			4	7	7	17	7	16	0	0	58
15:30 - 16:30			3	6	9	11	10	12	0	1	52
15:45 - 16:45			3	4	8	9	9	9	0	1	43
16:00 - 17:00			3	9	9	16	10	16	0	1	64
16:15 - 17:15			2	7	7	15	8	16	1	1	57
16:30 - 17:30			2	8	9	22	8	25	2	0	76
16:45 - 17:45			2	8	9	21	8	24	2	0	74
17:00 - 18:00			3	4	10	19	9	22	2	0	69
17:15 - 18:15			1	4	10	19	9	21	1	0	65
17:30 - 18:30			3	4	6	17	6	16	0	0	52
17:45 - 18:45			3	3	9	13	9	13	0	0	50
18:00 - 19:00			2	7	4	13	4	16	1	0	47



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine



AM

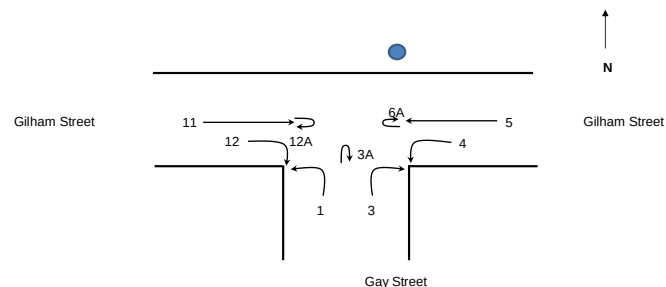
Time Period	Movement 1			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6A			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total				
6:00 - 6:15	1	0	1	1	0	1	0	0	0	4	0	4	4	0	4	0	0	0	7	0	7	1	0	1	0	0	0	18	6:00 - 7:00	139	
6:15 - 6:30	0	0	0	0	0	0	0	0	0	13	2	15	15	0	15	0	0	0	3	0	3	0	0	0	0	0	0		33	6:15 - 7:15	145
6:30 - 6:45	1	0	1	2	1	3	0	0	0	16	0	16	18	0	18	1	0	1	4	0	4	1	0	1	0	0	0		44	6:30 - 7:30	134
6:45 - 7:00	0	0	0	3	0	3	0	0	0	18	0	18	15	0	15	1	0	1	6	0	6	1	0	1	0	0	0		44	6:45 - 7:45	109
7:00 - 7:15	0	0	0	1	0	1	1	0	1	5	0	5	9	0	9	0	0	0	8	0	8	0	0	0	0	0	0		24	7:00 - 8:00	94
7:15 - 7:30	0	0	0	3	0	3	0	0	0	5	0	5	8	0	8	0	0	0	5	0	5	1	0	1	0	0	0		22	7:15 - 8:15	97
7:30 - 7:45	0	0	0	0	0	0	0	0	0	2	0	2	5	0	5	0	0	0	12	0	12	0	0	0	0	0	0		19	7:30 - 8:30	129
7:45 - 8:00	0	0	0	0	0	0	0	0	0	1	2	3	14	0	14	0	0	0	11	0	11	1	0	1	0	0	0		29	7:45 - 8:45	179
8:00 - 8:15	0	0	0	3	1	4	0	0	0	2	2	4	5	1	6	0	0	0	13	0	13	0	0	0	0	0	0	27	8:00 - 9:00	233	
8:15 - 8:30	1	0	1	2	0	2	0	0	0	2	0	2	26	0	26	0	0	0	22	1	23	0	0	0	0	0	0		54	AM Peak	233
8:30 - 8:45	1	0	1	0	1	1	0	0	0	1	3	4	36	0	36	0	0	0	26	1	27	0	0	0	0	0	0		69		
8:45 - 9:00	0	0	0	1	1	2	0	0	0	1	2	3	37	0	37	0	0	0	39	0	39	2	0	2	0	0	0		83		
Total	4	0	4	16	4	20	1	0	1	70	11	81	192	1	193	2	0	2	156	2	158	7	0	7	0	0	0	466			
AM Peak	2	0	2	6	3	9	0	0	0	6	7	13	104	1	105	0	0	0	100	2	102	2	0	2	0	0	0	233			

PM

Time Period	Movement 1			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6A			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		15:00 - 16:00	182
15:00 - 15:15	3	0	3	11	1	12	0	0	0	0	1	1	17	0	17	0	0	0	37	0	37	0	0	0	0	0	0	70		
15:15 - 15:30	1	0	1	4	3	7	0	0	0	0	5	5	9	0	9	0	0	0	20	0	20	2	0	2	0	0	0	44	15:15 - 16:15	142
15:30 - 15:45	1	0	1	8	2	10	0	0	0	2	0	2	8	0	8	0	0	0	16	0	16	4	0	4	0	0	0	41	15:30 - 16:30	123
15:45 - 16:00	1	0	1	5	2	7	0	0	0	2	2	4	3	0	3	0	0	0	12	0	12	0	0	0	0	0	0	27	15:45 - 16:45	101
16:00 - 16:15	2	0	2	3	1	4	0	0	0	0	4	4	6	0	6	0	0	0	14	0	14	0	0	0	0	0	0	30	16:00 - 17:00	101



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine



AM

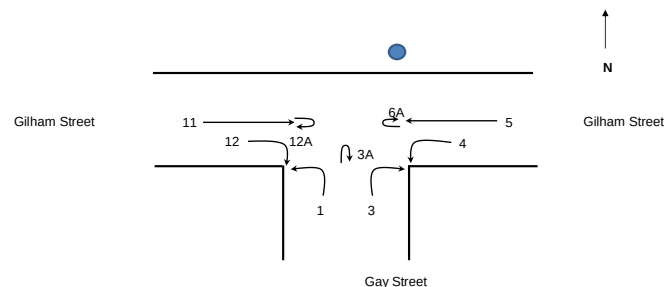
Time Period	Movement 1			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6A			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
16:15 - 16:30	0	0	0	2	2	4	0	0	0	0	0	0	10	1	11	0	0	0	10	0	10	0	0	0	0	0	0	25	16:15 - 17:15	99
16:30 - 16:45	0	0	0	0	2	2	0	0	0	0	0	0	11	0	11	0	0	0	6	0	6	0	0	0	0	0	0	19	16:30 - 17:30	104
16:45 - 17:00	0	0	0	3	3	6	0	0	0	1	2	3	9	0	9	0	0	0	9	0	9	0	0	0	0	0	0	27	16:45 - 17:45	108
17:00 - 17:15	0	0	0	1	1	2	0	0	0	2	3	5	13	0	13	0	0	0	8	0	8	0	0	0	0	0	0	28	17:00 - 18:00	110
17:15 - 17:30	0	0	0	2	2	4	0	0	0	1	3	4	13	0	13	0	0	0	7	0	7	2	0	2	0	0	0	30	17:15 - 18:15	102
17:30 - 17:45	0	0	0	0	1	1	0	0	0	2	0	2	11	0	11	0	0	0	9	0	9	0	0	0	0	0	0	23	17:30 - 18:30	97
17:45 - 18:00	1	0	1	0	2	2	0	0	0	4	1	5	11	0	11	0	0	0	10	0	10	0	0	0	0	0	0	29	17:45 - 18:45	101
18:00 - 18:15	0	0	0	0	0	0	0	0	0	1	0	1	8	0	8	0	0	0	10	0	10	1	0	1	0	0	0	20	18:00 - 19:00	93
18:15 - 18:30	1	0	1	0	0	0	0	0	0	1	0	1	10	0	10	0	0	0	13	0	13	0	0	0	0	0	0	25	PM Peak	182
18:30 - 18:45	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	1	0	1	16	0	16	1	0	1	0	0	0	27		
18:45 - 19:00	0	0	0	3	3	6	0	0	0	1	0	1	8	0	8	0	0	0	6	0	6	0	0	0	0	0	0	21		
Total	10	0	10	42	25	67	0	0	0	17	21	38	156	1	157	1	0	1	203	0	203	10	0	10	0	0	0	486		
PM Peak	6	0	6	28	8	36	0	0	0	4	8	12	37	0	37	0	0	0	85	0	85	6	0	6	0	0	0	182		

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6A			Movement 11			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
6:00 - 7:00	2	0	2	6	1	7	0	0	0	51	2	53	52	0	52	2	0	2	20	0	20	3	0	3	0	0	0	136	3	139
6:15 - 7:15	1	0	1	6	1	7	1	0	1	52	2	54	57	0	57	2	0	2	21	0	21	2	0	2	0	0	0	142	3	145
6:30 - 7:30	1	0	1	9	1	10	1	0	1	44	0	44	50	0	50	2	0	2	23	0	23	3	0	3	0	0	0	133	1	134
6:45 - 7:45	0	0	0	7	0	7	1	0	1	30	0	30	37	0	37	1	0	1	31	0	31	2	0	2	0	0	0	109	0	109
7:00 - 8:00	0	0	0	4	0	4	1	0	1	13	2	15	36	0	36	0	0	0	36	0	36	2	0	2	0	0	0	92	2	94
7:15 - 8:15	0	0	0	6	1	7	0	0	0	10	4	14	32	1	33	0	0	0	41	0	41	2	0	2	0	0	0	91	6	97



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine



AM

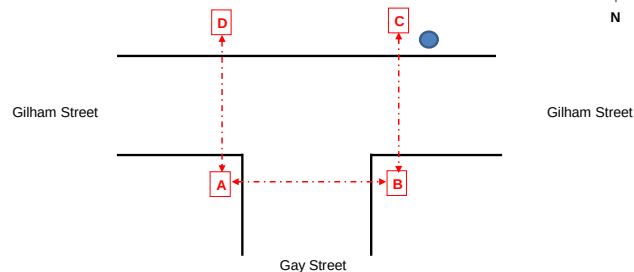
Time Period	Movement 1			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6A			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
7:30 - 8:30	1	0	1	5	1	6	0	0	0	7	4	11	50	1	51	0	0	0	58	1	59	1	0	1	0	0	0	122	7	129
7:45 - 8:45	2	0	2	5	2	7	0	0	0	6	7	13	81	1	82	0	0	0	72	2	74	1	0	1	0	0	0	167	12	179
8:00 - 9:00	2	0	2	6	3	9	0	0	0	6	7	13	104	1	105	0	0	0	100	2	102	2	0	2	0	0	0	220	13	233

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6A			Movement 11			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
15:00 - 16:00	6	0	6	28	8	36	0	0	0	4	8	12	37	0	37	0	0	0	85	0	85	6	0	6	0	0	0	166	16	182
15:15 - 16:15	5	0	5	20	8	28	0	0	0	4	11	15	26	0	26	0	0	0	62	0	62	6	0	6	0	0	0	123	19	142
15:30 - 16:30	4	0	4	18	7	25	0	0	0	4	6	10	27	1	28	0	0	0	52	0	52	4	0	4	0	0	0	109	14	123
15:45 - 16:45	3	0	3	10	7	17	0	0	0	2	6	8	30	1	31	0	0	0	42	0	42	0	0	0	0	0	0	87	14	101
16:00 - 17:00	2	0	2	8	8	16	0	0	0	1	6	7	36	1	37	0	0	0	39	0	39	0	0	0	0	0	0	86	15	101
16:15 - 17:15	0	0	0	6	8	14	0	0	0	3	5	8	43	1	44	0	0	0	33	0	33	0	0	0	0	0	0	85	14	99
16:30 - 17:30	0	0	0	6	8	14	0	0	0	4	8	12	46	0	46	0	0	0	30	0	30	2	0	2	0	0	0	88	16	104
16:45 - 17:45	0	0	0	6	7	13	0	0	0	6	8	14	46	0	46	0	0	0	33	0	33	2	0	2	0	0	0	93	15	108
17:00 - 18:00	1	0	1	3	6	9	0	0	0	9	7	16	48	0	48	0	0	0	34	0	34	2	0	2	0	0	0	97	13	110
17:15 - 18:15	1	0	1	2	5	7	0	0	0	8	4	12	43	0	43	0	0	0	36	0	36	3	0	3	0	0	0	93	9	102
17:30 - 18:30	2	0	2	0	3	3	0	0	0	8	1	9	40	0	40	0	0	0	42	0	42	1	0	1	0	0	0	93	4	97
17:45 - 18:45	2	0	2	0	2	2	0	0	0	6	1	7	38	0	38	1	0	1	49	0	49	2	0	2	0	0	0	98	3	101
18:00 - 19:00	1	0	1	3	3	6	0	0	0	3	0	3	35	0	35	1	0	1	45	0	45	2	0	2	0	0	0	90	3	93



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine

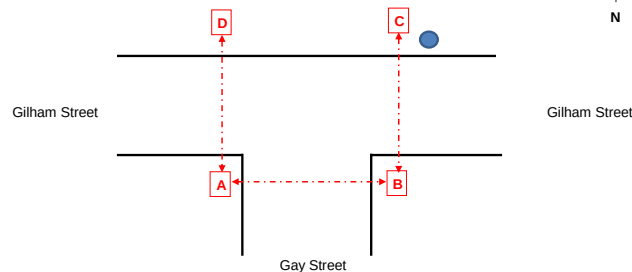


AM

Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			
6:00 - 6:15	0	0	0	0			0	0	0	6:00 - 7:00	5
6:15 - 6:30	0	0	0	0			0	0	0	6:15 - 7:15	10
6:30 - 6:45	0	1	0	0			0	0	1	6:30 - 7:30	15
6:45 - 7:00	2	2	0	0			0	0	4	6:45 - 7:45	20
7:00 - 7:15	3	0	1	1			0	0	5	7:00 - 8:00	20
7:15 - 7:30	5	0	0	0			0	0	5	7:15 - 8:15	15
7:30 - 7:45	2	3	0	0			1	0	6	7:30 - 8:30	10
7:45 - 8:00	3	1	0	0			0	0	4	7:45 - 8:45	4
8:00 - 8:15	1	0	0	0			0	0	1	8:00 - 9:00	35
8:15 - 8:30	3	7	0	0			0	0	10	AM Peak	35
8:30 - 8:45	3	13	0	0			0	0	16		
8:45 - 9:00	6	2	0	0			0	0	8		
Total	28	29	1	1			1	0	60		
AM Peak	13	22	0	0			0	0	35		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine



AM

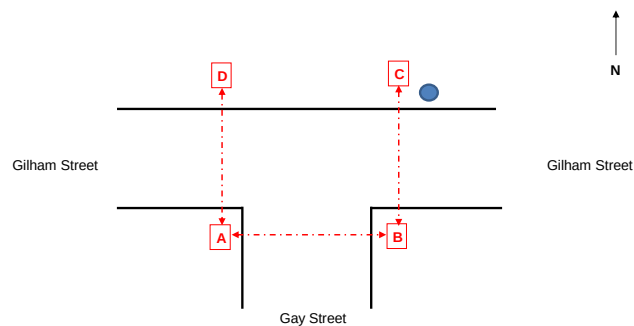
Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			

PM

Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			
15:00 - 15:15	12	2	0	0			0	0	14	15:00 - 16:00	42
15:15 - 15:30	17	0	0	0			0	0	17	15:15 - 16:15	31
15:30 - 15:45	3	1	5	0			1	0	10	15:30 - 16:30	22
15:45 - 16:00	0	1	0	0			0	0	1	15:45 - 16:45	14
16:00 - 16:15	2	1	0	0			0	0	3	16:00 - 17:00	20
16:15 - 16:30	1	5	0	1			0	1	8	16:15 - 17:15	22
16:30 - 16:45	0	2	0	0			0	0	2	16:30 - 17:30	17
16:45 - 17:00	4	3	0	0			0	0	7	16:45 - 17:45	18
17:00 - 17:15	0	5	0	0			0	0	5	17:00 - 18:00	18
17:15 - 17:30	1	1	0	0			1	0	3	17:15 - 18:15	15
17:30 - 17:45	0	3	0	0			0	0	3	17:30 - 18:30	18
17:45 - 18:00	1	5	0	0			0	1	7	17:45 - 18:45	19
18:00 - 18:15	0	1	1	0			0	0	2	18:00 - 19:00	13
18:15 - 18:30	1	5	0	0			0	0	6	PM Peak	42
18:30 - 18:45	0	4	0	0			0	0	4		
18:45 - 19:00	1	0	0	0			0	0	1		
Total	43	39	6	1			2	2	93		
PM Peak	32	4	5	0			1	0	42		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine



AM

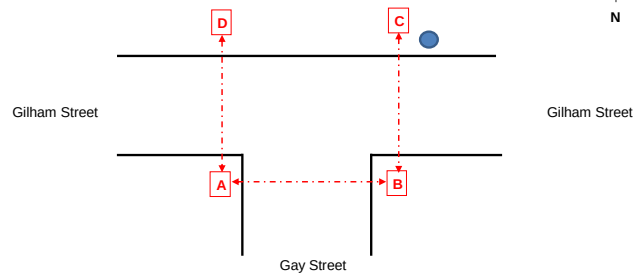
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
6:00 - 7:00	2	3	0	0			0	0	5
6:15 - 7:15	5	3	1	1			0	0	10
6:30 - 7:30	10	3	1	1			0	0	15
6:45 - 7:45	12	5	1	1			1	0	20
7:00 - 8:00	13	4	1	1			1	0	20
7:15 - 8:15	10	4	0	0			1	0	15
7:30 - 8:30	5	4	0	0			1	0	10
7:45 - 8:45	3	1	0	0			0	0	4
8:00 - 9:00	13	22	0	0			0	0	35



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Gilham Street & Gay Street
 Weather : Fine



AM

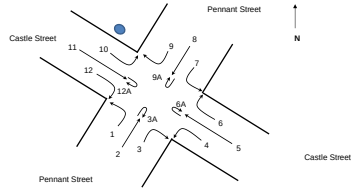
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
15:00 - 16:00	32	4	5	0			1	0	42
15:15 - 16:15	22	3	5	0			1	0	31
15:30 - 16:30	6	8	5	1			1	1	22
15:45 - 16:45	3	9	0	1			0	1	14
16:00 - 17:00	7	11	0	1			0	1	20
16:15 - 17:15	5	15	0	1			0	1	22
16:30 - 17:30	5	11	0	0			1	0	17
16:45 - 17:45	5	12	0	0			1	0	18
17:00 - 18:00	2	14	0	0			1	1	18
17:15 - 18:15	2	10	1	0			1	1	15
17:30 - 18:30	2	14	1	0			0	1	18
17:45 - 18:45	2	15	1	0			0	1	19
18:00 - 19:00	2	10	1	0			0	0	13



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Pennant Street & Castle Street
Weather : Fine

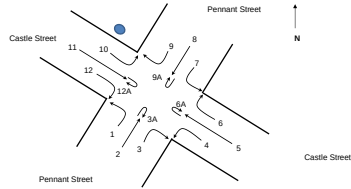


Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total												
6:00 - 6:15	3	0	3	118	14	132	7	2	9	0	0	0	6	0	6	1	0	1	2	0	2	0	0	0	5	0	5	36	2	38	4	0	4	0	0	0	6	0	6	1	0	1	6	0	6	0	0	0	213	6:00 - 7:00	1213
6:15 - 6:30	2	0	2	143	15	158	10	0	10	0	0	0	6	0	6	2	0	2	0	0	0	0	0	0	1	0	1	60	6	66	3	0	3	0	0	0	9	1	10	2	0	2	4	0	4	0	0	0	264	6:15 - 7:15	1401
6:30 - 6:45	4	0	4	177	17	194	7	2	9	0	0	0	6	0	6	3	0	3	0	0	0	0	0	0	0	0	0	70	5	75	8	0	8	0	0	0	13	0	13	6	0	6	11	0	11	0	0	0	329	6:30 - 7:30	1589
6:45 - 7:00	6	0	6	165	14	179	19	2	21	0	0	0	16	0	16	5	0	5	1	0	1	0	0	0	5	0	5	103	7	110	13	1	14	0	0	0	15	0	15	19	0	19	16	0	16	0	0	0	407	6:45 - 7:45	1810
7:00 - 7:15	8	0	8	155	10	165	16	1	17	0	0	0	21	0	21	4	0	4	0	0	0	0	0	0	4	0	4	118	7	125	13	0	13	0	0	0	21	0	21	7	0	7	16	0	16	0	0	0	401	7:00 - 8:00	1833
7:15 - 7:30	5	1	6	168	8	176	25	1	26	1	0	1	25	0	25	10	1	11	3	0	3	0	0	0	4	0	4	127	8	135	13	1	14	0	0	0	23	1	24	13	0	13	12	2	14	0	0	0	452	7:15 - 8:15	2044
7:30 - 7:45	21	3	24	171	9	180	23	0	23	0	0	0	29	0	29	11	0	11	3	0	3	0	0	0	9	1	10	176	11	187	17	0	17	0	0	0	21	1	22	20	0	20	23	1	24	0	0	0	550	7:30 - 8:30	2089
7:45 - 8:00	22	2	24	129	8	137	23	2	25	0	0	0	30	0	30	19	0	19	2	0	2	0	0	0	8	0	8	156	15	171	24	0	24	0	0	0	35	1	36	31	1	32	20	2	22	0	0	0	530	7:45 - 8:45	2201
8:00 - 8:15	11	0	11	150	14	164	20	1	21	0	0	0	32	0	32	15	0	15	1	1	2	0	0	0	3	1	4	142	8	150	17	0	17	0	0	0	42	2	44	34	0	34	18	0	18	0	0	0	512	8:00 - 9:00	2225
8:15 - 8:30	22	0	22	142	7	149	23	0	23	0	0	0	19	2	21	24	2	26	1	0	1	0	0	0	9	0	9	139	10	149	25	0	25	0	0	0	32	2	34	25	0	25	13	0	13	0	0	0	497	AM Peak	2325
8:30 - 8:45	32	1	33	170	7	177	28	2	30	0	0	0	23	2	25	35	0	35	6	1	7	0	0	0	11	0	11	185	13	198	25	1	26	0	0	0	52	3	55	43	0	43	22	0	22	0	0	0	662		
8:45 - 9:00	22	0	22	188	6	194	30	1	31	0	0	0	16	0	16	15	1	16	8	0	8	0	0	0	18	0	18	167	11	178	28	0	28	0	0	0	74	1	75	42	0	42	25	1	26	0	0	0	654		
Total	158	7	165	1876	129	2005	231	14	245	1	0	1	229	4	233	144	4	148	27	2	29	0	0	0	77	2	79	1479	103	1582	190	3	193	0	0	0	343	12	355	243	1	244	186	6	192	0	0	0	5471		
AM Peak	87	1	88	650	34	684	101	4	105	0	0	0	90	4	94	89	3	92	16	2	18	0	0	0	41	1	42	633	42	675	95	1	96	0	0	0	200	8	208	144	0	144	78	1	79	0	0	0	2325		

PM																																																		Total of all Movements	Peak Hour Volume Determination	
Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A						
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total										
15:00 - 15:15	24	0	24	140	4	144	43	2	45	0	0	0	56	2	58	40	1	41	11	4	15	0	0	0	7	1	8	201	12	213	31	6	37	0	0	0	52	0	52	44	0	44	7	0	7	0	0	0	688	15:00 - 16:00	2713	
15:15 - 15:30	32	0	32	143	4	147	36	0	36	0	0	0	49	0	49	25	0	25	4	0	4	0	0	0	27	0	27	222	12	234	42	2	44	0	0	0	39	3	42	41	1	42	16	0	16	0	0	0	698	15:15 - 16:15	2697	
15:30 - 15:45	12	0	12	136	4	140	44	0	44	0	0	0	53	0	53	25	1	26	6	0	6	0	0	0	15	1	16	229	14	243	40	0	40	0	0	0	41	1	42	28	0	28	12	0	12	0	0	0	662	15:30 - 16:30	2612	
15:45 - 16:00	28	0	28	165	6	171	37	1	38	0	0	0	51	0	51	26	0	26	6	0	6	0	0	0	9	0	9	220	10	230	27	1	28	0	0	0	32	0	32	36	0	36	10	0	10	0	0	0	665	15:45 - 16:45	2584	
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16:30 - 16:45	23	2	25	135	3	138	43	1	44	0	0	0	47	0	47	24	0	24	6	0	6	0	0	0	13	0	13	222	9	231	26	0	26	0	0	0	44	0	44	24	1	25	11	0	11	0	0	0	634	16:30 - 17:30	2448	
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17:00 - 17:15	25	0	25	134	6	140	42	0	42	0	0	0	42	1	43	20	0	20	4	0	4	0	0	0	11	1	12	178	5	183	37	0	37	0	0	0	42	0	42	32	0	32	11	0	11	0	0	0	591	17:00 - 18:00	2399	
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17:30 - 17:45	17	0	17	143	3	146	23	0	23	0	0	0	57	0	57	26	0	26	2	0	2	0	0	0	20	0	20	227	9	236	30	0	30	0	0	0	26	0	26	27	0	27	14	0	14	0	0	0	624	17:30 - 18:30	2291	
17:45 - 18:00	18	0	18	119	7	126	49	1	50	0	0	0	32	0	32	27	0	27	6	0	6	0	0	0	9	1	10	203	2	205	29	0	29	0	0	0	33	0	33	39	0	39	5	0	5	0	0	0	580	17:45 - 18:45	2167	
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18:15 - 18:30	28	0	28	116	1	117	50	1	51	0	0	0	35	0	35	19	0	19	4	0	4	0	0	0	16	0	16	148	5	153	29	0	29	0	0	0	29	0	29	20	0	20	16	0	16	0	0	0	517	PM Peak	2713	
18:30 - 18:45	26	0	26	107	4	111	40	1	41	0	0	0	38	0	38	21	0	21	2	0	2	0	0	0	20	1	21	155	4	159	23	0	23	0	0	0	16	0	16	28	0	28	12	0	12	0	0	0	500			
18:45 - 19:00	21	0	21	86	2	88	30	0	30	0	0	0	26	0	26	18	0	18	5	0	5	0	0	0	7	0	7	111	2	113	43	0	43	0	0	0	20	0	20	16	0	16	10	0	10	0	0	0	397			
Total	364	3	367	2139	64	2203	607	14	621	0	0	0	727	6	733	393	2	395	84	4	88	0	0	0	232	5	237	3074	129	3194	514	9	523	0	0	0	578	5	583	505	3	508	182	0	182	0	0	0	9634			
PM Peak	96	0	96	584	18	602	160	3	163	0	0	0	209	2	211	116	2	118	27	4	31	0	0	0	58	2	60	872	48	920	140	9	149	0	0	0	164	4	168	149	1	150	45	0	45	0	0	0	2713			



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Pennant Street & Castle Street
Weather : Fine

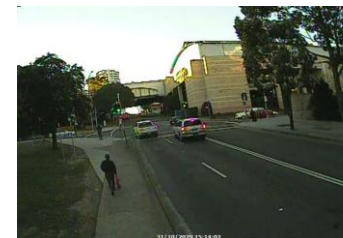
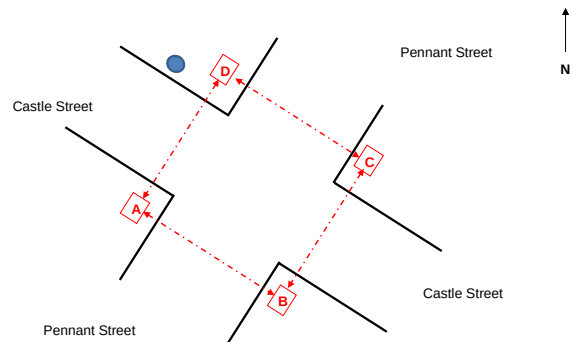


Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total												
7:30 - 8:30	76	5	81	592	38	630	89	3	92	0	0	0	110	2	112	69	2	71	7	1	8	0	0	0	29	2	31	613	44	657	83	0	83	0	0	0	130	6	136	110	1	111	74	3	77	0	0	0	1982	107	2089
7:45 - 8:45	87	3	90	591	36	627	94	5	99	0	0	0	104	4	108	93	2	95	10	2	12	0	0	0	31	1	32	622	46	668	91	1	92	0	0	0	161	8	169	133	1	134	73	2	75	0	0	0	2090	111	2201
8:00 - 9:00	87	1	88	650	34	684	101	4	105	0	0	0	90	4	94	89	3	92	16	2	18	0	0	0	41	1	42	633	42	675	95	1	96	0	0	0	200	8	208	144	0	144	78	1	79	0	0	0	2224	101	2325

TIME PERIOD	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total						
15:00 - 16:00	96	0	96	584	18	602	160	3	163	0	0	0	209	2	211	116	2	118	27	4	31	0	0	0	58	2	60	872	48	920	140	9	149	0	0	0	164	4	168	149	1	150	45	0	45	0	0	0	2620	93	2713
15:15 - 16:15	94	0	94	607	19	626	153	3	156	0	0	0	210	1	211	101	1	102	23	0	23	0	0	0	67	1	68	891	46	937	135	3	138	0	0	0	155	5	160	131	1	132	50	0	50	0	0	0	2617	80	2697
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15:45 - 16:45	91	3	94	609	18	627	141	5	146	0	0	0	199	2	201	96	0	96	24	0	24	0	0	0	48	0	48	853	37	890	115	1	116	0	0	0	159	1	160	139	1	140	40	0	40	0	0	0	2516	68	2584
16:00 - 17:00	87	3	90	594	15	609	150	5	155	0	0	0	203	2	205	95	0	95	23	0	23	0	0	0	47	0	47	807	33	840	127	0	127	0	0	0	167	1	168	136	2	138	41	0	41	0	0	0	2477	61	2538
16:15 - 17:15	90	3	93	565	16	581	156	3	159	0	0	0	188	2	190	90	0	90	20	0	20	0	0	0	42	1	43	765	28	793	138	0	138	0	0	0	166	0	166	142	2	144	40	0	40	0	0	0	2402	55	2457
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17:00 - 18:00	81	0	81	541	21	562	138	3	141	0	0	0	168	1	169	105	0	105	20	0	20	0	0	0	57	2	59	800	22	822	125	0	125	0	0	0	145	0	145	125	0	125	45	0	45	0	0	0	2350	49	2399
17:15 - 18:15	79	0	79	518	18	536	135	4	139	0	0	0	174	1	175	104	0	104	19	0	19	0	0	0	73	1	74	803	23	826	115	0	115	0	0	0	140	0	140	124	0	124	47	0	47	0	0	0	2331	47	2378
17:30 - 18:30	86	0	86	489	14	503	161	3	164	0	0	0	172	1	173	91	0	91	15	0	15	0	0	0	72	1	73	759	22	781	115	0	115	0	0	0	125	0	125	117	0	117	48	0	48	0	0	0	2250	41	2291
17:45 - 18:45	97	0	97	453	15	468	178	4	182	0	0	0	153	1	154	86	0	86	15	0	15	0	0	0	72	2	74	687	17	704	108	0	108	0	0	0	115	0	115	118	0	118	46	0	46	0	0	0	2128	39	2167
18:00 - 19:00	100	0	100	420	10	430	159	3	162	0	0	0	147	1	148	77	0	77	14	0	14	0	0	0	70	1	71	595	17	612	122	0	122	0	0	0	102	0	102	95	0	95	51	0	51	0	0	0	1952	32	1984



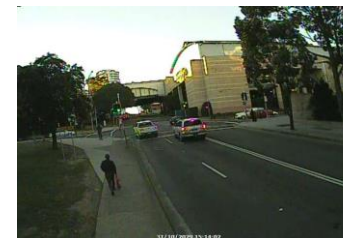
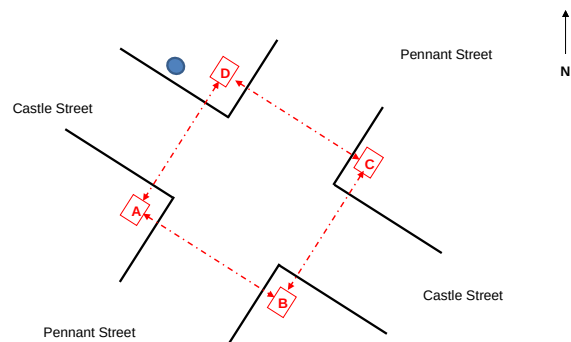
Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Street
 Weather : Fine



AM											
Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			
6:00 - 6:15	3	0	0	0	0	4	0	0	7	6:00 - 7:00	46
6:15 - 6:30	2	0	0	0	0	9	2	1	14	6:15 - 7:15	59
6:30 - 6:45	0	0	0	0	1	5	0	0	6	6:30 - 7:30	69
6:45 - 7:00	1	0	0	2	0	16	0	0	19	6:45 - 7:45	96
7:00 - 7:15	3	0	0	0	1	14	0	2	20	7:00 - 8:00	122
7:15 - 7:30	4	0	3	0	3	12	1	1	24	7:15 - 8:15	102
7:30 - 7:45	2	0	0	1	9	21	0	0	33	7:30 - 8:30	78
7:45 - 8:00	2	1	1	0	13	28	0	0	45	7:45 - 8:45	45
8:00 - 8:15	4	2	0	0	13	28	0	1	48	8:00 - 9:00	494
8:15 - 8:30	7	22	2	0	89	23	0	23	166	AM Peak	494
8:30 - 8:45	7	10	3	4	82	27	1	22	156		
8:45 - 9:00	4	11	6	2	40	26	1	34	124		
Total	39	46	15	9	251	213	5	84	662		
AM Peak	22	45	11	6	224	104	2	80	494		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Street
 Weather : Fine



AM

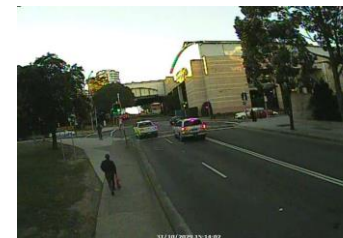
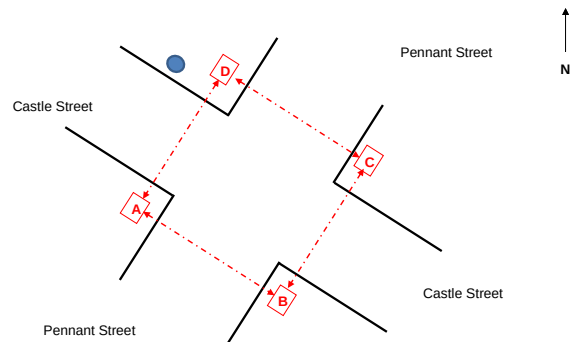
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination	
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D			

PM

Time Period	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination		
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D				
15:00 - 15:15	20	19	0	1	15	28	53	3	139	15:00 - 16:00	549	
15:15 - 15:30	34	15	0	1	13	146	37	3		249	15:15 - 16:15	497
15:30 - 15:45	23	28	1	3	14	16	8	1		94	15:30 - 16:30	321
15:45 - 16:00	17	21	2	1	13	10	1	2		67	15:45 - 16:45	306
16:00 - 16:15	15	31	0	0	21	8	9	3	87	16:00 - 17:00	306	
16:15 - 16:30	12	33	3	2	16	5	1	1	73	16:15 - 17:15	273	
16:30 - 16:45	17	25	1	0	18	11	4	3	79	16:30 - 17:30	251	
16:45 - 17:00	16	20	3	0	17	8	3	0	67	16:45 - 17:45	232	
17:00 - 17:15	7	15	0	2	16	8	1	5	54	17:00 - 18:00	228	
17:15 - 17:30	10	9	3	1	23	5	0	0	51	17:15 - 18:15	227	
17:30 - 17:45	4	6	0	5	29	16	0	0	60	17:30 - 18:30	215	
17:45 - 18:00	9	19	1	2	19	10	3	0	63	17:45 - 18:45	198	
18:00 - 18:15	12	13	0	1	22	3	0	2	53	18:00 - 19:00	163	
18:15 - 18:30	13	8	0	0	10	7	1	0	39	PM Peak	549	
18:30 - 18:45	12	15	2	0	10	3	0	1	43			
18:45 - 19:00	2	13	0	0	9	4	0	0	28			
Total	223	290	16	19	265	288	121	24	1246			
PM Peak	94	83	3	6	55	200	99	9	549			



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Street
 Weather : Fine



AM

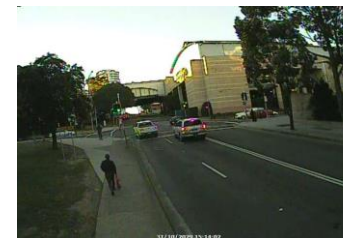
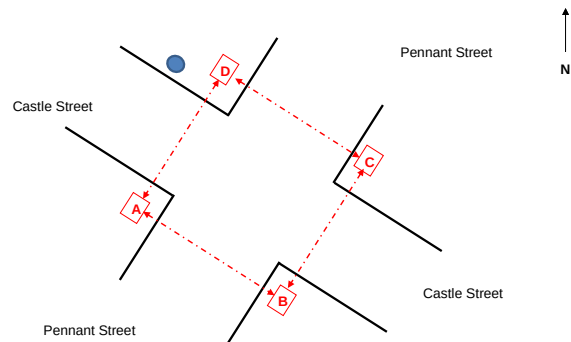
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
6:00 - 7:00	6	0	0	2	1	34	2	1	46
6:15 - 7:15	6	0	0	2	2	44	2	3	59
6:30 - 7:30	8	0	3	2	5	47	1	3	69
6:45 - 7:45	10	0	3	3	13	63	1	3	96
7:00 - 8:00	11	1	4	1	26	75	1	3	122
7:15 - 8:15	8	1	4	1	25	61	1	1	102
7:30 - 8:30	4	1	1	1	22	49	0	0	78
7:45 - 8:45	2	1	1	0	13	28	0	0	45
8:00 - 9:00	22	45	11	6	224	104	2	80	494



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Street
 Weather : Fine



AM

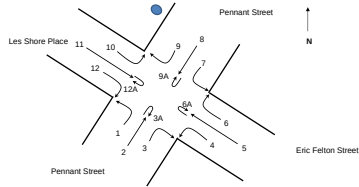
Time	PEDESTRIAN MOVEMENTS								Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS								Grand Total
	A - B	B - A	B - C	C - B	C - D	D - C	D - A	A - D	
15:00 - 16:00	94	83	3	6	55	200	99	9	549
15:15 - 16:15	89	95	3	5	61	180	55	9	497
15:30 - 16:30	67	113	6	6	64	39	19	7	321
15:45 - 16:45	61	110	6	3	68	34	15	9	306
16:00 - 17:00	60	109	7	2	72	32	17	7	306
16:15 - 17:15	52	93	7	4	67	32	9	9	273
16:30 - 17:30	50	69	7	3	74	32	8	8	251
16:45 - 17:45	37	50	6	8	85	37	4	5	232
17:00 - 18:00	30	49	4	10	87	39	4	5	228
17:15 - 18:15	35	47	4	9	93	34	3	2	227
17:30 - 18:30	38	46	1	8	80	36	4	2	215
17:45 - 18:45	46	55	3	3	61	23	4	3	198
18:00 - 19:00	39	49	2	1	51	17	1	3	163



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Pennant Street & Les Shore Place
Weather : Fine

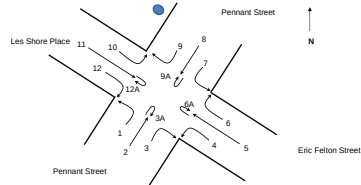


Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total													
6:00 - 6:15	10	0	10	116	15	131	3	0	3	0	0	0	3	0	3	1	0	1	1	0	1	0	0	0	3	1	4	47	2	49	2	0	2	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	205	6:00 - 7:00	1123	
6:15 - 6:30	11	0	11	150	17	167	4	1	5	0	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0	1	1	56	6	62	7	0	7	1	0	1	0	0	0	0	0	1	0	1	0	0	0	262	6:15 - 7:15	1258		
6:30 - 6:45	10	0	10	178	15	193	5	1	6	0	0	0	2	0	2	1	0	1	0	0	0	0	0	0	0	1	0	77	5	82	13	0	13	0	0	0	0	0	0	1	0	1	2	0	2	0	0	0	311	6:30 - 7:30	1377	
6:45 - 7:00	14	0	14	166	11	177	3	2	5	0	0	0	10	0	10	0	0	0	0	0	0	0	0	0	0	1	0	1	116	7	123	8	0	8	0	0	0	2	0	2	0	0	0	5	0	5	0	0	0	345	6:45 - 7:45	1519
7:00 - 7:15	10	0	10	155	12	167	10	0	10	0	0	0	9	0	9	0	0	0	0	0	0	0	0	0	1	0	1	114	8	122	11	0	11	0	0	0	0	4	0	4	0	0	0	6	0	6	0	0	0	340	7:00 - 8:00	1599
7:15 - 7:30	13	0	13	163	7	170	17	2	19	0	0	0	12	2	14	0	0	0	0	1	1	0	0	0	5	0	5	132	7	139	11	0	11	0	0	0	2	0	2	0	0	0	7	0	7	0	0	0	381	7:15 - 8:15	1701	
7:30 - 7:45	18	0	18	171	9	180	16	1	17	0	0	0	14	2	16	0	0	0	1	0	1	0	0	0	6	0	6	169	12	181	17	0	17	0	0	0	4	0	4	1	0	1	12	0	12	0	0	0	453	7:30 - 8:30	1742	
7:45 - 8:00	25	0	25	132	9	141	13	0	13	0	0	0	13	2	15	2	0	2	1	0	1	0	0	0	6	1	7	167	14	181	20	0	20	0	0	0	0	6	0	6	0	0	14	0	14	0	0	0	425	7:45 - 8:45	1855	
8:00 - 8:15	35	0	35	141	14	155	28	2	30	0	0	0	13	2	15	2	0	2	0	1	1	0	0	0	11	2	13	153	3	156	17	0	17	0	0	0	6	0	6	2	0	2	10	0	10	0	0	0	442	8:00 - 9:00	2114	
8:15 - 8:30	38	0	38	105	8	113	29	0	29	0	0	0	16	2	18	4	0	4	3	0	3	0	0	0	8	2	10	145	8	153	21	0	21	0	0	0	8	0	8	6	0	6	19	0	19	0	0	0	422	AM Peak	2114	
8:30 - 8:45	60	4	64	115	9	124	46	0	46	0	0	0	14	3	17	10	0	10	2	0	2	0	0	0	21	1	22	176	11	187	33	0	33	0	0	0	14	4	18	6	0	6	37	0	37	0	0	0	566			
8:45 - 9:00	76	1	77	139	6	145	74	0	74	0	0	0	19	3	22	28	0	28	7	0	7	0	0	0	19	0	19	172	9	181	36	1	37	0	0	0	20	1	27	17	0	17	50	0	50	0	0	0	684			
Total	320	5	325	1731	132	1863	248	9	257	0	0	0	132	16	148	48	0	48	15	2	17	0	0	0	82	8	90	1524	92	1616	196	1	197	1	0	1	72	5	77	33	0	33	164	0	164	0	0	0	4036			
AM Peak	209	5	214	900	37	937	177	2	179	0	0	0	62	10	72	44	0	44	12	1	13	0	0	0	59	5	64	646	31	677	107	1	108	0	0	0	54	5	59	31	0	31	116	0	116	0	0	0	2114			

PM																																															Total of all Movements	Peak Hour Volume Determination			
Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A					
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total									
15:00 - 15:15	31	5	36	105	4	109	58	0	58	0	0	8	88	1	89	19	0	19	20	0	20	0	0	0	21	1	22	148	12	160	23	1	24	0	0	0	22	1	23	3	0	3	30	3	33	0	0	0	596	15:00 - 16:00	2251
15:15 - 15:30	15	0	15	122	7	129	64	0	64	0	0	0	80	1	81	10	0	10	13	0	13	0	0	0	15	0	15	163	13	176	5	0	5	0	0	0	24	0	24	7	0	7	53	1	54	0	0	0	593	15:15 - 16:15	2201
15:30 - 15:45	11	0	11	134	4	138	48	1	49	0	0	0	79	1	80	0	0	0	23	0	23	0	0	0	16	2	18	168	15	183	2	0	2	0	0	0	6	0	6	3	0	3	17	0	17	0	0	0	530	15:30 - 16:30	2096
15:45 - 16:00	7	0	7	121	5	126	56	0	56	1	0	1	78	2	80	3	0	3	15	0	15	0	0	0	16	1	17	185	7	192	3	0	3	0	0	0	8	0	8	4	0	4	20	0	20	0	0	0	532	15:45 - 16:45	2063
16:00 - 16:15	5	1	6	143	6	149	70	0	70	0	0	0	80	1	81	1	0	1	14	0	14	0	0	0	13	0	13	168	10	178	3	0	3	0	0	0	8	0	8	1	0	1	22	0	22	0	0	0	546	16:00 - 17:00	2014
16:15 - 16:30	8	0	8	131	4	135	52	0	52	0	0	0	72	1	73	1	0	1	21	1	22	0	0	0	13	0	13	152	6	158	4	0	4	0	0	0	8	0	8	0	0	0	13	1	14	0	0	0	488	16:15 - 17:15	1940
16:30 - 16:45	9	0	9	133	3	136	41	0	41	0	0	0	68	1	69	1	0	1	19	0	19	0	0	0	7	0	7	181	8	189	3	0	3	0	0	0	7	0	7	1	0	1	15	0	15	0	0	0	497	16:30 - 17:30	1953
16:45 - 17:00	11	0	11	140	2	142	40	1	41	0	0	0	80	0	80	3	0	3	17	0	17	0	0	0	7	0	7	147	2	149	3	0	3	0	0	0	10	0	10	2	0	2	18	0	18	0	0	0	483	16:45 - 17:45	1948
17:00 - 17:15	10	0	10	128	5	133	38	0	38	0	0	0	64	0	64	3	0	3	12	0	12	0	0	0	10	1	11	159	6	165	5	0	5	0	0	0	16	0	16	2	0	2	13	0	13	0	0	0	472	17:00 - 18:00	1915
17:15 - 17:30	19	0	19	135	5	140	42	1	43	0	0	0	72	2	74	6	0	6	16	0	16	0	0	0	8	0	8	169	4	173	2	0	2	0	0	0	6	0	6	0	0	0	14	0	14	0	0	0	501	17:15 - 18:15	1876
17:30 - 17:45	3	0	3	134	0	134	37	3	40	0	0	0	64	1	65	2	0	2	8	0	8	0	0	0	8	0	8	161	8	169	6	0	6	0	0	0	13	0	13	3	0	3	41	0	41	0	0	0	492	17:30 - 18:30	1759
17:45 - 18:00	3	1	4	120	6	126	28	0	28	0	0	0	52	0	52	1	0	1	9	0	9	0	0	0	4	0	4	166	3	169	11	1	12	0	0	0	17	0	17	3	0	3	25	0	25	0	0	0	450	17:45 - 18:45	1625
18:00 - 18:15	4	0	4	125	2	127	20	0	20	0	0	0	42	0	42	5	0	5	14	0	14	0	0	0	12	0	12	172	5	177	3	0	3	0	0	0	14	0	14	1	0	1	13	1	14	0	0	0	433	18:00 - 19:00	1475
18:15 - 18:30	3	0	3	123	2	125	21	1	22	0	0	0	38	2	40	1	0	1	10	1	11	0	0	0	8	1	9	140	4	144	3	0	3	0	0	0	5	1	6	2	0	2	18	0	18	0	0	0	384	PM Peak	2251
18:30 - 18:45	2	0	2	116	4	120	16	0	16	0	0	0	23	1	24	0	0	0	4	0	4	0	0	0	10	0	10	168	3	171	1	0	1	0	0	0	2	0	2	1	0	1	7	0	7	0	0	0	358		
18:45 - 19:00	0	0	0	98	2	100	15	0	15	0	0	0	13	0	13	0	0	0	4	0	4	0	0	0	6	0	6	150	3	153	1	0	1	0	0	0	2	0	2	0	0	0	6	0	6	0	0	0	300		
Total	141	7	148	2089	61	2069	646	7	653	1	0	1	993	14	1007	56	0	56	219	2	221	0	0	0	174	6	180	2597	109	2706	78	2	80	0	0	0	168	2	170	33	0	33	125	6	331	0	0	0	7655		
PM Peak	64	5	69	488	20	502	226	1	227	1	0	1	325	5	330	32	0	32	71	0	71	0	0	0	68	4	72	694	47	711	33	1	34	0	0	0	60	1	61	17	0	17	120	4	124	0	0	0	2251		



Client : Mott MacDonald
Job : Vivien Place, Castle Hill
Day/Date : Tuesday, 6 August 2019
Survey Location : Pennant Street & Les Shore Place
Weather : Fine



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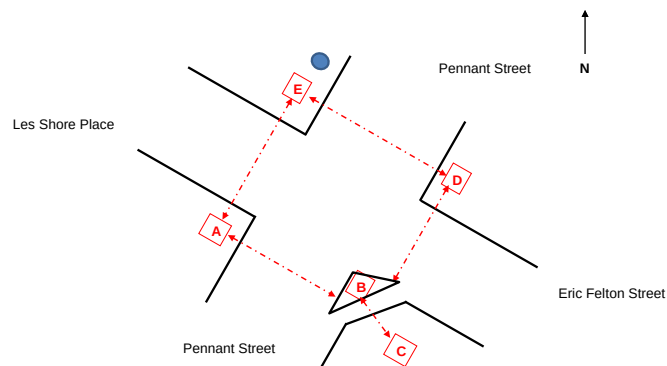
Time Period	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total												
7:30 - 8:30	116	0	116	549	40	589	86	3	89	0	0	0	56	8	64	8	0	8	5	1	6	0	0	0	31	5	36	634	37	671	75	0	75	0	0	0	24	0	24	9	0	9	55	0	55	0	0	0	1648	94	1742
7:45 - 8:45	158	4	162	493	40	533	116	2	118	0	0	0	56	9	65	18	0	18	6	1	7	0	0	0	46	6	52	641	36	677	91	0	91	0	0	0	34	4	38	14	0	14	80	0	80	0	0	0	1753	102	1855
8:00 - 9:00	209	5	214	500	37	537	177	2	179	0	0	0	62	10	72	44	0	44	12	1	13	0	0	0	59	5	64	646	31	677	107	1	108	0	0	0	54	5	59	31	0	31	116	0	116	0	0	0	2017	97	2114

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 2			Movement 3			Movement 3A			Movement 4			Movement 5			Movement 6			Movement 6A			Movement 7			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 11			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total									
15:00 - 16:00	64	5	69	482	20	502	226	1	227	1	0	1	325	5	330	32	0	32	71	0	71	0	0	0	68	4	72	664	47	711	33	1	34	0	0	0	60	1	61	17	0	17	120	4	124	0	0	0	2163	88	2251
15:15 - 16:15	38	1	39	520	22	542	238	1	239	1	0	1	317	5	322	14	0	14	65	0	65	0	0	0	60	3	63	684	45	729	13	0	13	0	0	0	46	0	46	15	0	15	112	1	113	0	0	0	2123	78	2201
15:30 - 16:30	31	1	32	529	19	548	226	1	227	1	0	1	309	5	314	5	0	5	73	1	74	0	0	0	58	3	61	673	38	711	12	0	12	0	0	0	30	0	30	8	0	8	72	1	73	0	0	0	2027	69	2096
15:45 - 16:45	29	1	30	528	18	546	219	0	219	1	0	1	298	5	303	6	0	6	69	1	70	0	0	0	49	1	50	686	31	717	13	0	13	0	0	0	31	0	31	6	0	6	70	1	71	0	0	0	2005	58	2063
16:00 - 17:00	33	1	34	547	15	562	203	1	204	0	0	0	300	3	303	6	0	6	71	1	72	0	0	0	40	0	40	648	26	674	13	0	13	0	0	0	33	0	33	4	0	4	68	1	69	0	0	0	1966	48	2014
16:15 - 17:15	38	0	38	532	14	546	171	1	172	0	0	0	284	2	286	8	0	8	69	1	70	0	0	0	37	1	38	639	22	661	15	0	15	0	0	0	41	0	41	5	0	5	59	1	60	0	0	0	1898	42	1940
16:30 - 17:30	49	0	49	536	15	551	161	2	163	0	0	0	284	3	287	13	0	13	64	0	64	0	0	0	32	1	33	656	20	676	13	0	13	0	0	0	39	0	39	5	0	5	60	0	60	0	0	0	1912	41	1953
16:45 - 17:45	43	0	43	537	12	549	157	5	162	0	0	0	280	3	283	14	0	14	53	0	53	0	0	0	33	1	34	636	20	656	16	0	16	0	0	0	45	0	45	7	0	7	86	0	86	0	0	0	1907	41	1948
17:00 - 18:00	35	1	36	517	16	533	145	4	149	0	0	0	252	3	255	12	0	12	45	0	45	0	0	0	30	1	31	655	21	676	24	1	25	0	0	0	52	0	52	8	0	8	93	0	93	0	0	0	1868	47	1915
17:15 - 18:15	29	1	30	514	13	527	127	4	131	0	0	0	230	3	233	14	0	14	47	0	47	0	0	0	32	0	32	668	20	688	22	1	23	0	0	0	50	0	50	7	0	7	93	1	94	0	0	0	1833	43	1876
17:30 - 18:30	13	1	14	502	10	512	106	4	110	0	0	0	196	3	199	9	0	9	41	1	42	0	0	0	32	1	33	639	20	659	23	1	24	0	0	0	49	1	50	9	0	9	97	1	98	0	0	0	1716	43	1759
17:45 - 18:45	12	1	13	484	14	498	85	1	86	0	0	0	155	3	158	7	0	7	37	1	38	0	0	0	34	1	35	646	15	661	18	1	19	0	0	0	38	1	39	7	0	7	63	1	64	0	0	0	1586	39	1625
18:00 - 19:00	9	0	9	462	10	472	72	1	73	0	0	0	116	3	119	6	0	6	32	1	33	0	0	0	36	1	37	630	15	645	8	0	8	0	0	0	23	1	24	4	0	4	44	1	45	0	0	0	1442	33	1475



Client : Mott MacDonald
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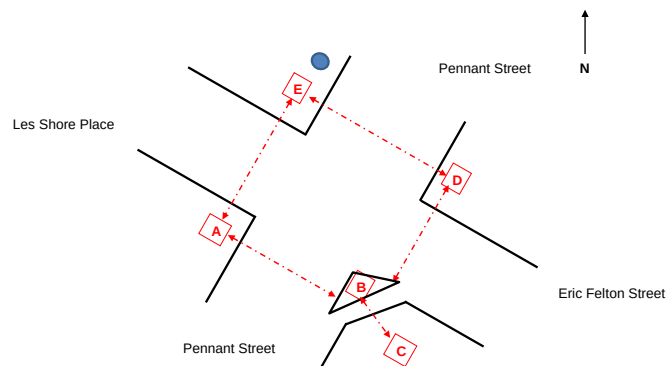


AM

Time Period	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E			
6:00 - 6:15	7	2	8	2	0	1	1	9	4	1	35	6:00 - 7:00	241
6:15 - 6:30	7	1	6	1	1	0	3	5	9	1	34	6:15 - 7:15	270
6:30 - 6:45	8	16	8	16	0	0	2	0	16	7	73	6:30 - 7:30	285
6:45 - 7:00	22	5	24	5	0	3	1	6	31	2	99	6:45 - 7:45	276
7:00 - 7:15	10	8	9	8	0	0	7	6	10	6	64	7:00 - 8:00	221
7:15 - 7:30	6	10	6	10	0	0	1	5	3	8	49	7:15 - 8:15	157
7:30 - 7:45	19	2	19	2	0	0	0	2	17	3	64	7:30 - 8:30	108
7:45 - 8:00	9	6	10	6	0	1	0	3	6	3	44	7:45 - 8:45	44
8:00 - 8:15	12	7	12	7	0	0	0	4	10	3	55	8:00 - 9:00	798
8:15 - 8:30	23	18	23	18	0	0	0	3	15	38	138	AM Peak	798
8:30 - 8:45	35	28	35	28	0	0	0	3	30	53	212		
8:45 - 9:00	28	95	28	95	0	0	0	4	28	115	393		
Total	186	198	188	198	1	5	15	50	179	240	1260		
AM Peak	98	148	98	148	0	0	0	14	83	209	798		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Les Shore Place
 Weather : Fine



AM

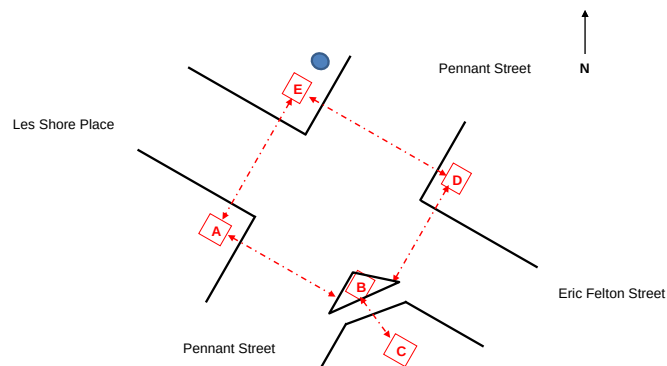
Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E		

PM

Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E			
15:00 - 15:15	100	28	100	28	0	0	1	1	98	24	380	15:00 - 16:00	631
15:15 - 15:30	41	7	41	4	0	3	0	0	33	4	133	15:15 - 16:15	322
15:30 - 15:45	8	12	8	12	0	0	0	0	10	7	57	15:30 - 16:30	213
15:45 - 16:00	5	17	5	17	0	0	0	0	4	13	61	15:45 - 16:45	185
16:00 - 16:15	5	22	5	22	0	0	2	1	4	10	71	16:00 - 17:00	169
16:15 - 16:30	3	6	3	6	0	0	0	1	3	2	24	16:15 - 17:15	162
16:30 - 16:45	3	7	2	7	0	0	3	0	5	2	29	16:30 - 17:30	167
16:45 - 17:00	4	12	4	12	0	1	4	0	1	7	45	16:45 - 17:45	226
17:00 - 17:15	5	17	5	18	0	0	1	0	7	11	64	17:00 - 18:00	291
17:15 - 17:30	3	7	3	7	0	0	0	0	2	7	29	17:15 - 18:15	287
17:30 - 17:45	6	22	6	22	0	0	12	1	4	15	88	17:30 - 18:30	282
17:45 - 18:00	7	34	7	34	0	0	1	0	13	14	110	17:45 - 18:45	205
18:00 - 18:15	6	15	5	14	0	0	3	0	6	11	60	18:00 - 19:00	115
18:15 - 18:30	0	9	1	9	0	0	0	0	0	5	24	PM Peak	631
18:30 - 18:45	3	1	3	1	0	0	1	0	1	1	11		
18:45 - 19:00	4	4	4	4	0	0	0	1	2	1	20		
Total	203	220	202	217	0	4	28	5	193	134	1206		
PM Peak	154	64	154	61	0	3	1	1	145	48	631		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
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 Weather : Fine



AM

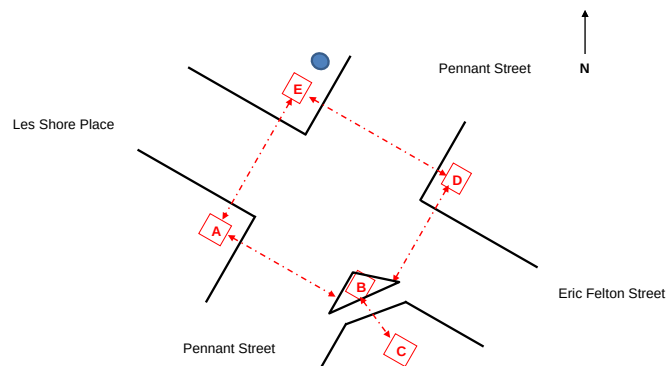
Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS										Grand Total
	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E	
6:00 - 7:00	44	24	46	24	1	4	7	20	60	11	241
6:15 - 7:15	47	30	47	30	1	3	13	17	66	16	270
6:30 - 7:30	46	39	47	39	0	3	11	17	60	23	285
6:45 - 7:45	57	25	58	25	0	3	9	19	61	19	276
7:00 - 8:00	44	26	44	26	0	1	8	16	36	20	221
7:15 - 8:15	34	18	35	18	0	1	1	10	26	14	157
7:30 - 8:30	28	8	29	8	0	1	0	5	23	6	108
7:45 - 8:45	9	6	10	6	0	1	0	3	6	3	44
8:00 - 9:00	98	148	98	148	0	0	0	14	83	209	798



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Les Shore Place
 Weather : Fine



AM

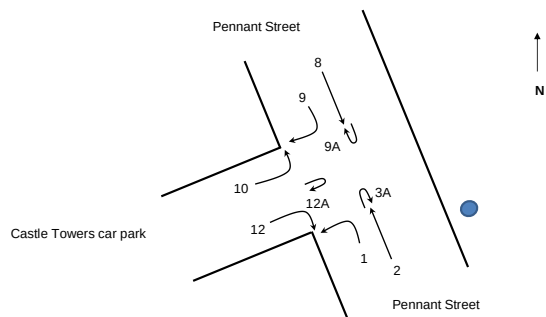
Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS										Grand Total
	A - B	B - A	B - C	C - B	B - D	D - B	D - E	E - D	E - A	A - E	
15:00 - 16:00	154	64	154	61	0	3	1	1	145	48	631
15:15 - 16:15	59	58	59	55	0	3	2	1	51	34	322
15:30 - 16:30	21	57	21	57	0	0	2	2	21	32	213
15:45 - 16:45	16	52	15	52	0	0	5	2	16	27	185
16:00 - 17:00	15	47	14	47	0	1	9	2	13	21	169
16:15 - 17:15	15	42	14	43	0	1	8	1	16	22	162
16:30 - 17:30	15	43	14	44	0	1	8	0	15	27	167
16:45 - 17:45	18	58	18	59	0	1	17	1	14	40	226
17:00 - 18:00	21	80	21	81	0	0	14	1	26	47	291
17:15 - 18:15	22	78	21	77	0	0	16	1	25	47	287
17:30 - 18:30	19	80	19	79	0	0	16	1	23	45	282
17:45 - 18:45	16	59	16	58	0	0	5	0	20	31	205
18:00 - 19:00	13	29	13	28	0	0	4	1	9	18	115



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine



AM

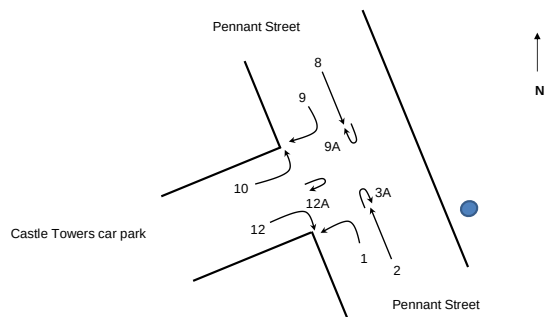
Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		6:00 - 7:00	1050	
6:00 - 6:15	3	0	3	59	3	62	0	0	0	118	15	133	3	0	3	0	0	0	1	0	1	0	0	0	0	0	202	6:00 - 7:00			1050
6:15 - 6:30	6	0	6	59	6	65	0	0	0	147	17	164	4	0	4	0	0	0	0	0	0	0	0	0	0	239	6:15 - 7:15	1165			
6:30 - 6:45	4	0	4	92	5	97	0	0	0	165	15	180	4	0	4	0	0	0	0	0	0	0	0	0	0	285	6:30 - 7:30	1271			
6:45 - 7:00	12	0	12	123	7	130	0	0	0	164	11	175	5	0	5	0	0	0	1	0	1	1	0	1	0	0	324	6:45 - 7:45	1369		
7:00 - 7:15	6	0	6	127	8	135	0	0	0	155	12	167	7	0	7	0	0	0	1	0	1	1	0	1	0	0	317	7:00 - 8:00	1438		
7:15 - 7:30	12	0	12	149	7	156	0	0	0	157	8	165	8	0	8	0	0	0	2	0	2	2	0	2	0	0	345	7:15 - 8:15	1478		
7:30 - 7:45	7	0	7	192	11	203	0	0	0	155	7	162	8	0	8	0	1	1	1	0	1	1	0	1	0	0	383	7:30 - 8:30	1492		
7:45 - 8:00	7	0	7	211	15	226	0	0	0	137	10	147	8	0	8	0	0	0	1	0	1	4	0	4	0	0	393	7:45 - 8:45	1569		
8:00 - 8:15	23	0	23	164	5	169	0	0	0	137	15	152	10	0	10	0	0	0	2	0	2	1	0	1	0	0	357	8:00 - 9:00	1622		
8:15 - 8:30	35	0	35	183	10	193	0	0	0	109	8	117	6	0	6	0	0	0	5	0	5	3	0	3	0	0	359	AM Peak	1622		
8:30 - 8:45	52	0	52	245	13	258	0	0	0	119	13	132	12	0	12	0	0	0	0	0	0	6	0	6	0	0	460				
8:45 - 9:00	59	0	59	187	9	196	0	0	0	146	6	152	24	0	24	0	0	0	4	0	4	11	0	11	0	0	446				
Total	226	0	226	1791	99	1890	0	0	0	1709	137	1846	99	0	99	0	1	1	18	0	18	30	0	30	0	0	4110				
AM Peak	169	0	169	779	37	816	0	0	0	511	42	553	52	0	52	0	0	0	11	0	11	21	0	21	0	0	1622				

PM

Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total		15:00 - 16:00	1792
15:00 - 15:15	62	0	62	176	16	192	0	0	0	143	5	148	5	0	5	0	0	0	21	0	21	38	0	38	0	0	0	466		
15:15 - 15:30	50	0	50	175	12	187	0	0	0	156	7	163	5	0	5	0	0	0	10	0	10	25	0	25	0	0	0	440	15:15 - 16:15	1764
15:30 - 15:45	58	1	59	157	16	173	0	0	0	152	4	156	12	0	12	0	0	0	13	0	13	28	0	28	0	0	0	441	15:30 - 16:30	1749
15:45 - 16:00	54	0	54	193	8	201	0	0	0	134	5	139	11	0	11	0	0	0	15	0	15	25	0	25	0	0	0	445	15:45 - 16:45	1742
16:00 - 16:15	47	0	47	155	9	164	0	0	0	148	6	154	8	0	8	0	0	0	17	0	17	48	0	48	0	0	0	438	16:00 - 17:00	1685



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine



AM

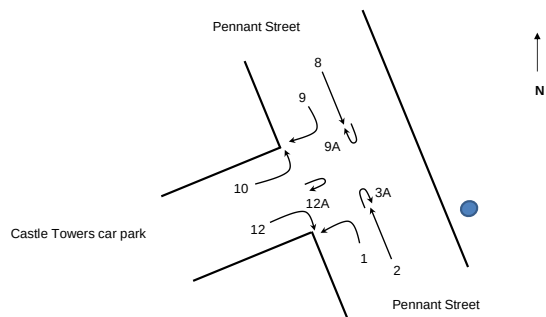
Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
16:15 - 16:30	38	0	38	163	6	169	0	0	0	165	5	170	7	0	7	0	0	0	12	0	12	29	0	29	0	0	0	425	16:15 - 17:15	1648
16:30 - 16:45	40	0	40	175	8	183	0	0	0	150	3	153	6	0	6	0	0	0	17	0	17	35	0	35	0	0	0	434	16:30 - 17:30	1631
16:45 - 17:00	33	0	33	146	2	148	0	0	0	155	2	157	5	0	5	0	0	0	14	0	14	31	0	31	0	0	0	388	16:45 - 17:45	1579
17:00 - 17:15	23	0	23	152	7	159	0	0	0	162	5	167	2	0	2	0	0	0	17	0	17	33	0	33	0	0	0	401	17:00 - 18:00	1613
17:15 - 17:30	25	0	25	168	4	172	0	0	0	152	5	157	6	0	6	0	0	0	17	0	17	31	0	31	0	0	0	408	17:15 - 18:15	1581
17:30 - 17:45	22	0	22	149	8	157	1	0	1	143	0	143	8	0	8	0	0	0	21	0	21	30	0	30	0	0	0	382	17:30 - 18:30	1566
17:45 - 18:00	30	0	30	178	5	183	0	0	0	147	6	153	2	0	2	0	0	0	22	0	22	32	0	32	0	0	0	422	17:45 - 18:45	1464
18:00 - 18:15	15	0	15	153	4	157	0	0	0	154	2	156	4	0	4	0	0	0	17	0	17	20	0	20	0	0	0	369	18:00 - 19:00	1313
18:15 - 18:30	14	0	14	201	4	205	0	0	0	135	3	138	2	0	2	0	1	1	11	0	11	22	0	22	0	0	0	393	PM Peak	1792
18:30 - 18:45	11	0	11	116	3	119	0	0	0	120	4	124	2	0	2	0	0	0	11	0	11	13	0	13	0	0	0	280		
18:45 - 19:00	10	0	10	142	3	145	0	0	0	105	2	107	0	0	0	0	0	0	4	0	4	5	0	5	0	0	0	271		
Total	532	1	533	2599	115	2714	1	0	1	2321	64	2385	85	0	85	0	1	1	239	0	239	445	0	445	0	0	0	6403		
PM Peak	224	1	225	701	52	753	0	0	0	585	21	606	33	0	33	0	0	0	59	0	59	116	0	116	0	0	0	1792		

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
6:00 - 7:00	25	0	25	333	21	354	0	0	0	594	58	652	16	0	16	0	0	0	2	0	2	1	0	1	0	0	0	971	79	1050
6:15 - 7:15	28	0	28	401	26	427	0	0	0	631	55	686	20	0	20	0	0	0	2	0	2	2	0	2	0	0	0	1084	81	1165
6:30 - 7:30	34	0	34	491	27	518	0	0	0	641	46	687	24	0	24	0	0	0	4	0	4	4	0	4	0	0	0	1198	73	1271
6:45 - 7:45	37	0	37	591	33	624	0	0	0	631	38	669	28	0	28	0	1	1	5	0	5	5	0	5	0	0	0	1297	72	1369
7:00 - 8:00	32	0	32	679	41	720	0	0	0	604	37	641	31	0	31	0	1	1	5	0	5	8	0	8	0	0	0	1359	79	1438
7:15 - 8:15	49	0	49	716	38	754	0	0	0	586	40	626	34	0	34	0	1	1	6	0	6	8	0	8	0	0	0	1399	79	1478



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine



AM

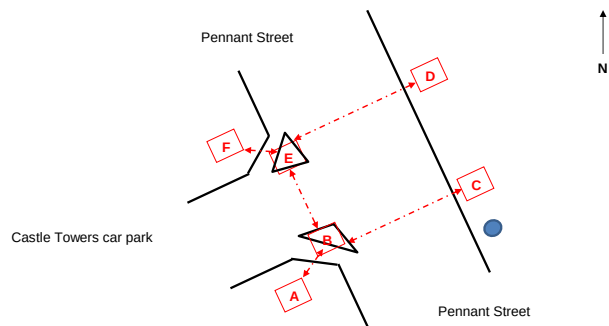
Time Period	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Total of all Movements	Peak Hour Volume Determination	
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total			
7:30 - 8:30	72	0	72	750	41	791	0	0	0	538	40	578	32	0	32	0	1	1	9	0	9	9	0	9	0	0	0	1410	82	1492
7:45 - 8:45	117	0	117	803	43	846	0	0	0	502	46	548	36	0	36	0	0	0	8	0	8	14	0	14	0	0	0	1480	89	1569
8:00 - 9:00	169	0	169	779	37	816	0	0	0	511	42	553	52	0	52	0	0	0	11	0	11	21	0	21	0	0	0	1543	79	1622

HOURLY FLOW

TIME PERIOD	Movement 1			Movement 2			Movement 3A			Movement 8			Movement 9			Movement 9A			Movement 10			Movement 12			Movement 12A			Grand Total		
	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total	Light	Heavy	Total
15:00 - 16:00	224	1	225	701	52	753	0	0	0	585	21	606	33	0	33	0	0	0	59	0	59	116	0	116	0	0	0	1718	74	1792
15:15 - 16:15	209	1	210	680	45	725	0	0	0	590	22	612	36	0	36	0	0	0	55	0	55	126	0	126	0	0	0	1696	68	1764
15:30 - 16:30	197	1	198	668	39	707	0	0	0	599	20	619	38	0	38	0	0	0	57	0	57	130	0	130	0	0	0	1689	60	1749
15:45 - 16:45	179	0	179	686	31	717	0	0	0	597	19	616	32	0	32	0	0	0	61	0	61	137	0	137	0	0	0	1692	50	1742
16:00 - 17:00	158	0	158	639	25	664	0	0	0	618	16	634	26	0	26	0	0	0	60	0	60	143	0	143	0	0	0	1644	41	1685
16:15 - 17:15	134	0	134	636	23	659	0	0	0	632	15	647	20	0	20	0	0	0	60	0	60	128	0	128	0	0	0	1610	38	1648
16:30 - 17:30	121	0	121	641	21	662	0	0	0	619	15	634	19	0	19	0	0	0	65	0	65	130	0	130	0	0	0	1595	36	1631
16:45 - 17:45	103	0	103	615	21	636	1	0	1	612	12	624	21	0	21	0	0	0	69	0	69	125	0	125	0	0	0	1546	33	1579
17:00 - 18:00	100	0	100	647	24	671	1	0	1	604	16	620	18	0	18	0	0	0	77	0	77	126	0	126	0	0	0	1573	40	1613
17:15 - 18:15	92	0	92	648	21	669	1	0	1	596	13	609	20	0	20	0	0	0	77	0	77	113	0	113	0	0	0	1547	34	1581
17:30 - 18:30	81	0	81	681	21	702	1	0	1	579	11	590	16	0	16	0	1	1	71	0	71	104	0	104	0	0	0	1533	33	1566
17:45 - 18:45	70	0	70	648	16	664	0	0	0	556	15	571	10	0	10	0	1	1	61	0	61	87	0	87	0	0	0	1432	32	1464
18:00 - 19:00	50	0	50	612	14	626	0	0	0	514	11	525	8	0	8	0	1	1	43	0	43	60	0	60	0	0	0	1287	26	1313



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine

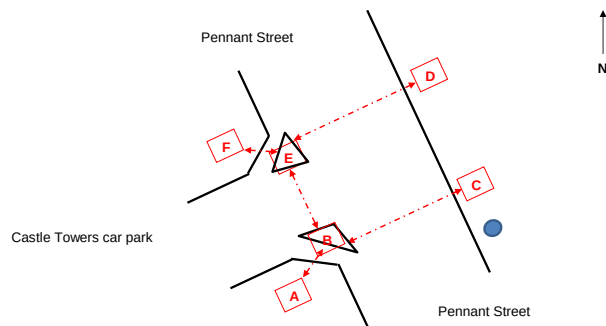


AM

Time Period	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E			
6:00 - 6:15	0	0	0	0	0	0	0	0	0	0	0	6:00 - 7:00	2
6:15 - 6:30	0	0	0	0	0	0	0	0	0	0	0	6:15 - 7:15	2
6:30 - 6:45	0	0	0	0	0	0	0	0	0	0	0	6:30 - 7:30	2
6:45 - 7:00	0	0	0	0	1	0	0	1	0	0	2	6:45 - 7:45	9
7:00 - 7:15	0	0	0	0	0	0	0	0	0	0	0	7:00 - 8:00	7
7:15 - 7:30	0	0	0	0	0	0	0	0	0	0	0	7:15 - 8:15	7
7:30 - 7:45	0	0	0	1	2	0	0	3	0	1	7	7:30 - 8:30	7
7:45 - 8:00	0	0	0	0	0	0	0	0	0	0	0	7:45 - 8:45	0
8:00 - 8:15	0	0	0	0	0	0	0	0	0	0	0	8:00 - 9:00	19
8:15 - 8:30	0	0	0	0	1	0	0	1	0	0	2	AM Peak	19
8:30 - 8:45	0	0	0	1	4	1	1	5	0	1	13		
8:45 - 9:00	0	0	0	0	0	2	2	0	0	0	4		
Total	0	0	0	2	8	3	3	10	0	2	28		
AM Peak	0	0	0	1	5	3	3	6	0	1	19		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine



AM

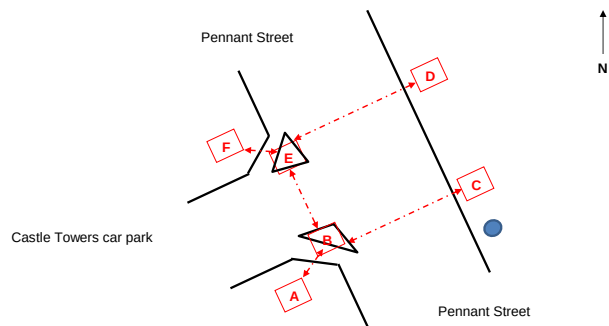
Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E		

PM

Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination	
Period	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E			
15:00 - 15:15	0	0	0	0	0	3	3	0	0	0	6	15:00 - 16:00	15
15:15 - 15:30	0	0	0	0	0	2	3	0	0	0	5	15:15 - 16:15	15
15:30 - 15:45	0	0	0	0	0	1	1	0	0	0	2	15:30 - 16:30	12
15:45 - 16:00	0	0	0	0	1	0	0	1	0	0	2	15:45 - 16:45	17
16:00 - 16:15	0	0	0	0	2	1	1	2	0	0	6	16:00 - 17:00	20
16:15 - 16:30	0	0	0	0	0	0	2	0	0	0	2	16:15 - 17:15	24
16:30 - 16:45	0	0	0	0	0	4	3	0	0	0	7	16:30 - 17:30	26
16:45 - 17:00	0	0	0	0	0	3	2	0	0	0	5	16:45 - 17:45	23
17:00 - 17:15	0	0	0	0	0	4	6	0	0	0	10	17:00 - 18:00	22
17:15 - 17:30	0	0	0	0	0	2	2	0	0	0	4	17:15 - 18:15	14
17:30 - 17:45	0	0	0	0	0	2	2	0	0	0	4	17:30 - 18:30	10
17:45 - 18:00	0	0	0	0	0	2	2	0	0	0	4	17:45 - 18:45	8
18:00 - 18:15	0	0	0	0	0	1	1	0	0	0	2	18:00 - 19:00	6
18:15 - 18:30	0	0	0	0	0	0	0	0	0	0	0	PM Peak	26
18:30 - 18:45	0	0	0	0	0	1	1	0	0	0	2		
18:45 - 19:00	0	0	0	0	1	0	0	1	0	0	2		
Total	0	0	0	0	4	26	29	4	0	0	63		
PM Peak	0	0	0	0	0	13	13	0	0	0	26		



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine



AM

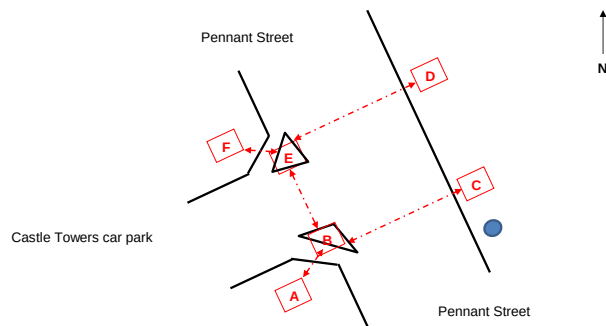
Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E		

HOURLY FLOW

TIME PERIOD	PEDESTRIAN MOVEMENTS										Grand Total
	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E	
6:00 - 7:00	0	0	0	0	1	0	0	1	0	0	2
6:15 - 7:15	0	0	0	0	1	0	0	1	0	0	2
6:30 - 7:30	0	0	0	0	1	0	0	1	0	0	2
6:45 - 7:45	0	0	0	1	3	0	0	4	0	1	9
7:00 - 8:00	0	0	0	1	2	0	0	3	0	1	7
7:15 - 8:15	0	0	0	1	2	0	0	3	0	1	7
7:30 - 8:30	0	0	0	1	3	0	0	4	0	1	9
7:45 - 8:45	0	0	0	1	5	1	1	6	0	1	15
8:00 - 9:00	0	0	0	1	5	3	3	6	0	1	19



Client : Mott MacDonald
 Job : Vivien Place, Castle Hill
 Day/Date : Tuesday, 6 August 2019
 Survey Location : Pennant Street & Castle Towers car park northern entry
 Weather : Fine



AM

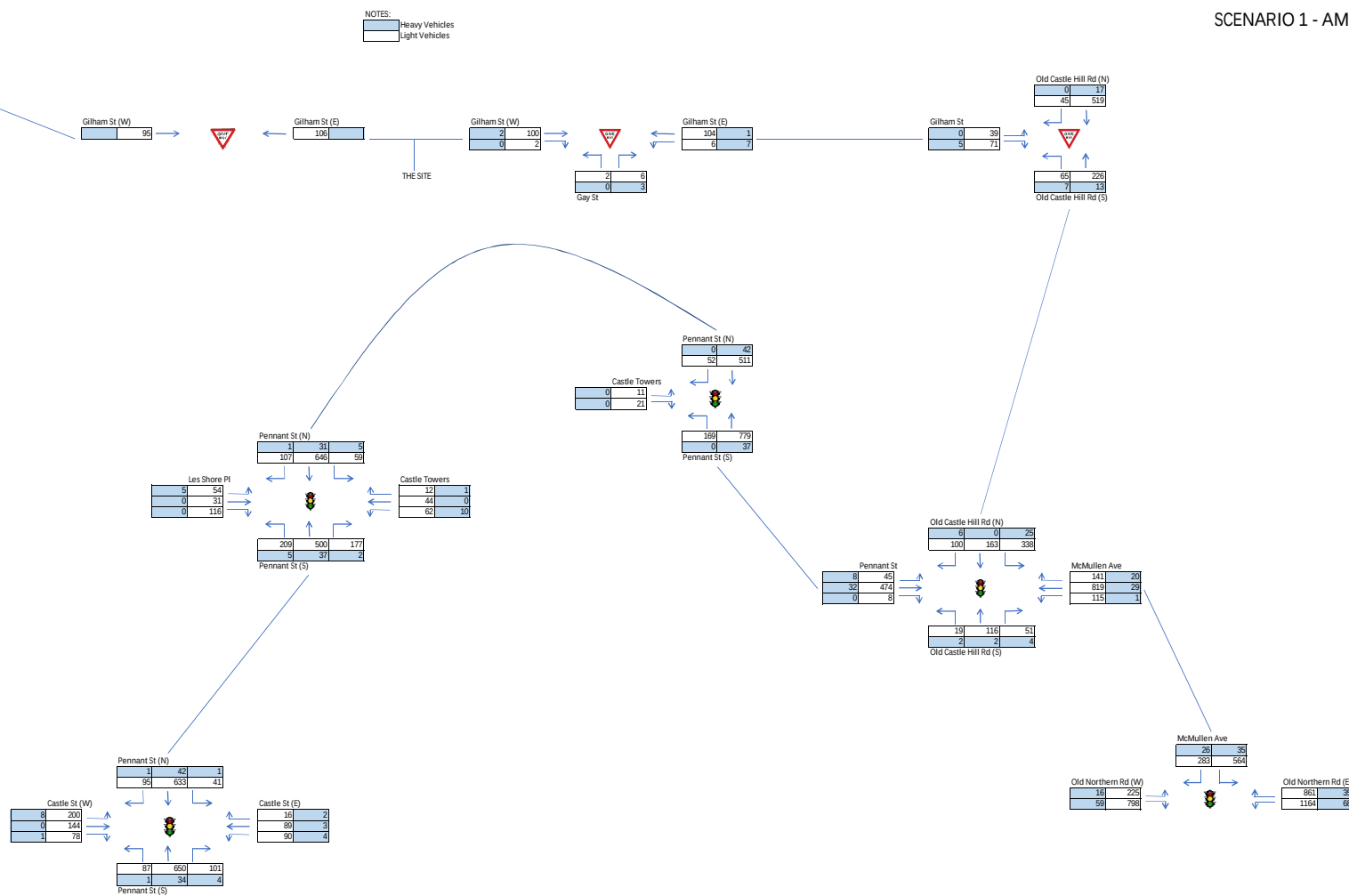
Time	PEDESTRIAN MOVEMENTS										Total of all Movements	Peak Hour Volume Determination
Period	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E		

HOURLY FLOW

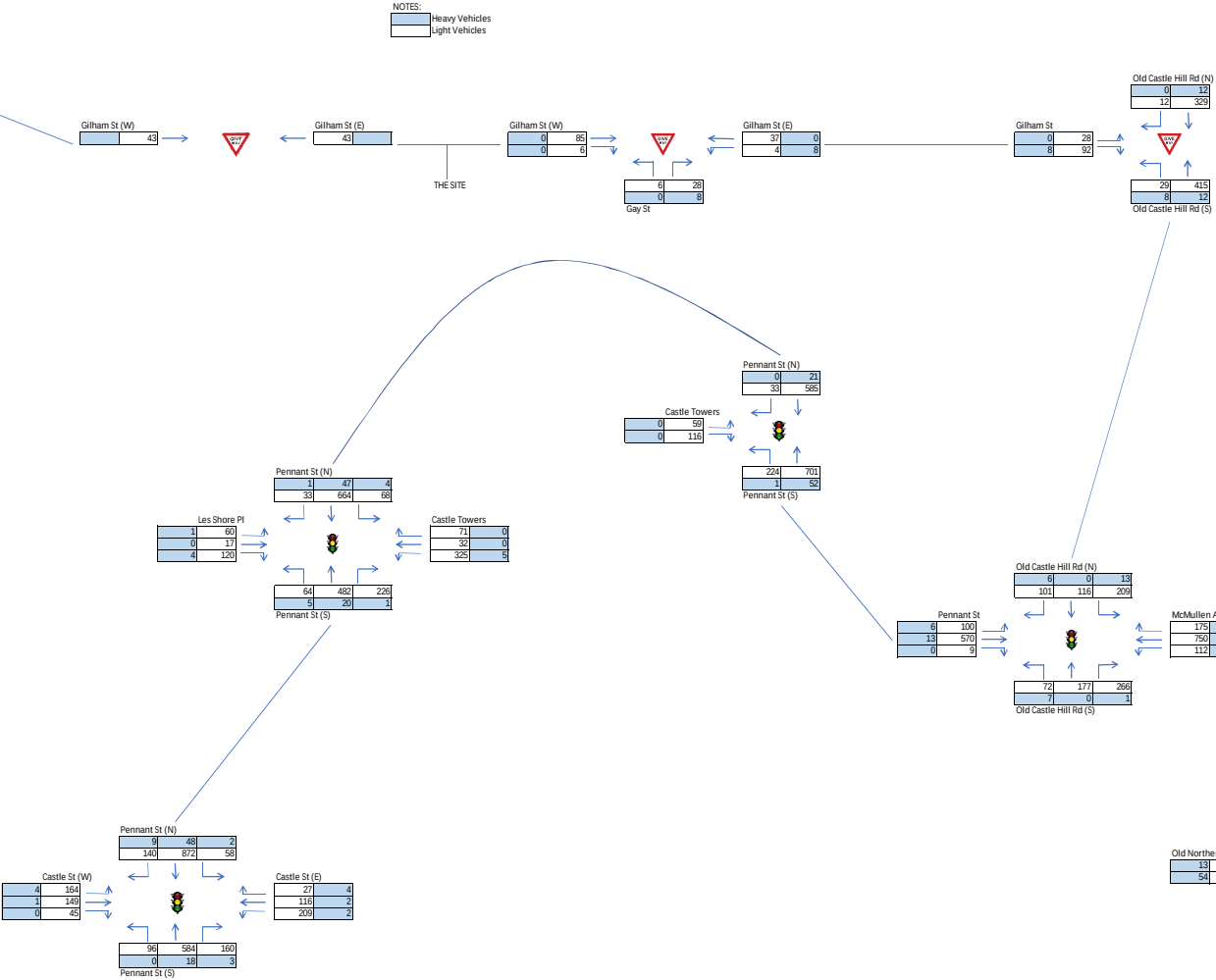
TIME PERIOD	PEDESTRIAN MOVEMENTS										Grand Total
	A - B	B - A	B - C	C - B	D - E	E - D	E - F	F - E	E - B	B - E	
15:00 - 16:00	0	0	0	0	1	6	7	1	0	0	15
15:15 - 16:15	0	0	0	0	3	4	5	3	0	0	15
15:30 - 16:30	0	0	0	0	3	2	4	3	0	0	12
15:45 - 16:45	0	0	0	0	3	5	6	3	0	0	17
16:00 - 17:00	0	0	0	0	2	8	8	2	0	0	20
16:15 - 17:15	0	0	0	0	0	11	13	0	0	0	24
16:30 - 17:30	0	0	0	0	0	13	13	0	0	0	26
16:45 - 17:45	0	0	0	0	0	11	12	0	0	0	23
17:00 - 18:00	0	0	0	0	0	10	12	0	0	0	22
17:15 - 18:15	0	0	0	0	0	7	7	0	0	0	14
17:30 - 18:30	0	0	0	0	0	5	5	0	0	0	10
17:45 - 18:45	0	0	0	0	0	4	4	0	0	0	8
18:00 - 19:00	0	0	0	0	1	2	2	1	0	0	6

B. Modelled Flows

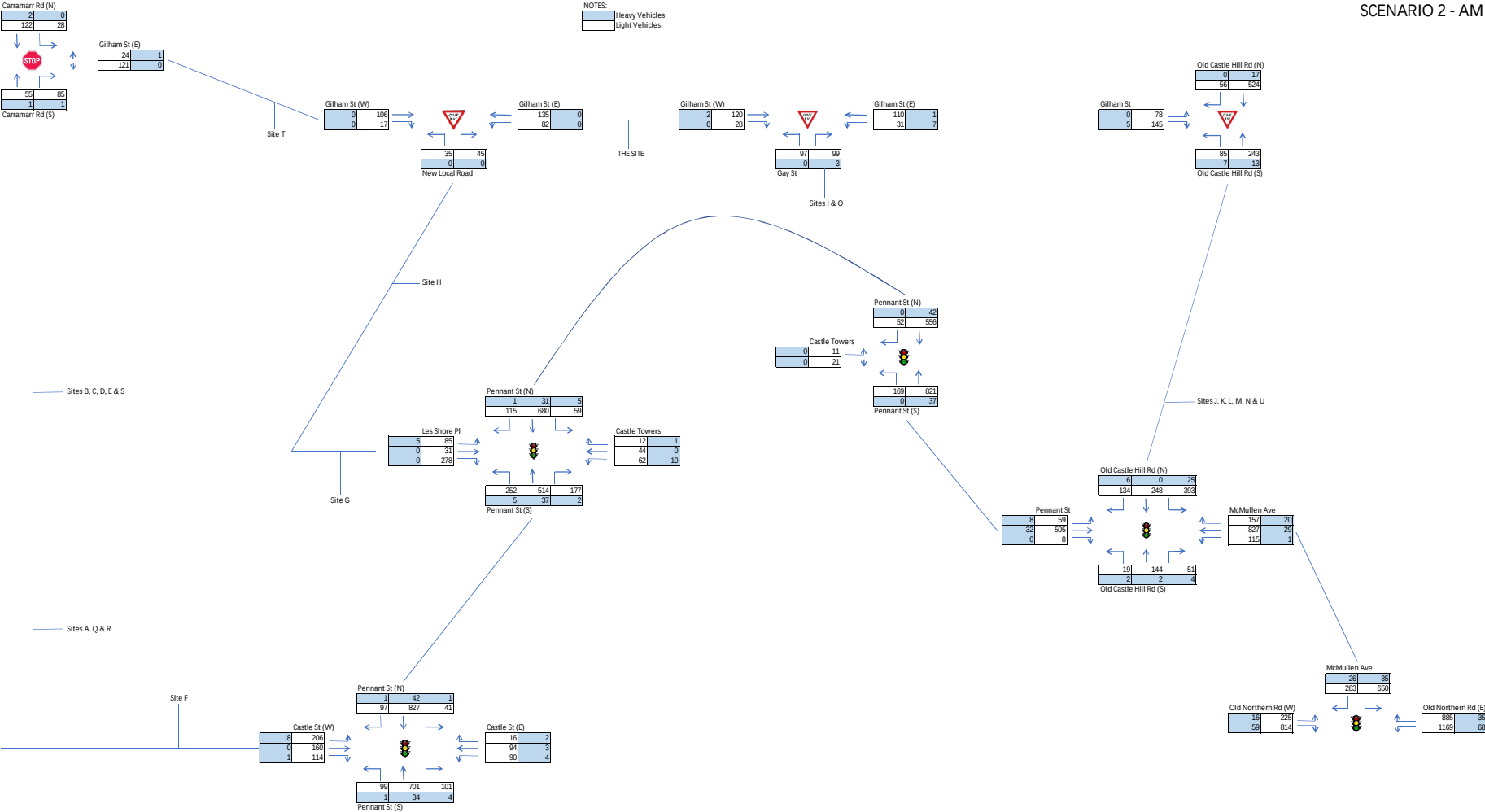
SCENARIO 1 - AM



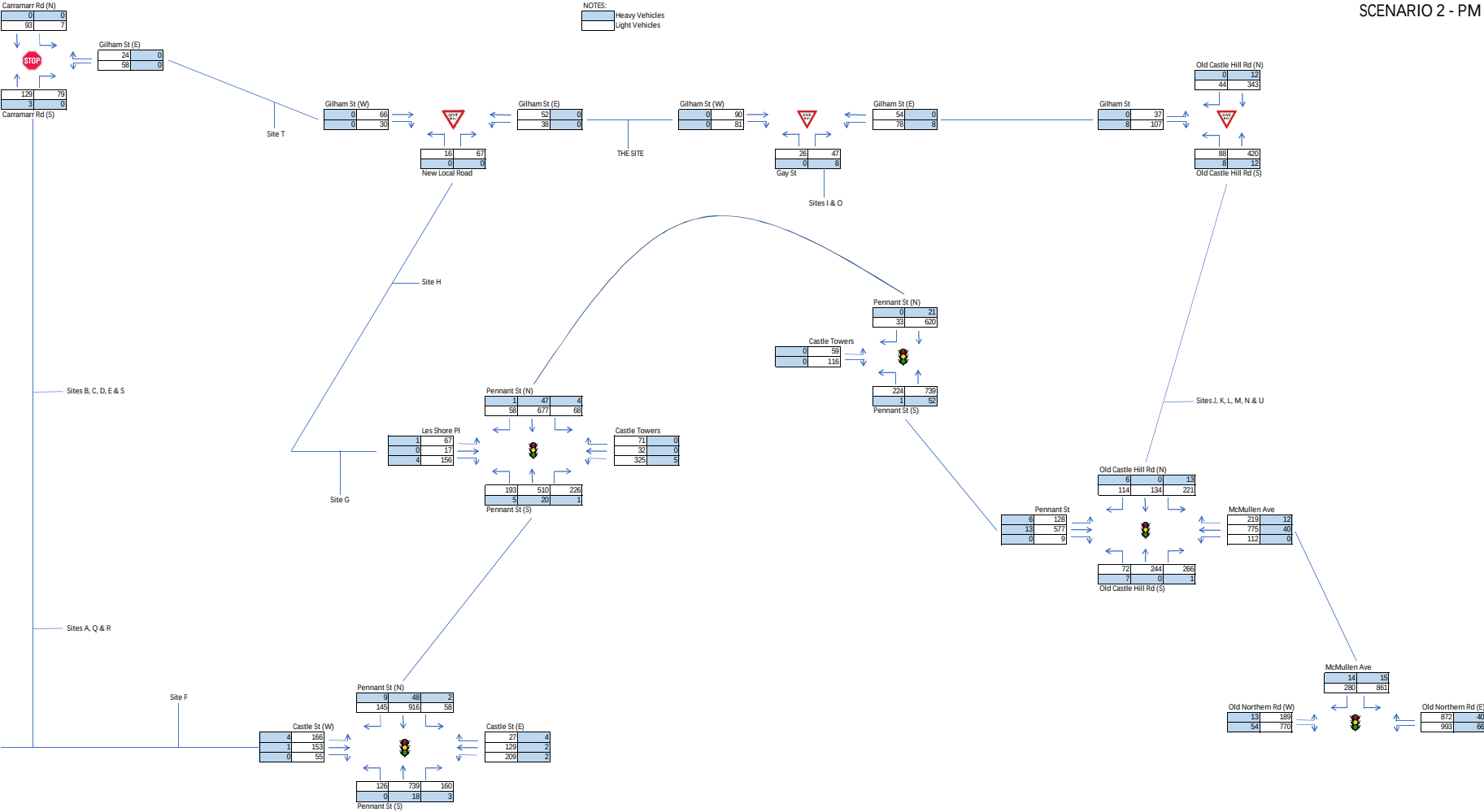
SCENARIO 1 - PM



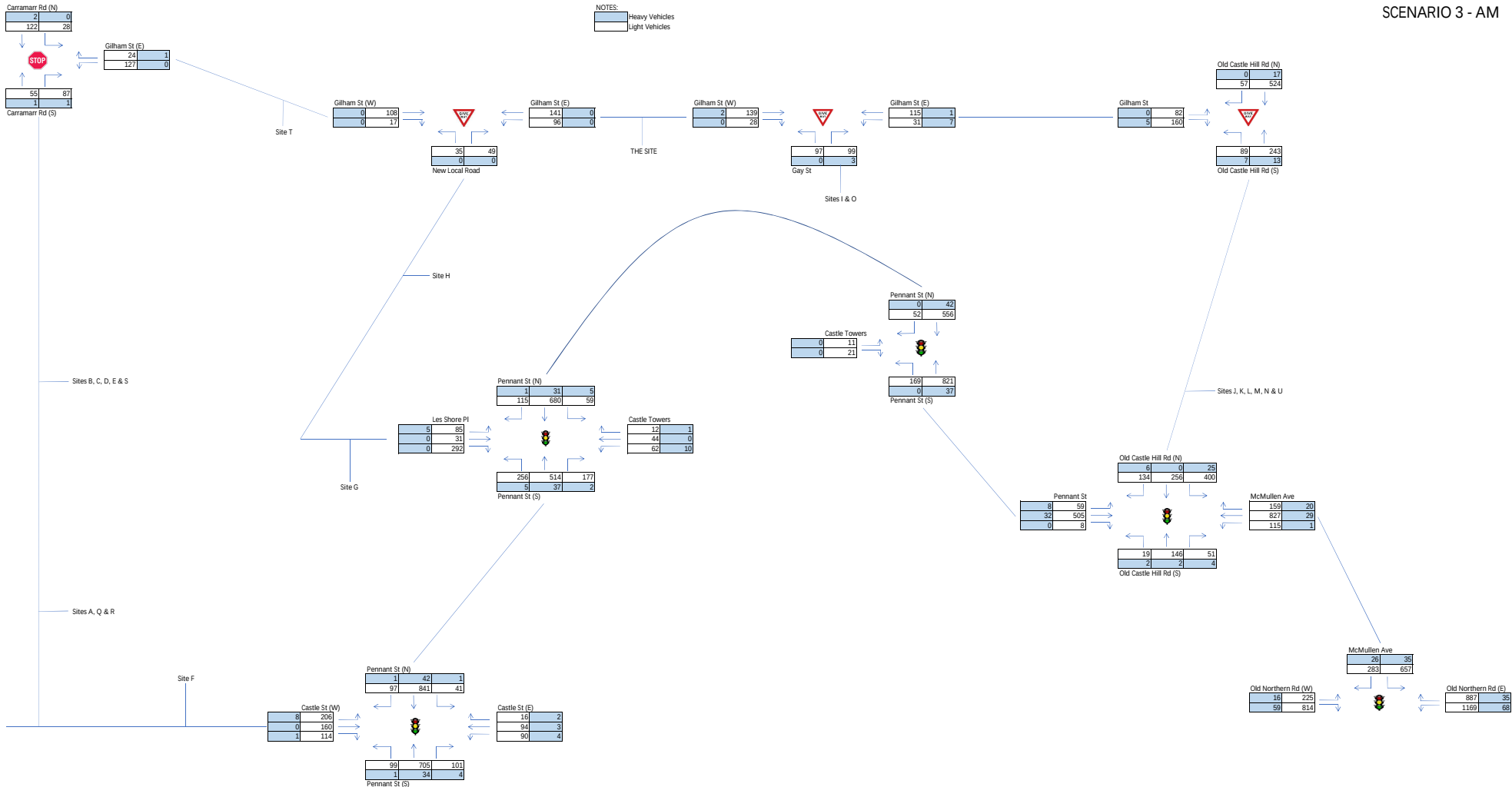
SCENARIO 2 - AM



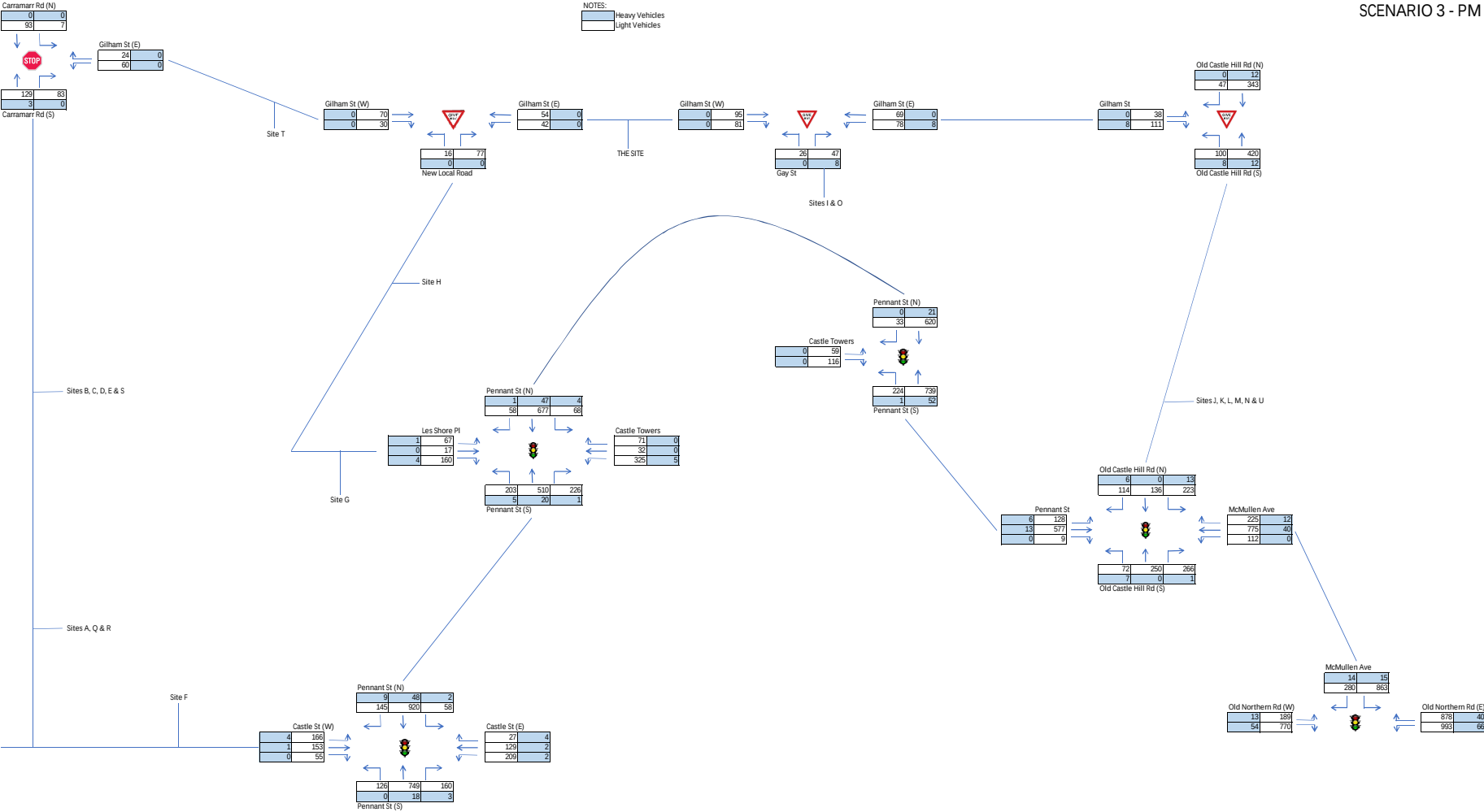
SCENARIO 2 - PM



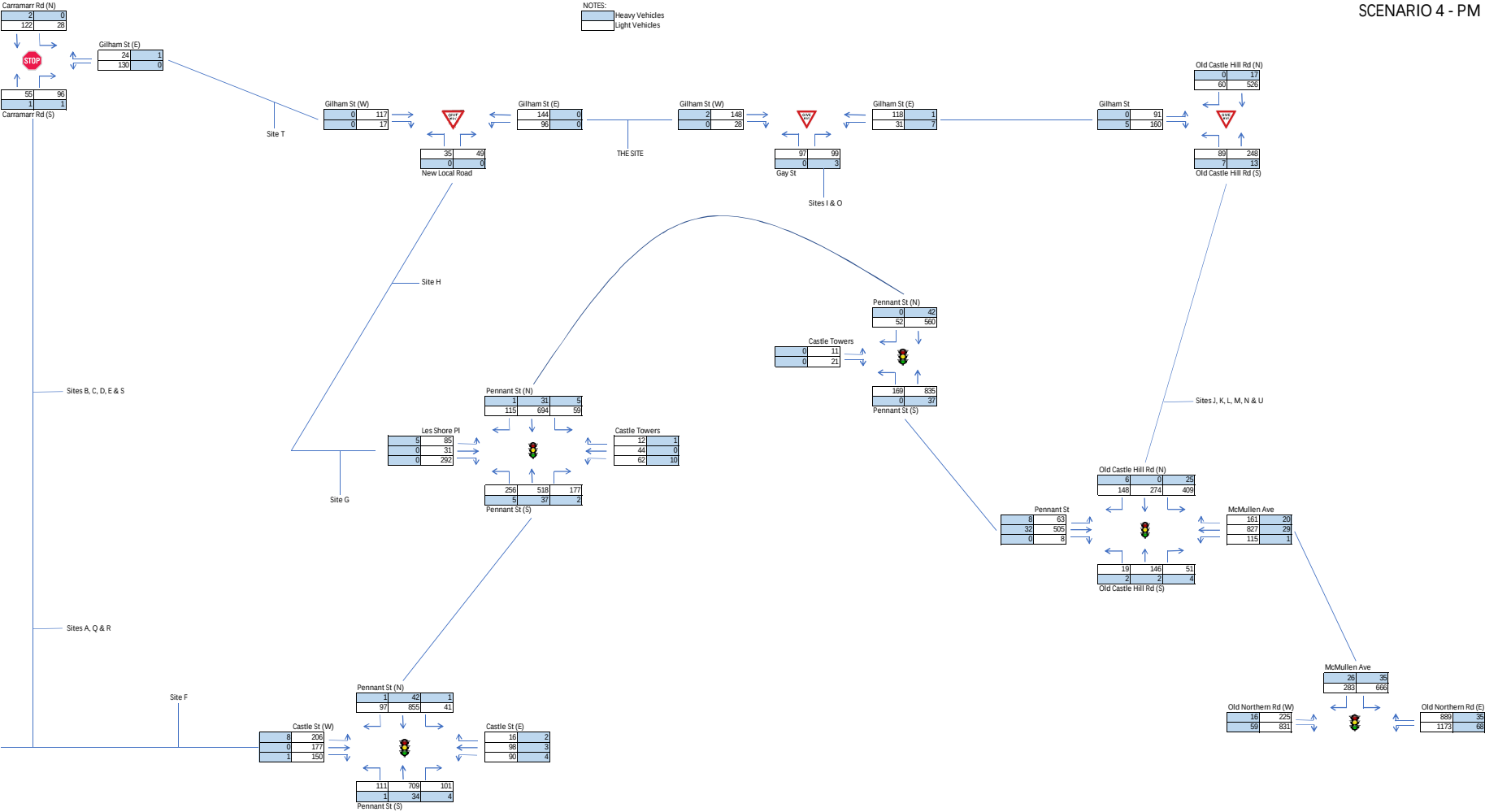
SCENARIO 3 - AM



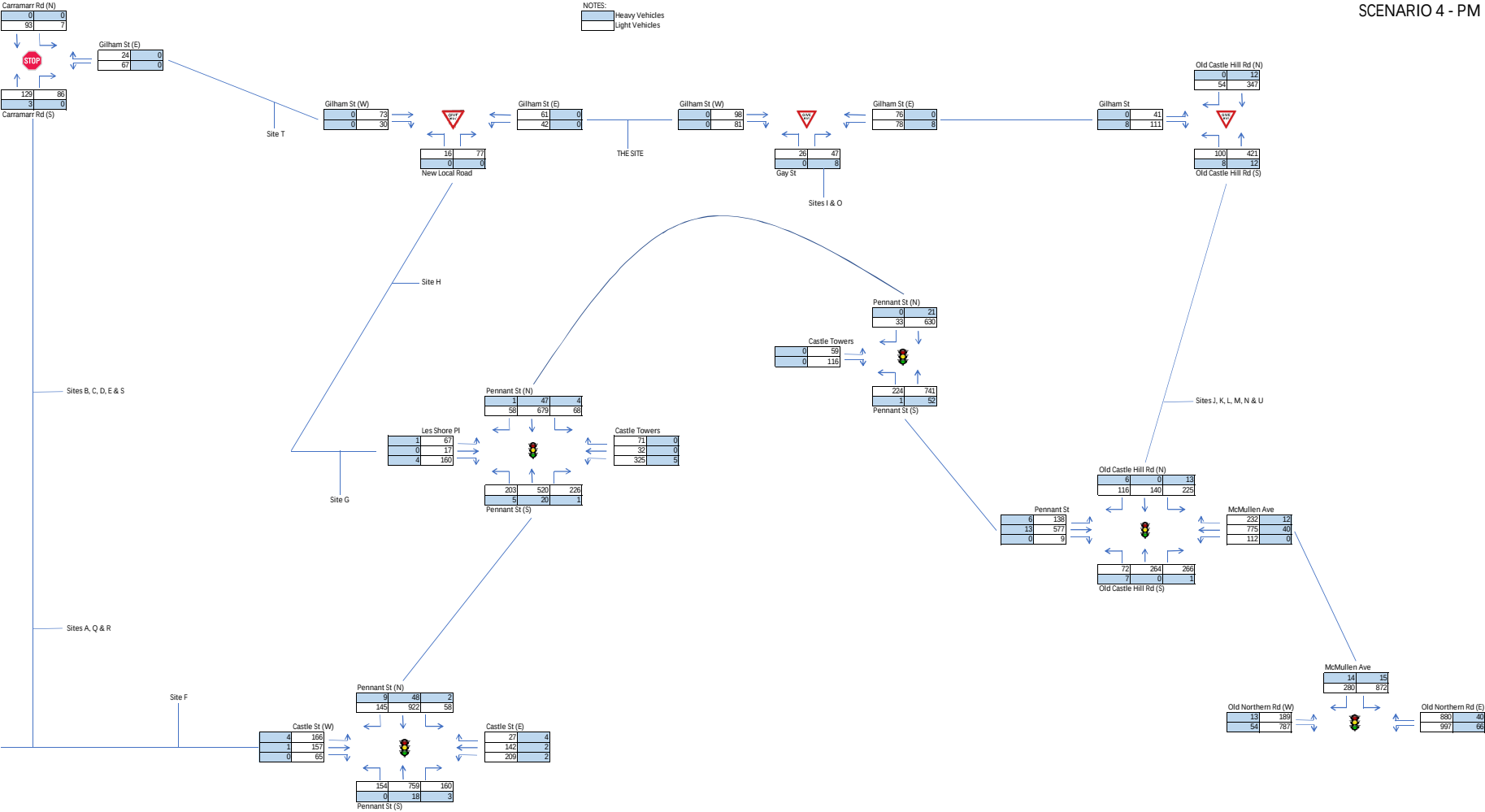
SCENARIO 3 - PM



SCENARIO 4 - PM



SCENARIO 4 - PM



C. SIDRA Outputs

SITE LAYOUT

Site: 1 [1-Gilham St/Carramarr Rd - Ex - PM]

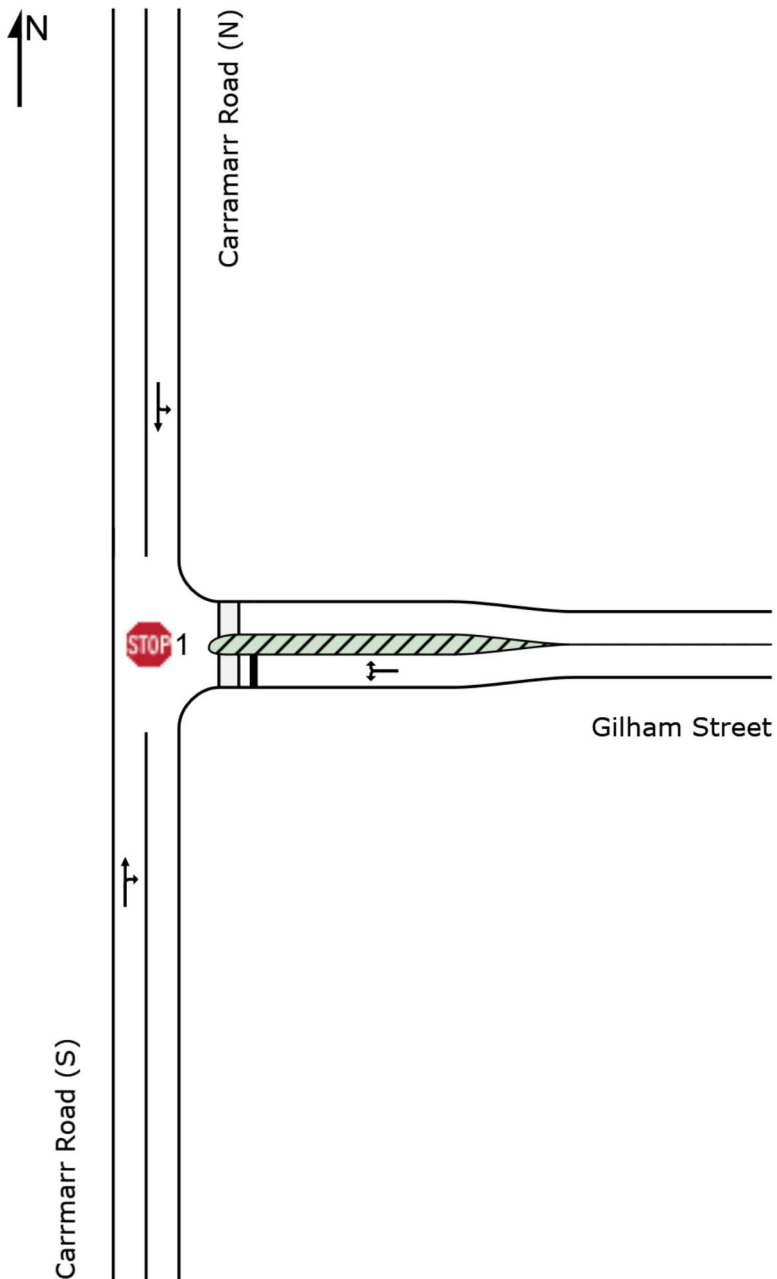
Gilham Street and Carramarr Road

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

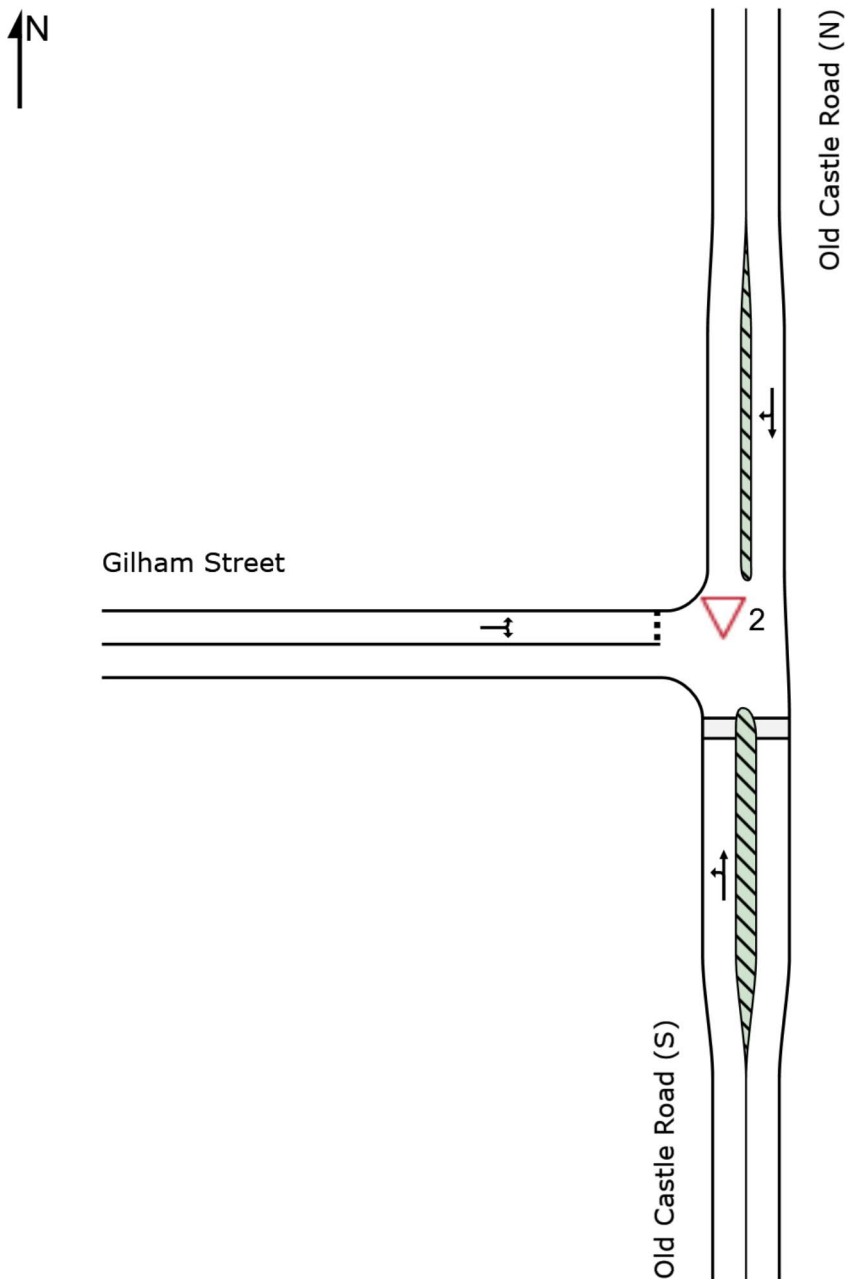
Stop (Two-Way)



SITE LAYOUT

▽ Site: 2 [2-Gilham St/Old Castle Rd - Ex - PM]

Gilham Street and Old Castle Road
Existing Scenario
PM Peak Hour Volumes
Site Category: (None)
Giveway / Yield (Two-Way)



SITE LAYOUT

Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Ex - PM]

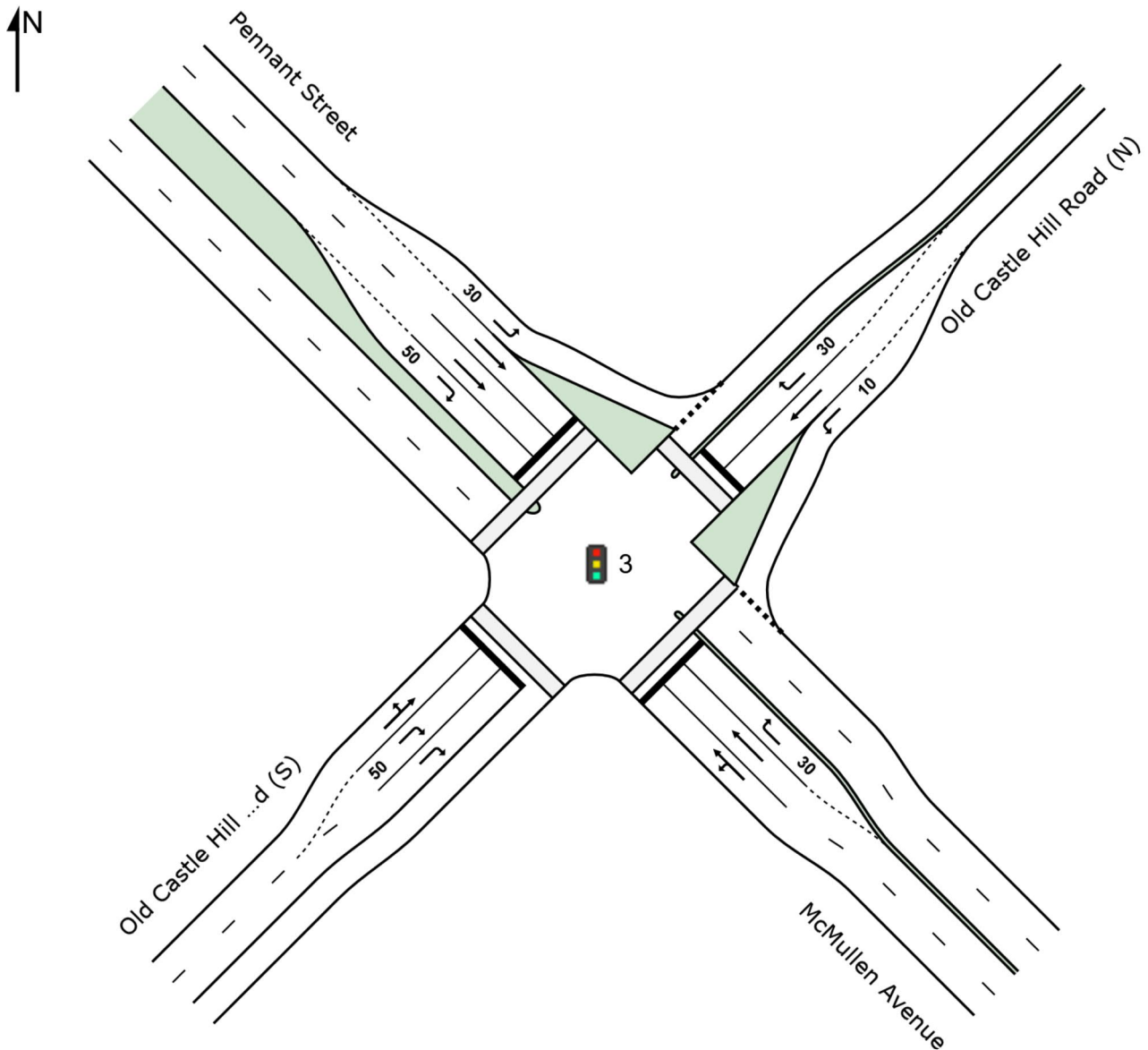
Old Castle Hill Road, McMullen Avenue and Pennant Street

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Isolated



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SITE LAYOUT

Site: 4 [4-McMullen Ave/Old Northern Rd - Ex - PM]

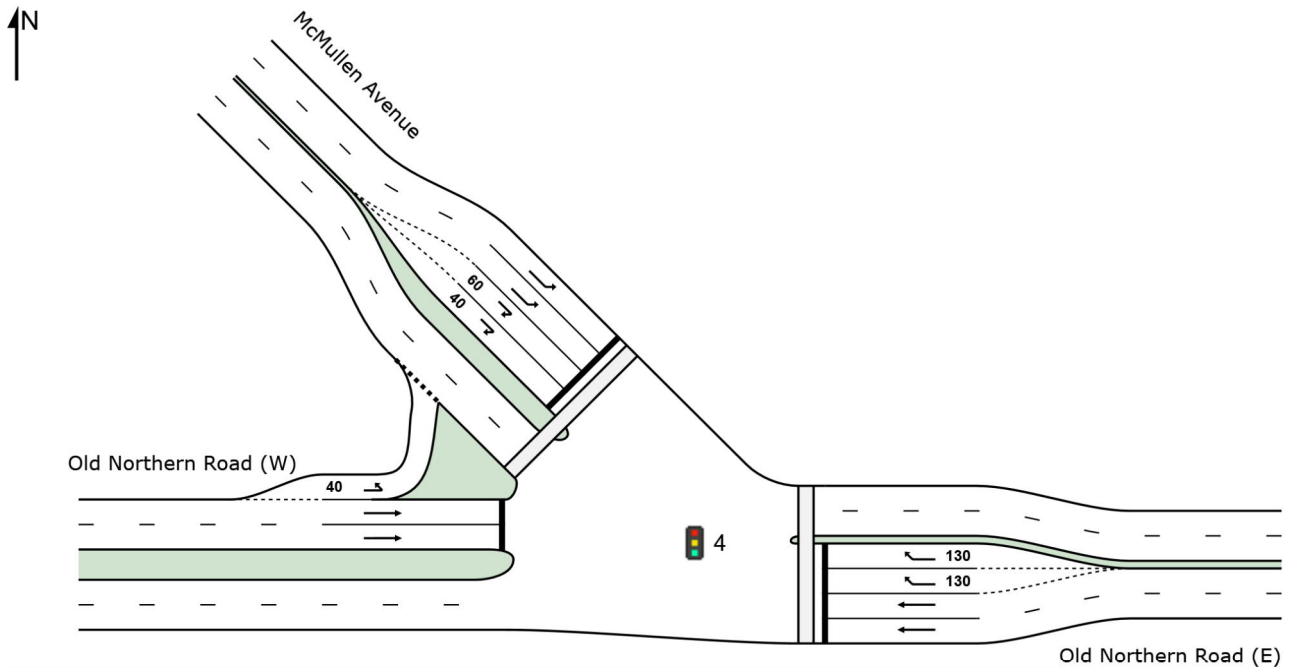
McMullen Avenue and Old Northern Road

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Isolated



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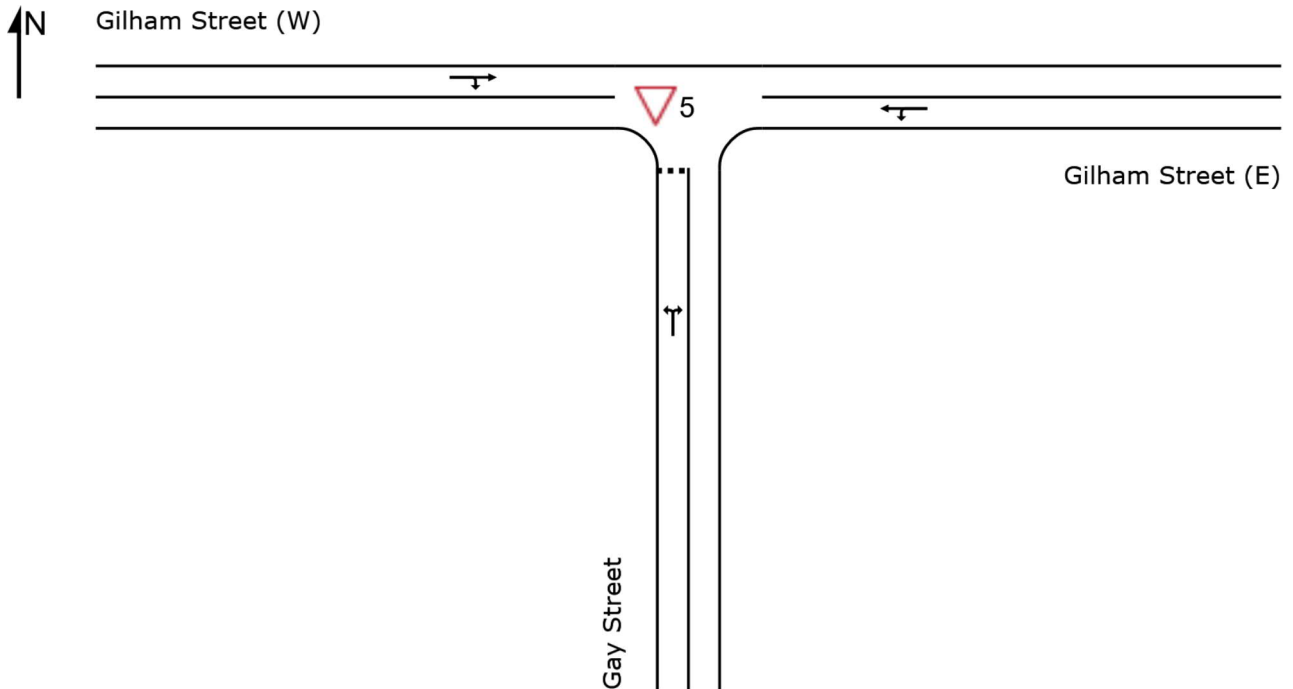
Organisation: MOTT MACDONALD AUSTRALIA | Created: Monday, October 14, 2019 1:43:01 PM

Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Existing Network - Scenario 1 [410745].sip8

SITE LAYOUT

Site: 5 [5-Gay St/Gilham St - Ex - PM]

Gay Street and Gilham Street
Existing Scenario
PM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)



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SITE LAYOUT

Site: 6 [6-Castle St/Pennant St - Ex - PM]

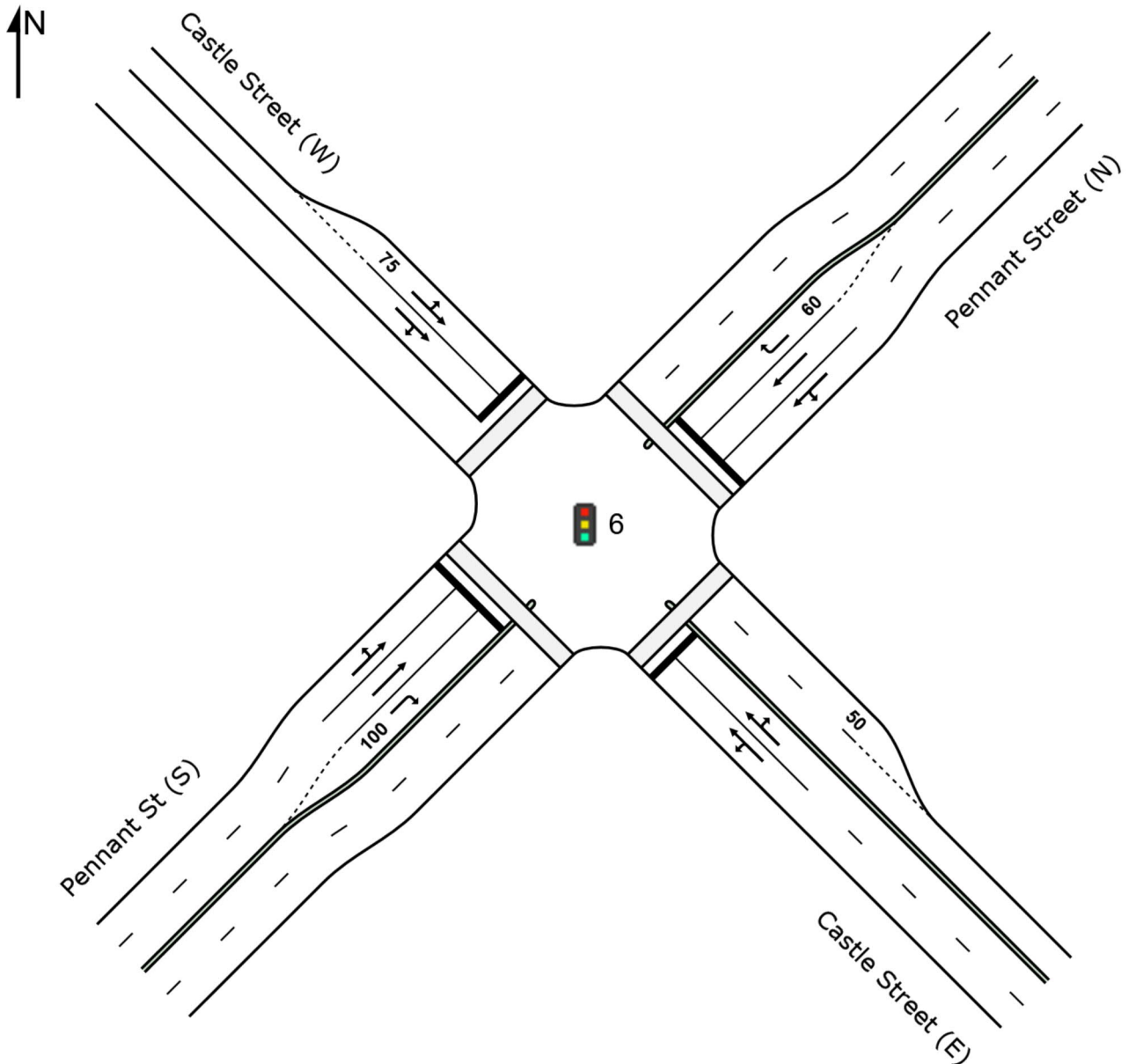
Castle Street and Pennant Street

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Isolated



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Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Existing Network - Scenario 1 [410745].sip8

SITE LAYOUT

Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Ex - AM]

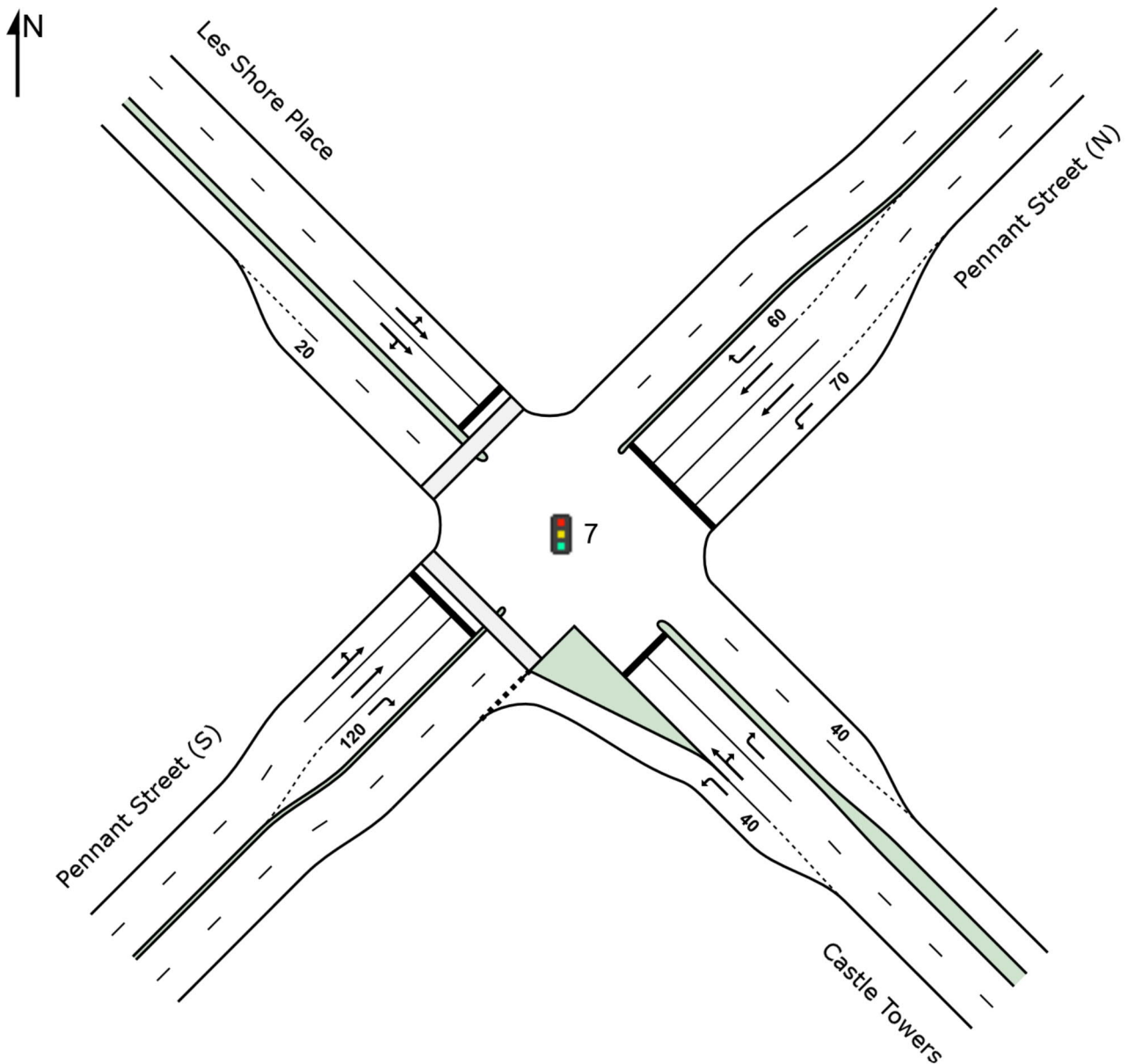
Les Shore Place, Castle Towers and Pennant Street

Existing Scenario

AM Peak Hour Volumes

Site Category: (None)

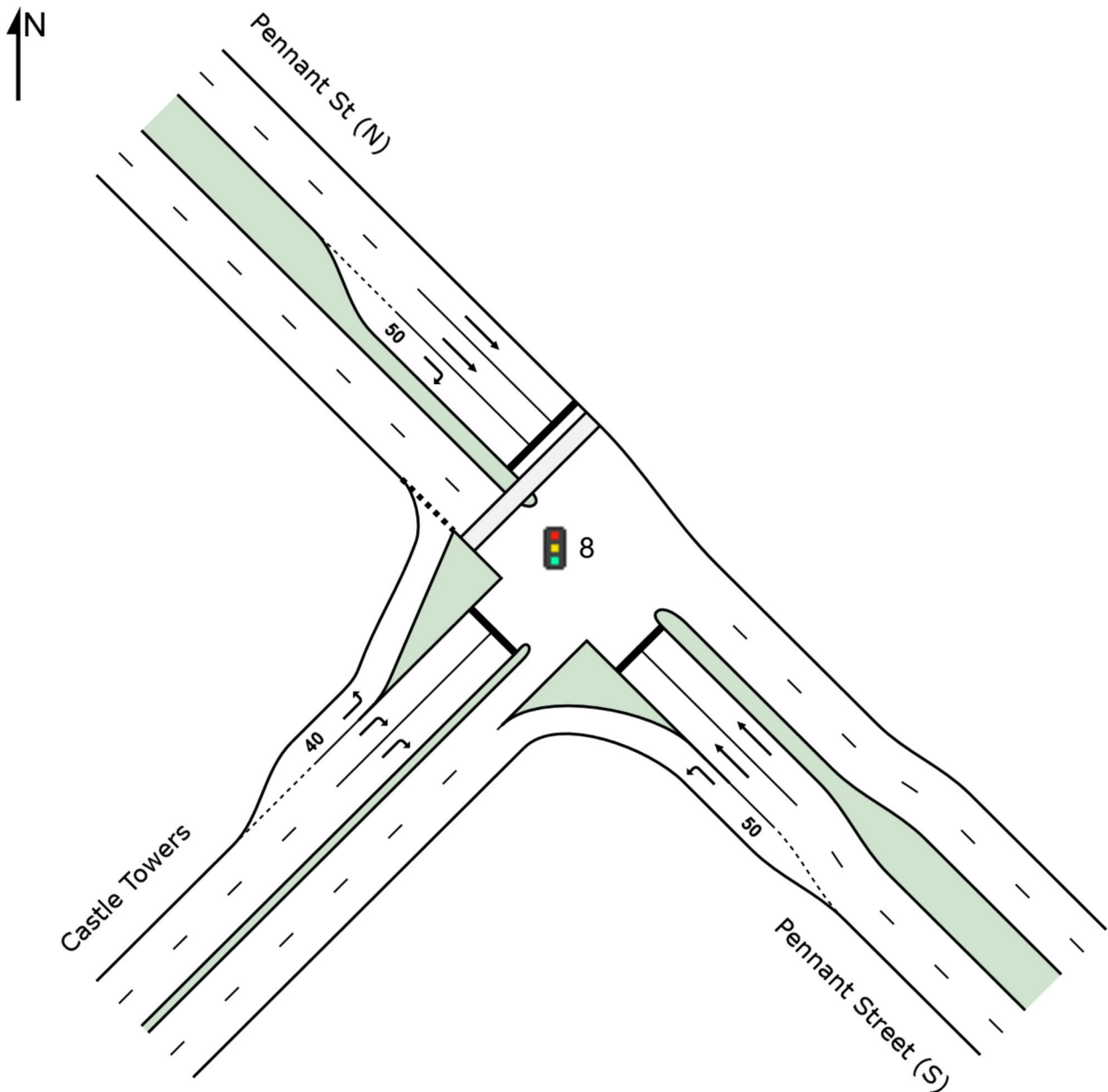
Signals - Fixed Time Isolated



SITE LAYOUT

Site: 8 [8-Castle Towers/Pennant Street - Ex - PM]

Castle Towers and Pennant Street
Existing Scenario
PM Peak Hour Volumes
Site Category: (None)
Signals - Fixed Time Isolated



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DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Ex - AM]

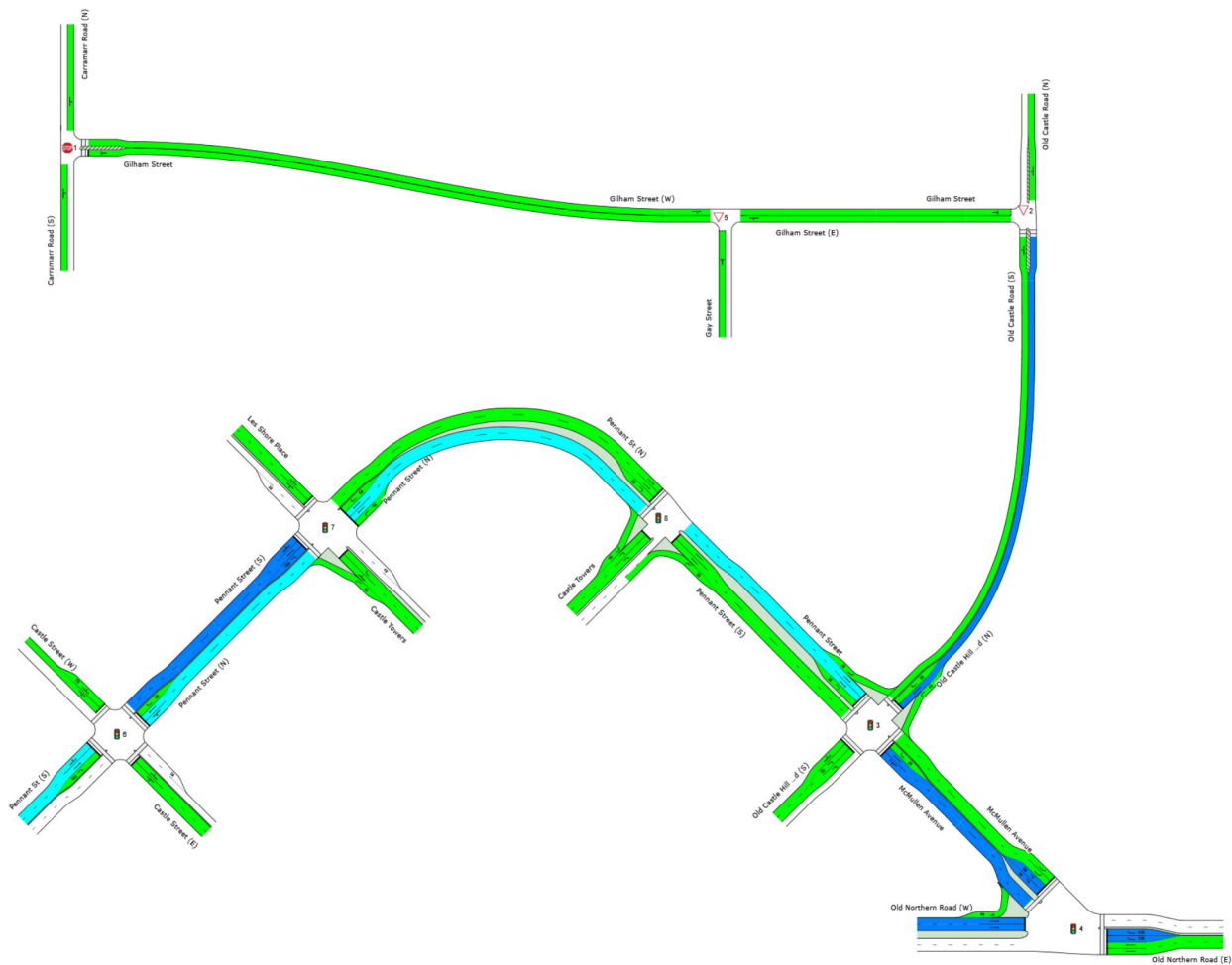
Vivien Place Network

Existing Scenario

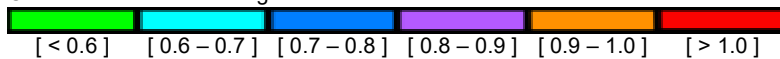
AM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Degree of Saturation



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DEGREE OF SATURATION

Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Ex - PM]

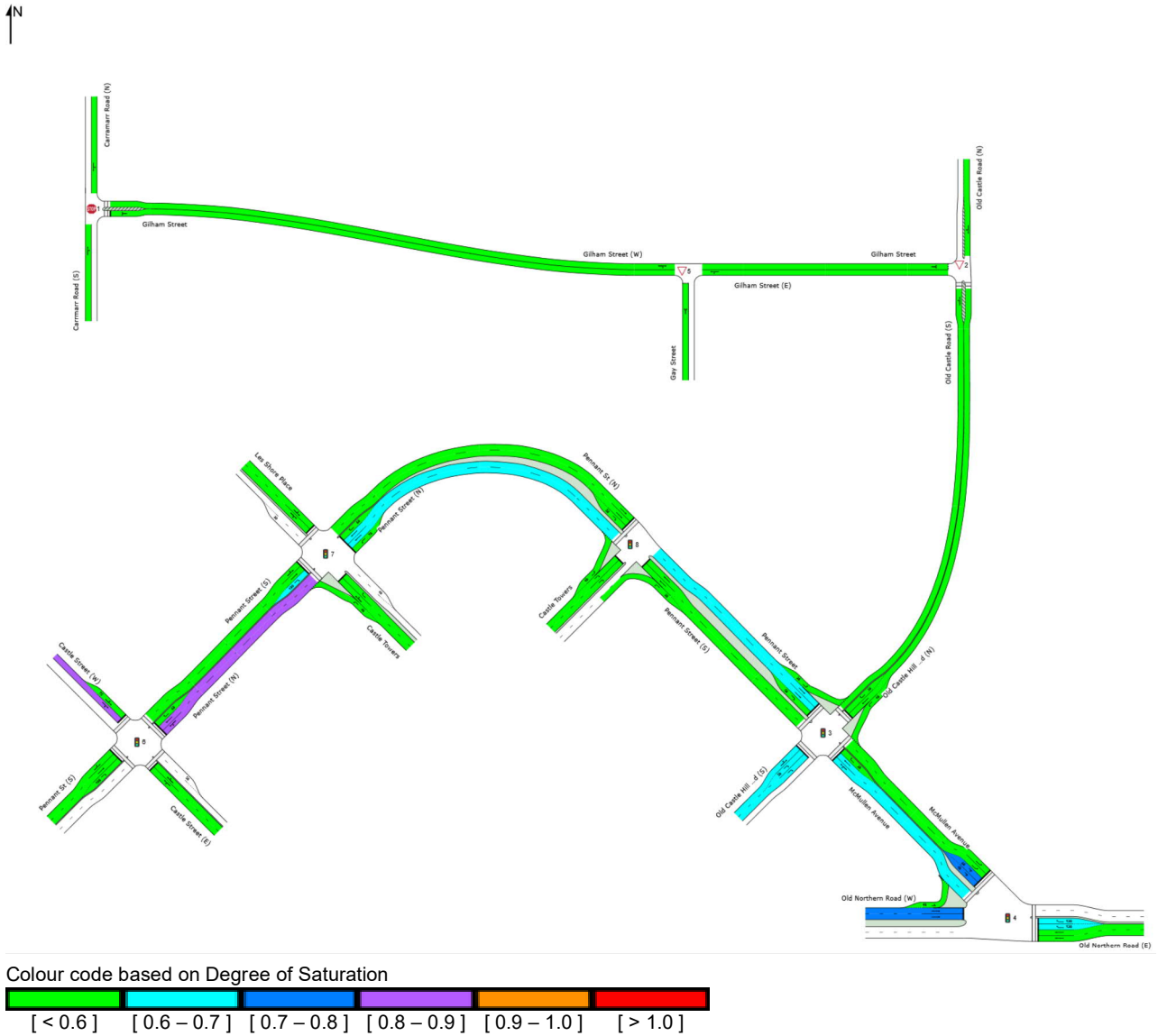
Vivien Place Network

Existing Scenario

PM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



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LANE LEVEL OF SERVICE

Lane Level of Service for Network Sites

Network: 1 [Vivien Place - Ex - AM]

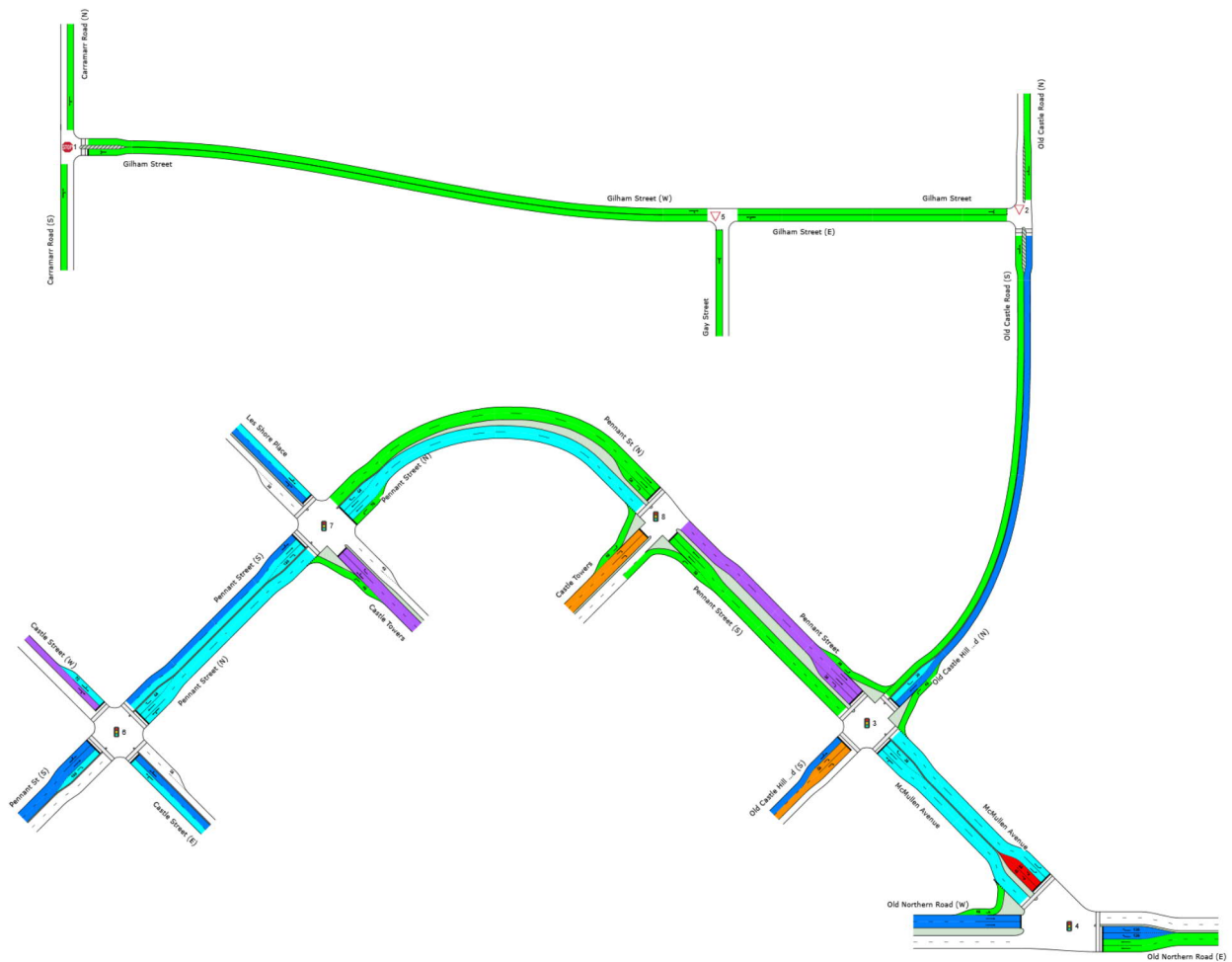
Vivien Place Network

Existing Scenario

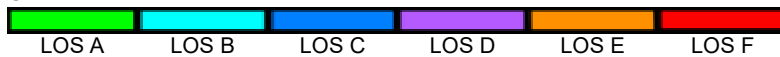
AM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Level of Service



Delay model settings are specified for individual Sites forming the Network.

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Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Existing Network - Scenario 1 [410745].sip8

LANE LEVEL OF SERVICE

Lane Level of Service for Network Sites

Network: 1 [Vivien Place - Ex - PM]

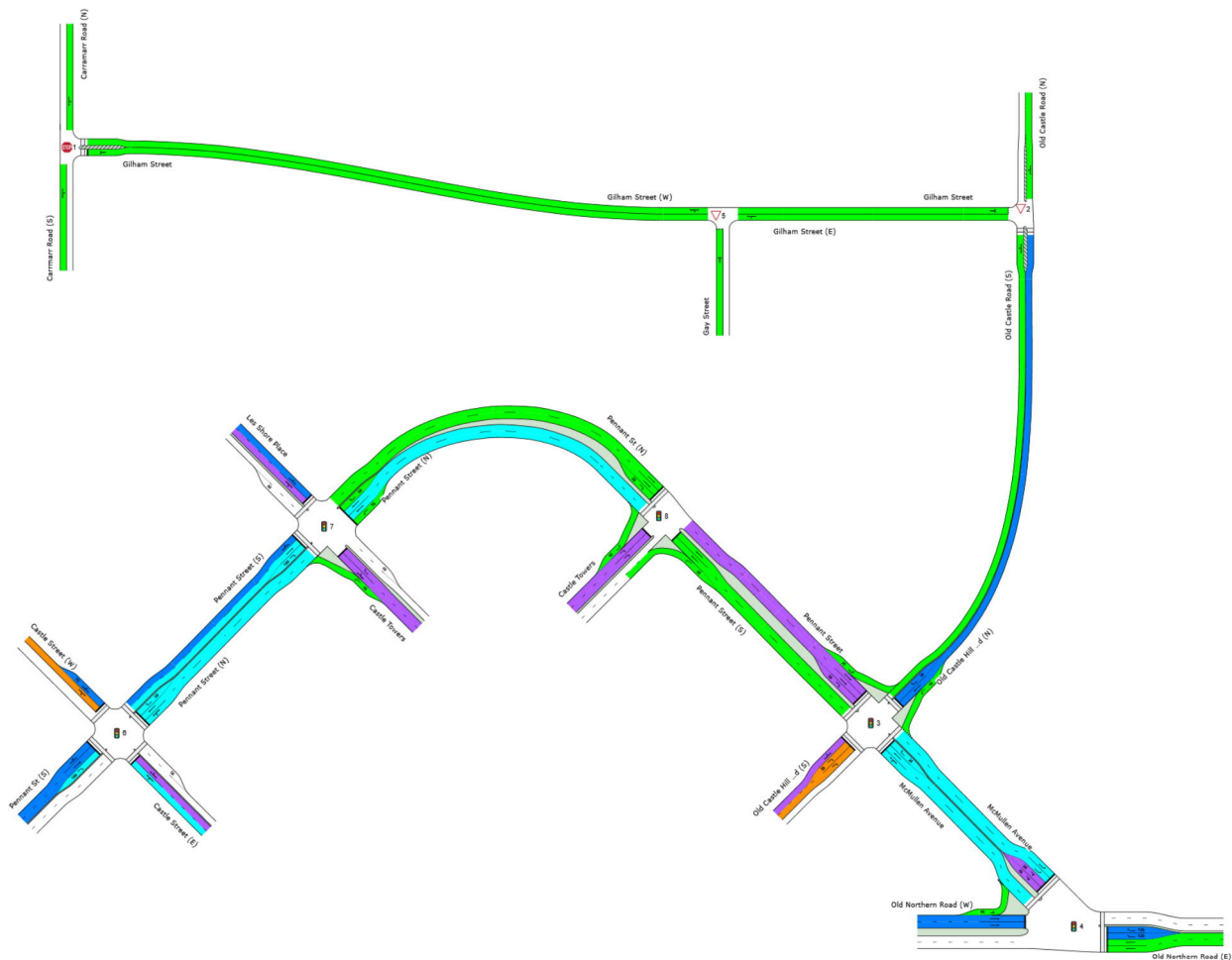
Vivien Place Network

Existing Scenario

PM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Level of Service



Delay model settings are specified for individual Sites forming the Network.

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Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Existing Network - Scenario 1 [410745].sip8

MOVEMENT SUMMARY

 Site: 1 [1-Gilham St/Carramarr Rd - Ex - AM]

 Network: 1 [Vivien Place - Ex - AM]

Gilham Street and Carramarr Road
Existing Scenario
AM Peak Hour Volumes
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	59	1.8	59	1.8	0.078	0.4	LOS A	0.4	2.5	0.25	0.30	0.25	47.2
3	R2	72	1.5	72	1.5	0.078	5.1	LOS A	0.4	2.5	0.25	0.30	0.25	45.0
Approach		131	1.6	131	1.6	0.078	3.0	NA	0.4	2.5	0.25	0.30	0.25	46.3
East: Gilham Street														
4	L2	71	0.0	71	0.0	0.086	8.0	LOS A	0.3	2.3	0.25	0.89	0.25	44.8
6	R2	26	4.0	26	4.0	0.086	8.5	LOS A	0.3	2.3	0.25	0.89	0.25	44.1
Approach		97	1.1	97	1.1	0.086	8.1	LOS A	0.3	2.3	0.25	0.89	0.25	44.6
North: Carramarr Road (N)														
7	L2	29	0.0	29	0.0	0.084	4.6	LOS A	0.0	0.0	0.00	0.10	0.00	48.5
8	T1	131	1.6	131	1.6	0.084	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.3
Approach		160	1.3	160	1.3	0.084	0.8	NA	0.0	0.0	0.00	0.10	0.00	49.2
All Vehicles		387	1.4	387	1.4	0.086	3.4	NA	0.4	2.5	0.15	0.36	0.15	46.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Ex - AM]

 Network: 1 [Vivien Place - Ex - AM]

Gay Street and Gilham Street
Existing Scenario
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	2	0.0	2	0.0	0.012	4.9	LOS A	0.0	0.3	0.27	0.54	0.27	35.1
3	R2	9	33.3	9	33.3	0.012	5.9	LOS A	0.0	0.3	0.27	0.54	0.27	35.1
Approach		12	27.3	12	27.3	0.012	5.7	LOS A	0.0	0.3	0.27	0.54	0.27	35.1
East: Gilham Street (E)														
4	L2	14	53.8	14	53.8	0.067	5.0	LOS A	0.0	0.0	0.00	0.06	0.00	44.9
5	T1	111	1.0	111	1.0	0.067	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	48.5
Approach		124	6.8	124	6.8	0.067	0.6	NA	0.0	0.0	0.00	0.06	0.00	47.6
West: Gilham Street (W)														
11	T1	107	2.0	107	2.0	0.057	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	49.8
12	R2	2	0.0	2	0.0	0.057	4.9	LOS A	0.0	0.1	0.01	0.01	0.01	48.5
Approach		109	1.9	109	1.9	0.057	0.1	NA	0.0	0.1	0.01	0.01	0.01	49.8
All Vehicles		245	5.6	245	5.6	0.067	0.6	NA	0.0	0.3	0.02	0.06	0.02	48.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

Site: 2 [2-Gilham St/Old Castle Rd - Ex - AM]

Network: 1 [Vivien Place - Ex - AM]

Gilham Street and Old Castle Road
Existing Scenario
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Old Castle Road (S)														
1	L2	76	9.7	76	9.7	0.177	4.7	LOS A	0.0	0.0	0.00	0.13	0.00	48.0
2	T1	252	5.4	252	5.4	0.177	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	48.6
Approach		327	6.4	327	6.4	0.177	1.1	NA	0.0	0.0	0.00	0.13	0.00	48.5
North: Old Castle Road (N)														
8	T1	564	3.2	564	3.2	0.331	0.2	LOS A	0.6	4.1	0.10	0.05	0.10	46.8
9	R2	47	0.0	47	0.0	0.331	6.3	LOS A	0.6	4.1	0.10	0.05	0.10	46.8
Approach		612	2.9	612	2.9	0.331	0.7	NA	0.6	4.1	0.10	0.05	0.10	46.8
West: Gilham Street														
10	L2	41	0.0	41	0.0	0.206	5.5	LOS A	0.7	5.2	0.48	0.70	0.48	32.8
12	R2	80	6.6	80	6.6	0.206	11.2	LOS A	0.7	5.2	0.48	0.70	0.48	23.4
Approach		121	4.3	121	4.3	0.206	9.3	LOS A	0.7	5.2	0.48	0.70	0.48	27.7
All Vehicles		1060	4.2	1060	4.2	0.331	1.8	NA	0.7	5.2	0.12	0.15	0.12	45.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Ex - AM]

 Network: 1 [Vivien Place - Ex - AM]

McMullen Avenue and Old Northern Road

Existing Scenario

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
East: Old Northern Road (E)														
5	T1	1297	5.5	1297	5.5	0.449	5.2	LOS A	13.2	96.8	0.39	0.35	0.39	50.0
6a	R1	943	3.9	943	3.9	0.727	35.0	LOS C	21.9	158.4	0.91	0.93	1.19	17.7
Approach		2240	4.8	2240	4.8	0.727	17.8	LOS B	21.9	158.4	0.61	0.60	0.72	32.7
NorthWest: McMullen Avenue														
27a	L1	631	5.8	631	5.8	0.271	21.2	LOS B	13.7	101.1	0.73	0.78	0.73	30.3
29b	R3	325	8.4	325	8.4	0.799	71.7	LOS F	10.1	76.0	1.00	0.86	1.11	14.1
Approach		956	6.7	956	6.7	0.799	38.4	LOS C	13.7	101.1	0.82	0.81	0.86	22.0
West: Old Northern Road (W)														
10b	L3	254	6.6	254	6.6	0.346	14.5	LOS A	6.3	46.9	0.55	0.74	0.55	29.7
11	T1	902	6.9	902	6.9	0.800	38.3	LOS C	29.8	221.1	0.91	0.86	0.98	24.4
Approach		1156	6.8	1156	6.8	0.800	33.1	LOS C	29.8	221.1	0.83	0.83	0.89	25.0
All Vehicles		4352	5.8	4352	5.8	0.800	26.4	LOS B	29.8	221.1	0.71	0.70	0.80	27.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	14	54.2	LOS E	0.0	0.0	0.95	0.95
P7	NorthWest Full Crossing	25	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		39	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Ex - AM]**  **Network: 1 [Vivien Place - Ex - AM]**

Old Castle Hill Road, McMullen Avenue and Pennant Street

Existing Scenario

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: McMullen Avenue														
21	L2	122	0.9	122	0.9	0.750	32.7	LOS C	26.8	192.5	0.82	0.76	0.82	20.3
22	T1	893	3.4	893	3.4	0.750	26.7	LOS B	26.8	192.5	0.75	0.69	0.76	16.8
23	R2	169	12.4	169	12.4	0.473	26.5	LOS B	5.5	42.6	0.76	0.76	0.76	17.3
Approach		1184	4.4	1184	4.4	0.750	27.3	LOS B	26.8	192.5	0.76	0.71	0.77	17.3
NorthEast: Old Castle Hill Road (N)														
24	L2	382	6.9	382	6.9	0.321	8.6	LOS A	6.2	45.9	0.38	0.63	0.38	37.3
25	T1	172	0.0	172	0.0	0.768	38.5	LOS C	8.3	57.9	0.77	0.74	0.96	22.4
26	R2	112	5.7	112	5.7	0.214	25.2	LOS B	3.8	28.2	0.70	0.71	0.70	25.0
Approach		665	4.9	665	4.9	0.768	19.1	LOS B	8.3	57.9	0.54	0.67	0.58	29.2
NorthWest: Pennant Street														
27	L2	56	15.1	56	15.1	0.051	8.3	LOS A	0.8	6.1	0.37	0.63	0.37	28.3
28	T1	533	6.3	533	6.3	0.676	54.2	LOS D	16.1	119.1	1.00	0.84	1.00	6.9
29	R2	8	0.0	8	0.0	0.041	55.0	LOS D	0.5	3.2	0.95	0.69	0.95	10.5
Approach		597	7.1	597	7.1	0.676	49.9	LOS D	16.1	119.1	0.94	0.82	0.94	7.5
SouthWest: Old Castle Hill Road (S)														
30	L2	22	9.5	22	9.5	0.233	35.5	LOS C	6.1	44.1	0.76	0.65	0.76	9.5
31	T1	124	1.7	124	1.7	0.233	30.9	LOS C	6.1	44.1	0.76	0.65	0.76	9.5
32	R2	58	7.3	58	7.3	0.179	60.7	LOS E	1.6	12.0	0.96	0.72	0.96	5.1
Approach		204	4.1	204	4.1	0.233	39.8	LOS C	6.1	44.1	0.82	0.67	0.82	7.7
All Vehicles		2651	5.1	2651	5.1	0.768	31.3	LOS C	26.8	192.5	0.75	0.72	0.77	16.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P5	SouthEast Full Crossing	41	54.2	LOS E	0.1	0.1	0.95	0.95	
P6	NorthEast Full Crossing	10	54.2	LOS E	0.0	0.0	0.95	0.95	
P7	NorthWest Full Crossing	28	54.2	LOS E	0.1	0.1	0.95	0.95	
P8	SouthWest Full Crossing	4	54.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		83	54.2	LOS E			0.95	0.95	

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Ex - AM]



Network: 1 [Vivien Place - Ex - AM]

Les Shore Place, Castle Towers and Pennant Street

Existing Scenario

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	76	13.9	76	13.9	0.091	4.1	LOS A	1.1	8.3	0.36	0.29	0.36	12.2
22	T1	46	0.0	46	0.0	0.150	47.3	LOS D	2.4	16.5	0.90	0.68	0.90	6.3
23	R2	14	7.7	14	7.7	0.049	46.3	LOS D	0.7	5.1	0.88	0.62	0.88	4.1
Approach		136	8.5	136	8.5	0.150	23.1	LOS B	2.4	16.5	0.59	0.45	0.59	7.6
NorthEast: Pennant Street (N)														
24	L2	67	7.8	67	7.8	0.075	9.8	LOS A	0.4	2.8	0.10	0.69	0.10	31.5
25	T1	713	4.6	713	4.6	0.627	23.6	LOS B	14.0	101.8	0.71	0.61	0.71	25.9
26	R2	114	0.9	114	0.9	0.497	25.8	LOS B	3.6	25.2	0.73	0.73	0.73	25.4
Approach		894	4.4	894	4.4	0.627	22.9	LOS B	14.0	101.8	0.67	0.63	0.67	26.2
NorthWest: Les Shore Place														
27	L2	62	8.5	62	8.5	0.091	28.3	LOS B	2.3	17.0	0.66	0.69	0.66	7.2
28	T1	33	0.0	33	0.0	0.291	42.5	LOS D	7.1	49.4	0.82	0.77	0.82	7.5
29	R2	122	0.0	122	0.0	0.291	39.9	LOS C	7.1	49.4	0.83	0.78	0.83	5.5
Approach		217	2.4	217	2.4	0.291	37.0	LOS C	7.1	49.4	0.78	0.75	0.78	6.2
SouthWest: Pennant Street (S)														
30	L2	225	2.3	225	2.3	0.721	32.3	LOS C	16.1	116.5	0.85	0.83	1.03	16.0
31	T1	565	6.9	565	6.9	0.721	24.4	LOS B	16.8	124.6	0.78	0.71	0.84	22.3
32	R2	188	1.1	188	1.1	0.723	26.2	LOS B	6.3	44.4	0.75	0.82	0.85	20.2
Approach		979	4.7	979	4.7	0.723	26.6	LOS B	16.8	124.6	0.79	0.76	0.88	19.8
All Vehicles		2225	4.6	2225	4.6	0.723	25.9	LOS B	16.8	124.6	0.73	0.69	0.77	20.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	292	54.8	LOS E	1.0	1.0	0.96	0.96
P8	SouthWest Full Crossing	246	54.7	LOS E	0.8	0.8	0.96	0.96
All Pedestrians		538	54.8	LOS E			0.96	0.96

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.

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MOVEMENT SUMMARY

 Site: 6 [6-Castle St/Pennant St - Ex - AM]

 Network: 1 [Vivien Place - Ex - AM]

Castle Street and Pennant Street

Existing Scenario

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	99	4.3	99	4.3	0.124	16.2	LOS B	2.3	16.8	0.62	0.69	0.62	29.1
22	T1	97	3.3	97	3.3	0.280	40.1	LOS C	5.5	40.3	0.86	0.70	0.86	25.3
23	R2	19	11.1	19	11.1	0.280	44.3	LOS D	5.5	40.3	0.86	0.70	0.86	6.2
Approach		215	4.4	215	4.4	0.280	29.5	LOS C	5.5	40.3	0.75	0.70	0.75	25.1
NorthEast: Pennant Street (N)														
24	L2	44	2.4	44	2.4	0.606	22.9	LOS B	12.1	89.0	0.76	0.67	0.76	28.3
25	T1	711	6.2	711	6.2	0.606	20.5	LOS B	13.7	101.3	0.81	0.71	0.81	34.7
26	R2	101	1.0	101	1.0	0.202	27.3	LOS B	3.1	21.7	0.70	0.73	0.70	34.2
Approach		856	5.4	856	5.4	0.606	21.4	LOS B	13.7	101.3	0.80	0.71	0.80	34.4
NorthWest: Castle Street (W)														
27	L2	219	3.8	219	3.8	0.224	19.8	LOS B	6.6	47.5	0.56	0.71	0.56	32.7
28	T1	152	0.0	152	0.0	0.596	43.3	LOS D	12.3	86.3	0.94	0.80	0.94	24.1
29	R2	83	1.3	83	1.3	0.596	47.8	LOS D	12.3	86.3	0.94	0.80	0.94	27.6
Approach		454	2.1	454	2.1	0.596	32.8	LOS C	12.3	86.3	0.75	0.76	0.75	28.1
SouthWest: Pennant St (S)														
30	L2	93	1.1	93	1.1	0.608	39.5	LOS C	19.2	139.2	0.88	0.78	0.88	31.0
31	T1	720	5.0	720	5.0	0.608	33.9	LOS C	19.7	143.7	0.88	0.77	0.88	18.0
32	R2	111	3.8	111	3.8	0.250	25.0	LOS B	3.5	25.6	0.74	0.74	0.74	24.0
Approach		923	4.4	923	4.4	0.608	33.4	LOS C	19.7	143.7	0.86	0.77	0.86	20.8
All Vehicles		2447	4.3	2447	4.3	0.608	28.7	LOS C	19.7	143.7	0.81	0.74	0.81	27.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	17	32.3	LOS D	0.0	0.0	0.90	0.90
P6	NorthEast Full Crossing	328	54.9	LOS E	1.1	1.1	0.96	0.96
P7	NorthWest Full Crossing	82	54.3	LOS E	0.3	0.3	0.95	0.95
P8	SouthWest Full Crossing	67	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		494	53.9	LOS E			0.96	0.96

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Ex - AM]

 Network: 1 [Vivien Place - Ex - AM]

Castle Towers and Pennant Street

Existing Scenario

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %		v/c		Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	178	0.0	178	0.0	0.096	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	859	4.5	859	4.5	0.267	3.8	LOS A	10.7	77.5	0.44	0.39	0.44	39.2
Approach		1037	3.8	1037	3.8	0.267	4.8	LOS A	10.7	77.5	0.37	0.45	0.37	35.8
NorthWest: Pennant St (N)														
28	T1	582	7.6	582	7.6	0.219	0.3	LOS A	0.7	5.0	0.03	0.03	0.03	58.9
29	R2	55	0.0	55	0.0	0.124	7.7	LOS A	0.1	0.5	0.02	0.70	0.02	32.2
Approach		637	6.9	637	6.9	0.219	1.0	LOS A	0.7	5.0	0.03	0.09	0.03	54.4
SouthWest: Castle Towers														
30	L2	12	0.0	12	0.0	0.018	1.5	LOS A	0.1	0.7	0.20	0.15	0.20	14.0
32	R2	22	0.0	22	0.0	0.141	62.8	LOS E	0.7	4.9	0.98	0.67	0.98	3.5
Approach		34	0.0	34	0.0	0.141	41.7	LOS C	0.7	4.9	0.72	0.49	0.72	4.7
All Vehicles		1707	4.9	1707	4.9	0.267	4.1	LOS A	10.7	77.5	0.25	0.32	0.25	41.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Pedestrian ped	Back of Queue Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	8	54.2	LOS E	0.0	0.0	0.95	0.95
All Pedestrians		8	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY



Site: 1 [1-Gilham St/Carramarr Rd - Ex - PM]



Network: 1 [Vivien Place - Ex - PM]

Gilham Street and Carramarr Road

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carrmarr Road (S)														
2	T1	139	2.3	139	2.3	0.096	0.1	LOS A	0.2	1.7	0.10	0.12	0.10	48.8
3	R2	38	0.0	38	0.0	0.096	4.9	LOS A	0.2	1.7	0.10	0.12	0.10	47.8
Approach		177	1.8	177	1.8	0.096	1.1	NA	0.2	1.7	0.10	0.12	0.10	48.7
East: Gilham Street														
4	L2	45	0.0	45	0.0	0.063	7.8	LOS A	0.2	1.6	0.21	0.90	0.21	44.8
6	R2	25	0.0	25	0.0	0.063	8.3	LOS A	0.2	1.6	0.21	0.90	0.21	44.2
Approach		71	0.0	71	0.0	0.063	8.0	LOS A	0.2	1.6	0.21	0.90	0.21	44.6
North: Carramarr Road (N)														
7	L2	7	0.0	7	0.0	0.054	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.4
8	T1	98	0.0	98	0.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		105	0.0	105	0.0	0.054	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		353	0.9	353	0.9	0.096	2.3	NA	0.2	1.7	0.09	0.25	0.09	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Ex - PM]

 Network: 1 [Vivien Place - Ex - PM]

Gay Street and Gilham Street
Existing Scenario
PM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	6	0.0	6	0.0	0.041	4.7	LOS A	0.1	1.1	0.18	0.54	0.18	35.7
3	R2	38	22.2	38	22.2	0.041	5.4	LOS A	0.1	1.1	0.18	0.54	0.18	35.7
Approach		44	19.0	44	19.0	0.041	5.3	LOS A	0.1	1.1	0.18	0.54	0.18	35.7
East: Gilham Street (E)														
4	L2	13	66.7	13	66.7	0.030	5.2	LOS A	0.0	0.0	0.00	0.13	0.00	43.9
5	T1	39	0.0	39	0.0	0.030	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	47.3
Approach		52	16.3	52	16.3	0.030	1.3	NA	0.0	0.0	0.00	0.13	0.00	45.7
West: Gilham Street (W)														
11	T1	89	0.0	89	0.0	0.050	0.0	LOS A	0.0	0.3	0.02	0.04	0.02	49.5
12	R2	6	0.0	6	0.0	0.050	4.7	LOS A	0.0	0.3	0.02	0.04	0.02	48.3
Approach		96	0.0	96	0.0	0.050	0.3	NA	0.0	0.3	0.02	0.04	0.02	49.4
All Vehicles		192	8.8	192	8.8	0.050	1.7	NA	0.1	1.1	0.05	0.18	0.05	47.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rd - Ex - PM]

 Network: 1 [Vivien Place - Ex - PM]

Gilham Street and Old Castle Road
Existing Scenario
PM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Old Castle Road (S)														
1	L2	39	21.6	39	21.6	0.259	4.8	LOS A	0.0	0.0	0.00	0.04	0.00	49.4
2	T1	449	2.8	449	2.8	0.259	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.5
Approach		488	4.3	488	4.3	0.259	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.5
North: Old Castle Road (N)														
8	T1	359	3.5	359	3.5	0.200	0.1	LOS A	0.2	1.2	0.05	0.02	0.05	48.4
9	R2	13	0.0	13	0.0	0.200	7.0	LOS A	0.2	1.2	0.05	0.02	0.05	48.4
Approach		372	3.4	372	3.4	0.200	0.4	NA	0.2	1.2	0.05	0.02	0.05	48.4
West: Gilham Street														
10	L2	29	0.0	29	0.0	0.228	6.5	LOS A	0.8	6.1	0.58	0.80	0.60	32.6
12	R2	105	8.0	105	8.0	0.228	10.2	LOS A	0.8	6.1	0.58	0.80	0.60	23.1
Approach		135	6.3	135	6.3	0.228	9.4	LOS A	0.8	6.1	0.58	0.80	0.60	26.1
All Vehicles		995	4.2	995	4.2	0.259	1.6	NA	0.8	6.1	0.10	0.14	0.10	46.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Ex - PM]

 Network: 1 [Vivien Place - Ex - PM]

McMullen Avenue and Old Northern Road

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
East: Old Northern Road (E)														
5	T1	1109	6.3	1109	6.3	0.386	4.9	LOS A	10.5	77.6	0.36	0.32	0.36	50.6
6a	R1	935	4.5	935	4.5	0.655	32.3	LOS C	18.6	135.1	0.87	0.91	1.12	18.8
Approach		2044	5.5	2044	5.5	0.655	17.4	LOS B	18.6	135.1	0.59	0.59	0.71	32.8
NorthWest: McMullen Avenue														
27a	L1	832	1.9	832	1.9	0.367	17.8	LOS B	14.7	104.5	0.64	0.75	0.64	33.1
29b	R3	309	4.8	309	4.8	0.736	55.2	LOS D	8.8	63.8	0.96	0.83	1.03	17.1
Approach		1141	2.7	1141	2.7	0.736	27.9	LOS B	14.7	104.5	0.73	0.77	0.74	26.5
West: Old Northern Road (W)														
10b	L3	213	6.4	213	6.4	0.243	12.0	LOS A	4.0	29.6	0.44	0.71	0.44	32.5
11	T1	851	6.7	851	6.7	0.734	35.1	LOS C	25.0	185.2	0.90	0.79	0.91	25.6
Approach		1063	6.6	1063	6.6	0.734	30.5	LOS C	25.0	185.2	0.81	0.78	0.82	26.3
All Vehicles		4248	5.0	4248	5.0	0.736	23.5	LOS B	25.0	185.2	0.68	0.69	0.74	29.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	7	54.2	LOS E	0.0	0.0	0.95	0.95
P7	NorthWest Full Crossing	22	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		29	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Ex - PM]**  **Network: 1 [Vivien Place - Ex - PM]**

Old Castle Hill Road, McMullen Avenue and Pennant Street

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Queue	Back of Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	m				km/h
SouthEast: McMullen Avenue														
21	L2	118	0.0	118	0.0	0.651	27.5	LOS B	22.7	164.5	0.71	0.67	0.71	23.0
22	T1	832	5.1	832	5.1	0.651	21.1	LOS B	22.7	164.5	0.66	0.60	0.66	19.6
23	R2	197	6.4	197	6.4	0.469	23.2	LOS B	5.6	41.5	0.73	0.76	0.73	19.0
Approach		1146	4.8	1146	4.8	0.651	22.1	LOS B	22.7	164.5	0.68	0.64	0.68	19.9
NorthEast: Old Castle Hill Road (N)														
24	L2	234	5.9	234	5.9	0.214	11.0	LOS A	4.6	34.2	0.42	0.64	0.42	34.9
25	T1	122	0.0	122	0.0	0.577	37.8	LOS C	5.6	39.5	0.83	0.66	0.83	22.6
26	R2	113	5.6	113	5.6	0.307	31.3	LOS C	4.3	31.3	0.85	0.75	0.85	22.3
Approach		468	4.3	468	4.3	0.577	22.9	LOS B	5.6	39.5	0.63	0.67	0.63	27.0
NorthWest: Pennant Street														
27	L2	112	5.7	112	5.7	0.102	8.5	LOS A	1.3	9.6	0.31	0.63	0.31	28.0
28	T1	614	2.2	614	2.2	0.692	47.9	LOS D	19.0	135.9	0.99	0.85	0.99	7.6
29	R2	9	0.0	9	0.0	0.033	48.1	LOS D	0.5	3.4	0.91	0.69	0.91	11.6
Approach		735	2.7	735	2.7	0.692	41.9	LOS C	19.0	135.9	0.88	0.81	0.89	8.7
SouthWest: Old Castle Hill Road (S)														
30	L2	83	8.9	83	8.9	0.638	46.5	LOS D	13.8	98.7	0.92	0.79	0.92	7.2
31	T1	186	0.0	186	0.0	0.638	41.8	LOS C	13.8	98.7	0.92	0.79	0.92	7.2
32	R2	281	0.4	281	0.4	0.700	63.5	LOS E	8.4	59.0	1.00	0.84	1.09	4.9
Approach		551	1.5	551	1.5	0.700	53.6	LOS D	13.8	98.7	0.96	0.82	1.01	5.9
All Vehicles		2900	3.6	2900	3.6	0.700	33.3	LOS C	22.7	164.5	0.78	0.72	0.79	14.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue pedestrian	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	17	54.2	LOS E	0.1	0.1	0.95	0.95
P6	NorthEast Full Crossing	17	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	34	54.2	LOS E	0.1	0.1	0.95	0.95
P8	SouthWest Full Crossing	14	54.2	LOS E	0.0	0.0	0.95	0.95
All Pedestrians		82	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Ex - PM]



Network: 1 [Vivien Place - Ex - PM]

Les Shore Place, Castle Towers and Pennant Street

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	347	1.5	347	1.5	0.372	5.5	LOS A	6.5	45.9	0.46	0.41	0.46	11.4
22	T1	34	0.0	34	0.0	0.182	47.6	LOS D	2.8	19.8	0.90	0.69	0.90	5.4
23	R2	75	0.0	75	0.0	0.182	47.7	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
Approach		456	1.2	456	1.2	0.372	15.5	LOS B	6.5	45.9	0.57	0.47	0.57	8.1
NorthEast: Pennant Street (N)														
24	L2	76	5.6	76	5.6	0.080	13.0	LOS A	0.9	6.8	0.22	0.71	0.22	29.1
25	T1	748	6.6	748	6.6	0.616	18.3	LOS B	13.3	98.4	0.60	0.52	0.60	29.8
26	R2	36	2.9	36	2.9	0.084	12.6	LOS A	0.4	3.1	0.28	0.62	0.28	34.8
Approach		860	6.4	860	6.4	0.616	17.6	LOS B	13.3	98.4	0.56	0.54	0.56	29.9
NorthWest: Les Shore Place														
27	L2	64	1.6	64	1.6	0.127	36.5	LOS C	3.0	21.1	0.76	0.73	0.76	5.7
28	T1	18	0.0	18	0.0	0.407	48.2	LOS D	7.4	53.1	0.87	0.77	0.87	6.8
29	R2	131	3.2	131	3.2	0.407	50.2	LOS D	7.4	53.1	0.92	0.79	0.92	4.5
Approach		213	2.5	213	2.5	0.407	45.9	LOS D	7.4	53.1	0.87	0.77	0.87	5.0
SouthWest: Pennant Street (S)														
30	L2	73	7.2	73	7.2	0.499	37.1	LOS C	11.2	81.7	0.73	0.69	0.96	15.4
31	T1	528	4.0	528	4.0	0.499	23.0	LOS B	11.2	81.7	0.61	0.55	0.70	23.3
32	R2	239	0.4	239	0.4	0.604	17.3	LOS B	5.2	36.7	0.54	0.77	0.54	24.3
Approach		840	3.3	840	3.3	0.604	22.6	LOS B	11.2	81.7	0.60	0.63	0.68	22.5
All Vehicles		2368	3.9	2368	3.9	0.616	21.5	LOS B	13.3	98.4	0.60	0.58	0.63	20.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	193	54.6	LOS E	0.6	0.6	0.96	0.96
P8	SouthWest Full Crossing	218	54.6	LOS E	0.7	0.7	0.96	0.96
All Pedestrians		411	54.6	LOS E			0.96	0.96

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.

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Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Existing Network - Scenario 1 [410745].sip8

MOVEMENT SUMMARY

 Site: 6 [6-Castle St/Pennant St - Ex - PM]

 Network: 1 [Vivien Place - Ex - PM]

Castle Street and Pennant Street

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	222	0.9	222	0.9	0.295	18.1	LOS B	5.5	38.8	0.71	0.74	0.71	28.1
22	T1	124	1.7	124	1.7	0.515	49.3	LOS D	8.5	61.6	0.96	0.78	0.96	22.7
23	R2	33	12.9	33	12.9	0.515	53.6	LOS D	8.5	61.6	0.96	0.78	0.96	5.1
Approach		379	2.2	379	2.2	0.515	31.4	LOS C	8.5	61.6	0.81	0.76	0.81	23.4
NorthEast: Pennant Street (N)														
24	L2	63	3.3	63	3.3	0.820	32.4	LOS C	21.8	159.4	0.94	0.88	1.01	22.7
25	T1	968	5.2	968	5.2	0.820	26.8	LOS B	21.8	159.4	0.95	0.88	1.03	30.8
26	R2	157	6.0	157	6.0	0.279	23.0	LOS B	4.8	35.6	0.77	0.76	0.77	36.1
Approach		1188	5.2	1188	5.2	0.820	26.6	LOS B	21.8	159.4	0.93	0.87	0.99	31.3
NorthWest: Castle Street (W)														
27	L2	177	2.4	177	2.4	0.274	30.4	LOS C	7.7	54.6	0.72	0.74	0.72	27.7
28	T1	158	0.7	158	0.7	0.807	53.8	LOS D	13.6	95.8	0.97	0.93	1.12	21.4
29	R2	82	0.0	82	0.0	0.807	62.2	LOS E	13.6	95.8	1.00	0.96	1.18	24.1
Approach		417	1.3	417	1.3	0.807	45.6	LOS D	13.6	95.8	0.87	0.85	0.96	24.1
SouthWest: Pennant St (S)														
30	L2	101	0.0	101	0.0	0.512	36.6	LOS C	16.2	115.4	0.83	0.75	0.83	31.9
31	T1	634	3.0	634	3.0	0.512	30.6	LOS C	16.7	120.1	0.82	0.73	0.82	19.3
32	R2	172	1.8	172	1.8	0.371	24.5	LOS B	5.2	36.8	0.80	0.77	0.80	24.2
Approach		906	2.4	906	2.4	0.512	30.1	LOS C	16.7	120.1	0.82	0.74	0.82	22.5
All Vehicles		2891	3.4	2891	3.4	0.820	31.1	LOS C	21.8	159.4	0.87	0.81	0.91	26.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	9	29.9	LOS C	0.0	0.0	0.90	0.90
P6	NorthEast Full Crossing	255	54.7	LOS E	0.8	0.8	0.96	0.96
P7	NorthWest Full Crossing	108	54.4	LOS E	0.4	0.4	0.95	0.95
P8	SouthWest Full Crossing	177	54.6	LOS E	0.6	0.6	0.96	0.96
All Pedestrians		549	54.2	LOS E			0.96	0.96

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Ex - PM]

 Network: 1 [Vivien Place - Ex - PM]

Castle Towers and Pennant Street

Existing Scenario

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %		v/c		Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	237	0.4	237	0.4	0.128	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	793	6.9	793	6.9	0.283	7.0	LOS A	10.9	80.6	0.49	0.43	0.49	30.4
Approach		1029	5.4	1029	5.4	0.283	7.6	LOS A	10.9	80.6	0.38	0.51	0.38	29.8
NorthWest: Pennant St (N)														
28	T1	638	3.5	638	3.5	0.286	1.4	LOS A	2.6	18.6	0.09	0.08	0.09	55.6
29	R2	35	0.0	35	0.0	0.084	7.8	LOS A	0.0	0.3	0.02	0.70	0.02	32.2
Approach		673	3.3	673	3.3	0.286	1.7	LOS A	2.6	18.6	0.09	0.11	0.09	53.3
SouthWest: Castle Towers														
30	L2	62	0.0	62	0.0	0.080	1.8	LOS A	0.6	4.2	0.23	0.18	0.23	13.8
32	R2	122	0.0	122	0.0	0.281	50.1	LOS D	3.7	25.9	0.93	0.72	0.93	4.1
Approach		184	0.0	184	0.0	0.281	33.8	LOS C	3.7	25.9	0.69	0.54	0.69	5.4
All Vehicles		1886	4.1	1886	4.1	0.286	8.1	LOS A	10.9	80.6	0.30	0.37	0.30	31.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued Stop Rate
P7	NorthWest Full Crossing	7	54.2	LOS E	0.0	0.0	0.95
All Pedestrians		7	54.2	LOS E			0.95

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.

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SITE LAYOUT

Site: 1 [1-Gilham St/Carramarr Rd - Fu - AM]

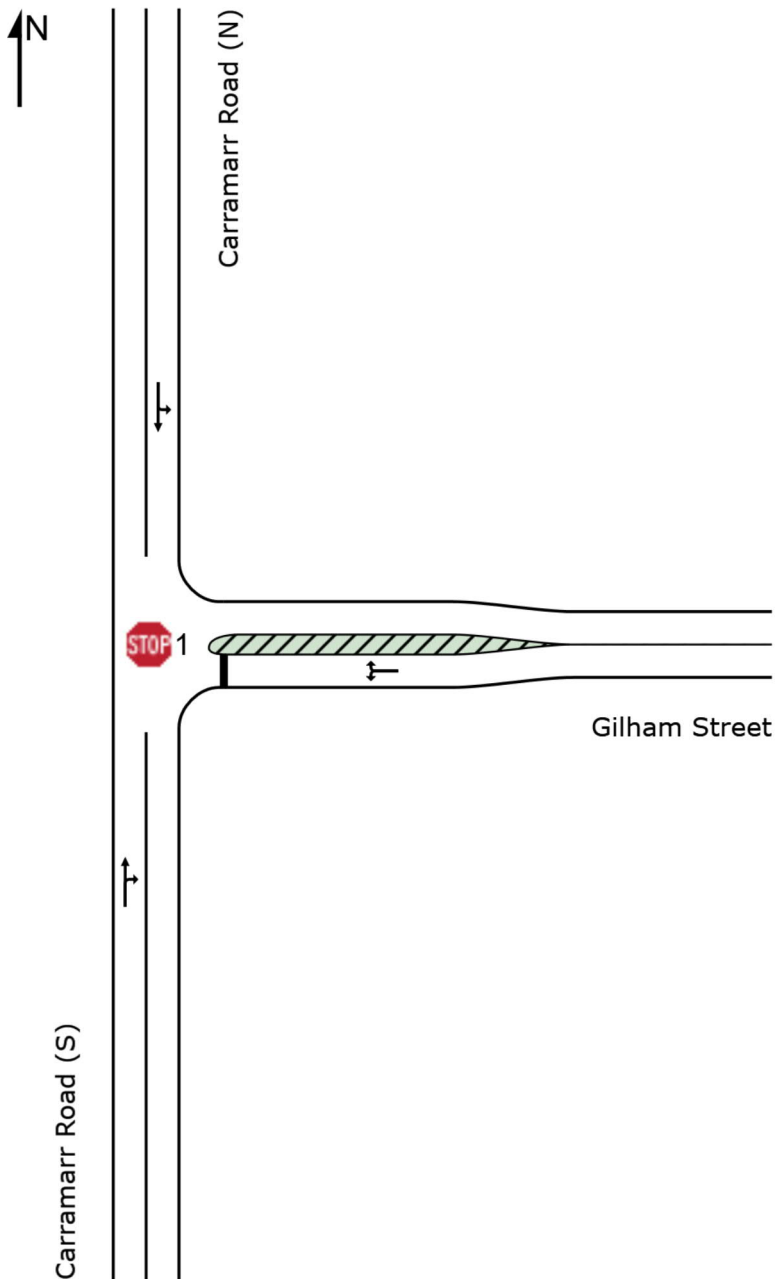
Gilham Street and Carramarr Road

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

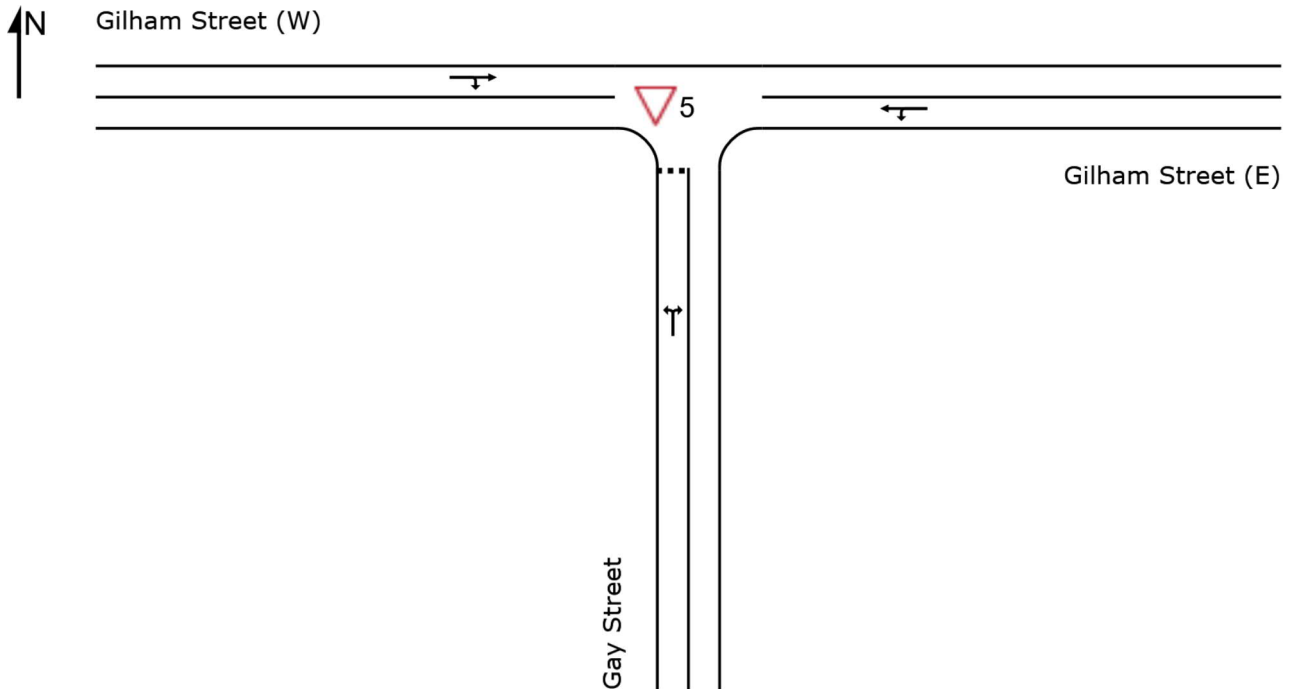
Stop (Two-Way)



SITE LAYOUT

Site: 5 [5-Gay St/Gilham St - Fu - AM]

Gay Street and Gilham Street
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

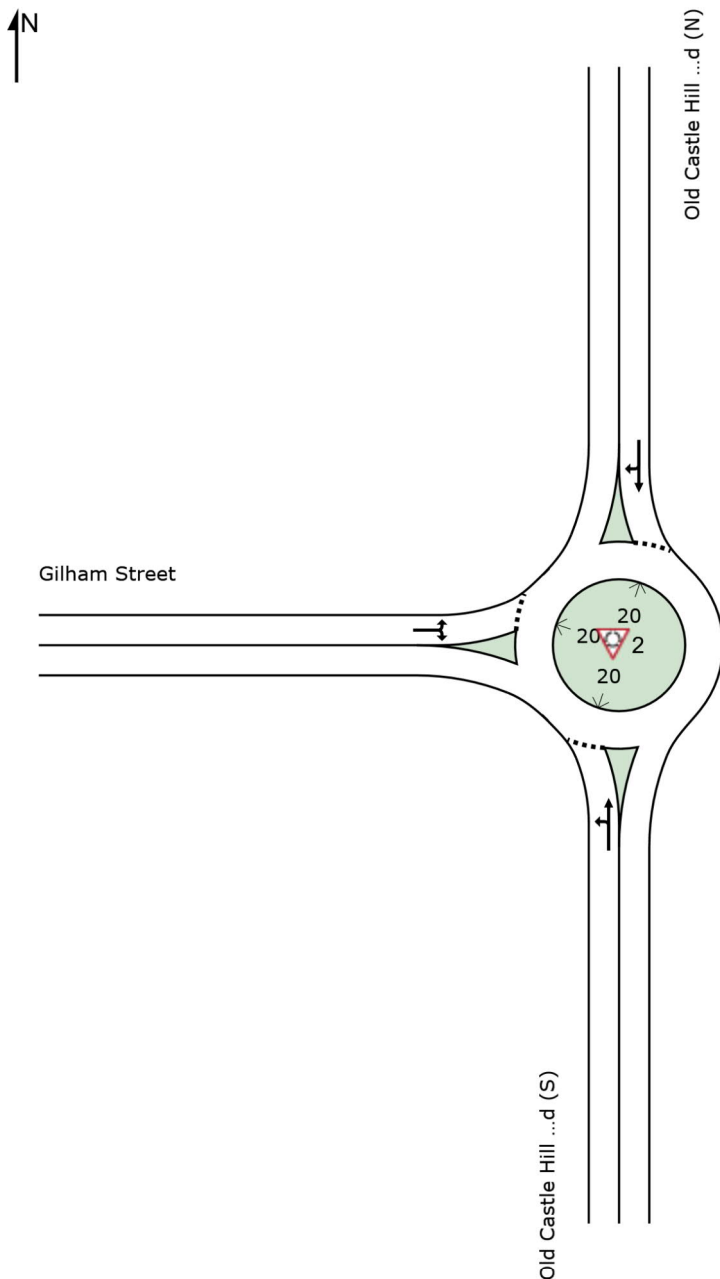


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Gilham Street and Old Castle Road
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Roundabout



SITE LAYOUT

Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - AM]

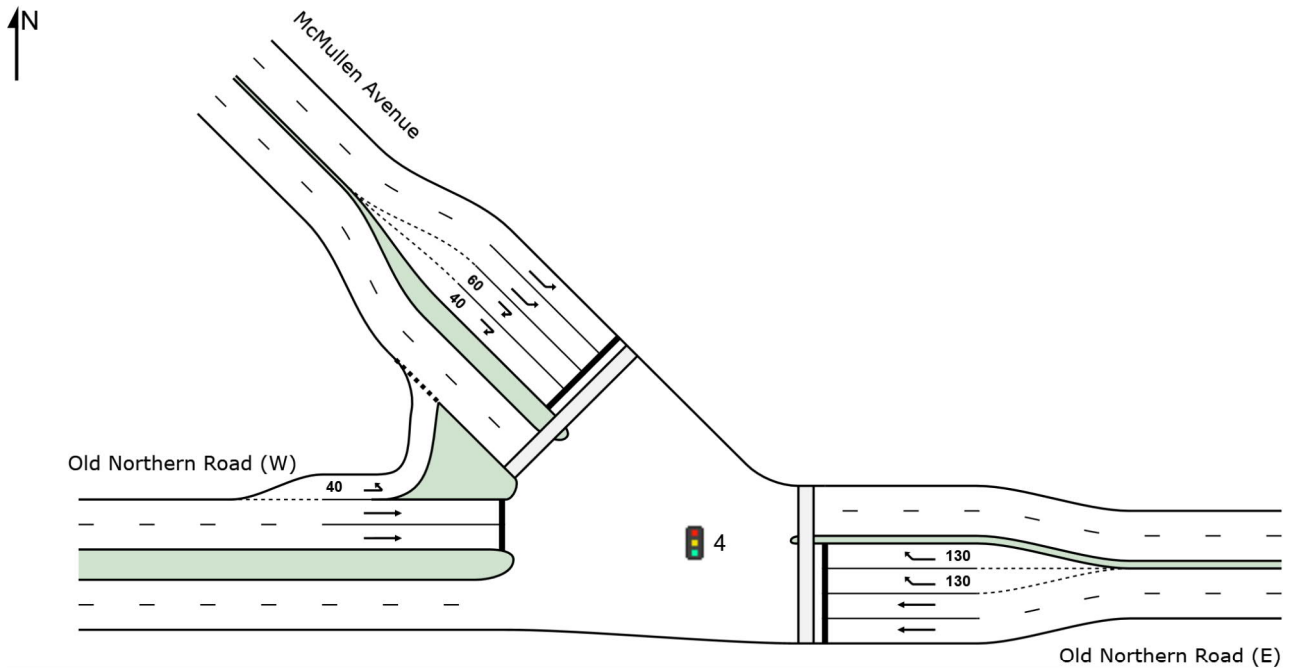
McMullen Avenue and Old Northern Road

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Isolated



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SITE LAYOUT

Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - AM]

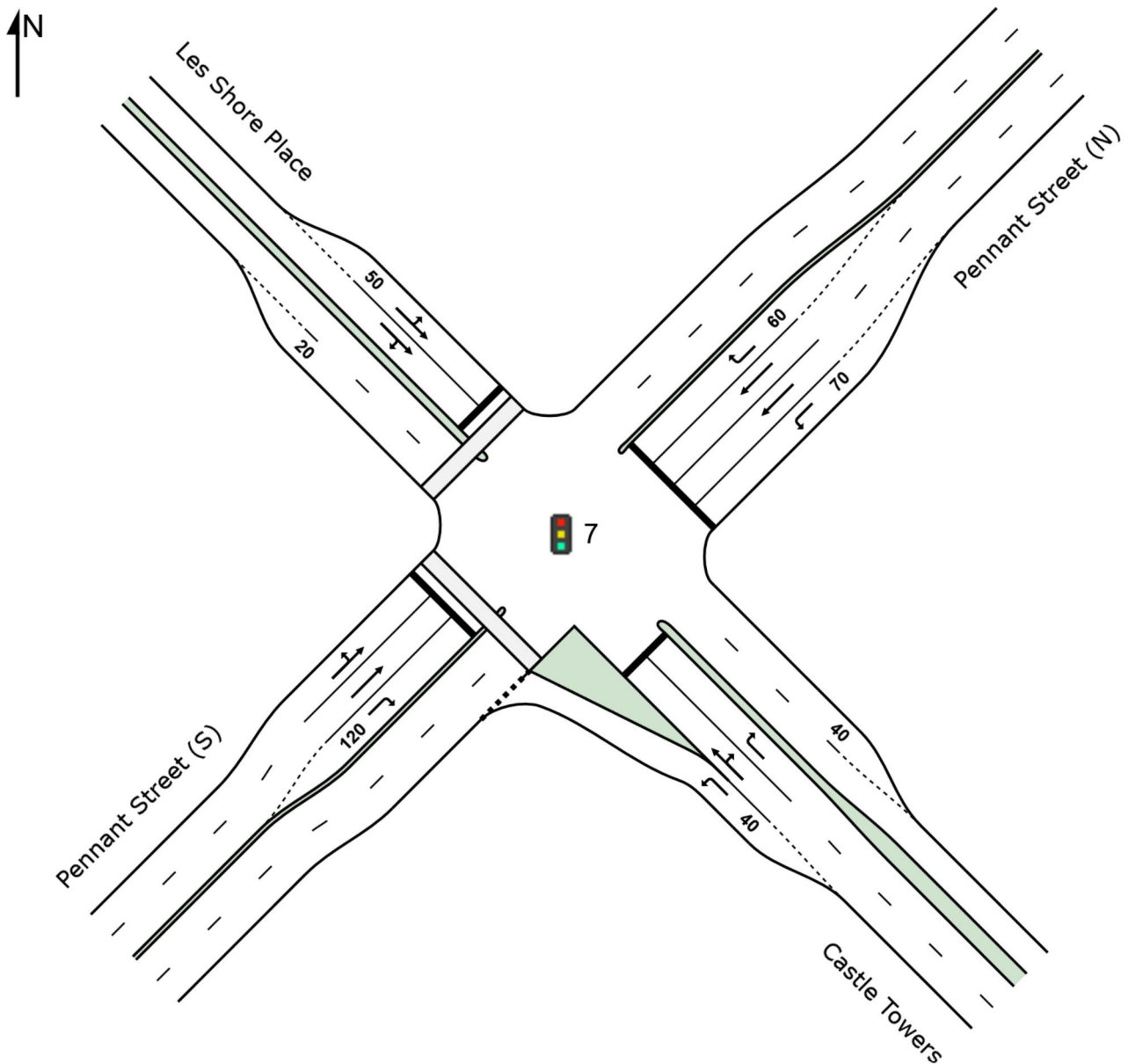
Les Shore Place, Castle Towers and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Isolated



SITE LAYOUT

Site: 6 [6-Castle St/Pennant St - Fu - AM]

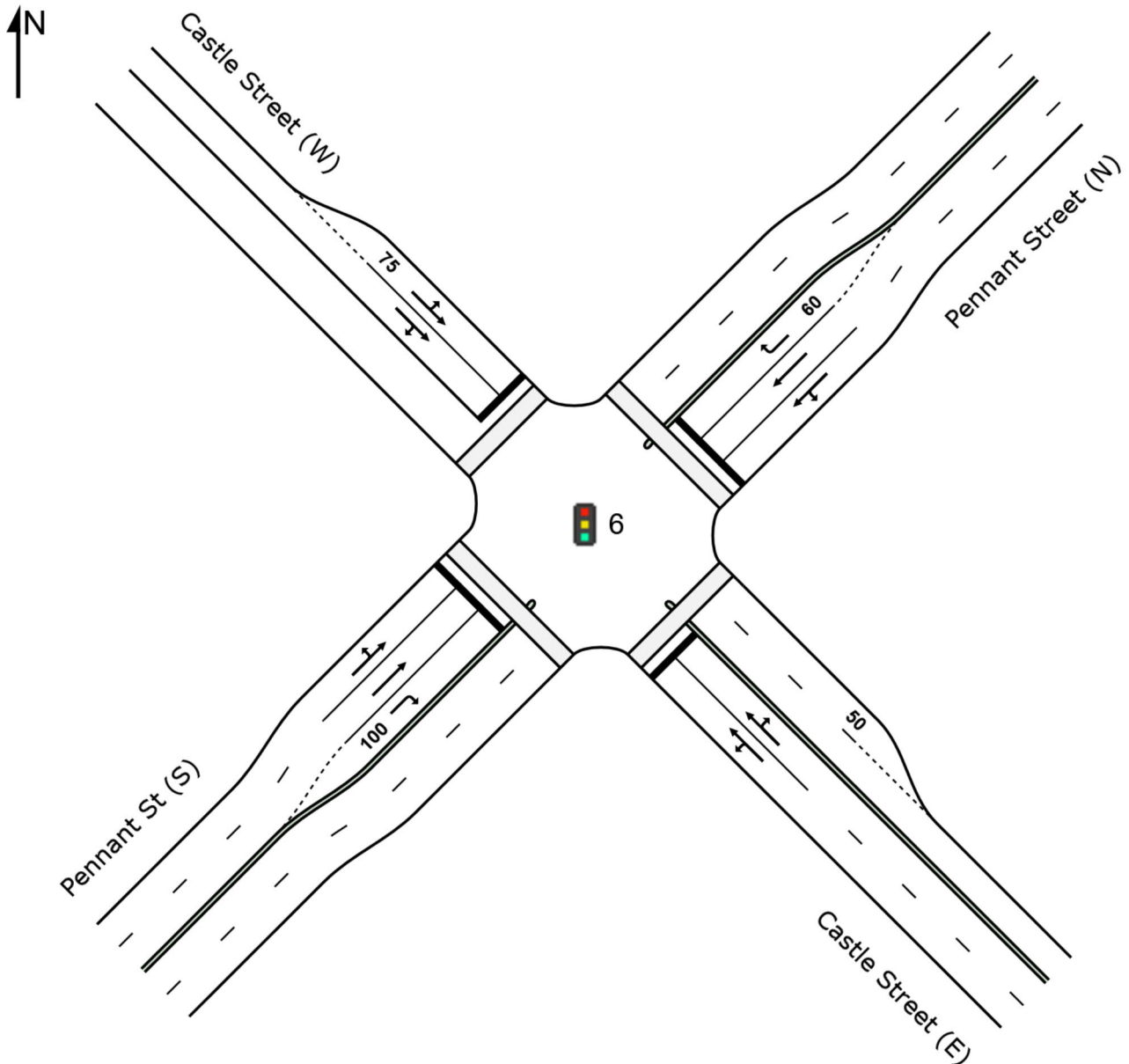
Castle Street and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Isolated



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SITE LAYOUT

Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - AM Rev]

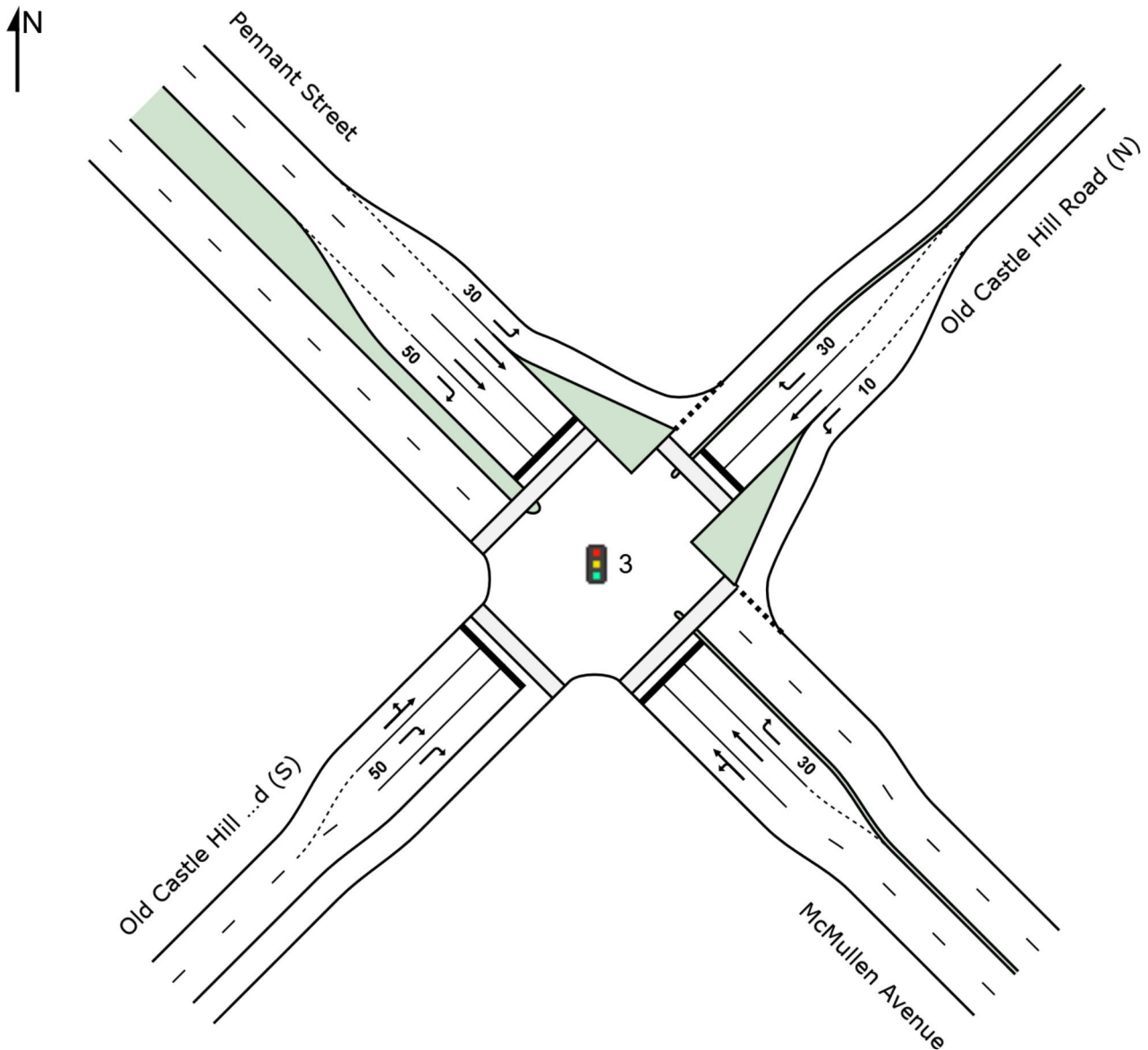
Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

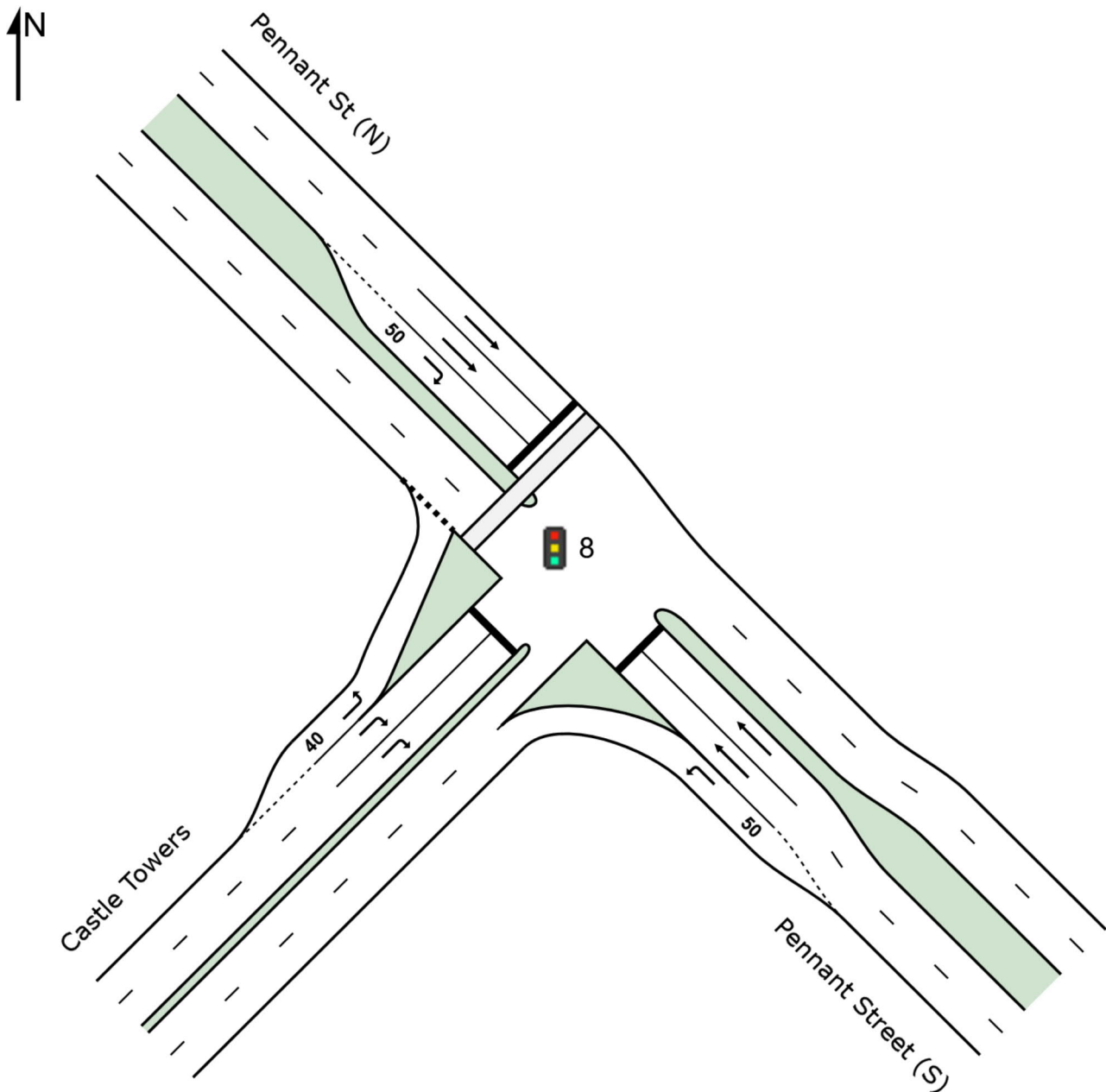
Signals - Fixed Time Isolated



SITE LAYOUT

Site: 8 [8-Castle Towers/Pennant Street - Fu - AM]

Castle Towers and Pennant Street
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Signals - Fixed Time Isolated



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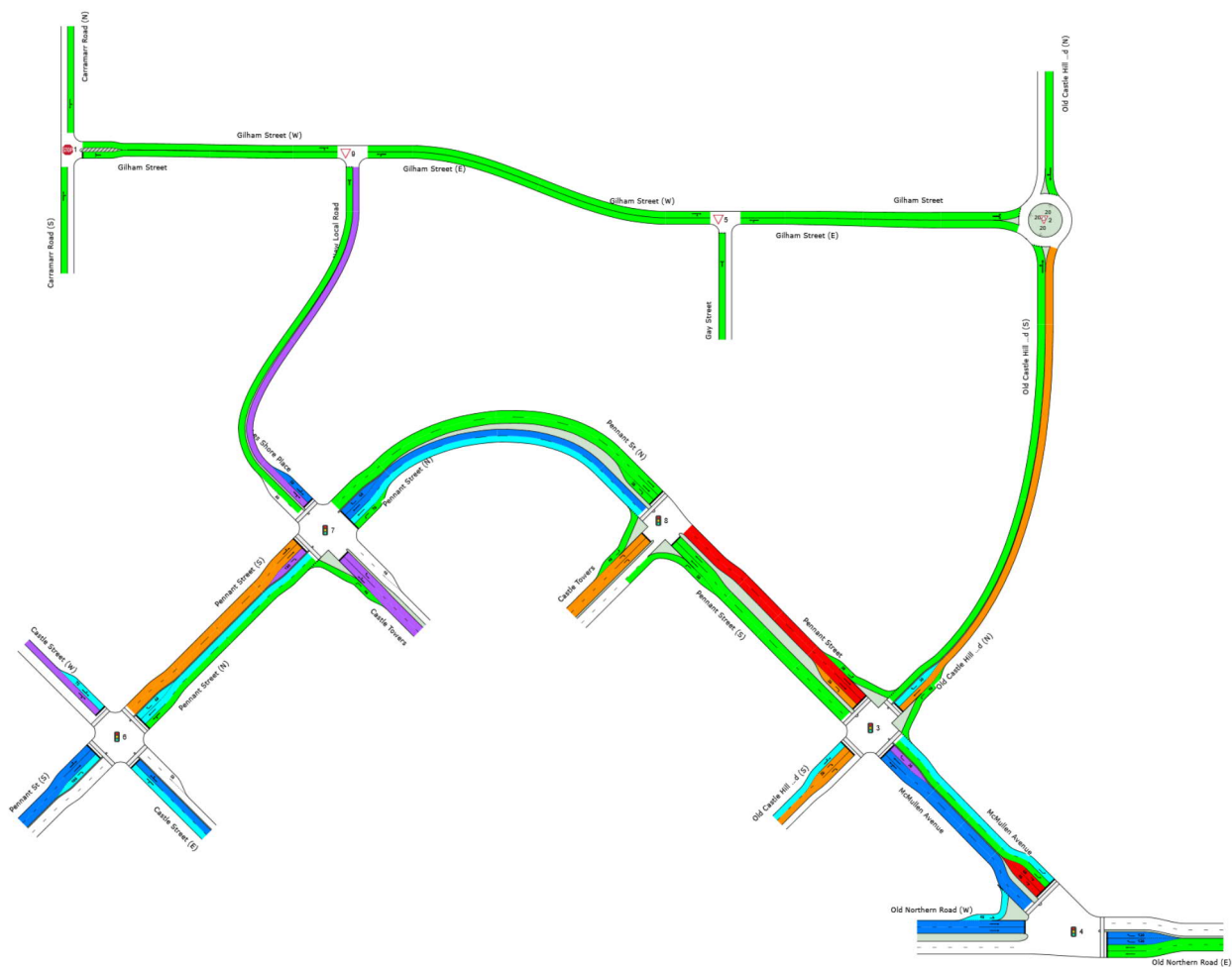
Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Future Network - Scenario 4 [410745].sip8

Lane Level of Service for Network Sites

Vivien Place Network

AM Peak Hour Volumes

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



LOS A LOS B LOS C LOS D LOS E LOS F

Delay model settings are specified for individual Sites forming the Network.

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Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Fu - AM]

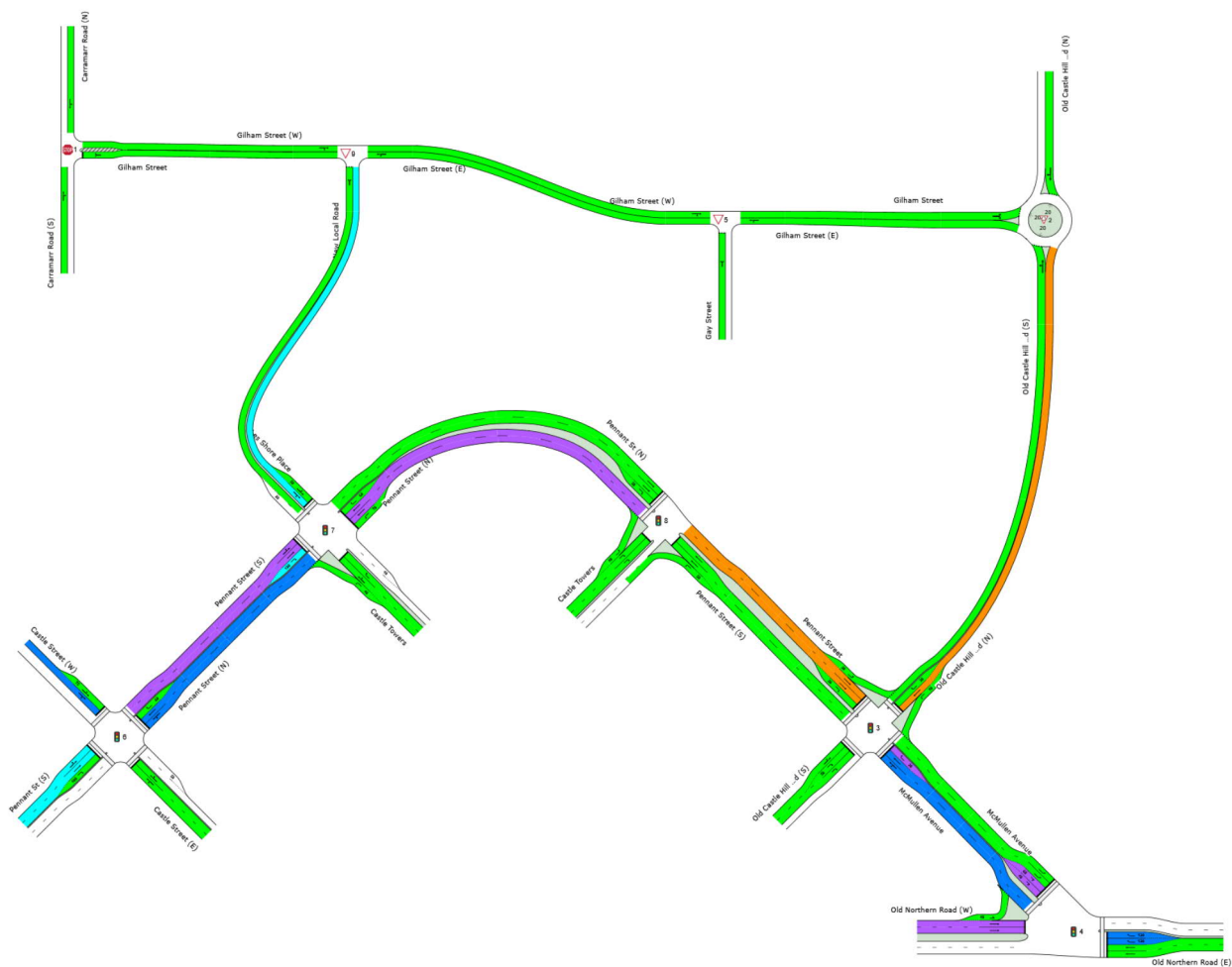
Vivien Place Network

Future Scenario 2

AM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Degree of Saturation



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Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Fu - PM]

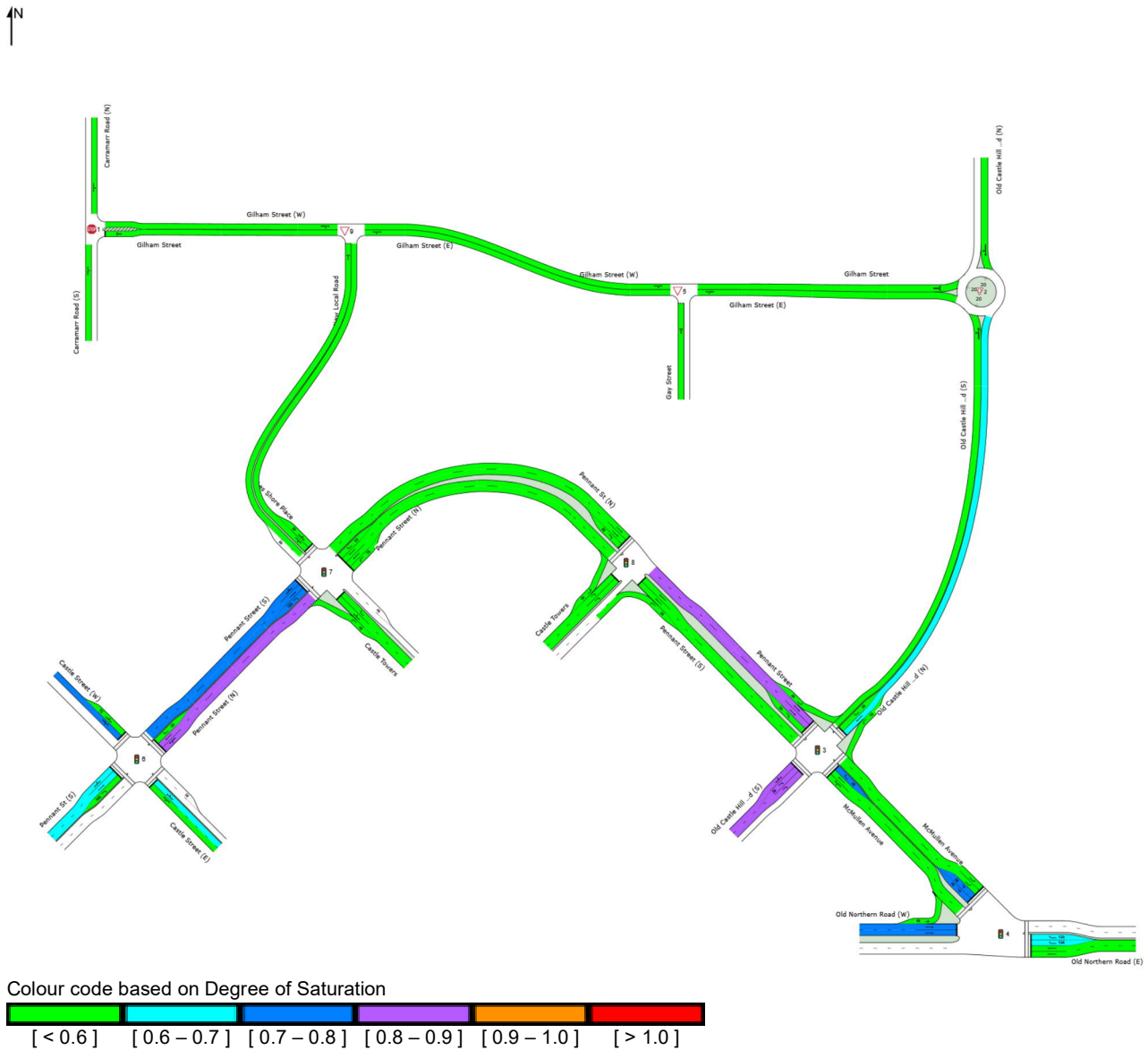
Vivien Place Network

Future Scenario 2

PM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



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MOVEMENT SUMMARY



Site: 1 [1-Gilham St/Carramarr Rd - Fu - AM]



Network: 1 [Vivien Place - Fu - AM]

Gilham Street and Carramarr Road

Future Scenario 2

AM Peak Hour Volumes

Site Category: (None)

Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	59	1.8	59	1.8	0.090	0.4	LOS A	0.4	3.0	0.26	0.33	0.26	47.0
3	R2	91	1.2	91	1.2	0.090	5.1	LOS A	0.4	3.0	0.26	0.33	0.26	44.6
Approach		149	1.4	149	1.4	0.090	3.3	NA	0.4	3.0	0.26	0.33	0.26	45.9
East: Gilham Street														
4	L2	127	0.0	127	0.0	0.131	8.0	LOS A	0.5	3.8	0.26	0.89	0.26	44.5
6	R2	26	4.0	26	4.0	0.131	8.7	LOS A	0.5	3.8	0.26	0.89	0.26	43.7
Approach		154	0.7	154	0.7	0.131	8.1	LOS A	0.5	3.8	0.26	0.89	0.26	44.4
North: Carramarr Road (N)														
7	L2	29	0.0	29	0.0	0.084	4.6	LOS A	0.0	0.0	0.00	0.10	0.00	48.5
8	T1	131	1.6	131	1.6	0.084	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.3
Approach		160	1.3	160	1.3	0.084	0.8	NA	0.0	0.0	0.00	0.10	0.00	49.2
All Vehicles		463	1.1	463	1.1	0.131	4.0	NA	0.5	3.8	0.17	0.44	0.17	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gay Street and Gilham Street
Future Scenario 2
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	102	0.0	102	0.0	0.179	5.0	LOS A	0.7	5.0	0.26	0.56	0.26	35.2
3	R2	107	2.9	107	2.9	0.179	5.9	LOS A	0.7	5.0	0.26	0.56	0.26	35.2
Approach		209	1.5	209	1.5	0.179	5.5	LOS A	0.7	5.0	0.26	0.56	0.26	35.2
East: Gilham Street (E)														
4	L2	40	18.4	40	18.4	0.085	4.7	LOS A	0.0	0.0	0.00	0.14	0.00	45.1
5	T1	117	0.9	117	0.9	0.085	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	44.4
Approach		157	5.4	157	5.4	0.085	1.2	NA	0.0	0.0	0.00	0.14	0.00	44.8
West: Gilham Street (W)														
11	T1	128	1.6	128	1.6	0.086	0.1	LOS A	0.2	1.4	0.11	0.10	0.11	39.9
12	R2	29	0.0	29	0.0	0.086	4.8	LOS A	0.2	1.4	0.11	0.10	0.11	43.2
Approach		158	1.3	158	1.3	0.086	1.0	NA	0.2	1.4	0.11	0.10	0.11	41.3
All Vehicles		524	2.6	524	2.6	0.179	2.8	NA	0.7	5.0	0.14	0.30	0.14	38.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Future Network - Scenario 2 [410745].sip8

MOVEMENT SUMMARY

 Site: 9 [9-Gilham St/New Local Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and New Local Road
Future Scenario 2
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: New Local Road														
1	L2	37	0.0	37	0.0	0.074	5.0	LOS A	0.2	1.5	0.20	0.56	0.20	40.3
3	R2	47	0.0	47	0.0	0.074	5.8	LOS A	0.2	1.5	0.20	0.56	0.20	40.3
Approach		84	0.0	84	0.0	0.074	5.4	LOS A	0.2	1.5	0.20	0.56	0.20	40.3
East: Gilham Street (E)														
4	L2	86	0.0	86	0.0	0.119	4.3	LOS A	0.0	0.0	0.00	0.20	0.00	38.1
5	T1	142	0.0	142	0.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	38.1
Approach		228	0.0	228	0.0	0.119	1.6	NA	0.0	0.0	0.00	0.20	0.00	38.1
West: Gilham Street (W)														
11	T1	112	0.0	112	0.0	0.070	0.2	LOS A	0.1	0.9	0.11	0.08	0.11	48.6
12	R2	18	0.0	18	0.0	0.070	5.3	LOS A	0.1	0.9	0.11	0.08	0.11	48.6
Approach		129	0.0	129	0.0	0.070	0.9	NA	0.1	0.9	0.11	0.08	0.11	48.6
All Vehicles		442	0.0	442	0.0	0.119	2.1	NA	0.2	1.5	0.07	0.23	0.07	44.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rdd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and Old Castle Road
Future Scenario 2
AM Peak Hour Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
South: Old Castle Hill Road (S)														
1	L2	97	7.6	97	7.6	0.261	3.2	LOS A	1.5	10.9	0.19	0.35	0.19	43.6
2	T1	269	5.1	269	5.1	0.261	3.1	LOS A	1.5	10.9	0.19	0.35	0.19	47.4
Approach		366	5.7	366	5.7	0.261	3.1	LOS A	1.5	10.9	0.19	0.35	0.19	46.5
North: Old Castle Hill Road (N)														
8	T1	569	3.1	569	3.1	0.495	3.9	LOS A	4.1	29.0	0.50	0.47	0.50	34.4
9	R2	59	0.0	59	0.0	0.495	8.4	LOS A	4.1	29.0	0.50	0.47	0.50	34.4
Approach		628	2.8	628	2.8	0.495	4.4	LOS A	4.1	29.0	0.50	0.47	0.50	34.4
West: Gilham Street														
10	L2	82	0.0	82	0.0	0.212	4.4	LOS A	1.4	10.1	0.48	0.59	0.48	36.6
12	R2	158	3.3	158	3.3	0.212	8.9	LOS A	1.4	10.1	0.48	0.59	0.48	28.3
Approach		240	2.2	240	2.2	0.212	7.4	LOS A	1.4	10.1	0.48	0.59	0.48	32.1
All Vehicles		1235	3.6	1235	3.6	0.495	4.6	LOS A	4.1	29.0	0.40	0.46	0.40	39.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

McMullen Avenue and Old Northern Road

Future Scenario 2

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
East: Old Northern Road (E)														
5	T1	1302	5.5	1302	5.5	0.446	4.9	LOS A	12.8	93.9	0.37	0.34	0.37	50.6
6a	R1	968	3.8	968	3.8	0.753	35.8	LOS C	23.3	168.4	0.92	0.95	1.21	17.4
Approach		2271	4.8	2271	4.8	0.753	18.1	LOS B	23.3	168.4	0.61	0.60	0.73	32.4
NorthWest: McMullen Avenue														
27a	L1	721	5.1	721	5.1	0.308	13.4	LOS A	9.1	66.8	0.40	0.66	0.40	36.5
29b	R3	325	8.4	325	8.4	0.854	74.0	LOS F	10.4	77.7	1.00	0.89	1.18	13.8
Approach		1046	6.1	1046	6.1	0.854	32.2	LOS C	10.4	77.7	0.58	0.73	0.64	24.4
West: Old Northern Road (W)														
10b	L3	254	6.6	254	6.6	0.370	16.0	LOS B	6.8	50.0	0.58	0.76	0.60	28.2
11	T1	919	6.8	919	6.8	0.821	40.1	LOS C	31.5	233.6	0.92	0.88	1.01	23.7
Approach		1173	6.7	1173	6.7	0.821	34.9	LOS C	31.5	233.6	0.85	0.85	0.92	24.2
All Vehicles		4489	5.6	4489	5.6	0.854	25.8	LOS B	31.5	233.6	0.66	0.70	0.76	27.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	32	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	56	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		88	54.3	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - AM]**  **Network: 1 [Vivien Place - Fu - AM]**

Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 2

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: McMullen Avenue														
21	L2	122	0.9	122	0.9	0.755	39.2	LOS C	27.9	200.0	0.93	0.84	0.93	17.8
22	T1	901	3.4	901	3.4	0.755	33.4	LOS C	27.9	200.0	0.88	0.79	0.88	14.2
23	R2	186	11.3	186	11.3	0.843	46.1	LOS D	9.0	69.2	0.97	0.91	1.26	11.3
Approach		1209	4.4	1209	4.4	0.843	36.0	LOS C	27.9	200.0	0.90	0.81	0.95	14.1
NorthEast: Old Castle Hill Road (N)														
24	L2	440	6.0	440	6.0	0.492	9.7	LOS A	8.0	59.0	0.44	0.65	0.44	36.3
25	T1	261	0.0	261	0.0	0.917	60.5	LOS E	16.2	113.4	0.77	0.95	1.22	17.0
26	R2	147	4.3	147	4.3	0.265	22.7	LOS B	4.8	34.7	0.68	0.71	0.68	26.3
Approach		848	3.8	848	3.8	0.917	27.6	LOS B	16.2	113.4	0.58	0.76	0.72	24.8
NorthWest: Pennant Street														
27	L2	71	11.9	71	11.9	0.066	10.2	LOS A	1.6	12.1	0.54	0.68	0.54	25.1
28	T1	565	6.0	565	6.0	0.933	73.8	LOS F	20.2	148.6	1.00	1.01	1.26	5.2
29	R2	8	0.0	8	0.0	0.056	62.5	LOS E	0.5	3.5	1.00	0.69	1.00	9.4
Approach		644	6.5	644	6.5	0.933	66.7	LOS E	20.2	148.6	0.95	0.97	1.18	5.8
SouthWest: Old Castle Hill Road (S)														
30	L2	22	9.5	22	9.5	0.248	32.1	LOS C	7.0	50.1	0.73	0.63	0.73	10.4
31	T1	154	1.4	154	1.4	0.248	27.5	LOS B	7.0	50.1	0.73	0.63	0.73	10.4
32	R2	58	7.3	58	7.3	0.179	60.7	LOS E	1.6	12.0	0.96	0.72	0.96	5.1
Approach		234	3.6	234	3.6	0.248	36.2	LOS C	7.0	50.1	0.79	0.65	0.79	8.4
All Vehicles		2936	4.6	2936	4.6	0.933	40.3	LOS C	27.9	200.0	0.81	0.82	0.92	14.4

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P5	SouthEast Full Crossing	92	54.4	LOS E	0.3	0.3	0.95	0.95	
P6	NorthEast Full Crossing	24	54.2	LOS E	0.1	0.1	0.95	0.95	
P7	NorthWest Full Crossing	62	54.3	LOS E	0.2	0.2	0.95	0.95	
P8	SouthWest Full Crossing	10	54.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		188	54.3	LOS E			0.95	0.95	

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - AM]



Network: 1 [Vivien Place - Fu - AM]

Les Shore Place, Castle Towers and Pennant Street

Future Scenario 2

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	76	13.9	76	13.9	0.101	8.6	LOS A	1.6	12.6	0.48	0.39	0.48	10.1
22	T1	46	0.0	46	0.0	0.150	47.3	LOS D	2.4	16.5	0.90	0.68	0.90	4.1
23	R2	14	7.7	14	7.7	0.049	46.3	LOS D	0.7	5.1	0.88	0.62	0.88	4.1
Approach		136	8.5	136	8.5	0.150	25.6	LOS B	2.4	16.5	0.66	0.51	0.66	6.1
NorthEast: Pennant Street (N)														
24	L2	67	7.8	67	7.8	0.082	12.8	LOS A	0.7	5.1	0.19	0.70	0.19	29.4
25	T1	748	4.4	748	4.4	0.817	27.3	LOS B	18.2	131.9	0.82	0.73	0.85	23.8
26	R2	122	0.9	122	0.9	0.482	40.5	LOS C	5.0	35.5	1.00	0.79	1.00	18.3
Approach		938	4.2	938	4.2	0.817	28.0	LOS B	18.2	131.9	0.80	0.74	0.82	23.3
NorthWest: Les Shore Place														
27	L2	95	5.6	95	5.6	0.192	34.3	LOS C	4.9	35.3	0.74	0.75	0.74	19.8
28	T1	33	0.0	33	0.0	0.616	39.5	LOS C	15.1	105.9	0.79	0.77	0.79	18.3
29	R2	293	0.0	293	0.0	0.616	44.2	LOS D	15.1	105.9	0.91	0.82	0.91	17.0
Approach		420	1.3	420	1.3	0.616	41.6	LOS C	15.1	105.9	0.86	0.80	0.86	17.7
SouthWest: Pennant Street (S)														
30	L2	271	1.9	271	1.9	0.893	60.4	LOS E	23.4	169.1	1.00	0.98	1.30	12.1
31	T1	580	6.7	580	6.7	0.893	64.3	LOS E	27.5	203.6	1.00	0.97	1.17	11.2
32	R2	188	1.1	188	1.1	0.647	43.5	LOS D	8.2	57.9	1.00	0.82	1.01	15.3
Approach		1039	4.5	1039	4.5	0.893	59.5	LOS E	27.5	203.6	1.00	0.95	1.18	12.1
All Vehicles		2533	4.0	2533	4.0	0.893	43.0	LOS D	27.5	203.6	0.88	0.82	0.97	16.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	646	55.6	LOS E	2.2	2.2	0.98	0.98
P8	SouthWest Full Crossing	544	55.4	LOS E	1.8	1.8	0.97	0.97
All Pedestrians		1190	55.5	LOS E			0.97	0.97

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: 6 [6-Castle St/Pennant St - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Castle Street and Pennant Street

Future Scenario 2

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	99	4.3	99	4.3	0.134	17.9	LOS B	2.5	18.2	0.66	0.69	0.66	27.9
22	T1	102	3.1	102	3.1	0.294	41.0	LOS C	5.9	42.6	0.87	0.71	0.87	25.0
23	R2	19	11.1	19	11.1	0.294	45.3	LOS D	5.9	42.6	0.87	0.71	0.87	6.1
Approach		220	4.3	220	4.3	0.294	31.0	LOS C	5.9	42.6	0.77	0.70	0.77	24.6
NorthEast: Pennant Street (N)														
24	L2	44	2.4	44	2.4	0.740	12.9	LOS A	11.0	80.0	0.53	0.49	0.53	38.2
25	T1	915	4.8	915	4.8	0.740	13.4	LOS A	15.5	112.7	0.66	0.59	0.66	40.6
26	R2	103	1.0	103	1.0	0.220	20.4	LOS B	2.5	17.4	0.53	0.69	0.53	37.5
Approach		1062	4.4	1062	4.4	0.740	14.1	LOS A	15.5	112.7	0.64	0.59	0.64	40.0
NorthWest: Castle Street (W)														
27	L2	225	3.7	225	3.7	0.256	22.3	LOS B	7.5	54.3	0.60	0.72	0.60	31.3
28	T1	168	0.0	168	0.0	0.754	48.1	LOS D	16.3	114.4	0.98	0.89	1.05	22.7
29	R2	121	0.9	121	0.9	0.754	53.7	LOS D	16.3	114.4	0.99	0.90	1.06	26.0
Approach		515	1.8	515	1.8	0.754	38.1	LOS C	16.3	114.4	0.82	0.82	0.86	26.5
SouthWest: Pennant St (S)														
30	L2	105	1.0	105	1.0	0.635	39.2	LOS C	20.6	149.1	0.88	0.79	0.88	31.0
31	T1	774	4.6	774	4.6	0.635	33.2	LOS C	21.5	156.7	0.88	0.78	0.88	18.2
32	R2	111	3.8	111	3.8	0.284	25.6	LOS B	3.6	25.8	0.77	0.74	0.77	23.6
Approach		989	4.1	989	4.1	0.635	33.0	LOS C	21.5	156.7	0.87	0.78	0.87	21.0
All Vehicles		2786	3.8	2786	3.8	0.754	26.6	LOS B	21.5	156.7	0.76	0.71	0.77	28.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	38	32.9	LOS D	0.1	0.1	0.90	0.90
P6	NorthEast Full Crossing	724	55.8	LOS E	2.4	2.4	0.98	0.98
P7	NorthWest Full Crossing	182	54.6	LOS E	0.6	0.6	0.96	0.96
P8	SouthWest Full Crossing	148	54.5	LOS E	0.5	0.5	0.96	0.96
All Pedestrians		1092	54.6	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Castle Towers and Pennant Street

Future Scenario 2

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	178	0.0	178	0.0	0.096	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	903	4.3	903	4.3	0.280	0.4	LOS A	1.0	7.5	0.04	0.04	0.04	56.8
Approach		1081	3.6	1081	3.6	0.280	1.9	LOS A	1.0	7.5	0.03	0.15	0.03	45.9
NorthWest: Pennant St (N)														
28	T1	629	7.0	629	7.0	0.305	1.1	LOS A	3.7	27.5	0.12	0.11	0.12	56.5
29	R2	55	0.0	55	0.0	0.119	7.6	LOS A	0.1	0.5	0.02	0.70	0.02	32.3
Approach		684	6.5	684	6.5	0.305	1.6	LOS A	3.7	27.5	0.12	0.16	0.12	52.8
SouthWest: Castle Towers														
30	L2	12	0.0	12	0.0	0.018	0.5	LOS A	0.0	0.3	0.12	0.09	0.12	14.7
32	R2	22	0.0	22	0.0	0.183	64.3	LOS E	0.7	5.2	0.99	0.68	0.99	3.4
Approach		34	0.0	34	0.0	0.183	42.3	LOS C	0.7	5.2	0.69	0.48	0.69	4.7
All Vehicles		1799	4.6	1799	4.6	0.305	2.6	LOS A	3.7	27.5	0.08	0.16	0.08	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	18	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		18	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 Site: 1 [1-Gilham St/Carramarr Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and Carramarr Road
Future Scenario 2
PM Peak Hour Volumes
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	139	2.3	139	2.3	0.124	0.2	LOS A	0.5	3.4	0.16	0.20	0.16	48.0
3	R2	83	0.0	83	0.0	0.124	4.9	LOS A	0.5	3.4	0.16	0.20	0.16	46.4
Approach		222	1.4	222	1.4	0.124	2.0	NA	0.5	3.4	0.16	0.20	0.16	47.6
East: Gilham Street														
4	L2	61	0.0	61	0.0	0.077	7.8	LOS A	0.3	2.0	0.21	0.90	0.21	44.4
6	R2	25	0.0	25	0.0	0.077	8.6	LOS A	0.3	2.0	0.21	0.90	0.21	43.8
Approach		86	0.0	86	0.0	0.077	8.0	LOS A	0.3	2.0	0.21	0.90	0.21	44.2
North: Carramarr Road (N)														
7	L2	7	0.0	7	0.0	0.054	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.4
8	T1	98	0.0	98	0.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		105	0.0	105	0.0	0.054	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		414	0.8	414	0.8	0.124	2.8	NA	0.5	3.4	0.13	0.31	0.13	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gay Street and Gilham Street
Future Scenario 2
PM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	27	0.0	27	0.0	0.081	4.7	LOS A	0.3	2.1	0.19	0.55	0.19	35.3
3	R2	58	14.5	58	14.5	0.081	6.0	LOS A	0.3	2.1	0.19	0.55	0.19	35.3
Approach		85	9.9	85	9.9	0.081	5.6	LOS A	0.3	2.1	0.19	0.55	0.19	35.3
East: Gilham Street (E)														
4	L2	91	9.3	91	9.3	0.081	4.6	LOS A	0.0	0.0	0.00	0.33	0.00	42.4
5	T1	57	0.0	57	0.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.33	0.00	37.6
Approach		147	5.7	147	5.7	0.081	2.9	NA	0.0	0.0	0.00	0.33	0.00	41.3
West: Gilham Street (W)														
11	T1	95	0.0	95	0.0	0.104	0.3	LOS A	0.5	3.2	0.23	0.26	0.23	31.7
12	R2	85	0.0	85	0.0	0.104	4.8	LOS A	0.5	3.2	0.23	0.26	0.23	39.9
Approach		180	0.0	180	0.0	0.104	2.5	NA	0.5	3.2	0.23	0.26	0.23	37.5
All Vehicles		413	4.1	413	4.1	0.104	3.2	NA	0.5	3.2	0.14	0.34	0.14	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 9 [9-Gilham St/New Local Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and New Local Road
Future Scenario 2
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows	Arrival Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed			
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec	Vehicles veh	Distance m					km/h
South: New Local Road														
1	L2	17	0.0	17	0.0	0.074	4.7	LOS A	0.2	1.5	0.14	0.55	0.14	40.7
3	R2	71	0.0	71	0.0	0.074	5.2	LOS A	0.2	1.5	0.14	0.55	0.14	40.7
Approach		87	0.0	87	0.0	0.074	5.1	LOS A	0.2	1.5	0.14	0.55	0.14	40.7
East: Gilham Street (E)														
4	L2	40	0.0	40	0.0	0.050	4.3	LOS A	0.0	0.0	0.00	0.23	0.00	37.1
5	T1	55	0.0	55	0.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.23	0.00	37.1
Approach		95	0.0	95	0.0	0.050	1.8	NA	0.0	0.0	0.00	0.23	0.00	37.1
West: Gilham Street (W)														
11	T1	69	0.0	69	0.0	0.055	0.1	LOS A	0.2	1.2	0.13	0.17	0.13	47.5
12	R2	32	0.0	32	0.0	0.055	4.8	LOS A	0.2	1.2	0.13	0.17	0.13	47.5
Approach		101	0.0	101	0.0	0.055	1.6	NA	0.2	1.2	0.13	0.17	0.13	47.5
All Vehicles		283	0.0	283	0.0	0.074	2.8	NA	0.2	1.5	0.09	0.31	0.09	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rdd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and Old Castle Road
Future Scenario 2
PM Peak Hour Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Old Castle Hill Road (S)														
1	L2	101	8.3	101	8.3	0.374	3.2	LOS A	2.4	17.5	0.17	0.34	0.17	43.7
2	T1	455	2.8	455	2.8	0.374	3.1	LOS A	2.4	17.5	0.17	0.34	0.17	47.5
Approach		556	3.8	556	3.8	0.374	3.1	LOS A	2.4	17.5	0.17	0.34	0.17	46.9
North: Old Castle Hill Road (N)														
8	T1	374	3.4	374	3.4	0.325	3.5	LOS A	2.3	16.4	0.38	0.43	0.38	35.6
9	R2	46	0.0	46	0.0	0.325	8.0	LOS A	2.3	16.4	0.38	0.43	0.38	35.6
Approach		420	3.0	420	3.0	0.325	4.0	LOS A	2.3	16.4	0.38	0.43	0.38	35.6
West: Gilham Street														
10	L2	39	0.0	39	0.0	0.162	5.7	LOS A	1.2	8.5	0.60	0.64	0.60	35.0
12	R2	121	7.0	121	7.0	0.162	10.3	LOS A	1.2	8.5	0.60	0.64	0.60	26.5
Approach		160	5.3	160	5.3	0.162	9.2	LOS A	1.2	8.5	0.60	0.64	0.60	29.4
All Vehicles		1136	3.7	1136	3.7	0.374	4.3	LOS A	2.4	17.5	0.31	0.42	0.31	42.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

McMullen Avenue and Old Northern Road

Future Scenario 2

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
East: Old Northern Road (E)														
5	T1	1115	6.2	1115	6.2	0.388	4.9	LOS A	10.6	78.1	0.36	0.32	0.36	50.6
6a	R1	960	4.4	960	4.4	0.661	33.0	LOS C	18.6	134.8	0.88	0.91	1.14	18.5
Approach		2075	5.4	2075	5.4	0.661	17.9	LOS B	18.6	134.8	0.60	0.60	0.72	32.3
NorthWest: McMullen Avenue														
27a	L1	922	1.7	922	1.7	0.418	20.0	LOS B	19.7	140.1	0.71	0.78	0.71	31.5
29b	R3	309	4.8	309	4.8	0.736	70.6	LOS F	9.5	69.3	1.00	0.84	1.06	14.4
Approach		1232	2.5	1232	2.5	0.736	32.7	LOS C	19.7	140.1	0.78	0.79	0.80	24.4
West: Old Northern Road (W)														
10b	L3	213	6.4	213	6.4	0.223	11.9	LOS A	3.9	28.6	0.43	0.70	0.43	32.7
11	T1	867	6.6	867	6.6	0.724	34.1	LOS C	25.0	184.8	0.89	0.79	0.90	26.1
Approach		1080	6.5	1080	6.5	0.724	29.7	LOS C	25.0	184.8	0.80	0.77	0.81	26.7
All Vehicles		4386	4.8	4386	4.8	0.736	25.0	LOS B	25.0	184.8	0.70	0.70	0.76	28.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	16	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		66	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - PM]**  **Network: 1 [Vivien Place - Fu - PM]**

Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 2

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Queue	Back of Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	m				km/h
SouthEast: McMullen Avenue														
21	L2	118	0.0	118	0.0	0.591	19.4	LOS B	15.7	113.6	0.51	0.52	0.51	28.7
22	T1	858	4.9	858	4.9	0.591	11.2	LOS A	15.7	113.6	0.43	0.41	0.43	28.3
23	R2	243	5.2	243	5.2	0.768	32.2	LOS C	9.4	68.6	0.94	0.85	1.02	15.0
Approach		1219	4.5	1219	4.5	0.768	16.2	LOS B	15.7	113.6	0.54	0.51	0.56	24.2
NorthEast: Old Castle Hill Road (N)														
24	L2	246	5.6	246	5.6	0.226	11.9	LOS A	5.2	38.2	0.45	0.64	0.45	34.1
25	T1	141	0.0	141	0.0	0.647	40.1	LOS C	6.8	47.6	0.85	0.71	0.90	21.9
26	R2	126	5.0	126	5.0	0.449	35.2	LOS C	5.1	37.1	0.94	0.78	0.94	20.9
Approach		514	3.9	514	3.9	0.647	25.4	LOS B	6.8	47.6	0.68	0.69	0.69	25.8
NorthWest: Pennant Street														
27	L2	141	4.5	141	4.5	0.141	10.4	LOS A	2.2	16.0	0.37	0.65	0.37	25.0
28	T1	621	2.2	621	2.2	0.855	57.5	LOS E	21.7	154.4	1.00	0.96	1.17	6.5
29	R2	9	0.0	9	0.0	0.040	46.0	LOS D	0.5	3.3	0.87	0.69	0.87	12.0
Approach		772	2.6	772	2.6	0.855	48.8	LOS D	21.7	154.4	0.88	0.90	1.02	7.7
SouthWest: Old Castle Hill Road (S)														
30	L2	83	8.9	83	8.9	0.877	61.3	LOS E	21.4	152.6	0.98	1.02	1.23	5.6
31	T1	257	0.0	257	0.0	0.877	56.7	LOS E	21.4	152.6	0.98	1.02	1.23	5.6
32	R2	281	0.4	281	0.4	0.828	69.9	LOS E	9.0	62.9	1.00	0.93	1.28	4.5
Approach		621	1.4	621	1.4	0.877	63.3	LOS E	21.4	152.6	0.99	0.98	1.25	5.1
All Vehicles		3125	3.3	3125	3.3	0.877	35.1	LOS C	21.7	154.4	0.74	0.73	0.83	14.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue pedestrian	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	38	54.2	LOS E	0.1	0.1	0.95	0.95
P6	NorthEast Full Crossing	38	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	76	54.3	LOS E	0.2	0.2	0.95	0.95
P8	SouthWest Full Crossing	32	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		184	54.3	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - PM]



Network: 1 [Vivien Place - Fu - PM]

Les Shore Place, Castle Towers and Pennant Street

Future Scenario 2

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	347	1.5	347	1.5	0.403	7.5	LOS A	7.7	54.8	0.53	0.46	0.53	10.5
22	T1	34	0.0	34	0.0	0.182	47.6	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
23	R2	75	0.0	75	0.0	0.182	47.7	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
Approach		456	1.2	456	1.2	0.403	17.0	LOS B	7.7	54.8	0.62	0.52	0.62	7.6
NorthEast: Pennant Street (N)														
24	L2	76	5.6	76	5.6	0.074	11.9	LOS A	0.7	5.2	0.17	0.70	0.17	29.9
25	T1	762	6.5	762	6.5	0.573	29.5	LOS C	15.6	115.1	0.74	0.65	0.74	22.7
26	R2	62	1.7	62	1.7	0.157	26.2	LOS B	2.0	14.3	0.85	0.74	0.85	24.2
Approach		900	6.1	900	6.1	0.573	27.8	LOS B	15.6	115.1	0.70	0.66	0.70	23.4
NorthWest: Les Shore Place														
27	L2	72	1.5	72	1.5	0.168	24.7	LOS B	2.7	18.8	0.79	0.73	0.79	23.8
28	T1	18	0.0	18	0.0	0.536	32.3	LOS C	9.3	66.6	0.82	0.74	0.82	20.4
29	R2	168	2.5	168	2.5	0.536	54.0	LOS D	9.3	66.6	0.96	0.81	0.96	14.9
Approach		258	2.0	258	2.0	0.536	44.4	LOS D	9.3	66.6	0.90	0.78	0.90	17.0
SouthWest: Pennant Street (S)														
30	L2	208	2.5	208	2.5	0.778	59.4	LOS E	19.7	141.4	1.00	0.95	1.31	12.4
31	T1	558	3.8	558	3.8	0.778	57.6	LOS E	23.5	169.6	1.00	0.91	1.11	12.2
32	R2	239	0.4	239	0.4	0.785	46.1	LOS D	10.8	75.7	1.00	0.86	1.07	14.7
Approach		1005	2.7	1005	2.7	0.785	55.2	LOS D	23.5	169.6	1.00	0.90	1.14	12.8
All Vehicles		2619	3.5	2619	3.5	0.785	38.1	LOS C	23.5	169.6	0.82	0.74	0.88	15.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	428	55.1	LOS E	1.4	1.4	0.97	0.97
P8	SouthWest Full Crossing	482	55.3	LOS E	1.6	1.6	0.97	0.97
All Pedestrians		910	55.2	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 6 [6-Castle St/Pennant St - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Castle Street and Pennant Street

Future Scenario 2

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	222	0.9	222	0.9	0.307	18.9	LOS B	5.6	39.7	0.73	0.75	0.73	27.5
22	T1	138	1.5	138	1.5	0.610	51.9	LOS D	9.5	68.9	0.98	0.81	0.98	22.1
23	R2	33	12.9	33	12.9	0.610	56.2	LOS D	9.5	68.9	0.98	0.81	0.98	4.9
Approach		393	2.1	393	2.1	0.610	33.6	LOS C	9.5	68.9	0.84	0.77	0.84	22.8
NorthEast: Pennant Street (N)														
24	L2	63	3.3	63	3.3	0.817	19.8	LOS B	18.6	135.5	0.81	0.74	0.84	30.8
25	T1	1015	5.0	1015	5.0	0.817	17.6	LOS B	18.6	135.5	0.83	0.75	0.86	36.9
26	R2	162	5.8	162	5.8	0.301	19.4	LOS B	3.9	28.6	0.58	0.72	0.58	37.9
Approach		1240	5.0	1240	5.0	0.817	17.9	LOS B	18.6	135.5	0.79	0.75	0.82	36.9
NorthWest: Castle Street (W)														
27	L2	179	2.4	179	2.4	0.268	29.6	LOS C	7.5	53.2	0.70	0.73	0.70	28.0
28	T1	162	0.6	162	0.6	0.789	54.7	LOS D	12.5	87.9	0.97	0.92	1.12	21.3
29	R2	58	0.0	58	0.0	0.789	62.3	LOS E	12.5	87.9	1.00	0.94	1.16	24.2
Approach		399	1.3	399	1.3	0.789	44.6	LOS D	12.5	87.9	0.86	0.84	0.94	24.2
SouthWest: Pennant St (S)														
30	L2	133	0.0	133	0.0	0.636	38.5	LOS C	21.6	153.2	0.88	0.80	0.88	31.2
31	T1	797	2.4	797	2.4	0.636	32.2	LOS C	22.6	161.1	0.87	0.78	0.87	18.6
32	R2	172	1.8	172	1.8	0.362	23.4	LOS B	5.1	36.2	0.77	0.77	0.77	24.8
Approach		1101	2.0	1101	2.0	0.636	31.6	LOS C	22.6	161.1	0.86	0.78	0.86	22.0
All Vehicles		3133	3.1	3133	3.1	0.817	28.1	LOS B	22.6	161.1	0.83	0.77	0.85	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	20	29.5	LOS C	0.0	0.0	0.90	0.90
P6	NorthEast Full Crossing	564	55.5	LOS E	1.9	1.9	0.97	0.97
P7	NorthWest Full Crossing	240	54.7	LOS E	0.8	0.8	0.96	0.96
P8	SouthWest Full Crossing	392	55.0	LOS E	1.3	1.3	0.97	0.97
All Pedestrians		1216	54.7	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Castle Towers and Pennant Street

Future Scenario 2

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	237	0.4	237	0.4	0.128	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	833	6.6	833	6.6	0.294	2.2	LOS A	4.0	29.4	0.14	0.13	0.14	45.9
Approach		1069	5.2	1069	5.2	0.294	3.9	LOS A	4.0	29.4	0.11	0.27	0.11	38.5
NorthWest: Pennant St (N)														
28	T1	675	3.3	675	3.3	0.350	2.6	LOS A	5.3	38.4	0.17	0.15	0.17	52.3
29	R2	35	0.0	35	0.0	0.080	8.0	LOS A	0.1	0.5	0.04	0.70	0.04	32.0
Approach		709	3.1	709	3.1	0.350	2.9	LOS A	5.3	38.4	0.16	0.18	0.16	50.5
SouthWest: Castle Towers														
30	L2	62	0.0	62	0.0	0.080	0.7	LOS A	0.3	2.3	0.16	0.13	0.16	14.5
32	R2	122	0.0	122	0.0	0.349	52.2	LOS D	3.9	27.4	0.94	0.74	0.94	4.0
Approach		184	0.0	184	0.0	0.349	34.8	LOS C	3.9	27.4	0.68	0.53	0.68	5.3
All Vehicles		1963	4.0	1963	4.0	0.350	6.4	LOS A	5.3	38.4	0.18	0.26	0.18	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued Effective Stop Rate
P7	NorthWest Full Crossing	16	54.2	LOS E	0.1	0.1	0.95 0.95
All Pedestrians		16	54.2	LOS E			0.95 0.95

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.

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Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Fu - AM]

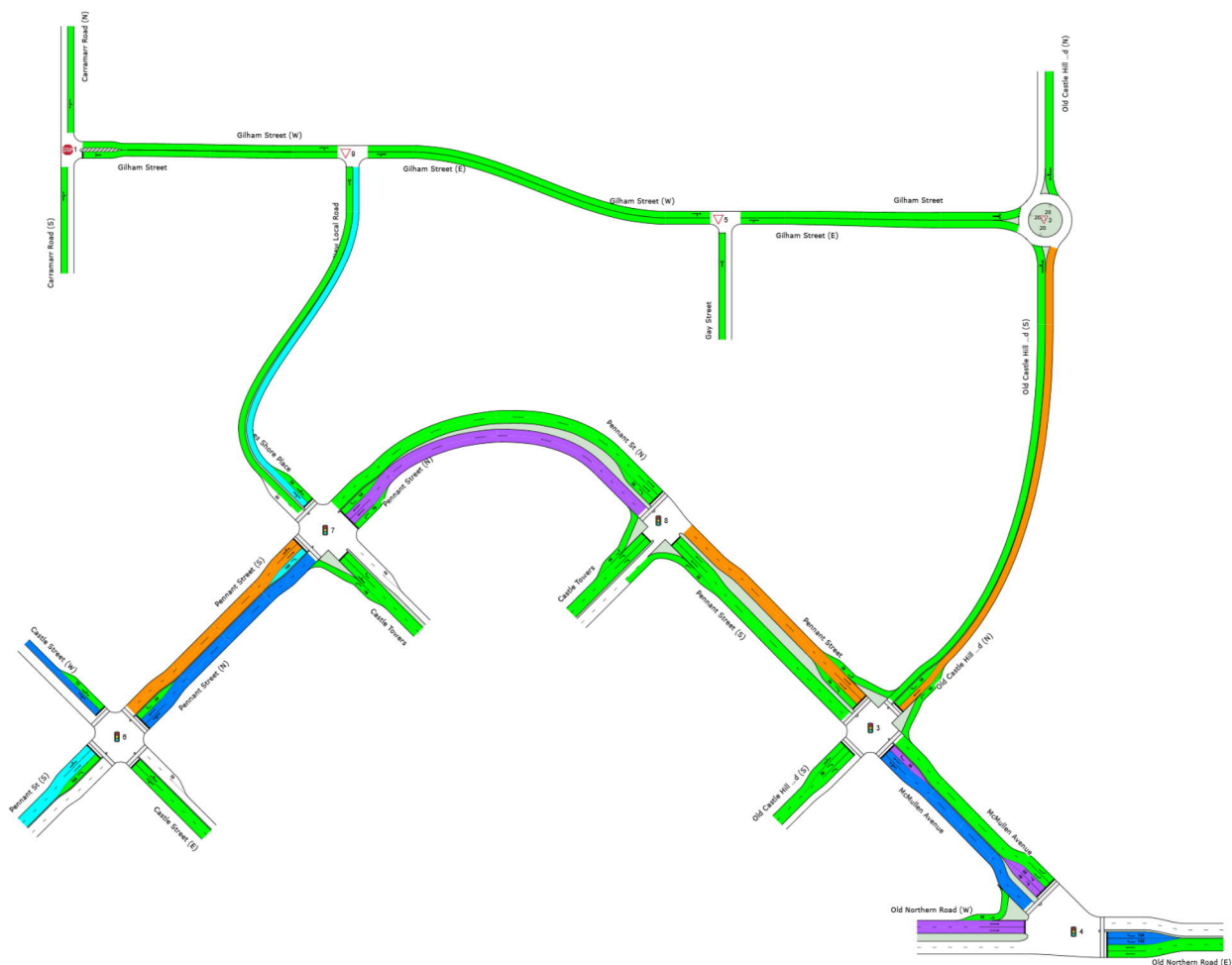
Vivien Place Network

Future Scenario 3

AM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Degree of Saturation



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Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Fu - PM]

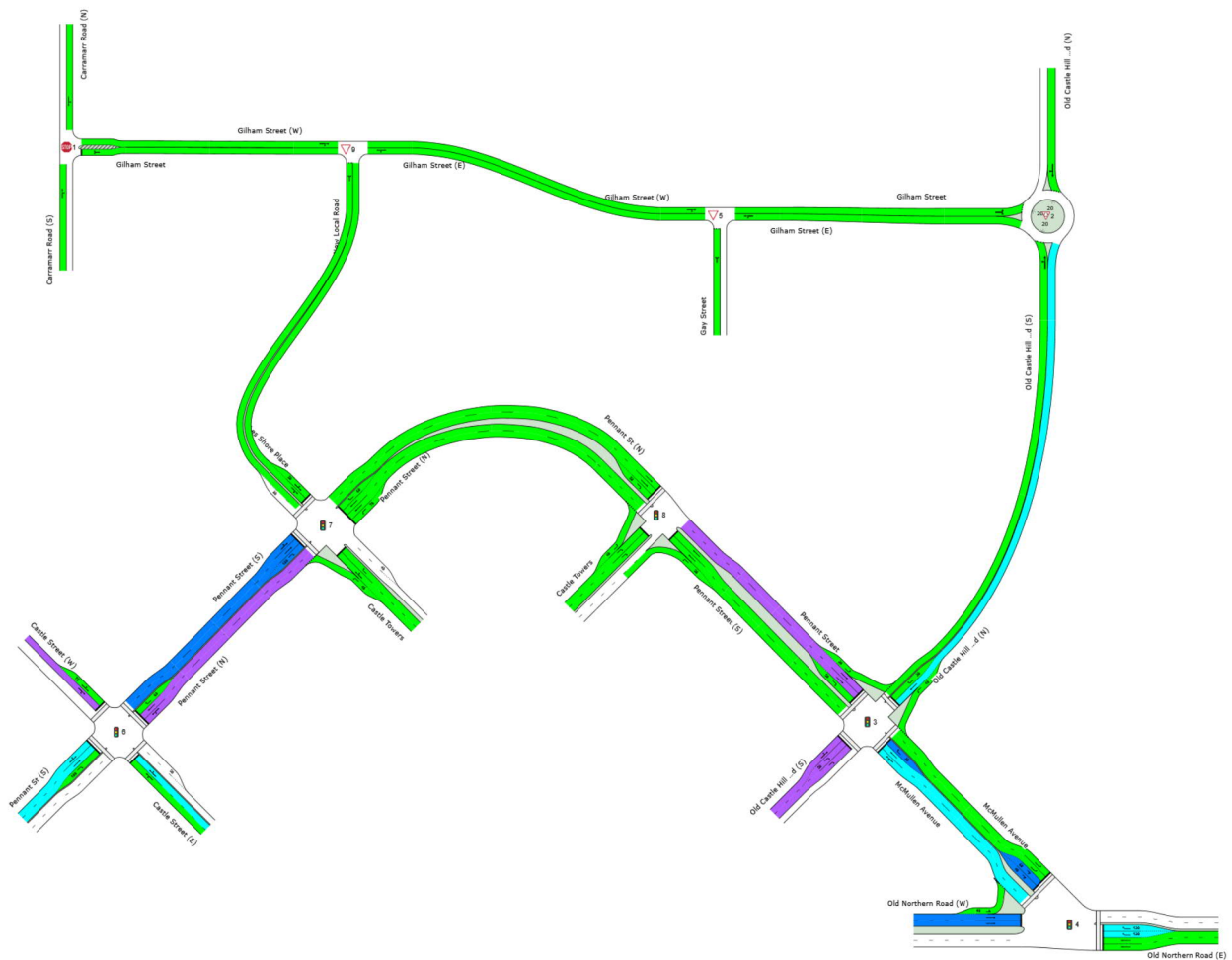
Vivien Place Network

Future Scenario 3

PM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Degree of Saturation



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MOVEMENT SUMMARY

 Site: 1 [1-Gilham St/Carramarr Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and Carramarr Road
Future Scenario 3
AM Peak Hour Volumes
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	59	1.8	59	1.8	0.091	0.4	LOS A	0.4	3.1	0.26	0.34	0.26	46.9
3	R2	93	1.1	93	1.1	0.091	5.1	LOS A	0.4	3.1	0.26	0.34	0.26	44.5
Approach		152	1.4	152	1.4	0.091	3.3	NA	0.4	3.1	0.26	0.34	0.26	45.8
East: Gilham Street														
4	L2	134	0.0	134	0.0	0.136	8.0	LOS A	0.6	3.9	0.26	0.89	0.26	44.5
6	R2	26	4.0	26	4.0	0.136	8.7	LOS A	0.6	3.9	0.26	0.89	0.26	43.7
Approach		160	0.7	160	0.7	0.136	8.1	LOS A	0.6	3.9	0.26	0.89	0.26	44.4
North: Carramarr Road (N)														
7	L2	29	0.0	29	0.0	0.084	4.6	LOS A	0.0	0.0	0.00	0.10	0.00	48.5
8	T1	131	1.6	131	1.6	0.084	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.3
Approach		160	1.3	160	1.3	0.084	0.8	NA	0.0	0.0	0.00	0.10	0.00	49.2
All Vehicles		472	1.1	472	1.1	0.136	4.1	NA	0.6	3.9	0.17	0.44	0.17	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gay Street and Gilham Street
Future Scenario 3
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	102	0.0	102	0.0	0.182	5.0	LOS A	0.7	5.1	0.27	0.57	0.27	35.1
3	R2	107	2.9	107	2.9	0.182	6.1	LOS A	0.7	5.1	0.27	0.57	0.27	35.1
Approach		209	1.5	209	1.5	0.182	5.5	LOS A	0.7	5.1	0.27	0.57	0.27	35.1
East: Gilham Street (E)														
4	L2	40	18.4	40	18.4	0.087	4.7	LOS A	0.0	0.0	0.00	0.13	0.00	45.2
5	T1	122	0.9	122	0.9	0.087	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	44.6
Approach		162	5.2	162	5.2	0.087	1.2	NA	0.0	0.0	0.00	0.13	0.00	44.9
West: Gilham Street (W)														
11	T1	148	1.4	148	1.4	0.096	0.1	LOS A	0.2	1.4	0.11	0.09	0.11	40.8
12	R2	29	0.0	29	0.0	0.096	4.9	LOS A	0.2	1.4	0.11	0.09	0.11	43.5
Approach		178	1.2	178	1.2	0.096	0.9	NA	0.2	1.4	0.11	0.09	0.11	41.8
All Vehicles		549	2.5	549	2.5	0.182	2.8	NA	0.7	5.1	0.14	0.29	0.14	39.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 9 [9-Gilham St/New Local Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and New Local Road
Future Scenario 3
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: New Local Road														
1	L2	37	0.0	37	0.0	0.079	5.0	LOS A	0.2	1.7	0.20	0.56	0.20	40.2
3	R2	52	0.0	52	0.0	0.079	5.9	LOS A	0.2	1.7	0.20	0.56	0.20	40.2
Approach		88	0.0	88	0.0	0.079	5.5	LOS A	0.2	1.7	0.20	0.56	0.20	40.2
East: Gilham Street (E)														
4	L2	101	0.0	101	0.0	0.131	4.3	LOS A	0.0	0.0	0.00	0.22	0.00	37.5
5	T1	148	0.0	148	0.0	0.131	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	37.5
Approach		249	0.0	249	0.0	0.131	1.7	NA	0.0	0.0	0.00	0.22	0.00	37.5
West: Gilham Street (W)														
11	T1	114	0.0	114	0.0	0.071	0.2	LOS A	0.1	0.9	0.11	0.08	0.11	48.5
12	R2	18	0.0	18	0.0	0.071	5.4	LOS A	0.1	0.9	0.11	0.08	0.11	48.5
Approach		132	0.0	132	0.0	0.071	0.9	NA	0.1	0.9	0.11	0.08	0.11	48.5
All Vehicles		469	0.0	469	0.0	0.131	2.2	NA	0.2	1.7	0.07	0.24	0.07	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rdd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and Old Castle Road
Future Scenario 3

Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Old Castle Hill Road (S)														
1	L2	101	7.3	101	7.3	0.264	3.2	LOS A	1.5	11.1	0.19	0.35	0.19	43.5
2	T1	269	5.1	269	5.1	0.264	3.1	LOS A	1.5	11.1	0.19	0.35	0.19	47.3
Approach		371	5.7	371	5.7	0.264	3.1	LOS A	1.5	11.1	0.19	0.35	0.19	46.5
North: Old Castle Hill Road (N)														
8	T1	569	3.1	569	3.1	0.505	4.1	LOS A	4.2	29.8	0.53	0.48	0.53	34.1
9	R2	60	0.0	60	0.0	0.505	8.5	LOS A	4.2	29.8	0.53	0.48	0.53	34.1
Approach		629	2.8	629	2.8	0.505	4.5	LOS A	4.2	29.8	0.53	0.48	0.53	34.1
West: Gilham Street														
10	L2	86	0.0	86	0.0	0.230	4.4	LOS A	1.6	11.1	0.48	0.60	0.48	36.5
12	R2	174	3.0	174	3.0	0.230	8.9	LOS A	1.6	11.1	0.48	0.60	0.48	28.2
Approach		260	2.0	260	2.0	0.230	7.4	LOS A	1.6	11.1	0.48	0.60	0.48	31.9
All Vehicles		1260	3.5	1260	3.5	0.505	4.7	LOS A	4.2	29.8	0.42	0.47	0.42	39.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

McMullen Avenue and Old Northern Road

Future Scenario 3

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
East: Old Northern Road (E)														
5	T1	1302	5.5	1302	5.5	0.446	4.9	LOS A	12.8	93.9	0.37	0.34	0.37	50.6
6a	R1	971	3.8	971	3.8	0.747	35.6	LOS C	23.3	168.6	0.92	0.94	1.21	17.5
Approach		2273	4.8	2273	4.8	0.747	18.0	LOS B	23.3	168.6	0.61	0.60	0.73	32.5
NorthWest: McMullen Avenue														
27a	L1	728	5.1	728	5.1	0.311	13.7	LOS A	9.5	69.5	0.41	0.66	0.41	36.2
29b	R3	325	8.4	325	8.4	0.854	74.0	LOS F	10.4	77.7	1.00	0.89	1.18	13.8
Approach		1054	6.1	1054	6.1	0.854	32.3	LOS C	10.4	77.7	0.59	0.73	0.65	24.3
West: Old Northern Road (W)														
10b	L3	254	6.6	254	6.6	0.368	15.6	LOS B	6.8	50.0	0.58	0.76	0.59	28.6
11	T1	919	6.8	919	6.8	0.820	40.1	LOS C	31.5	233.3	0.92	0.88	1.01	23.7
Approach		1173	6.7	1173	6.7	0.820	34.8	LOS C	31.5	233.3	0.85	0.85	0.92	24.3
All Vehicles		4499	5.6	4499	5.6	0.854	25.7	LOS B	31.5	233.3	0.66	0.70	0.76	27.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	32	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	56	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		88	54.3	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3 [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - AM]**  **Network: 1 [Vivien Place - Fu - AM]**

Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 3

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: McMullen Avenue														
21	L2	122	0.9	122	0.9	0.756	38.8	LOS C	27.8	199.4	0.92	0.83	0.92	17.9
22	T1	901	3.4	901	3.4	0.756	33.1	LOS C	27.8	199.4	0.87	0.78	0.88	14.3
23	R2	188	11.2	188	11.2	0.851	46.9	LOS D	9.2	70.5	0.97	0.92	1.27	11.2
Approach		1212	4.3	1212	4.3	0.851	35.8	LOS C	27.8	199.4	0.89	0.81	0.94	14.1
NorthEast: Old Castle Hill Road (N)														
24	L2	447	5.9	447	5.9	0.503	9.7	LOS A	8.2	60.2	0.44	0.66	0.44	36.3
25	T1	269	0.0	269	0.0	0.939	68.0	LOS E	17.8	124.4	0.77	1.00	1.29	15.7
26	R2	147	4.3	147	4.3	0.266	22.7	LOS B	4.8	34.7	0.68	0.71	0.68	26.3
Approach		864	3.8	864	3.8	0.939	30.1	LOS C	17.8	124.4	0.59	0.77	0.75	23.7
NorthWest: Pennant Street														
27	L2	71	11.9	71	11.9	0.066	10.0	LOS A	1.5	11.7	0.52	0.68	0.52	25.4
28	T1	565	6.0	565	6.0	0.933	73.9	LOS F	20.2	148.6	1.00	1.01	1.26	5.2
29	R2	8	0.0	8	0.0	0.056	62.5	LOS E	0.5	3.5	1.00	0.69	1.00	9.4
Approach		644	6.5	644	6.5	0.933	66.8	LOS E	20.2	148.6	0.95	0.97	1.18	5.8
SouthWest: Old Castle Hill Road (S)														
30	L2	22	9.5	22	9.5	0.251	32.2	LOS C	7.1	50.8	0.73	0.63	0.73	10.4
31	T1	156	1.4	156	1.4	0.251	27.6	LOS B	7.1	50.8	0.73	0.63	0.73	10.4
32	R2	58	7.3	58	7.3	0.179	60.7	LOS E	1.6	12.0	0.96	0.72	0.96	5.1
Approach		236	3.6	236	3.6	0.251	36.1	LOS C	7.1	50.8	0.79	0.65	0.79	8.4
All Vehicles		2956	4.6	2956	4.6	0.939	40.9	LOS C	27.8	199.4	0.80	0.82	0.92	14.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P5	SouthEast Full Crossing	92	54.4	LOS E	0.3	0.3	0.95	0.95	
P6	NorthEast Full Crossing	24	54.2	LOS E	0.1	0.1	0.95	0.95	
P7	NorthWest Full Crossing	62	54.3	LOS E	0.2	0.2	0.95	0.95	
P8	SouthWest Full Crossing	10	54.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		188	54.3	LOS E			0.95	0.95	

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - AM]



Network: 1 [Vivien Place - Fu - AM]

Les Shore Place, Castle Towers and Pennant Street

Future Scenario 3

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	76	13.9	76	13.9	0.102	9.0	LOS A	1.6	12.9	0.49	0.39	0.49	9.9
22	T1	46	0.0	46	0.0	0.150	47.3	LOS D	2.4	16.5	0.90	0.68	0.90	4.1
23	R2	14	7.7	14	7.7	0.049	46.3	LOS D	0.7	5.1	0.88	0.62	0.88	4.1
Approach		136	8.5	136	8.5	0.150	25.8	LOS B	2.4	16.5	0.67	0.51	0.67	6.1
NorthEast: Pennant Street (N)														
24	L2	67	7.8	67	7.8	0.084	13.0	LOS A	0.7	5.3	0.19	0.70	0.19	29.2
25	T1	748	4.4	748	4.4	0.838	31.3	LOS C	19.1	138.4	0.88	0.78	0.92	21.9
26	R2	122	0.9	122	0.9	0.463	40.5	LOS C	5.0	35.5	1.00	0.78	1.00	18.3
Approach		938	4.2	938	4.2	0.838	31.1	LOS C	19.1	138.4	0.84	0.78	0.87	21.8
NorthWest: Les Shore Place														
27	L2	95	5.6	95	5.6	0.202	34.4	LOS C	5.1	36.7	0.75	0.75	0.75	19.7
28	T1	33	0.0	33	0.0	0.647	38.4	LOS C	15.8	110.4	0.77	0.76	0.77	18.6
29	R2	307	0.0	307	0.0	0.647	44.5	LOS D	15.8	110.4	0.92	0.83	0.92	17.0
Approach		435	1.2	435	1.2	0.647	41.9	LOS C	15.8	110.4	0.87	0.81	0.87	17.6
SouthWest: Pennant Street (S)														
30	L2	275	1.9	275	1.9	0.927	67.4	LOS E	25.5	184.1	1.00	1.04	1.41	11.1
31	T1	580	6.7	580	6.7	0.927	69.8	LOS E	28.7	212.8	1.00	1.02	1.25	10.5
32	R2	188	1.1	188	1.1	0.631	43.2	LOS D	8.2	57.6	1.00	0.82	1.00	15.3
Approach		1043	4.4	1043	4.4	0.927	64.4	LOS E	28.7	212.8	1.00	0.99	1.24	11.4
All Vehicles		2552	4.0	2552	4.0	0.927	46.3	LOS D	28.7	212.8	0.90	0.86	1.01	15.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	646	55.6	LOS E	2.2	2.2	0.98	0.98
P8	SouthWest Full Crossing	544	55.4	LOS E	1.8	1.8	0.97	0.97
All Pedestrians		1190	55.5	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 6 [6-Castle St/Pennant St - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Castle Street and Pennant Street

Future Scenario 3

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	99	4.3	99	4.3	0.134	17.7	LOS B	2.4	17.8	0.66	0.69	0.66	28.0
22	T1	102	3.1	102	3.1	0.294	41.0	LOS C	5.9	42.6	0.87	0.71	0.87	25.0
23	R2	19	11.1	19	11.1	0.294	45.3	LOS D	5.9	42.6	0.87	0.71	0.87	6.1
Approach		220	4.3	220	4.3	0.294	30.9	LOS C	5.9	42.6	0.77	0.70	0.77	24.6
NorthEast: Pennant Street (N)														
24	L2	44	2.4	44	2.4	0.749	13.4	LOS A	11.7	85.0	0.55	0.51	0.55	37.7
25	T1	929	4.8	929	4.8	0.749	12.3	LOS A	15.8	115.2	0.67	0.60	0.67	41.7
26	R2	103	1.0	103	1.0	0.217	20.0	LOS B	2.4	17.0	0.52	0.69	0.52	37.6
Approach		1077	4.3	1077	4.3	0.749	13.1	LOS A	15.8	115.2	0.65	0.60	0.65	40.9
NorthWest: Castle Street (W)														
27	L2	225	3.7	225	3.7	0.255	22.9	LOS B	7.7	55.7	0.61	0.72	0.61	31.0
28	T1	168	0.0	168	0.0	0.750	47.6	LOS D	16.1	113.4	0.97	0.88	1.04	22.8
29	R2	121	0.9	121	0.9	0.750	53.5	LOS D	16.1	113.4	0.99	0.89	1.06	26.0
Approach		515	1.8	515	1.8	0.750	38.2	LOS C	16.1	113.4	0.82	0.81	0.86	26.5
SouthWest: Pennant St (S)														
30	L2	105	1.0	105	1.0	0.652	40.2	LOS C	21.0	152.0	0.90	0.80	0.90	30.7
31	T1	778	4.6	778	4.6	0.652	34.2	LOS C	22.0	160.0	0.89	0.79	0.89	17.9
32	R2	111	3.8	111	3.8	0.289	26.2	LOS B	3.6	26.3	0.78	0.75	0.78	23.3
Approach		994	4.1	994	4.1	0.652	34.0	LOS C	22.0	160.0	0.88	0.79	0.88	20.7
All Vehicles		2805	3.8	2805	3.8	0.750	26.5	LOS B	22.0	160.0	0.77	0.72	0.78	28.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	38	32.4	LOS D	0.1	0.1	0.90	0.90
P6	NorthEast Full Crossing	724	55.8	LOS E	2.4	2.4	0.98	0.98
P7	NorthWest Full Crossing	182	54.6	LOS E	0.6	0.6	0.96	0.96
P8	SouthWest Full Crossing	148	54.5	LOS E	0.5	0.5	0.96	0.96
All Pedestrians		1092	54.6	LOS E			0.97	0.97

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.

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Project: C:\Users\cam81238\Mott MacDonald\Transport Assessment for Vivie - Do\Develop\03 Modelling\SIDRA\01 Base Models\Increased PED\190709 - Future Network - Scenario 3 [410745] MZADID.sip8

MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Castle Towers and Pennant Street

Future Scenario 3

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	178	0.0	178	0.0	0.096	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	903	4.3	903	4.3	0.280	0.4	LOS A	1.0	7.5	0.04	0.04	0.04	56.8
Approach		1081	3.6	1081	3.6	0.280	1.9	LOS A	1.0	7.5	0.03	0.15	0.03	45.8
NorthWest: Pennant St (N)														
28	T1	629	7.0	629	7.0	0.306	1.0	LOS A	2.9	21.2	0.10	0.09	0.10	56.9
29	R2	55	0.0	55	0.0	0.119	7.6	LOS A	0.1	0.5	0.02	0.70	0.02	32.3
Approach		684	6.5	684	6.5	0.306	1.5	LOS A	2.9	21.2	0.09	0.14	0.09	53.1
SouthWest: Castle Towers														
30	L2	12	0.0	12	0.0	0.018	0.5	LOS A	0.0	0.3	0.12	0.09	0.12	14.7
32	R2	22	0.0	22	0.0	0.183	64.3	LOS E	0.7	5.2	0.99	0.68	0.99	3.4
Approach		34	0.0	34	0.0	0.183	42.3	LOS C	0.7	5.2	0.69	0.48	0.69	4.7
All Vehicles		1799	4.6	1799	4.6	0.306	2.5	LOS A	2.9	21.2	0.07	0.15	0.07	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	18	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		18	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 Site: 1 [1-Gilham St/Carramarr Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and Carramarr Road
Future Scenario 3
PM Peak Hour Volumes
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	139	2.3	139	2.3	0.126	0.2	LOS A	0.5	3.5	0.17	0.21	0.17	48.0
3	R2	87	0.0	87	0.0	0.126	4.9	LOS A	0.5	3.5	0.17	0.21	0.17	46.3
Approach		226	1.4	226	1.4	0.126	2.0	NA	0.5	3.5	0.17	0.21	0.17	47.6
East: Gilham Street														
4	L2	63	0.0	63	0.0	0.078	7.8	LOS A	0.3	2.1	0.21	0.90	0.21	44.4
6	R2	25	0.0	25	0.0	0.078	8.6	LOS A	0.3	2.1	0.21	0.90	0.21	43.8
Approach		88	0.0	88	0.0	0.078	8.0	LOS A	0.3	2.1	0.21	0.90	0.21	44.2
North: Carramarr Road (N)														
7	L2	7	0.0	7	0.0	0.054	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.4
8	T1	98	0.0	98	0.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		105	0.0	105	0.0	0.054	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		420	0.8	420	0.8	0.126	2.9	NA	0.5	3.5	0.13	0.31	0.13	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gay Street and Gilham Street
Future Scenario 3
PM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	27	0.0	27	0.0	0.082	4.8	LOS A	0.3	2.2	0.22	0.56	0.22	35.1
3	R2	58	14.5	58	14.5	0.082	6.1	LOS A	0.3	2.2	0.22	0.56	0.22	35.1
Approach		85	9.9	85	9.9	0.082	5.7	LOS A	0.3	2.2	0.22	0.56	0.22	35.1
East: Gilham Street (E)														
4	L2	91	9.3	91	9.3	0.089	4.6	LOS A	0.0	0.0	0.00	0.30	0.00	42.9
5	T1	73	0.0	73	0.0	0.089	0.0	LOS A	0.0	0.0	0.00	0.30	0.00	38.5
Approach		163	5.2	163	5.2	0.089	2.6	NA	0.0	0.0	0.00	0.30	0.00	41.8
West: Gilham Street (W)														
11	T1	100	0.0	100	0.0	0.107	0.4	LOS A	0.5	3.3	0.24	0.25	0.24	31.8
12	R2	85	0.0	85	0.0	0.107	4.9	LOS A	0.5	3.3	0.24	0.25	0.24	40.0
Approach		185	0.0	185	0.0	0.107	2.5	NA	0.5	3.3	0.24	0.25	0.24	37.5
All Vehicles		434	3.9	434	3.9	0.107	3.1	NA	0.5	3.3	0.15	0.33	0.15	38.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 9 [9-Gilham St/New Local Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and New Local Road
Future Scenario 3
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: New Local Road														
1	L2	17	0.0	17	0.0	0.085	4.7	LOS A	0.2	1.7	0.15	0.55	0.15	40.7
3	R2	81	0.0	81	0.0	0.085	5.2	LOS A	0.2	1.7	0.15	0.55	0.15	40.7
Approach		98	0.0	98	0.0	0.085	5.1	LOS A	0.2	1.7	0.15	0.55	0.15	40.7
East: Gilham Street (E)														
4	L2	44	0.0	44	0.0	0.053	4.3	LOS A	0.0	0.0	0.00	0.24	0.00	36.8
5	T1	57	0.0	57	0.0	0.053	0.0	LOS A	0.0	0.0	0.00	0.24	0.00	36.8
Approach		101	0.0	101	0.0	0.053	1.9	NA	0.0	0.0	0.00	0.24	0.00	36.8
West: Gilham Street (W)														
11	T1	74	0.0	74	0.0	0.057	0.1	LOS A	0.2	1.3	0.13	0.16	0.13	47.5
12	R2	32	0.0	32	0.0	0.057	4.9	LOS A	0.2	1.3	0.13	0.16	0.13	47.5
Approach		105	0.0	105	0.0	0.057	1.6	NA	0.2	1.3	0.13	0.16	0.13	47.5
All Vehicles		304	0.0	304	0.0	0.085	2.8	NA	0.2	1.7	0.09	0.31	0.09	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rdd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and Old Castle Road
Future Scenario 3
PM Peak Hour Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Castle Hill Road (S)														
1	L2	114	7.4	114	7.4	0.384	3.2	LOS A	2.5	18.2	0.18	0.34	0.18	43.6
2	T1	455	2.8	455	2.8	0.384	3.1	LOS A	2.5	18.2	0.18	0.34	0.18	47.4
Approach		568	3.7	568	3.7	0.384	3.1	LOS A	2.5	18.2	0.18	0.34	0.18	46.8
North: Old Castle Hill Road (N)														
8	T1	374	3.4	374	3.4	0.329	3.5	LOS A	2.3	16.6	0.39	0.43	0.39	35.4
9	R2	49	0.0	49	0.0	0.329	8.0	LOS A	2.3	16.6	0.39	0.43	0.39	35.4
Approach		423	3.0	423	3.0	0.329	4.1	LOS A	2.3	16.6	0.39	0.43	0.39	35.4
West: Gilham Street														
10	L2	40	0.0	40	0.0	0.168	5.7	LOS A	1.2	8.8	0.61	0.64	0.61	35.0
12	R2	125	6.7	125	6.7	0.168	10.3	LOS A	1.2	8.8	0.61	0.64	0.61	26.5
Approach		165	5.1	165	5.1	0.168	9.2	LOS A	1.2	8.8	0.61	0.64	0.61	29.3
All Vehicles		1157	3.6	1157	3.6	0.384	4.3	LOS A	2.5	18.2	0.32	0.42	0.32	42.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

McMullen Avenue and Old Northern Road

Future Scenario 3

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
East: Old Northern Road (E)														
5	T1	1115	6.2	1115	6.2	0.388	4.9	LOS A	10.6	78.1	0.36	0.32	0.36	50.6
6a	R1	966	4.4	966	4.4	0.652	32.1	LOS C	18.4	133.8	0.87	0.91	1.12	18.8
Approach		2081	5.4	2081	5.4	0.652	17.5	LOS B	18.4	133.8	0.60	0.60	0.71	32.6
NorthWest: McMullen Avenue														
27a	L1	924	1.7	924	1.7	0.422	19.2	LOS B	19.9	141.3	0.69	0.77	0.69	32.0
29b	R3	309	4.8	309	4.8	0.736	70.6	LOS F	9.5	69.3	1.00	0.84	1.06	14.4
Approach		1234	2.5	1234	2.5	0.736	32.1	LOS C	19.9	141.3	0.77	0.79	0.78	24.6
West: Old Northern Road (W)														
10b	L3	213	6.4	213	6.4	0.225	11.9	LOS A	3.9	28.8	0.43	0.70	0.43	32.7
11	T1	867	6.6	867	6.6	0.742	35.4	LOS C	25.4	187.8	0.90	0.80	0.92	25.5
Approach		1080	6.5	1080	6.5	0.742	30.8	LOS C	25.4	187.8	0.81	0.78	0.82	26.2
All Vehicles		4395	4.8	4395	4.8	0.742	24.9	LOS B	25.4	187.8	0.70	0.70	0.76	28.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	16	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		66	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3** [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - PM]  **Network: 1** [Vivien Place - Fu - PM]

Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 3

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Queue	Back of Distance	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	m				km/h
SouthEast: McMullen Avenue														
21	L2	118	0.0	118	0.0	0.610	20.5	LOS B	16.9	122.5	0.55	0.55	0.55	27.8
22	T1	858	4.9	858	4.9	0.610	12.1	LOS A	16.9	122.5	0.45	0.43	0.45	27.3
23	R2	249	5.1	249	5.1	0.792	33.3	LOS C	9.8	71.8	0.93	0.85	1.04	14.6
Approach		1225	4.5	1225	4.5	0.792	17.2	LOS B	16.9	122.5	0.56	0.53	0.58	23.4
NorthEast: Old Castle Hill Road (N)														
24	L2	248	5.5	248	5.5	0.228	11.9	LOS A	5.3	38.6	0.45	0.64	0.45	34.1
25	T1	143	0.0	143	0.0	0.636	39.0	LOS C	6.8	47.6	0.84	0.70	0.87	22.2
26	R2	126	5.0	126	5.0	0.440	34.5	LOS C	5.0	36.6	0.93	0.78	0.93	21.1
Approach		518	3.9	518	3.9	0.636	24.9	LOS B	6.8	47.6	0.67	0.69	0.68	26.0
NorthWest: Pennant Street														
27	L2	141	4.5	141	4.5	0.143	11.0	LOS A	2.2	15.9	0.37	0.65	0.37	24.2
28	T1	621	2.2	621	2.2	0.855	55.5	LOS D	21.7	154.6	1.00	0.96	1.17	6.7
29	R2	9	0.0	9	0.0	0.040	46.0	LOS D	0.5	3.3	0.88	0.69	0.88	12.1
Approach		772	2.6	772	2.6	0.855	47.2	LOS D	21.7	154.6	0.88	0.90	1.02	7.9
SouthWest: Old Castle Hill Road (S)														
30	L2	83	8.9	83	8.9	0.866	59.0	LOS E	21.3	151.9	0.97	1.00	1.19	5.8
31	T1	263	0.0	263	0.0	0.866	54.3	LOS D	21.3	151.9	0.97	1.00	1.19	5.8
32	R2	281	0.4	281	0.4	0.828	69.9	LOS E	9.0	62.9	1.00	0.93	1.28	4.5
Approach		627	1.3	627	1.3	0.866	61.9	LOS E	21.3	151.9	0.99	0.97	1.23	5.2
All Vehicles		3142	3.3	3142	3.3	0.866	34.8	LOS C	21.7	154.6	0.74	0.73	0.84	14.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	38	54.2	LOS E	0.1	0.1	0.95	0.95
P6	NorthEast Full Crossing	38	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	76	54.3	LOS E	0.2	0.2	0.95	0.95
P8	SouthWest Full Crossing	32	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		184	54.3	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - PM]



Network: 1 [Vivien Place - Fu - PM]

Les Shore Place, Castle Towers and Pennant Street

Future Scenario 3

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	347	1.5	347	1.5	0.404	7.5	LOS A	7.7	54.9	0.53	0.46	0.53	10.5
22	T1	34	0.0	34	0.0	0.182	47.6	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
23	R2	75	0.0	75	0.0	0.182	47.7	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
Approach		456	1.2	456	1.2	0.404	17.0	LOS B	7.7	54.9	0.62	0.52	0.62	7.6
NorthEast: Pennant Street (N)														
24	L2	76	5.6	76	5.6	0.073	11.6	LOS A	0.7	5.1	0.17	0.70	0.17	30.1
25	T1	762	6.5	762	6.5	0.556	25.9	LOS B	15.1	111.6	0.71	0.62	0.71	24.6
26	R2	62	1.7	62	1.7	0.155	25.6	LOS B	2.0	13.9	0.83	0.74	0.83	24.6
Approach		900	6.1	900	6.1	0.556	24.7	LOS B	15.1	111.6	0.67	0.63	0.67	25.0
NorthWest: Les Shore Place														
27	L2	72	1.5	72	1.5	0.179	25.3	LOS B	2.8	19.6	0.80	0.73	0.80	23.5
28	T1	18	0.0	18	0.0	0.572	30.4	LOS C	9.6	68.5	0.81	0.74	0.81	20.9
29	R2	173	2.4	173	2.4	0.572	55.2	LOS D	9.6	68.5	0.97	0.81	0.97	14.7
Approach		262	2.0	262	2.0	0.572	45.4	LOS D	9.6	68.5	0.91	0.78	0.91	16.8
SouthWest: Pennant Street (S)														
30	L2	219	2.4	219	2.4	0.763	58.1	LOS E	19.7	141.2	1.00	0.95	1.30	12.6
31	T1	558	3.8	558	3.8	0.763	55.6	LOS D	23.5	169.5	1.00	0.90	1.10	12.5
32	R2	239	0.4	239	0.4	0.768	44.4	LOS D	10.6	74.5	1.00	0.85	1.06	15.1
Approach		1016	2.7	1016	2.7	0.768	53.5	LOS D	23.5	169.5	1.00	0.90	1.13	13.1
All Vehicles		2634	3.5	2634	3.5	0.768	36.5	LOS C	23.5	169.5	0.81	0.73	0.87	16.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	428	55.1	LOS E	1.4	1.4	0.97	0.97
P8	SouthWest Full Crossing	482	55.3	LOS E	1.6	1.6	0.97	0.97
All Pedestrians		910	55.2	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 6 [6-Castle St/Pennant St - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Castle Street and Pennant Street

Future Scenario 3

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	222	0.9	222	0.9	0.314	19.4	LOS B	5.8	40.6	0.74	0.75	0.74	27.2
22	T1	138	1.5	138	1.5	0.643	53.3	LOS D	9.7	70.1	0.99	0.82	1.01	21.8
23	R2	33	12.9	33	12.9	0.643	57.6	LOS E	9.7	70.1	0.99	0.82	1.01	4.8
Approach		393	2.1	393	2.1	0.643	34.5	LOS C	9.7	70.1	0.85	0.78	0.86	22.4
NorthEast: Pennant Street (N)														
24	L2	63	3.3	63	3.3	0.803	19.5	LOS B	18.3	133.3	0.80	0.74	0.83	31.0
25	T1	1019	5.0	1019	5.0	0.803	16.9	LOS B	18.3	133.3	0.82	0.74	0.84	37.4
26	R2	162	5.8	162	5.8	0.298	18.0	LOS B	3.6	26.3	0.54	0.71	0.54	38.7
Approach		1244	5.0	1244	5.0	0.803	17.2	LOS B	18.3	133.3	0.78	0.74	0.80	37.4
NorthWest: Castle Street (W)														
27	L2	179	2.4	179	2.4	0.281	31.2	LOS C	7.8	55.4	0.73	0.74	0.73	27.3
28	T1	162	0.6	162	0.6	0.826	57.4	LOS E	12.8	90.1	0.97	0.95	1.17	20.7
29	R2	58	0.0	58	0.0	0.826	65.5	LOS E	12.8	90.1	1.00	0.97	1.23	23.5
Approach		399	1.3	399	1.3	0.826	46.8	LOS D	12.8	90.1	0.87	0.86	0.98	23.5
SouthWest: Pennant St (S)														
30	L2	133	0.0	133	0.0	0.629	37.7	LOS C	21.6	153.4	0.87	0.79	0.87	31.5
31	T1	807	2.3	807	2.3	0.629	31.4	LOS C	22.5	161.0	0.87	0.77	0.87	18.9
32	R2	172	1.8	172	1.8	0.359	22.9	LOS B	5.0	35.5	0.77	0.76	0.77	25.1
Approach		1112	2.0	1112	2.0	0.629	30.8	LOS C	22.5	161.0	0.85	0.77	0.85	22.3
All Vehicles		3147	3.1	3147	3.1	0.826	27.9	LOS B	22.5	161.0	0.82	0.77	0.85	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	20	29.5	LOS C	0.0	0.0	0.90	0.90
P6	NorthEast Full Crossing	564	55.5	LOS E	1.9	1.9	0.97	0.97
P7	NorthWest Full Crossing	240	54.7	LOS E	0.8	0.8	0.96	0.96
P8	SouthWest Full Crossing	392	55.0	LOS E	1.3	1.3	0.97	0.97
All Pedestrians		1216	54.7	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Castle Towers and Pennant Street

Future Scenario 3

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %		v/c		Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	237	0.4	237	0.4	0.128	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	833	6.6	833	6.6	0.294	2.2	LOS A	3.8	28.4	0.14	0.13	0.14	46.0
Approach		1069	5.2	1069	5.2	0.294	3.9	LOS A	3.8	28.4	0.11	0.26	0.11	38.5
NorthWest: Pennant St (N)														
28	T1	675	3.3	675	3.3	0.349	1.9	LOS A	3.8	27.6	0.12	0.11	0.12	54.3
29	R2	35	0.0	35	0.0	0.080	7.9	LOS A	0.1	0.4	0.03	0.70	0.03	32.1
Approach		709	3.1	709	3.1	0.349	2.2	LOS A	3.8	27.6	0.12	0.14	0.12	52.2
SouthWest: Castle Towers														
30	L2	62	0.0	62	0.0	0.080	0.7	LOS A	0.3	2.3	0.16	0.13	0.16	14.5
32	R2	122	0.0	122	0.0	0.347	52.2	LOS D	3.9	27.5	0.94	0.74	0.94	4.0
Approach		184	0.0	184	0.0	0.347	34.8	LOS C	3.9	27.5	0.68	0.53	0.68	5.3
All Vehicles		1963	4.0	1963	4.0	0.349	6.1	LOS A	3.9	28.4	0.17	0.24	0.17	35.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	16	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		16	54.2	LOS E			0.95	0.95

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.

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Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Fu - AM]

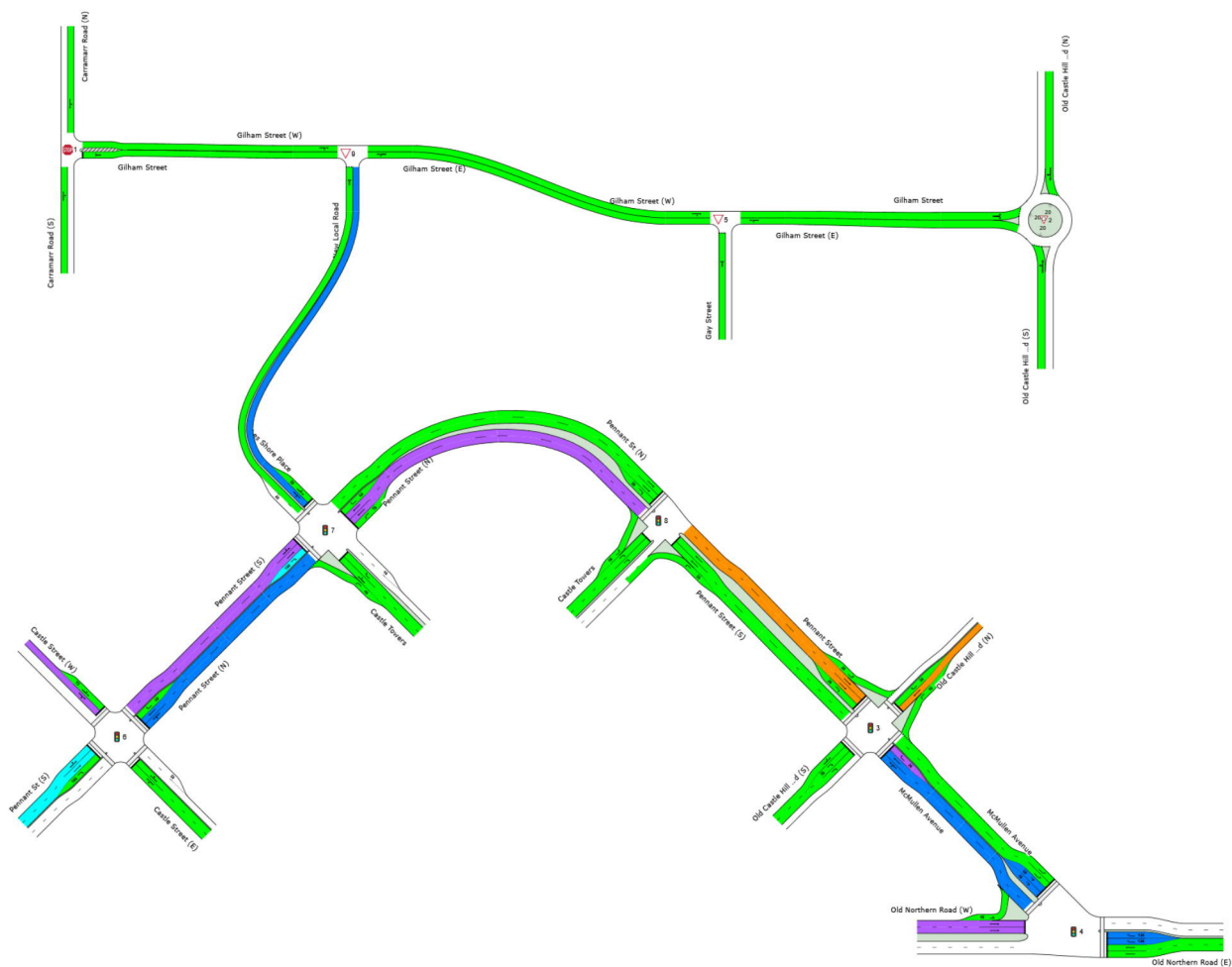
Vivien Place Network

Future Scenario 4

AM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



Colour code based on Degree of Saturation



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Ratio of Demand Volume to Capacity, v/c ratio per lane

Network: 1 [Vivien Place - Fu - PM]

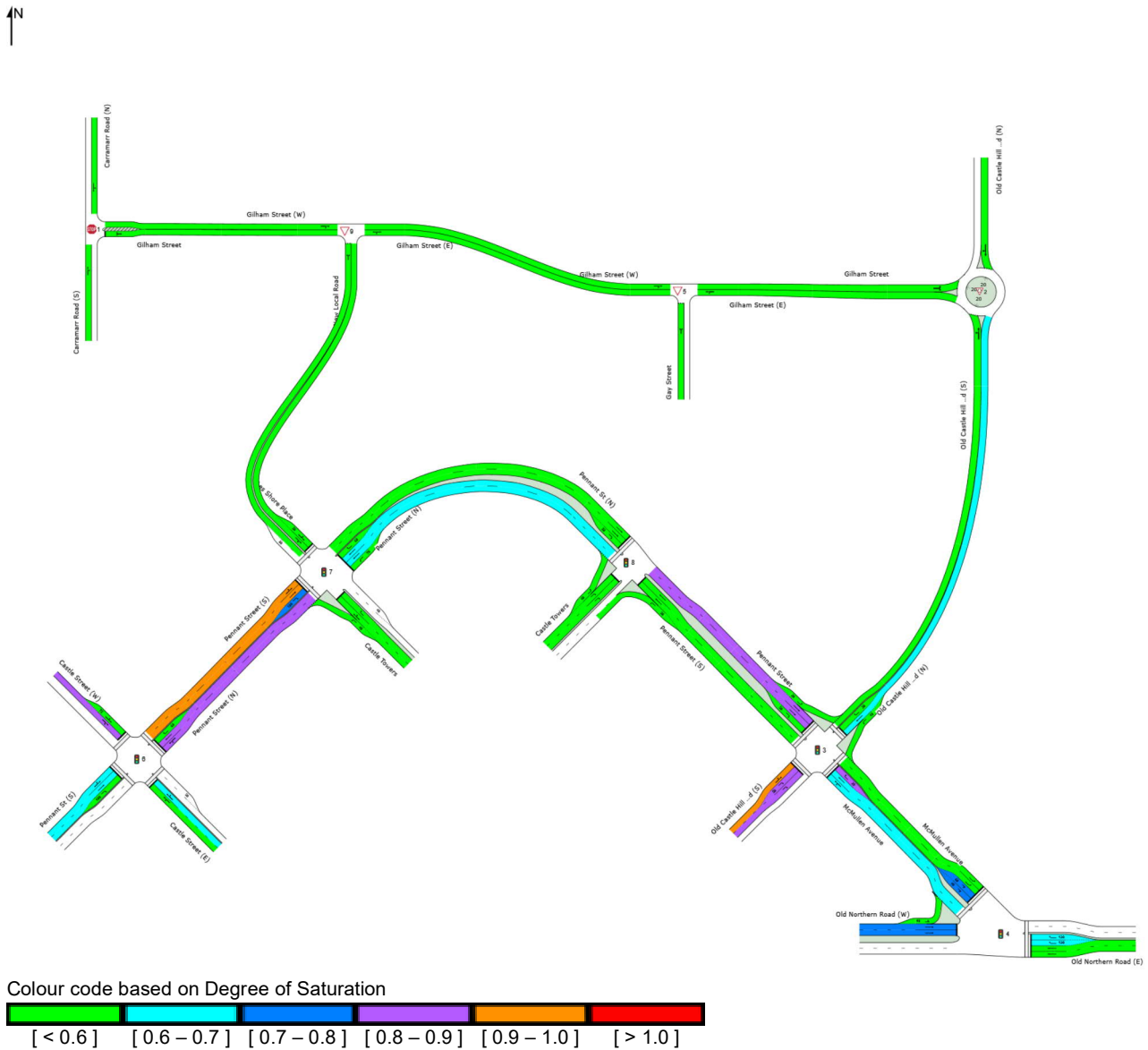
Vivien Place Network

Future Scenario 4

PM Peak Hour Volumes

Network Category: (None)

Network Cycle Time = 120 seconds (Network User-Given Cycle Time)



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MOVEMENT SUMMARY

 Site: 1 [1-Gilham St/Carramarr Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and Carramarr Road
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	59	1.8	59	1.8	0.097	0.5	LOS A	0.5	3.3	0.27	0.35	0.27	46.9
3	R2	102	1.0	102	1.0	0.097	5.1	LOS A	0.5	3.3	0.27	0.35	0.27	44.4
Approach		161	1.3	161	1.3	0.097	3.4	NA	0.5	3.3	0.27	0.35	0.27	45.6
East: Gilham Street														
4	L2	137	0.0	137	0.0	0.139	8.0	LOS A	0.6	4.0	0.26	0.89	0.26	44.5
6	R2	26	4.0	26	4.0	0.139	8.8	LOS A	0.6	4.0	0.26	0.89	0.26	43.7
Approach		163	0.6	163	0.6	0.139	8.1	LOS A	0.6	4.0	0.26	0.89	0.26	44.4
North: Carramarr Road (N)														
7	L2	29	0.0	29	0.0	0.084	4.6	LOS A	0.0	0.0	0.00	0.10	0.00	48.5
8	T1	131	1.6	131	1.6	0.084	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.3
Approach		160	1.3	160	1.3	0.084	0.8	NA	0.0	0.0	0.00	0.10	0.00	49.2
All Vehicles		484	1.1	484	1.1	0.139	4.1	NA	0.6	4.0	0.18	0.45	0.18	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 5 [5-Gay St/Gilham St - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gay Street and Gilham Street
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	102	0.0	102	0.0	0.184	5.0	LOS A	0.7	5.1	0.27	0.57	0.27	35.0
3	R2	107	2.9	107	2.9	0.184	6.1	LOS A	0.7	5.1	0.27	0.57	0.27	35.0
Approach		209	1.5	209	1.5	0.184	5.6	LOS A	0.7	5.1	0.27	0.57	0.27	35.0
East: Gilham Street (E)														
4	L2	40	18.4	40	18.4	0.089	4.7	LOS A	0.0	0.0	0.00	0.13	0.00	45.2
5	T1	125	0.8	125	0.8	0.089	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	44.7
Approach		165	5.1	165	5.1	0.089	1.1	NA	0.0	0.0	0.00	0.13	0.00	44.9
West: Gilham Street (W)														
11	T1	158	1.3	158	1.3	0.101	0.1	LOS A	0.2	1.4	0.10	0.09	0.10	41.1
12	R2	29	0.0	29	0.0	0.101	4.9	LOS A	0.2	1.4	0.10	0.09	0.10	43.6
Approach		187	1.1	187	1.1	0.101	0.9	NA	0.2	1.4	0.10	0.09	0.10	42.0
All Vehicles		562	2.4	562	2.4	0.184	2.7	NA	0.7	5.1	0.14	0.28	0.14	39.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 9 [9-Gilham St/New Local Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and New Local Road
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: New Local Road														
1	L2	37	0.0	37	0.0	0.080	5.0	LOS A	0.2	1.7	0.21	0.56	0.21	40.1
3	R2	52	0.0	52	0.0	0.080	5.9	LOS A	0.2	1.7	0.21	0.56	0.21	40.1
Approach		88	0.0	88	0.0	0.080	5.6	LOS A	0.2	1.7	0.21	0.56	0.21	40.1
East: Gilham Street (E)														
4	L2	101	0.0	101	0.0	0.132	4.3	LOS A	0.0	0.0	0.00	0.22	0.00	37.6
5	T1	152	0.0	152	0.0	0.132	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	37.6
Approach		253	0.0	253	0.0	0.132	1.7	NA	0.0	0.0	0.00	0.22	0.00	37.6
West: Gilham Street (W)														
11	T1	123	0.0	123	0.0	0.076	0.2	LOS A	0.1	0.9	0.11	0.07	0.11	48.6
12	R2	18	0.0	18	0.0	0.076	5.4	LOS A	0.1	0.9	0.11	0.07	0.11	48.6
Approach		141	0.0	141	0.0	0.076	0.8	NA	0.1	0.9	0.11	0.07	0.11	48.6
All Vehicles		482	0.0	482	0.0	0.132	2.2	NA	0.2	1.7	0.07	0.24	0.07	44.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rdd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Gilham Street and Old Castle Road
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total	HV	Total	HV				Vehicles	Distance				
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Old Castle Hill Road (S)														
1	L2	101	7.3	101	7.3	0.269	3.2	LOS A	1.8	13.2	0.25	0.36	0.25	43.1
2	T1	275	5.0	275	5.0	0.269	3.1	LOS A	1.8	13.2	0.25	0.36	0.25	46.9
Approach		376	5.6	376	5.6	0.269	3.2	LOS A	1.8	13.2	0.25	0.36	0.25	46.1
North: Old Castle Hill Road (N)														
8	T1	572	3.1	572	3.1	0.509	4.1	LOS A	4.2	30.2	0.53	0.49	0.53	44.7
9	R2	63	0.0	63	0.0	0.509	8.5	LOS A	4.2	30.2	0.53	0.49	0.53	34.1
Approach		635	2.8	635	2.8	0.509	4.5	LOS A	4.2	30.2	0.53	0.49	0.53	44.1
West: Gilham Street														
10	L2	96	0.0	96	0.0	0.246	4.4	LOS A	1.4	10.2	0.49	0.63	0.49	36.6
12	R2	174	3.0	174	3.0	0.246	8.9	LOS A	1.4	10.2	0.49	0.63	0.49	42.9
Approach		269	2.0	269	2.0	0.246	7.3	LOS A	1.4	10.2	0.49	0.63	0.49	41.1
All Vehicles		1280	3.5	1280	3.5	0.509	4.7	LOS A	4.2	30.2	0.44	0.48	0.44	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

McMullen Avenue and Old Northern Road

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
East: Old Northern Road (E)														
5	T1	1306	5.5	1306	5.5	0.452	5.3	LOS A	13.4	97.9	0.39	0.35	0.39	50.0
6a	R1	973	3.8	973	3.8	0.763	37.5	LOS C	23.5	170.0	0.93	0.96	1.24	16.9
Approach		2279	4.8	2279	4.8	0.763	19.0	LOS B	23.5	170.0	0.62	0.61	0.75	31.7
NorthWest: McMullen Avenue														
27a	L1	738	5.0	738	5.0	0.320	14.5	LOS A	10.6	77.7	0.45	0.68	0.45	35.5
29b	R3	325	8.4	325	8.4	0.798	71.2	LOS F	10.1	75.9	1.00	0.86	1.11	14.2
Approach		1063	6.0	1063	6.0	0.798	31.8	LOS C	10.6	77.7	0.62	0.73	0.65	24.5
West: Old Northern Road (W)														
10b	L3	254	6.6	254	6.6	0.343	14.9	LOS B	6.5	47.9	0.55	0.74	0.55	29.2
11	T1	937	6.6	937	6.6	0.810	38.4	LOS C	31.2	230.6	0.91	0.86	0.99	24.4
Approach		1191	6.6	1191	6.6	0.810	33.4	LOS C	31.2	230.6	0.84	0.84	0.90	24.9
All Vehicles		4533	5.6	4533	5.6	0.810	25.8	LOS B	31.2	230.6	0.68	0.70	0.77	27.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	42	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	74	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		116	54.3	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - AM]



Network: 1 [Vivien Place - Fu - AM]

Les Shore Place, Castle Towers and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	76	13.9	76	13.9	0.102	9.8	LOS A	1.7	13.5	0.51	0.41	0.51	9.6
22	T1	46	0.0	46	0.0	0.136	45.2	LOS D	2.3	16.1	0.88	0.66	0.88	4.2
23	R2	14	7.7	14	7.7	0.044	44.3	LOS D	0.7	5.0	0.86	0.61	0.86	4.2
Approach		136	8.5	136	8.5	0.136	25.4	LOS B	2.3	16.1	0.67	0.52	0.67	6.1
NorthEast: Pennant Street (N)														
24	L2	67	7.8	67	7.8	0.078	12.3	LOS A	0.7	4.9	0.18	0.70	0.18	29.7
25	T1	763	4.3	763	4.3	0.822	34.1	LOS C	20.2	146.5	0.88	0.81	0.94	20.7
26	R2	122	0.9	122	0.9	0.476	40.3	LOS C	5.0	35.3	1.00	0.79	1.00	18.4
Approach		953	4.1	953	4.1	0.822	33.3	LOS C	20.2	146.5	0.85	0.80	0.90	20.9
NorthWest: Les Shore Place														
27	L2	95	5.6	95	5.6	0.223	37.6	LOS C	5.4	39.0	0.78	0.76	0.78	18.7
28	T1	33	0.0	33	0.0	0.713	41.2	LOS C	16.5	115.4	0.80	0.77	0.80	17.9
29	R2	307	0.0	307	0.0	0.713	48.1	LOS D	16.5	115.4	0.95	0.85	0.97	16.1
Approach		435	1.2	435	1.2	0.713	45.3	LOS D	16.5	115.4	0.90	0.82	0.92	16.8
SouthWest: Pennant Street (S)														
30	L2	275	1.9	275	1.9	0.873	59.0	LOS E	23.1	166.8	1.00	0.97	1.28	12.4
31	T1	584	6.7	584	6.7	0.873	61.4	LOS E	27.2	201.1	1.00	0.96	1.15	11.6
32	R2	188	1.1	188	1.1	0.656	42.7	LOS D	8.0	56.8	1.00	0.82	1.01	15.4
Approach		1047	4.4	1047	4.4	0.873	57.4	LOS E	27.2	201.1	1.00	0.94	1.16	12.4
All Vehicles		2571	4.0	2571	4.0	0.873	44.7	LOS D	27.2	201.1	0.91	0.84	0.99	15.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	850	56.1	LOS E	2.9	2.9	0.98	0.98
P8	SouthWest Full Crossing	716	55.8	LOS E	2.4	2.4	0.98	0.98
All Pedestrians		1566	56.0	LOS E			0.98	0.98

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: 6 [6-Castle St/Pennant St - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Castle Street and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	99	4.3	99	4.3	0.132	17.3	LOS B	2.4	17.4	0.65	0.69	0.65	28.4
22	T1	106	3.0	106	3.0	0.275	38.3	LOS C	5.9	42.6	0.84	0.70	0.84	25.9
23	R2	19	11.1	19	11.1	0.275	42.6	LOS D	5.9	42.6	0.84	0.70	0.84	6.4
Approach		224	4.2	224	4.2	0.275	29.4	LOS C	5.9	42.6	0.76	0.69	0.76	25.3
NorthEast: Pennant Street (N)														
24	L2	44	2.4	44	2.4	0.799	14.3	LOS A	13.2	95.8	0.58	0.55	0.61	36.5
25	T1	944	4.7	944	4.7	0.799	15.8	LOS B	18.0	131.0	0.72	0.65	0.74	38.4
26	R2	103	1.0	103	1.0	0.238	22.2	LOS B	2.7	18.7	0.56	0.70	0.56	36.5
Approach		1092	4.2	1092	4.2	0.799	16.3	LOS B	18.0	131.0	0.70	0.65	0.72	38.1
NorthWest: Castle Street (W)														
27	L2	225	3.7	225	3.7	0.279	24.3	LOS B	8.4	60.3	0.64	0.72	0.64	30.4
28	T1	186	0.0	186	0.0	0.819	48.7	LOS D	19.9	139.7	0.97	0.94	1.10	22.5
29	R2	159	0.7	159	0.7	0.819	56.1	LOS D	19.9	139.7	1.00	0.96	1.14	25.3
Approach		571	1.7	571	1.7	0.819	41.1	LOS C	19.9	139.7	0.85	0.86	0.93	25.8
SouthWest: Pennant St (S)														
30	L2	118	0.9	118	0.9	0.682	42.0	LOS C	21.9	158.3	0.92	0.82	0.92	30.0
31	T1	782	4.6	782	4.6	0.682	35.6	LOS C	22.9	166.9	0.91	0.81	0.91	17.4
32	R2	111	3.8	111	3.8	0.310	28.1	LOS B	3.8	27.3	0.81	0.75	0.81	22.5
Approach		1011	4.1	1011	4.1	0.682	35.5	LOS C	22.9	166.9	0.90	0.80	0.90	20.3
All Vehicles		2897	3.7	2897	3.7	0.819	28.9	LOS C	22.9	166.9	0.80	0.75	0.83	27.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	50	32.9	LOS D	0.1	0.1	0.90	0.90
P6	NorthEast Full Crossing	953	56.4	LOS E	3.2	3.2	0.99	0.99
P7	NorthWest Full Crossing	239	54.7	LOS E	0.8	0.8	0.96	0.96
P8	SouthWest Full Crossing	195	54.6	LOS E	0.6	0.6	0.96	0.96
All Pedestrians		1437	55.0	LOS E			0.98	0.98

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.

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MOVEMENT SUMMARY

 **Site: 3** [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - AM Rev]  **Network: 1** [Vivien Place - Fu - AM]

Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: McMullen Avenue														
21	L2	122	0.9	122	0.9	0.726	37.5	LOS C	26.6	190.9	0.88	0.80	0.88	18.4
22	T1	901	3.4	901	3.4	0.726	29.8	LOS C	26.6	190.9	0.82	0.73	0.82	15.5
23	R2	191	11.0	191	11.0	0.826	41.6	LOS C	8.7	66.5	0.96	0.87	1.15	23.9
Approach		1214	4.3	1214	4.3	0.826	32.4	LOS C	26.6	190.9	0.85	0.76	0.88	17.9
NorthEast: Old Castle Hill Road (N)														
24	L2	457	5.8	457	5.8	0.515	9.7	LOS A	8.4	61.4	0.43	0.65	0.43	36.3
25	T1	288	0.0	288	0.0	0.912	56.8	LOS E	17.4	121.6	0.75	0.93	1.16	17.7
26	R2	162	3.9	162	3.9	0.317	24.9	LOS B	5.7	41.4	0.71	0.72	0.71	25.1
Approach		907	3.6	907	3.6	0.912	27.4	LOS B	17.4	121.6	0.58	0.75	0.71	24.9
NorthWest: Pennant Street														
27	L2	75	11.3	75	11.3	0.073	10.8	LOS A	1.8	13.7	0.61	0.70	0.61	38.9
28	T1	565	6.0	565	6.0	0.935	74.5	LOS F	20.3	149.4	1.00	1.01	1.27	5.1
29	R2	8	0.0	8	0.0	0.048	60.5	LOS E	0.5	3.5	1.00	0.70	1.00	9.7
Approach		648	6.5	648	6.5	0.935	66.9	LOS E	20.3	149.4	0.96	0.97	1.19	7.3
SouthWest: Old Castle Hill Road (S)														
30	L2	22	9.5	22	9.5	0.234	29.9	LOS C	6.8	48.6	0.70	0.60	0.70	11.1
31	T1	156	1.4	156	1.4	0.234	25.3	LOS B	6.8	48.6	0.70	0.60	0.70	27.3
32	R2	58	7.3	58	7.3	0.328	68.2	LOS E	1.8	13.1	1.00	0.72	1.00	4.6
Approach		236	3.6	236	3.6	0.328	36.3	LOS C	6.8	48.6	0.77	0.63	0.77	19.4
All Vehicles		3005	4.5	3005	4.5	0.935	38.7	LOS C	26.6	190.9	0.78	0.79	0.89	17.0

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P5	SouthEast Full Crossing	121	54.4	LOS E	0.4	0.4	0.95	0.95	
P6	NorthEast Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95	
P7	NorthWest Full Crossing	32	54.2	LOS E	0.1	0.1	0.95	0.95	
P8	SouthWest Full Crossing	13	54.2	LOS E	0.0	0.0	0.95	0.95	
All Pedestrians		216	54.3	LOS E			0.95	0.95	

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Fu - AM]

 Network: 1 [Vivien Place - Fu - AM]

Castle Towers and Pennant Street

Future Scenario 4

AM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	178	0.0	178	0.0	0.096	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	918	4.2	918	4.2	0.293	0.6	LOS A	1.3	9.4	0.05	0.05	0.05	55.6
Approach		1096	3.6	1096	3.6	0.293	2.0	LOS A	1.3	9.4	0.04	0.16	0.04	45.3
NorthWest: Pennant St (N)														
28	T1	634	7.0	634	7.0	0.319	2.3	LOS A	7.2	53.8	0.23	0.20	0.23	53.2
29	R2	55	0.0	55	0.0	0.124	7.6	LOS A	0.1	0.5	0.02	0.70	0.02	32.3
Approach		688	6.4	688	6.4	0.319	2.7	LOS A	7.2	53.8	0.21	0.24	0.21	50.2
SouthWest: Castle Towers														
30	L2	12	0.0	12	0.0	0.017	0.5	LOS A	0.0	0.3	0.12	0.09	0.12	14.7
32	R2	22	0.0	22	0.0	0.123	59.3	LOS E	0.7	4.9	0.96	0.67	0.96	3.6
Approach		34	0.0	34	0.0	0.123	39.1	LOS C	0.7	4.9	0.67	0.47	0.67	4.9
All Vehicles		1818	4.6	1818	4.6	0.319	3.0	LOS A	7.2	53.8	0.12	0.20	0.12	45.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	24	54.2	LOS E	0.1	0.1	0.95	0.95
All Pedestrians		24	54.2	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 Site: 1 [1-Gilham St/Carramarr Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and Carramarr Road
Future Scenario 4
PM Peak Hour Volumes
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Carramarr Road (S)														
2	T1	139	2.3	139	2.3	0.128	0.2	LOS A	0.5	3.6	0.17	0.22	0.17	48.0
3	R2	91	0.0	91	0.0	0.128	4.9	LOS A	0.5	3.6	0.17	0.22	0.17	46.3
Approach		229	1.4	229	1.4	0.128	2.1	NA	0.5	3.6	0.17	0.22	0.17	47.5
East: Gilham Street														
4	L2	71	0.0	71	0.0	0.084	7.8	LOS A	0.3	2.3	0.21	0.90	0.21	44.4
6	R2	25	0.0	25	0.0	0.084	8.6	LOS A	0.3	2.3	0.21	0.90	0.21	43.8
Approach		96	0.0	96	0.0	0.084	8.0	LOS A	0.3	2.3	0.21	0.90	0.21	44.3
North: Carramarr Road (N)														
7	L2	7	0.0	7	0.0	0.054	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	49.4
8	T1	98	0.0	98	0.0	0.054	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		105	0.0	105	0.0	0.054	0.3	NA	0.0	0.0	0.00	0.04	0.00	49.7
All Vehicles		431	0.7	431	0.7	0.128	3.0	NA	0.5	3.6	0.14	0.32	0.14	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

Site: 5 [5-Gay St/Gilham St - Fu - PM]

Network: 1 [Vivien Place - Fu - PM]

Gay Street and Gilham Street
Future Scenario 4
PM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Gay Street														
1	L2	27	0.0	27	0.0	0.083	4.8	LOS A	0.3	2.2	0.23	0.56	0.23	35.0
3	R2	58	14.5	58	14.5	0.083	6.1	LOS A	0.3	2.2	0.23	0.56	0.23	35.0
Approach		85	9.9	85	9.9	0.083	5.7	LOS A	0.3	2.2	0.23	0.56	0.23	35.0
East: Gilham Street (E)														
4	L2	91	9.3	91	9.3	0.093	4.6	LOS A	0.0	0.0	0.00	0.28	0.00	43.1
5	T1	80	0.0	80	0.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.28	0.00	38.9
Approach		171	4.9	171	4.9	0.093	2.5	NA	0.0	0.0	0.00	0.28	0.00	41.9
West: Gilham Street (W)														
11	T1	103	0.0	103	0.0	0.109	0.4	LOS A	0.5	3.4	0.25	0.25	0.25	31.8
12	R2	85	0.0	85	0.0	0.109	4.9	LOS A	0.5	3.4	0.25	0.25	0.25	40.0
Approach		188	0.0	188	0.0	0.109	2.4	NA	0.5	3.4	0.25	0.25	0.25	37.5
All Vehicles		444	3.8	444	3.8	0.109	3.1	NA	0.5	3.4	0.15	0.32	0.15	38.8

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 9 [9-Gilham St/New Local Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and New Local Road
Future Scenario 4
AM Peak Hour Volumes
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed	
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m			km/h	
South: New Local Road														
1	L2	17	0.0	17	0.0	0.085	4.8	LOS A	0.2	1.7	0.16	0.55	0.16	40.6
3	R2	81	0.0	81	0.0	0.085	5.3	LOS A	0.2	1.7	0.16	0.55	0.16	40.6
Approach		98	0.0	98	0.0	0.085	5.2	LOS A	0.2	1.7	0.16	0.55	0.16	40.6
East: Gilham Street (E)														
4	L2	44	0.0	44	0.0	0.057	4.3	LOS A	0.0	0.0	0.00	0.22	0.00	37.4
5	T1	64	0.0	64	0.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	37.4
Approach		108	0.0	108	0.0	0.057	1.8	NA	0.0	0.0	0.00	0.22	0.00	37.4
West: Gilham Street (W)														
11	T1	77	0.0	77	0.0	0.059	0.1	LOS A	0.2	1.3	0.13	0.16	0.13	47.6
12	R2	32	0.0	32	0.0	0.059	4.9	LOS A	0.2	1.3	0.13	0.16	0.13	47.6
Approach		108	0.0	108	0.0	0.059	1.5	NA	0.2	1.3	0.13	0.16	0.13	47.6
All Vehicles		315	0.0	315	0.0	0.085	2.7	NA	0.2	1.7	0.09	0.30	0.09	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 2 [2-Gilham St/Old Castle Rdd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Gilham Street and Old Castle Road
Future Scenario 4
PM Peak Hour Volumes
Site Category: (None)
Roundabout

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
South: Old Castle Hill Road (S)														
1	L2	114	7.4	114	7.4	0.390	3.2	LOS A	2.6	18.6	0.20	0.35	0.20	43.5
2	T1	456	2.8	456	2.8	0.390	3.1	LOS A	2.6	18.6	0.20	0.35	0.20	47.3
Approach		569	3.7	569	3.7	0.390	3.1	LOS A	2.6	18.6	0.20	0.35	0.20	46.7
North: Old Castle Hill Road (N)														
8	T1	378	3.3	378	3.3	0.337	3.6	LOS A	2.4	17.2	0.39	0.44	0.39	35.3
9	R2	57	0.0	57	0.0	0.337	8.0	LOS A	2.4	17.2	0.39	0.44	0.39	35.3
Approach		435	2.9	435	2.9	0.337	4.1	LOS A	2.4	17.2	0.39	0.44	0.39	35.3
West: Gilham Street														
10	L2	43	0.0	43	0.0	0.171	5.7	LOS A	1.2	9.0	0.61	0.64	0.61	35.0
12	R2	125	6.7	125	6.7	0.171	10.3	LOS A	1.2	9.0	0.61	0.64	0.61	26.5
Approach		168	5.0	168	5.0	0.171	9.1	LOS A	1.2	9.0	0.61	0.64	0.61	29.5
All Vehicles		1173	3.6	1173	3.6	0.390	4.4	LOS A	2.6	18.6	0.33	0.42	0.33	41.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

Roundabout Capacity Model: SIDRA Standard.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

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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MOVEMENT SUMMARY

 Site: 4 [4-McMullen Ave/Old Northern Rd - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

McMullen Avenue and Old Northern Road

Future Scenario 4

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %				Vehicles veh	Distance m				
East: Old Northern Road (E)														
5	T1	1119	6.2	1119	6.2	0.389	4.9	LOS A	10.6	78.5	0.36	0.33	0.36	50.6
6a	R1	968	4.3	968	4.3	0.667	33.2	LOS C	18.9	136.9	0.88	0.92	1.14	18.4
Approach		2087	5.3	2087	5.3	0.667	18.0	LOS B	18.9	136.9	0.60	0.60	0.72	32.2
NorthWest: McMullen Avenue														
27a	L1	934	1.7	934	1.7	0.431	20.6	LOS B	20.7	147.0	0.73	0.79	0.73	31.1
29b	R3	309	4.8	309	4.8	0.736	70.6	LOS F	9.5	69.3	1.00	0.84	1.06	14.4
Approach		1243	2.5	1243	2.5	0.736	33.0	LOS C	20.7	147.0	0.80	0.80	0.81	24.2
West: Old Northern Road (W)														
10b	L3	213	6.4	213	6.4	0.224	11.9	LOS A	3.9	28.8	0.43	0.70	0.43	32.7
11	T1	885	6.4	885	6.4	0.739	34.6	LOS C	25.7	189.9	0.90	0.80	0.91	25.9
Approach		1098	6.4	1098	6.4	0.739	30.2	LOS C	25.7	189.9	0.81	0.78	0.82	26.5
All Vehicles		4428	4.8	4428	4.8	0.739	25.2	LOS B	25.7	189.9	0.71	0.70	0.77	27.9

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P2	East Full Crossing	21	54.2	LOS E	0.1	0.1	0.95	0.95
P7	NorthWest Full Crossing	66	54.3	LOS E	0.2	0.2	0.95	0.95
All Pedestrians		87	54.3	LOS E			0.95	0.95

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.

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MOVEMENT SUMMARY

 **Site: 3** [3-Old Castle Hill Rd/McMullen Ave/Pennant St - Fu - PM]  **Network: 1** [Vivien Place - Fu - PM]

Old Castle Hill Road, McMullen Avenue and Pennant Street

Future Scenario 4

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: McMullen Avenue														
21	L2	118	0.0	118	0.0	0.602	20.1	LOS B	16.3	118.2	0.53	0.54	0.53	28.1
22	T1	858	4.9	858	4.9	0.602	11.7	LOS A	16.3	118.2	0.44	0.42	0.44	27.7
23	R2	257	4.9	257	4.9	0.814	35.4	LOS C	10.5	76.9	0.95	0.87	1.09	14.0
Approach		1233	4.4	1233	4.4	0.814	17.5	LOS B	16.3	118.2	0.56	0.53	0.59	23.1
NorthEast: Old Castle Hill Road (N)														
24	L2	251	5.5	251	5.5	0.233	12.0	LOS A	5.3	39.2	0.46	0.65	0.46	34.0
25	T1	147	0.0	147	0.0	0.660	39.6	LOS C	7.1	49.6	0.85	0.71	0.90	22.0
26	R2	128	4.9	128	4.9	0.450	34.8	LOS C	5.1	37.3	0.94	0.78	0.94	21.0
Approach		526	3.8	526	3.8	0.660	25.3	LOS B	7.1	49.6	0.68	0.70	0.70	25.8
NorthWest: Pennant Street														
27	L2	152	4.2	152	4.2	0.154	11.0	LOS A	2.5	18.4	0.39	0.66	0.39	24.2
28	T1	621	2.2	621	2.2	0.896	63.5	LOS E	22.9	163.2	1.00	1.01	1.25	5.9
29	R2	9	0.0	9	0.0	0.041	47.4	LOS D	0.5	3.4	0.89	0.69	0.89	11.8
Approach		782	2.6	782	2.6	0.896	53.1	LOS D	22.9	163.2	0.88	0.94	1.08	7.1
SouthWest: Old Castle Hill Road (S)														
30	L2	83	8.9	83	8.9	0.910	67.1	LOS E	24.1	171.3	0.99	1.08	1.31	5.2
31	T1	278	0.0	278	0.0	0.910	62.5	LOS E	24.1	171.3	0.99	1.08	1.31	5.2
32	R2	281	0.4	281	0.4	0.828	69.9	LOS E	9.0	62.9	1.00	0.93	1.28	4.5
Approach		642	1.3	642	1.3	0.910	66.3	LOS E	24.1	171.3	0.99	1.02	1.30	4.9
All Vehicles		3183	3.2	3183	3.2	0.910	37.4	LOS C	24.1	171.3	0.75	0.75	0.87	13.3

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians									
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate	
P5	SouthEast Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95	
P6	NorthEast Full Crossing	50	54.3	LOS E	0.2	0.2	0.95	0.95	
P7	NorthWest Full Crossing	100	54.4	LOS E	0.3	0.3	0.95	0.95	
P8	SouthWest Full Crossing	42	54.2	LOS E	0.1	0.1	0.95	0.95	
All Pedestrians		242	54.3	LOS E			0.95	0.95	

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.

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MOVEMENT SUMMARY



Site: 7 [7-Les Shore Pl/Castle Towers/Pennant St - Fu - PM]



Network: 1 [Vivien Place - Fu - PM]

Les Shore Place, Castle Towers and Pennant Street

Future Scenario 4

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Towers														
21	L2	347	1.5	347	1.5	0.393	8.1	LOS A	8.0	56.7	0.54	0.47	0.54	10.3
22	T1	34	0.0	34	0.0	0.182	47.6	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
23	R2	75	0.0	75	0.0	0.182	47.7	LOS D	2.8	19.8	0.90	0.69	0.90	4.0
Approach		456	1.2	456	1.2	0.393	17.5	LOS B	8.0	56.7	0.63	0.53	0.63	7.5
NorthEast: Pennant Street (N)														
24	L2	76	5.6	76	5.6	0.078	11.9	LOS A	0.8	5.6	0.18	0.70	0.18	30.0
25	T1	764	6.5	764	6.5	0.647	33.8	LOS C	17.4	128.3	0.82	0.72	0.82	20.9
26	R2	62	1.7	62	1.7	0.145	28.0	LOS B	2.1	15.2	0.92	0.75	0.92	23.3
Approach		902	6.1	902	6.1	0.647	31.5	LOS C	17.4	128.3	0.78	0.72	0.78	21.6
NorthWest: Les Shore Place														
27	L2	72	1.5	72	1.5	0.170	24.8	LOS B	2.7	19.2	0.79	0.73	0.79	23.8
28	T1	18	0.0	18	0.0	0.546	30.4	LOS C	9.5	67.8	0.81	0.74	0.81	21.0
29	R2	173	2.4	173	2.4	0.546	54.1	LOS D	9.5	67.8	0.96	0.81	0.96	14.9
Approach		262	2.0	262	2.0	0.546	44.5	LOS D	9.5	67.8	0.90	0.78	0.90	17.0
SouthWest: Pennant Street (S)														
30	L2	219	2.4	219	2.4	0.915	69.8	LOS E	22.6	162.0	1.00	1.03	1.46	10.8
31	T1	568	3.7	568	3.7	0.915	69.1	LOS E	26.5	191.6	1.00	1.00	1.26	10.6
32	R2	239	0.4	239	0.4	0.704	43.8	LOS D	10.4	73.1	1.00	0.84	1.02	15.2
Approach		1026	2.7	1026	2.7	0.915	63.4	LOS E	26.5	191.6	1.00	0.97	1.25	11.6
All Vehicles		2646	3.5	2646	3.5	0.915	42.7	LOS D	26.5	191.6	0.85	0.79	0.95	14.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P7	NorthWest Full Crossing	563	55.5	LOS E	1.9	1.9	0.97	0.97
P8	SouthWest Full Crossing	634	55.6	LOS E	2.1	2.1	0.98	0.98
All Pedestrians		1197	55.5	LOS E			0.97	0.97

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: 6 [6-Castle St/Pennant St - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Castle Street and Pennant Street

Future Scenario 4

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand Flows		Arrival Flows		Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %	v/c	sec		Vehicles veh	Distance m				km/h
SouthEast: Castle Street (E)														
21	L2	222	0.9	222	0.9	0.307	18.9	LOS B	5.6	39.7	0.73	0.75	0.73	27.5
22	T1	152	1.4	152	1.4	0.615	51.1	LOS D	10.2	73.8	0.98	0.81	0.98	22.3
23	R2	33	12.9	33	12.9	0.615	55.4	LOS D	10.2	73.8	0.98	0.81	0.98	5.0
Approach		406	2.1	406	2.1	0.615	33.8	LOS C	10.2	73.8	0.84	0.77	0.84	22.9
NorthEast: Pennant Street (N)														
24	L2	63	3.3	63	3.3	0.824	19.8	LOS B	18.8	136.6	0.81	0.75	0.84	30.8
25	T1	1021	4.9	1021	4.9	0.824	15.7	LOS B	18.8	136.6	0.81	0.74	0.85	38.5
26	R2	162	5.8	162	5.8	0.315	18.6	LOS B	3.6	26.7	0.54	0.70	0.54	38.4
Approach		1246	5.0	1246	5.0	0.824	16.3	LOS B	18.8	136.6	0.77	0.74	0.81	38.2
NorthWest: Castle Street (W)														
27	L2	179	2.4	179	2.4	0.286	31.3	LOS C	7.9	56.4	0.73	0.74	0.73	27.4
28	T1	166	0.6	166	0.6	0.842	57.4	LOS E	13.7	96.4	0.97	0.97	1.19	20.7
29	R2	68	0.0	68	0.0	0.842	66.2	LOS E	13.7	96.4	1.00	1.00	1.25	23.3
Approach		414	1.3	414	1.3	0.842	47.6	LOS D	13.7	96.4	0.87	0.87	1.00	23.4
SouthWest: Pennant St (S)														
30	L2	162	0.0	162	0.0	0.673	39.2	LOS C	23.1	163.7	0.90	0.81	0.90	30.9
31	T1	818	2.3	818	2.3	0.673	32.8	LOS C	24.4	173.9	0.89	0.80	0.89	18.4
32	R2	172	1.8	172	1.8	0.375	24.0	LOS B	5.2	37.0	0.78	0.77	0.78	24.5
Approach		1152	1.9	1152	1.9	0.673	32.4	LOS C	24.4	173.9	0.88	0.79	0.88	22.0
All Vehicles		3218	3.0	3218	3.0	0.842	28.3	LOS B	24.4	173.9	0.83	0.78	0.86	27.7

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians								
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate
P5	SouthEast Full Crossing	26	29.5	LOS C	0.1	0.1	0.90	0.90
P6	NorthEast Full Crossing	742	55.9	LOS E	2.5	2.5	0.98	0.98
P7	NorthWest Full Crossing	316	54.9	LOS E	1.0	1.0	0.96	0.96
P8	SouthWest Full Crossing	516	55.3	LOS E	1.7	1.7	0.97	0.97
All Pedestrians		1600	55.1	LOS E			0.97	0.97

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.

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MOVEMENT SUMMARY

 Site: 8 [8-Castle Towers/Pennant Street - Fu - PM]

 Network: 1 [Vivien Place - Fu - PM]

Castle Towers and Pennant Street

Future Scenario 4

PM Peak Hour Volumes

Site Category: (None)

Signals - Fixed Time Coordinated Cycle Time = 120 seconds (Network User-Given Cycle Time)

Movement Performance - Vehicles														
Mov ID	Turn	Demand	Flows	Arrival	Flows	Deg. Satn	Average Delay	Level of Service	95% Back of Queue		Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed
		Total veh/h	HV %	Total veh/h	HV %		v/c		Vehicles veh	Distance m				km/h
SouthEast: Pennant Street (S)														
21	L2	237	0.4	237	0.4	0.128	9.7	LOS A	0.0	0.0	0.00	0.75	0.00	28.4
22	T1	835	6.6	835	6.6	0.294	2.3	LOS A	4.0	29.6	0.15	0.13	0.15	45.7
Approach		1072	5.2	1072	5.2	0.294	3.9	LOS A	4.0	29.6	0.11	0.27	0.11	38.4
NorthWest: Pennant St (N)														
28	T1	685	3.2	685	3.2	0.382	2.9	LOS A	6.0	43.4	0.18	0.16	0.18	51.8
29	R2	35	0.0	35	0.0	0.080	7.9	LOS A	0.1	0.4	0.03	0.70	0.03	32.1
Approach		720	3.1	720	3.1	0.382	3.1	LOS A	6.0	43.4	0.17	0.19	0.17	50.0
SouthWest: Castle Towers														
30	L2	62	0.0	62	0.0	0.080	0.7	LOS A	0.3	2.3	0.16	0.13	0.16	14.5
32	R2	122	0.0	122	0.0	0.375	52.6	LOS D	4.0	28.1	0.95	0.74	0.95	3.9
Approach		184	0.0	184	0.0	0.375	35.1	LOS C	4.0	28.1	0.68	0.53	0.68	5.3
All Vehicles		1976	3.9	1976	3.9	0.382	6.5	LOS A	6.0	43.4	0.19	0.26	0.19	34.6

Site Level of Service (LOS) Method: Delay (RTA NSW). 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.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians							
Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued Effective Stop Rate
P7	NorthWest Full Crossing	21	54.2	LOS E	0.1	0.1	0.95 0.95
All Pedestrians		21	54.2	LOS E			0.95 0.95

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.

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