1376 Carling Avenue

TIA Strategy Report

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TIA ADDENDUM #2

1. Introduction

Parsons has been retained by Holloway Lodging to prepare an Addendum Letter to the 2017 CTS in support of the phase 2 Site Plan Application (SPA). The following report represents addendum #2 to the CTS prepared in April 2017 (Appendix A).

2. Updated Existing Conditions

2.1. Existing and Planned Conditions

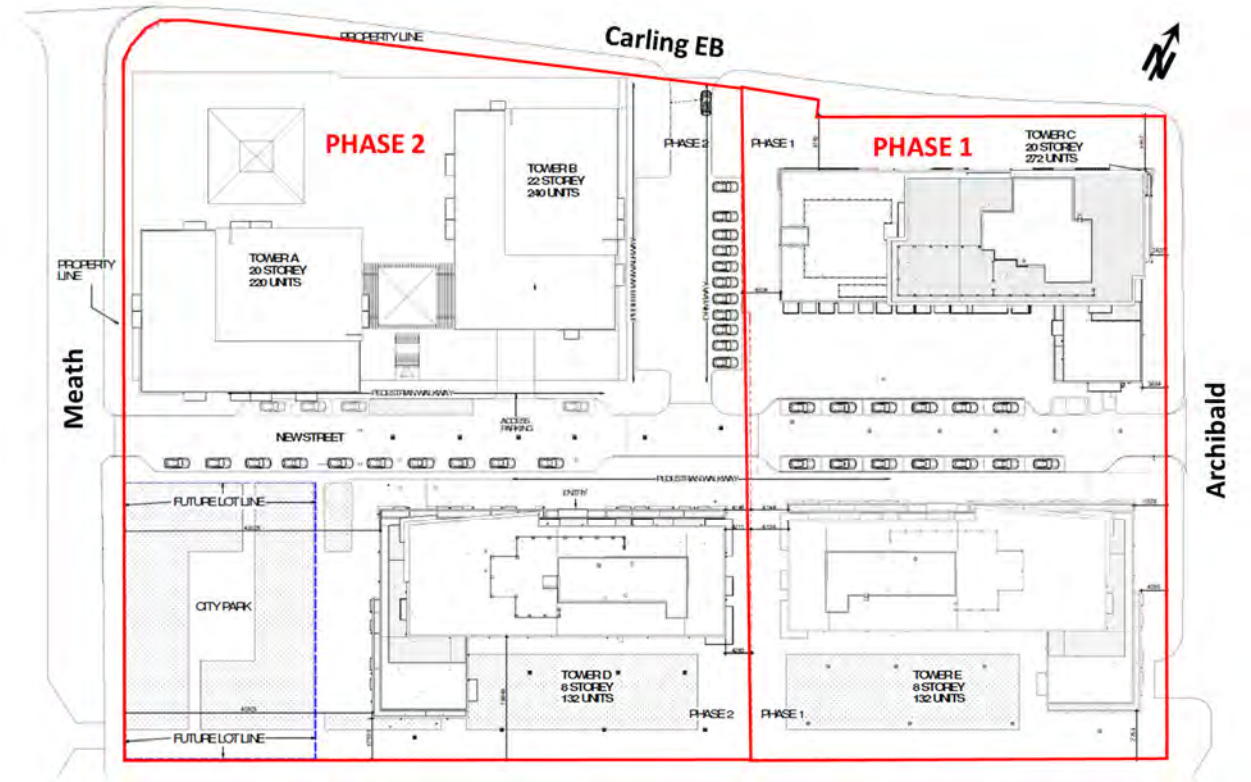
2.1.1. Proposed Development

The proposed phase 2 development is located at the municipal address of 1376 Carling Avenue on the southeast corner of the Meath/Carling intersection. The parcel located just east of the site, 1354 Carling Avenue, is also owned by Holloway Lodging and is currently under construction as Phase 1 of the proposed project, consisting of 2 residential buildings, Tower C and E, with 20 and 8-storeys respectively and 426 residential units combined. This TIA report will focus on the Phase 2 of the Holloway Lodging's development which include the additions of Tower A, B and D consisting of a 20, 22 and 8-storey apartment buildings with 220, 240 and 132 units respectively, for a combined total of approximately 592 residential units and local ground-floor commercial use. The masterplan for the development has been provided as **Figure 2**.

The existing site for Phase 2 is currently being occupied by a Travelodge Hotel. The proposed study area includes the intersections of Merivale/Carling, Kirkwood/Carling EB, Kirkwood/Carling WB, 61m E of Archibald/Carling, Westgate Access/Carling, Merivale/100m N of Carling and roadway segments adjacent to the site or between intersections as shown in **Figure 1**. More details regarding the study area can be found in **Section 2.1.2**.

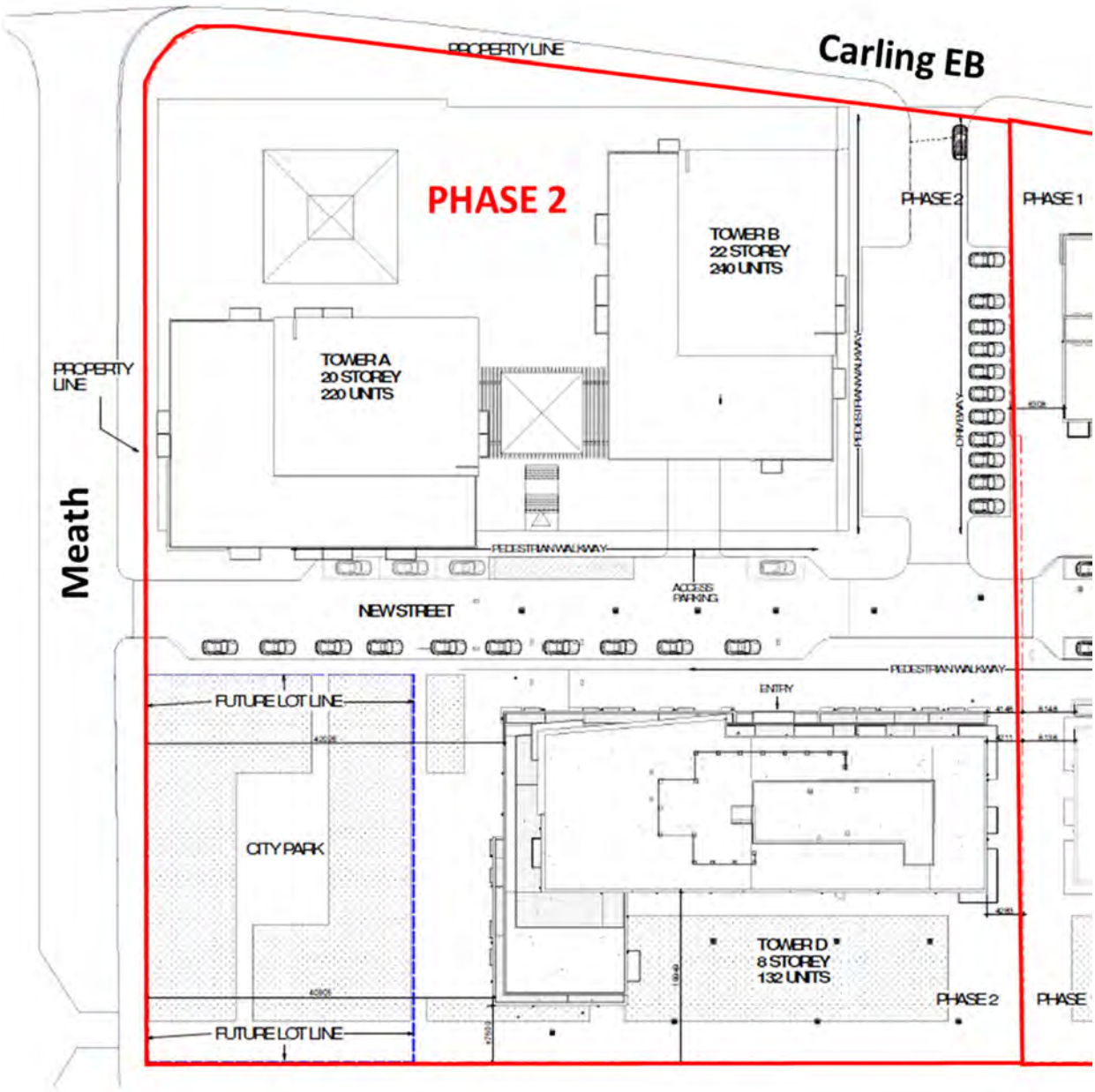
Figure 1: Local Context

Figure 2: Holloway Lodging's Carling Master Plan



The property is currently zoned as AM [2519] S389-h which has a zoning hold until a Site Plan Control approval is granted. Phase 1 is currently under construction and phase 2 is assumed to be fully developed by 2023. The entirety of the site will rely on 3 shared driveways which include a right-in right-out on Carling Avenue, a full movement access to Meath Street and a full movement driveway to Archibald Street. Ramps to the underground parking structures are proposed via the internal driveways. The latest Phase 2 site plan concept is shown in **Figure 3**.

Figure 3: Proposed Site Plan Buildings A & B



2.1.2. Existing Conditions

Area Road Network

Carling Avenue is an east-west arterial roadway which extends from March Road in the west to Bronson Avenue in the east and then continues as Glebe Avenue. The cross section in the study area consists of three travel lanes per direction divided by a median. Major intersections have left and right auxiliary turn lanes. The posted speed limit is 60km/h.

Merivale Road is a north-south arterial roadway with a two-lane cross-section within the study area. It extends from Island Park Drive in the north and Prince of Wales Drive in the south. Within the study area, the posted speed limit is 50 km/h.

Kirkwood Avenue is a north-south arterial roadway with a four-lane cross-section within the study area. It extends from Wilber Avenue in the north and Merivale Road in the south. Within the study area, the posted speed limit is 50 km/h.

Meath Street is a north-south local roadway with two-lane cross-sections and on-street parking permitted along the west side of the street. Th roadway form 'T'-intersection with Carling Avenue, permitting northbound right and eastbound right turning movements only. Meath Street is to include temporary road closure restricting access to/from Thames Street. The unposted speed limit along the roadway is assumed to be 50 km/h.

Archibald Street is a north-south local roadway with two-lane cross-sections and on-street parking permitted along the west side of the street. Th roadway form 'T'-intersection with Carling Avenue, permitting northbound right and eastbound right turning movements only. Archibald Street is to include temporary road closure restricting access to/from Thames Street. The unposted speed limit along the roadway is assumed to be 50 km/h.

Highway 417 is an east-west Provincial Freeway with a six-lane cross-section within the study area. This highway is part of the Trans-Canada Highway and extends beyond the borders of Ottawa in both the west and east ends. The posted speed limit is 100 km/h. Access/egress to/from HWY 417 is provided via multiple on/off ramps on Carling Avenue within the vicinity of the Carling/Kirkwood intersections.

Existing Study Area Intersections

The following describes the existing physical geometry of the study area intersections.

Kirkwood/Carling WB

The Kirkwood/Carling WB intersection is a signalized four-legged intersection. The westbound approach consists of a shared through/right-turn lane, a through lane, a shared through/left-turn lane and a left-turn lane. The southbound approach consists of a single right-turn lane and two through lanes. The northbound approach consists of a shared through-left lane and a single through lane. At this location, there are no restricted movements; however, Carling Avenue operates in the westbound direction only.

Kirkwood/Carling EB

The Kirkwood/Carling EB intersection is a signalized four-legged intersection. The eastbound approach consists of a single channelized right-turn lane, two through lanes, a shared through/left-turn lane and a left-turn lane. The southbound approach consists of a shared through/left-turn lane and a single through lane. The northbound approach consists of two through lanes and a single right-turn lane. At this location, the only restricted movement is the 'no right-turn on red' in the northbound direction. Carling Avenue operates in the eastbound direction only at this location.

61m E Archibald/Carling

The 61m E Archibald/Carling intersection is a signalized three-legged intersection. The eastbound approach has a triple through lane only. The westbound approach consists of a single through/right-turn lane and two through lanes. The southbound approach consists of a single all movement lane. At this location, left-turns are not allowed from Carling Avenue (east and west bound).

Westgate Shopping Centre/Carling

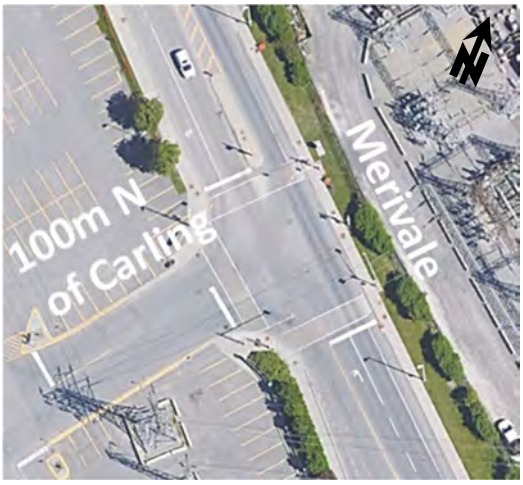
The Westgate Shopping Centre/Carling intersection is a signalized four-legged intersection. The east and westbound approaches both consist of a single left-turn lane, two through lanes and a shared through/right-turn lane. The southbound approach consists of a shared through/left-turn lane and a single right-turn lane. The northbound approach consists of a single all-movement lane. At this location, there are no restricted movements.

Merivale/Carling

The Merivale/Carling intersection is a signalized four-legged intersection. The westbound approach consists of a single left-turn lane, two through lanes and a shared through/right-turn lane. The eastbound approach consists of two through lanes and a shared through/right-turn lane. The southbound approach consists of a single left-turn lane, a single through lane and a single right-turn lane. The northbound approach consists of a single left-turn lane, a single through lane and a single channelized right-turn lane. At this location, the eastbound left-turn movement is prohibited, and all other movements are permitted.

Merivale/100m N of Carling

The Merivale/100m N of Carling intersection is a signalized three-legged intersection. The westbound approach consists of a single all movement lane. The southbound approach consists of a single right-turn lane and a single through lane. The northbound approach consists of a single left-turn lane and a single through lane. At this location, there are no restricted movements, however trucks can only exit the shopping center to the south.



Existing Driveways to Adjacent Developments

Smaller driveways consisting of parking for 5 or less vehicles were highlighted in orange in the figure below. Major driveways with access to 6 or more vehicle parking spots were marked on the map with red boxes as shown in **Figure 4** and described below. Note that only driveways within area of influence to the site and within 200-meters of the sites' proposed driveway on roadways that border the property were considered.

Figure 4: Existing Driveways Adjacent to Development

- Carling Avenue:
  - 1420 Carling – parking for residential low rise
  - 1400 Carling – parking for Embassy West Senior Living, more than 30 surface parking spots available, accessible via 2 driveways to Carling Avenue
  - 1376 & 1354 Carling – two existing driveways within phase 1 and 2 of the development. These will be consolidated into a single right-in right-out driveway once the development is built
  - 1330 Carling – double access to a car dealership, one to Carling and one to Archibald
  - 1320 Carling – surface parking for a 2-storey office/commercial building
  - 1316 Carling – double access to large surface parking exceeding 30 stalls for Phoenix high-rise apartments
  - 1296 Carling – surface parking for a 3-storey office/commercial building
- Meath Street:
  - 1400 Carling – back door access and delivery access to Embassy West Senior Living
  - 824 Meath – approximately 7 parking stalls for a small office building
  - 1376 Carling – back door access to the proposed site phase 2. This access will be relocated north and will become a new full movement driveway from the site
  - 3 minor single private residential driveways
- Archibald Street:
  - 1330 Carling – double access to a car dealership, one to Carling and one to Archibald
  - 1354 Carling – back door access to the proposed site phase 1. This access will be moved higher north and will become a new full movement driveway from the site

Existing Area Traffic Management Measures

Below are the existing area traffic management measures within the study area:

- No through traffic allowed between Carling Avenue and Merivale Road via Thames Street, Archibald Street nor Meath Street (prevent shortcutting and reduces traffic volumes on local streets)
- Textured pedestrian crosswalk at all intersections linking to Westgate Shopping Center
- Painted high visibility zebra stripe crossings at Kirkwood/Carling EB intersection
- Channelized right-turns at Kirkwood/Carling EB and Merivale/Carling intersections
- Various turn movements prohibited
- On-street parking on local roads

Pedestrian/Cycling Network

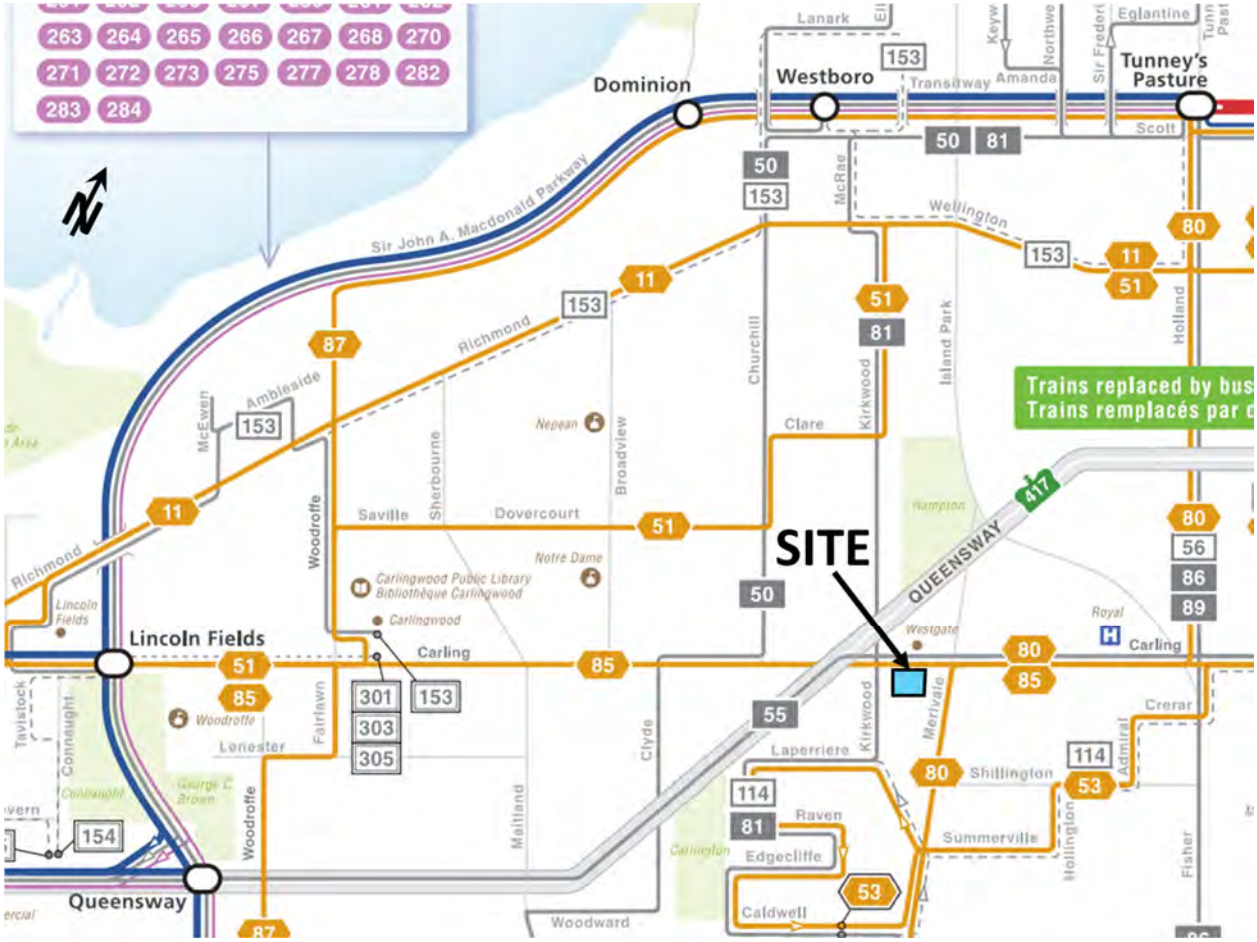
Sidewalk facilities in the vicinity of the site are provided along both sides of Carling Avenue, Kirkwood Avenue, and Merivale Road, while Meath Street has sidewalk facilities on the east side of the roadway only. No sidewalks currently exist along Archibald Street.

Dedicated bicycle facilities are currently provided in the form of bike lanes in both directions along Carling Avenue (west of Merivale Road) and along Merivale Road (north of Carling Avenue). Kirkwood Avenue is identified as a 'suggested route'.

Transit Network

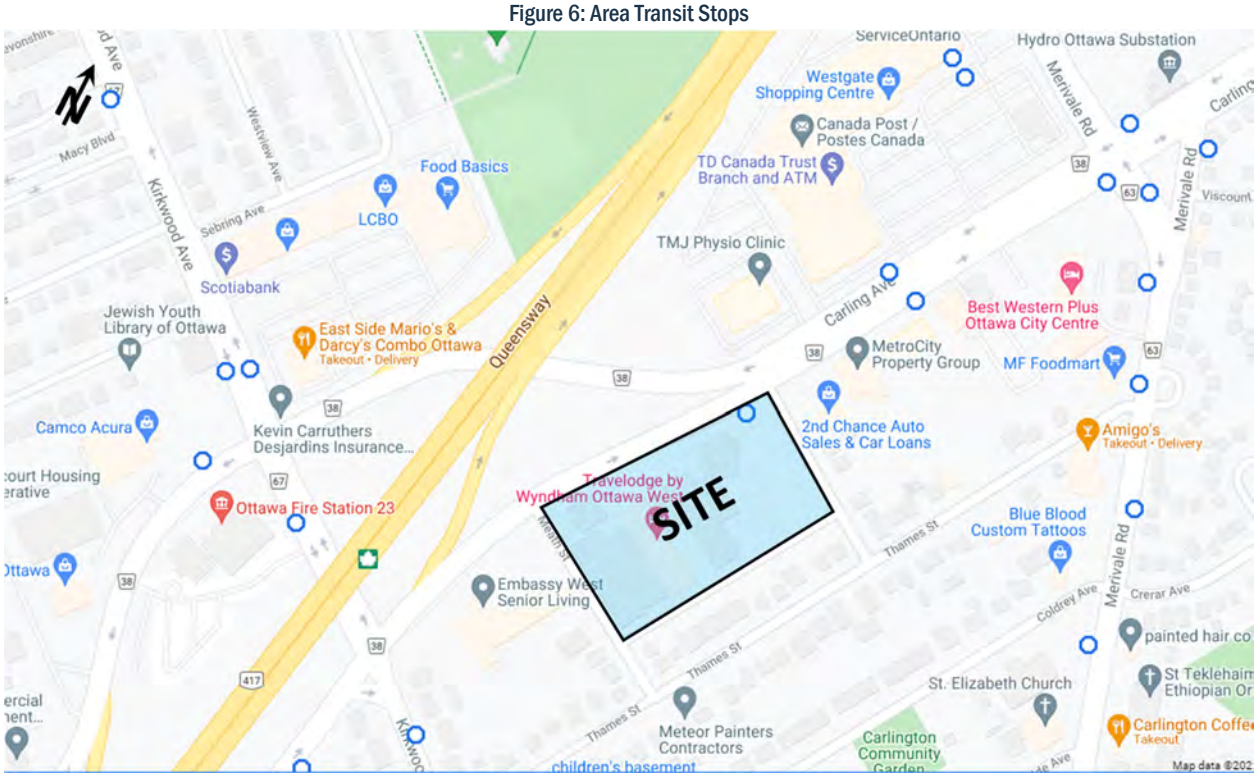
The transit network for the study area is illustrated in **Figure 5** and the nearest bus stop locations are represented as blue circles within **Figure 6**.

Figure 5: Area Transit Network



Source: *https://www.octranspo.com/images/files/maps/systemmap.pdf*

Figure 6: Area Transit Stops



Source: *https://plan.octranspo.com/plan/StopSchedules?showOptions=true*

The following OC Transpo routes currently operate within 600-meter radius of the site:

- **Route #85 (Gatineau <-> Bayshore)**: Identified by OC Transpo as a 'Frequent' route that operates 7 days a week with all-day service. During weekdays between business hours, the bus frequency is approximately one every 15 minutes or less. Route #85 provides service between Terrasses de la Chaudiere in Gatineau and Bayshore Shopping Center, with connection to Confederation Line 1 at Pimisi Station, Trillium Line 2 at Carling Station and major BRT at Lincoln Fields Station. Route #85 has stops on both sides of Carling Avenue, located adjacent to phase 1 for eastbound and approximately 300 meters east for westbound.
- **Route #80 (Barrhaven Center <-> Tunney's Pasture)**: Identified by OC Transpo as a 'Frequent' route that operates 7 days a week with all-day service. Route #80 provides connection to Confederation Line 1 at Tunney's Pasture Station and Barrhaven. Route #80 has stops on both sides of Merivale Road, located approximately 500 meters from the site.
- **Route #55 (Elmvale <-> Bayshore)**: Identified by OC Transpo as a 'local' route that operates on custom routing to local destinations. Normally has closer bunched stops and provides connection to larger stations for transfer. Route #55 provides service between Elmvale and Bayshore with connection to Confederation Line 1 at Lees Station and Trillium Line 2 at Carling Station. Route #55 has stops on both sides of Carling Avenue, located adjacent to phase 1 for eastbound and approximately 300 meters east for westbound.
- **Route #81 (Clyde <-> Tunney's Pasture)**: Identified by OC Transpo as a 'local' route that operates on custom routing to local destinations. Normally has closer bunched stops and provides connection to larger stations for transfer. Route #81 provides connection to Confederation Line 1 at Tunney's Pasture Station. Route #81 has stops on both sides of Carling Avenue, located adjacent to phase 1 for eastbound and approximately 300 meters east for westbound.

Peak Hour Travel Demands

The existing peak hour traffic volumes within the study area were obtained from the City of Ottawa. Figure 7 displays the existing vehicle traffic volumes while Figure 8 shows the existing pedestrian and cyclist volumes. Peak hour traffic volume count data is provided in Appendix B.

Figure 7: Existing Peak Hour Vehicle Traffic Volumes

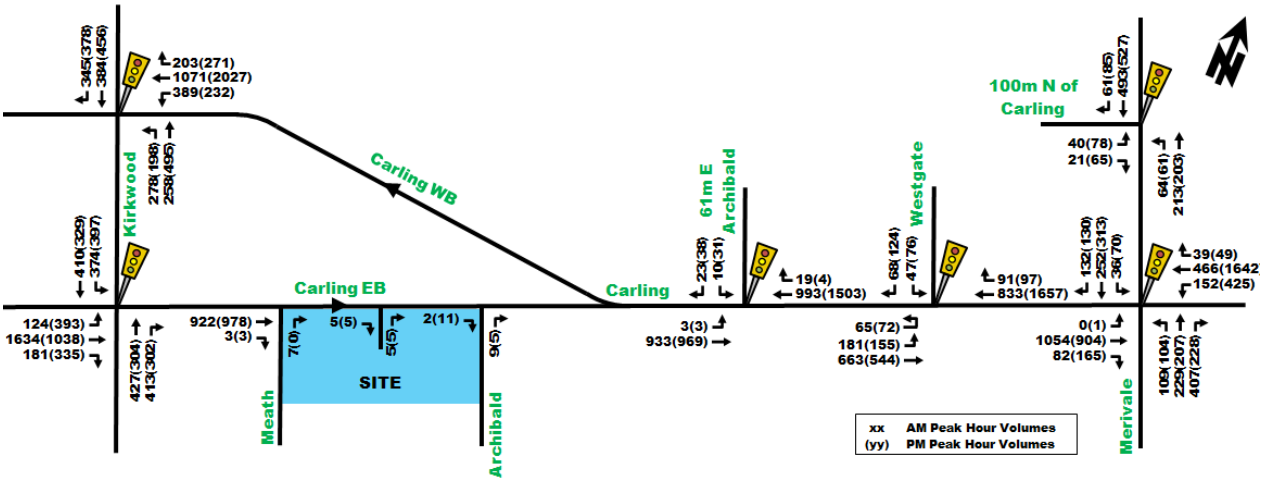
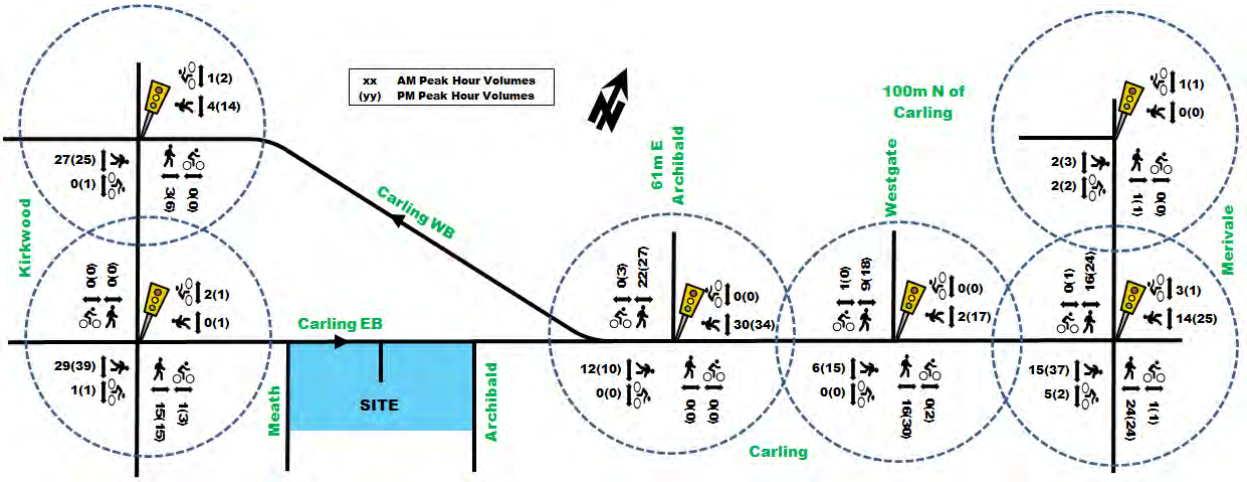


Figure 8: Existing Peak Hour Pedestrian and Cyclist Volumes



Existing Road Safety Conditions

A five-year collision history data (2015-2019, inclusive) was requested and obtained from the City of Ottawa for all intersections and road segments within the study area. Upon analyzing the collision data, the total number of collisions observed within the study area was determined to be 365 collisions within the past five-years. The majority of the collisions 308 (84%) resulted in property damage only and 57 (16%) resulted in non-fatal injury. The types of impact were broken down into the following: 120 (33%) sideswipe, 101 (28%) rear end, 80 (22%) turning movement, 41 (11%) angle, 19 (5%) Single Vehicle (other), and 4 (1%) other.

To help quantify the relative safety risk at intersections within the study area, an industry standard unit of measure for assessing collisions at an intersection was used based on the number of collisions per million entering vehicles (MEV). An MEV value greater than 1.00 indicates a relatively high frequency of collisions; however, it does not explain the type or severity of collision. A secondary analysis is done to determine the severity of collision by representing the number of personal injuries as a percentage of the total number of collisions at a given intersection.

A high propensity (MEV > 1.00 or %PIR > 30%) would signal a potential intersection design deficiency or other contributing factor, such as poor intersection geometry, blind spaces, poor lighting, excessive speeds, high amount of entry/exit driveways etc.

At intersections within the study area, reported collisions have historically taken place at a rate of:

- Kirkwood/Carling WB intersection experienced 141 collisions, where 122 (87%) involved property damage only, and 19 (13%) involved non-fatal injury. The type of collisions that occurred are comprised predominantly of sideswipes 54 or 38% of collisions and turning movements 43 or 31% of collisions. The collision rate is estimated at 2.01 Collisions/MEV which is considered very high. Though the collision rate is very high risk due to the MEV well above 1.0, the percentage of non-fatal injury is low as it is well below 30% (i.e PIR > 30%). On a closer inspection, it can be seen that 37 of 141 collisions (26%) involved vehicles changing lanes and 57 of 141 collisions (40%) involved vehicles turning either left or right, with 107 of 141 (76%) involving vehicles headed westbound. Just east of the intersection, there is a short segment of road following the merging of two major road links, the Highway 417 WB off-ramp and Carling Avenue WB which is entering on a curvature and below a bridge. The complex geometry coupled with a short, shared segment of road where vehicles have to change lanes/weave depending on where they are going (short decision time) increases the likelihood of sideswipes and turning movement collisions which generally result in property damage only.
- Kirkwood/Carling EB intersection experienced 105 collisions, where 89 (85%) involved property damage only, and 16 (15%) involved non-fatal injury. The type of collisions that occurred are comprised predominantly of rear ends 46 or 44% of collisions and sideswipes 26 or 25% of collisions. The collision rate is estimated at 1.55 Collisions/MEV which is considered high to very high. Though the collision rate is very high risk due to the MEV well above 1.0, the percentage of non-fatal injury is low as it is well below

30% (i.e PIR > 30%). On a closer inspection, it can be seen that 27 of 105 collisions (26%) involved vehicles changing lanes and 35 of 105 collisions (33%) involved vehicles going ahead, with 51 of 105 (49%) involving vehicles headed eastbound. Just west of the intersection, there is a short segment of road following the merger of two major road links, the Highway 417 EB off-ramp and Carling Avenue EB which is entering on a curvature and below a bridge. The complex geometry coupled with a short, shared segment of road where vehicles have to change lanes/weave depending on where they are going (short decision time) increases the likelihood of sideswipes collisions which generally result in property damage only. Additionally, the shared through/left could result in some vehicles slowing down to turn left while others continue forward to get to the highway on-ramp who fail to stop in time and cause higher rear end collisions at this location.

- Merivale/Carling experienced 53 collisions where 42 (79%) involved property damage only and 11 (21%) involved non-fatal injury. The collision rate is estimated at 0.80 collisions/MEV which is considered medium risk.
- Westgate/Carling intersection experienced 14 collisions mostly resulting in 12 or 86% property damage only and has a MEV of 0.27 which is considered low risk
- Archibald/Carling intersection experienced 1 collision resulting in property damage only
- 73 E of Archibald/Carling intersection experienced 4 collisions mostly resulting in property damage only
- Merivale/112 N of Carling intersection experienced 2 collisions with MEV of 0.1 (very low)

Other collisions within the study area include:

- There was a total of 18 midblock collisions experienced on the Carling WB between Kirkwood and the highway 417 ramps. An additional 7 midblock collisions were experienced on Carling WB between Kirkwood and the highway 417 ramps, which equates to 25 of 34 (74%) of all midblock collisions within the study area. The high number of merging and weaving lanes is the likely cause of the higher midblock collisions. Between the highway ramps and Kirkwood on Carling Avenue (east and westbound), 22 of 25 (88%) were property damage only.
- A total of 1 collision involved cyclists, occurring at Carling Avenue EB between Westgate and 73m E of Archibald resulting in non-fatal injury
- There were 4 collisions with pedestrians recorded, 3 occurring at Kirkwood/Carling WB and 1 occurring at Kirkwood/Carling EB

The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix C.

2.1.3. Planned Conditions

Planned Study Area Transportation Network Changes

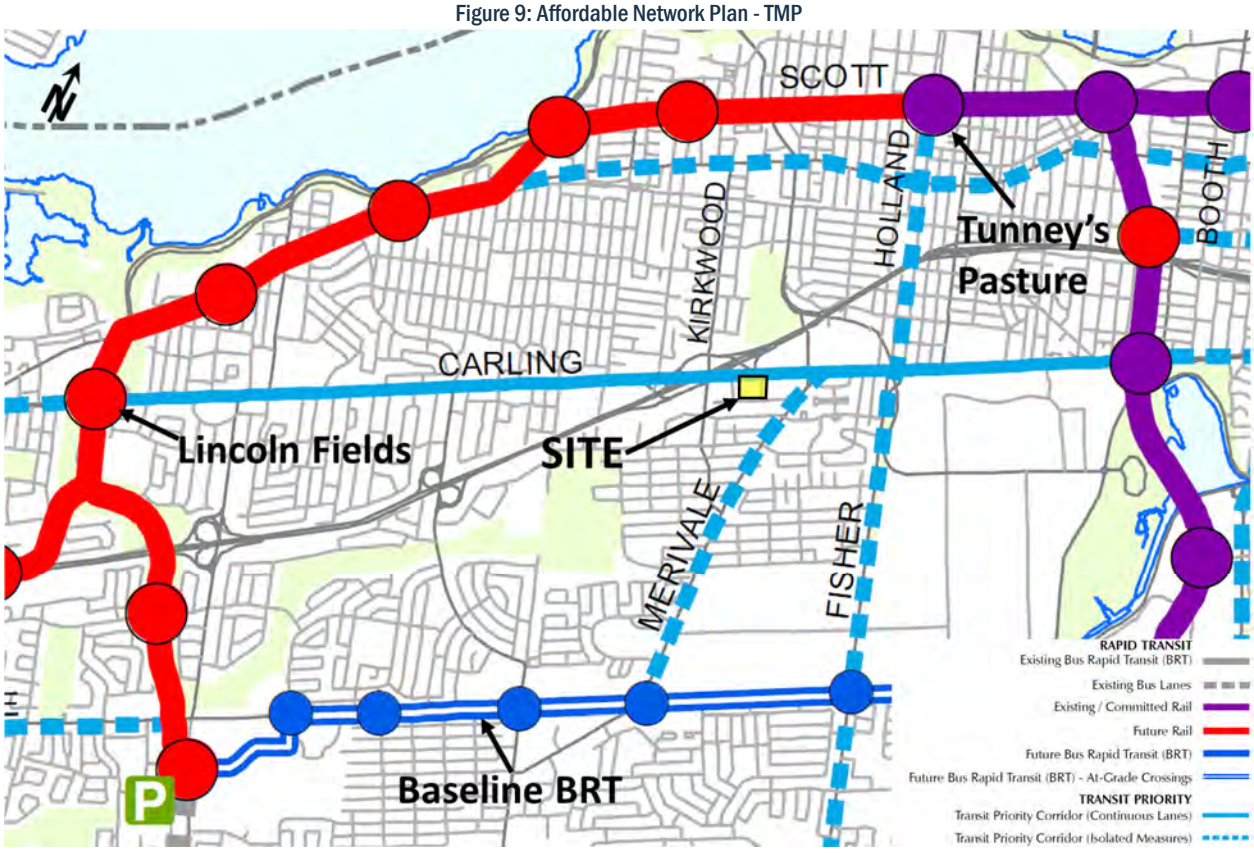
Within the study area, notable transportation network changes are described as follows:

Transportation Master Plan

Notable transportation network changes within the study area are included in the City's 2013 Transportation Master Plan. Identified as part of the 2031 Affordable Network is a Transit Priority Corridor (continuous lanes) along Carling Avenue between the Carling Trillium Line Station and the Lincoln Fields Transit Station, where a new light rail station will be built as part of the Confederation Line west expansion, expected to be completed in 2024.

Transit Priority (isolated measures) are planned along Merivale Road from Carling Avenue to Baseline Road where it connects to a future bus rapid transit (BRT) corridor. An additional transit priority corridor is proposed between Tunney's Pasture Station via Holland and Fisher to the proposed Baseline BRT corridor. These plans are outlined in **Figure 9** below from the TMP's Affordable Network Plan.

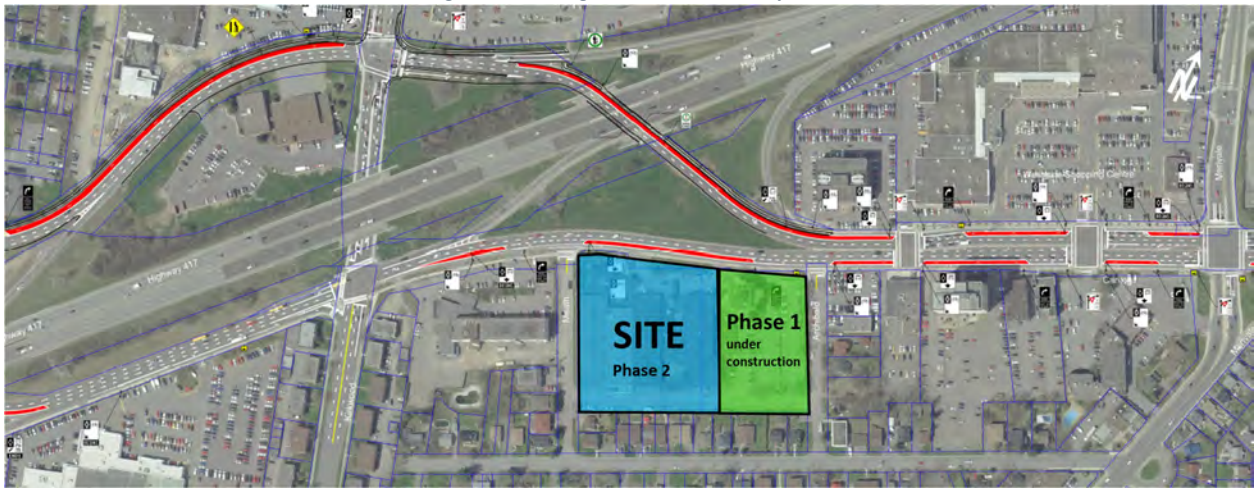
Figure 9: Affordable Network Plan - TMP



Carling Transit Priority Study

The Carling Avenue Transit Priority Study is currently underway to identify a recommended functional design. The current plan within the vicinity of the site is shown as **Figure 10**. The functional design includes transit priority (continuous lanes) with plans in the future to expand to an at-grade LRT from Bronson Avenue to Baseline Station. The construction timing of the planned modifications is currently planned to begin in summer 2021, with anticipated completion by fall 2021.

Figure 10: Carling Avenue Transit Priority Plan



Source: https://ottawa.ca/en/carling-avenue-transit-priority-measures

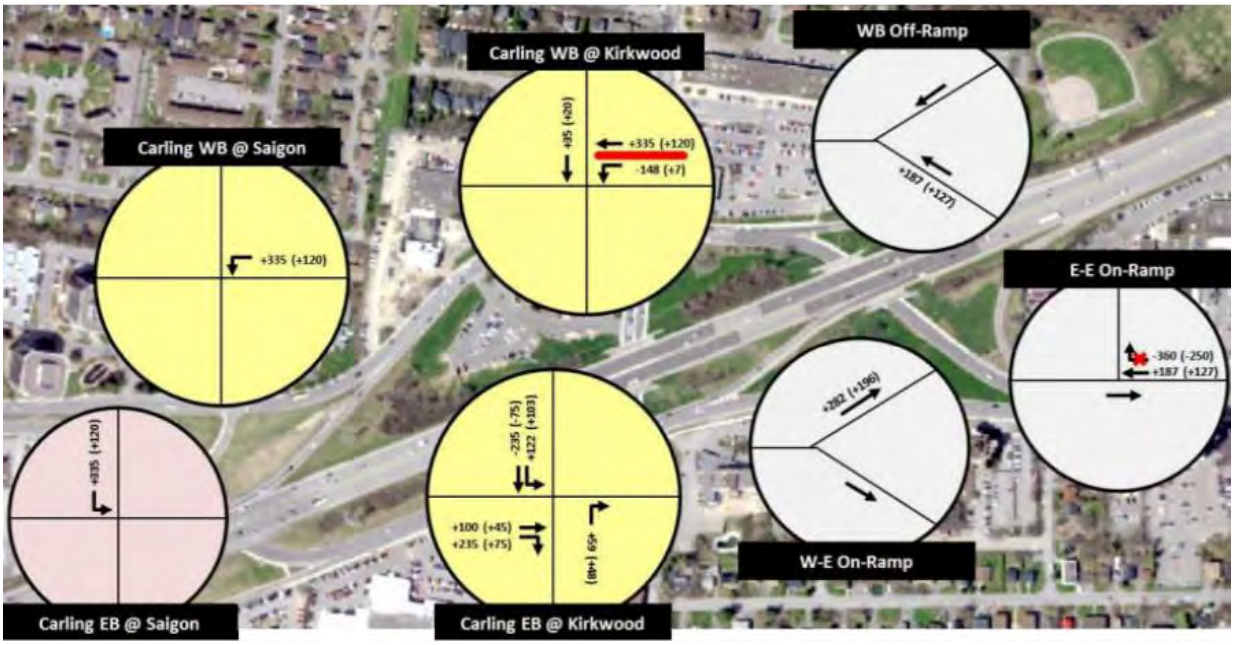
Highway 417/Kirkwood Interchange E-E On-Ramp Closure and Intersection Modifications

In March 2018 the Ministry of Transportation closed the eastbound on-ramp from Carling Avenue westbound to Highway 417 coming from the Westgate Mall. As indicated in the Queensway Expansion East project webpage, this closure is part of the Queensway Expansion from Maitland Avenue to Island Park Drive, which will add one lane in each direction. Mitigation for redirected traffic is planned to be implemented at the Carling Avenue westbound/Kirkwood Avenue and Carling Avenue/Saigon Court intersections. Mitigation measures include:

- Two dedicated left-turn lanes on Carling Avenue westbound at Kirkwood Avenue to accommodate left-turning traffic, including redirected traffic from the closed E-E (eastbound) on-ramp;
- A raised concrete median island constructed between the through lanes and the left-turn lanes on Carling Avenue westbound at Kirkwood Avenue to prevent E-W off-ramp traffic from weaving across Carling Avenue westbound to turn left on to Kirkwood Avenue southbound;
- A dedicated left turn lane on Carling Avenue westbound at Saigon Court to accommodate traffic turning left on to Saigon, including redirected traffic from the E-W off-ramp seeking access to Carling Avenue eastbound/Kirkwood Avenue south;
- Widening of Saigon Court by one lane to provide additional capacity;
- New traffic signals at the Carling Avenue eastbound/Saigon Court intersection;
- New sidewalks and a segregated bike lane on Carling Avenue westbound; and
- Speed humps and other improvements on Coldrey Avenue.

The Traffic Assessment Report Summary for the Proposed Closure of Highway 417 E-E On-Ramp at Carling Avenue Interchange, produced by MMM Group (now WSP) in December 2016, identified a total of 360 vehicles during the AM peak and 250 vehicles during the PM peak would be displaced by this closure. Figure 11 illustrates the proposed traffic impacts of the updated traffic counts and proposed changes listed above.

Figure 11: Net Traffic Impacts – Carling E-E On-Ramp Closure and Modifications



Source: MMM Group/WSP Report, 2016

Cycling Network

Within the City of Ottawa Ultimate Cycling Plan, Carling Avenue, Merivale Road and further away Island Park Drive, Holland/Fisher and Churchill Avenue are classified as future spine routes. The majority of these spine routes provide north-south connection to major pathways such as the multi-use pathway (MUP) on Scott Street, Ottawa River Pathway and Experimental Farm MUP, while Carling Avenue provides east-west connectivity. Kirkwood Avenue and Laperriere Avenue are classified as local routes in the future. Sebring Avenue, north of the Hampton Park Plaza is also a local route with pathway links to the MUPs near Island Park Drive. **Figure 12** depicts the existing and future Ultimate Cycling Network.

Figure 12: Existing and Future "Ultimate Cycling Network"

Other Area Developments

According to the City's development application search tool, the following developments are planned within the vicinity of the subject site (600-meter radius) and are illustrated in **Figure 13**.

Figure 13: Other Area Development

1 – 590 Kirkwood

The proposed development is a 3-storey residential building. A total of 22 units are proposed. The Transportation Brief (prepared by McIntosh Perry) projects an increase in two-way traffic volumes of approximately 10 to 15 veh/h during peak hours.

2 – 1309 Carling

The proposed development by RioCan is a 24-storey mixed-use building. A total of 203 units and 17,758 ft^2 are proposed. The Transportation Brief (prepared by Parsons) projects an increase in two-way traffic volumes of approximately 50 to 80 veh/h during peak hours.

3 – 1400 Carling

The City of Ottawa has received a Zoning By-law Amendment to permit an increase in height from 10-storeys to 13-storeys for the addition of two towers onto the existing retirement home at Embassy Suites. No Transportation Brief was found for this development.

4 – 1330 Carling/815 Archibald

The proposed development by is a 24-storey mixed-use building. A total of 175 units and 792 m^2 are proposed. The Transportation Brief (prepared by CGH) projects an increase in two-way traffic volumes of approximately 75 to 95 veh/h during peak hours.

5 – 1272 Carling

The proposed development plans to include an addition for 3rd and 4th storeys with a total of 24 new units. No Transportation Brief was found for this development.

6 – 864 Lady Ellen

The proposed development plans to replace a 2.5-storey building with a 5-storey office building. No Transportation Brief was found for this development.

7 – 900 Merivale

The proposed development plans to include a 4-storey addition to an existing building. No Transportation Brief was found for this development.

8 – Gladstone Village

A community Design Plan (CDP) is currently underway for a Zoning By-law Amendment (ZBLA) for the rezoning of select properties within the Merivale traditional mainstreet zone.

2.2. Study Area and Time Periods

Full buildout of the proposed residential development is assumed to be 2023 and, as discussed in Section 3.2.2 in this report, no additional background growth was assumed. As such, the horizon year being analyzed in this report is 2023 (full buildout), including all planned network changes and other area development, using the weekday morning and afternoon peak hour time periods.

Proposed study area intersections and boundary roads are outlined below and highlighted in **Figure 14**.

- Merivale/Carling intersection
- Kirkwood/Carling EB intersection
- Kirkwood/Carling WB intersection
- Westgate Access/Carling intersection
- 61m E of Archibald/Carling intersection
- Merivale/100m N of Carling intersection
- Along site's Meath Street property frontage
- Along site's Carling Avenue property frontage
- Along site's Archibald Street property frontage

Figure 14: Study Area Boundaries and Intersections

3. Forecasting

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and Mode Shares

The proposed Phase 2 development includes the additions of Tower A, B and D consisting of a 20, 22 and 8-storey apartment buildings with 220, 240 and 132 units respectively, for a combined total of approximately 592 residential units and local ground-floor commercial use. The appropriate trip generation rates for a high-rise apartment land use and retail land use were obtained from the 2020 TRANS Trip Generation Manual and the ITE 10th Edition Trip Generation Manual, respectively. The TRANS Manual provides person-trip rates during the AM and PM peak periods (7AM-9:30AM and 3:30PM-6PM), while the ITE Manual provides vehicle-trip rates during the AM and PM peak hour. The trip rates corresponding to each land use are summarized in Table 1 below.

Table 1: Trip Generation Trip Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
High-Rise Apartments (50 floors)	TRANS 2020	T = 0.80(du)	T = 0.90(du)
Shopping Center (6,200 ft²)	ITE 820	T = 0.94(X)	T = 3.81(X)

Notes: *T = Average Vehicle Trip Ends*
du = dwelling units
X = 1,000 ft² Gross Leasable Area
TRANS trip rates are for the peak period
ITE trip rates are for the peak hour

Using the trip rates provided in Table 1, the total number of person trips generated during the morning and afternoon peaks can be found in Table 2.

Table 2: Development Peak Person Trip Generation

Land Use	Dwelling Units / GLA	AM Peak Person Trips	PM Peak Person Trips
High-Rise Apartments (50 floors)	592	474	533
Shopping Center	6,200 ft²	8	31

Notes: TRANS person trips are for the peak period
ITE person trips are for the peak hour

The proposed residential development is anticipated to generate 474 and 533 person trips during the morning and afternoon peak periods, respectively. The proposed commercial development is anticipated to generate 8 and 31 person trips during the morning and afternoon peak hours, respectively. The total person trips in Table 2 are then divided into different travel modes, as shown in Table 3 and Table 5, using mode share percentages obtained from the 2020 TRANS Manual and the previously prepared 2017 Community Transportation Study (CTS) for this site, respectively.

Table 3: High-Rise Apartments Peak Period Trips Mode Shares Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trips	Mode Share	PM Peak Period Person Trips
Auto Driver	41%	194	41%	219
Auto Passenger	6%	28	11%	59
Transit	43%	204	33%	176
Cycling	2%	9	2%	11
Walking	8%	38	13%	69
Total Person Trips	**100%**	**474**	**100%**	**533**

Table 4: Shopping Center Peak Hour Trips Mode Shares Breakdown

Travel Mode	Mode Share	AM Peak Hour Person Trips	PM Peak Hour Person Trips
Auto Driver	50%	4	15
Auto Passenger	15%	1	5
Transit	15%	1	5
Cycling	5%	1	1
Walking	15%	1	5
Total Person Trips	**100%**	**8**	**31**
Notes: The non-motorized travel mode used in the previous CTS was split into Cycling and Walking travel modes based on the splits used in Table 4			

Standard traffic analysis is usually conducted using the morning and afternoon peak hour trips as they represent a worst-case scenario. In the 2020 TRANS Manual, Table 4 provides conversions rates from peak period to peak hours for different mode shares. The conversion rates are provided in Table 5 below.

Table 5: Peak Period to Peak Hour Conversion Factors (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors	
	AM	PM
Auto Driver	0.48	0.44
Passenger	0.31	0.21
Transit	0.55	0.47
Bike	0.58	0.48
Walk	0.58	0.52

Note that conversion factors for auto passenger trips are not available in the 2020 TRANS Manual. To obtain the passenger trip factor it is assumed that the total person trip peak hour conversion factor is the average of the provided adjustment factors minus the passenger trip peak hour conversion factor and has been calculated as shown in the example below:

$$0.5 = \frac{x + 0.48 + 0.55 + 0.58 + 0.58}{5}$$

$$x = 2.5 - 0.48 - 0.55 - 0.58 - 0.58$$

$$x = 0.31 \rightarrow AM\ passenger\ trip\ peak\ hour\ conversion\ factor$$

Using the conversion rates in Table 5 and the peak period person trips for different travel modes in Table 3, the peak hour trips for different travel modes can be calculated for the residential land use, as shown in Table 6. Inbound and outbound percentages were obtained from Table 9 of the 2020 TRANS Manual. Following Table 7, Table 8 provides the peak hour trips for each travel mode for the commercial land use calculated using the ITE Manual. Finally, Table 9 provides the total peak hour trip generation for the entire Phase 2 development.

Table 6: High-Rise Apartments Peak Hour Travel Mode Trips

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Auto Driver	29	64	93	56	40	96
Passenger	3	6	9	10	7	17
Transit	35	77	112	48	35	83
Bike	2	3	5	3	2	5
Walk	7	15	22	21	15	36
Total Person Trips	**76**	**165**	**241**	**138**	**99**	**237**

Table 7: Shopping Center Peak Hour Travel Mode Trips

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (62%)	Out (38%)	Total	In (48%)	Out (52%)	Total
Auto Driver	2	2	4	7	8	15
Passenger	1	0	1	2	3	5
Transit	1	0	1	2	3	5
Bike	0	1	1	1	0	1
Walk	1	0	1	3	2	5
Total Person Trips	**5**	**3**	**8**	**15**	**16**	**31**
Less Retail 25% Pass-By	-1	-1	-2	-2	-2	-4
Total 'New' Auto Trips	**1**	**1**	**2**	**5**	**6**	**11**

Table 8: Phase 2 Total Peak Hour Trip Generation

Land Use	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
High-Rise Apartments	29	64	93	56	40	96
Shopping Center	2	2	4	7	8	15
Retail Pass-By (25%)	-1	-1	-2	-2	-2	-4
Total 'New' Auto Trips	30	65	95	61	46	107
Less Existing Hotel Trips	-10	-21	-31	-19	-10	-29
Net New Auto Trips	**20**	**44**	**64**	**42**	**36**	**78**

As shown in Table 6, the total person trips anticipated to be generated by the proposed residential development are 241 and 237 trips during the morning and afternoon peak hours, respectively. Vehicle trips are anticipated to be in the order of 95 veh/h during both the morning and afternoon peak hours. The Auto and Transit mode shares generate the highest number of trips for the proposed residential development, which is expected given the location of the development along a Transit Priority Corridor and within the vicinity of Highway 417.

As shown in Table 8, the total person trips anticipated to be generated by the proposed commercial development are 8 and 31 trips during the morning and afternoon peak hours, respectively. Following an adjustment for Pass-By trips of 25%, vehicle trips are anticipated to be 2 and 11 veh/h during the morning and afternoon peak hours, respectively. The Auto mode share generates the highest number of trips for the proposed commercial development.

Overall, the total peak hour vehicle trips anticipated to be generated by the entire Phase 2 development, after accounting for the removal of the existing hotel site, are approximately 65 and 80 veh/h during the morning and afternoon peak hours, respectively, as shown in Table 9.

3.1.2. Trip Distribution and Assignment

Traffic distribution used in this report is assumed to be the same as reported in 2017 CTS, where it was based on existing volume splits at study area intersections and knowledge of the surrounding area. The distribution is outlined as follows:

From the Site

- 10% to eastbound HWY 417
- 20% to westbound HWY 417;
- 50% to the east via Carling Avenue;
- 5% to the west via Carling Avenue; and
- 15% to the south via Merivale Road;

100%

To the Site

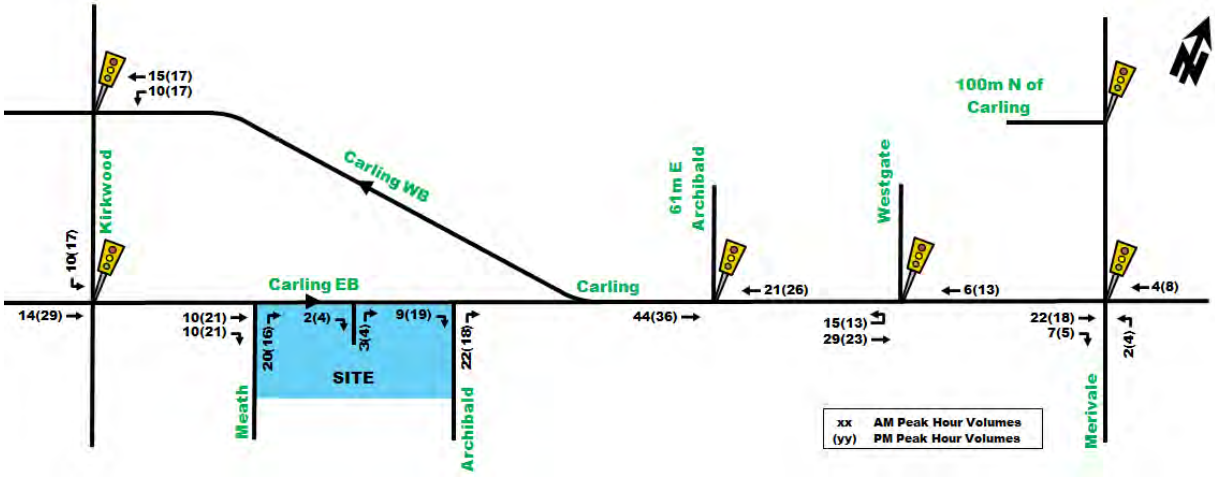
- 40% from eastbound HWY 417
- 20% from westbound HWY 417;
- 20% from the east via Carling Avenue;
- 10% from the west via Carling Avenue; and
- 10% from the south via Merivale Road;

100%

The anticipated site-generated auto trips for the proposed development from Table 9 was then assigned to the road network as shown in Figure 15. Since access to/from the proposed development is made via right-in/right-out movements along eastbound Carling Avenue only, the following trip distribution assumptions were made:

- Traffic to/from eastbound HWY 417:
    - Arriving traffic will exit HWY 417 at Kirkwood Ave and travel east on Carling Ave towards the site access.
    - Departing traffic will travel east on Carling Ave away from the site access, make a U-turn at the Carling/Westgate SC intersection, turn left onto Kirkwood Ave, left onto Carling Ave and enter HWY 417.
- Traffic to/from westbound HWY 417:
    - Arriving traffic will exit HWY 417 at Kirkwood Ave, travel through the Carling/Kirkwood N intersection, turn left onto Saigon Ct, left onto Carling Ave and travel east towards the site access.
    - Departing traffic will travel east on Carling Ave away from the site access, make a U-turn at the Carling/Westgate SC intersection, travel through the Carling/Kirkwood N intersection and enter HWY 417.
- Traffic to/from the east via Carling Avenue:
    - Arriving traffic will travel west on Carling Ave, turn left onto Kirkwood Ave, left onto Carling Ave and travel east towards the site access.
    - Departing traffic will travel east on Carling Ave away from the site access and through the Carling/Merivale intersection.
- Traffic to/from the west via Carling Avenue:
    - Arriving traffic will travel east on Carling Ave towards the site access.
    - Departing traffic will travel east on Carling Ave away from the site access, make a U-turn at the Carling/Westgate SC intersection, travel through the Carling/Kirkwood N intersection and continue west along Carling Ave.
- Traffic to/from the south via Merivale Road:
    - Arriving traffic will travel north along Merivale Rd, turn left onto Carling Ave, left onto Kirkwood Ave, left onto Carling Ave and travel east towards the site access.
    - Departing traffic will travel east on Carling Ave away from the site access and turn right onto Merivale Rd to travel south.

Figure 15: 2023 Site-Generated Traffic



3.2. Background Network Traffic

3.2.1. Transportation network plans

Refer to Section 2.1.3: Planned Study Area Transportation Network Changes.

3.2.2. Background Growth

As mentioned within the original 2017 CTS, a review of historical traffic count data provided by the City of Ottawa at the Merivale/Carling intersection indicated that no overall growth has occurred in recent years. Therefore, no additional background traffic growth was assumed for the subsequent analysis of future traffic operations and Figure 7 represents the background traffic volumes.

3.2.3. Other Developments

Description of planned transportation network changes and other area developments taking place within the study area was provided in Section 2.1.3. Traffic volumes generated by the following future adjacent network changes and area developments will be taken into account with regards to the analysis, with their respective traffic volume figures (obtained from approved TIA Reports) illustrated below:

- 1309 Carling Avenue (Figure 16)
- 1330 Carling Avenue/815 Archibald Street (Figure 17)
- 1354 Carling Avenue Phase 1 of this development (Figure 18)
- Kirkwood North/Carling Intersection Improvements – Volume Reassignment (Figure 19)

Figure 16: 1309 Carling Avenue Site-Generated Traffic Volumes

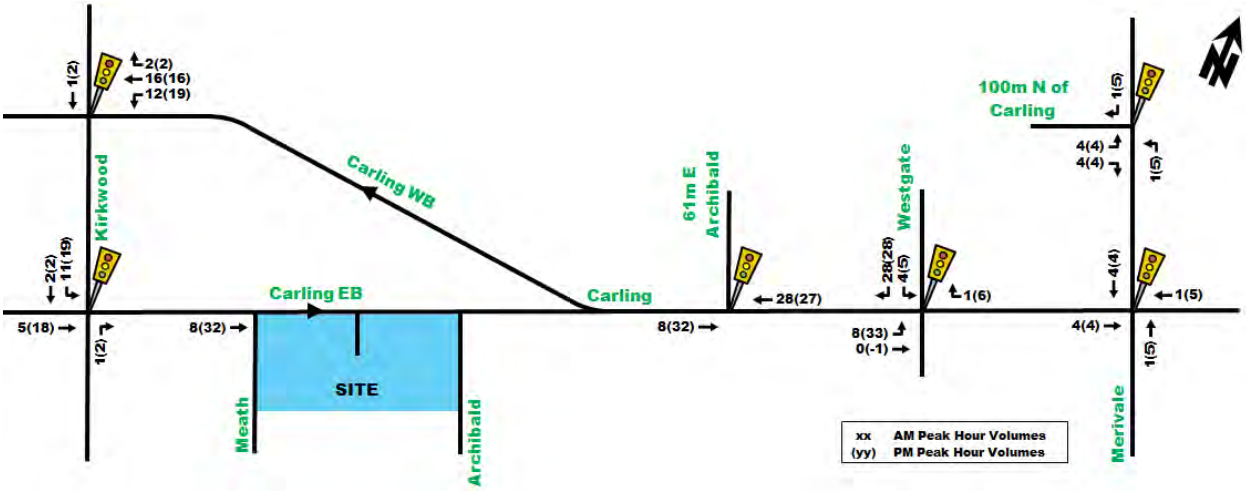


Figure 17: 1330 Carling Avenue/815 Archibald Street Site-Generated Traffic Volumes

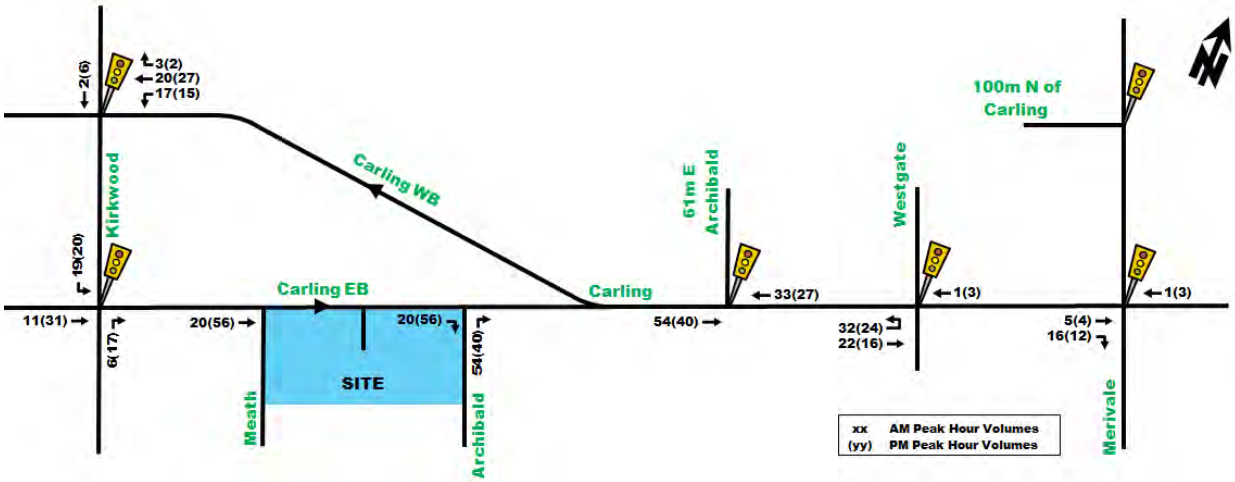


Figure 18: 1354 Carling Avenue (Phase 1) Site-Generated Traffic Volumes

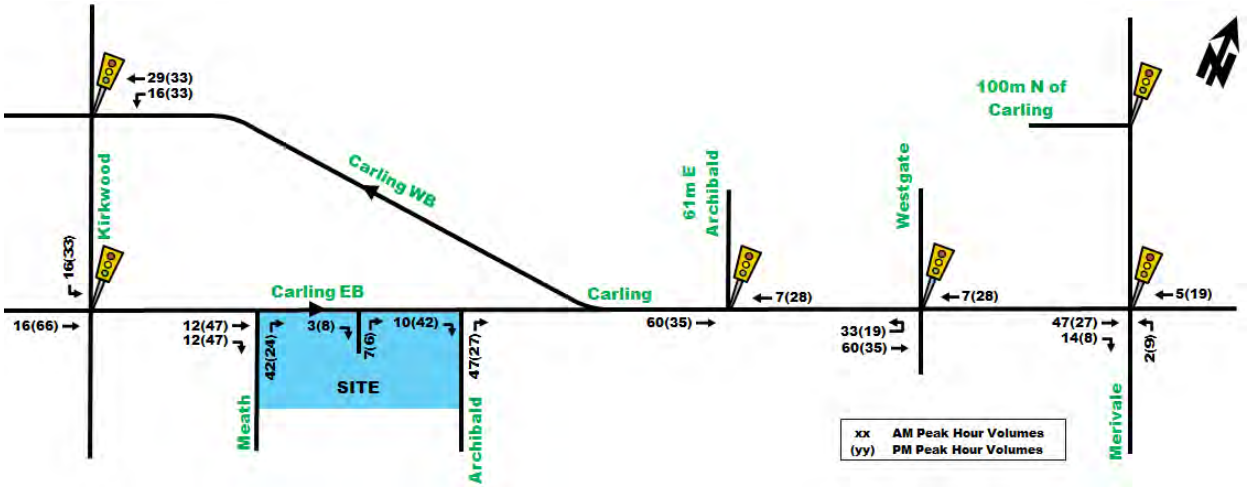
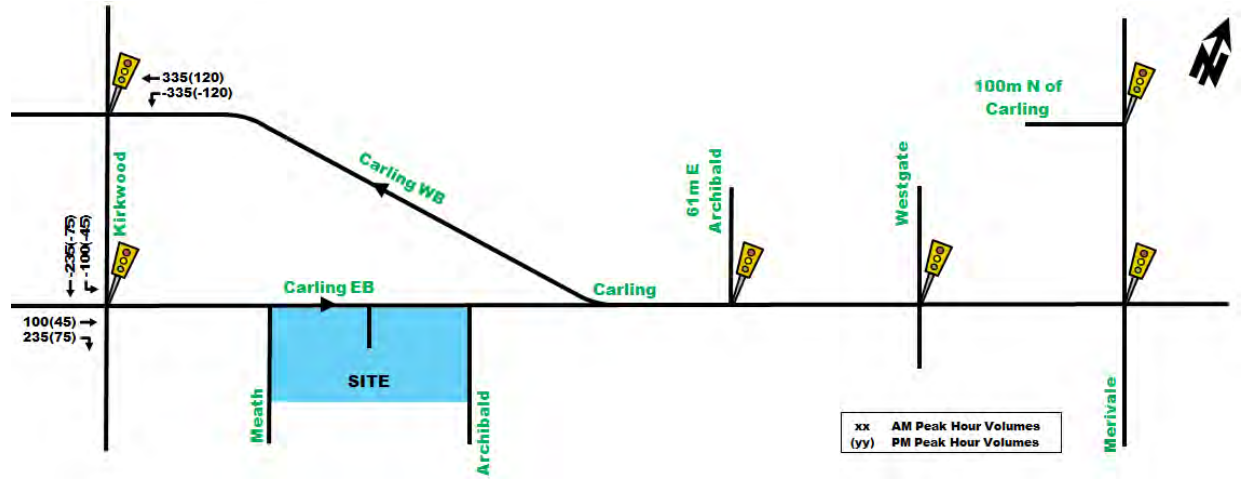
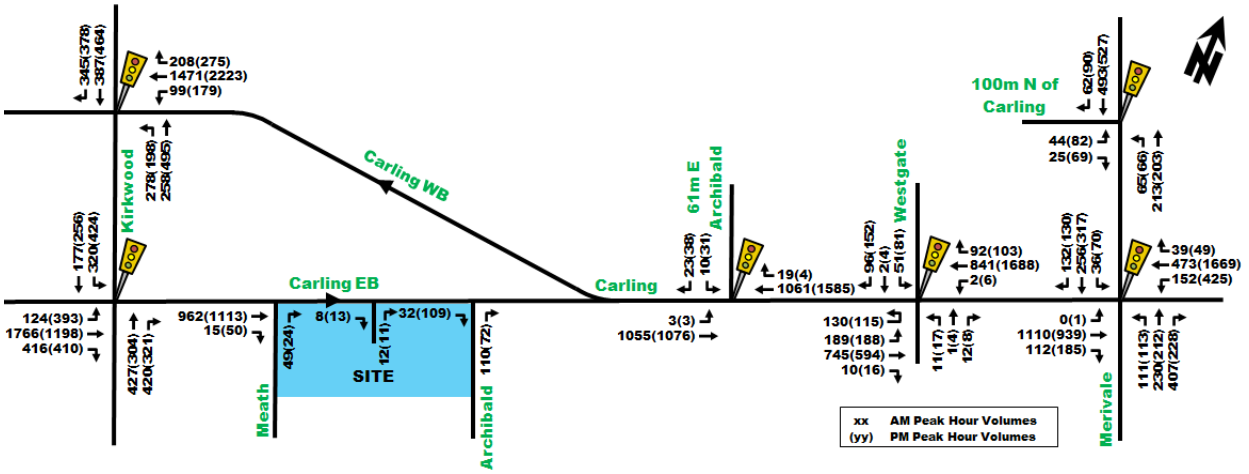


Figure 19: Kirkwood N/Carling Intersection Improvements – Traffic Volume Reassignment



All network changes and other area developments are anticipated to be constructed prior to the buildout date of the proposed Phase 2 development at 1376 Carling Avenue. As such, they are added to the background (Figure 7) traffic volumes. The forecasted total future background 2023 traffic volumes are illustrated in Figure 20.

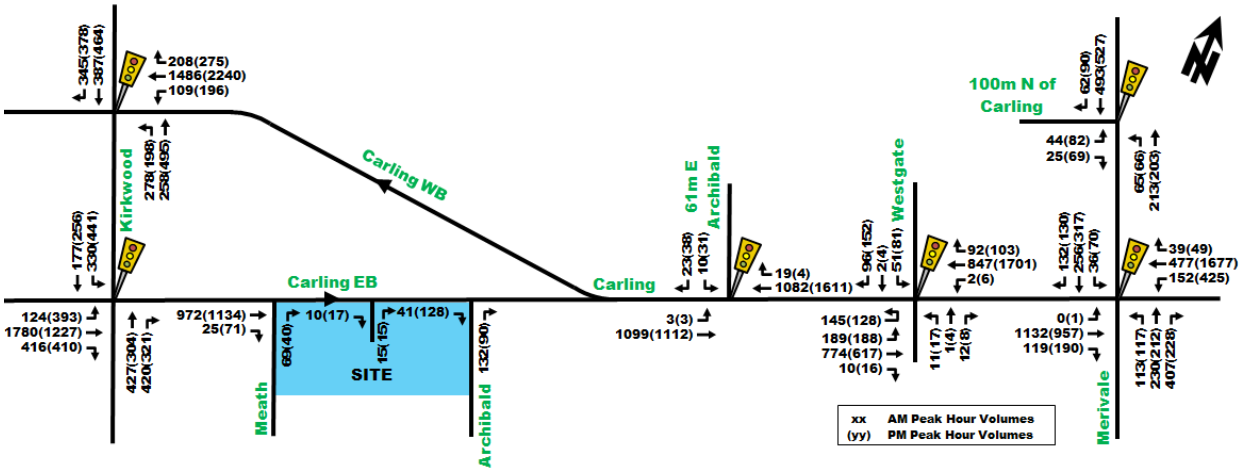
Figure 20: Total Future Background 2023 Traffic Volumes



3.3. Demand Rationalization

The total projected future traffic volumes can be determined by superimposing the site-generated traffic volumes in Figure 15, onto the total future background traffic volumes in Figure 20, resulting in the total projected 2023 traffic volumes illustrated in Figure 21.

Figure 21: Total Projected 2023 Traffic Volumes



4. Analysis

4.1. Development Design

4.1.1. Design for Sustainable Modes

The proposed development falls within the Area Y – Inner Urban Mainstreets of the City's Zoning By-Law Schedule 1A. Most of the vehicle parking is proposed in an underground parking lot with some surface parking provided along the internal roadways. A total of 369 vehicle parking spaces will be provided (320 underground, 49 surface), meeting the minimum of 343 spaces required (278 for residential, 58 for visitors, 7 for retail store). With regard to bicycle parking, 319 spaces will be provided which meets the City's Bylaw Requirements (296 for residential).

Sidewalk facilities are currently provided along the Carling Avenue and Meath Street frontages, while no sidewalk facilities exist on Archibald Street, phase 1 (1354 Carling Avenue) plans to include sidewalk along the Archibald Street frontage. On-site pedestrian walkways are planned to connect to the public sidewalks, the parking lots and the proposed buildings.

Transit service within the vicinity of the site is currently provided by OC Transpo Routes #55, 81, and 85 which include frequent all-day service. It should be noted that Route #81 connects to bus stops along Carling Avenue for only some trips. There is a nearby existing bus stop connecting all routes located along eastbound Carling Avenue, just west of Archibald Street, within 150 m walking distance from the proposed development. Carling Avenue is planned to have transit priority lanes adjacent to the site in the future. No additional service or stop locations are proposed/required within the study area.

4.1.2. Circulation and Access

With regard to on-site circulation, the proposed drive aisles within the garage are noted as 6.0 m in width, which meets the City's By-Law requirements. There is one proposed ramp to/from the underground parking.

The underground and surface level parking are accessed via the internal site road network and is connected by driveway connections to each public street (Carling, Meath, and Archibald). The ramp providing access to the underground parking should be equal to or less than 2% grade for 9 m from the property line. Appropriate transitions grades should be provided at the top and bottom of the ramps. A loading area (short term parking) is

identified on the proposed Site Plan. Sufficient turning radii on-site and at the site driveway connections should be provided for fire, garbage and delivery truck circulation.

Based on projected volumes and proximity to adjacent intersections, additional traffic control/auxiliary turn lanes are not warranted or required at the proposed driveway connections.

The proposed Site Plan includes three two-way driveway connections, providing one connection to each property frontage (Carling Avenue, Meath Street and Archibald Street), which satisfies the Private Approach By-Law maximum of 2 two-way private approaches on each frontage. In addition, driveways to the same property should be distanced at least 9 m apart according to the Private Approach By-Law, which is met by the proposed site plan.

4.2. Parking

4.2.1. Parking Supply

A total of 369 vehicle parking spaces and 319 bicycle parking spaces will be provided for the proposed development.

Based on City of Ottawa Parking Provisions, Schedule 1A, the proposed development is located in "Area Y". For the residential land use, minimum parking is required at a rate of 0.5 spaces per unit, excluding the first 12 residential units per building with five or more storeys, which equates to 278 parking spaces. For the commercial/retail land use, minimum parking is required at a rate of 1.25 spaces per m^2 of gross floor area, which equates to approximately 7 parking spaces.

For residential land uses in Area Y, visitor parking is required at a rate of 0.1 spaces per unit, excluding the first 12 units, which equates to approximately 58 visitor parking spaces required. In total, 343 parking spaces (278 for residential, 58 for visitors, 7 for retail store) are required, which is satisfied by the proposed site plan.

Bicycle parking is required at a rate of 0.5 per dwelling unit, which equates to 296 bicycle parking spaces for the 592 apartment units (no bicycle parking is required for the commercial/retail land use). Therefore, the proposed development is anticipated to meet the parking requirements for vehicle and bicycle parking spaces.

4.3. Boundary Street Design

The boundary street for the development is Carling Avenue. The Multi-Modal Level Of Service (MMLOS) analysis for the eastbound and westbound road segments along the boundary street adjacent to the site is summarized in Table 9 and Table 11 for the Existing and Background 2023 condition, respectively, with detailed analysis provided in Appendix D. The existing MMLOS targets for Arterial Main Streets were used for this site.

Segment MMLOS – Existing Conditions

Table 9: MMLOS – Boundary Street Segments – Existing Condition

Road Segment	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Minimum Desirable Target	BLoS	Minimum Desirable Target	TLoS	Minimum Desirable Target	TLoS	Minimum Desirable Target
Carling Avenue (Eastbound)	F	C	D	C	D	C	D	D
Carling Avenue (Westbound)	F	C	F	C	D	C	D	D

As shown in Table 9, the pedestrian, bicycle, and transit target level of service is not currently met on Carling Avenue. The travel speeds, assumed to be above the posted 60km/h, govern the pedestrian LoS, and the 3 travel lanes govern the bicycle LoS. For transit, the target LoS is based on the "Transit Priority – Continuous Lanes" designation for Carling Avenue, based on the TMP's Affordable Network Plan and, as buses currently operate in mixed traffic, the resultant transit LoS does not meet this target.

Carling Avenue would need to be reduced to an operating speed of 30-50 km/h and narrowed to 2 lanes per direction to meet the pedestrian and bicycle MMLOS targets. If the bike lanes were physically separated, the BLoS will achieve an 'A'. Bus lanes are required to meet the transit LoS. These measures have been included in the Carling Transit Priority Study design and an assessment of the future background 2023 condition for this design is summarized in Table 11, below.

Segment MMLOS – Background 2023 Conditions

Table 10: MMLOS – Boundary Street Segments – Background 2023

Road Segment	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Minimum Desirable Target	BLoS	Minimum Desirable Target	TLoS	Minimum Desirable Target	TLoS	Minimum Desirable Target
Carling Avenue (Eastbound)	F	C	D	C	B	C	D	D
Carling Avenue (Westbound)	F	C	A	C	B	C	D	D

As shown in Table 11, the physically separated bike lane facility provided in the westbound direction along Carling Avenue (across Highway 417) generates a LoS 'A', meeting and exceeding the target LoS. As a result of the addition of bus lanes in each direction, the transit LoS is improved to a 'B', satisfying the target LoS. The remaining MMLOS results from the existing condition remain the same.

4.4. Intersection Design

4.4.1. Intersection control

The three site accesses are assumed to use Stop control for vehicles exiting. Other study area intersections will continue operating with existing controls.

4.4.2. Intersection design

Synchro 10 Trafficware was used to analyze intersection performance of intersections within the study area. Critical movements at each of the intersections were assessed based on either the movement with the highest volume-to-capacity ratio (for signalized intersections), or the movement experiencing the highest average delay (for unsignalized intersections). It should be noted that, as per the TIA Guidelines, the Peak Hour Factor (PHF)

used for analysis was 0.90 in existing conditions and 1.00 in all future scenario conditions. All Synchro report outputs for existing and future conditions have been provided in Appendix E.

Existing Conditions

Table 11 below summarizes the intersection performance of study area intersections for the Auto Mode share, based on the existing conditions traffic volumes illustrated in Figure 7. Table 13 summarizes the intersection MMLOS analysis for the remaining Pedestrian, Bicycle, Transit and Truck Modes at signalized intersection adjacent to the proposed site.

Table 11: Existing Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Kirkwood/Carling WB (S)	D(F)	0.89(1.13)	SBR(WBT)	32.4(76.1)	C(F)	0.76(1.12)
Kirkwood/Carling EB (S)	F(F)	1.14(1.18)	NBR(NBR)	47.4(37.6)	E(D)	0.96(0.84)
61 m E of Archibald/Carling (S)	A(A)	0.26(0.46)	WBT(SBL)	1.7(3.1)	A(A)	0.25(0.36)
Westgate SC/Carling (S)	C(D)	0.72(0.83)	EBL(EBL)	7.8(13.8)	A(B)	0.35(0.69)
Merivale/Carling (S)	C(F)	0.78(1.07)	SBT(EBT)	32.7(56.5)	B(E)	0.70(1.00)
Merivale/Westgate SC (S)	A(A)	0.39(0.45)	SBT(SBT)	4.7(6.9)	A(A)	0.35(0.41)
Meath/Carling (U)	B(A)	10.6(0.0)	NBR(EBT)	0.1(0.0)	A(A)	-
Archibald/Carling (U)	A(A)	8.4(8.4)	NBR(NBR)	7.0(2.8)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 0.90 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, critical movement based on max v/c
(U) – Unsignalized Intersection, critical movement based on highest average delay

As shown in Table 11, signalized intersections 'as a whole' operate at a LOS 'E' or better during both peak hours, with the exception of the Kirkwood/Carling WB intersection which operates at a failing LOS 'F'. Critical movements at signalized intersections operate at a LOS 'D' or better during both peak hours, with the exception of the Kirkwood/Carling WB, Kirkwood/Carling EB, and Merivale/Carling intersections which each exhibit failing (LOS 'F') critical movements during peak hours. Critical movements of unsignalized intersections operate at a LOS 'B' or better during both peak hours.

Intersection MMLOS – Existing Conditions

Table 12: MMLoS – Signalized Study Area Intersections, Existing Conditions

Intersection	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Kirkwood/Carling EB	D	C	F	C	F	C	D	D
61 m E of Archibald/Carling	F	C	D	C	B	C	F	D

As shown in Table 13, all modes, except for trucks, do not currently meet the target LoS at the Kirkwood/Carling EB intersection. At the 61 m E of Archibald/Carling intersection, transit was reported as the only mode to satisfy the target LoS.

Total Future Background 2023

Table 13 below summarizes the Synchro traffic operations at study area intersections for the Auto Mode, based on the total future background 2023 conditions traffic volumes in Figure 20. Table 15 summarizes the intersection MMLOS analysis for the remaining Pedestrian, Bicycle, Transit and Truck Modes at signalized intersection adjacent to the proposed site.

Table 13: Total Future Background 2023 Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Kirkwood/Carling WB (S)	D(E)	0.82(0.97)	SBR(SBR)	31.4(42.5)	C(E)	0.77(0.96)
Kirkwood/Carling EB (S)	E(D)	0.92(0.84)	NBR(NBR)	36.0(28.1)	D(B)	0.88(0.70)
61 m E of Archibald/Carling (S)	A(A)	0.37(0.54)	EBT(WBT)	2.0(4.3)	A(A)	0.37(0.48)
Westgate SC/Carling (S)	C(E)	0.72(0.93)	EBL(WBT)	8.4(32.8)	A(D)	0.42(0.88)
Merivale/Carling (S)	D(E)	0.82(1.00)	EBT(NBL)	33.9(65.2)	C(E)	0.78(0.94)
Merivale/Westgate SC (S)	A(A)	0.35(0.40)	SBT(SBT)	4.5(6.2)	A(A)	0.31(0.36)
Meath/Carling (U)	B(A)	12.5(9.2)	NBR(NBR)	0.6(0.2)	A(A)	-
Archibald/Carling (U)	A(A)	8.7(8.6)	NBR(NBR)	6.7(3.4)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.00 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, critical movement based on max v/c
(U) – Unsignalized Intersection, critical movement based on highest average delay

As shown in Table 13, study area intersections are projected to operate slightly better than existing conditions due to increasing the PHF to 1.0 with all intersections and critical movements operating at a LOS 'E' or better during both peak hours.

Intersection MMLOS – Background 2023 Conditions

Table 14: MMLoS – Signalized Study Area Intersections, Background 2023 Conditions

	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Kirkwood/Carling EB	D	C	F	C	F	C	D	D
61 m E of Archibald/Carling	F	C	D	C	B	C	F	D

As only minor changes are expected as a result of planned network changes in the background condition, the intersection MMLOS analysis for both intersections is anticipated to be the same as the existing condition, with the majority of travel modes not meeting LoS targets.

Total Projected 2023

Based on total projected 2023 traffic volumes in Figure 21, study area intersections were analyzed using Synchro, with results summarized in Table 15 below.

Table 15: Total Projected 2023 Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Kirkwood/Carling WB (S)	D(E)	0.82(0.97)	SBR(SBR)	31.4(42.8)	C(E)	0.77(0.96)
Kirkwood/Carling EB (S)	E(D)	0.92(0.84)	NBR(NBR)	36.4(28.9)	D(C)	0.88(0.71)
61 m E of Archibald/Carling (S)	A(A)	0.38(0.55)	EBT(WBT)	2.0(4.4)	A(A)	0.38(0.49)
Westgate SC/Carling (S)	C(E)	0.76(0.97)	EBL(WBT)	8.8(47.8)	A(E)	0.44(0.91)
Merivale/Carling (S)	D(E)	0.83(0.99)	EBT(EBT)	34.7(73.8)	C(E)	0.79(0.95)
Merivale/Westgate SC (S)	A(A)	0.35(0.40)	SBT(SBT)	4.5(6.2)	A(A)	0.31(0.36)
Meath/Carling (U)	B(A)	12.9(9.3)	NBR(NBR)	0.8(0.3)	A(A)	-
Archibald/Carling (U)	A(A)	8.8(8.6)	NBR(NBR)	6.7(3.6)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.00 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, critical movement based on max v/c
(U) – Unsignalized Intersection, critical movement based on highest average delay

As indicated by Table 15, traffic operations are anticipated to be similar to the total future background 2023 traffic operations, with slightly higher delays and v/c ratios.

5. Findings, Conclusions and Recommendations

Based on the results summarized herein, the following transportation related conclusions are offered:

Proposed Development

- The proposed development will be located at 1376 Carling Avenue.
- The development will consist of a 20, 22, and 8-storey high-rise residential building with 592 apartment units, constructed as the second phase of the 1354-1376 Carling Avenue development by 2023.
- Access will be provided via 3 shared driveways which include a right-in/right-out on Carling Avenue, a full movement access to Meath Street and a full movement driveway to Archibald Street.
- A total of 369 vehicle parking spaces are proposed, with 320 spaces provided within the underground parking garage and 49 surface spaces. A total of 319 bicycle parking spaces will also be provided.
- At full buildout in 2023, the development is anticipated to generate a total of 249 and 268 person trips during the morning and afternoon peak hours, respectively. The net 'new' vehicle trips are anticipated to be approximately 65 and 80 veh/h during the morning and afternoon peak hours, respectively. Transit trips are anticipated to be 113 and 88 trips during the morning and afternoon peak hours respectively. Active transportation modes (bike and walk) are anticipated to generate 29 and 47 trips during the morning and afternoon peak hours respectively.

Existing and Background Conditions

- In existing conditions, all intersections 'as a whole' are anticipated to operate at LOS 'E' or better during both peak hours, with the exception of the Kirkwood/Carling WB intersection which operates at a failing LOS 'F'. Critical movements at signalized intersections operate at a LOS 'D' or better during peak hours, with the exception of the Kirkwood/Carling WB, Kirkwood/Carling EB, and Merivale/Carling intersections which each exhibit failing (LOS 'F') critical movements during peak hours. Critical movements of unsignalized intersections operate at a LOS 'B' or better during both peak hours.
- No additional background growth was assumed. All planned transportation network changes and other area developments were included in the 2023 horizon year (full buildout).
- As required by the TIA Guidelines, the PHF in future conditions is increased to 1.0, which results in improved traffic operations for total future background 2023 compared to existing conditions.

Projected Conditions

- Total projected 2023 traffic operations are similar to their respective future background operations, with slightly higher delays and v/c ratios.
- In the future projected conditions, traffic along Archibald Street exceeds the 120 veh/h threshold of a local road, with 130 veh/h (10 veh/h above the threshold). However, traffic operations at study area intersections are acceptable. As such, there is no recommended modifications or reclassification of the local road.

In summary, the proposed development is recommended to proceed from a transportation perspective.

Prepared By:

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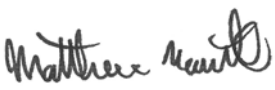
Reviewed By:



Matthew Mantle, P.Eng.
Transportation Engineer

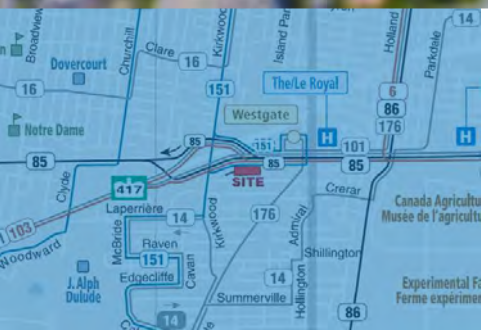
APPENDIX A

ORIGINAL CTS AND ADDENDUM #1

2017 CTS

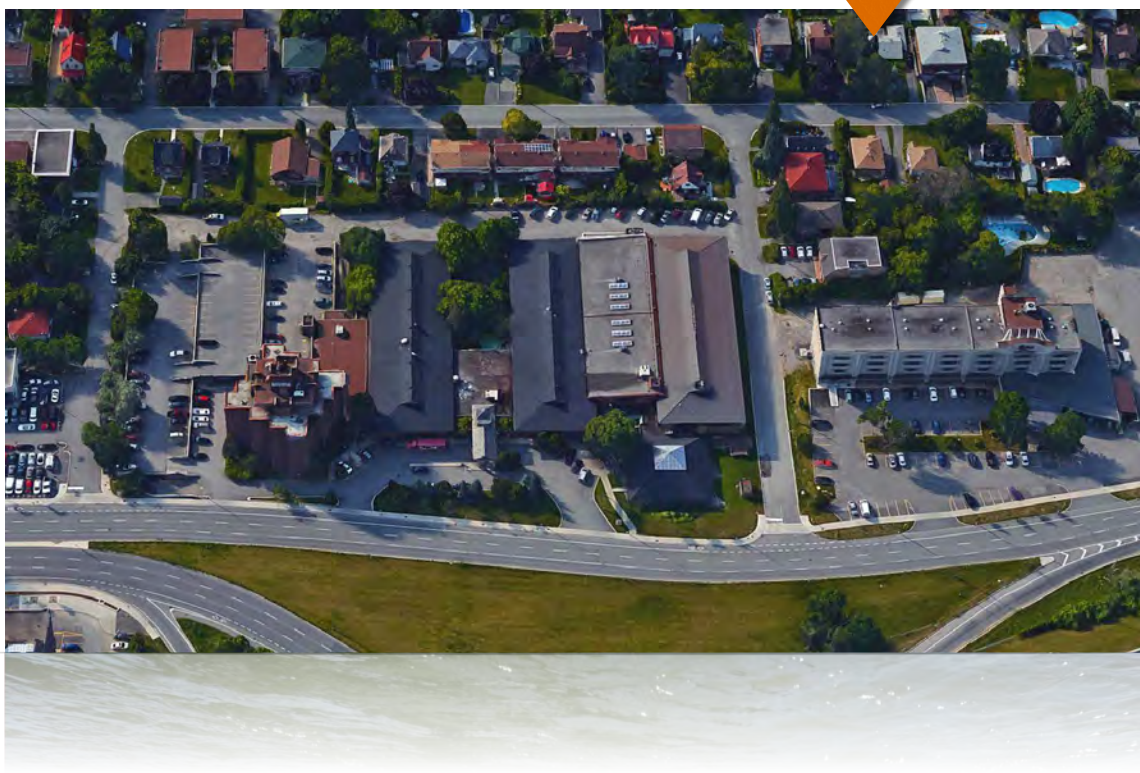
Holloway LODGING

April 2017



1354 Carling Avenue

Community Transportation Study / Transportation Impact Study



PARSONS

1354 Carling Avenue

Community Transportation Study/ Transportation Impact Study

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April 10, 2017

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PARSONS

envision more

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Community Transportation Study/Transportation Impact Study

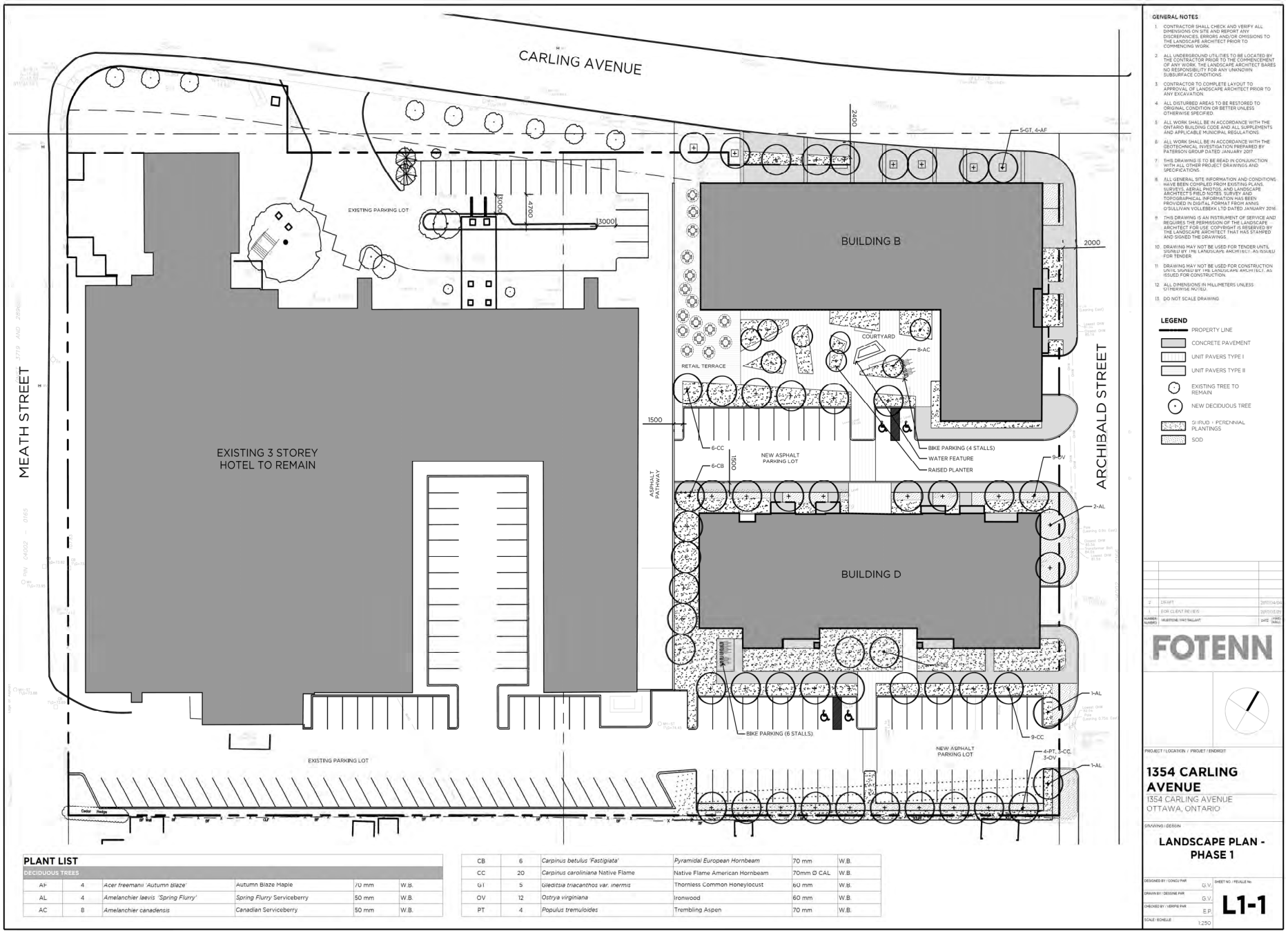
1. INTRODUCTION

Holloway Lodging is proposing a new residential development consisting of four buildings on the properties municipally known as 1376 and 1354 Carling Avenue. Two buildings (Buildings A and B) front Carling Avenue and are both proposed with 20 storeys and two 9 storey buildings (Buildings C and D) are proposed further south on the site. The total number of residential units is 914 within the four buildings. Approximately 2,440 m^2 (26,200 ft^2) of commercial is proposed fronting Carling Avenue as part of Buildings A and B.

The site is currently occupied by a hotel (Travelodge) and parking structure with multiple (3) driveway connections to Carling Avenue and to a private road at the south end of the site. Access to the future development is proposed via one right-in/right-out driveway to Carling Avenue, four full-movement driveways to Meath Street and four full-movement driveways to Archibald Street (underground and surface parking lot accesses). Within the vicinity of HWY 417, the east and westbound sections of Carling Avenue are divided. As such, all access to/from Carling Avenue at this location will operate as right-in/right-out in the eastbound direction. The local context of the site is provided as Figure 1 and the proposed Phase 1 Site Plan and Ultimate Site Plan are provided as Figures 2 and 3, respectively.

Figure 1: Local Context

The site is planned to be developed in two phases. The first phase will consist of Building 'B' and Building 'D' (identified on the Site Plan) and the existing hotel will remain. The Ultimate Phase will include all four buildings and the removal of the existing hotel. For the purpose of this assessment, horizon years will be analyzed for the year 2019 representing full occupancy of Phase 1, and at the year 2024, representing ultimate build out. The study area will consist of the signalized and unsignalized intersections of Carling EB/Kirkwood South, Carling WB/Kirkwood North, Carling/Westgate Shopping Centre, Carling/Merivale, and the unsignalized Merivale/Thames.



PLANT LIST

DECIDUOUS TREES					
AF	4	*Acer freemanii 'Autumn Blaze'*	Autumn Blaze Maple	70 mm	W.B.
AL	4	*Amelanchier laevis 'Spring Flurry'*	*Spring Flurry* Serviceberry	50 mm	W.B.
AC	8	*Amelanchier canadensis*	*Canadian* Serviceberry	50 mm	W.B.
CB	6	*Carpinus betulus 'Fastigiata'*	*Pyramidal European* Hornbeam	70 mm	W.B.
CC	20	*Carpinus caroliniana* Native Flame	Native Flame American Hornbeam	70mm Ø CAL	W.B.
GI	5	*Gleditsia triacanthos var. inermis*	Thornless Common Honeylocust	60 mm	W.B.
OV	12	*Ostrya virginiana*	Ironwood	60 mm	W.B.
PT	4	*Populus tremuloides*	Trembling Aspen	70 mm	W.B.

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Figure 2: Proposed Phase 1 Site Plan

1354 Carling Avenue

SITE STATISTICS	
LOT	
Site Area:	±18 804 m2
Building 'A'	
Building Height	20 storeys.
Building Area (above grade):	33 569 m2.
Ground Floor Commercial	1560 m2
Total Residential Units:	410
Residential Parking Required (50%) :	205
Visitor Parking Required:	53
Parking at Grade	38
Building 'B'	
Building Height	20 Storeys
Building Area (above grade):	19160 m2.
Ground Floor Commercial	877 m2
Total Residential Units:	218
Residential Parking Required (50%) :	109
Visitor Parking Required:	21
Parking at Grade	27
Building 'D'	
Building Height	9 Storeys
Building Area (above grade):	9786 m2.
Total Residential Units:	124
Residential Parking Required (50%) :	62
Visitor Parking Required:	12
Parking at Grade	38
Building 'C'	
Building Height	9 Storeys
Building Area (above grade):	13 839 m2.
Total Residential Units:	162
Residential Parking Required (60%) :	81
Visitor Parking Required:	12
Parking at Grade	45

N°	DATE	ÉMISSION
2		
1		

1354 Carling Avenue
Design Concept

Site Plan Proposal

PRELIMINARY

GeigerHuot
architectes

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Figure 3: Proposed Ultimate Site Plan

As part of the rezoning and Site Plan Application processes, the City of Ottawa requires a submission of a formal Transportation Impact Assessment (TIA) consistent with their guidelines dated October 2006. With respect to these guidelines and for a rezoning/Site Plan application, a Community Transportation Study (CTS)/Transportation Impact Study (TIS) is considered the appropriate type of study. As such, a combined CTS/TIS is provided in support of the proposed development.

2. EXISTING CONDITIONS

2.1. AREA ROAD NETWORK

Carling Avenue is an east-west arterial roadway with a six-lane cross-section and a 44.5 m right-of-way (ROW) within the study area. It extends from March Road in the west and Bronson Avenue in the east. Within the study area, the unposted speed limit is understood to be 50 km/h.

Merivale Road is a north-south arterial roadway with a two-lane cross-section and a 30 m ROW within the study area. It extends from Island Park Drive in the north and Prince of Wales Drive in the south. Within the study area, the posted speed limit is 50 km/h.

Kirkwood Avenue is a north-south arterial roadway with a four-lane cross-section within the study area. It extends from Wilber Avenue in the north and Merivale Road in the south. Within the study area, the posted speed limit is 50 km/h.

Meath Street and Archibald Street are north-south local roadways with two-lane cross-sections and on-street parking permitted along the west side of the streets. Both roadways form 'T'-intersections with Carling Avenue, permitting northbound right and eastbound right turning movements only. A private roadway connects these roads directly south of the subject site. South of this private roadway, both Meath Street and Archibald Street operate as one-way roadways in the northbound direction. It is assumed that this restriction was put in place to prevent 'cut-through' traffic from Carling Avenue to Merivale Road, via Thames Street. The unposted speed limit along these roadways is understood to be 50 km/h.

Thames Street is an east-west local roadway with a two-lane cross-section and on-street parking permitted along the south side of the roadway. Thames Street forms a 'T'-intersection with Merivale Road and is cul-de-sac at the west end. The unposted speed limit is understood to be 50 km/h.

Highway 417 is an east-west Provincial Freeway with a six-lane cross-section within the study area. This highway is part of the Trans-Canada Highway and extends beyond the borders of Ottawa in both the west and east ends. The posted speed limit is 100 km/h. Access/egress to/from HWY 417 is provided via multiple on/off ramps on Carling Avenue within the vicinity of the Carling/Kirkwood intersections.

2.2. PEDESTRIAN/CYCLING NETWORK

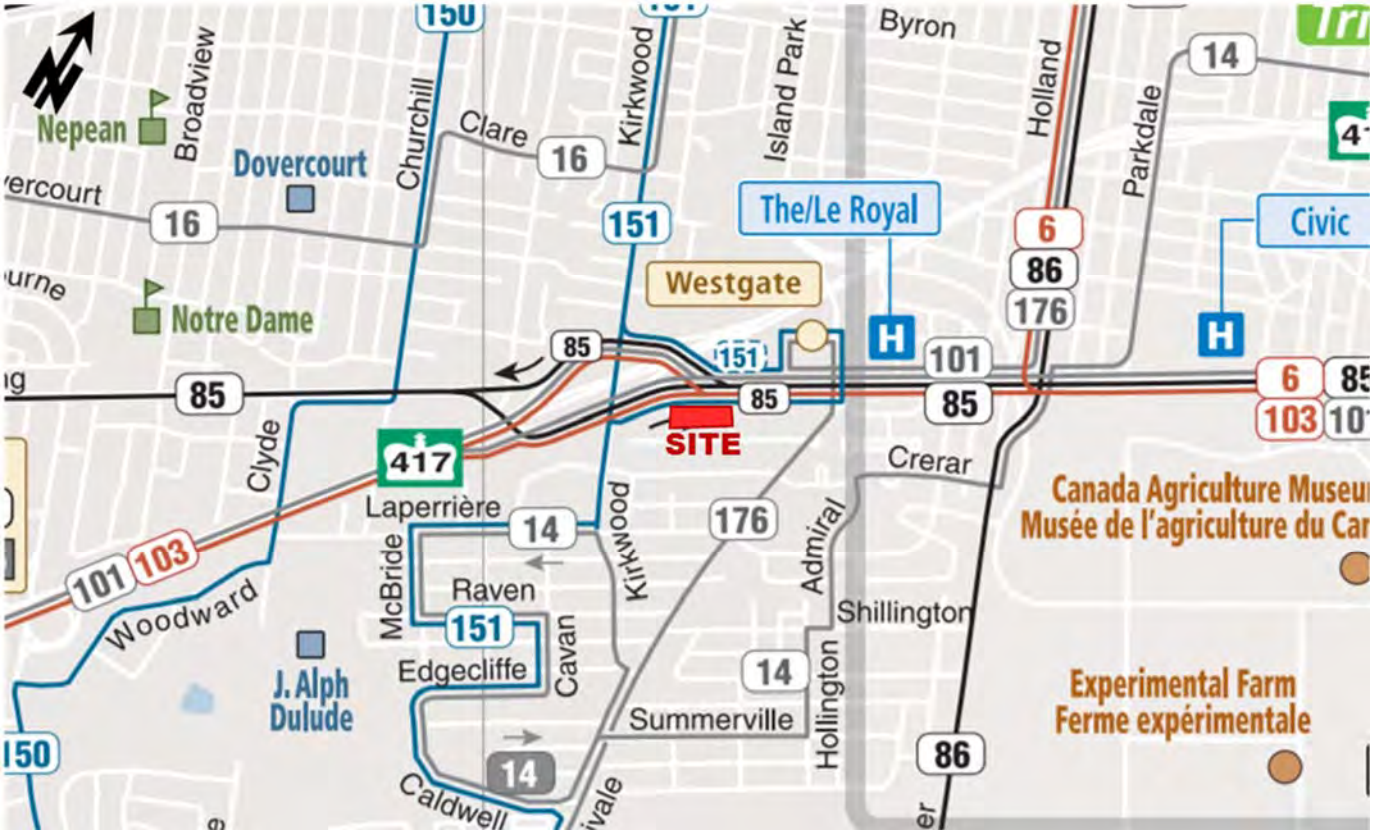
Sidewalk facilities in the vicinity of the site are provided along both sides of Carling Avenue, Kirkwood Avenue, and Merivale Road. No sidewalks are provided along the local roadways Archibald Street, Meath Street and Thames Street. Dedicated bicycle facilities are currently provided in the form of bike lanes in both directions along Carling Avenue (west of Merivale Road) and along Merivale Road (north of Carling Avenue). Kirkwood Avenue is identified as a 'suggested route'.

According to the City's Cycling Plan, Merivale Road and Carling Avenue are classified as "Spine Routes" and Kirkwood Avenue is classified as a "Local Route".

2.3. TRANSIT NETWORK

Transit service within the vicinity of the site is currently provided by OC Transpo Routes #85, 101, 103, and 151. Regular/Local Routes #85, 101, 151 provide frequent all-day service and Peak Hour Route #103 provides service during the weekday peak hours only. Bus stops for all routes are located along Carling Avenue within 150 m walking distance from the proposed development.

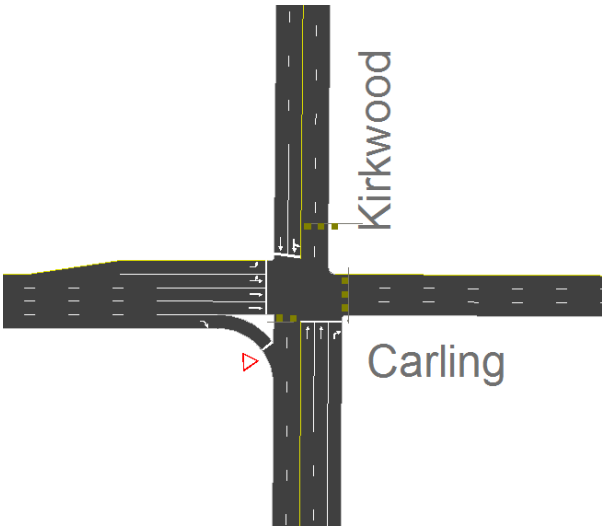
Figure 4: Area Transit Network



2.4. EXISTING STUDY AREA INTERSECTIONS

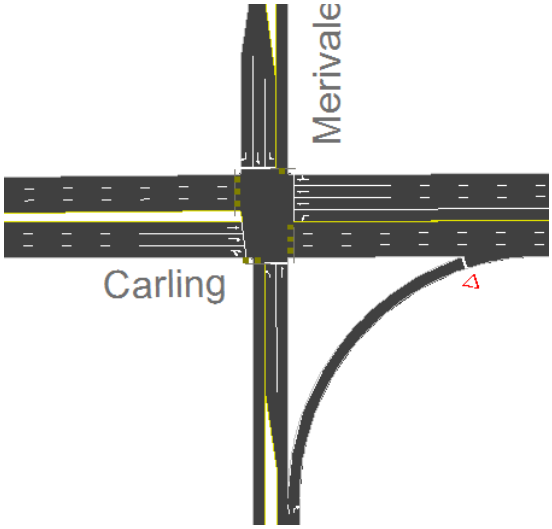
Carling EB/Kirkwood South

The Carling EB/Kirkwood S intersection is a signalized four-legged intersection. The eastbound approach consists of a single channelized right-turn lane, two through lanes, a shared through/left-turn lane and a left-turn lane. The southbound approach consists of a shared through/left-turn lane and a single through lane. The northbound approach consists of two through lanes and a single right-turn lane. At this location, the only restricted movement is the 'no right-turn on red' in the northbound direction. Also, Carling Avenue operates in the eastbound direction only at this location.



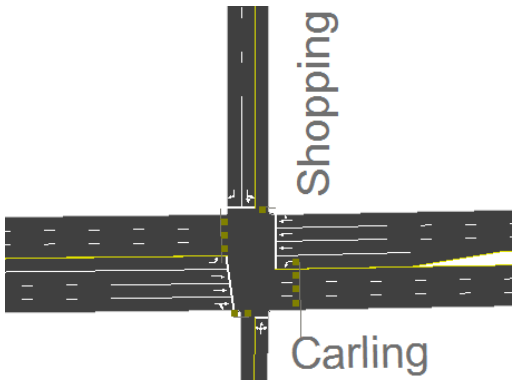
Merivale/Carling

The Merivale/Carling intersection is a signalized four-legged intersection. The westbound approach consists of a single left-turn lane, two through lanes and a shared through/right-turn lane. The eastbound approach consists a two through lanes and a shared through/right-turn lane. The southbound approach consists of a single left-turn lane, a single through lane and a single right-turn lane. The northbound approach consists of a single left-turn lane, a single through lane and a single channelized right-turn lane. At this location, the eastbound left-turn movement is prohibited and all other movements are permitted.



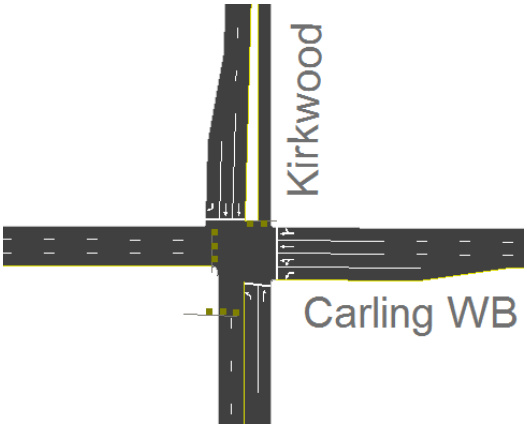
Carling/Westgate Shopping Centre

The Carling/Westgate Shopping Centre intersection is a signalized four-legged intersection. The east and westbound approaches both consist of a single left-turn lane, two through lanes and a shared through/right-turn lane. The southbound approach consists of a share through/left-turn lane and a single right-turn lane. The northbound approach consists of a single all-movement lane. At this location, there are no restricted or banned movements.



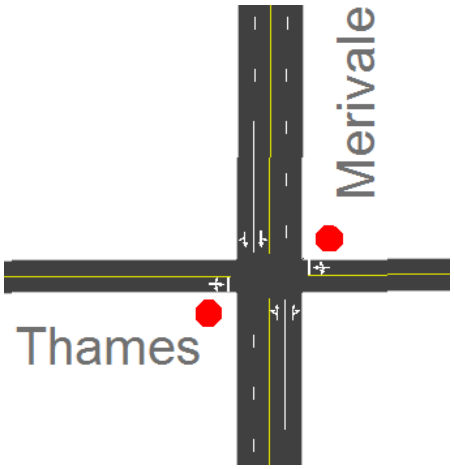
Carling WB/Kirkwood North

The Carling WB/Kirkwood N intersection is a signalized four-legged intersection. The westbound approach consists of a shared through/right-turn lane, a through lane, a shared through/left-turn lane and a left-turn lane. The southbound approach consists of a single right-turn lane and two through lanes. The northbound approach consists of a single through lane and a single left-turn lane. At this location, there are no restricted or banned movements; however, Carling Avenue operates in the westbound direction only.



Merivale/Thames

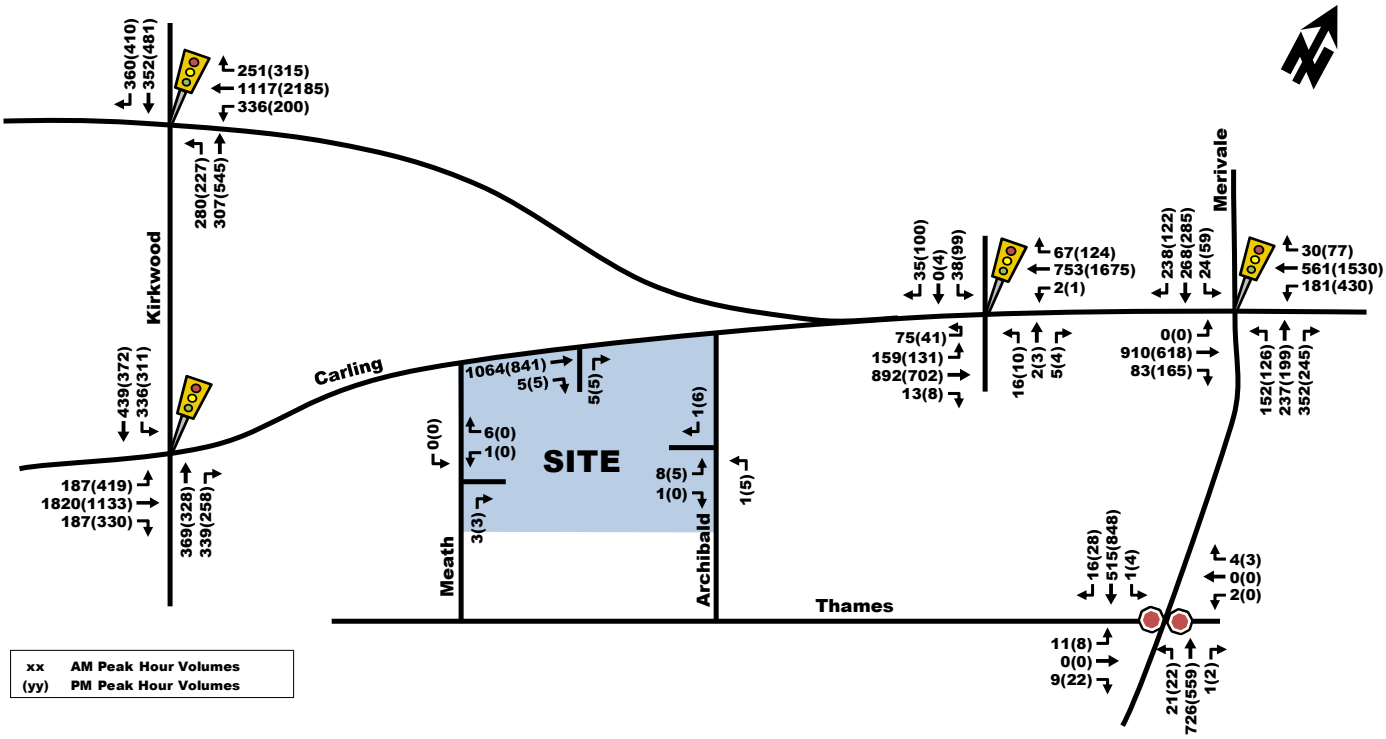
The Merivale/Thames intersection is an unsignalized four-legged intersection with STOP control on the minor approaches only. The north and southbound approaches consist of two through lanes, with turning movement permitted from the through lanes. The eastbound approach (Thames Street) consists of a single full-movement lane. The westbound approach is a short residential loop off Merivale Road that consists of a single full movement lane.



2.5. EXISTING INTERSECTION OPERATIONS

Illustrated as Figure 5, are the most recent weekday morning and afternoon peak hour traffic volumes obtained from the City of Ottawa for the signalized Carling/Kirkwood N, Carling/Kirkwood S, Carling/Shopping Centre, and Carling/Merivale intersections. The unsignalized Merivale/Thames intersection and the Travelodge driveway were counted by Parsons in March 2017. It is noteworthy that the existing access to the parking structure from Carling Avenue was under construction at the time and as such the traffic volumes from the private driveway were counted (off of Archibald and Meath). In addition, the Merivale/Carling intersection count data dated August 2016 is noted as being lower than the October 2015 count, and as such, the higher 2015 count was used as a conservative method. Peak hour traffic volumes are included as Appendix A.

Figure 5: Existing Peak Hour Traffic Volumes



The following Table 1 provides a summary of existing traffic operations at study area intersections based on the SYNCHRO (V9) traffic analysis software. The subject intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the critical movement(s). The subject intersections 'as a whole' were assessed based on a weighted v/c ratio. The unsignalized intersection was assessed in terms of delay and the corresponding Level of Service. The SYNCHRO model output of existing conditions is provided within Appendix B.

Table 1: Existing Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Kirkwood S/Carling EB	E(D)	0.91(0.88)	EBT(NBR)	35.4(26.0)	E(B)	0.91(0.68)
Merivale/Carling	B(F)	0.70(1.01)	NBL(WBL)	25.4(32.0)	A(C)	0.59(0.71)
Kirkwood N/Carling WB	D(F)	0.85(1.13)	SBR(WBT)	28.5(74.6)	C(F)	0.72(1.12)
Carling/Westgate SC	A(B)	0.54(0.67)	EBT(EBL)	4.4(9.9)	A(B)	0.50(0.63)
Merivale/Thames	C(C)	18.5(18.9)	EBL(EBL)	0.6(0.6)	-	-
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 1, the Merivale/Carling and Carling/Westgate Shopping Centre are currently operating overall at an acceptable LoS 'C' or better during morning and afternoon commuter peak hours. During the morning peak hour, the Kirkwood South/Carling EB intersection 'as a whole' is operating at capacity (LoS 'E') and during the afternoon peak hour, the Kirkwood North/Carling WB intersection 'as a whole' is operating above capacity (LoS 'F').

With regard to 'critical movements' at study area intersections, the eastbound through movement at the Kirkwood South/Carling EB intersection is currently operating at capacity (LoS 'E') during the morning peak hour. During the afternoon peak hour, the westbound through and westbound left-turn movements at the Kirkwood N/Carling WB and Merivale/Carling intersections are currently failing (LoS 'F'). All other 'critical movements' at study area intersections are currently operating at an acceptable LoS 'D' or better during peak hours with respect to the City's operating standard of LoS 'D' or better ($v/c \leq 0.90$).

With regard to the unsignalized Merivale/Thames intersection, the SYNCHRO analysis indicates delays for side street traffic in the range of 16 to 18 seconds during morning and afternoon peak hours.

As mentioned previously, Archibald Street and Meath Street operate as one-way roadways in the northbound direction south of the site. Field observations noted one to two vehicles travelling southbound to Thames Street along both Archibald Street and Meath Street.

2.6. EXISTING ROAD SAFETY CONDITIONS

Collision history for study area roads (2013 to 2015, inclusive) was obtained from the City of Ottawa and most collisions (83%) involved only property damage, indicating low impact speeds, and 16% involved personal injuries. The remaining 1% were identified as "non-reportable", indicating the total damage to a vehicle was less than $1,000.

The primary causes of collisions cited by police include; rear end (29%), turning movement (29%), sideswipe (25%), and angle (11%) type collisions.

A standard unit of measure for assessing collisions at an intersection is based on the number collisions per million entering vehicles (MEV). At intersections within the study area, reported collisions have historically taken place at a rate of:

- 1.35/MEV at the Carling/Kirkwood N intersection;

- 1.30/MEV at the Carling/Kirkwood S intersection;
- 0.35/MEV at the Carling/Westgate Shopping Centre intersection; and
- 0.97/MEV at the Carling/Merivale intersection.

The Carling/Kirkwood N intersection has experienced high numbers of collisions in the past years. Changes are proposed at the Carling/Kirkwood N intersection with the removal of the HWY 417 eastbound on-ramp (outlined in Section 3.1). These modifications will help reduce the amount of traffic from the highway attempting to merge over multiple lanes to turn left onto Kirkwood Avenue.

At the Merivale/Thames intersection, 2 collisions were reported in a 3-year period and there were no reported collisions at the Carling/Meath and Carling/Archibald intersection between 2013 to 2015. It is noteworthy that in 2012 there was a fatal accident involving a cyclist and a passenger vehicle at the Carling/Archibald intersection. In addition, between 2011 and 2013 there were 5 reported collisions involving cyclists within the study area along Carling Avenue. As part of the City's Transit Priority project along Carling Avenue, on-street cycling lanes (and cycle tracks approaching Carling/Kirkwood North) are proposed along the curb lane between the sidewalk and the Transit Lane within the study area (west of Merivale Road).

With regard to the Carling/Westgate Shopping Centre intersection, there is a notable volume of westbound U-turning vehicles. Within the 3-years of provided collision data, there are no collisions involving U-turn movements, however, there are 5 collisions involving vehicles turning eastbound left (which could indicate they were making a U-turn). One possible mitigative measure to reduce chances of collisions involving U-turns is to not allow southbound right-turns-on-red for the Westgate Shopping Centre. The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix C.

2.7. SCREENLINE OPERATIONS

The relevant screenlines within the vicinity of the proposed development are:

- SL 28 CPR Line
  - Highway 417 station
- SL 27 CPR Line South
  - Carling Station

The City of Ottawa provided the most recent 2014 and 2016 Screenline count data, which is included as Appendix D. The existing performance of the relevant study area Screenline stations is summarized below in Table 2.

Table 2: Existing Screenline Station Performance

Screenline Station	Peak Directional Demand[1] (PCU)[2]		Directional Capacity[3] (PCU)	v/c	
	AM Peak Inbound	PM Peak Outbound		AM Peak	PM Peak
CPR Line South (SL#29) Carling Station	1,109	1,736	1,800	0.62 (LoS 'B')	0.96 (LoS 'E')
CPR Line (SL #28) Highway 417 Station	5,657	6,308	5,400	1.05 (LoS 'F')	1.17 (LoS 'F')

1. 2014 volumes obtained from the City of Ottawa
2. PCU (Passenger Car Units) were assumed to be the sum of autos and 2x heavy vehicles
3. Directional capacities were obtained from IBI's Road Network Development Report and the 2008 Road Infrastructure Needs Study

As shown in Table 2, both Screenline stations at Carling and HWY417 are operating at or above capacity (LoS 'E' or 'F') in the afternoon peak hour in the outbound direction (westbound). During the morning peak hour, SL #28 HWY 417 Station is operating above capacity (v/c > 1.0) and the Carling Station is operating at an acceptable LoS 'B'.

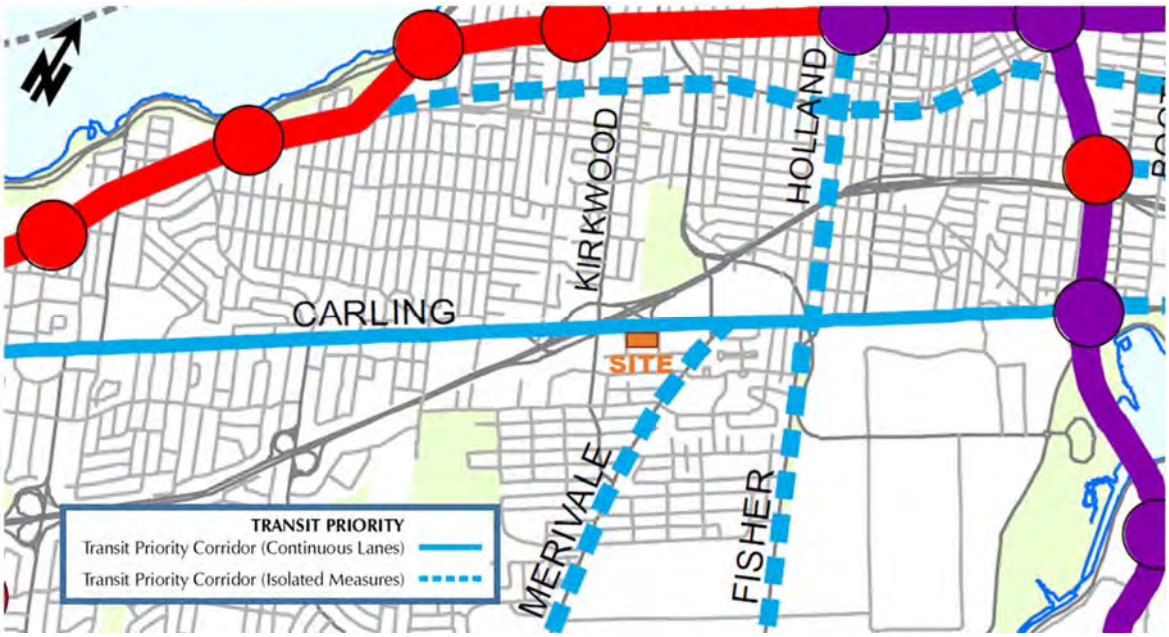
It is noteworthy that for SL #28, the assumed capacity of the station located at the HWY 417, between the Rochester and Parkdale interchanges, is consider low for a four-lane freeway facility. Given existing volumes exceed the assumed capacity, and given the assumed capacity is considered low, the performance of SL #28 is likely better than a v/c of 1.05 to 1.17. However, based on observations, it is reasonable to assume that SL #28 is operating close to or at capacity (v/c = 0.9 to 1.0). It should be noted that the implementation of the east-west Light Rail Transit (LRT) will provide additional person capacity and mitigate the existing capacity constraints across this screenline. In addition, the planned transit priority along Carling Avenue will increase person capacity along this corridor, although it will also reduce the automobile capacity (lane reductions).

3. DEMAND FORECASTING

3.1. PLANNED STUDY AREA TRANSPORTATION NETWORK CHANGES

Within the City's 2013 TMP and identified on the 2031 Affordable Network Plan, there are no plans to increase the existing auto capacity within the vicinity of the site on City roadways. HWY 417 between Maitland Avenue and Carling Avenue is planned to be widened from 6 lanes to 8 lanes, starting Summer 2017. In terms of planned network improvements for transit, Carling Avenue is identified as a future Transit Priority corridor and Merivale Road is identified to receive isolated Transit Priority measures as shown in Figure 6.

Figure 6: TMP Rapid Transit and Transit Priority – 2031 Affordable Network



Identified on the 2031 Network Concept Plan (planned network changes beyond the 2031 planning horizon year), further improvements to transit within the study area are planned. Carling Avenue is identified as a future Light Rail Transit (LRT) corridor with a station planned at the Merivale Road, and Merivale Road is identified as a future BRT corridor.

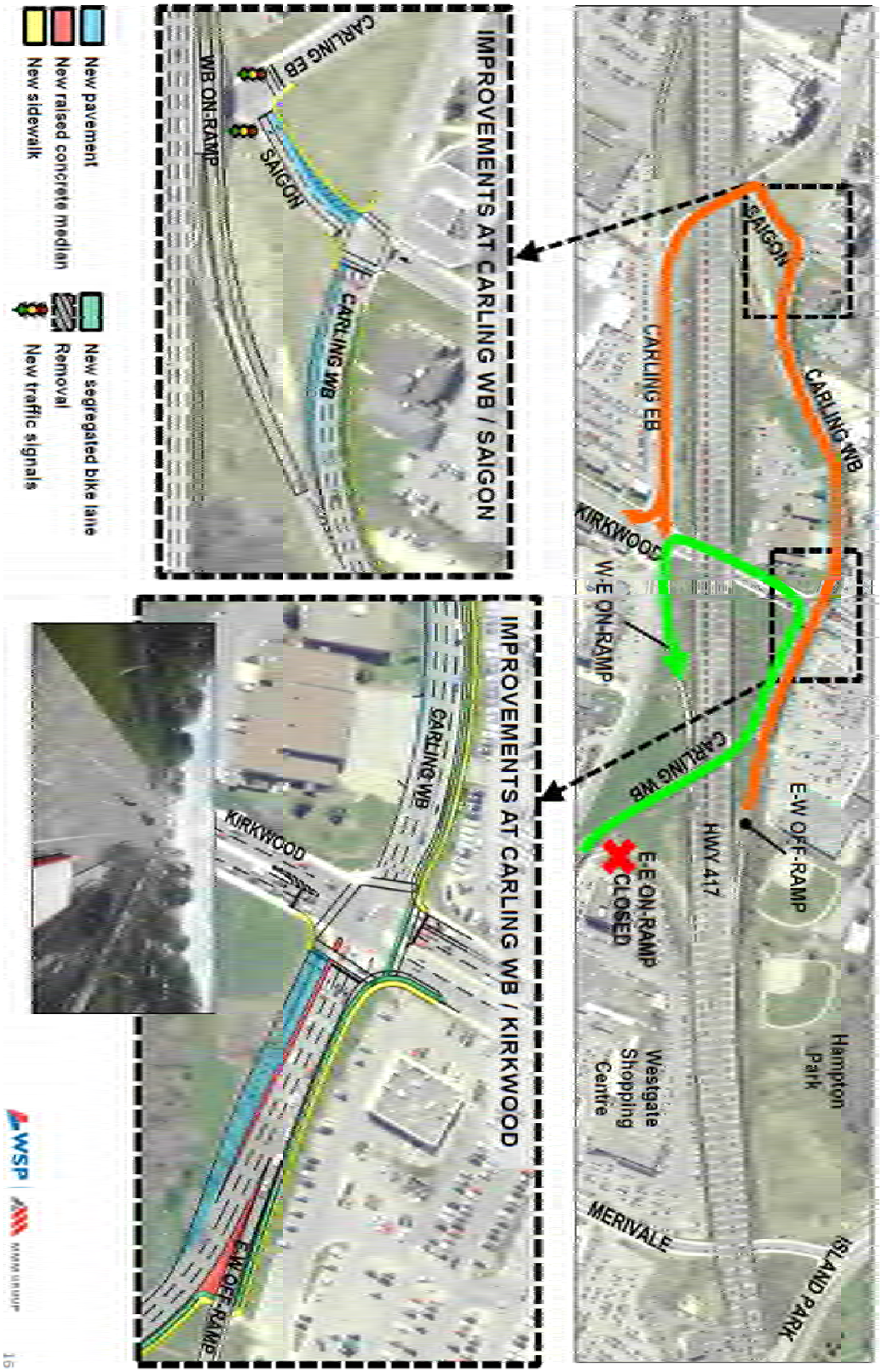
The MTO has indicated that as part of the planned widening of the highway from 6 lanes to 8 lanes between Maitland Avenue and Carling Avenue, the existing westbound Carling Avenue onramp to eastbound Highway 417 is planned to be closed. MTO has indicated that this is a relatively low-use ramp serving approximately 3,900 vehicles per day. The alternative route for these vehicles is to continue along Carling Avenue westbound, turn left at Kirkwood Avenue, and left onto Carling Avenue eastbound to the HWY 417 ramp. This route is shown in the following figure in green and the planned closed ramp is shown in red.

Figure 7: HWY 417 Eastbound On-Ramps

Given the projected increase in vehicle traffic at the Carling WB/Kirkwood N intersection, MTO along with the City of Ottawa, is proposing modifications to the Carling WB/Kirkwood N intersection to improve vehicle operations. There is an existing concern regarding vehicles exiting HWY 417 eastbound and 'weaving' across multiple lanes of traffic on Carling Avenue to turn left (heading southbound) on Kirkwood Avenue. To reduce the amount of 'weaving' vehicles, a concrete median is proposed separating the left-turn lanes from the through vehicles. This would prevent vehicles from HWY 417 turning left onto Kirkwood. Vehicles will instead turn left at the adjacent Carling/Saigon intersection.

Additional vehicle capacity in the form of a new westbound left-turn lane (double left-turn lanes) is proposed at the Carling WB/Kirkwood N intersection and additional left-turn lanes are proposed at both the Carling WB/Saigon and Carling EB/Saigon intersections. The Carling EB/Saigon intersection will also be signalized in the future. These proposed modifications are outlined in the following figure which is an excerpt of the MTO's presentation to the City of Ottawa Transportation Committee.

Figure 8: Proposed Modifications at the Carling/Kirkwood and Carling/Saigon Intersections[1]



[1] Ministry of Transportation, WSP, MMM Group. (March 1, 2017). Proposed Highway 417 Carling Avenue E-E Ramp Closure [PDF]. Retrieved from http://app05.ottawa.ca/sirepub/cache/2/2i0wuzwgfmi1oodkghmkrmvz/431586031620170228385 29.PDF

3.2. OTHER AREA DEVELOPMENT

With respect to other area development, the following development applications have been submitted to the City of Ottawa in the vicinity of the proposed site:

Westgate Shopping Centre - 1309 Carling
The Westgate Shopping Centre is located approximately 200 m northeast of the subject development and is planned to be redeveloped in four phases, with Phase 1 occupancy planned for 2017 and Phase 2 and 3 occupancy planned for 2022. Phase 1 of the Site Plan consists of 187 residential units and approximately 24,500 ft^2 of commercial and Phases 2 and 3 consist of an additional 1,183 residential units and 96,250 ft^2 of commercial. The Community Transportation Study (prepared by Parsons) projected an increase in two-way vehicle traffic of 95 to 120 veh/h during the weekday commuter peak hours for Phase 1 of the development and a 'net' increase in two-way vehicle traffic of 308 to 348 veh/h for Phase 2 and 3 (taking into account the partial removal of existing mall-generated traffic).

The projected traffic distribution from Phase1 of the development is included herein in the 2019 Horizon year, and the additional traffic generated by Phases 2 and 3 is included herein as part of the 2024 Horizon year as background traffic.

1335 Carling
1335 Carling Avenue, which is location approximately 75 m northeast of the subject development, is planned to be redeveloped on approximately the same timeline as the planned redevelopment of the Westgate Shopping Centre. The current proposal is to redevelop 1335 Carling Avenue to consist of an 11-storey office/commercial tower, totaling approximately 180,000 ft^2. The current site consists of a 6-storey building, totaling approximately 72,000 ft^2 of office/commercial. The Westgate Shopping Centre Redevelopment CTS outlines projected increases in traffic volumes for this development to be in the range of 100 veh/h and 80 veh/h during the weekday morning and afternoon peak hours, respectively.

The projected traffic distribution from this planned development is included herein in the 2019 Horizon year background traffic.

1400 Carling Avenue
The above-noted address is located directly adjacent to the west of the subject development. A requested has been submitted to increase the existing retirement home from 10 storeys to 13 storeys. No Traffic Impact Study was prepared for this application.

900 Merivale Road
An expansion of the existing Community Health Centre is planned at the above-noted location, which is located approximately 250 m southeast of the subject development. The Transportation Overview (prepared by Parsons) projects an increase in two-way vehicle traffic of 40 to 50 veh/h during the weekday commuter peak hours.

999 Merivale Road
A residential building consisting of 14 condominium units is planned at the above-noted address, which is located approximately 500 m southeast of the subject development. The Transportation Overview (prepared by Novatech) projects an increase in two-way vehicle traffic of approximately 10 veh/h during the weekday commuter peak hours.

The projected traffic generated by the Westgate Shopping Centre redevelopment and by the 1335 Carling development was added as background traffic to the study area intersections. These combined traffic volumes are illustrated as Figure 9 for the Horizon year 2019 and Figure 10 for the Horizon year 2024.

Figure 9: Projected 2019 Area Development Traffic

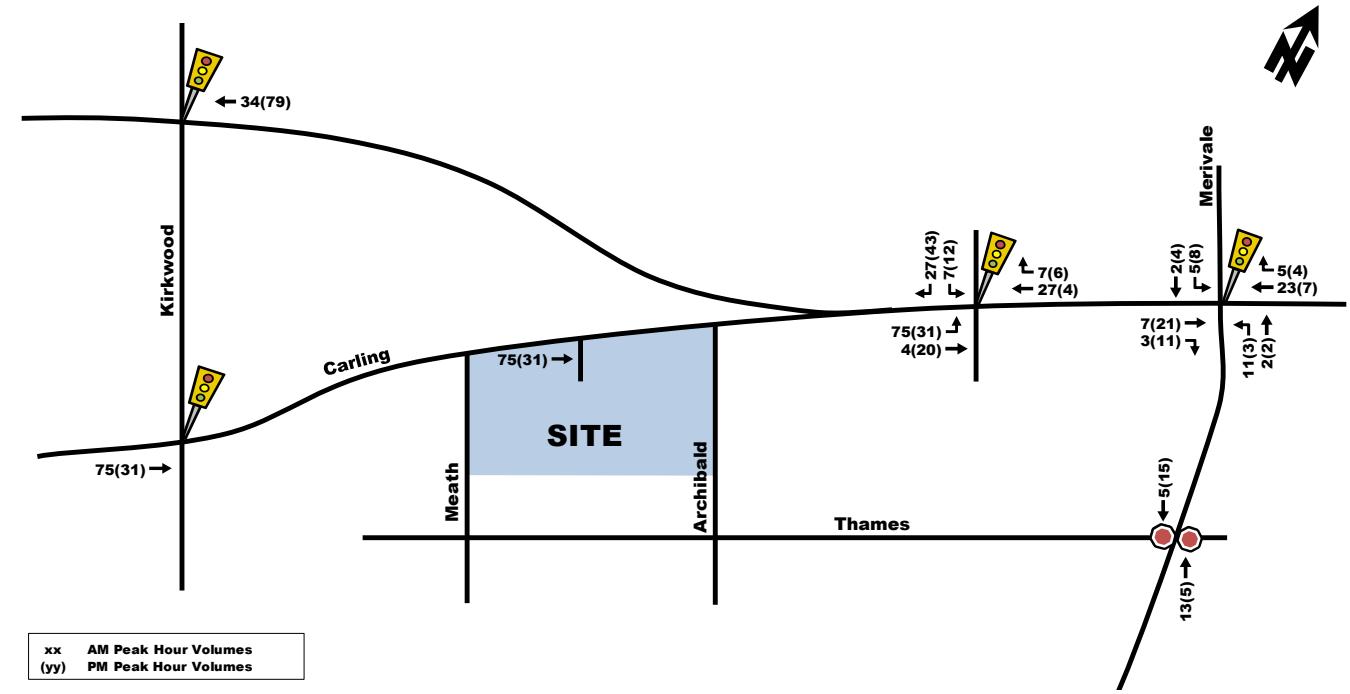
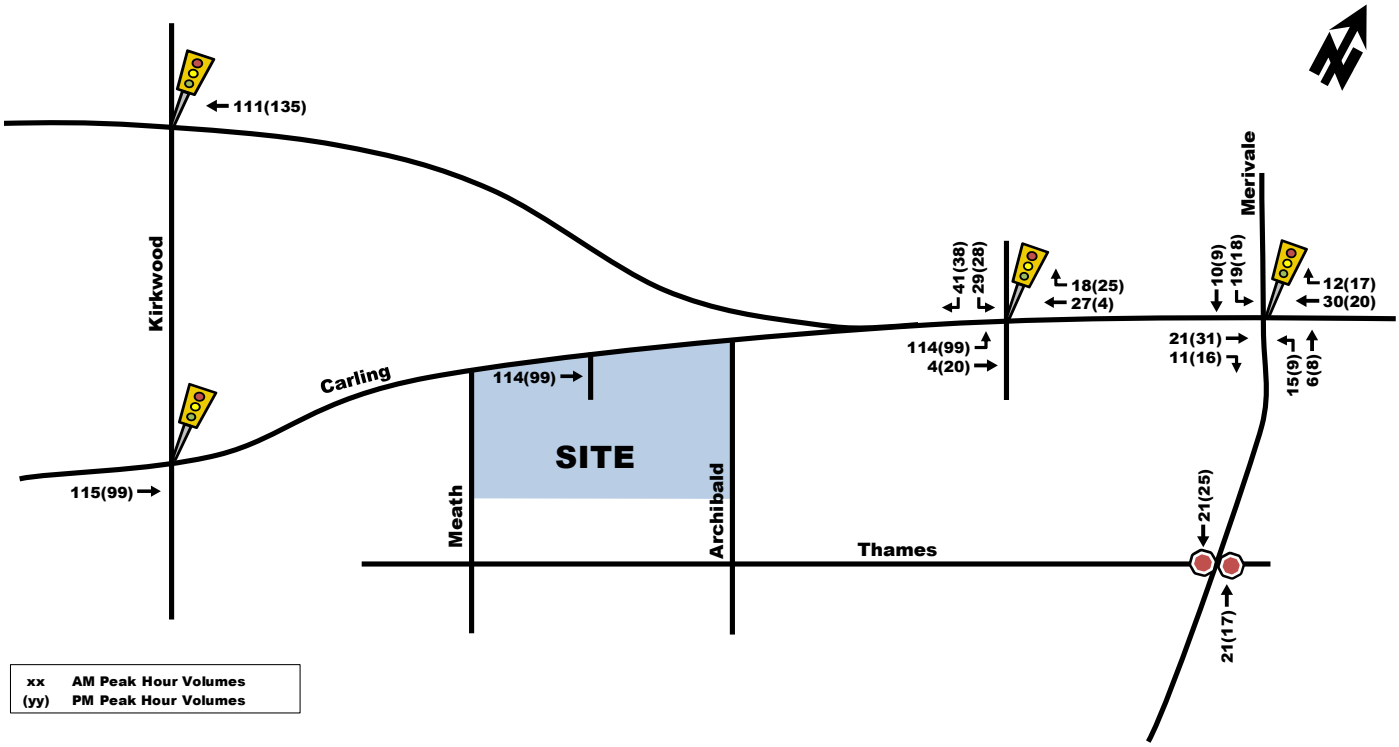


Figure 10: Projected 2024 Area Development Traffic



3.3. BACKGROUND TRAFFIC GROWTH

The following background traffic growth through the immediate study area (summarized in Table 3) was calculated based on historical traffic count data (years 2003, 2010, 2014, 2015, and 2016) provided by the City of Ottawa at the Merivale/Carling intersection. Detailed analysis is included as Appendix E.

Table 3: Merivale/Carling Historical Background Growth

Time Period	Percent Annual Change				
	North Leg	South Leg	East Leg	West Leg	Overall
8 hrs	-0.70%	-0.41%	0.48%	-0.34%	-0.12%
AM Peak	-1.58%	-0.97%	-0.88%	-1.02%	-1.04%
PM Peak	-1.69%	-0.84%	0.64%	-0.27%	-0.18%

As show in Table 3, the Merivale/Carling intersection has experienced no overall growth (calculated as a weighted average) in recent years. Therefore, no additional background traffic growth was assumed for the subsequent analysis of future traffic operations.

3.4. BACKGROUND TRAFFIC INTERSECTION PERFORMANCE

Prior to any development of the proposed site, the following Table 4 provides a summary of background 2024 traffic operations at study area intersections based on the SYNCHRO (V9) traffic analysis software. The area development traffic volumes, outlined in Figure 10, were added onto existing traffic volumes to calculate baseline background traffic volumes (illustrated as Appendix F). The SYNCHRO model assumes existing intersection geometry and signal timing except at the Kirkwood N/Carling intersection were modifications are planned. The following analysis assumes a double westbound left-turn lane at the Kirkwood N/Carling intersection associated with the closure of the HWY 417 eastbound on-ramp. The detailed SYNCHRO model output of projected background conditions is provided within Appendix F.

Table 4: Projected Background 2024 Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	'Critical Movement'			Intersection 'as a Whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Kirkwood S/Carling EB	E(D)	0.96(0.88)	EBT(NBR)	38.9(26.6)	E(B)	0.95(0.65)
Merivale/Carling	C(F)	0.76(1.06)	NBL(WBL)	28.8(34.5)	B(C)	0.62(0.74)
Kirkwood N/Carling WB	D(F)	0.86(1.11)	SBR(WBT)	28.0(65.6)	C(F)	0.72(1.10)
Carling/Westgate SC	D(D)	0.90(0.82)	EBT(EBT)	11.7(14.8)	D(C)	0.85(0.79)
Merivale/Thames	C(C)	19.2(19.6)	EBT(EBT)	0.6(0.6)	-	-

Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.

As shown in Table 4, the signalized study area intersections 'as a whole' are projected to continue to operate at an acceptable LoS 'D' or better, with the exception of the Kirkwood S/Carling EB intersection during the morning peak hour and the adjacent Kirkwood N/Carling WB intersection during the afternoon peak hour, which are projected to operate at or above capacity (LoS 'E' and LoS 'F'). This is similar to the existing condition.

With regard to the 'critical movements', similar to existing conditions, the eastbound through movement at the Kirkwood S/Carling EB intersection during the morning peak hour is projected to continue to operate at capacity (LoS 'E') and the westbound through and westbound left-turn movements at the Kirkwood N/Carling WB and Merivale/Carling intersections are projected to operate above capacity (LoS 'F') during the afternoon peak hour. The critical movements at the

Carling/Westgate SC intersection have decreased from LoS 'A' and 'B' to LoS 'D' as there is an increase in the turning movements into and out of the Westgate Shopping Centre development.

These results are similar to the intersection capacity analysis noted in the Westgate Shopping Centre Redevelopment CTS. As noted in the Westgate CTS, minimal mitigation to improve intersection performance is feasible given the physical constraints at the intersections, specifically those in close proximity to HWY 417 (Kirkwood/Carling intersections). In terms of storage length for turn lanes, the east and westbound left-turn lanes along Carling Avenue are currently constructed with as much storage as possible given the adjacent intersections.

With regard to the eastbound left-turn movement at the Carling/Westgate Shopping Centre, the existing and background volumes at this location are significant. As mentioned previously, the existing traffic volumes are 130 to 160 left turning vehicles with an additional 40 to 75 vehicles performing a U-turn, totally approximately 170 to 235 veh/h in this left-turn lane. With the addition of the traffic generated by the adjacent developments, the total volume projected to be in this lane is approximately 270 to 350 veh/h during the morning and afternoon peak hours. As such, this movement is projected to operate at LoS 'D' with projected 95th percentile queues of approximately 100 to 150 m with existing signal timing. The existing storage length at this location is approximately 75 m and as such, the 95th percentile queue is projected to spill back out of the turn lane given the background conditions.

With regard to the eastbound U-turn movement along Carling Avenue, the Carling/Westgate Shopping Centre intersection is the only intersection that permits left-turns and U-turns within the vicinity of the site. U-turns and left-turns are permitted further east at the Civic Hospital driveways (unsignalized) and at the signalized Carling/Holland intersection (which is located 700 m east of the Carling/Westgate Shopping Centre intersection). Given Carling Avenue's configuration within the study area, there is a high demand for vehicles to perform a U-turn to head westbound on Carling Avenue towards the HWY 417 on-off ramps. This is represented by the 40 to 75 veh/h that perform this U-turn today.

3.5. SITE TRIP GENERATION

Appropriate trip generation rates for the proposed development consisting of approximately 914 residential units and 26,230 ft^2 of ground floor commercial (assumed to be retail) were obtained from the 9th Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual, which are summarized in Table 5.

Table 5: ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
Condominiums	ITE 230	T = 0.44(du); ln(T) = 0.80 ln(du) + 0.26	T = 0.52(du); ln(T) = 0.82 ln(du) + 0.32
Specialty Retail Centre	ITE 826	T = 1.36(X); T = 1.20(X) + 10.74	T = 2.71(X); T = 2.40(X) + 21.48

Notes: *T = Average Vehicle Trip Ends*
X = 1000 ft^2 Gross Floor Area
du = dwelling units
Specialty Retail AM Peak is assumed to be 50% of the PM Peak

As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more urban study area context were applied to attain estimates of person trips for the proposed development. This approach is considered appropriate within the industry for urban infill developments.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Our review of available literature suggests that a combined factor of approximately 1.3 is considered

reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%.

For Phase 1 of the development, the existing hotel will remain and two of the buildings will be constructed on the east side of the site. As such, Phase 1 of the development will consist of approximately 342 residential units and 9,440 ft^2 of commercial. The person trip generation for the proposed Phase 1 of the development is summarized in Table 6.

Table 6: Phase 1 Modified Person Trip Generation

Land Use	Area	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Condominiums	342 du	30	150	180	143	71	214
Specialty Retail	9,440 ft^2	16	13	29	25	32	57
Total Person Trips		**46**	**163**	**209**	**168**	**103**	**271**

Note: 1.3 factor to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%

The person trips shown in Table 6 for the proposed site were then reduced by modal share values, including a reduction for 'pass-by' trips based on the site's location and proximity to adjacent communities, employment, other shopping uses and transit availability. Modal share and 'pass-by' values for condominiums and specialty retail uses within the proposed Phase 1 development are summarized in Tables 7 and 8, respectively, with the total Phase 1 site-generated vehicle traffic summarized in Table 9.

Table 7: Phase 1 Condominium Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	50%	15	75	90	72	36	108
Auto Passenger	10%	3	15	18	15	8	23
Transit	25%	8	38	46	35	17	52
Non-motorized	15%	4	22	26	21	10	31
Total Person Trips	100%	30	150	180	143	71	214
Total 'New' Auto Trips		**15**	**75**	**90**	**72**	**36**	**108**

Table 8: Phase 1 Specialty Retail Modal Site Trip Generation

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Auto Driver	50%	8	7	15	13	16	29
Auto Passenger	15%	3	2	5	4	5	9
Transit	15%	2	2	4	3	5	8
Non-motorized	20%	3	2	5	5	6	11
Total Person Trips	100%	16	13	29	25	32	57
Less Retail 25% Pass-By		-2	-2	-4	-4	-4	-8
Total 'New' Auto Trips		**6**	**5**	**11**	**9**	**12**	**21**

Table 9: Phase 1 Total Site Vehicle Trip Generation

Land Use	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Condominiums	15	75	90	72	36	108
Specialty Retail	8	7	15	13	16	29
Retail Pass-By (30%)	-2	-2	-4	-4	-4	-8
Total 'New' Auto Trips	**21**	**80**	**101**	**81**	**48**	**129**

As shown in Table 9, the resulting number of potential 'new' two-way vehicle trips for the proposed Phase 1 development is approximately 100 and 130 veh/h during the weekday morning and afternoon peak hours, respectively.

The ultimate development is planned to consist of four buildings with a total of 914 residential units and approximately 26,200 ft^2 of ground floor commercial, assumed to be ground floor retail for this study. In the ultimate scenario, the hotel will be demolished and as such, traffic generated from the hotel will be removed from the roadway network. As shown in Figure 5 – 'Existing Peak Hour Traffic Volumes', the total amount of vehicle traffic travelling to/from the hotel during the peak hours is approximately 30 veh/h. Following the same method outlined above, the total Phase 1 and 2 site-trip generation is summarized in Table 10 and detailed in Appendix G.

Table 10: Phase 1 and 2 Total Site Vehicle Trip Generation

Land Use	AM Peak (veh/h)			PM Peak (veh/h)		
	In	Out	Total	In	Out	Total
Condominiums	33	164	197	161	80	241
Specialty Retail	15	13	28	24	31	55
Retail Pass-By (30%)	-4	-4	-8	-7	-7	-14
Total 'New' Auto Trips	**44**	**173**	**217**	**178**	**104**	**282**
Less Existing Hotel Trips	-10	-21	-31	-19	-10	-29
Total 'Net' New Auto Trips	**34**	**152**	**186**	**159**	**94**	**253**

As shown in Table 10, the resulting number of potential 'new' two-way vehicle trips for the proposed development is approximately 215 and 280 veh/h during the weekday morning and afternoon peak hours, respectively. With the removal of the existing vehicle trips to/from the hotel site, the net increase in vehicle traffic is projected to be 185 to 253 veh/h during the weekday morning and afternoon peak hours, respectively.

3.6. VEHICLE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Traffic distribution was based existing volume splits at study area intersections and our knowledge of the surrounding area. As Carling Avenue operates as a one-way roadway at the site access and as the on/off ramps for HWY 417 are located to the west of the site, the distribution for vehicles leaving the site is assumed to be slightly different than the distribution for vehicles entering the site. For example, it is assumed that more eastbound vehicles, exiting the site, will elect to travel along Carling Avenue to their destination or to the next on-ramp to HWY 417 to avoid performing a U-turn along Carling Avenue. However, when arriving to the site, most drivers will exit the on/off ramps at Carling Avenue and continue eastbound on Carling to the site. The resultant distribution is outlined as follows:

From the Site

- 10% to eastbound HWY 417
- 20% to westbound HWY 417;
- 50% to the east via Carling Avenue;
- 5% to the west via Carling Avenue; and
- 15% to the south via Merivale Road;

100%

To the Site

- 40% from eastbound HWY 417
- 20% from westbound HWY 417;
- 20% from the east via Carling Avenue;
- 10% from the west via Carling Avenue; and
- 10% from the south via Merivale Road;

100%

Based on these distributions, 'new' and 'pass-by' site-generated trips were assigned to study area intersections, which are illustrated as Figure 11 for Phase 1 site-generated traffic and Figure 12 for Phase 1 and 2 site-generated traffic.

Figure 11: Phase 1 'New' and 'Pass-by' Site-Generated Traffic Volumes

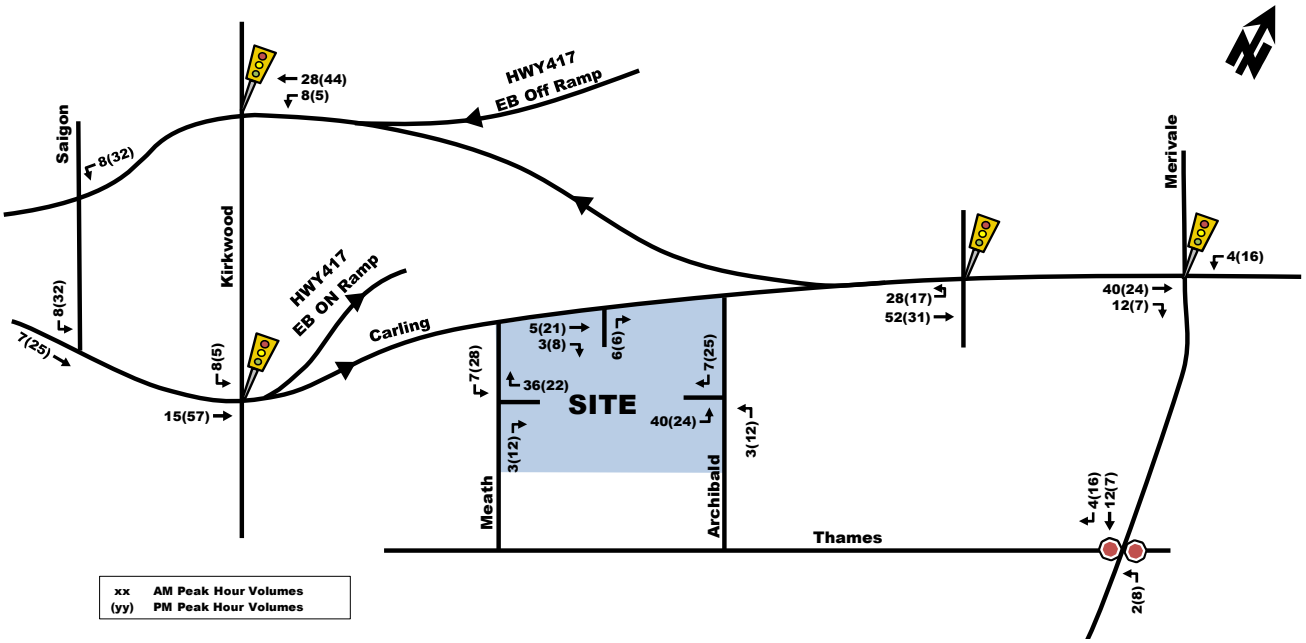
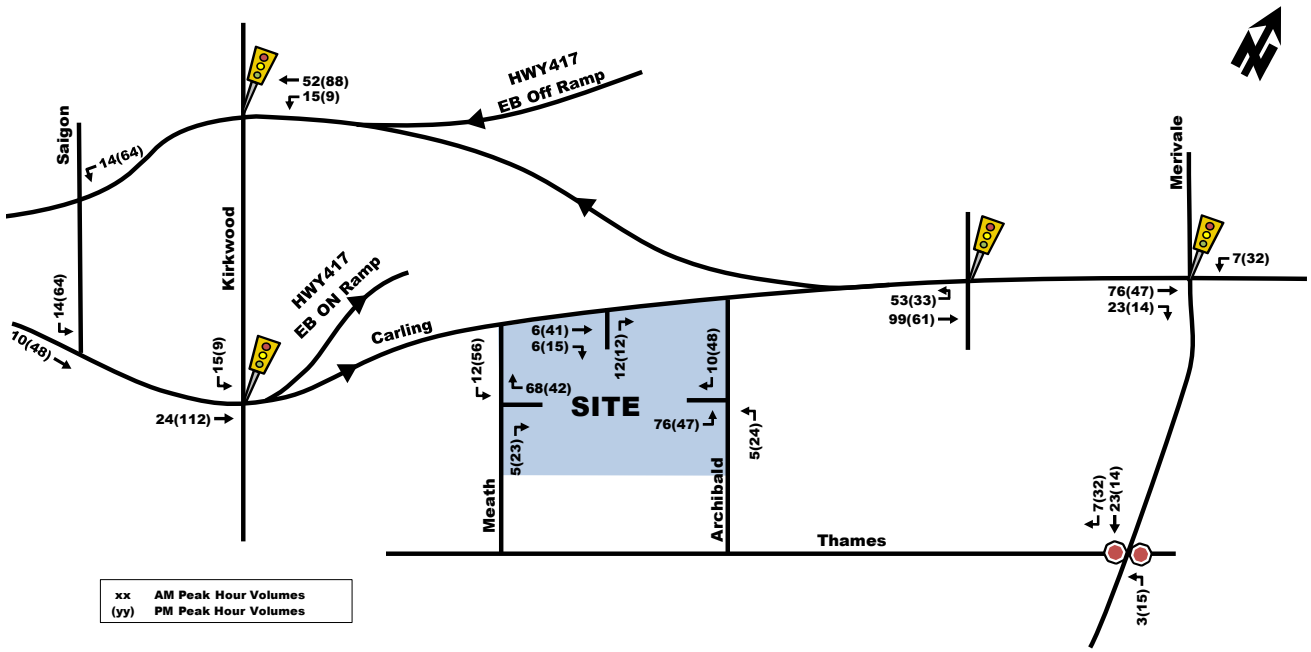


Figure 12: Phase 1 and 2 'New' and 'Pass-by' Site-Generated Traffic Volumes

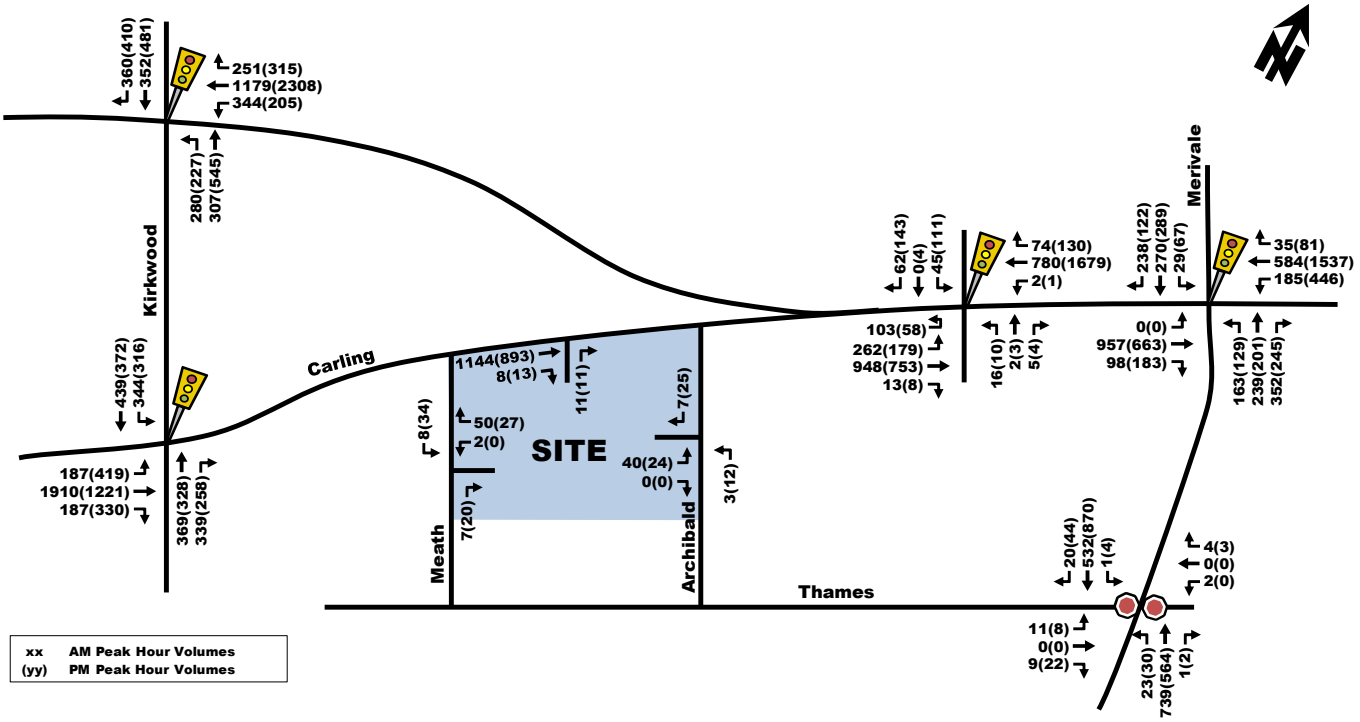


4. FUTURE TRAFFIC OPERATIONS

4.1. PROJECTED 2019 CONDITIONS AT PHASE 1 SITE DEVELOPMENT

The total projected 2019 volumes associated with the proposed development were derived by superimposing Phase 1 'new' and 'pass-by' site-generated traffic volumes (Figure 11) and 2019 area development traffic (Figure 9) onto existing traffic volumes (Figure 5). The resulting total projected 2019 volumes are illustrated as Figure 13.

Figure 13: Total Projected 2019 Peak Hour Traffic Volumes



The Carling/Kirkwood N and Carling/Kirkwood S intersections will have significant changes to the turning movement volumes given the proposed plan to close the HWY 417 eastbound on-ramp. It is anticipated that there will be an increase in vehicle volume travelling through both intersections as Carling Avenue westbound vehicles destined for HWY 417 eastbound will travel through both Carling/Kirkwood intersections or find a different route. Given the relatively significant amount of unknown factors that would affect the traffic patterns within the study area, the existing traffic volumes were assumed as background traffic for the purpose of this study.

The following Table 11 provides a projected performance summary for study area intersections, based on total projected 2019 traffic volumes. The proposed modifications to the Carling/Kirkwood N intersection are included in there ensuing analysis. The detailed SYNCHRO model output of projected 2019 conditions is provided within Appendix H.

Table 11: Projected 2019 Performance of Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a Whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Kirkwood S/Carling EB	E(D)	0.95(0.88)	EBT(NBR)	38.3(26.3)	E(B)	0.94(0.64)
Merivale/Carling	C(F)	0.74(1.09)	NBL(WBL)	26.7(35.6)	B(C)	0.63(0.75)
Kirkwood N/Carling WB	D(F)	0.85(1.11)	SBR(WBT)	27.7(69.6)	B(F)	0.70(1.10)
Carling/Westgate SC	D(C)	0.88(0.80)	EBT(EBL)	7.6(12.5)	D(C)	0.84(0.77)
Merivale/Thames	C(C)	19.2(20.1)	EBT(EBT)	0.6(0.7)	-	-

Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.

As shown in Table 11, the study area intersections are projected to operate 'as a whole' with acceptable levels of service LoS 'D' or better during the peak hours, with the exception of the Carling/Kirkwood intersections. This is similar to existing and background 2024 conditions.

With regard to the 'critical movements', the eastbound through movement at the Carling/Kirkwood S intersection is projected to continue to operate at capacity (LoS 'E') during the morning peak hour. During the afternoon peak hour, the westbound left-turn movement at the Carling/Merivale intersection and the westbound through movement at the Carling/Kirkwood N intersection are projected to operate above capacity (LoS 'F'), similar to existing conditions.

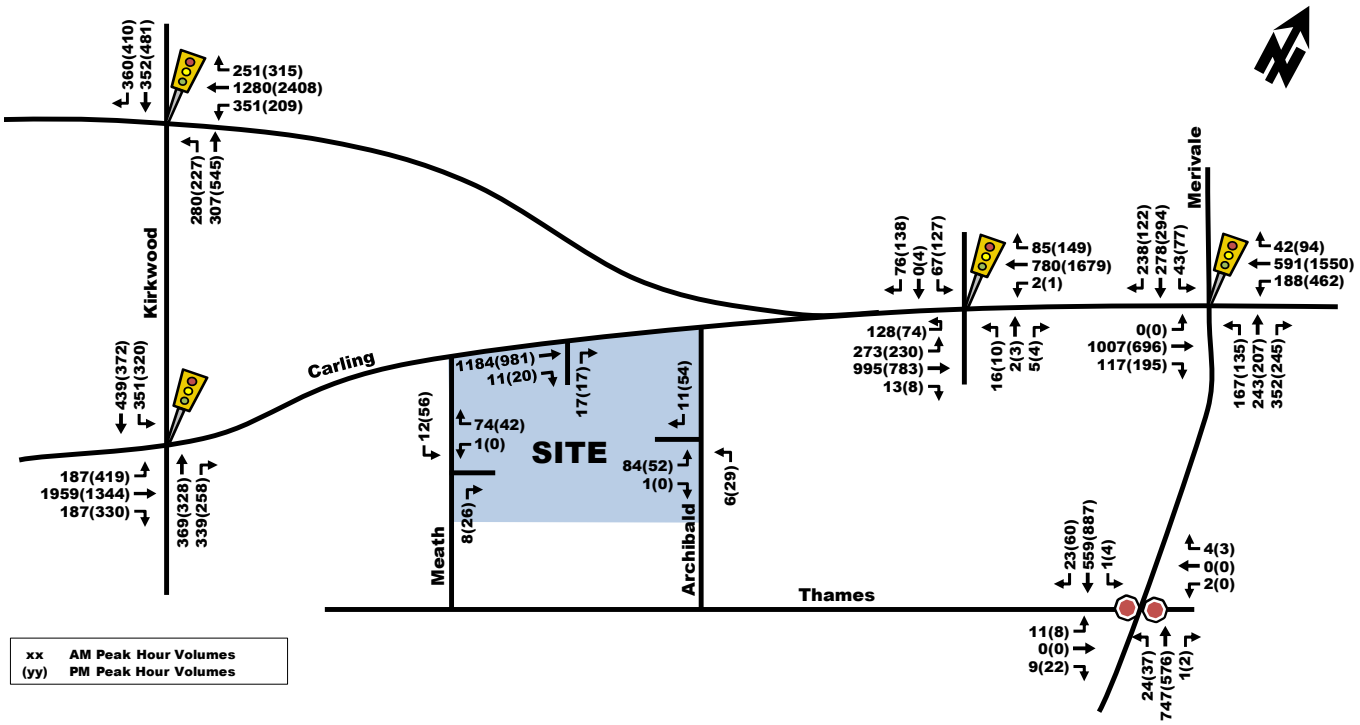
As mentioned in Section 3.4 Background Traffic Intersection Performance, the mitigative measures to improve performance at the study area intersections are relatively restricted given the current geometry. Signal timing adjustments can help improve some of the critical movements, however, most critical movements continue to operate in the range of LoS 'D' to LoS 'F'. The SYNCHRO model output of these changes is provided within Appendix I.

As mentioned previously, significant traffic pattern changes are anticipated with the removal of the HWY 417 eastbound on-ramp. In addition, the future transit priority corridor will help reduce the reliance on passenger automobiles, ultimately reducing the number of vehicles on the roadway. As such, and given the roadway geometry constraints, minimal mitigation is possible, and traffic volumes are expected to change and/or be reduced in the future with the planned network changes.

4.2. PROJECTED 2024 CONDITIONS AT FULL SITE BUILD-OUT

The total projected 2024 volumes associated with the proposed development were derived by superimposing Phase 1 and 2 'new' and 'pass-by' site-generated traffic volumes (Figure 12) and 2024 area development traffic (Figure 10) onto existing traffic volumes (Figure 5). The resulting total projected 2024 volumes are illustrated as Figure 14.

Figure 14: Total Projected 2024 Peak Hour Traffic Volumes



The following Table 12 provides a projected performance summary for study area intersections, based on total projected 2024 traffic volumes. The detailed SYNCHRO model output of projected 2024 conditions is provided within Appendix J.

Table 12: Projected 2024 Performance of Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a Whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Kirkwood S/Carling EB	E(D)	0.97(0.88)	EBT(NBR)	40.4(27.2)	E(B)	0.96(0.69)
Merivale/Carling	C(F)	0.76(1.18)	NBL(WBL)	28.7(39.8)	B(C)	0.67(0.79)
Kirkwood N/Carling WB	D(F)	0.86(1.15)	SBR(WBT)	26.2(75.2)	C(F)	0.74(1.14)
Carling/Westgate SC	F(D)	1.04(0.82)	EBL(WBT)	14.5(20.7)	A(C)	0.48(0.76)
Merivale/Thames	C(C)	20.1(21.2)	EBT(EBT)	0.6(0.8)	-	-
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 12, the study area intersections are projected to operate 'as a whole' with acceptable levels of service LoS 'D' or better during the peak hours, with the exception of the Carling/Kirkwood intersections. This is similar to existing and background 2024 conditions.

With regard to the 'critical movements', the eastbound through movement at the Carling/Kirkwood S intersection is projected to continue to operate at capacity (LoS 'E') during the morning peak hour. During the afternoon peak hour, the westbound left-turn movement at the Carling/Merivale intersection and the westbound through movement at the Carling/Kirkwood N intersection are projected to operate above capacity (LoS 'F'). The eastbound left-turn movement at the Carling/Westgate Shopping Centre intersection is projected to operate above capacity (LoS 'F') during the morning peak hour.

As mentioned previously, signal timing adjustments can be made to improve the vehicle performance for certain movements. These modifications include:

- Optimized signal timing at all study area intersections;
- Provide protected/permitted eastbound left-turn phase at the Carling/Westgate Shopping Centre intersection; and
- Double westbound left-turn lanes at the Kirkwood N/Carling WB intersection as per the MTO and City's plans associated with the closure of the HWY 417 eastbound on-ramp.

Given these modifications, the resulting study area intersection performance is outlined in Table 13 and the SYNCHRO model output is provided at Appendix K.

Table 13: Projected 2024 Performance of Study Area Intersections – Modified Signal Timing

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a Whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Kirkwood S/Carling EB	D(D)	0.90(0.88)	EBT(NBR)	36.6(27.0)	D(B)	0.90(0.69)
Merivale/Carling	C(E)	0.76(0.92)	NBL(WBL)	32.1(33.5)	B(C)	0.67(0.80)
Kirkwood N/Carling WB	D(F)	0.85(1.06)	SBR(SBR)	29.2(57.4)	C(F)	0.74(1.03)
Carling/Westgate SC	C(D)	0.77(0.81)	EBL(EBL)	13.6(20.4)	C(C)	0.74(0.78)
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown, with some adjustments to timing, most study area intersection are projected to operate with acceptable levels of service. The Kirkwood N/Carling WB intersection continues to operate above capacity during the afternoon peak hour.

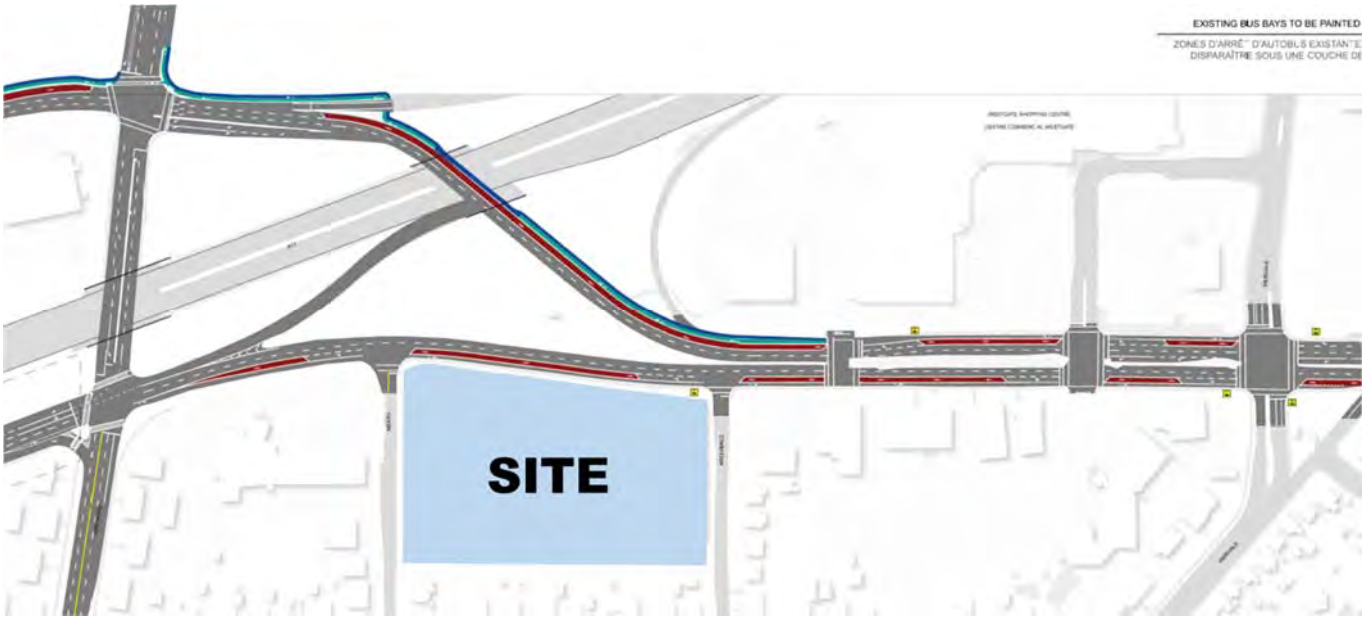
The total amount of vehicles that are projected to perform a U-turn at the Carling/Westgate Shopping Centre intersection ranges from 75 to 130 veh/h during the peak hours. As there is an existing protected/permitted left-turn phase at this location during the afternoon peak hour (and recommended during the morning peak hour), there is sufficient capacity for the left-turn and U-turn vehicles to operate at LoS 'D'. As mentioned previously, consideration could be given to restricting the southbound right-turn movement to 'no-right-on-red' to help prevent collisions associated with heavy U-turn traffic.

With regard to queues at the Carling/Westgate Shopping Centre intersection, the eastbound left-turn lane 95th percentile queue is projected to be approximately 85 to 115 m, which spills out past the provided 75 m storage lane. This is similar to Background 2024 traffic volume scenario as there is a significant amount of traffic using the left-turn lane for left-turn as well as U-turn movements. With the future modifications to Carling Avenue, both the closure of the HWY 417 eastbound on-ramp and the future transit priority lanes, significant changes to traffic conditions are anticipated within this network. With the closure of the eastbound on-ramp, drivers may elect to continue eastbound along Carling Avenue instead of performing the U-turn movement. In addition, with the implementation of transit priority, passenger vehicle traffic is likely to decrease given the more reliable transit service and the reduction of vehicle lane capacity on Carling Avenue.

4.2.1. CARLING AVENUE TRANSIT PRIORITY CONDITION

The City of Ottawa project to provide transit priority continuous lanes along Carling Avenue is identified in the 2013 TMP as part of the affordable network. The Open House for this project was held in February 2017 and illustrates the proposed plan along Carling Avenue. The following Figure 15 illustrates the plan for Carling Avenue within the vicinity of the site.

Figure 15: Proposed Carling Avenue Transit Priority Plan



As shown in the above figure, the proposed cross-section of Carling Avenue would consist of two vehicle travel lanes and a 'transit only' lane along the curb side. This will reduce passenger vehicle capacity along the corridor. The total projected 2024 traffic volume scenario was assessed with this new configuration and the results as summarized in Table 14. These results include the mitigative measures outlined above.

Table 14: Projected 2024 Performance of Study Area Intersections – Reduced Carling Avenue Cross-Section

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a Whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Kirkwood S/Carling EB	D(D)	0.90(0.88)	EBT(NBR)	36.5(27.6)	D(B)	0.90(0.69)
Merivale/Carling	D(D)	0.83(0.90)	EBT(WBL)	49.9(55.4)	C(D)	0.79(0.85)
Kirkwood N/Carling WB	D(F)	0.86(1.05)	SBR(WBT)	29.6(52.9)	C(F)	0.74(1.05)
Carling/Westgate SC	C(F)	0.74(1.01)	EBL(WBT)	15.5(47.7)	A(E)	0.51(0.95)

Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.

As shown in Table 17, the study area intersections 'as a whole' are projected to operate at an acceptable LoS 'D' or better during the peak hours, with the exception of the Kirkwood N/Carling WB and Carling/Westgate Shopping Centre intersection during the afternoon peak hour. With regard to the critical movements, the westbound through movements at the Kirkwood N/Carling WB and Carling/Westgate Shopping Centre intersections are projected to operate above capacity (LoS 'F') given the reduced vehicle travel lanes. All other critical movements are projected to operate with acceptable levels of service given the signal timing plan modifications outlined above.

It is noteworthy, providing a transit priority corridor along Carling Avenue will ultimately reduce the number of passenger vehicles on the roadway, as more people will be inclined to take transit with improved travel times. With a reduction of passenger vehicles, the levels of service for the study area intersection will improve.

4.3. NEIGHBOURHOOD IMPACTS

Based on the location of the proposed development and its connections to Carling Avenue (arterial road), there is minimal site-generated traffic projected to travel along local streets within the vicinity of the subject site. Given the one-way configuration of Archibald Street and Meath Street, site-generated traffic can use these streets to access the development, however, they are restricted from using Archibald Street and Meath Street to travel southbound to Thames Street to exit the site. Approximately 30% of inbound traffic to the site is projected to travel via Thames Street, Archibald Street and Meath Street, which equates to approximately 10 to 50 veh/h during peak hours for the ultimate condition. This amount of traffic represents less than 1 vehicle each minute on average and the total traffic travelling along Thames Street in the westbound direction is less than 100 veh/h during the afternoon peak hour, which is appropriate for a local roadway.

With respect to neighbourhood transit, the site is projected to generate an approximate total of 105 and 135 new two-way person transit trips during the weekday morning and afternoon peak hours, respectively, for the ultimate condition. This amount of person traffic can be easily accommodated by the proposed transit priority corridor.

5. TRANSPORTATION DEMAND MANAGEMENT

Depending on the nature of a development, Transportation Demand Management (TDM) strategies have the potential to be an integral part of a planned development in order to address and support the City's policies with regard to TDM. For this particular site, its proximity to the existing transit service is considered very advantageous in lessening the reliance on the private automobile. A number of other TDM measures could also be considered, including:

- Improving the quality and safety of pedestrian facilities, such as enhanced sidewalks/lighting;
- Provide quality and safe cycling facilities, such as storage facilities;
- Provide change area/shower facilities for any on-site employees;
- Providing transit information in common areas or/and enhance bus shelters to encourage transit use; and
- Provide appropriate car sharing programs/facilities to reduce auto ownership and attract residents who do not own a vehicle.

TDM strategies are important in encouraging active modes of transportation to/from the site, further lessening the reliance on the private automobile.

6. SITE PLAN REVIEW

This section provides an overview of site access, parking requirements, pedestrian circulation and transit accessibility. The proposed Phase 1 and Ultimate Site Plans were previously illustrated as Figures 2 and 3.

Parking

Parking is planned to be provided at grade with access to/from Carling Avenue, Archibald Street and Meath Street. In addition, underground parking is planned with access to/from Archibald Street and Meath Street. A total of 457 parking spaces are required for the residential units, 92 are required for the visitor parking and depending on the land use of the commercial parcels additional parking may be required. Currently the Ultimate Site Plan indicates a total of 148 surface level parking spaces and the parking garage plan indicates a total of 537 parking spaces, for a total of 685 parking spaces. This amount of parking meets the City's By-Law requirements for Area Y (Inner Urban Mainstreet) as identified on Schedule 1A. The surface parking space dimensions are noted as 5.4 m in length and 2.7 m in width, and the underground parking space dimensions are noted as 5.3 m in length and 2.6 m in width, which satisfies the City's By-Law requirements.

Site Circulation

With regard to on-site circulation, the proposed parking lot is laid out effectively, such that two-way traffic can be efficiently accommodated. The proposed drive aisles are noted as 6.7 m in width, which meets the City's By-Law requirements. There

are four proposed ramps to/from the underground parking, which will minimize conflicts within the parking garage and on the ramps.

There are three separate surface level parking lots. The one serving the two buildings fronting Carling Avenue (Buildings A and B) has three driveway connections to public streets (one to Archibald, one to Carling and one to Meath). Each of the 9 storey buildings (Buildings C and D) have individual surface parking lots with one driveway connection to the local street. Providing multiple driveways to the parking garages and parking lots will minimize the amount of vehicles conflicts and reduce speeds on-site.

The ramp providing access to the lower level parking should be equal to or less than 2% grade for 9 m from the property line. Appropriate transitions grades should be provided at the top and bottom of the ramps.

Truck routes or loading areas are not identified on the proposed Site Plan; however, sufficient turning radii on-site and at the site driveway connections should be provided for fire, garbage and delivery truck circulation.

Access Requirements
Based on projected volumes and proximity to adjacent intersections, additional traffic control/auxiliary turn lanes are not warranted or required at the proposed driveway connections.

The proposed Site Plan has one driveway connection to Carling Avenue, 4 driveway connections to Meath Street and 4 driveway connections to Archibald Street. According to the Private Approach By-Law the maximum number of private approaches allowed on each frontage is 2 two-way private approaches. As such, the number of driveways on Meath Street and Archibald Street exceed the maximum allowed by the Private Approach By-Law. In addition, driveways to the same property should be distanced at least 9 m apart according to the Private Approach By-Law. All driveways meet this By-Law with the exception of the Building B accesses which has two driveways that are spaced approximately 7.5 m apart. This was done to maximize the distance of the driveways from the arterial roadway (Carling Avenue).

Given the Site Plan design, providing an underground parking access for each building will minimize on site vehicle conflicts and reduce speeds within the parking garage. In addition, as the surface parking lots are not all connected on site, and as each parking lot serves an individual building, providing an access to each parking lot is considered appropriate. In addition, the traffic volumes along Archibald Street and Meath Street were observed to be very low, in the range of 20 to 30 veh/h two-way, which equates to approximately 1 vehicle every 2 to 3 minutes. As such, off-site conflicts with vehicles exiting and entering the site are projected to be low. Based on the foregoing, the proposed amount of driveways is considered acceptable.

Pedestrians/Transit
To connect pedestrians to transit service and other nearby employment, shopping and recreation opportunities, sidewalks are provided along both sides of Carling Avenue, Merivale Road and Kirkwood Avenue. Pedestrian pathways are planned connecting the parking lots to/from the four proposed buildings and a pedestrian crossing is proposed crossing the drive aisle that connects to Carling Avenue.

Transit service within the vicinity of the site is currently provided by OC Transpo Routes #85, 101, 103, and 151. Regular/Local Routes #85, 101, 151 provide frequent all-day service and Peak Hour Route #103 provides service during the weekday peak hours only. Bus stops for all routes are located along Carling Avenue within 150 m walking distance from the proposed development. Carling Avenue is planned to have transit priority lanes adjacent to the site in the future.

Bicycles
A total of 458 underground bicycle parking spaces are proposed to serve the development, which is sufficient with respect to the City's By-Law requirements for the proposed site. Surface bicycle parking, located in well-lit areas, close to main building entrances, should also be provided for the commercial portion of the site.

7. FINDINGS AND RECOMMENDATIONS

Based on the foregoing analysis of the proposed development, the following transportation-related conclusions are offered:

EXISTING CONDITIONS

- The study area intersections adjacent to the site are currently operating 'as a whole' with an overall LoS 'D' or better during the weekday morning and afternoon peak hours, with the exception on the Carling/Kirkwood North and South intersections;

- With regard to 'critical movements' at study area intersections, the eastbound through movement at the Kirkwood South/Carling EB intersection is currently operating at capacity (LoS 'E') during the morning peak hour. During the afternoon peak hour, the westbound through and westbound left-turn movements at the Kirkwood N/Carling WB and Merivale/Carling intersections are currently failing (LoS 'F'). All other movements are operating at acceptable LoS 'D' or better during peak hours;

- Based on the available collision data, Carling/Kirkwood N intersection has experienced high numbers of collisions in the past years. Changes are proposed at the Carling/Kirkwood N intersection with the removal of the HWY 417 eastbound on-ramp to help mitigate issues with weaving vehicles;

- Between the year 2011 to 2013 there were several collisions involving cyclists along Carling Avenue;

PROJECTED CONDITIONS

- Based on historic counts at the Carling/Merivale intersection, the study area has experiences no overall growth in recent years;

- There are several proposed developments within the study area, and traffic from the major developments (Westgate Shopping Centre redevelopment and 1335 Carling Avenue) has been accounted for the in the background traffic volumes;

- Carling Avenue is planned to have transit priority lanes in both directions, which will reduce the number of passenger vehicle lanes along Carling Avenue form 6-lanes to 4-lanes;

- The MTO has plans to close the HWY 417 eastbound on-ramp along Carling Avenue as part of the HWY 417 widening. Modifications to the Carling/Kirkwood N intersection are planned to mitigate future traffic pattern changes;

- The proposed development is projected to generate 'new' two-way vehicle volumes of approximately 100 and 130 veh/h during the weekday morning and afternoon peak hours, respectively for Phase 1 of the development and 185 to 253 veh/h for the ultimate development;

- At Phase 1 site occupancy (year 2019), study area intersections continue to operate with some capacity constraints for certain movements. Mitigation in the form of signal timing adjustments is recommended as there are minimal possible geometric improvements given the existing geometry. Signal timing adjustments results in most critical movements operating at LoS 'D' to LoS 'F';

- At full occupancy (year 2024), the results are similar to year 2019 results with minimal mitigation recommended;

- Significant traffic pattern changes are anticipated with the removal of the HWY 417 eastbound on-ramp and the implementation of the transit priority corridor along Carling Avenue. In addition, the future transit priority corridor

will help reduce the reliance on passenger automobiles, ultimately reducing the number of vehicles on the roadway;

- The total projected 2024 traffic volume scenario was assessed with a 4-lane cross section along Carling Avenue and results reveal some capacity constraints for the east and westbound movements, given the reduced passenger vehicle capacity. As mentioned, the transit priority design plans for Carling Avenue will ultimately help reduce the number of vehicles on the roadways;

- There is a significant amount of existing and projected U-turning vehicles at the Carling/Westgate Shopping Centre intersection. There is a high demand for vehicles to turn around to access HWY 417. The total projected 2024 volume scenario indicates that this movement is projected to operate at LoS 'D' with 95th percentile queues that extend past the provided storage lane;

    - With future modifications to the road network, travel patterns are expected to change significantly and the queues at this intersection may be reduced;
    - A protected/permitted eastbound left-turn signal phase is recommended during the morning peak hour (already implemented during the afternoon peak hour);
    - Implementing a 'no-right-on-red' restriction for the southbound movement would likely reduce the amount of vehicle conflicts with U-turning vehicles;

SITE PLAN

- Based on projected volumes and proximity to adjacent intersections, additional traffic control/auxiliary turn lanes are not warranted or required at the proposed driveway connections;

- The proposed vehicle / bicycle parking supply and dimensioning; and the proposed drive aisles widths of 6.7m are sufficient with respect to the City's By-Law requirements;

- The proposed driveway connections meet the City's Private Approach By-Law requirements with respect to spacing, with the exception of the Building B accesses, which have been placed closer together in order to maximize the distance from Carling Avenue; and

- The proposed number of accesses exceeds that recommended in the Private Approach By-Law. However, this plan is recommended as it separates the underground garage accesses from the surface parking lot entrances, reducing the number of conflict points on the site, while having a minimal impact on the adjacent streets.

Based on the foregoing, the proposed development fits well into the context of the surrounding area, and its location and design serves to promote use of walking, cycling, and transit modes, thus supporting City of Ottawa policies, goals and objectives with respect to redevelopment, intensification and modal share.

Therefore, the proposed 1354 Carling Avenue residential development is recommended from a transportation perspective.

Prepared By:

André Jane Sponder, B.A.Sc.
Engineering Associate, Transportation

Reviewed By:

Christopher Gordon, P.Eng.
Senior Project Manager, Transportation

CTS/TIS ADDENDUM # 1

PARSONS

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20 April 2018

OUR REF: 476088 - 01000

Holloway Lodging Corporation
6009 Quinpool Road, 10th Floor
Halifax, NS
B3K 5J7

Attention: Gavin MacDonald

Dear Gavin:

Re: 1354 Carling Avenue CTS/TIS
Addendum #1

1. INTRODUCTION

The Community Transportation Study/Transportation Impact Study (CTS/TIS) for the proposed residential development located at 1354 Carling Avenue was submitted in April 2017. Comments have been received on the CTS/TIS from the City of Ottawa and the Site Plan for Phases 1 and 2 has been revised and is attached (Attachment #1). This Addendum #1 has been prepared to address the comments received and address the transportation related changes to the proposed Site Plan, which include:

- Phase 1:
  - Revised number of residential units from 342 units to 381 units;
  - Revised ground floor retail land use size from 9,440 ft^2 to 6,663 ft^2;
  - Two driveway connections to Archibald Street (revised from 4 driveways);
  - 372 parking spaces proposed for Phase 1.
- Phase 2
  - Revised number of residential buildings from 4 buildings to 5 buildings;
  - Revised number of residential units for Phase 2 from 914 units to 870 units (total units);
  - One proposed driveway connection to Meath Street.

2. REVISED SITE PLAN

2.1. REVISED TRIP GENERATION

Given the revised land use sizes outlined above the trip-generation analysis was revised following the same method outlined in the original CTS/TIS. The resultant Phase 1 site-generated person trips are outlined in Table 1.

Table 1: Phase 1 Revised Site Trip-Generation

Travel Mode	Mode Share		AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	Residential	Retail	In	Out	In	Out	Total	Total
Auto Driver	50%	50%	24	88	112	89	53	142
Auto Passenger	10%	15%	6	19	25	19	13	32
Transit	25%	15%	10	41	51	42	24	66
Non-motorized	15%	20%	6	26	32	27	16	43
Total Person Trips	100%	100%	46	174	220	177	106	283
Less Retail Pass-by (25%)			-2	-2	-4	-3	-3	-6
Total 'New' Auto Trips			**22**	**86**	**108**	**86**	**50**	**136**
Original CTS Vehicle Trips			*21*	*80*	*101*	*81*	*48*	*129*
Difference in Vehicle Trips			**1**	**6**	**7**	**5**	**2**	**7**

As shown, the revised Site Plan has minimal impact on the number of vehicle and person trips generated by Phase 1 of the development and will have negligible impact of the findings, conclusions and recommendations of the original CTS/TIS.

For Phase 2, the revised trip-generation is outlined in Table 2.

Table 2: Phase 1 and 2 Revised Site Trip-Generation

Travel Mode	Mode Share		AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	Residential	Retail	In	Out	In	Out	Total	Total
Auto Driver	50%	50%	47	171	218	178	108	286
Auto Passenger	10%	15%	12	36	48	39	26	65
Transit	25%	15%	20	81	101	84	47	131
Non-motorized	15%	20%	15	52	67	55	34	89
Total Person Trips	100%	100%	94	340	434	356	215	571
Less Retail Pass-by (25%)			-4	-4	-8	-7	-7	-14
Total 'New' Auto Trips			43	167	210	171	101	272
Less Existing Hotel Trips			-10	-21	-31	-19	-10	-29
Net New Auto Trips			**33**	**146**	**179**	**152**	**91**	**243**
Original CTS Vehicle Trips			*34*	*152*	*186*	*159*	*94*	*253*
Difference in Vehicle Trips			**-1**	**-6**	**-7**	**-7**	**-3**	**-10**

As shown, the revised Site Plan has a minimal impact on the number of vehicle and person trips generated by Phases 1 and 2 of the development and will have negligible impact of the findings, conclusions and recommendations of the original CTS/TIS.

2.2. REVISED SITE PLAN REVIEW

Vehicle and Bicycle Parking
A total of 372 parking spaces are proposed for Phase 1 of the development, which meets the City's By-Law requirements. For Phase 2, a total number of parking spaces will be refined during the Site Plan Application for Phase 2.

Bicycle parking for Phase 1 is proposed underground (166 spaces) and surface (20 spaces) for a total of 186 spaces, which meets the City's By-Law requirements. For Phase 2, the number of bicycle parking spaces will be refined during the Site Plan Application for Phase 2.

Access Requirements
Access for Phase 1 is provided via one full-movement connection to Archibald Street and the existing hotel driveways. The driveway connection is located approximately 50 m south of Carling Avenue. For Phase 2, access is proposed via two full-movement driveway connections; one to Archibald Street and one to Meath Street and a right-in/right-out connection to Carling Avenue.

3. CITY COMMENTS

3.1. TRANSIT SERVICES

Comment 2.1: *As per the TMP, Carling Ave has been identified as a transit priority corridor with potential continuous bus only-lanes.*

Response 2.1: Agreed.

Comment 2.2: *There is a bus stop (# 2346) located adjacent to the site along eastbound Carling Ave, west of Archibald St. The bus stop is to be maintained. A) The applicant shall construct a new concrete shelter pad at no cost to the City, as per City specification SC-11 attached, in order to allow for improved transit amenities. The Site Plan should be revised to show how this bus stop and shelter pad will be accommodated. B) The applicant is to contact Transit Services prior to construction to ensure the safe continued operation of the afore-mentioned bus stop.*

Response 2.2: Noted, and the architect has been advised.

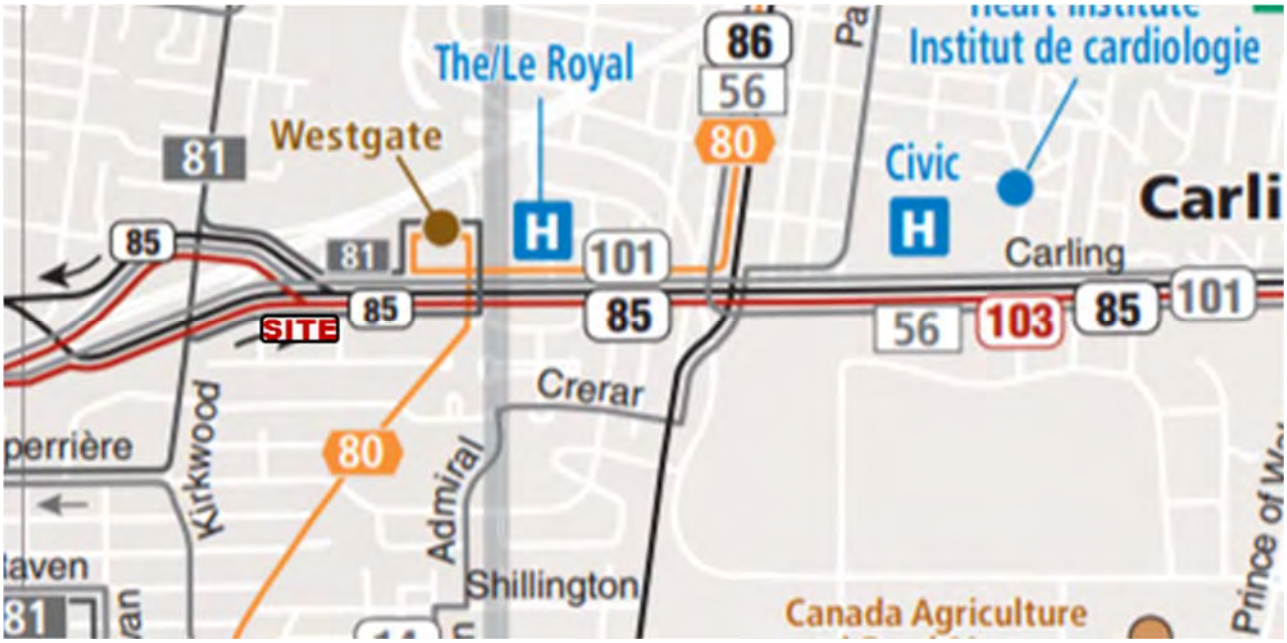
Comment 2.3: *Barrier free transit stop loading area is to be 1.5-2 m wide and long enough (minimum 15.0 m) to serve both the front and rear doors of the longest transit vehicles.*

Response 2.3: Noted, and the architect has been advised.

Comment 2.4: *The April service change saw route 151 renumbered to 81. The transit network exhibit in this section is out of date. Several other routes illustrated have had their number changed: e.g. 6 to 56, 176 to 80, and 150 to 80.*

Response 2.4: Noted, the revised transit map is shown as Figure 1.

Figure 1: Updated Transit Map



Comment 2.5: *Site will generate 105 to 135 new two-way transit person trips. TIA indicates that it can be accommodated by the transit priority corridor. While giving priority to transit will lead to a reduction to external delay and this relative travel time advantage is important to transit mode share gains, there is no indication that sufficient capacity is provided to meet this additional ridership demand. Please revise.*

Response 2.5: The existing transit ridership data is outlined in Table 3 (obtained from OC Transpo). This information reflects the weekday morning and afternoon peak period times (6AM – 9AM) and (3PM to 6PM) for the eastbound and westbound stops closest to the site (Stops 8080 and 2346).

Table 3: Peak Period Transit Ridership Data

Stop	Time Period	Route #	Total Boardings	Total Alightings	Approximate # of Busses during Peak Period	Average Load at Departure
Stop 8080	AM PEAK	81	1	0	5	4
		85	14	14	13	19
		101	3	10	8	15
		103	13	10	10	16
	PM PEAK	81	8	4	6	6
		85	41	35	14	29
		101	24	23	12	25
Stop 2346	AM PEAK	81	0	2	6	4
		85	5	4	11	28
		101	1	7	11	26
	PM PEAK	81	0	3	6	6
		85	6	6	13	31
		101	1	3	9	14
		103	2	0	11	14

As this data represents the number of persons boarding and alighting the busses over a 3-hour period, the number of persons per hour boarding/alighting each bus is estimated to range between 0 to 25 two-way persons per hour, with 4 to 30 persons on board at departure (on average).

The total projected number of transit riders ranges from 100 to 130 two-way persons per hour during the peak hours. As shown there are 28 to 36 buses per stop during the 3-hour morning peak period and 32 to 39 buses per stop during the 3-hour afternoon peak period. This results in an average of 10 to 12 additional boardings and alightings per bus during the peak hours, which can be accommodated on these existing routes.

3.2. TRAFFIC ENGINEERING

Comment 2.16: *Carling Avenue/Westgate intersection - Forecasted eastbound left turn volumes (and U-turns, as included in the study) from this development and others in the area result in a range of 237-365 vehicles per hour during the peaks. Mitigation measures should be considered for this location. With the introduction of transit priority along the corridor, the proposed cross-section of Carling Avenue will consist of two vehicle travel lanes. Queues extending past the available storage in the eastbound left turn lane will block the through lane leaving only a single lane available for eastbound traffic.*

Response 2.16: For left-turn movements that have traffic volumes of 300 veh/h or more, dual left-turn lanes can be considered. Given the space constraints on Carling Avenue and the future BRT along this corridor, dual left-turn lanes at this location are not feasible. As mentioned in the Westgate Transportation Impact Assessment, there are limitted mitigative measures apart from signal timing adjustment that are feasible in this area.

Comment 2.17*: The signal west of Carling Avenue and Westgate must be included in the analysis.*

Response 2.17: Noted. The revised existing conditions for the Carling/73 m East of Archibald signal are summarized below.

Figure 2: Existing Peak Hour Traffic Volumes

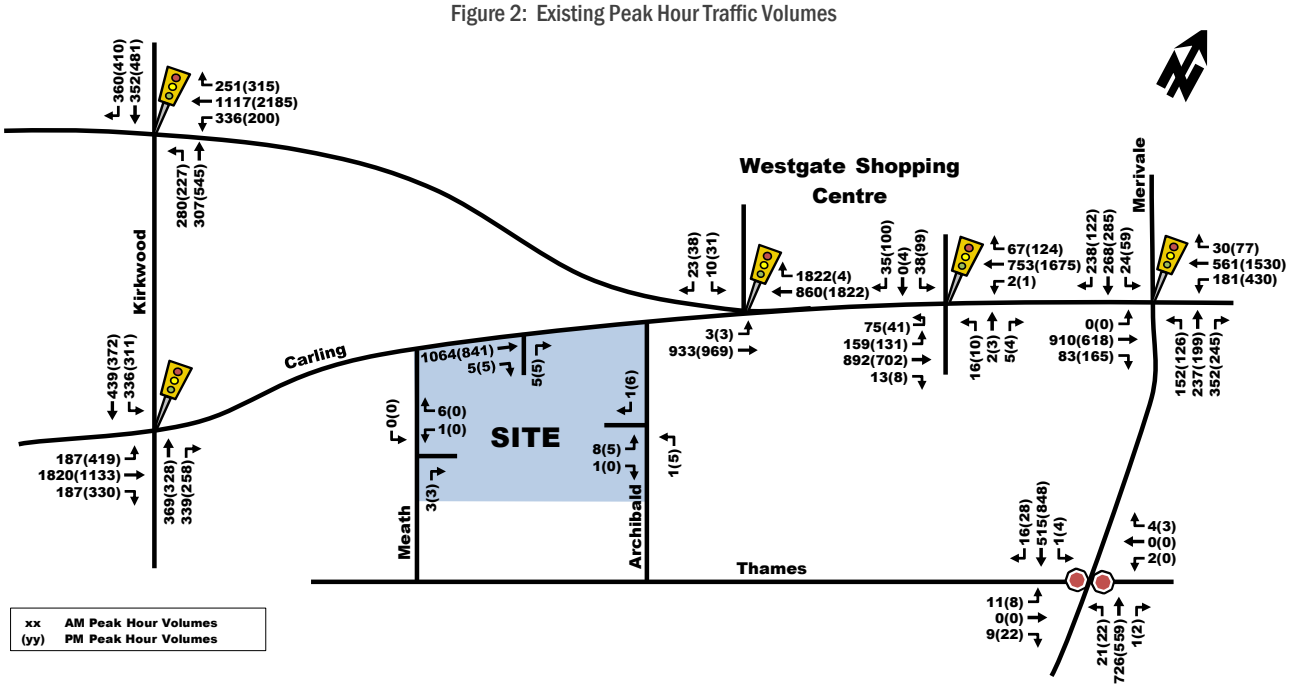


Table 4: Existing Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Carling/73m E of Archibald	A(A)	0.22(0.48)	EBT(WBT)	0.1(11.4)	A(A)	0.22(0.41)
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown, the intersection located approximately 70 m east of the Carling/Archibald intersection is currently operating at an excellent level of service of LoS 'A' during peak hours.

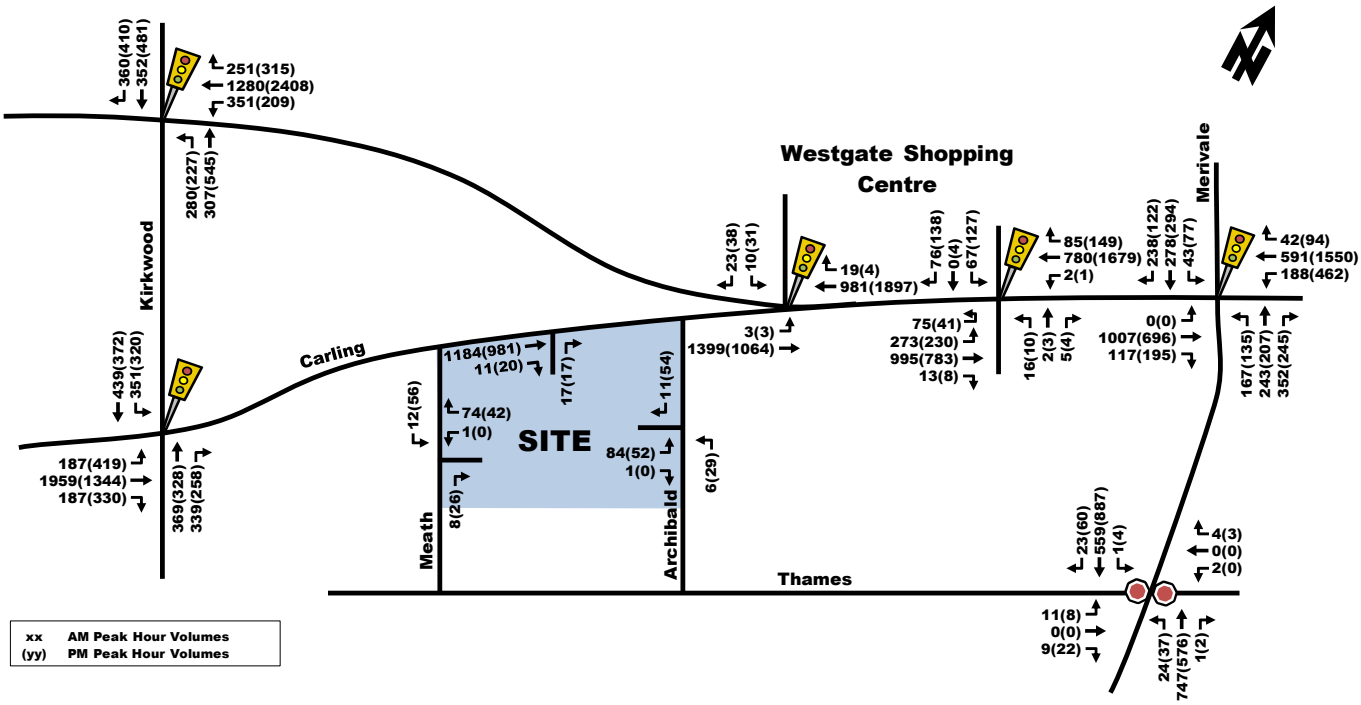
The total projected traffic volumes at study area intersections are illustrated as Figure 3 and the projected intersection performance is included in Table 5.

Table 5: Projected Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Carling/73m E of Archibald	A(C)	0.54(0.72)	EBT(WBT)	6.7(8.5)	A(B)	0.53(0.61)
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

The results in Table 5 reflect the two-lane cross-section along Carling Avenue, which represents the future condition with bus lanes along Carling Avenue. As shown, the Carling/Westgate (73m east of Archibald) intersection is projected to operate with acceptable levels of service of LoS 'C' or better.

Figure 3: Projected Peak Hour Traffic Volumes



Comment 2.18: Please provide revised Synchro files saved as Synchro Version 8.

Response 2.18: SYNCHRO Version 8 files are provided on CD with resubmission.

3.3. TRANSPORTATION PLANNING

Comment 2.19: The site's four proposed accesses plus four underground parking accesses off local roads and the internal connection of parking in the ultimate plan makes the Carling Avenue access redundant and unnecessary. The access is projected to have low usage and will also create a conflict point with the proposed Carling Avenue transit only and cycling lanes.

Response 2.19: The revised Site Plan has a reduced number of site accesses. For Phase 1, the existing driveway for the hotel to Carling Avenue will be maintained and two full-movement accesses to Archibald Street are proposed. For Phase 2, one right-in/right-out driveway connection to Carling Avenue, one full-movement access to Meath Street and the two Phase 1 full-movement driveway connections to Archibald Street are proposed.

Comment 2.20: There are too many proposed accesses (4 on Meath Street and 4 on Archibald Street) that exceed the Private Approach By-Law based on length of frontage. Also the proposed northerly accesses on Archibald Street are too close to each other. Please review and reduce the number of accesses as stated in the by-law.

Response 2.20: As mentioned in Response 2.19, the number of proposed accesses has been reduced. The revised number of accesses meets the City's By-Law requirements.

Comment 2.21: The use of Thames Street as a west-bound access is an issue, and Carling Avenue options need to be reviewed. Please address cut-through traffic in your revised CTS. Any option looking at a west-bound Carling Avenue left-turn lane would require an RMA and discussions with MTO and City Staff.

Response 2.21: Traffic projected to access the proposed development via Thames Street is not considered 'cut-through' traffic. 'Cut-through' traffic is commuter traffic travelling along an arterial roadway that uses a local roadway to bypass part of the arterial network (i.e. a vehicle uses Archibald or Meath Street and Thames Street to cut through the neighbourhood from Carling Avenue to Merivale Road). The site-generated traffic associated with this development is considered local residential traffic. An increase in local residential traffic along Thames Street, Archibald Street and Meath Street is expected given the site's proposed connections to Archibald Street and Meath Street. As mentioned in the original CTS/TIS, approximately 30% of inbound traffic to the proposed development is projected to travel via Thames Street, Archibald Street/Meath Street, which equates to approximately 10 to 50 new veh/h during the peak hours. This amount of traffic represents less than 1 new vehicle each minute on average and the total traffic travelling along Thames Street in the westbound direction is projected to be less than 100 veh/h during the afternoon peak hours, which is appropriate for a local roadway.

This topic is further discussed in the attached Technical Memorandum, which was prepared by Parsons in March 2018 (Attachment #2). A meeting was organized with the local City Councillor and it was proposed that Meath Street would be closed and a narrowing along Archibald Street would be implemented at the one-way location (using a bulb-out). This is shown in the attached drawing (Attachment #3). There are several concerns from a transportation perspective with this option:

1) Existing 'cut-through' traffic using Meath Street will likely continue to 'cut-through' the neighbourhood using Archibald Street instead;
2) Trucks at the Meath Street dead-end have no public turn-around location. An agreement to use the subject site's driveway connection to Meath Street would be required, otherwise, trucks would be required to reverse to Carling Avenue and back up onto Carling Avenue to turn around; and
3) Trucks at the Thames Street dead-end currently reverse approximately 120 m to turn around using Meath Street. With the closure of Meath Street, trucks will have to reverse 300 m to Archibald Street to turn around.

Based on the foregoing, the closure of Meath Street is not recommended from a transportation perspective, as it will not prevent cut-through traffic through the neighbourhood and will cause issues with truck movements in the area. The narrowing of both Meath Street and Archibald Street using bulb-outs, as outlined in the attached memo, is recommended. However, it is understood that through consultation with the local Councillor and community, the planning department may elect to close Meath and develop a channelized one-way lane at Archibald, to which the proponent is agreeable.

Comment 2.22: *Modifications to Meath Street and Archibald Street may be required to control movements from the site. Provide a road plan showing the location of the existing accesses on both sides of these streets.*

Response 2.22: The options for improvements to the bulb outs on Archibald Street and Meath Street were also assessed as part of the Technical Memorandum prepared in March. The following Figure 4 shows a proposed options to help enforce the one-way operation of Meath Street and Archibald Street at their intersections with Thames Street. As shown there are private driveways just north of each of the proposed bulb-outs.

Figure 4: Possible Bulb-Out Option along Archibald and Meath

Comment 2.23*: Sidewalks must be continuous and depressed through all accesses and should be continuous along the frontage of Archibald Street and Meath Street to Carling Avenue. (see DWG SC7.1 attached).*

Response 2.23: Noted, and the architect has been advised.

Comment 2.24*: With the redevelopment at 1309 Carling and 1335 Carling Avenue underway, review the need for the additional traffic signal to the west of the Carling Avenue/Westgate intersection. The need for additional storage for EB LT vehicles at the Westgate Shopping Centre intersection will extend through this signalized T-intersection.*

Response 2.24: The signalized intersection located west of the Carling/Westgate intersection is understood to be required for truck access and would impact the operations of the Westgate development if removed.

Comment 2.25*: Carling Avenue is designated as an Arterial road within the City's Official Plan with a ROW protection of 44.5 metres. The ROW limits are to be shown on all the drawings and the offset distance (22.25 metres) to be dimensioned from a distance 2.5 metres north of the existing curb. The 2.5 metres represents half the width of a 5.0 metres median which would have been present if not for the roadway divide.*

Response 2.25: Noted and the proponent has been advised.

Comment 2.26*: All underground and above ground building footprints and permanent walls need to be shown on the plan to confirm that any permanent structure does not extend either above or below into the existing property lines, sight triangles and/or future road widening protection limits.*

Response 2.26: Noted, and the proponent has been advised.

Comment 2.27*: Please refer to TAC Manual Part 2; Table 3.2.9.3 and Figure 3.2.5.2 for appropriate throat length and dimensioning.*

Response 2.27: The throat length for the proposed Carling Avenue driveway connection has been redesigned and is included in the updated Phase 2 Site Plan.

Comment 2.28*: The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards*

Response 2.28: Noted and the proponent has been advised.

Comment 2.29*: Ensure that the driveway grade does not exceed 2-6% within the private property for a distance of 9.0 metres from the ROW limit; see Section 25 (t) of the Private Approach By-Law #2003-447. Any grade exceeding 6% will require a subsurface melting device.*

Response 2.29: Noted, and the architect has been advised.

Comment 2.30*: The Tactile Walking Surface Indicator (TWSI) should be provided at pedestrian crossings. Under the Integrated Accessibility Standards of the Accessibility for Ontarians with Disabilities Act, 2005, and the City of Ottawa Accessibility Design Standards, TWSI's are required for new construction and the redevelopment of elements in public spaces, such as for exterior paths of travel (e.g. sidewalks and at the top of stairs).*

Response 2.30: Noted, and the architect has been advised.

Comment 2.31*: Minimum lane width for fire trucks is 6.0 metres. A fire truck three-point turn as it relates to the proposed lane configurations is to be confirmed by the Fire Chief.*

Response 2.31: Noted and the architect has been advised.

Comment 2.32*: Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.*

Response 2.32: Noted, and the architect has been advised.

Comment 2.33*: For the interlock pavers, landscaped areas and public art on City's road right-of-way the developer has to sign a "Maintenance Agreement" with the City to cover any claims.*

Response 2.33: Noted, and the architect has been advised.

Based on the foregoing, the proposed 1354-1376 Carling Avenue development continues to be recommended from a transportation perspective.

Prepared by :

André Sponder, B.A.Sc.
Transportation Analyst

Reviewed by :

Christopher Gordon, P.Eng.
Senior Project Manager

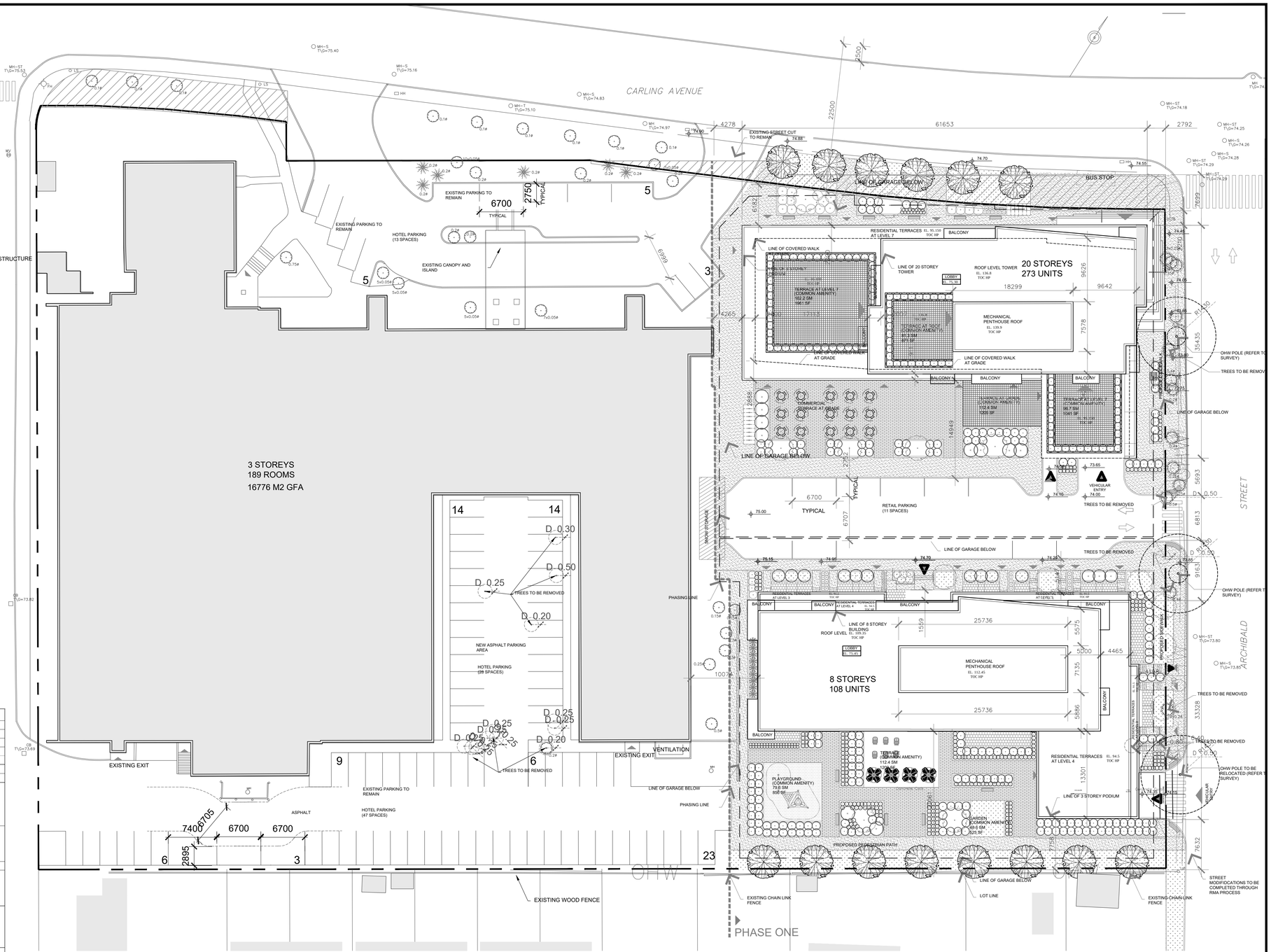
Attachment #1

Phase 1 and 2 Revised Site Plans

Notes & Legend

Denotes

- Deciduous Tree
- Coniferous Tree
- FH – Fire Hydrant
- WV – Water Valve
- MH–ST – Maintenance Hole (Storm Sewer)
- MH–S – Maintenance Hole (Sanitary)
- MH–B – Maintenance Hole (Bell Telephone)
- MH–T – Maintenance Hole (Traffic)
- MH–H – Maintenance Hole (Hydro)
- MH–G – Maintenance Hole (Gas)
- MH – Maintenance Hole (Unidentified)
- VC – Valve Chamber (Watermain)
- Overhead Wires
- CB – Catch Basin
- DI – Ditch Inlet
- GV – Gas Valve
- Gas Meter
- Hydro Meter
- HH – Handhole
- TB–B – Bell Terminal Box
- TB–C – Cable Terminal Box
- TB–T – Traffic Terminal Box
- TB – Unidentified Terminal Box
- B – Bollard
- S – Sign
- CLF – Chain Link Fence
- BF – Board Fence
- SRW – Stone Retaining Wall
- CRW – Concrete Retaining Wall
- DC – Depressed Curb
- UP – Utility Pole
- PG–W – Wooden Pole
- AN – Anchor
- LS – Light Standard
- Ø – Diameter
- 74.60 – Location of Elevations
- 74.60 – Top of Concrete Curb Elevation
- C/L – Centreline
- Property Line



ZONING TABLE

Current Zoning	AM10 and R4N	
Proposed Zoning	AM10[XXXX]	
Site Area	18,804 m²	
Dwelling Units	381 proposed (Building C: 273; Building E: 108)	
Proposed Retail Area	619m²	
Hotel Rooms/GFA	167 Existing / 5,916m²	
	REQUIRED	**PROPOSED**
Setbacks	Front (Carling): No minimum Corner Side (Meath & Archibald): Building B: No minimum Building E: 3m Rear: 7.5m	Front (Carling): 4m Corner Side (Meath and Archibald): Building B: 4.4m Building E: 4.2m Existing Hotel: 3.16m Rear: 7.76m
Building Wall	At least 50% of the frontage along the front lot line and corner side lot line must be occupied by building walls located within 4.5 metres of the frontage for a Residential use building, and within 3.0 metres for Non-residential and Mixed use buildings	Front (Carling): 79% within 3m Corner Side (Archibald): 57% within 3m/4.5m
Ground Floor Height	Minimum: 4.5 metres within 10m of Carling	4.95m
Glazing Requirement	Minimum: 50% of the surface area of the ground floor façade, measured from the average grade up to a height of 4.5 metres, facing a public street must be comprised of transparent glazing and active customer or resident entrance access doors	>50% (Floor to ceiling glazing proposed all along Carling Ave. with active customer doors)
Building Height	Minimum: 7.5 metres and at least 2 storeys Maximum: Up to 20m from rear lot line: 11m Between 20m and 30m from rear lot line: 20m All other Cases: 30m	Minimum: 18m Maximum: Up to 20m from rear lot line: 10.5m Between 20m and 30m from rear lot line: 25m All other Cases: 25m
Amenity Area 6m² per unit of which 50% is required to be communal	Total: 2,286m² Building C: 1,638m² Communal: 819m² Building E: 648m² Communal: 324m²	Total: 2,074 m² Building C: 1,365.m² Communal: 736m² Building E: 784m² Communal: 392m²
Parking Residential: Minimum: 0.5/dwelling unit Residential Visitor: Minimum: 0.1/dwelling unit excluding the first 12 units Maximum: 30 spaces Retail Store: Non-Residential (500m² or less): None Otherwise: 1.25/100m² of GFA Hotel: First 40 rooms: 0.5/room Balance: 1.0/12 rooms	Total Requirement: 260 spaces Residential 191 spaces Residential Visitor: 30 spaces Retail: 8 spaces Hotel: 31 spaces	Total 372 spaces Underground: Residential 243 spaces Residential Visitor: 30 spaces At-Grade: Retail: 11 spaces Hotel: 88 spaces
Bicycle Parking Residential: 0.5/dwelling unit Retail: 1/250m² of GFA Hotel: 1/1,000m² of GFA 50% can be vertical 25% of residential spaces must be indoors	Total Requirement: 200 spaces Residential: 191 spaces Retail: 3 spaces Hotel: 6 spaces	Total: 200 spaces Underground: 180 spaces Surface: 20 spaces

PROJECT CONTACTS

CLIENT
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6009 Quinpool Rd,
Halifax, NS
B3K 5J7

ARCHITECT
GEIGER HUOT ARCHITECTES
424 RUE GUY, SUITE 104
MONTREAL, QC
H3J 1S6

PLANNER
FOTENN PLANNING AND URBAN DESIGN
223 MCLEOD STREET
OTTAWA, ON
K2P 0Z8

LANDSCAPE
FOTENN PLANNING AND URBAN DESIGN
223 MCLEOD STREET
OTTAWA, ON
K2P 0Z8

SURVEYOR
OSEL
120 IBER ROAD, UNIT 103
STITTSVILLE, ON
K2S 1E9

STRUCTURAL
LEROUX + CYR
500 ROUL GOUIN EST, BUREAU 306
MONTREAL, QC.
H3L 3W9

MECHANICAL & ELECTRICAL
DESJARDINS EXPERTS CONSEILS
166 PLACE DE LIERRE,
LAVAL, QC.
H7G 7X7

CIVIL ENGINEER
OSEL
120 IBER ROAD, UNIT 103
STITTSVILLE, ON
K2S 1E9

TRANSPORTATION & TRAFFIC
PARSONS
1223 MICHAEL STREET, SUITE 10C
OTTAWA, ON
K1J 7T2

Scale 1 : 300

10 7.5 5.0 2.5 0 5 10 Metres

Metric
DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

GeigerHuot
architectes
424, rue Guy, Bureau 104 , Montreal, Qc. H3J 1S6
tel: 514 - 935 - 3338 telec: 514 -935 - 3375
info@geigerhuot.com

General Notes

Do not scale directly off drawings all dimensions and site conditions are to be verified on site prior to begining any work. Never proceed in uncertainty.

ONTARIO ASSOCIATION OF ARCHITECTS
ERIC HUOT LICENCE 5307

Seal

TOPOGRAPHICAL PLAN OF

PART BLOCKS 6 AND 7
REGISTERED PLAN 221
AND
PART OF ROAD ALLOWANCE BETWEEN CONCESSION 1 (OTTAWA FRONT) AND CONCESSION A (RIDEAU FRONT)
CLOSED BY BY-LAW 231-66, INST 511589
GEOGRAPHIC TOWNSHOP OF NEPEAN
CITY OF OTTAWA

Prepared by Annis, O'Sullivan, Vollebekk Ltd.

14-10-2018	Issued for SPA	op
date:	revision	par:

Révision

FOTENN Planning + Design

Landscape

Méchanical - Electrical

Project

1354 - 1376
Carling Avenue
Ottawa, On.

Phase 1

Drawing Title:
Site Plan

APPROVED ☐ REFUSED ☐

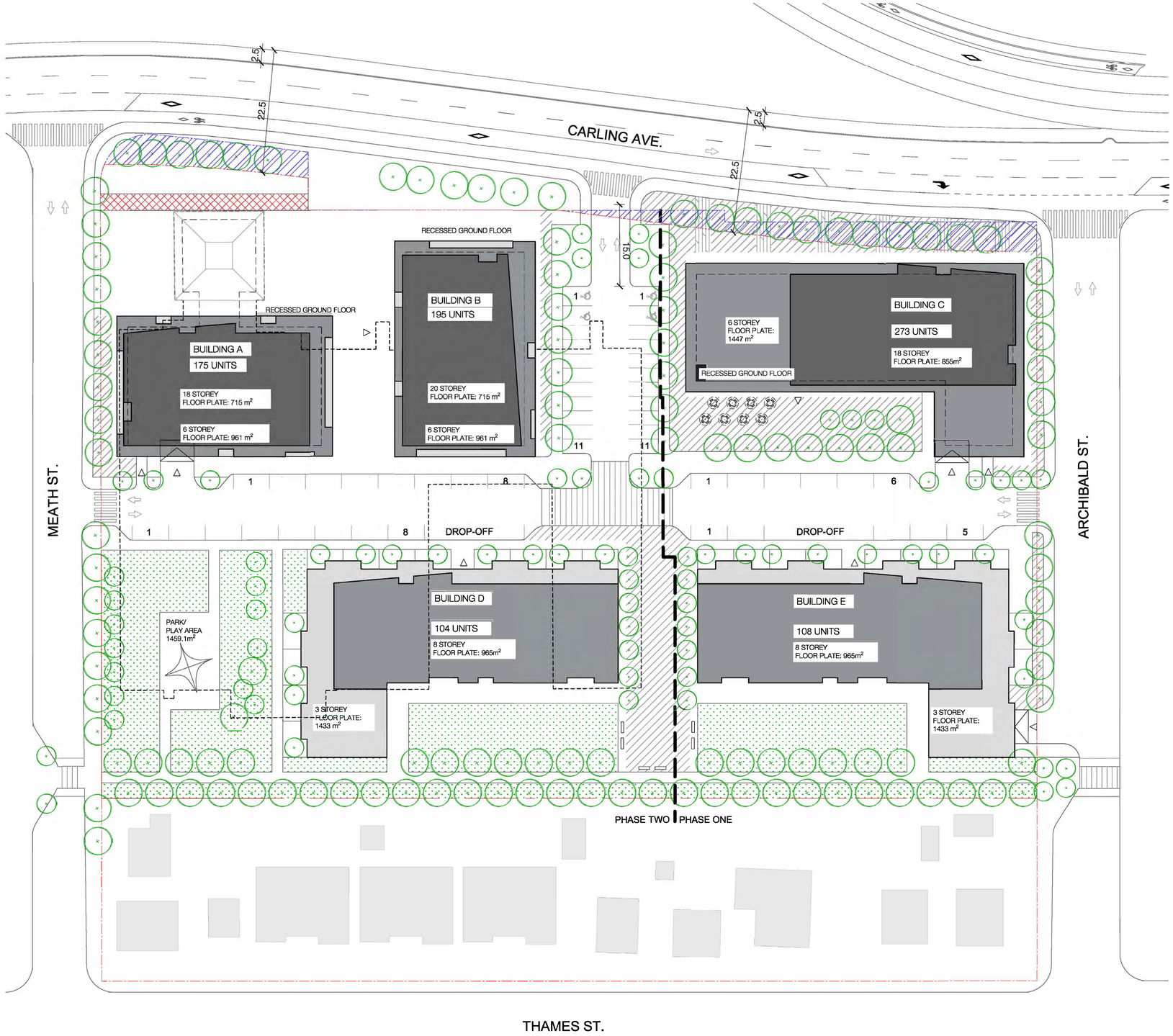
THIS ____ DAY OF _____, 20____

DON HERWEYER MCIP,RPP, MANAGER
DEVELOPMENT REVIEW SOUTH
PLANNING, INFRASTRUCTURE AND ECONOMIC
DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

Scale: 1:300	**Drawn by:** a.b.	
date: 03.06.2018	**approuve par:** E.H.	

Drawing File:
Job Number: 16-080

A-0.1



DEVELOPMENT STATISTICS

CURRENT ZONING	AM10 & R4N

SITE AREA	
Total Site Area:	18,559m²

SETBACKS	REQUIRED	PROVIDED
F.Y.	0m	Road widening
C.Y. (A/B)	0m	3,5m
C.Y. (C/D)	3m	5m
R.Y.	7.5m	11.5m/26m

HEIGHT	Storeys
Commercial Ground Floor:	1(6m)
A/B/C	18/20/18
D/C	8
Total:	20

RESIDENTIAL UNITS	
Building A	175
Building B	195
Building C	273
Building D	104
Building E	108
TOTAL:	855

Assumes an 85% efficiency and 75m² units

PARKING	Above Ground
	49

NOTES

1. Assumes a typical residential floor height of 3m. Assumes a minimum commercial ground floor height of 6m.

2. For the purposes of this concept, an average unit size of 75m² (800sf) is used to calculate the approximate number of units.

3. GFA: Assumes 85% efficiency for apartment buildings. Areas are approximate.
   * Building includes interior amenity areas for the residents;

1354-1376 CARLING AVE

CONCEPT SITE PLAN

LEGEND

- PROPERTY LINE
- PHASING LINE
- EXISTING HOTEL
- ORIGINAL PROPERTY LINE
- ROAD WIDENING
- SEWER EASEMENT

6	ACCESS ROAD THROAT	2018.04.18	RP
5	FOR CLIENT REVIEW	2018.01.30	EL
4	FOR CLIENT REVIEW	2017.11.10	RP
3	FOR CLIENT REVIEW	2017.09.13	RP
2	REVIEW	2017.09.12	RP
1	DRAWING	2017.09.07	RP

CREATED BY: RP
REVIEWED BY: PB
DATE: 2017.11.10

CLIENT
HOLLOWAY LODGING CORPORATION

FOTENN
Planning + Design
OTTAWA
223 McLeod Street
Ottawa, ON K2P 0Z8
T 613 730 5709

01

Attachment #2

Archibald and Meath Street Tech Memo

PARSONS

1223 Michael Street, Suite 100 | Ottawa, Ontario K1J7T2
P: +1 613.738.4160 | www.parsons.com

Technical Memorandum

To:	Gavin MacDonald	Date:	19 March 2018
Copy:	Paul Black, Fotenn	Project:	476213 - 01000
From:	André Sponder/Christopher Gordon, P.Eng.		

Re: 1354-1376 Carling Avenue
Local Street Traffic

1. INTRODUCTION

Holloway Lodging is proposing a new residential development consisting of five buildings on the properties municipally known as 1376 and 1354 Carling Avenue. The site is bordered by Carling Avenue to the north, Archibald Street to the east and Meath Street to the west. The Community Transportation Study (CTS) was completed in April 2017 in support of the development. We are advised that there are concerns from the local Councilor and residents regarding site-generated traffic along Thames Street, which provides access to Archibald Street and Meath Street. This Technical Memo has been prepared to assess different options regarding the functionality of the local roadways in close proximity to the site and to assess opportunities to minimize additional site-generated traffic along Thames Street.

2. ARCHIBALD AND MEATH STREETS

The proposed site has vehicle access to Carling Avenue (in the eastbound direction only) and full-movement access to Archibald Street and Meath Street. Both Archibald Street and Meath Street operate as two-way roadways adjacent to the subject site, and transition into one-way roadways in the northbound direction, south of the site. It is understood that this one-way restriction was implemented to help prevent cut-through traffic through the neighbourhood. Vehicles travelling along Carling Avenue destined to Merivale Road could use Archibald/Meath Streets and Thames Street to access Merivale Road and avoid congestion on Carling Avenue. It is noteworthy that the purpose of local streets is to provide access to local residents, including the future residents of the subject development.

Several options are presented herein for discussion regarding Archibald and Meath Streets. These Options are listed below with the corresponding transportation discussion.

2.1. CURRENT PROPOSAL

Option 1 is to maintain the current proposal and allow site-generated traffic to access the site along Meath Street and Archibald Street via Thames Street. The following points of discussion are provided for this Option:

- Based on the location of the proposed development and its connections to Carling Avenue (arterial road), there is minimal site-generated traffic projected to travel along local streets within the vicinity of the subject site as the majority of drivers will be travelling to the development via HWY 417;
- The purpose of a local street is to provide access to residents within the community;
- Given the existing one-way configuration of Archibald Street and Meath Street, site-generated traffic can use these streets to access the development, however, they are restricted from using Archibald Street and Meath Street to travel southbound to Thames Street to exit the site;
- Approximately 30% of inbound traffic to the site is projected to travel via Thames Street, Archibald Street and Meath Street, which equates to approximately 10 to 55 veh/h during peak hours for the ultimate condition. This amount of traffic represents less than 1 vehicle each minute on average; and

- The total traffic travelling along Thames Street in the westbound direction is less than 100 veh/h during the afternoon peak hour, which is appropriate for a local roadway. This amount of traffic represents approximately 2 vehicles every minute.

2.2. EXTEND BULB-OUT

Option 2 is to extend the proposed bulb-out at the Archibald and Meath Street to clearly mark these streets as one-way roadways. Signage exists along Archibald Street and Meath Street to identify that the roadways operate as one-way roadways in the northbound direction. Given the northern portion of these roadways operate as two-way roadways, it could be confusing to drivers and drivers may not follow the signage and obey the one-way signage. Providing bulb-outs will clarify that these roadways change from two-way to one-way and will reduce the width of the roadway to one lane instead of two. This will help enforce the one-way operations of the southern portion of these two local streets. The following Figure 1 provides a visual representation of this option.

Figure 1: Curb Bulb-Outs at Archibald and Meath Streets

2.3. CLOSE LOCAL ROADWAYS

Option 3 is to close Archibald and Meath Streets to through traffic. This Option would result in:

- All traffic destined to the subject development would be required to use Carling Avenue to access the site;
- All residential traffic along Thames Street would be required to use Merivale Road to access their houses. Thames Street residents would no longer have direct access to Carling Avenue;
- A slight increase of vehicle traffic along Thames Street would result as drivers travelling from the west end of Thames Street to Merivale Road would no longer have direct access to Carling Avenue via Archibald and Meath Streets and all traffic would have to use the unsignalized Thames/Merivale intersection traveling onto and off of Thames Street; and
- Ensures that no traffic destined for the subject site travels via Thames Street to access the development.

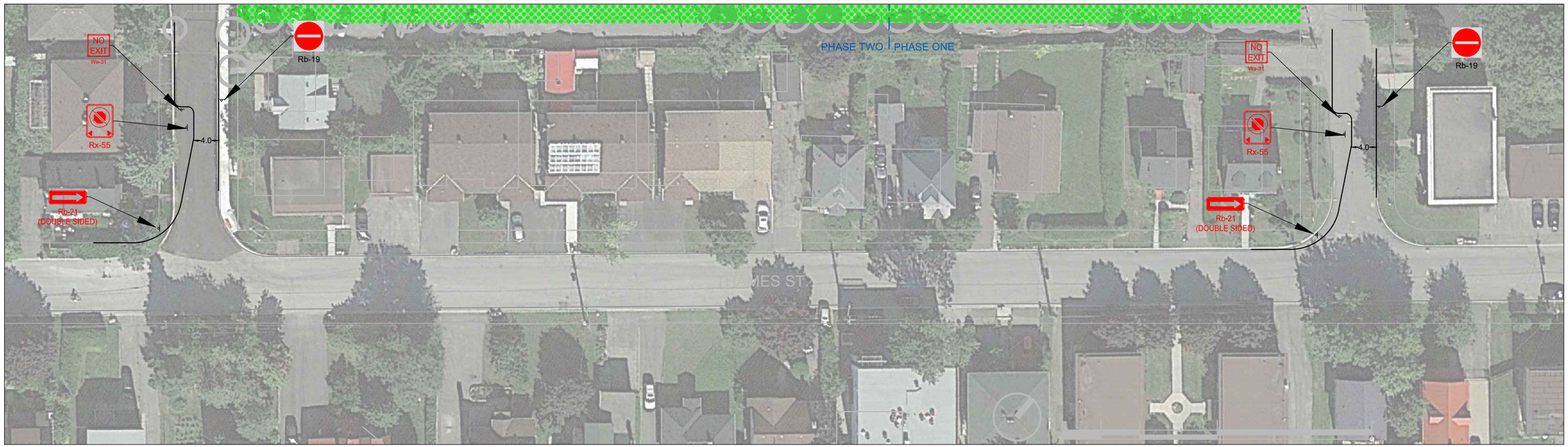
2.4. NEW INTERSECTION AT ARCHIBALD STREET

Option 4 is to provide a new intersection at Archibald Street and Carling Avenue. This option proposes to move the existing signalized truck access for the Westgate Shopping Centre to align with Archibald Street to form a traditional 4-legged intersection. This would allow full-movement access from the site onto Carling Avenue and would potentially minimize the amount of site-generated vehicles along Thames Street. This option presents several challenges:

- The existing intersection is on RioCan's Westgate property and if it was shifted towards Archibald Street, it would no longer be on their property, removing one of their accesses;
- The property to the north of Carling Avenue, adjacent to Westgate Shopping Centre, would require modifications to the site and no redevelopment of this parcel is proposed or anticipated at this time;
- The cost to remove and rebuild a signalized intersection along a major arterial road would be significant;
- MTO is removing the HWY 417 on-ramp adjacent to the Westgate Shopping Centre, however, there could still be some concerns from MTO with regards to this Option; and
- There could be issues with the existing median break and alignment.

3. CONCLUSION

Based on the foregoing, Option 2 is recommended from a transportation perspective. The majority of site-generated traffic is expected to travel to/from HWY 417 and will use the Carling Avenue site driveways. Approximately 30% of site-generated traffic travelling to the site is projected to use Thames Street to Archibald or Meath Streets to access the site, which equates to less than one additional vehicle every minute (10 to 55 veh/h). This amount of traffic is reasonable for a local roadway. Providing bulb-outs will help to enforce the one-way operations of the southern portion of these two local streets. To completely eliminate the possibility of traffic from the proposed development using Thames Street, Meath Street and Archibald Street would have to be closed to through traffic (Option 3). This is not recommended as it will limit access for the Thames Street residents to Carling Avenue and all Thames Street residents will have to use the unsignalized Thames/Merivale intersection to egress their neighbourhood. There are several challenges with Option 4, to move the existing RioCan signalized intersection, and as such it is not recommended. Given the available options and the minimal amount of site-generated traffic projected to travel along Thames Street to Archibald Street and Meath Street, it is recommended to construct bulb-out along the southern portion of Archibald and Meath Street to maintain the existing one-way operation.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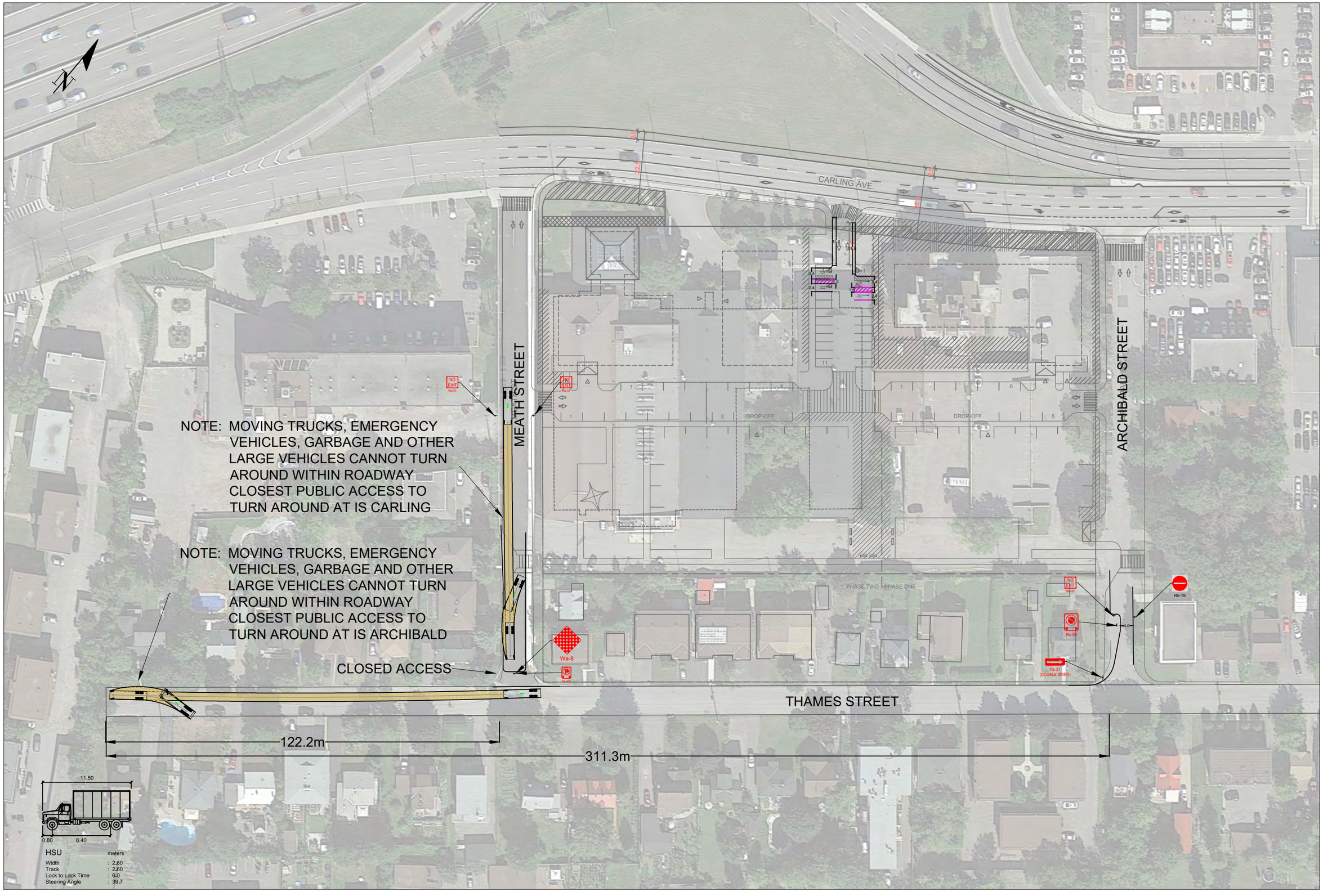
Wa-31
Rb-19
PHASE TWO
PHASE ONE
Rx-55
4.0
Rb-21
(DOUBLE SIDED)
NO EXIT
Wa-31
Rb-19
Rx-55
4.0
Rb-21
(DOUBLE SIDED)

Attachment #3

Proposed Closure of Meath Street Drawing


CARLING AVE.
MEATH STREET
ARCHIBALD STREET
THAMES STREET
DROP-OFF
DROP-OFF
PHASE TWO
PHASE ONE
NO EXIT
Wa-31
Wa-8
Rb-19
Rx-55
Rb-21
(DOUBLE SIDED)
NOTE: MOVING TRUCKS, EMERGENCY VEHICLES, GARBAGE AND OTHER LARGE VEHICLES CANNOT TURN AROUND WITHIN ROADWAY CLOSEST PUBLIC ACCESS TO TURN AROUND AT IS CARLING
NOTE: MOVING TRUCKS, EMERGENCY VEHICLES, GARBAGE AND OTHER LARGE VEHICLES CANNOT TURN AROUND WITHIN ROADWAY CLOSEST PUBLIC ACCESS TO TURN AROUND AT IS ARCHIBALD
CLOSED ACCESS
122.2m
311.3m
11.50
0.80
8.40
HSU
meters
Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 39.7

APPENDIX B

TRAFFIC COUNT DATA

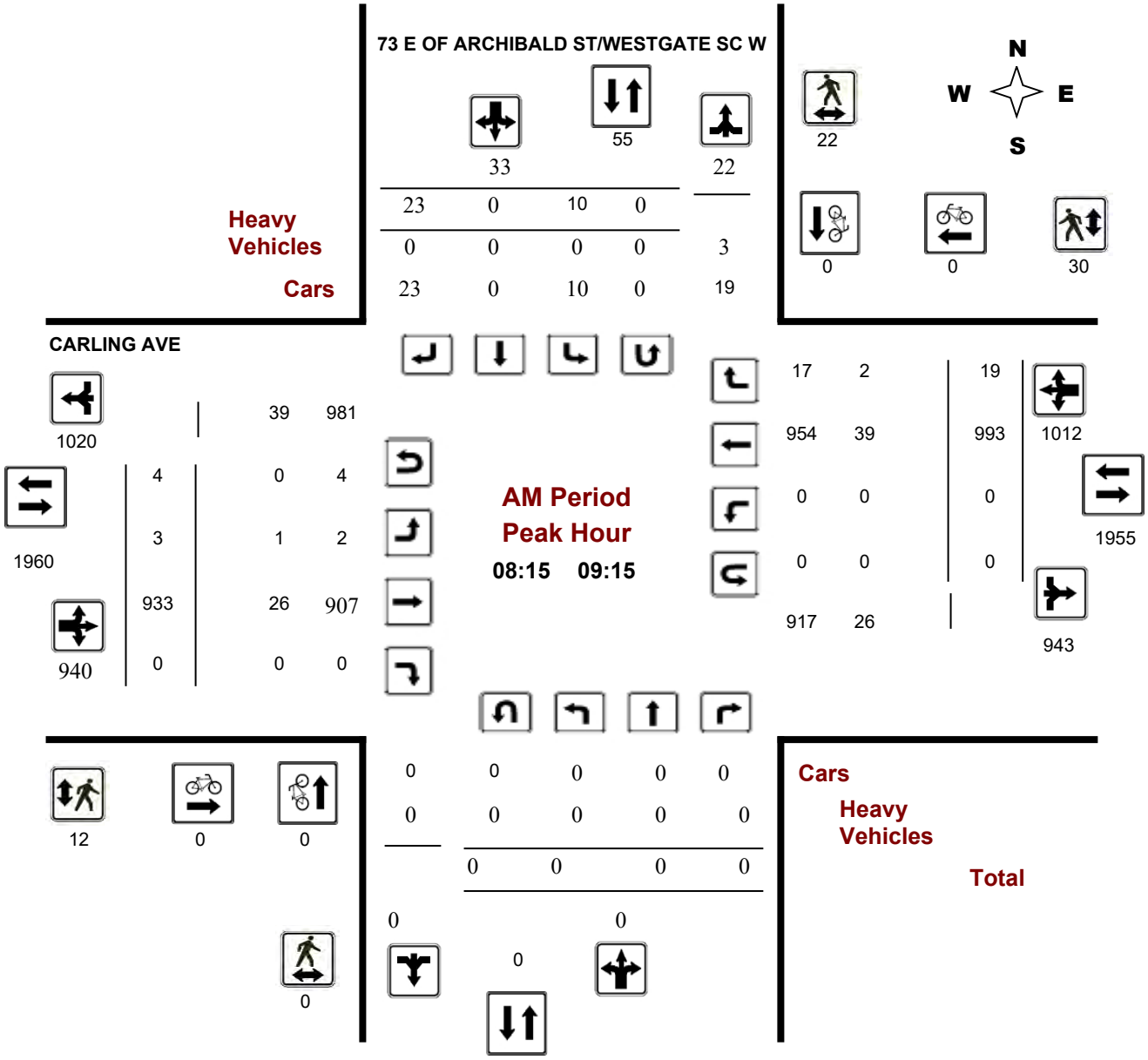
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

Start Time: 07:00 **Device:** Miovision



Comments

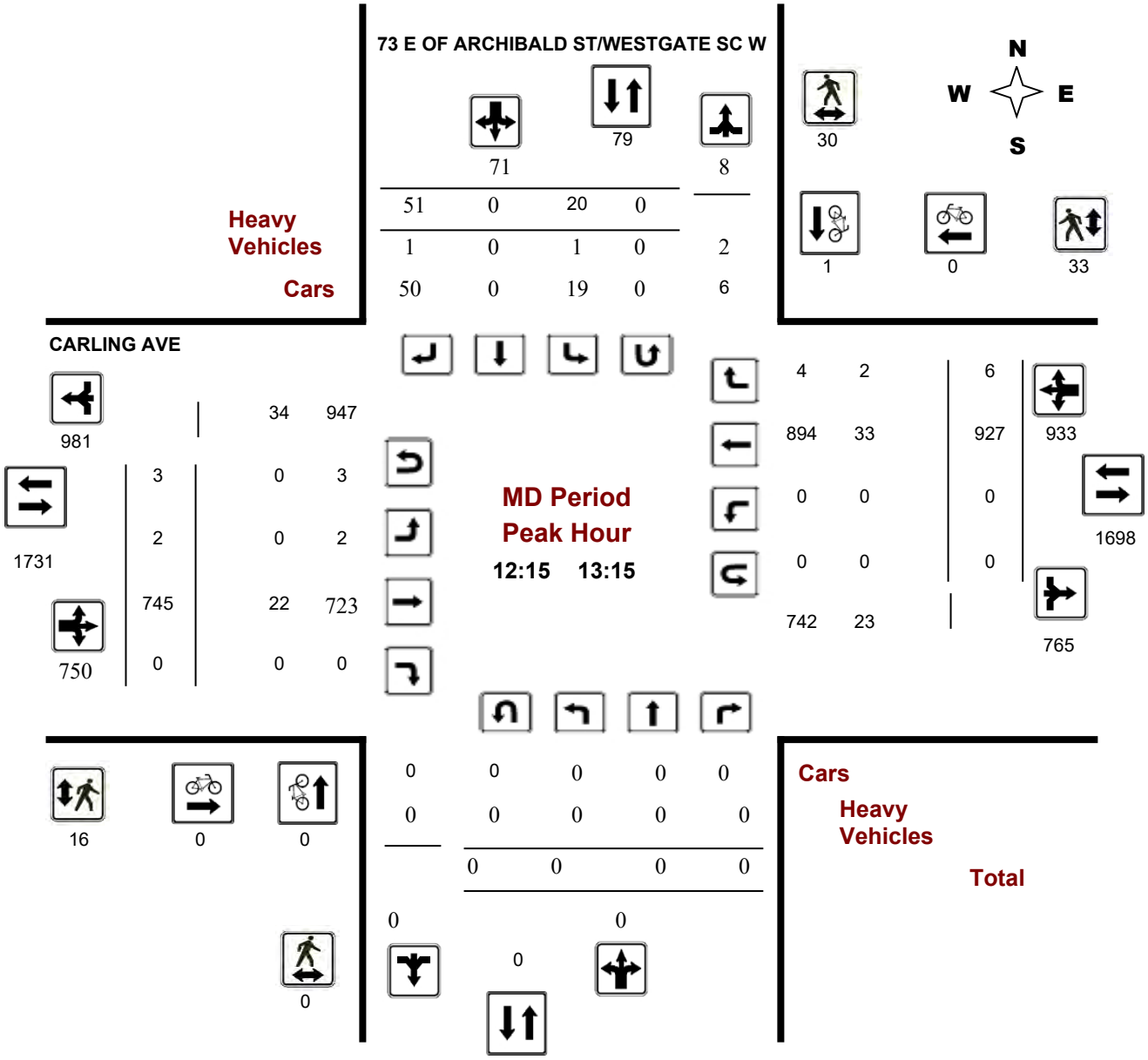
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

Start Time: 07:00 **Device:** Miovision



Comments

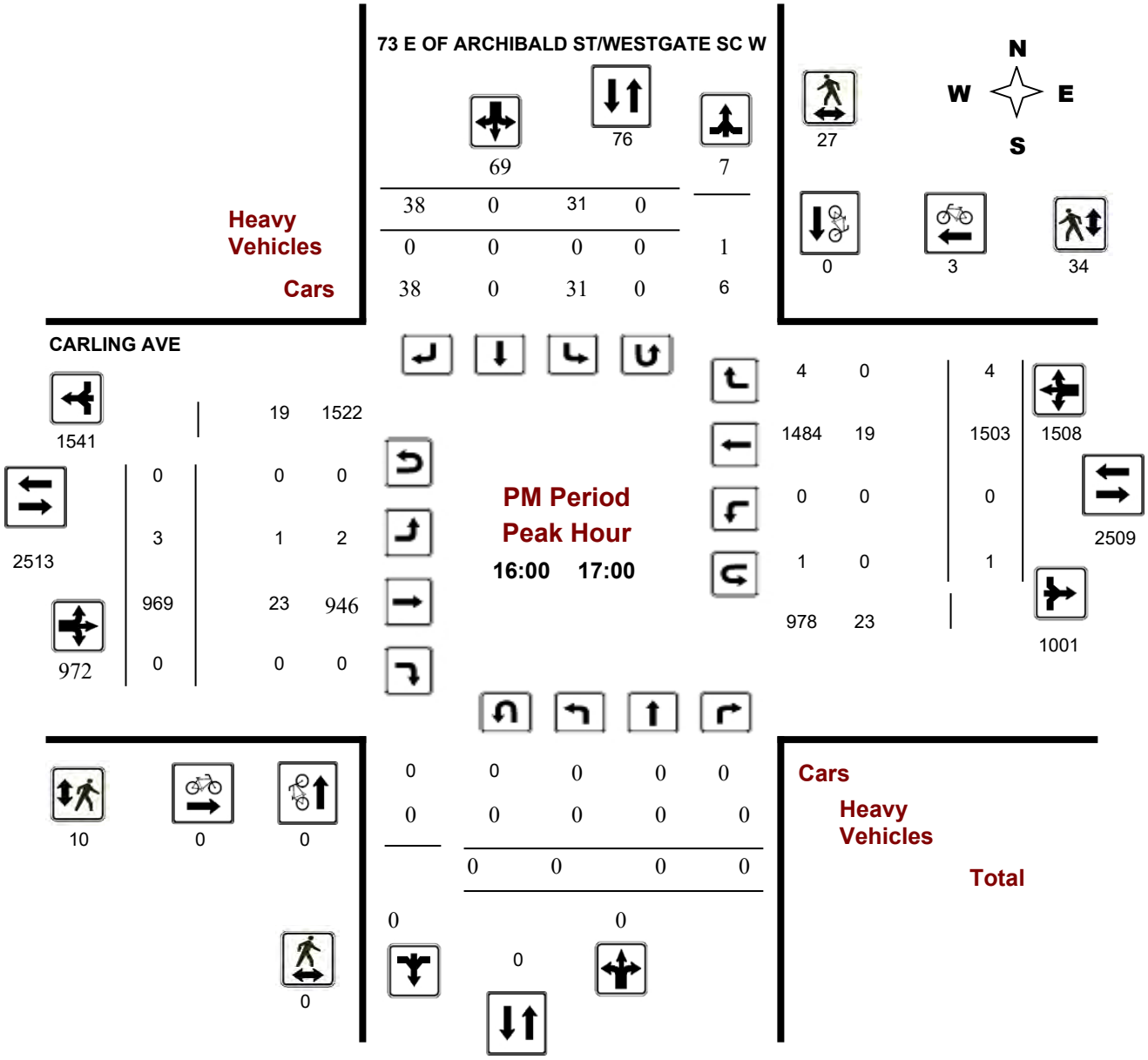
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Survey Date: Wednesday, January 31, 2018 **WO No:** 37476

Start Time: 07:00 **Device:** Miovision



Comments

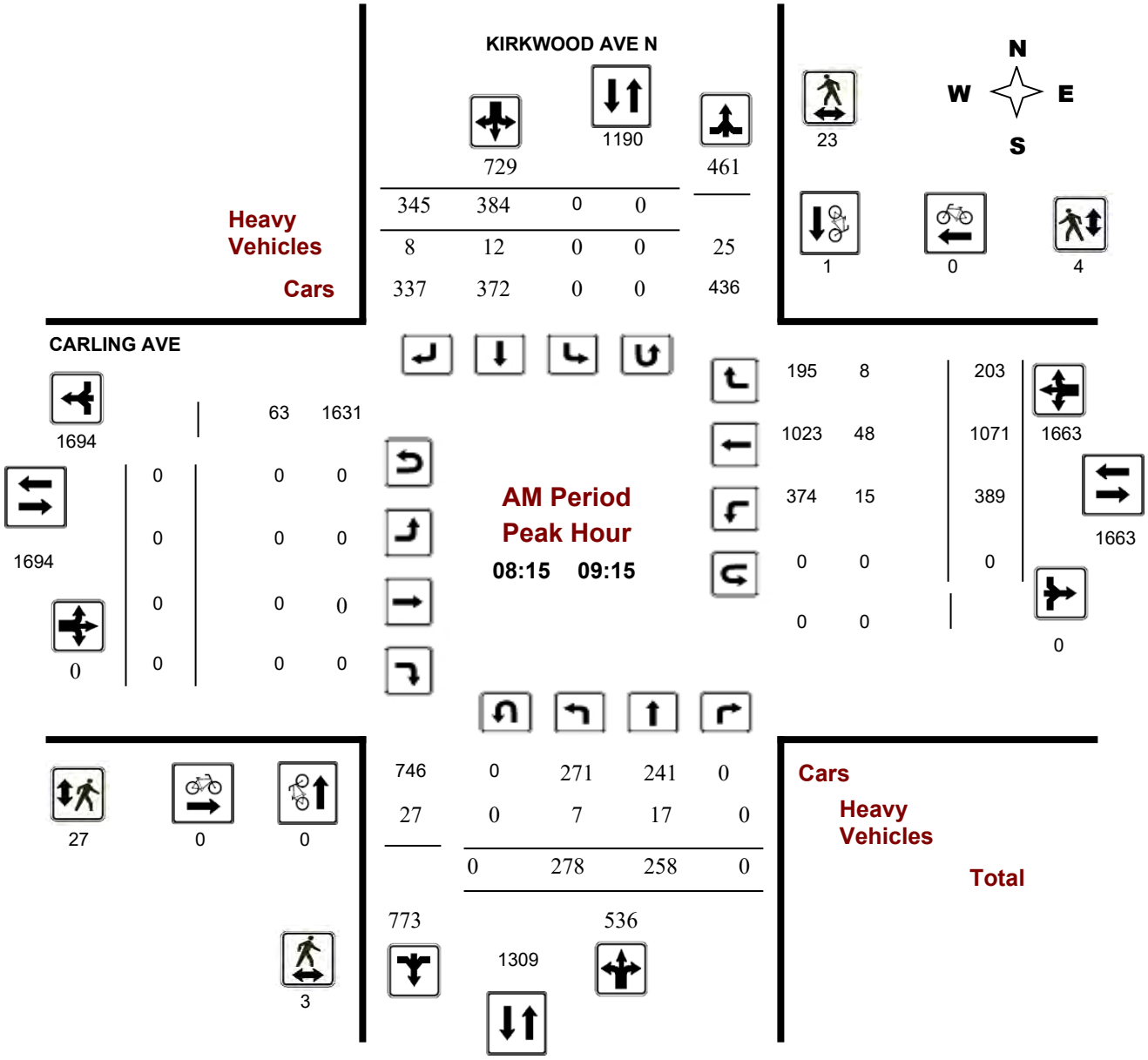
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE N

Survey Date: Tuesday, April 10, 2018
Start Time: 07:00

WO No: 37707
Device: Miovision



Comments

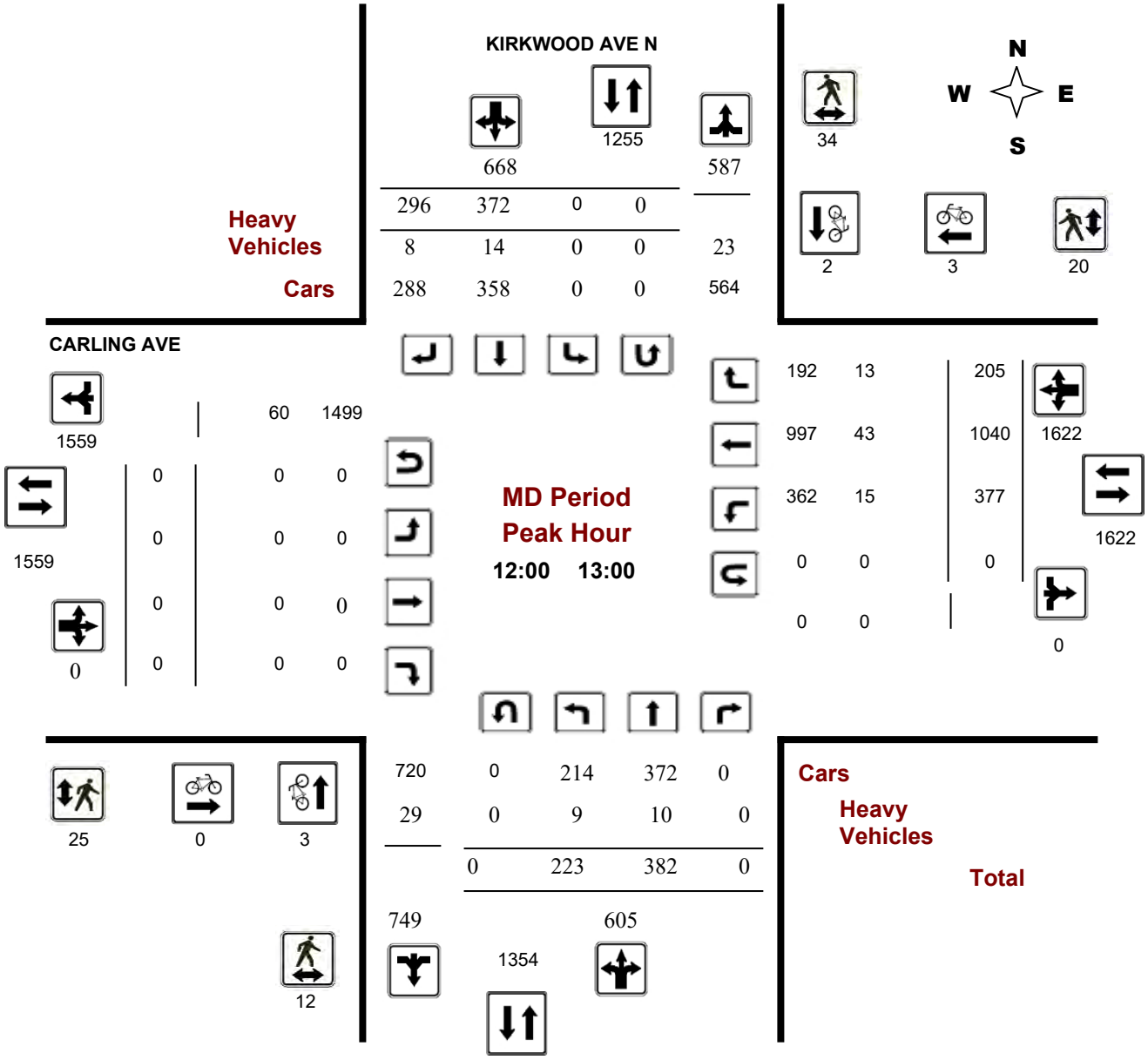
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE N

Survey Date: Tuesday, April 10, 2018
Start Time: 07:00

WO No: 37707
Device: Miovision



Comments

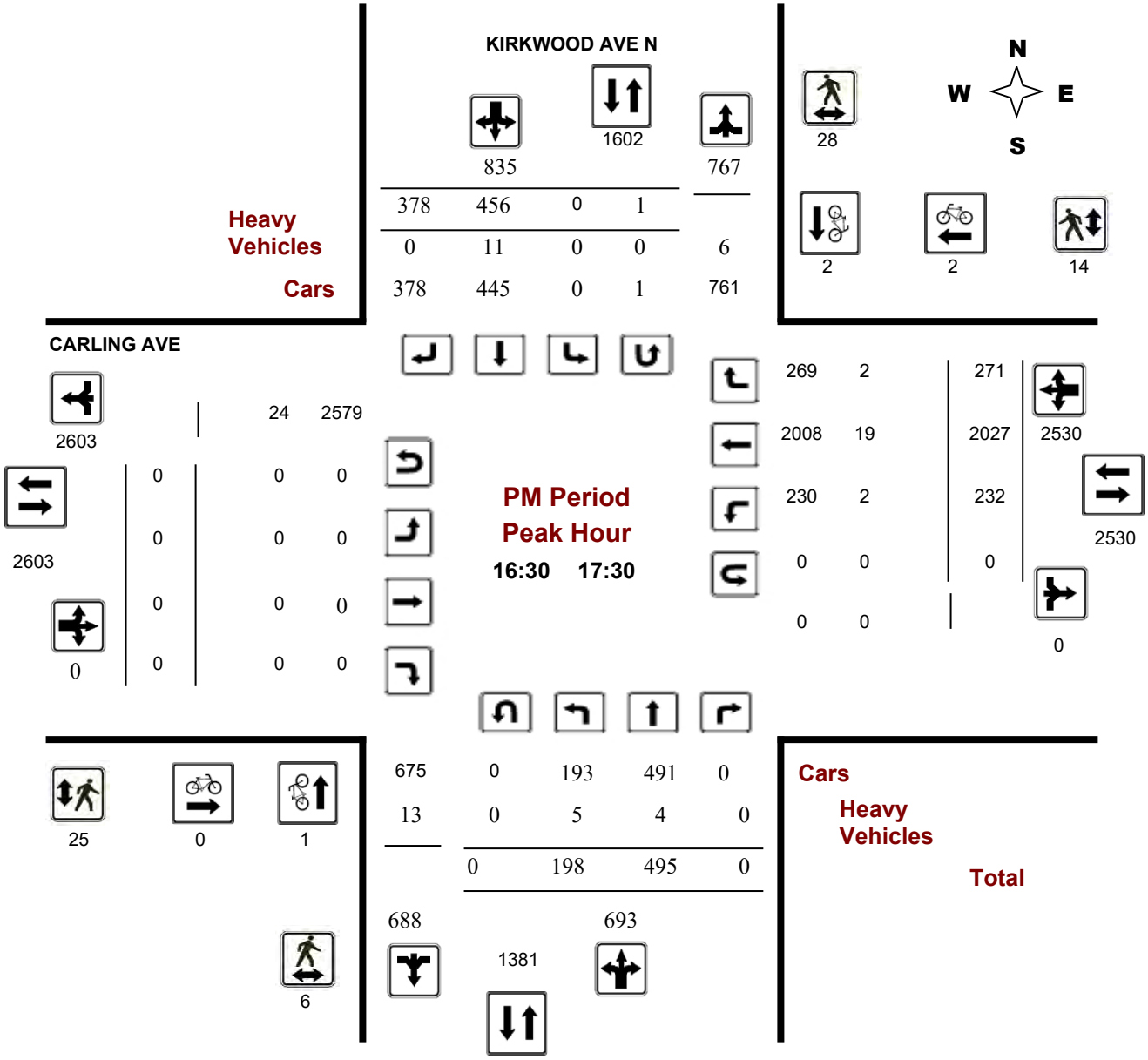
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE N

Survey Date: Tuesday, April 10, 2018
Start Time: 07:00

WO No: 37707
Device: Miovision



Comments

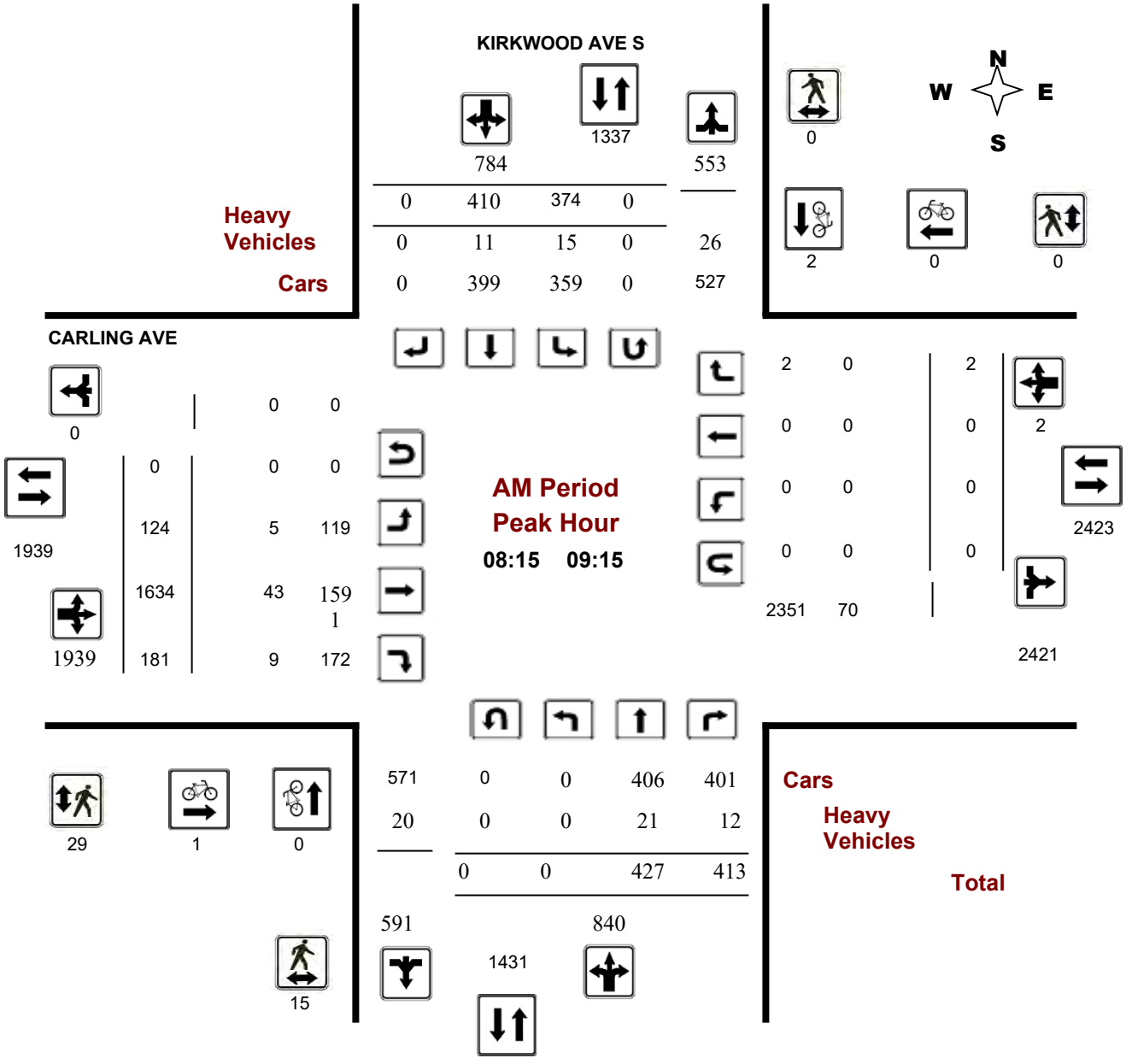
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Tuesday, April 10, 2018
Start Time: 07:00

WO No: 37699
Device: Miovision



Comments

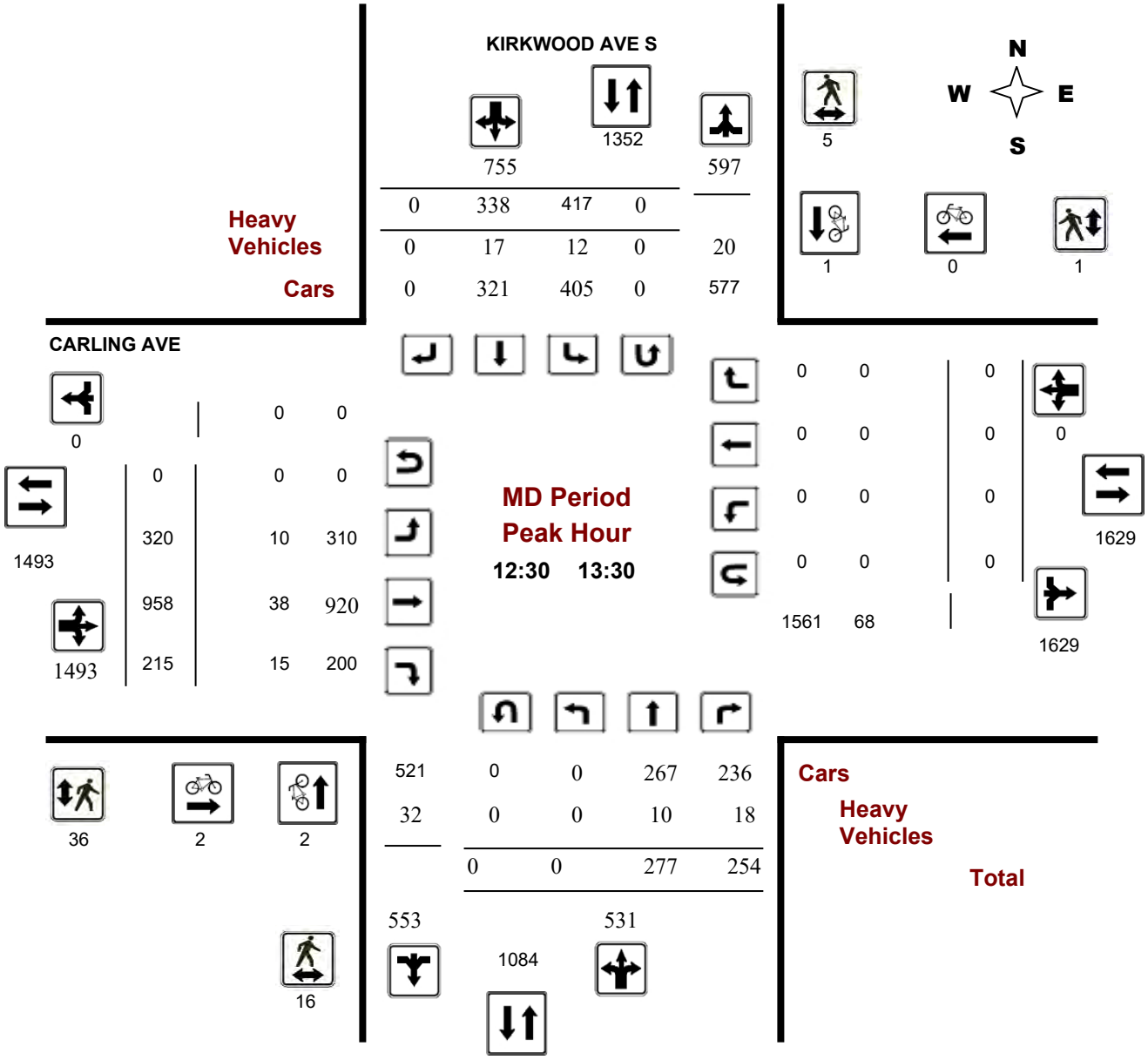
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Tuesday, April 10, 2018
Start Time: 07:00

WO No: 37699
Device: Miovision



Comments

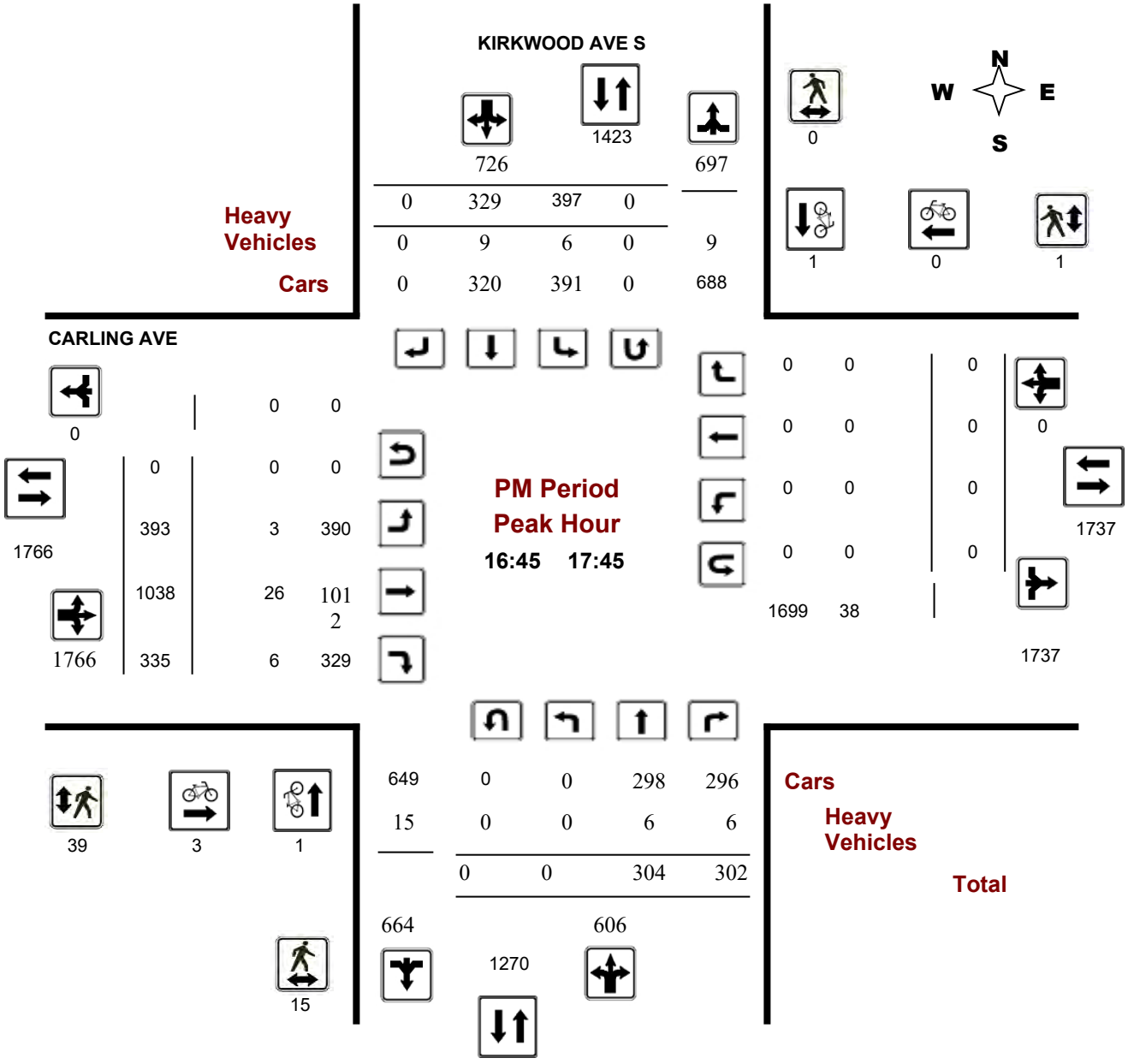
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ KIRKWOOD AVE S

Survey Date: Tuesday, April 10, 2018
Start Time: 07:00

WO No: 37699
Device: Miovision



Comments

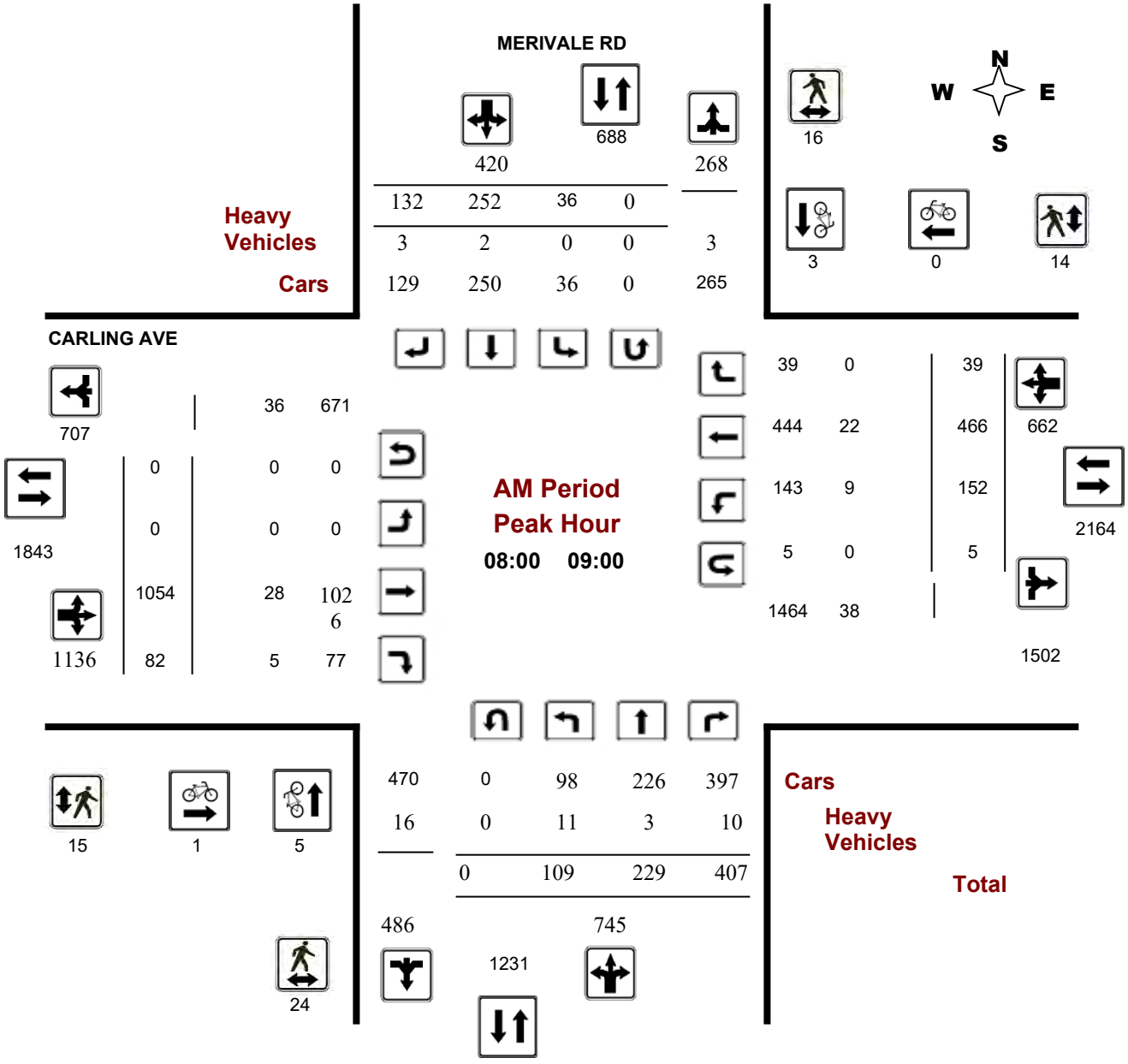
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, April 05, 2018 **WO No:** 37685

Start Time: 07:00 **Device:** Miovision



Comments

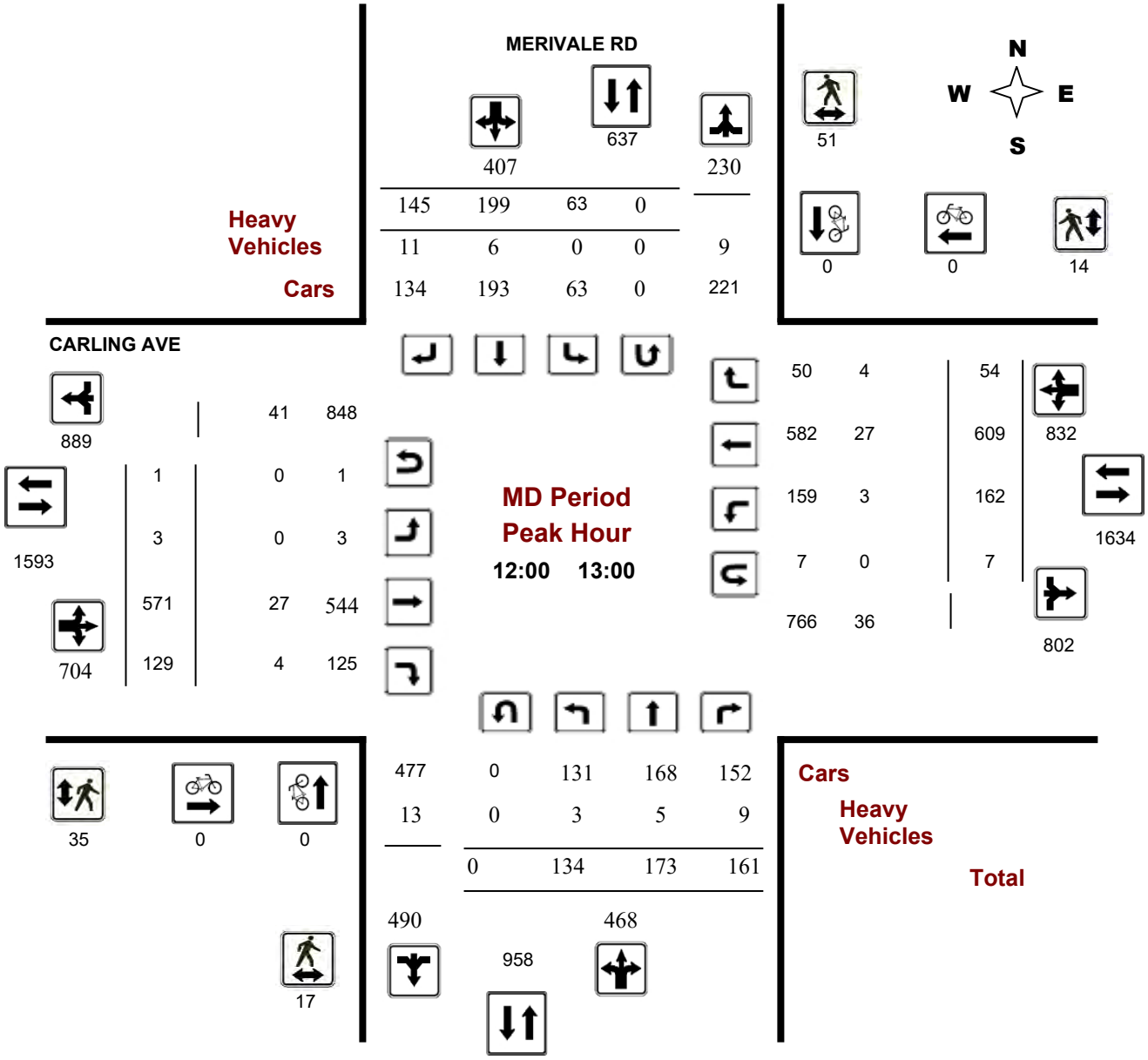
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, April 05, 2018 **WO No:** 37685

Start Time: 07:00 **Device:** Miovision



Comments

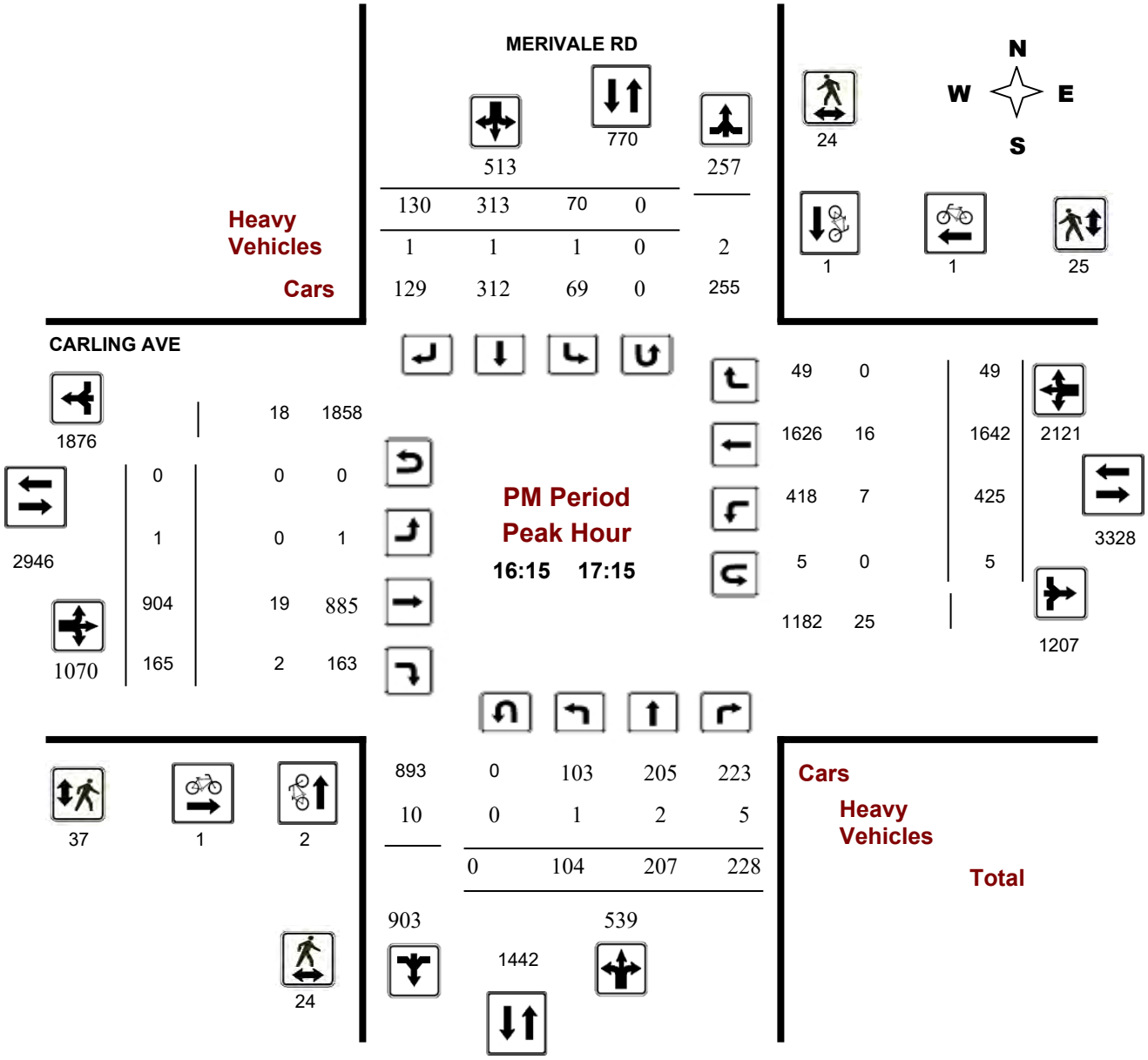
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ MERIVALE RD

Survey Date: Thursday, April 05, 2018 **WO No:** 37685

Start Time: 07:00 **Device:** Miovision



Comments

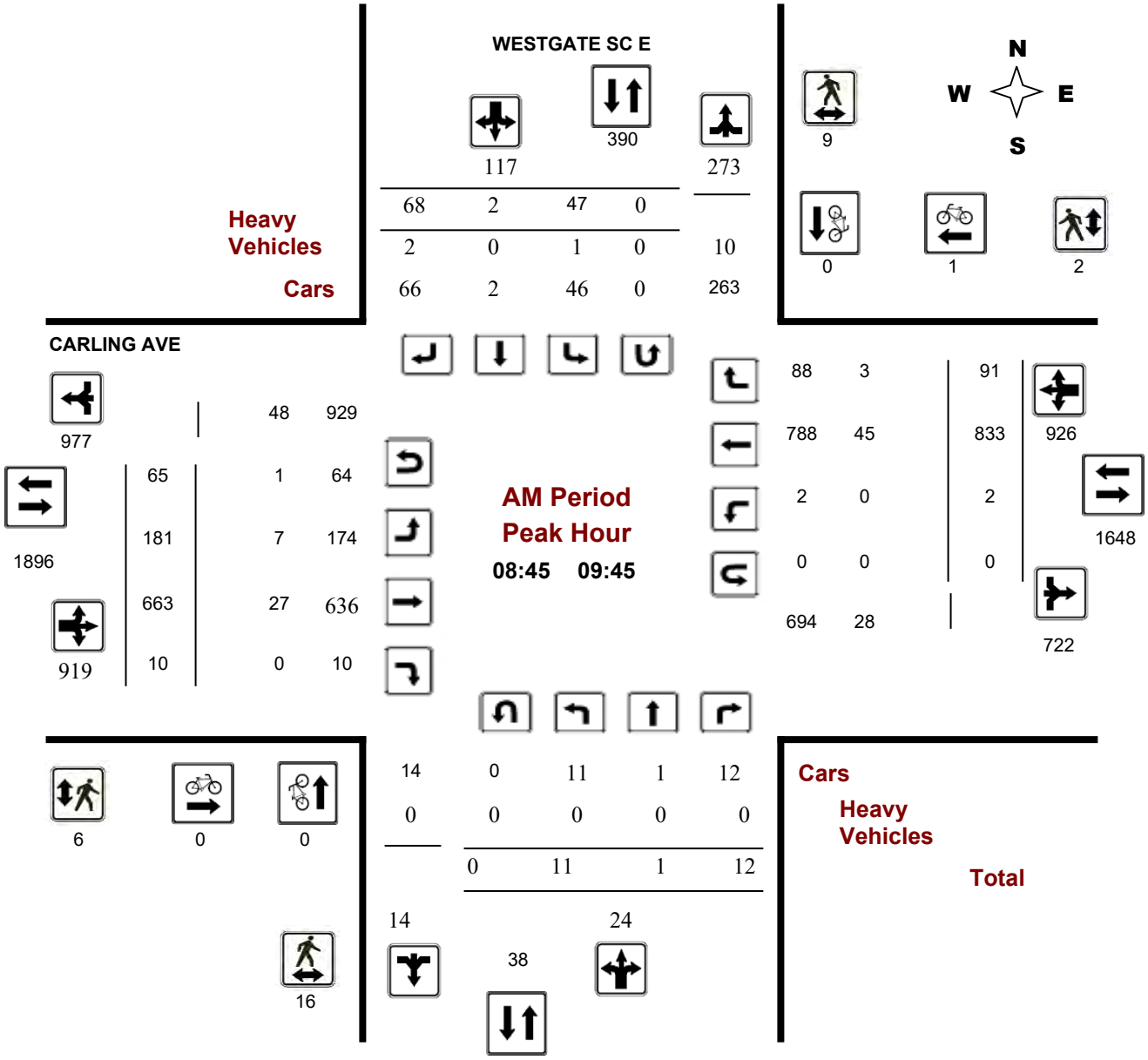
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, March 21, 2018 **WO No:** 37629

Start Time: 07:00 **Device:** Miovision



Comments

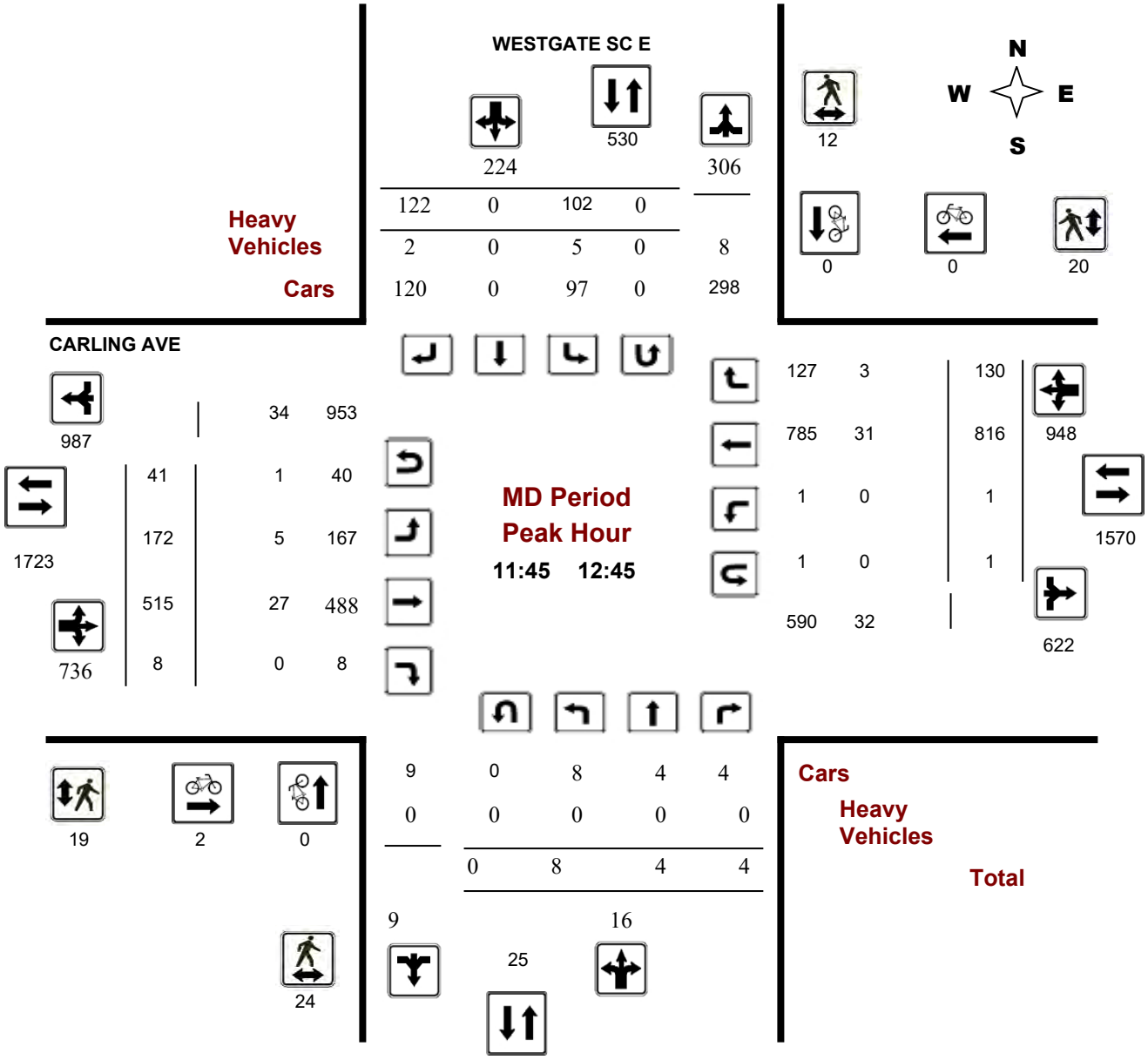
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, March 21, 2018 **WO No:** 37629

Start Time: 07:00 **Device:** Miovision



Comments

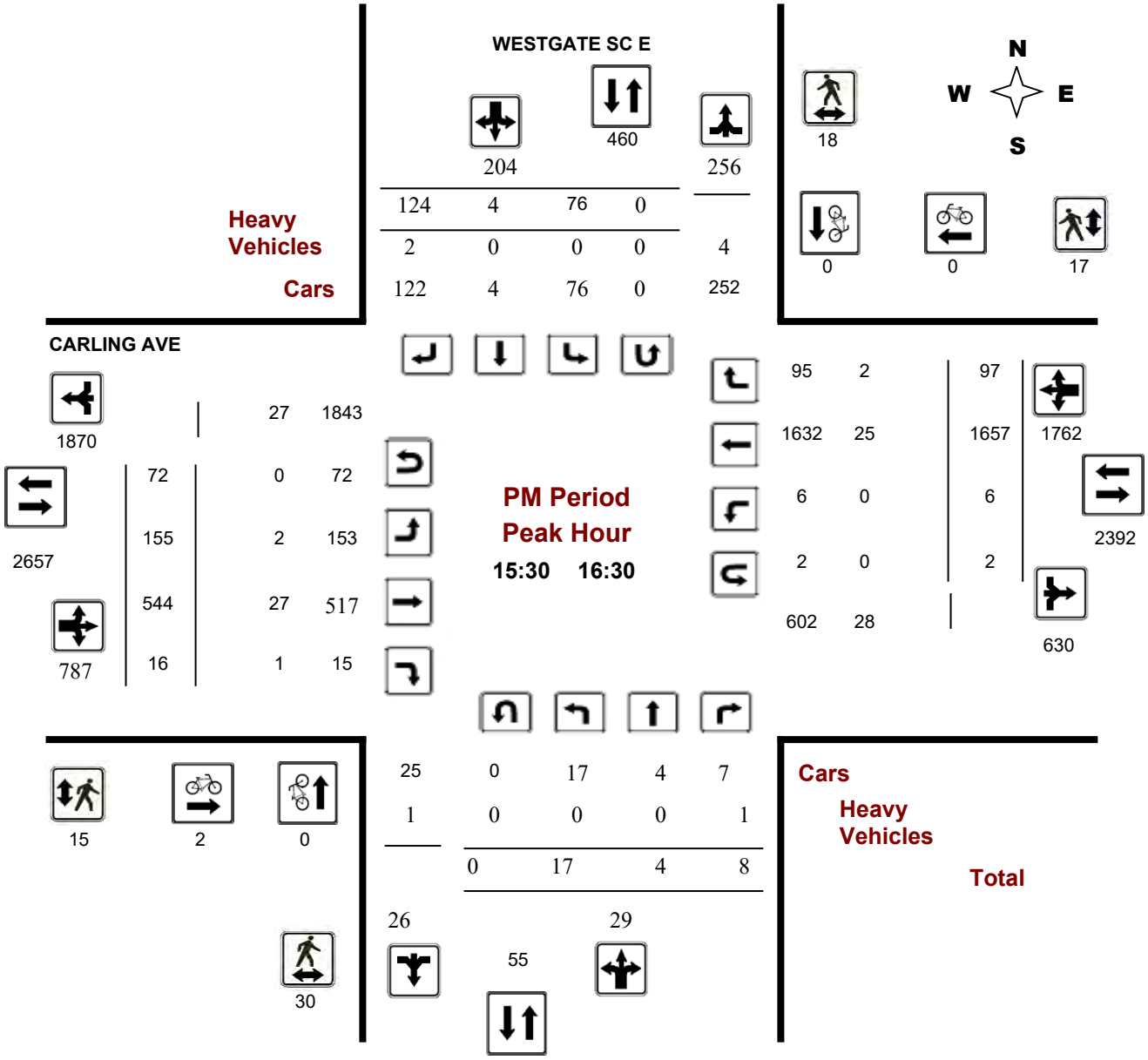
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ WESTGATE SC E

Survey Date: Wednesday, March 21, 2018 **WO No:** 37629

Start Time: 07:00 **Device:** Miovision



Comments

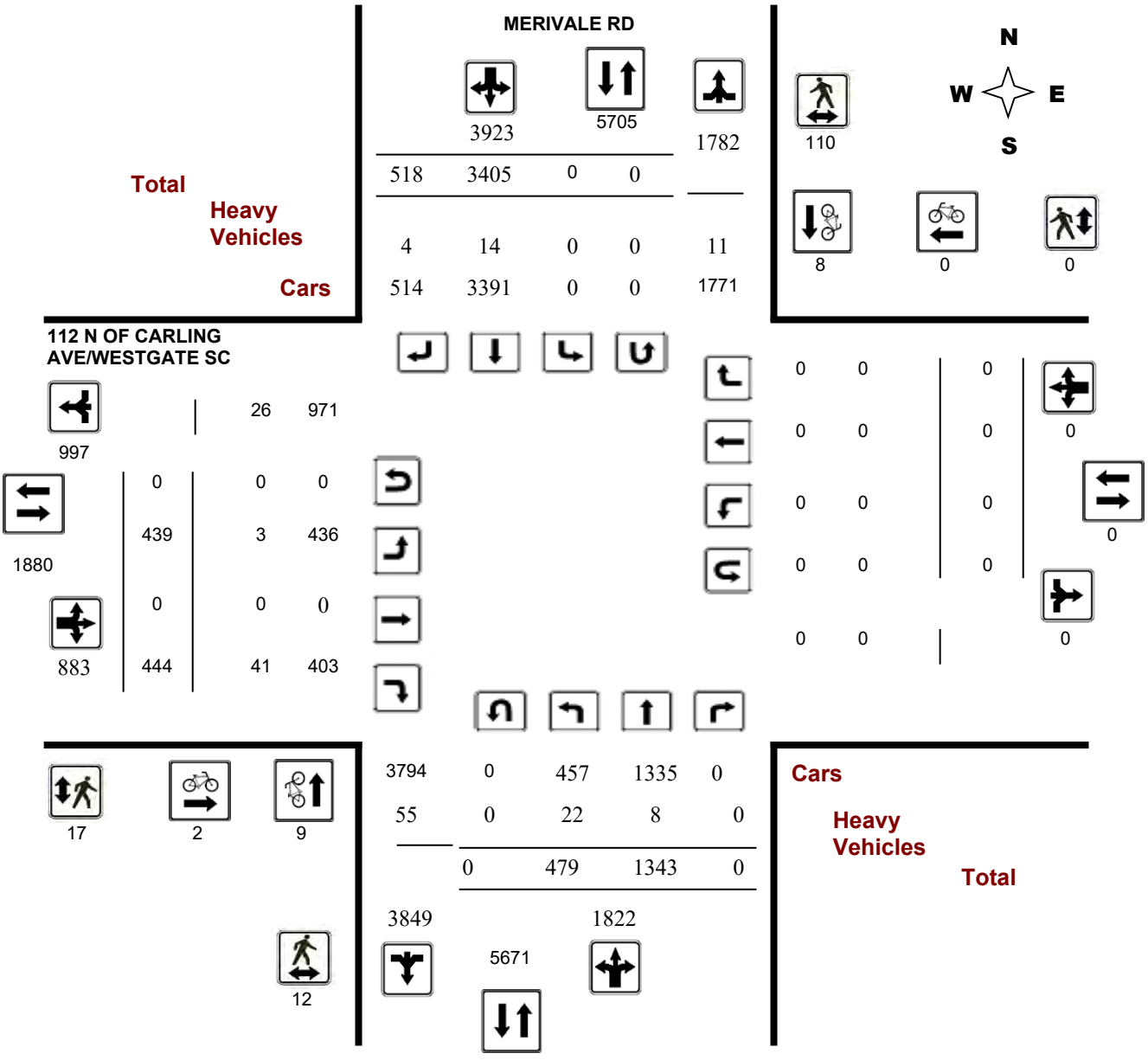
Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018
Start Time: 07:00
WO No: 37625
Device: Miovision

Full Study Diagram



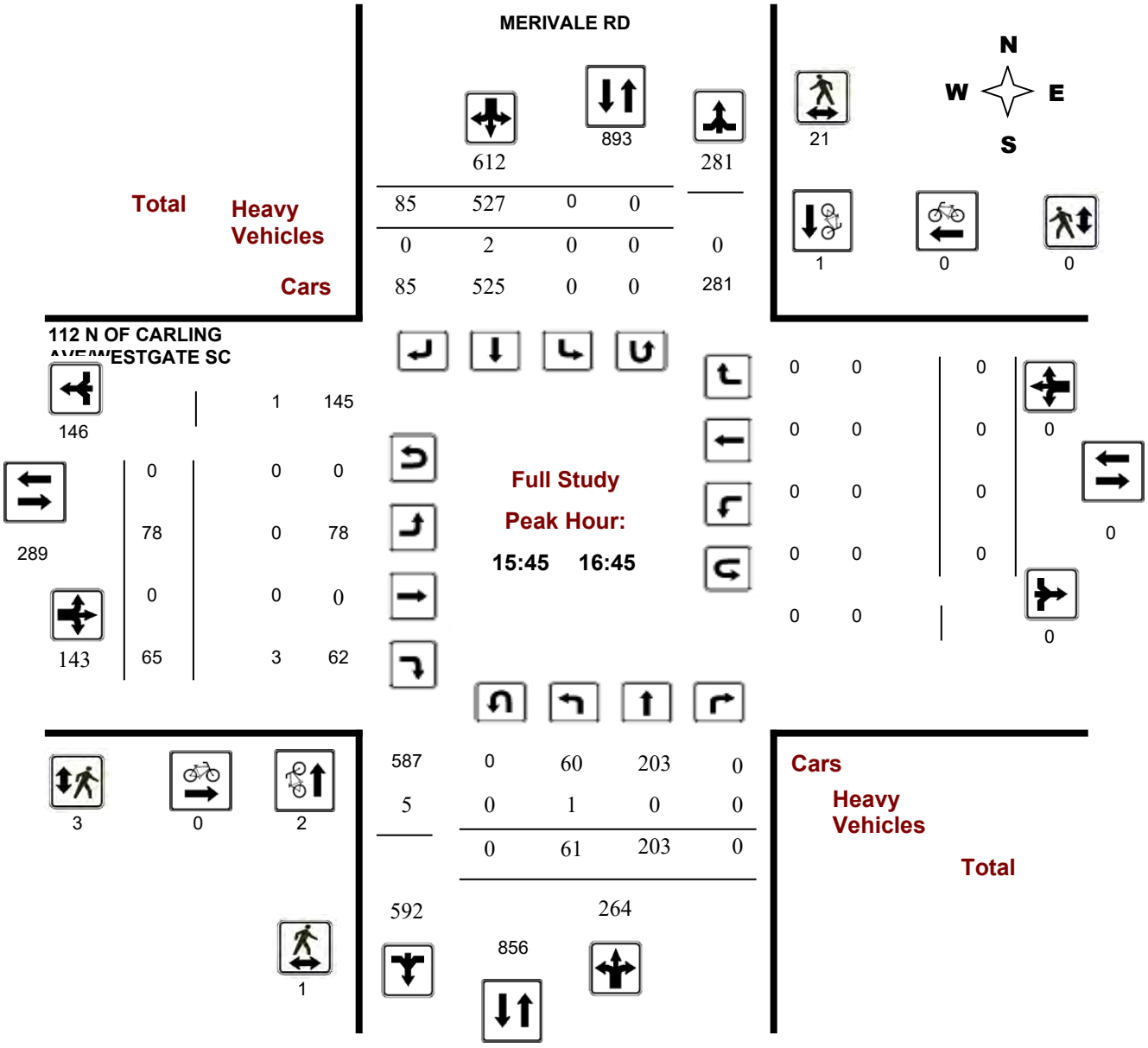
Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018
Start Time: 07:00
WO No: 37625
Device: Miovision

Full Study Peak Hour Diagram



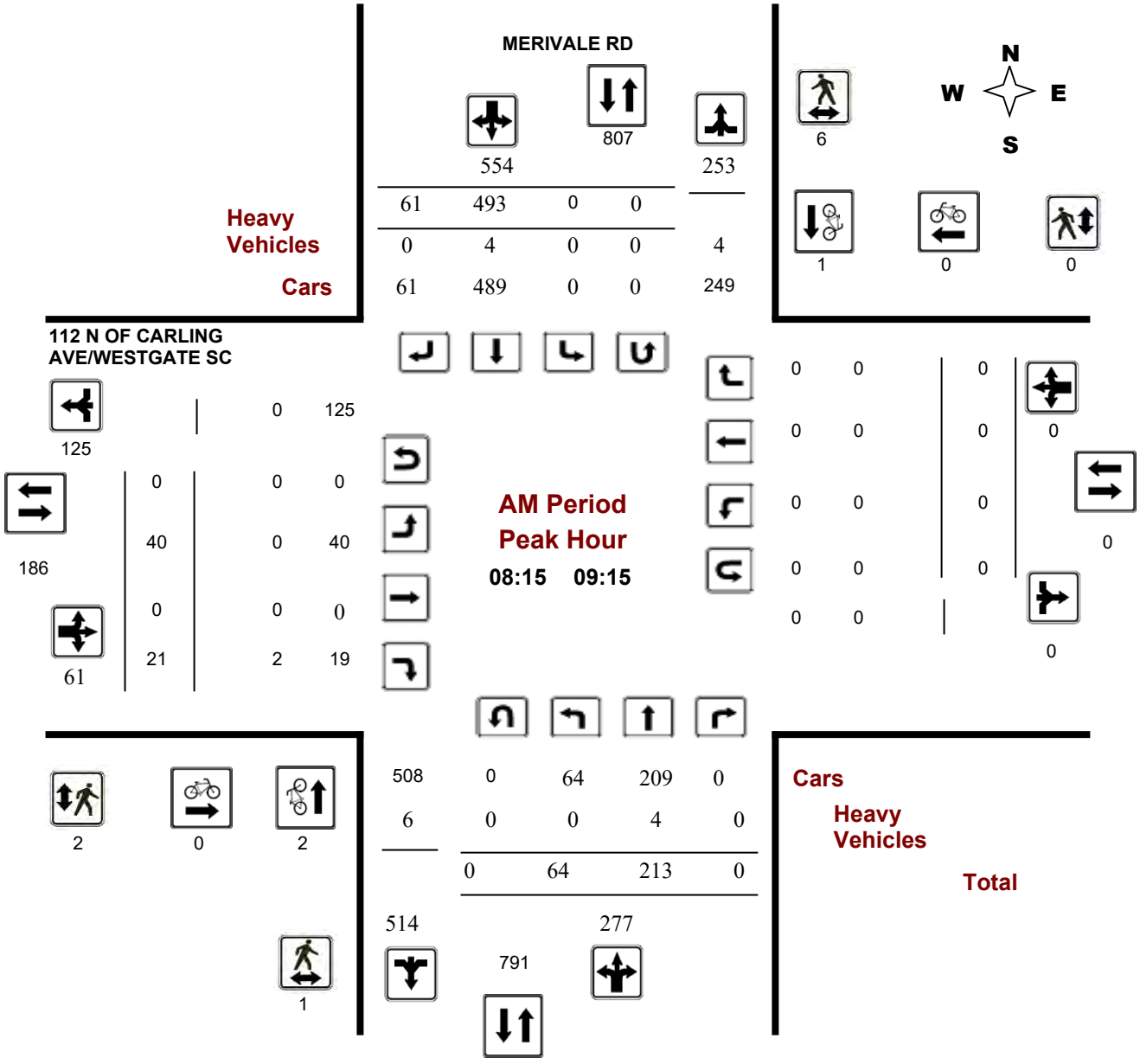
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision



Comments

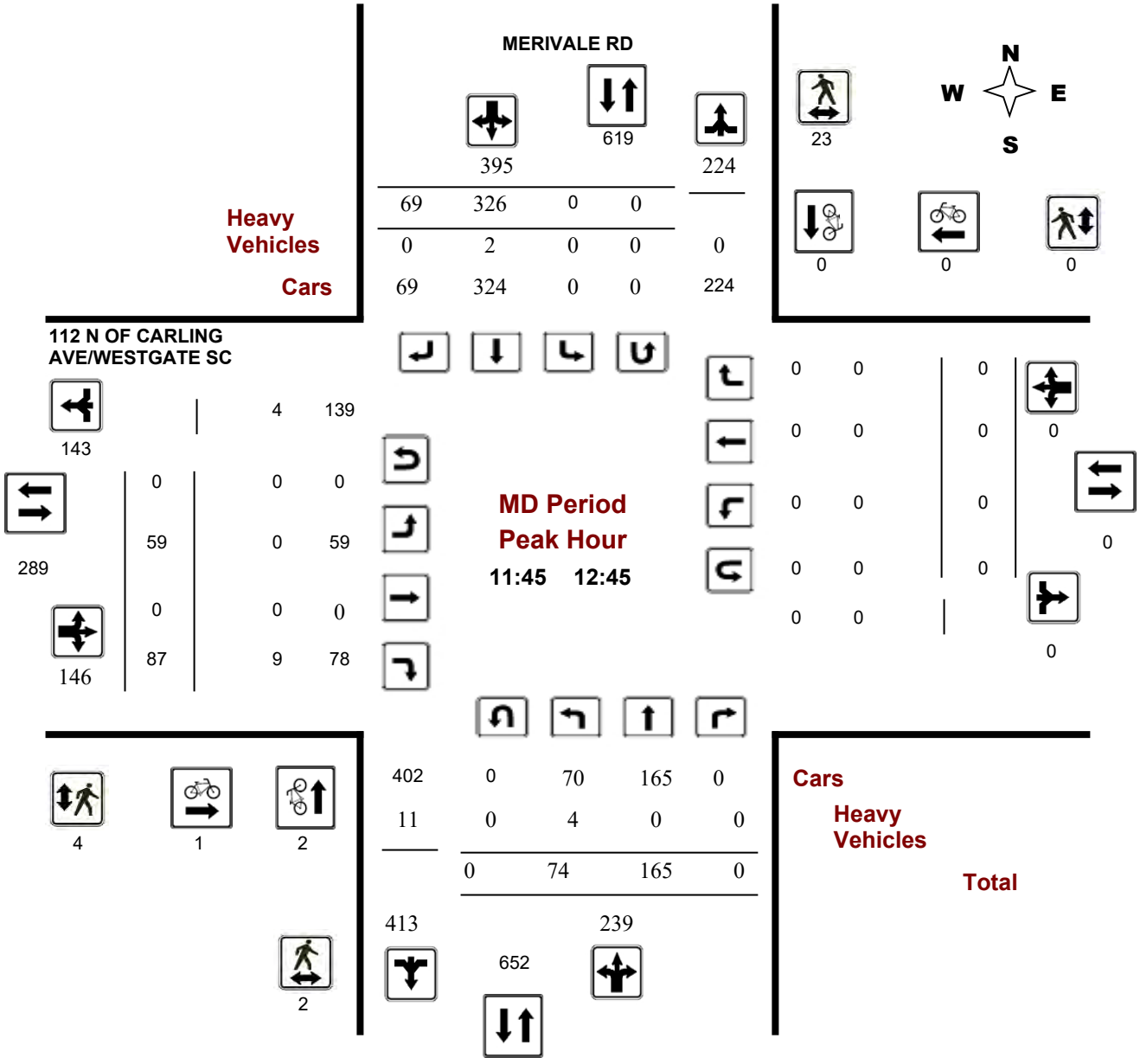
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018
Start Time: 07:00

WO No: 37625
Device: Miovision



Comments

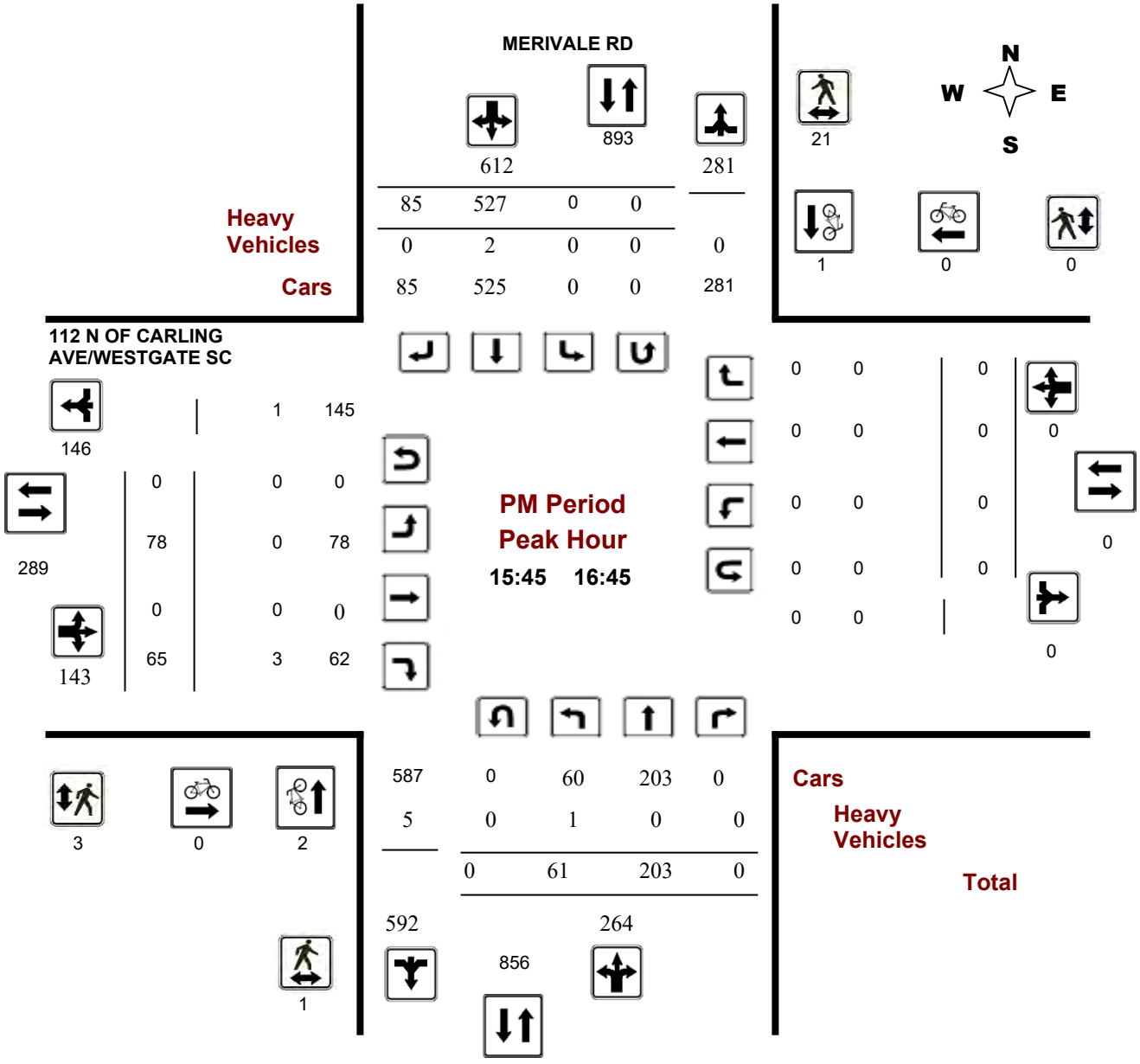
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, March 21, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor

1.00

	MERIVALE RD								112 N OF CARLING AVE/WESTGATE SC								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	40	125	0	**165**	0	462	48	**510**	**675**	24	0	15	**39**	0	0	0	**0**	**39**	**714**
08:00 09:00	57	216	0	**273**	0	500	52	**552**	**825**	43	0	18	**61**	0	0	0	**0**	**61**	**886**
09:00 10:00	96	108	0	**204**	0	434	67	**501**	**705**	36	0	42	**78**	0	0	0	**0**	**78**	**783**
11:30 12:30	75	155	0	**230**	0	328	75	**403**	**633**	59	0	84	**143**	0	0	0	**0**	**143**	**776**
12:30 13:30	66	158	0	**224**	0	276	66	**342**	**566**	64	0	93	**157**	0	0	0	**0**	**157**	**723**
15:00 16:00	55	204	0	**259**	0	473	84	**557**	**816**	66	0	77	**143**	0	0	0	**0**	**143**	**959**
16:00 17:00	51	206	0	**257**	0	514	76	**590**	**847**	77	0	62	**139**	0	0	0	**0**	**139**	**986**
17:00 18:00	39	171	0	**210**	0	418	50	**468**	**678**	70	0	53	**123**	0	0	0	**0**	**123**	**801**
Sub Total	479	1343	0	**1822**	0	3405	518	**3923**	**5745**	439	0	444	**883**	0	0	0	**0**	**883**	**6628**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	479	1343	0	**1822**	0	3405	518	**3923**	**5745**	439	0	444	**883**	0	0	0	**0**	**883**	**6628**
EQ 12Hr	666	1867	0	**2533**	0	4733	720	**5453**	**7986**	610	0	617	**1227**	0	0	0	**0**	**1227**	**9213**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	627	1759	0	**2387**	0	4461	679	**5139**	**7986**	575	0	582	**1157**	0	0	0	**0**	**1227**	**9213**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	822	2305	0	**3127**	0	5843	889	**6732**	**9859**	753	0	762	**1515**	0	0	0	**0**	**1515**	**11374**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

MERIVALE RD **112 N OF CARLING AVE/WESTGATE SC**

		Northbound				Southbound					Eastbound				Westbound					
Time Period		**LT**	**ST**	**RT**	**N TOT**	**LT**	**ST**	**RT**	**S TOT**	**STR TOT**	**LT**	**ST**	**RT**	**E TOT**	**LT**	**ST**	**RT**	**W TOT**	**STR TOT**	**Grand Total**
07:00	07:15	4	26	0	30	0	108	12	120	290	3	0	3	6	0	0	0	0	290	156
07:15	07:30	11	29	0	40	0	104	8	112	291	4	0	2	6	0	0	0	0	291	158
07:30	07:45	8	24	0	32	0	130	13	143	340	9	0	2	11	0	0	0	0	340	186
07:45	08:00	17	46	0	63	0	120	15	135	380	8	0	8	16	0	0	0	0	380	214
08:00	08:15	12	45	0	57	0	137	9	146	398	11	0	2	13	0	0	0	0	398	216
08:15	08:30	9	51	0	60	0	133	15	148	407	9	0	6	15	0	0	0	0	407	223
08:30	08:45	13	51	0	64	0	114	7	121	368	13	0	5	18	0	0	0	0	368	203
08:45	09:00	23	69	0	92	0	116	21	137	429	10	0	5	15	0	0	0	0	429	244
09:00	09:15	19	42	0	61	0	130	18	148	394	8	0	5	13	0	0	0	0	394	222
09:15	09:30	20	25	0	45	0	113	10	123	326	7	0	13	20	0	0	0	0	326	188
09:30	09:45	28	22	0	50	0	109	19	128	328	8	0	11	19	0	0	0	0	328	197
09:45	10:00	29	19	0	48	0	82	20	102	277	13	0	13	26	0	0	0	0	277	176
11:30	11:45	17	31	0	48	0	74	18	92	285	17	0	23	40	0	0	0	0	285	180
11:45	12:00	18	40	0	58	0	86	19	105	325	18	0	18	36	0	0	0	0	325	199
12:00	12:15	22	33	0	55	0	90	19	109	329	13	0	29	42	0	0	0	0	329	206
12:15	12:30	18	51	0	69	0	78	19	97	320	11	0	14	25	0	0	0	0	320	191
12:30	12:45	16	41	0	57	0	72	12	84	297	17	0	26	43	0	0	0	0	297	184
12:45	13:00	17	41	0	58	0	62	17	79	284	22	0	22	44	0	0	0	0	284	181
13:00	13:15	20	37	0	57	0	80	21	101	305	9	0	21	30	0	0	0	0	305	188
13:15	13:30	13	39	0	52	0	62	16	78	271	16	0	24	40	0	0	0	0	271	170
15:00	15:15	13	59	0	72	0	110	18	128	408	19	0	20	39	0	0	0	0	408	239
15:15	15:30	9	44	0	53	0	133	23	156	412	12	0	14	26	0	0	0	0	412	235
15:30	15:45	15	59	0	74	0	118	19	137	428	19	0	21	40	0	0	0	0	428	251
15:45	16:00	18	42	0	60	0	112	24	136	388	16	0	22	38	0	0	0	0	388	234
16:00	16:15	18	54	0	72	0	136	23	159	460	25	0	14	39	0	0	0	0	460	270
16:15	16:30	14	51	0	65	0	134	18	152	434	20	0	12	32	0	0	0	0	434	249
16:30	16:45	11	56	0	67	0	145	20	165	467	17	0	17	34	0	0	0	0	467	266
16:45	17:00	8	45	0	53	0	99	15	114	345	15	0	19	34	0	0	0	0	345	201
17:00	17:15	9	35	0	44	0	99	18	117	331	21	0	15	36	0	0	0	0	331	197
17:15	17:30	14	44	0	58	0	132	14	146	408	13	0	15	28	0	0	0	0	408	232
17:30	17:45	5	41	0	46	0	107	10	117	343	21	0	11	32	0	0	0	0	343	195
17:45	18:00	11	51	0	62	0	80	8	88	308	15	0	12	27	0	0	0	0	308	177
Total:		479	1343	0	1822	0	3405	518	3923	11376	439	0	444	883	0	0	0	0	11376	6,628

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		MERIVALE RD			112 N OF CARLING AVE/WESTGATE SC			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	3	3	0	0	0	3
08:00	08:15	0	2	2	0	0	0	2
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	2	1	3	0	0	0	3
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	1	0	1	0	0	0	1
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	1	0	1	1	0	1	2
12:30	12:45	1	0	1	0	0	0	1
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	1	1	0	0	0	1
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	1	0	1	0	0	0	1
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	1	1	2	0	0	0	2
16:45	17:00	1	0	1	0	0	0	1
17:00	17:15	0	0	0	1	0	1	1
17:15	17:30	1	0	1	0	0	0	1
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		9	8	**17**	2	0	2	19

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

	MERIVALE RD			112 N OF CARLING AVE/WESTGATE SC			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	0	0	**0**	**0**
07:15 07:30	0	1	**1**	1	0	**1**	**2**
07:30 07:45	0	0	**0**	0	0	**0**	**0**
07:45 08:00	0	1	**1**	0	0	**0**	**1**
08:00 08:15	0	3	**3**	1	0	**1**	**4**
08:15 08:30	1	2	**3**	1	0	**1**	**4**
08:30 08:45	0	0	**0**	0	0	**0**	**0**
08:45 09:00	0	2	**2**	0	0	**0**	**2**
09:00 09:15	0	2	**2**	1	0	**1**	**3**
09:15 09:30	0	0	**0**	0	0	**0**	**0**
09:30 09:45	1	5	**6**	3	0	**3**	**9**
09:45 10:00	2	2	**4**	1	0	**1**	**5**
11:30 11:45	0	5	**5**	0	0	**0**	**5**
11:45 12:00	1	4	**5**	0	0	**0**	**5**
12:00 12:15	0	3	**3**	1	0	**1**	**4**
12:15 12:30	1	10	**11**	3	0	**3**	**14**
12:30 12:45	0	6	**6**	0	0	**0**	**6**
12:45 13:00	2	9	**11**	0	0	**0**	**11**
13:00 13:15	1	5	**6**	0	0	**0**	**6**
13:15 13:30	0	4	**4**	1	0	**1**	**5**
15:00 15:15	1	3	**4**	0	0	**0**	**4**
15:15 15:30	1	1	**2**	0	0	**0**	**2**
15:30 15:45	0	3	**3**	0	0	**0**	**3**
15:45 16:00	1	3	**4**	1	0	**1**	**5**
16:00 16:15	0	10	**10**	2	0	**2**	**12**
16:15 16:30	0	5	**5**	0	0	**0**	**5**
16:30 16:45	0	3	**3**	0	0	**0**	**3**
16:45 17:00	0	3	**3**	0	0	**0**	**3**
17:00 17:15	0	6	**6**	1	0	**1**	**7**
17:15 17:30	0	4	**4**	0	0	**0**	**4**
17:30 17:45	0	3	**3**	0	0	**0**	**3**
17:45 18:00	0	2	**2**	0	0	**0**	**2**
Total	12	110	**122**	17	0	**17**	**139**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

MERIVALE RD **112 N OF CARLING AVE/WESTGATE SC**

		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	**N TOT**	LT	ST	RT	**S TOT**	**STR TOT**	LT	ST	RT	**E TOT**	LT	ST	RT	**W TOT**	**STR TOT**	**Grand Total**
07:00	07:15	0	0	0	**0**	0	0	0	**1**	**1**	1	0	0	**1**	0	0	0	**0**	**1**	**1**
07:15	07:30	0	1	0	**3**	0	1	0	**2**	**5**	0	0	1	**1**	0	0	0	**0**	**1**	**3**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
07:45	08:00	1	0	0	**2**	0	0	0	**0**	**2**	0	0	1	**2**	0	0	0	**0**	**2**	**2**
08:00	08:15	0	0	0	**2**	0	2	0	**3**	**5**	1	0	0	**1**	0	0	0	**0**	**1**	**3**
08:15	08:30	0	2	0	**3**	0	1	0	**3**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
08:30	08:45	0	2	0	**3**	0	0	0	**2**	**5**	0	0	1	**1**	0	0	0	**0**	**1**	**3**
08:45	09:00	0	0	0	**3**	0	2	0	**2**	**5**	0	0	1	**1**	0	0	0	**0**	**1**	**3**
09:00	09:15	0	0	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
09:15	09:30	1	0	0	**3**	0	0	0	**0**	**3**	0	0	2	**3**	0	0	0	**0**	**3**	**3**
09:30	09:45	0	0	0	**3**	0	0	1	**1**	**4**	0	0	3	**4**	0	0	0	**0**	**4**	**4**
09:45	10:00	3	0	0	**6**	0	1	0	**1**	**7**	0	0	2	**5**	0	0	0	**0**	**5**	**6**
11:30	11:45	2	0	0	**7**	0	1	0	**1**	**8**	0	0	4	**6**	0	0	0	**0**	**6**	**7**
11:45	12:00	1	0	0	**4**	0	0	0	**0**	**4**	0	0	3	**4**	0	0	0	**0**	**4**	**4**
12:00	12:15	1	0	0	**5**	0	1	0	**1**	**6**	0	0	3	**4**	0	0	0	**0**	**4**	**5**
12:15	12:30	1	0	0	**3**	0	1	0	**1**	**4**	0	0	1	**2**	0	0	0	**0**	**2**	**3**
12:30	12:45	1	0	0	**3**	0	0	0	**0**	**3**	0	0	2	**3**	0	0	0	**0**	**3**	**3**
12:45	13:00	1	0	0	**3**	0	0	0	**0**	**3**	0	0	2	**3**	0	0	0	**0**	**3**	**3**
13:00	13:15	1	0	0	**5**	0	0	0	**0**	**5**	0	0	4	**5**	0	0	0	**0**	**5**	**5**
13:15	13:30	2	1	0	**5**	0	0	0	**1**	**6**	0	0	2	**4**	0	0	0	**0**	**4**	**5**
15:00	15:15	3	0	0	**5**	0	0	0	**0**	**5**	0	0	2	**5**	0	0	0	**0**	**5**	**5**
15:15	15:30	2	0	0	**3**	0	0	0	**0**	**3**	0	0	1	**3**	0	0	0	**0**	**3**	**3**
15:30	15:45	0	1	0	**3**	0	1	0	**2**	**5**	0	0	1	**1**	0	0	0	**0**	**1**	**3**
15:45	16:00	0	0	0	**1**	0	0	0	**0**	**1**	0	0	1	**1**	0	0	0	**0**	**1**	**1**
16:00	16:15	1	0	0	**3**	0	1	0	**1**	**4**	0	0	1	**2**	0	0	0	**0**	**2**	**3**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
16:30	16:45	0	0	0	**2**	0	1	0	**1**	**3**	0	0	1	**1**	0	0	0	**0**	**1**	**2**
16:45	17:00	0	0	0	**0**	0	0	1	**1**	**1**	0	0	0	**1**	0	0	0	**0**	**1**	**1**
17:00	17:15	0	0	0	**1**	0	0	1	**2**	**3**	1	0	1	**3**	0	0	0	**0**	**3**	**3**
17:15	17:30	1	0	0	**1**	0	0	1	**1**	**2**	0	0	0	**2**	0	0	0	**0**	**2**	**2**
17:30	17:45	0	0	0	**1**	0	0	0	**0**	**1**	0	0	1	**1**	0	0	0	**0**	**1**	**1**
17:45	18:00	0	1	0	**1**	0	0	0	**1**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
Total:	None	22	8	0	**85**	0	14	4	**29**	**114**	3	0	41	**70**	0	0	0	**0**	**70**	**92**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Survey Date: Wednesday, March 21, 2018 **WO No:** 37625

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

Time Period		MERIVALE RD		112 N OF CARLING AVE/WESTGATE SC		
		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	0	0

APPENDIX C

COLLISION DATA

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	82	65	115	30	0	12	0	4	308	84%
Non-fatal injury	19	15	5	11	0	7	0	0	57	16%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**101**	**80**	**120**	**41**	**0**	**19**	**0**	**4**	**365**	100%
	#2 or 28%	#3 or 22%	#1 or 33%	#4 or 11%	#7 or 0%	#5 or 5%	#7 or 0%	#6 or 1%		

CARLING AVE / KIRKWOOD AVE N (0002358)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	141	38,398	1825	**2.01**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	22	36	53	7	0	3	0	1	122	87%
Non-fatal injury	3	7	1	4	0	4	0	0	19	13%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**25**	**43**	**54**	**11**	**0**	**7**	**0**	**1**	**141**	100%
	18%	31%	38%	8%	0%	5%	0%	1%		

CARLING AVE / KIRKWOOD AVE S (0002209)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	105	37,099	1825	**1.55**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	37	15	24	7	0	5	0	1	89	85%
Non-fatal injury	9	3	2	1	0	1	0	0	16	15%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**46**	**18**	**26**	**8**	**0**	**6**	**0**	**1**	**105**	100%
	44%	17%	25%	8%	0%	6%	0%	1%		

CARLING AVE / HWY 417 CARLING IC124R67 (0002104)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	8	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	3	0	4	0	0	0	0	0	7	88%
Non-fatal injury	0	0	1	0	0	0	0	0	1	13%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**3**	**0**	**5**	**0**	**0**	**0**	**0**	**0**	**8**	100%
	38%	0%	63%	0%	0%	0%	0%	0%		

ARCHIBALD ST / CARLING AVE (0006989)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	1	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

CARLING AVE / 73 E OF ARCHIBALD ST/WESTGATE SC (0008216)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	4	27,537	1825	**0.08**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	2	0	0	0	0	0	0	3	75%
Non-fatal injury	0	0	0	1	0	0	0	0	1	25%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	100%
	25%	50%	0%	25%	0%	0%	0%	0%		

CARLING AVE / WESTGATE SC E (0008795)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	14	28,805	1825	**0.27**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	2	1	6	0	0	0	2	12	86%
Non-fatal injury	1	0	0	0	0	1	0	0	2	14%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**2**	**2**	**1**	**6**	**0**	**1**	**0**	**2**	**14**	100%
	14%	14%	7%	43%	0%	7%	0%	14%		

CARLING AVE / MERIVALE RD (0002148)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	53	36,088	1825	**0.80**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	12	9	11	10	0	0	0	0	42	79%
Non-fatal injury	2	4	1	4	0	0	0	0	11	21%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**14**	**13**	**12**	**14**	**0**	**0**	**0**	**0**	**53**	100%
	26%	25%	23%	26%	0%	0%	0%	0%		

MERIVALE RD / 112 N OF CARLING AVE / WESTGATE SC (0008217)

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	2	11,374	1825	**0.10**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	0	0	0	0	0	0	1	50%
Non-fatal injury	1	0	0	0	0	0	0	0	1	50%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	100%
	100%	0%	0%	0%	0%	0%	0%	0%		

ROAD SEGMENTS Below

Carling EB between Kirkwood and highway ramps

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	7	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	4	0	0	1	0	0	5	71%
Non-fatal injury	1	0	0	0	0	1	0	0	2	29%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**4**	**0**	**0**	**2**	**0**	**0**	**7**	100%
	14%	0%	57%	0%	0%	29%	0%	0%		

Carling EB Elsewhere

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	4	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	1	0	0	0	0	0	0	1	25%
Non-fatal injury	1	1	0	1	0	0	0	0	3	75%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**2**	**0**	**1**	**0**	**0**	**0**	**0**	**4**	100%
	25%	50%	0%	25%	0%	0%	0%	0%		

Carling WB between Kirkwood and highway ramps

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	18	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	2	0	12	0	0	3	0	0	17	94%
Non-fatal injury	1	0	0	0	0	0	0	0	1	6%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**3**	**0**	**12**	**0**	**0**	**3**	**0**	**0**	**18**	100%
	17%	0%	67%	0%	0%	17%	0%	0%		

Carling WB Elsewhere

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	3	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	0	0	3	0	0	0	0	0	3	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	100%
	0%	0%	100%	0%	0%	0%	0%	0%		

Kirkwood between Carling EB & WB

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	3	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	2	0	0	0	0	0	3	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**2**	**0**	**0**	**0**	**0**	**0**	**3**	100%
	33%	0%	67%	0%	0%	0%	0%	0%		

Merivale between Carling and Westgate

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2015-2019	2	n/a	1825	**n/a**

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	Single Vehicle (other)	Single vehicle (Unattended vehicle)	Other	Total	
P.D. only	1	0	1	0	0	0	0	0	2	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non reportable	0	0	0	0	0	0	0	0	0	0%
Total	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**2**	100%
	50%	0%	50%	0%	0%	0%	0%	0%		

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: ARCHIBALD ST @ CARLING AVE

Traffic Control: Stop sign **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Feb-05, Tue,08:55	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Municipal transit bus	Other motor vehicle	0
					East	Stopped	Truck and trailer	Other motor vehicle	

Location: CARLING AVE @ 73 E OF ARCHIBALD ST/WESTGATE SC

Traffic Control: Traffic signal **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Oct-20, Thu,20:17	Rain	Turning movement	P.D. only	Wet	West	Making "U" turn	Passenger van	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-27, Sun,10:24	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-09, Tue,09:41	Snow	Angle	Non-fatal injury	Loose snow	West	Unknown	Unknown	Skidding/sliding	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Oct-19, Sat,16:30	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ HWY 417 CARLING IC124R67

Traffic Control: Yield sign **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Mar-05, Thu,18:09	Clear	Rear end	P.D. only	Dry	West	Merging	Automobile, station wagon	Other motor vehicle	0
					West	Merging	Automobile, station wagon	Other motor vehicle	
2015-Mar-06, Fri,10:22	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	School bus	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jun-29, Mon,17:10	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ HWY 417 CARLING IC124R67

Traffic Control: Yield sign **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jul-15, Wed,17:07	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2017-Jun-21, Wed,14:30	Clear	Sideswipe	P.D. only	Dry	West	Overtaking	Automobile, station wagon	Other motor vehicle	0
					West	Overtaking	Automobile, station wagon	Other motor vehicle	
2018-Nov-07, Wed,08:30	Clear	Rear end	P.D. only	Dry	West	Overtaking	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-11, Sun,10:15	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-15, Thu,17:41	Clear	Sideswipe	Non-fatal injury	Dry	West	Merging	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Motorcycle	Other motor vehicle	

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-06, Tue,12:30	Clear	Rear end	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Turning left	Passenger van	Other motor vehicle	
2015-Jan-13, Tue,06:05	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Jan-13, Tue,09:12	Clear	Sideswipe	P.D. only	Loose snow	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jan-28, Wed,17:30	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Feb-16, Mon,17:34	Clear	Angle	Non-fatal injury	Wet	North	Going ahead	Passenger van	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Feb-27, Fri,13:17	Clear	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2015-Mar-03, Tue,10:32	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Turning left	Truck - closed	Other motor vehicle	
2015-Apr-02, Thu,14:52	Clear	Turning movement	P.D. only	Dry	West	Turning left	Ambulance	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-May-14, Thu,14:22	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-May-28, Thu,08:10	Clear	SMV other	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Curb	0
2015-Jun-29, Mon,10:29	Rain	Sideswipe	P.D. only	Wet	West	Turning left	Truck and trailer	Other motor vehicle	0
					West	Turning left	Passenger van	Other motor vehicle	
2015-Jun-30, Tue,21:59	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Unknown	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Jul-07, Tue,18:11	Clear	Turning movement	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2015-Aug-09, Sun,21:30	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Unknown	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Oct-09, Fri,14:38	Clear	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Nov-13, Fri,20:03	Rain	Turning movement	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2015-Nov-24, Tue,10:20	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Nov-25, Wed,18:12	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Dec-14, Mon,18:40	Clear	Turning movement	P.D. only	Wet	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-17, Thu,17:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Dec-21, Mon,11:24	Freezing Rain	Sideswipe	P.D. only	Slush	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Going ahead	Truck - closed	Other motor vehicle	
2016-Jan-11, Mon,17:50	Clear	Other	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Curb	0
					West	Stopped	Tow truck	Other motor vehicle	
2016-Jan-20, Wed,17:40	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Jan-29, Fri,18:44	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-04, Thu,09:00	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Truck - closed	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Feb-18, Thu,06:45	Clear	Rear end	P.D. only	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-18, Thu,10:39	Snow	SMV other	P.D. only	Packed snow	West	Turning left	Automobile, station wagon	Skidding/sliding	0
2016-Feb-22, Mon,07:00	Clear	SMV other	Non-fatal injury	Wet	South	Turning right	Automobile, station wagon	Pedestrian	1
2016-Feb-26, Fri,14:54	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-02, Wed,15:48	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Mar-06, Sun,10:58	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Mar-12, Sat,00:15	Clear	Rear end	Non-fatal injury	Ice	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Mar-18, Fri,10:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Apr-08, Fri,10:24	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Fire vehicle	Other motor vehicle	
2016-May-06, Fri,08:43	Clear	Rear end	Non-fatal injury	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-13, Mon,13:04	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jun-15, Wed,14:21	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Unknown	Other motor vehicle	
2016-Jun-18, Sat,09:27	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jun-29, Wed,14:06	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Truck - closed	Other motor vehicle	
2016-Jul-15, Fri,17:07	Rain	Rear end	P.D. only	Wet	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jul-21, Thu,19:49	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Unknown	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2016-Jul-27, Wed,08:46	Clear	Rear end	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Slowing or stopping	Pick-up truck	Other motor vehicle	
2016-Aug-19, Fri,16:36	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2016-Aug-24, Wed,12:05	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2016-Sep-05, Mon,13:20	Clear	Turning movement	P.D. only	Dry	West	Turning left	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Sep-22, Thu,12:47	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Truck and trailer	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Oct-10, Mon,10:20	Clear	Angle	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-21, Mon,17:26	Snow	Sideswipe	P.D. only	Loose snow	West	Going ahead	Municipal transit bus	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Nov-26, Sat,12:00	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2017-Jan-30, Mon,18:52	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-14, Tue,08:52	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Mar-18, Sat,21:31	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-20, Mon,11:02	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Going ahead	Truck - closed	Other motor vehicle	
2017-Apr-17, Mon,22:35	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Apr-22, Sat,12:02	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Delivery van	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-May-07, Sun,12:27	Rain	Turning movement	P.D. only	Wet	North	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-May-18, Thu,15:00	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Motorcycle	Other motor vehicle	
2017-Jun-21, Wed,16:30	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-06, Thu,16:54	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jul-07, Fri,12:58	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-24, Thu,09:16	Clear	Rear end	Non-fatal injury	Dry	South	Stopped	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Sep-11, Mon,15:51	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Oct-03, Tue,19:34	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Oct-23, Mon,16:14	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Nov-10, Fri,14:22	Clear	Turning movement	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-06, Wed,18:07	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-14, Thu,15:50	Snow	Sideswipe	P.D. only	Loose snow	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-27, Wed,17:40	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-27, Wed,19:40	Clear	Angle	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-05, Fri,16:40	Snow	Turning movement	P.D. only	Ice	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-11, Thu,17:32	Rain	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-18, Thu,19:20	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-24, Wed,13:06	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-06, Tue,16:40	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Feb-08, Thu,10:20	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

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Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Feb-10, Sat,12:10	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-14, Wed,12:07	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-27, Tue,07:44	Clear	Turning movement	P.D. only	Wet	West	Turning left	Truck - closed	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Feb-27, Tue,12:21	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2018-Mar-26, Mon,17:18	Clear	Turning movement	P.D. only	Dry	West	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-28, Wed,10:38	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Apr-09, Mon,15:05	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-08, Tue,21:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-09, Wed,13:21	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - dump	Other motor vehicle	
2018-May-15, Tue,16:47	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Passenger van	Other motor vehicle	
2018-May-31, Thu,12:34	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - dump	Other motor vehicle	
2018-Jun-18, Mon,14:50	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jul-06, Fri,14:11	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Ran off road	0
2018-Jul-15, Sun,03:01	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-02, Thu,20:47	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2018-Aug-14, Tue,20:48	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Unknown	Pedestrian	1
2018-Aug-23, Thu,15:04	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - dump	Other motor vehicle	
2018-Aug-31, Fri,14:36	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-15, Sat,18:59	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-21, Fri,18:00	Rain	Angle	P.D. only	Wet	South	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-29, Sat,13:49	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Oct-05, Fri,17:21	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2018-Nov-17, Sat,23:53	Snow	SMV other	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Pole (utility, power)	0
2018-Nov-20, Tue,16:00	Clear	Turning movement	P.D. only	Wet	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Turning left	Police vehicle	Other motor vehicle	
2018-Dec-14, Fri,09:09	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Passenger van	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

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Traffic Control: Traffic signal **Total Collisions:** 141

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2018-Dec-18, Tue,19:05	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Changing lanes	Automobile, station wagon	Other motor vehicle	
2018-Dec-27, Thu,09:01	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-23, Wed,19:03	Snow	Turning movement	P.D. only	Loose snow	North	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-01, Fri,12:05	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Unknown	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Feb-11, Mon,08:34	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Feb-18, Mon,13:55	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-22, Fri,15:00	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-23, Sat,12:44	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-26, Tue,21:35	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Mar-04, Mon,08:45	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Mar-10, Sun,15:51	Snow	Turning movement	Non-fatal injury	Slush	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

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Traffic Control: Traffic signal **Total Collisions:** 141

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2019-Mar-12, Tue,09:40	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Delivery van	Other motor vehicle	
2019-Mar-20, Wed,13:13	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Delivery van	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Mar-20, Wed,17:32	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Truck - dump	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Apr-12, Fri,09:45	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Apr-17, Wed,18:35	Clear	Rear end	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2019-May-03, Fri,09:41	Rain	Sideswipe	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-May-28, Tue,15:24	Clear	SMV other	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Pedestrian	1
2019-Jun-05, Wed,12:24	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jun-25, Tue,22:12	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jul-03, Wed,21:13	Clear	Sideswipe	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jul-08, Mon,20:46	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-11, Thu,17:05	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jul-17, Wed,09:45	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-23, Tue,12:57	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - open	Other motor vehicle	
2019-Aug-12, Mon,16:38	Clear	Rear end	P.D. only	Dry	West	Going ahead	Truck - dump	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Aug-16, Fri,19:03	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Aug-18, Sun,13:42	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-28, Wed,09:09	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-30, Fri,15:57	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Sep-03, Tue,14:17	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Delivery van	Other motor vehicle	
2019-Sep-30, Mon,13:28	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Oct-19, Sat,10:00	Clear	Rear end	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Oct-21, Mon,17:40	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-06, Wed,11:45	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE N

Traffic Control: Traffic signal **Total Collisions:** 141

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Nov-07, Thu,12:05	Clear	Turning movement	Non-fatal injury	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2019-Nov-11, Mon,13:00	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-26, Tue,06:09	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - dump	Other motor vehicle	
2019-Nov-29, Fri,11:18	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Tow truck	Other motor vehicle	
2019-Dec-02, Mon,14:40	Clear	Rear end	P.D. only	Dry	North	Going ahead	Delivery van	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Dec-23, Mon,20:00	Clear	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-03, Sat,18:06	Snow	Turning movement	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jan-12, Mon,18:30	Snow	Rear end	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-14, Wed,15:15	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Jan-16, Fri,23:07	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-22, Thu,17:54	Clear	Turning movement	P.D. only	Dry	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Feb-05, Thu,15:36	Clear	Other	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Truck - closed	Other motor vehicle	
2015-Feb-08, Sun,08:01	Snow	SMV other	P.D. only	Ice	East	Turning left	Automobile, station wagon	Pole (utility, power)	0
2015-Feb-14, Sat,09:23	Snow	Rear end	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Feb-23, Mon,10:50	Clear	Rear end	P.D. only	Wet	East	Turning right	Tow truck	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2015-Mar-16, Mon,15:02	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-Apr-09, Thu,10:55	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-May-05, Tue,17:27	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2015-May-08, Fri,13:36	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-25, Sat,12:32	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-29, Wed,15:10	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Municipal transit bus	Other motor vehicle	
2015-Aug-16, Sun,20:14	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Aug-30, Sun,16:14	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Oct-12, Mon,18:39	Clear	Rear end	Non-fatal injury	Dry	South	Turning left	Passenger van	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Oct-14, Wed,18:13	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Oct-30, Fri,16:59	Clear	Rear end	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Dec-17, Thu,07:42	Rain	Rear end	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Dec-23, Wed,19:57	Rain	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Passenger van	Other motor vehicle	
2016-Jan-13, Wed,16:15	Clear	Rear end	Non-fatal injury	Dry	South	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jan-13, Wed,20:31	Clear	Rear end	P.D. only	Slush	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jan-14, Thu,09:50	Snow	Sideswipe	P.D. only	Loose snow	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Truck - dump	Other motor vehicle	
2016-Feb-05, Fri,13:29	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Mar-04, Fri,08:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-18, Fri,11:47	Clear	Angle	P.D. only	Dry	East	Turning right	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Mar-28, Mon,11:27	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2016-May-01, Sun,19:19	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-May-07, Sat,08:05	Clear	SMV other	P.D. only	Dry	East	Going ahead	Passenger van	Other	0
2016-May-25, Wed,10:23	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-May-25, Wed,10:30	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-21, Tue,11:57	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2016-Sep-29, Thu,14:56	Clear	Turning movement	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					South	Turning left	Passenger van	Other motor vehicle	
2016-Oct-02, Sun,11:00	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-17, Mon,15:10	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Nov-04, Fri,12:27	Clear	Sideswipe	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2016-Dec-04, Sun,22:39	Clear	Rear end	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Dec-29, Thu,08:43	Snow	Angle	P.D. only	Loose snow	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jan-02, Mon,17:33	Snow	Rear end	Non-fatal injury	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jan-04, Wed,13:20	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2017-Feb-03, Fri,17:12	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-09, Thu,08:54	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-13, Mon,13:49	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-15, Wed,19:40	Snow	Sideswipe	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Feb-16, Thu,19:30	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Apr-04, Tue,08:05	Rain	Rear end	Non-fatal injury	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Apr-20, Thu,09:42	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Apr-30, Sun,20:18	Rain	Sideswipe	Non-fatal injury	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jul-05, Wed,10:48	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Tow truck	Other motor vehicle	
2017-Jul-12, Wed,20:04	Clear	SMV other	P.D. only	Dry	East	Turning left	Automobile, station wagon	Curb	0
2017-Jul-25, Tue,13:08	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Aug-16, Wed,14:40	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Aug-17, Thu,21:49	Clear	SMV other	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Pedestrian	1
2017-Sep-20, Wed,14:45	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Nov-02, Thu,20:12	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-04, Mon,21:30	Rain	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-15, Fri,18:50	Snow	Rear end	Non-fatal injury	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Dec-21, Thu,13:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-23, Sat,13:56	Snow	Turning movement	P.D. only	Wet	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Dec-28, Thu,07:44	Clear	SMV other	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Ran off road	0
2018-Jan-02, Tue,13:55	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Pick-up truck	Skidding/sliding	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jan-05, Fri,16:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-08, Mon,14:13	Snow	Rear end	Non-fatal injury	Slush	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-11, Thu,16:29	Clear	Sideswipe	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-16, Fri,07:16	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Apr-14, Sat,19:25	Clear	Angle	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Apr-17, Tue,19:51	Clear	Rear end	Non-fatal injury	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-13, Sun,17:35	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-24, Thu,09:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Truck - tractor	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-27, Sun,15:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Jun-06, Wed,14:24	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Sep-08, Sat,16:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

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From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-25, Tue,11:45	Rain	Turning movement	Non-fatal injury	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Motorcycle	Other motor vehicle	
2018-Oct-03, Wed,20:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-09, Tue,17:00	Clear	Angle	P.D. only	Dry	East	Turning right	Passenger van	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2018-Oct-20, Sat,15:40	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
2018-Oct-23, Tue,14:23	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Passenger van	Other motor vehicle	0
					North	Unknown	Unknown	Other motor vehicle	
2018-Nov-02, Fri,11:10	Rain	Turning movement	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Nov-06, Tue,17:00	Clear	Sideswipe	Non-fatal injury	Dry	South	Changing lanes	Unknown	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Dec-23, Sun,18:17	Clear	Turning movement	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-07, Mon,07:15	Clear	Rear end	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
					North	Turning right	Unknown	Other motor vehicle	
2019-Jan-07, Mon,09:50	Clear	Rear end	P.D. only	Dry	North	Turning right	Passenger van	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-09, Wed,15:07	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-14, Mon,07:16	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jan-17, Thu,07:55	Clear	Rear end	P.D. only	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jan-20, Sun,14:55	Snow	Angle	P.D. only	Loose snow	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-31, Thu,09:40	Clear	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-19, Tue,16:30	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Mar-12, Tue,10:40	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Passenger van	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-17, Wed,13:07	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Apr-23, Tue,06:20	Clear	Rear end	P.D. only	Dry	East	Going ahead	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-May-06, Mon,16:45	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-May-24, Fri,08:27	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Truck - open	Other motor vehicle	
2019-Jul-06, Sat,16:18	Clear	Rear end	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ KIRKWOOD AVE S

Traffic Control: Traffic signal **Total Collisions:** 105

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jul-12, Fri,14:00	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Unknown	Unknown	Other motor vehicle	
2019-Aug-10, Sat,23:00	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-12, Mon,16:22	Rain	SMV other	P.D. only	Wet	East	Turning left	Automobile, station wagon	Curb	0
2019-Sep-05, Thu,09:10	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-12, Sat,18:11	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-20, Sun,21:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Stopped	Passenger van	Other motor vehicle	
2019-Nov-22, Fri,12:36	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Unknown	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Nov-27, Wed,22:17	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-13, Fri,08:51	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-05, Mon,14:09	Clear	Rear end	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Feb-03, Tue,16:12	Snow	Angle	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Feb-17, Tue,13:36	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2015-Feb-20, Fri,13:24	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Mar-02, Mon,17:53	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-04, Sat,23:40	Clear	Angle	P.D. only	Dry	North	Going ahead	Police vehicle	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Apr-07, Tue,13:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Passenger van	Other motor vehicle	
2015-Apr-24, Fri,22:09	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2015-May-26, Tue,15:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-May-27, Wed,16:41	Clear	Angle	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jul-19, Sun,17:10	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2015-Dec-09, Wed,20:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-04, Mon,17:40	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jan-17, Sun,18:01	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Feb-16, Tue,07:45	Snow	Rear end	P.D. only	Loose snow	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2016-Jun-03, Fri,23:03	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Aug-23, Tue,13:33	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Sep-08, Thu,23:07	Clear	Rear end	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Sep-09, Fri,13:35	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Sep-23, Fri,08:04	Clear	Angle	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Truck - closed	Other motor vehicle	
2016-Oct-06, Thu,11:45	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck and trailer	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Nov-30, Wed,19:00	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Dec-06, Tue,13:40	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Dec-06, Tue,20:39	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Dec-08, Thu,09:41	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Jan-20, Fri,13:52	Clear	Angle	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2017-Jan-24, Tue,15:00	Clear	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Mar-14, Tue,12:39	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2017-Jun-29, Thu,19:18	Rain	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-03, Thu,14:00	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Delivery van	Other motor vehicle	
2017-Aug-07, Mon,11:01	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Aug-26, Sat,00:00	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-03, Fri,13:34	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-08, Wed,16:20	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Making "U" turn	Automobile, station wagon	Other motor vehicle	
2017-Dec-19, Tue,10:01	Snow	Angle	Non-fatal injury	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Jan-09, Tue,09:17	Clear	Rear end	Non-fatal injury	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jan-13, Sat,10:42	Clear	Angle	P.D. only	Loose snow	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-13, Sat,14:14	Clear	Rear end	P.D. only	Slush	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2018-Apr-04, Wed,20:31	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-May-24, Thu,17:37	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-19, Thu,16:33	Clear	Angle	Non-fatal injury	Dry	West	Going ahead	Motorcycle	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Sep-14, Fri,17:21	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-13, Sat,11:55	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-30, Tue,07:25	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-19, Mon,11:39	Clear	Turning movement	P.D. only	Wet	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Municipal transit bus	Other motor vehicle	
2019-Feb-02, Sat,19:00	Snow	Sideswipe	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Unknown	Unknown	Other motor vehicle	
2019-Feb-15, Fri,11:50	Clear	Sideswipe	P.D. only	Slush	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ MERIVALE RD

Traffic Control: Traffic signal **Total Collisions:** 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Mar-30, Sat,10:18	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Passenger van	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-12, Wed,18:30	Clear	Sideswipe	P.D. only	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Unknown	Other motor vehicle	
2019-Aug-30, Fri,22:23	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-11, Fri,15:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2019-Nov-01, Fri,11:30	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-27, Wed,09:33	Rain	Sideswipe	P.D. only	Wet	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ WESTGATE SC E

Traffic Control: Traffic signal **Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Jan-03, Sat,19:34	Snow	Sideswipe	P.D. only	Packed snow	South	Turning right	Municipal transit bus	Other motor vehicle	0
					South	Turning right	Pick-up truck	Other motor vehicle	
2015-Feb-04, Wed,15:15	Snow	Angle	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Skidding/sliding	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2015-May-12, Tue,10:09	Clear	Angle	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Municipal transit bus	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE @ WESTGATE SC E

Traffic Control: Traffic signal **Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-May-20, Wed,10:08	Clear	Turning movement	P.D. only	Dry	East	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-24, Thu,16:40	Clear	Angle	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jul-05, Tue,12:34	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jul-22, Fri,12:53	Clear	SMV other	Non-fatal injury	Dry	West	Going ahead	Motorcycle	Skidding/sliding	0
2016-Sep-23, Fri,09:15	Clear	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Oct-31, Mon,12:53	Clear	Other	P.D. only	Dry	East	Reversing	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2018-Jun-19, Tue,10:14	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Feb-07, Thu,06:10	Clear	Angle	P.D. only	Loose snow	East	Going ahead	Pick-up truck	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Mar-06, Wed,12:53	Clear	Rear end	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Aug-03, Sat,15:00	Clear	Other	P.D. only	Wet	West	Reversing	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Oct-08, Tue,09:16	Clear	Angle	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE btwn ARCHIBALD ST & 73 E OF ARCHIBALD ST/WESTGATE SC W

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-16, Tue,19:01	Snow	Rear end	Non-fatal injury	Loose snow	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE EB btwn KIRKWOOD AVE & HWY417 IC124 RAMP55

Traffic Control: No control **Total Collisions:** 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Oct-15, Thu,20:00	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-20, Thu,12:27	Rain	SMV other	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Skidding/sliding	0
2017-Feb-21, Tue,13:18	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Dec-31, Sun,08:37	Clear	Rear end	Non-fatal injury	Dry	East	Stopped	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-21, Wed,14:30	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - tractor	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-16, Wed,16:49	Clear	SMV other	P.D. only	Dry	East	Going ahead	Pick-up truck	Rollover	0
2019-Oct-16, Wed,18:21	Rain	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Tow truck	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE EB btwn WESTGATE SC E & 73 E OF ARCHIBALD ST/WESTGATE SC W

Traffic Control: No control **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

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Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE EB btwn WESTGATE SC E & 73 E OF ARCHIBALD ST/WESTGATE SC W

Traffic Control: No control **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Aug-14, Mon,15:26	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Bicycle	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Cyclist	
2017-Oct-25, Wed,07:53	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE EB btwn WESTGATE SC E & MERIVALE RD

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-14, Sat,17:57	Clear	Turning movement	Non-fatal injury	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Municipal transit bus	Other motor vehicle	

Location: CARLING AVE WB btwn 73 E OF ARCHIBALD ST/WESTGATE SC W & WESTGATE SC E

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Aug-21, Wed,16:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE WB btwn HWY417 IC124 RAMP65 & 73 E OF ARCHIBALD ST/WESTGAT

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-12, Wed,18:15	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE WB btwn HWY417 IC124 RAMP67 & HWY417 IC124 RAMP65

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE WB btwn HWY417 IC124 RAMP67 & HWY417 IC124 RAMP65

Traffic Control: No control **Total Collisions:** 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Feb-01, Mon,08:50	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Truck - closed	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-14, Sun,02:04	Clear	SMV other	P.D. only	Ice	West	Going ahead	Automobile, station wagon	Fence/noice barrier	0
2018-Sep-14, Fri,02:44	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Ran off road	0
2019-Feb-11, Mon,09:44	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE WB btwn KIRKWOOD AVE & HWY417 IC124 RAMP67

Traffic Control: No control **Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Mar-27, Fri,16:10	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2016-Feb-12, Fri,16:34	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Unknown	Unknown	Other motor vehicle	
2016-Mar-21, Mon,15:26	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Sep-10, Sat,15:41	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Mar-22, Wed,15:14	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Municipal transit bus	Other motor vehicle	
2017-Oct-25, Wed,20:22	Clear	SMV other	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Curb	0
2018-Jan-04, Thu,18:52	Snow	Rear end	P.D. only	Packed snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: CARLING AVE WB btwn KIRKWOOD AVE & HWY417 IC124 RAMP67

Traffic Control: No control **Total Collisions:** 14

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Feb-26, Mon,10:36	Clear	Rear end	Non-fatal injury	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Mar-30, Fri,12:32	Snow	Sideswipe	P.D. only	Wet	West	Changing lanes	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-10, Wed,13:45	Clear	Sideswipe	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Mar-01, Fri,16:45	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-22, Thu,09:29	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Automobile, station wagon	Other motor vehicle	0
					West	Unknown	Automobile, station wagon	Other motor vehicle	
2019-Oct-08, Tue,14:19	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-21, Mon,14:18	Clear	Sideswipe	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE WB btwn WESTGATE SC E & MERIVALE RD

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Dec-02, Mon,16:54	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Changing lanes	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2015 **To:** December 31, 2019

Location: KIRKWOOD AVE btwn CARLING AVE & CARLING AVE

Traffic Control: No control **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Aug-10, Mon,12:42	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Unknown	Other motor vehicle	
2017-Apr-27, Thu,08:00	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-May-23, Wed,18:31	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	

Location: MERIVALE RD @ 112 N OF CARLING AVE/WESTGATE SC

Traffic Control: Traffic signal **Total Collisions:** 2

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Sep-04, Fri,15:11	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-11, Mon,19:05	Snow	Rear end	Non-fatal injury	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Passenger van	Other motor vehicle	

Location: MERIVALE RD btwn CARLING AVE & CARLING AVE

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Apr-27, Fri,12:08	Clear	Sideswipe	P.D. only	Dry	North	Overtaking	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: MERIVALE RD btwn WESTGATE SC & CARLING AVE

Traffic Control: No control **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Dec-22, Fri,14:17	Snow	Rear end	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	

APPENDIX D

MMLOS ANALYSIS

Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**1376 Carling**
Scenario	**Future 2023**	**Date**	
Comments			

Unlocked Rows for Replicating

INTERSECTIONS		Carling/Kirkwood S				61m E of Archibald				Intersection C			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	4	5		4	0 - 2		6	6				
	Median	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m				
	Conflicting Left Turns	Permissive	No left turn / Prohib.		No left turn / Prohib.	No left turn / Prohib.		Permissive	No left turn / Prohib.				
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control				
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR prohibited		RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed				
	Ped Signal Leading Interval?	No	No		No	No		No	No				
	Right Turn Channel	No Channel	Conv'tl without Receiving Lane		Conv'tl without Receiving Lane	No Channel		No Channel	No Channel				
	Corner Radius	5-10m	5-10m		5-10m	3-5m		3-5m	3-5m				
	Crosswalk Type	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings		Zebra stripe hi-vis markings	Textured/coloured pavement		Textured/coloured pavement	Textured/coloured pavement				
	PETSI Score	**57**	**56**		**69**	**98**		**25**	**33**				
	Ped. Exposure to Traffic LoS	**D**	**D**	**-**	**C**	**A**	**-**	**F**	**E**	**-**	**-**	**-**	**-**
	Cycle Length	120	120		120	120		120	120				
	Effective Walk Time	27	27		52	71		11	11				
	Average Pedestrian Delay	**36**	**36**		**19**	**10**		**50**	**50**				
	Pedestrian Delay LoS	**D**	**D**	**-**	**B**	**B**	**-**	**E**	**E**	**-**	**-**	**-**	**-**
	Level of Service	**D**	**D**	**-**	**C**	**B**	**-**	**F**	**E**	**-**	**-**	**-**	**-**
		D				**F**				**-**			
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic		Pocket Bike Lane	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP				
	Right Turn Lane Configuration	≤ 50 m	> 50 m		≤ 50 m Introduced right turn lane	≤ 50 m		Not Applicable	Not Applicable				
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h		>25 to 30 km/h	≤ 25 km/h		Not Applicable	Not Applicable				
	Cyclist relative to RT motorists	**D**	**F**	**-**	**C**	**D**	**-**	**Not Applicable**	**Not Applicable**	**-**	**-**	**-**	**-**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**-**	**Separated**	**Mixed Traffic**	**-**	**Separated**	**Separated**	**-**	**-**	**-**	**-**
	Left Turn Approach	One lane crossed	No lane crossed		≥ 2 lanes crossed	No lane crossed		No lane crossed	No lane crossed				
	Operating Speed	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h		> 50 to < 60 km/h	≤ 40 km/h		≥ 60 km/h	≥ 60 km/h				
	Left Turning Cyclist	**D**	**B**	**-**	**F**	**B**	**-**	**C**	**C**	**-**	**-**	**-**	**-**
	Level of Service	**D**	**F**	**-**	**F**	**D**	**-**	**C**	**C**	**-**	**-**	**-**	**-**
		F				**D**				**-**			
Transit	Average Signal Delay	≤ 40 sec	> 40 sec		≤ 30 sec			≤ 10 sec	≤ 10 sec				
	Level of Service	**E**	**F**	**-**	**D**	**-**	**-**	**B**	**B**	**-**	**-**	**-**	**-**
		F				**B**				**-**			
Truck	Effective Corner Radius	< 10 m	< 10 m		< 10 m	< 10 m		< 10 m	< 10 m				
	Number of Receiving Lanes on Departure from Intersection	≥ 2	≥ 2		≥ 2	≥ 2		1	1				
	Level of Service	**D**	**D**	**-**	**D**	**D**	**-**	**F**	**F**	**-**	**-**	**-**	**-**
		D				**F**				**-**			
Auto	Volume to Capacity Ratio	0.81 - 0.90				0.0 - 0.60							
	Level of Service	**D**				**A**				**-**			

Multi-Modal Level of Service - Segments Form

Consultant	Parsons	**Project**	1376 Carling Avenue
Scenario	Future 2023	**Date**	
Comments			

SEGMENTS		Carling Avenue	EB - Kirkwood to Meath	EB - Meath to 61m E of Archibald	WB - 61m E of Archibald to Kirkwood	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width	**F**	1.8 m > 2 m	1.8 m < 0.5 m	1.8 m < 0.5 m						
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000						
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no						
	Exposure to Traffic PLoS		**E**	**F**	**F**	-	-	-	-	-	-
	Effective Sidewalk Width		1.5 m	1.5 m	1.5 m						
	Pedestrian Volume		250 ped/hr	250 ped/hr	250 ped/hr						
	Crowding PLoS		**B**	**B**	**B**	-	-	-	-	-	-
	Level of Service		**E**	**F**	**F**	-	-	-	-	-	-
Bicycle	Type of Cycling Facility	**D**	Curbside Bike Lane	Curbside Bike Lane	Physically Separated						
	Number of Travel Lanes		≥ 3 each direction	≥ 3 each direction	~~2-3 lanes total~~						
	Operating Speed		>50 to 70 km/h	>50 to 70 km/h	~~≥ 60 km/h~~						
	# of Lanes & Operating Speed LoS		**D**	**D**	**~~A~~**	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m	≥ 1.8 m							
	Bike Lane Width LoS		**A**	**A**	**-**	-	-	-	-	-	-
	Bike Lane Blockages		Rare	Rare	~~Rare~~						
	Blockage LoS		**A**	**A**	**~~A~~**	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	~~< 1.8 m refuge~~						
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	~~≤ 3 lanes~~						
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h	~~≤ 40 km/h~~						
	Unsignalized Crossing - Lowest LoS		**B**	**B**	**~~A~~**	-	-	-	-	-	-
	Level of Service		**D**	**D**	**A**	-	-	-	-	-	-
Transit	Facility Type	**B**	Bus lane	Bus lane	Bus lane						
	Friction or Ratio Transit:Posted Speed		Cf ≤ 60	Cf ≤ 60	Cf ≤ 60						
	Level of Service		**B**	**B**	**B**	-	-	-	-	-	-
Truck	Truck Lane Width	**D**	≤ 3.2 m	≤ 3.2 m	≤ 3.2 m						
	Travel Lanes per Direction		> 1	> 1	> 1						
	Level of Service		**D**	**D**	**D**	-	-	-	-	-	-

Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**1376 Carling**
Scenario	**Existing Condition**	**Date**	
Comments			

Unlocked Rows for Replicating

INTERSECTIONS		Carling/Kirkwood S				61m E of Archibald				Intersection C			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	4	5		4	0 - 2		6	6				
	Median	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m	No Median - 2.4 m				
	Conflicting Left Turns	Permissive	No left turn / Prohib.		No left turn / Prohib.	No left turn / Prohib.		Permissive	No left turn / Prohib.				
	Conflicting Right Turns	Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control		Permissive or yield control	Permissive or yield control				
	Right Turns on Red (RToR) ?	RTOR allowed	RTOR prohibited		RTOR allowed	RTOR allowed		RTOR allowed	RTOR allowed				
	Ped Signal Leading Interval?	No	No		No	No		No	No				
	Right Turn Channel	No Channel	Conv'tl without Receiving Lane		Conv'tl without Receiving Lane	No Channel		No Channel	No Channel				
	Corner Radius	5-10m	5-10m		5-10m	3-5m		3-5m	3-5m				
	Crosswalk Type	Zebra stripe hi-vis markings	Zebra stripe hi-vis markings		Zebra stripe hi-vis markings	Textured/coloured pavement		Textured/coloured pavement	Textured/coloured pavement				
	PETSI Score	**57**	**56**		**69**	**98**		**25**	**33**				
	Ped. Exposure to Traffic LoS	**D**	**D**	**-**	**C**	**A**	**-**	**F**	**E**	**-**	**-**	**-**	**-**
	Cycle Length	120	120		120	120		130	130				
	Effective Walk Time	36	36		43	71		11	11				
	Average Pedestrian Delay	**29**	**29**		**25**	**10**		**54**	**54**				
	Pedestrian Delay LoS	**C**	**C**	**-**	**C**	**B**	**-**	**E**	**E**	**-**	**-**	**-**	**-**
	Level of Service	**D**	**D**	**-**	**C**	**B**	**-**	**F**	**E**	**-**	**-**	**-**	**-**
		D				**F**				**-**			
	Approach From	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**	**NORTH**	**SOUTH**	**EAST**	**WEST**
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic		Pocket Bike Lane	Mixed Traffic		Curb Bike Lane, Cycletrack or MUP	Curb Bike Lane, Cycletrack or MUP				
	Right Turn Lane Configuration	≤ 50 m	> 50 m		≤ 50 m Introduced right turn lane	≤ 50 m		Not Applicable	Not Applicable				
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h		>25 to 30 km/h	≤ 25 km/h		Not Applicable	Not Applicable				
	Cyclist relative to RT motorists	**D**	**F**	**-**	**C**	**D**	**-**	**Not Applicable**	**Not Applicable**	**-**	**-**	**-**	**-**
	Separated or Mixed Traffic	**Mixed Traffic**	**Mixed Traffic**	**-**	**Separated**	**Mixed Traffic**	**-**	**Separated**	**Separated**	**-**	**-**	**-**	**-**
	Left Turn Approach	One lane crossed	No lane crossed		≥ 2 lanes crossed	No lane crossed		No lane crossed	No lane crossed				
	Operating Speed	> 40 to ≤ 50 km/h	> 40 to ≤ 50 km/h		> 50 to < 60 km/h	≤ 40 km/h		≥ 60 km/h	≥ 60 km/h				
	Left Turning Cyclist	**D**	**B**	**-**	**F**	**B**	**-**	**C**	**C**	**-**	**-**	**-**	**-**
	Level of Service	**D**	**F**	**-**	**F**	**D**	**-**	**C**	**C**	**-**	**-**	**-**	**-**
		F				**D**				**-**			
Transit	Average Signal Delay	≤ 40 sec	> 40 sec		≤ 40 sec			≤ 10 sec	≤ 10 sec				
	Level of Service	**E**	**F**	**-**	**E**	**-**	**-**	**B**	**B**	**-**	**-**	**-**	**-**
		F				**B**				**-**			
Truck	Effective Corner Radius	< 10 m	< 10 m		< 10 m	< 10 m		< 10 m	< 10 m				
	Number of Receiving Lanes on Departure from Intersection	≥ 2	≥ 2		≥ 2	≥ 2		1	1				
	Level of Service	**D**	**D**	**-**	**D**	**D**	**-**	**F**	**F**	**-**	**-**	**-**	**-**
		D				**F**				**-**			
Auto	Volume to Capacity Ratio	0.91 - 1.00				0.0 - 0.60							
	Level of Service	**E**				**A**				**-**			

Multi-Modal Level of Service - Segments Form

Consultant	Parsons	**Project**	1376 Carling Avenue
Scenario	Existing Condition	**Date**	Jun-21
Comments			

SEGMENTS		Carling Avenue	EB - Kirkwood to Meath	EB - Meath to 61m E of Archibald	WB - 61m E of Archibald to Kirkwood	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width	**F**	1.8 m > 2 m	1.8 m < 0.5 m	1.8 m < 0.5 m						
	Avg Daily Curb Lane Traffic Volume		> 3000	> 3000	> 3000						
	Operating Speed On-Street Parking		> 60 km/h no	> 60 km/h no	> 60 km/h no						
	Exposure to Traffic PLoS		**E**	**F**	**F**	-	-	-	-	-	-
	Effective Sidewalk Width		1.5 m	1.5 m	1.5 m						
	Pedestrian Volume		250 ped/hr	250 ped/hr	250 ped/hr						
	Crowding PLoS		**B**	**B**	**B**	-	-	-	-	-	-
	Level of Service		**E**	**F**	**F**	-	-	-	-	-	-
Bicycle	Type of Cycling Facility	**F**	Curbside Bike Lane	Curbside Bike Lane	Mixed Traffic						
	Number of Travel Lanes		≥ 3 each direction	≥ 3 each direction	2-3 lanes total						
	Operating Speed		>50 to 70 km/h	>50 to 70 km/h	≥ 60 km/h						
	# of Lanes & Operating Speed LoS		**D**	**D**	**F**	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width		≥ 1.8 m	≥ 1.8 m							
	Bike Lane Width LoS		**A**	**A**	-	-	-	-	-	-	-
	Bike Lane Blockages		Rare	Rare							
	Blockage LoS		**A**	**A**	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	< 1.8 m refuge						
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	≤ 3 lanes						
	Sidestreet Operating Speed		>40 to 50 km/h	>40 to 50 km/h	≤ 40 km/h						
	Unsignalized Crossing - Lowest LoS		**B**	**B**	**A**	-	-	-	-	-	-
	Level of Service		**D**	**D**	**F**	-	-	-	-	-	-
Transit	Facility Type	**D**	Mixed Traffic	Mixed Traffic	Mixed Traffic						
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8	Vt/Vp ≥ 0.8						
	Level of Service		**D**	**D**	**D**	-	-	-	-	-	-
Truck	Truck Lane Width	**D**	≤ 3.2 m	≤ 3.2 m	≤ 3.2 m						
	Travel Lanes per Direction		> 1	> 1	> 1						
	Level of Service		**D**	**D**	**D**	-	-	-	-	-	-

APPENDIX E

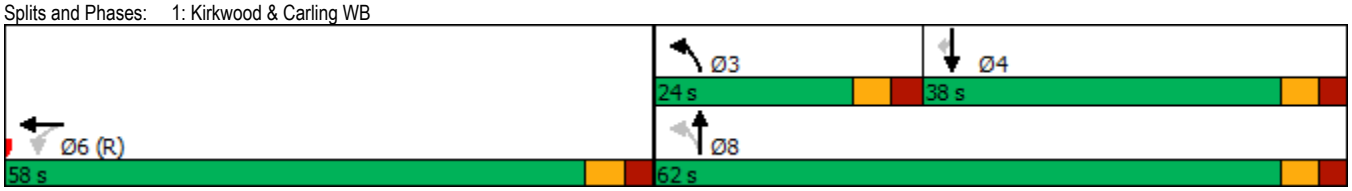
SYNCHRO ANALYSIS RESULTS

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	389	1071	278	258	384	345
Future Volume (vph)	389	1071	278	258	384	345
Lane Group Flow (vph)	389	1459	309	287	427	383
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	40.3	40.3	11.2	32.0	32.0	32.0
Total Split (s)	58.0	58.0	24.0	62.0	38.0	38.0
Total Split (%)	48.3%	48.3%	20.0%	51.7%	31.7%	31.7%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.9	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.2	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	54.0	54.0	53.5	53.7	30.4	30.4
Actuated g/C Ratio	0.45	0.45	0.45	0.45	0.25	0.25
v/c Ratio	0.59	0.72	0.74	0.36	0.50	0.89
Control Delay	30.2	29.2	25.7	14.0	40.2	57.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	29.2	25.7	14.0	40.2	57.3
LOS	C	C	C	B	D	E
Approach Delay		29.4		20.1	48.3	
Approach LOS		C		C	D	
Queue Length 50th (m)	81.1	107.8	60.5	55.2	44.4	68.6
Queue Length 95th (m)	120.2	127.2	m86.6	m80.1	60.1	#121.3
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	654	2022	421	832	904	447
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.72	0.73	0.34	0.47	0.86

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 66 (55%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.89	
Intersection Signal Delay: 32.4	Intersection LOS: C
Intersection Capacity Utilization 90.4%	ICU Level of Service E
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kirkwood & Carling WB



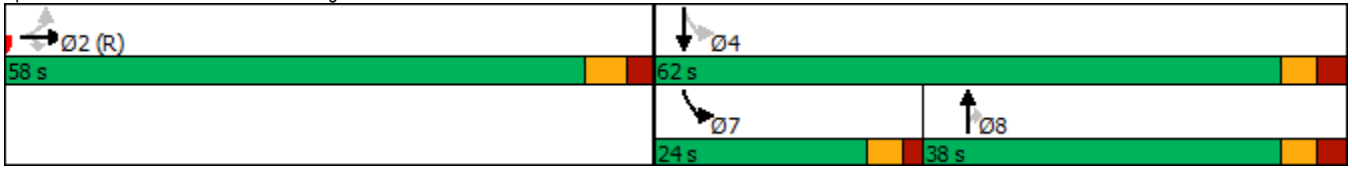
Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	124	1634	181	427	413	374	410
Future Volume (vph)	124	1634	181	427	413	374	410
Lane Group Flow (vph)	124	1830	201	474	459	416	456
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	16.1	16.1	10.1	26.1
Total Split (s)	58.0	58.0	58.0	38.0	38.0	24.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	31.7%	31.7%	20.0%	51.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.1	6.1	5.1	6.1
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	51.8	51.8	51.8	31.9	31.9	56.9	55.9
Actuated g/C Ratio	0.43	0.43	0.43	0.27	0.27	0.47	0.47
v/c Ratio	0.20	0.92	0.28	0.53	1.14	0.94	0.55
Control Delay	22.3	41.1	6.2	40.1	129.0	49.4	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.6
Total Delay	22.3	41.1	6.2	40.1	129.0	49.4	21.3
LOS	C	D	A	D	F	D	C
Approach Delay		36.7		83.8			34.7
Approach LOS		D		F			C
Queue Length 50th (m)	20.6	154.6	4.9	50.2	~126.1	61.9	71.4
Queue Length 95th (m)	35.8	#180.1	19.1	66.8	#188.8	#111.7	99.9
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	629	1987	709	901	403	441	831
Starvation Cap Reductn	0	0	0	0	0	0	123
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.92	0.28	0.53	1.14	0.94	0.64

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.14	
Intersection Signal Delay: 47.4	Intersection LOS: D
Intersection Capacity Utilization 90.4%	ICU Level of Service E
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

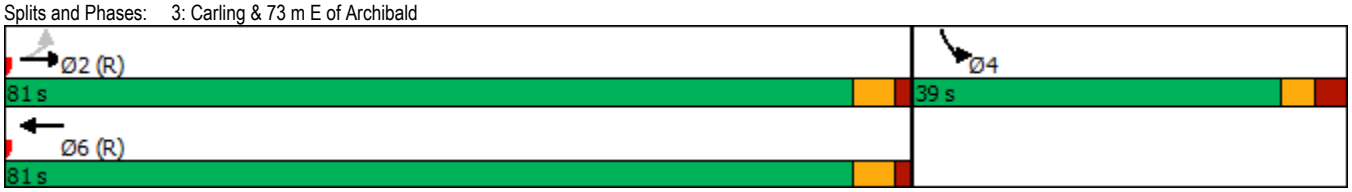
Splits and Phases: 2: Kirkwood & Carling EB



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	3	933	993	10
Future Volume (vph)	3	933	993	10
Lane Group Flow (vph)	0	1040	1124	37
Turn Type	Perm	NA	NA	Prot
Protected Phases		2	6	4
Permitted Phases	2			
Detector Phase	2	2	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.3	15.3	42.3	38.1
Total Split (s)	81.0	81.0	81.0	39.0
Total Split (%)	67.5%	67.5%	67.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)		107.2	107.2	10.0
Actuated g/C Ratio		0.89	0.89	0.08
v/c Ratio		0.25	0.26	0.24
Control Delay		1.8	0.6	28.9
Queue Delay		0.0	0.1	0.0
Total Delay		1.8	0.7	28.9
LOS		A	A	C
Approach Delay		1.8	0.7	28.9
Approach LOS		A	A	C
Queue Length 50th (m)		16.1	2.3	2.4
Queue Length 95th (m)		19.4	5.4	13.0
Internal Link Dist (m)		46.2	98.4	35.9
Turn Bay Length (m)				
Base Capacity (vph)		4080	4333	447
Starvation Cap Reductn		0	1368	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.25	0.38	0.08

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.26	
Intersection Signal Delay: 1.7	Intersection LOS: A
Intersection Capacity Utilization 54.7%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Carling & 73 m E of Archibald

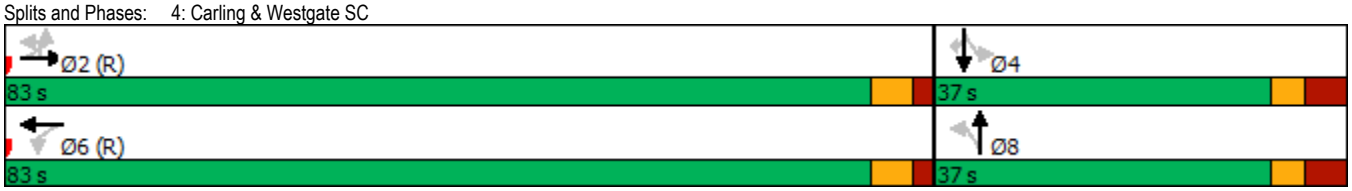


Lane Group	EBU	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	65	181	663	2	833	11	1	47	2	68
Future Volume (vph)	65	181	663	2	833	11	1	47	2	68
Lane Group Flow (vph)	0	273	748	2	1027	0	26	0	54	76
Turn Type	Perm	Perm	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases			2		6		8		4	
Permitted Phases	2	2		6		8		4		4
Detector Phase	2	2	2	6	6	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	83.0	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)		5.6	5.6	5.6	5.6		7.0		7.0	7.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		97.4	97.4	97.4	97.4		14.5		14.5	14.5
Actuated g/C Ratio		0.81	0.81	0.81	0.81		0.12		0.12	0.12
v/c Ratio		0.72	0.19	0.00	0.26		0.15		0.35	0.31
Control Delay		22.3	3.3	5.5	3.9		28.6		52.1	12.1
Queue Delay		0.0	0.0	0.0	0.1		0.0		0.0	0.0
Total Delay		22.3	3.3	5.5	4.0		28.6		52.1	12.1
LOS		C	A	A	A		C		D	B
Approach Delay			8.4		4.0		28.6		28.7	
Approach LOS			A		A		C		C	
Queue Length 50th (m)		14.8	10.9	0.1	17.2		2.9		12.4	0.0
Queue Length 95th (m)		#106.8	13.6	m0.6	31.5		9.6		21.0	11.9
Internal Link Dist (m)			98.4		89.4		10.8		75.6	
Turn Bay Length (m)		70.0		36.0						
Base Capacity (vph)		379	3943	506	3882		353		318	429
Starvation Cap Reductn		0	0	0	1421		0		0	0
Spillback Cap Reductn		0	597	0	0		0		0	0
Storage Cap Reductn		0	0	0	0		0		0	0
Reduced v/c Ratio		0.72	0.22	0.00	0.42		0.07		0.17	0.18

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 7.8	Intersection LOS: A
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

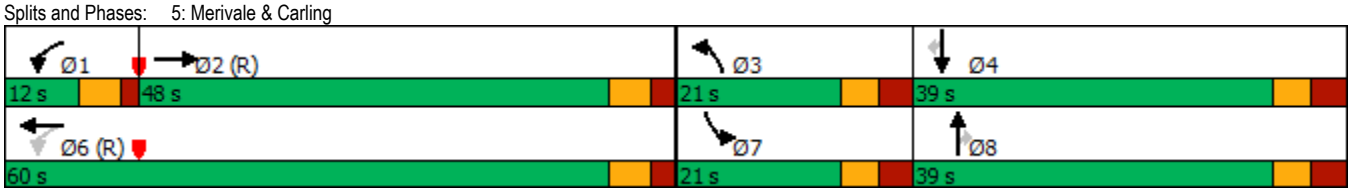
Splits and Phases: 4: Carling & Westgate SC



Lane Group	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations									
Traffic Volume (vph)	1054	152	466	109	229	407	36	252	132
Future Volume (vph)	1054	152	466	109	229	407	36	252	132
Lane Group Flow (vph)	1262	169	561	121	254	452	40	280	147
Turn Type	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2	1	6	3	8		7	4	
Permitted Phases		6				8			4
Detector Phase	2	1	6	3	8	8	7	4	4
Switch Phase									
Minimum Initial (s)	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	10.4	29.0	11.3	38.7	38.7	11.3	38.7	38.7
Total Split (s)	48.0	12.0	60.0	21.0	39.0	39.0	21.0	39.0	39.0
Total Split (%)	40.0%	10.0%	50.0%	17.5%	32.5%	32.5%	17.5%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	1.7	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	5.4	6.0	6.3	6.7	6.7	6.3	6.7	6.7
Lead/Lag	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	45.4	64.6	64.0	12.7	31.0	31.0	8.3	24.3	24.3
Actuated g/C Ratio	0.38	0.54	0.53	0.11	0.26	0.26	0.07	0.20	0.20
v/c Ratio	0.69	0.64	0.22	0.68	0.55	0.76	0.34	0.78	0.36
Control Delay	33.1	33.1	15.8	70.4	43.1	23.7	58.2	54.5	10.8
Queue Delay	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Total Delay	34.4	33.1	15.8	70.4	43.1	23.7	58.2	55.0	10.8
LOS	C	C	B	E	D	C	E	D	B
Approach Delay	34.4		19.8		36.5			41.3	
Approach LOS	C		B		D			D	
Queue Length 50th (m)	95.9	19.9	24.3	27.6	52.7	37.4	9.3	49.0	7.4
Queue Length 95th (m)	113.4	#68.0	37.0	47.0	74.0	74.3	20.9	72.9	17.3
Internal Link Dist (m)	89.4		139.3		159.9			90.9	
Turn Bay Length (m)		90.0		40.0			28.0		35.0
Base Capacity (vph)	1821	264	2564	207	493	612	207	480	493
Starvation Cap Reductn	339	0	0	0	0	0	0	34	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.85	0.64	0.22	0.58	0.52	0.74	0.19	0.63	0.30

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 52 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.78	
Intersection Signal Delay: 32.7	Intersection LOS: C
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

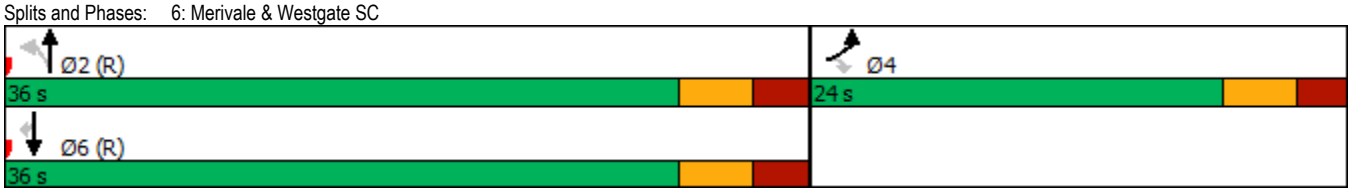
Splits and Phases: 5: Merivale & Carling



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	21	64	213	493	61
Future Volume (vph)	40	21	64	213	493	61
Lane Group Flow (vph)	44	23	71	237	548	68
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	15.9	15.9	35.9	35.9
Total Split (s)	24.0	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9	5.9	5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	10.0	47.1	47.1	47.1	47.1
Actuated g/C Ratio	0.17	0.17	0.78	0.78	0.78	0.78
v/c Ratio	0.16	0.09	0.12	0.17	0.39	0.06
Control Delay	23.0	11.0	1.5	1.3	5.3	1.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	11.0	1.5	1.3	5.3	1.4
LOS	C	B	A	A	A	A
Approach Delay	18.9			1.3	4.9	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.2	0.0	1.6	5.3	26.0	0.0
Queue Length 95th (m)	11.6	5.1	2.8	7.4	43.5	3.1
Internal Link Dist (m)	74.0			90.9	36.1	
Turn Bay Length (m)			25.0			30.0
Base Capacity (vph)	519	471	615	1400	1400	1178
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	19	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.05	0.12	0.17	0.40	0.06

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 8 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.39	
Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

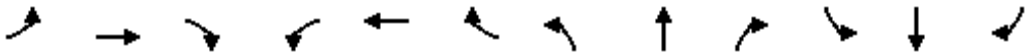
Splits and Phases: 6: Merivale & Westgate SC



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	922	3	0	0	0	7
Future Volume (Veh/h)	922	3	0	0	0	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1024	3	0	0	0	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	154			268		
pX, platoon unblocked						
vC, conflicting volume			1027		1026	343
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1027		1026	343
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			672		231	653

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	410	410	208	8
Volume Left	0	0	0	0
Volume Right	0	0	3	8
cSH	1700	1700	1700	653
Volume to Capacity	0.24	0.24	0.12	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.3
Control Delay (s)	0.0	0.0	0.0	10.6
Lane LOS				B
Approach Delay (s)	0.0			10.6
Approach LOS				B

Intersection Summary			
Average Delay	0.1		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	2	0	0	0	0	0	9	0	0	0
Future Volume (Veh/h)	0	0	2	0	0	0	0	0	9	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	2	0	0	0	0	0	10	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		352			70							
pX, platoon unblocked												
vC, conflicting volume	0			2			1	1	1	10	2	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			2			1	1	1	10	2	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	100	100	100
cM capacity (veh/h)	1622			1619			1021	894	1083	997	893	1084

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	0	0	2	0	0	0	10
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	2	0	0	0	10
cSH	1700	1700	1700	1700	1700	1700	1083
Volume to Capacity	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	8.4
Lane LOS							A
Approach Delay (s)	0.0			0.0			8.4
Approach LOS							A

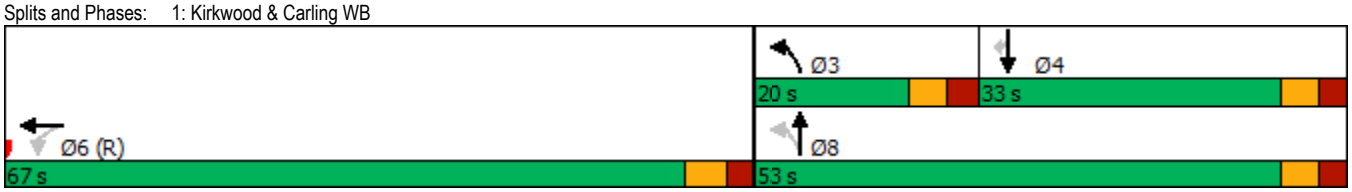
Intersection Summary				
Average Delay	7.0			
Intersection Capacity Utilization	13.3%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	232	2027	198	495	456	378
Future Volume (vph)	232	2027	198	495	456	378
Lane Group Flow (vph)	232	2579	220	550	507	420
Turn Type	Perm	NA	pm+pt	NA	NA	Perm
Protected Phases		6	3	8	4	
Permitted Phases	6		8			4
Detector Phase	6	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	40.3	40.3	11.2	32.0	32.0	32.0
Total Split (s)	67.0	67.0	20.0	53.0	33.0	33.0
Total Split (%)	55.8%	55.8%	16.7%	44.2%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.9	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.2	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	60.7	60.7	46.8	47.0	27.5	27.5
Actuated g/C Ratio	0.51	0.51	0.39	0.39	0.23	0.23
v/c Ratio	0.32	1.13	0.72	0.79	0.65	1.06
Control Delay	19.0	94.6	34.3	37.9	46.7	97.1
Queue Delay	0.0	0.0	0.0	3.3	0.0	0.0
Total Delay	19.0	94.6	34.3	41.2	46.7	97.1
LOS	B	F	C	D	D	F
Approach Delay		88.4		39.3	69.5	
Approach LOS		F		D	E	
Queue Length 50th (m)	36.1	~273.1	42.2	130.5	57.6	~93.2
Queue Length 95th (m)	56.3	#302.9	#63.0	171.4	76.1	#155.5
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	732	2278	311	698	777	397
Starvation Cap Reductn	0	0	0	78	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.32	1.13	0.71	0.89	0.65	1.06

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 6:WBTL, Start of Green	
Natural Cycle: 115	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.13	
Intersection Signal Delay: 76.1	Intersection LOS: E
Intersection Capacity Utilization 93.8%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Kirkwood & Carling WB

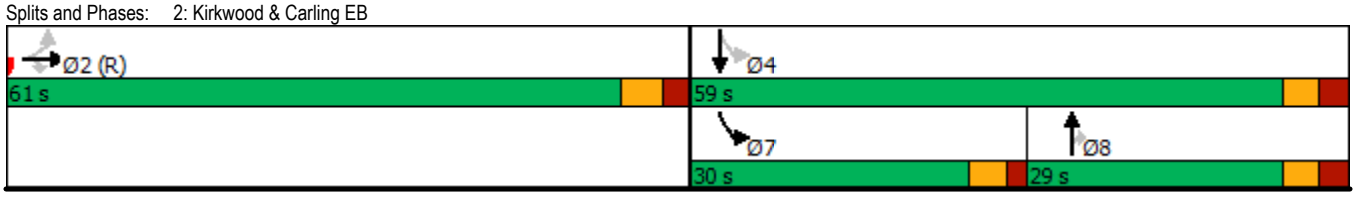


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	393	1038	335	304	302	397	329
Future Volume (vph)	393	1038	335	304	302	397	329
Lane Group Flow (vph)	389	1201	372	338	336	441	366
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	16.1	16.1	10.1	26.1
Total Split (s)	61.0	61.0	61.0	29.0	29.0	30.0	59.0
Total Split (%)	50.8%	50.8%	50.8%	24.2%	24.2%	25.0%	49.2%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.1	6.1	5.1	6.1
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	54.8	54.8	54.8	22.9	22.9	53.9	52.9
Actuated g/C Ratio	0.46	0.46	0.46	0.19	0.19	0.45	0.44
v/c Ratio	0.58	0.57	0.46	0.52	1.18	0.87	0.47
Control Delay	28.6	25.3	6.8	47.0	153.5	30.1	12.0
Queue Delay	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Total Delay	28.9	25.4	6.8	47.0	153.5	30.1	12.0
LOS	C	C	A	D	F	C	B
Approach Delay		22.6		100.1			21.9
Approach LOS		C		F			C
Queue Length 50th (m)	77.0	78.7	10.2	38.0	~94.8	82.4	32.7
Queue Length 95th (m)	113.9	93.7	31.7	53.1	#151.1	m#114.9	m63.0
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	665	2097	811	646	285	506	786
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	44	94	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.60	0.46	0.52	1.18	0.87	0.47

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 81 (68%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.18	
Intersection Signal Delay: 37.6	Intersection LOS: D
Intersection Capacity Utilization 93.8%	ICU Level of Service F
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

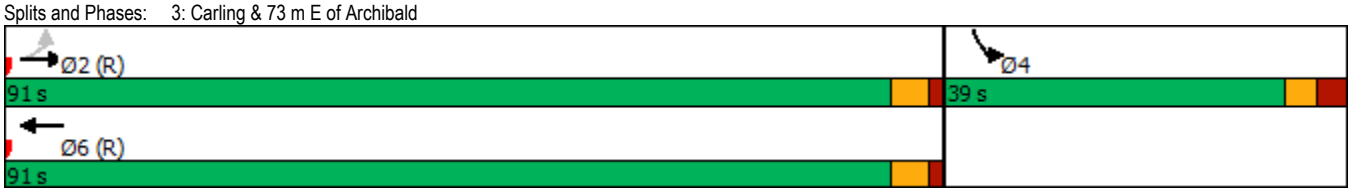
Splits and Phases: 2: Kirkwood & Carling EB



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	3	969	1503	31
Future Volume (vph)	3	969	1503	31
Lane Group Flow (vph)	0	1080	1674	76
Turn Type	Perm	NA	NA	Prot
Protected Phases		2	6	4
Permitted Phases	2			
Detector Phase	2	2	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.3	15.3	42.3	38.1
Total Split (s)	91.0	91.0	91.0	39.0
Total Split (%)	70.0%	70.0%	70.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)		111.9	111.9	11.0
Actuated g/C Ratio		0.86	0.86	0.08
v/c Ratio		0.28	0.40	0.46
Control Delay		2.4	1.5	44.0
Queue Delay		0.0	0.1	0.0
Total Delay		2.4	1.6	44.0
LOS		A	A	D
Approach Delay		2.4	1.6	44.0
Approach LOS		A	A	D
Queue Length 50th (m)		16.9	8.0	10.9
Queue Length 95th (m)		25.1	29.2	26.0
Internal Link Dist (m)		46.2	98.4	35.9
Turn Bay Length (m)				
Base Capacity (vph)		3924	4192	427
Starvation Cap Reductn		0	1191	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.28	0.56	0.18

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 107 (82%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 3.1	Intersection LOS: A
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 3: Carling & 73 m E of Archibald

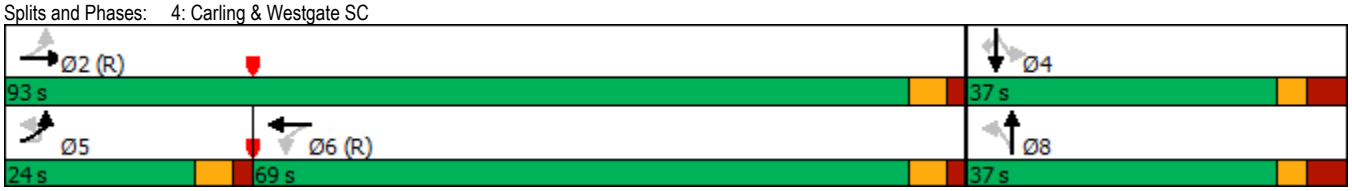


Lane Group	EBU	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	72	155	544	6	1657	17	4	76	4	124
Future Volume (vph)	72	155	544	6	1657	17	4	76	4	124
Lane Group Flow (vph)	0	252	622	7	1949	0	32	0	88	138
Turn Type	custom	pm+pt	NA	Perm	NA	Perm	NA	Perm	NA	Perm
Protected Phases		5	2		6		8		4	
Permitted Phases	5	2		6		8		4		4
Detector Phase	5	5	2	6	6	8	8	4	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	24.0	24.0	93.0	69.0	69.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	18.5%	18.5%	71.5%	53.1%	53.1%	28.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)		5.6	5.6	5.6	5.6		7.0		7.0	7.0
Lead/Lag	Lead	Lead		Lag	Lag					
Lead-Lag Optimize?	Yes	Yes		Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		100.7	100.7	76.6	76.6		16.7		16.7	16.7
Actuated g/C Ratio		0.77	0.77	0.59	0.59		0.13		0.13	0.13
v/c Ratio		0.83	0.17	0.02	0.69		0.18		0.55	0.50
Control Delay		52.6	2.6	4.5	8.6		38.4		64.3	21.4
Queue Delay		0.0	0.0	0.0	0.6		0.0		0.0	0.0
Total Delay		52.6	2.7	4.5	9.2		38.4		64.3	21.4
LOS		D	A	A	A		D		E	C
Approach Delay			17.1		9.1		38.4		38.1	
Approach LOS			B		A		D		D	
Queue Length 50th (m)		43.9	3.5	0.1	12.0		5.4		21.9	8.5
Queue Length 95th (m)		#94.2	26.4	m0.6	197.9		13.4		34.4	25.0
Internal Link Dist (m)			98.4		89.4		10.8		75.6	
Turn Bay Length (m)		70.0		36.0						
Base Capacity (vph)		324	3746	406	2837		312		287	417
Starvation Cap Reductn		0	0	0	447		0		0	0
Spillback Cap Reductn		0	1156	0	0		0		0	0
Storage Cap Reductn		0	0	0	0		0		0	0
Reduced v/c Ratio		0.78	0.24	0.02	0.82		0.10		0.31	0.33

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 3 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 13.8	Intersection LOS: B
Intersection Capacity Utilization 101.6%	ICU Level of Service G
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carling & Westgate SC



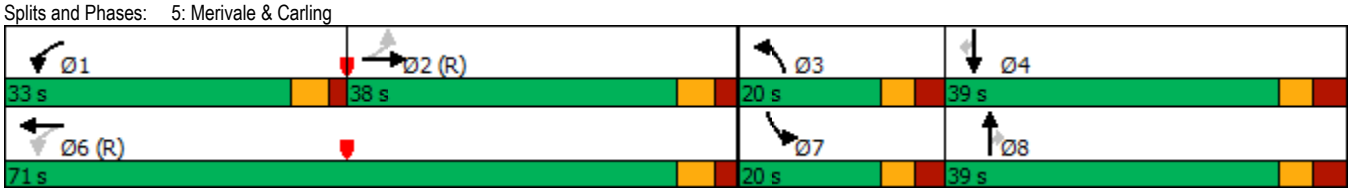
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	1	904	425	1642	104	207	228	70	313	130
Future Volume (vph)	1	904	425	1642	104	207	228	70	313	130
Lane Group Flow (vph)	0	1188	472	1878	116	230	253	78	348	144
Turn Type	Perm	NA	pm+pt	NA	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2	1	6	3	8		7	4	
Permitted Phases	2		6				8			4
Detector Phase	2	2	1	6	3	8	8	7	4	4
Switch Phase										
Minimum Initial (s)	10.0	10.0	5.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	11.3	38.7	38.7	11.3	38.7	38.7
Total Split (s)	38.0	38.0	33.0	71.0	20.0	39.0	39.0	20.0	39.0	39.0
Total Split (%)	29.2%	29.2%	25.4%	54.6%	15.4%	30.0%	30.0%	15.4%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	5.4	6.0	6.3	6.7	6.7	6.3	6.7	6.7
Lead/Lag	Lag	Lag	Lead		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)		32.0	70.1	69.5	12.4	33.3	33.3	10.9	29.1	29.1
Actuated g/C Ratio		0.25	0.54	0.53	0.10	0.26	0.26	0.08	0.22	0.22
v/c Ratio		1.07	0.99	0.73	0.72	0.50	0.45	0.55	0.87	0.35
Control Delay		93.1	77.5	25.9	81.1	46.2	7.3	66.0	67.5	13.5
Queue Delay		12.4	0.0	0.4	0.0	0.0	0.0	0.0	6.8	0.0
Total Delay		105.5	77.5	26.3	81.1	46.2	7.3	66.0	74.3	13.5
LOS		F	E	C	F	D	A	E	E	B
Approach Delay		105.5		36.6		36.5			57.8	
Approach LOS		F		D		D			E	
Queue Length 50th (m)		~121.9	~122.5	138.2	29.0	50.1	0.0	19.6	71.6	7.6
Queue Length 95th (m)		#151.7	#190.6	158.8	#52.5	77.0	21.1	35.4	#122.3	23.6
Internal Link Dist (m)		89.4		139.3		159.9			90.9	
Turn Bay Length (m)			90.0		40.0			28.0		35.0
Base Capacity (vph)		1110	475	2588	178	463	564	178	443	447
Starvation Cap Reductn		92	0	0	0	0	0	0	60	0
Spillback Cap Reductn		0	0	253	0	0	0	0	0	5
Storage Cap Reductn		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		1.17	0.99	0.80	0.65	0.50	0.45	0.44	0.91	0.33

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 15 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.07	
Intersection Signal Delay: 56.5	Intersection LOS: E
Intersection Capacity Utilization 108.3%	ICU Level of Service G
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: Merivale & Carling

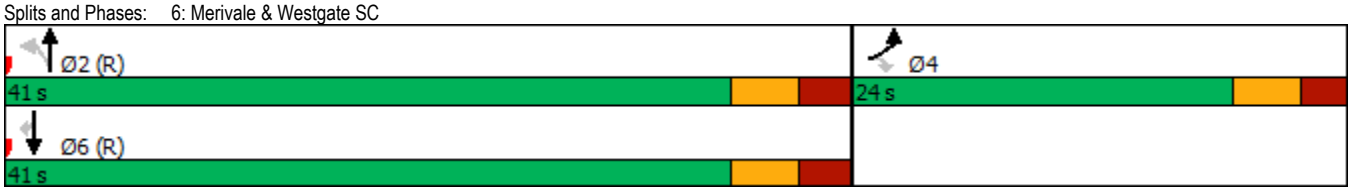


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	78	65	61	203	527	85
Future Volume (vph)	78	65	61	203	527	85
Lane Group Flow (vph)	87	72	68	226	586	94
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	15.9	15.9	35.9	35.9
Total Split (s)	24.0	24.0	41.0	41.0	41.0	41.0
Total Split (%)	36.9%	36.9%	63.1%	63.1%	63.1%	63.1%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9	5.9	5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.4	10.4	47.4	47.4	47.4	47.4
Actuated g/C Ratio	0.16	0.16	0.73	0.73	0.73	0.73
v/c Ratio	0.32	0.24	0.13	0.17	0.45	0.09
Control Delay	27.6	9.1	2.6	2.8	6.5	1.3
Queue Delay	0.0	0.1	0.0	0.0	0.1	0.0
Total Delay	27.6	9.2	2.6	2.8	6.6	1.3
LOS	C	A	A	A	A	A
Approach Delay	19.2			2.7	5.9	
Approach LOS	B			A	A	
Queue Length 50th (m)	9.5	0.0	1.2	4.0	28.7	0.0
Queue Length 95th (m)	20.1	9.1	m2.1	m5.7	52.9	3.9
Internal Link Dist (m)	74.0			90.9	36.1	
Turn Bay Length (m)			25.0			30.0
Base Capacity (vph)	479	471	528	1300	1300	1104
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	74	0	0	97	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.18	0.13	0.17	0.49	0.09

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 27 (42%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

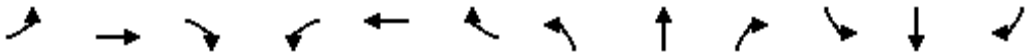
Splits and Phases: 6: Merivale & Westgate SC



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	978	3	0	0	0	0
Future Volume (Veh/h)	978	3	0	0	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	1087	3	0	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	154			268		
pX, platoon unblocked						
vC, conflicting volume			1090		1088	364
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1090		1088	364
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			636		210	633

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	435	435	220	0
Volume Left	0	0	0	0
Volume Right	0	0	3	0
cSH	1700	1700	1700	1700
Volume to Capacity	0.26	0.26	0.13	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS				A
Approach Delay (s)	0.0			0.0
Approach LOS				A

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	23.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	11	0	0	0	0	0	5	0	0	0
Future Volume (Veh/h)	0	0	11	0	0	0	0	0	5	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	0	12	0	0	0	0	0	6	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		352			70							
pX, platoon unblocked												
vC, conflicting volume	0			12			6	6	6	6	12	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			12			6	6	6	6	12	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	100	100	100
cM capacity (veh/h)	1622			1605			1013	889	1075	1007	882	1084

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1
Volume Total	0	0	12	0	0	0	6
Volume Left	0	0	0	0	0	0	0
Volume Right	0	0	12	0	0	0	6
cSH	1700	1700	1700	1700	1700	1700	1075
Volume to Capacity	0.00	0.00	0.01	0.00	0.00	0.00	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	8.4
Lane LOS							A
Approach Delay (s)	0.0			0.0			8.4
Approach LOS							A

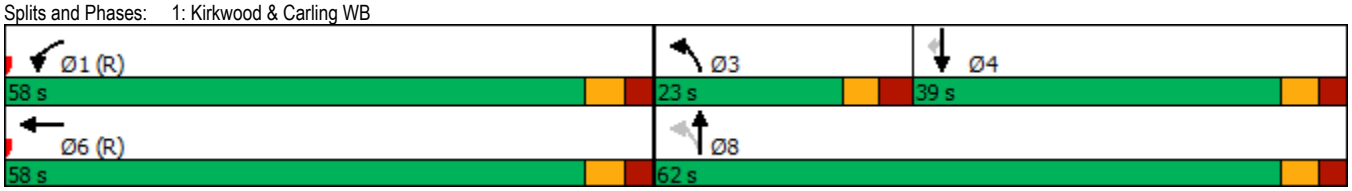
Intersection Summary				
Average Delay	2.8			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	99	1471	278	258	387	345
Future Volume (vph)	99	1471	278	258	387	345
Lane Group Flow (vph)	99	1679	278	258	387	345
Turn Type	Prot	NA	pm+pt	NA	NA	Perm
Protected Phases	1	6	3	8	4	
Permitted Phases			8			4
Detector Phase	1	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	16.3	40.3	11.2	32.0	32.0	32.0
Total Split (s)	58.0	58.0	23.0	62.0	39.0	39.0
Total Split (%)	48.3%	48.3%	19.2%	51.7%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.9	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.2	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	55.8	55.8	51.7	51.9	29.6	29.6
Actuated g/C Ratio	0.46	0.46	0.43	0.43	0.25	0.25
v/c Ratio	0.06	0.76	0.68	0.33	0.46	0.82
Control Delay	19.0	29.4	26.9	17.9	40.0	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.0	29.4	26.9	17.9	40.0	48.2
LOS	B	C	C	B	D	D
Approach Delay		28.9		22.6	43.8	
Approach LOS		C		C	D	
Queue Length 50th (m)	6.5	116.9	54.0	49.3	40.8	59.0
Queue Length 95th (m)	12.1	143.0	m78.2	m72.1	53.8	#93.4
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1528	2219	416	832	932	459
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.76	0.67	0.31	0.42	0.75

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 66 (55%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 31.4	Intersection LOS: C
Intersection Capacity Utilization 91.9%	ICU Level of Service F
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kirkwood & Carling WB

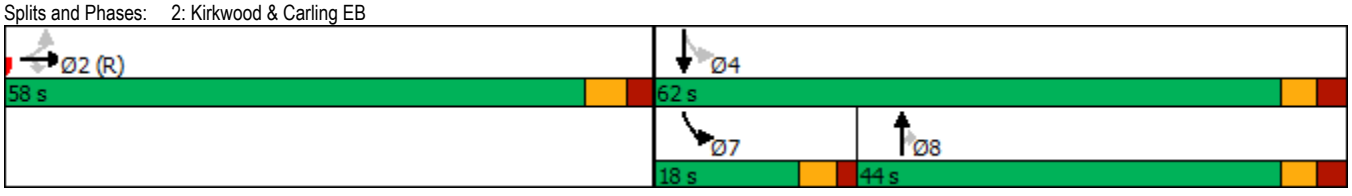


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	124	1766	416	427	420	320	177
Future Volume (vph)	124	1766	416	427	420	320	177
Lane Group Flow (vph)	112	1778	416	427	420	320	177
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	16.1	16.1	10.1	26.1
Total Split (s)	58.0	58.0	58.0	44.0	44.0	18.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	36.7%	36.7%	15.0%	51.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.1	6.1	5.1	6.1
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	53.5	53.5	53.5	36.2	36.2	55.2	54.2
Actuated g/C Ratio	0.45	0.45	0.45	0.30	0.30	0.46	0.45
v/c Ratio	0.17	0.87	0.50	0.42	0.92	0.77	0.22
Control Delay	21.6	36.1	6.6	34.5	66.6	46.4	25.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	36.1	6.6	34.5	66.6	46.4	25.9
LOS	C	D	A	C	E	D	C
Approach Delay		30.1		50.4			39.1
Approach LOS		C		D			D
Queue Length 50th (m)	18.4	147.5	9.0	41.3	93.3	74.9	40.7
Queue Length 95th (m)	32.5	171.0	32.9	55.7	#149.7	#105.9	62.2
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	649	2051	830	1070	479	415	831
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.87	0.50	0.40	0.88	0.77	0.21

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 36.0	Intersection LOS: D
Intersection Capacity Utilization 91.9%	ICU Level of Service F
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

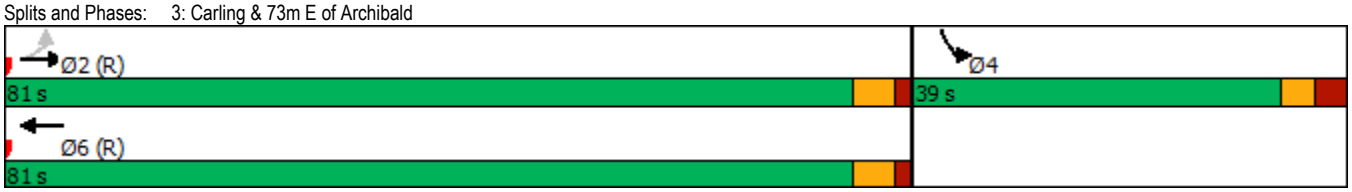
Splits and Phases: 2: Kirkwood & Carling EB



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	3	1055	1061	10
Future Volume (vph)	3	1055	1061	10
Lane Group Flow (vph)	0	1058	1080	33
Turn Type	Perm	NA	NA	Prot
Protected Phases		2	6	4
Permitted Phases	2			
Detector Phase	2	2	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.3	15.3	42.3	38.1
Total Split (s)	81.0	81.0	81.0	39.0
Total Split (%)	67.5%	67.5%	67.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)		107.2	107.2	10.0
Actuated g/C Ratio		0.89	0.89	0.08
v/c Ratio		0.37	0.36	0.22
Control Delay		2.3	0.8	29.4
Queue Delay		0.0	0.1	0.0
Total Delay		2.3	0.9	29.4
LOS		A	A	C
Approach Delay		2.3	0.9	29.4
Approach LOS		A	A	C
Queue Length 50th (m)		27.0	2.5	2.2
Queue Length 95th (m)		33.4	7.6	12.3
Internal Link Dist (m)		33.9	110.7	27.9
Turn Bay Length (m)				
Base Capacity (vph)		2885	3016	445
Starvation Cap Reductn		0	498	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.37	0.43	0.07

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 2.0	Intersection LOS: A
Intersection Capacity Utilization 56.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Carling & 73m E of Archibald

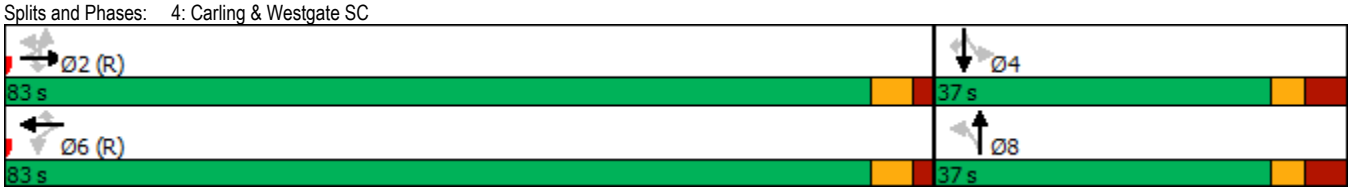


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	189	745	10	2	841	92	11	1	51	2	96
Future Volume (vph)	130	189	745	10	2	841	92	11	1	51	2	96
Lane Group Flow (vph)	0	319	745	10	2	841	92	0	24	0	53	96
Turn Type	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases			2			6			8		4	
Permitted Phases	2	2		2	6		6	8		4		4
Detector Phase	2	2	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	83.0	83.0	83.0	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)		5.6	5.6	5.6	5.6	5.6	5.6		7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		92.9	92.9	92.9	92.9	92.9	92.9		14.5		14.5	14.5
Actuated g/C Ratio		0.77	0.77	0.77	0.77	0.77	0.77		0.12		0.12	0.12
v/c Ratio		0.72	0.28	0.01	0.00	0.32	0.08		0.13		0.35	0.36
Control Delay		19.5	4.1	0.0	5.5	4.8	2.3		28.5		51.9	11.8
Queue Delay		0.0	0.1	0.0	0.0	0.2	0.0		0.0		0.0	0.0
Total Delay		19.5	4.2	0.0	5.5	5.0	2.3		28.5		51.9	11.8
LOS		B	A	A	A	A	A		C		D	B
Approach Delay			8.7			4.8			28.5		26.1	
Approach LOS			A			A			C		C	
Queue Length 50th (m)		13.6	16.5	0.0	0.1	21.3	0.5		2.7		12.1	0.0
Queue Length 95th (m)		#106.2	24.5	m0.1	m0.6	40.0	3.4		9.0		20.7	13.0
Internal Link Dist (m)			110.7			89.4			10.8		75.6	
Turn Bay Length (m)		70.0		15.0	36.0		20.0					
Base Capacity (vph)		444	2625	1097	490	2625	1131		360		319	444
Starvation Cap Reductn		0	800	0	0	910	0		0		0	0
Spillback Cap Reductn		0	833	0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.72	0.42	0.01	0.00	0.49	0.08		0.07		0.17	0.22

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 110	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 85.0%	ICU Level of Service E
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Carling & Westgate SC

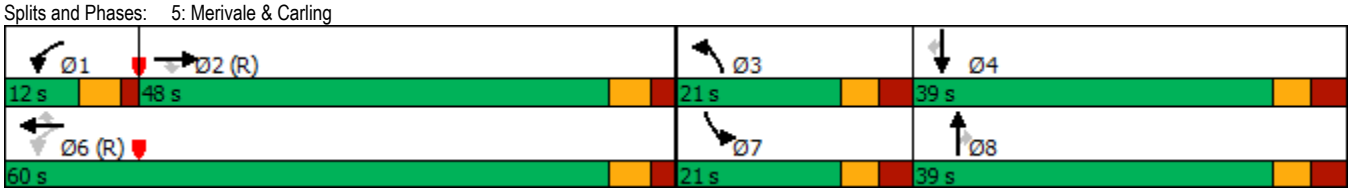


Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1110	112	152	473	39	111	230	407	36	256	132
Future Volume (vph)	1110	112	152	473	39	111	230	407	36	256	132
Lane Group Flow (vph)	1110	112	152	473	39	111	230	407	36	256	132
Turn Type	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2		1	6		3	8		7	4	
Permitted Phases		2	6		6			8			4
Detector Phase	2	2	1	6	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	29.0	11.3	38.7	38.7	11.3	38.7	38.7
Total Split (s)	48.0	48.0	12.0	60.0	60.0	21.0	39.0	39.0	21.0	39.0	39.0
Total Split (%)	40.0%	40.0%	10.0%	50.0%	50.0%	17.5%	32.5%	32.5%	17.5%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.4	6.0	6.0	6.3	6.7	6.7	6.3	6.7	6.7
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	48.2	48.2	66.4	65.8	65.8	12.3	32.2	32.2	8.0	22.9	22.9
Actuated g/C Ratio	0.40	0.40	0.55	0.55	0.55	0.10	0.27	0.27	0.07	0.19	0.19
v/c Ratio	0.82	0.17	0.64	0.25	0.05	0.64	0.48	0.67	0.32	0.75	0.34
Control Delay	37.3	2.7	35.4	16.1	0.1	68.1	40.6	16.5	58.3	54.8	10.1
Queue Delay	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	44.4	2.7	35.4	16.1	0.1	68.1	40.6	16.5	58.3	55.0	10.1
LOS	D	A	D	B	A	E	D	B	E	E	B
Approach Delay	40.6			19.6			31.6			41.3	
Approach LOS	D			B			C			D	
Queue Length 50th (m)	126.2	1.1	18.0	29.6	0.0	25.3	48.1	23.0	8.4	46.2	2.0
Queue Length 95th (m)	#174.7	10.9	#64.4	48.5	0.0	43.6	66.8	54.7	19.3	65.4	14.9
Internal Link Dist (m)	89.4			139.3			159.9			90.9	
Turn Bay Length (m)		20.0	90.0		20.0	40.0			28.0		35.0
Base Capacity (vph)	1360	662	236	1857	820	207	504	628	207	480	492
Starvation Cap Reductn	214	0	0	0	0	0	0	0	0	28	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.17	0.64	0.25	0.05	0.54	0.46	0.65	0.17	0.57	0.27

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 52 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 33.9 — Intersection LOS: C
Intersection Capacity Utilization 87.2% — ICU Level of Service E
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

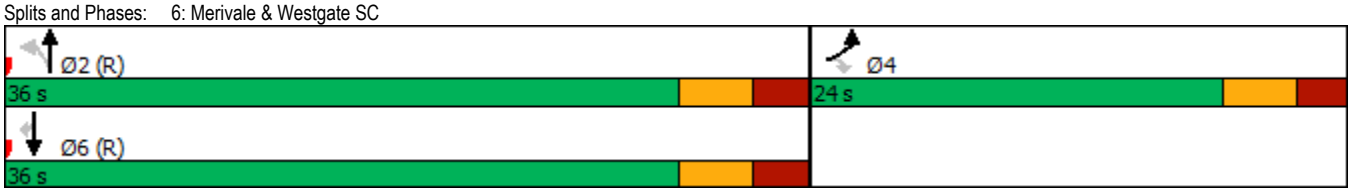
Splits and Phases: 5: Merivale & Carling



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	25	65	213	493	62
Future Volume (vph)	44	25	65	213	493	62
Lane Group Flow (vph)	44	25	65	213	493	62
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	15.9	15.9	35.9	35.9
Total Split (s)	24.0	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9	5.9	5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	10.0	47.1	47.1	47.1	47.1
Actuated g/C Ratio	0.17	0.17	0.78	0.78	0.78	0.78
v/c Ratio	0.16	0.09	0.10	0.15	0.35	0.05
Control Delay	23.0	10.7	1.0	0.8	5.0	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	10.7	1.0	0.8	5.0	1.5
LOS	C	B	A	A	A	A
Approach Delay	18.6			0.9	4.6	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.2	0.0	0.4	1.2	22.3	0.0
Queue Length 95th (m)	11.6	5.3	1.4	3.6	37.7	2.9
Internal Link Dist (m)	74.0			90.9	36.1	
Turn Bay Length (m)			25.0			30.0
Base Capacity (vph)	519	472	665	1400	1400	1177
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	8	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.05	0.10	0.15	0.35	0.05

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 8 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 4.5	Intersection LOS: A
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

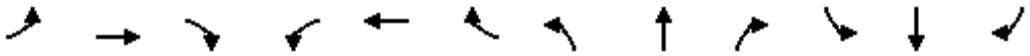
Splits and Phases: 6: Merivale & Westgate SC



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	962	15	0	0	0	49
Future Volume (Veh/h)	962	15	0	0	0	49
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	962	15	0	0	0	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	154			256		
pX, platoon unblocked						
vC, conflicting volume			977		962	481
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			977		962	481
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	91
cM capacity (veh/h)			702		254	531

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	481	481	15	49
Volume Left	0	0	0	0
Volume Right	0	0	15	49
cSH	1700	1700	1700	531
Volume to Capacity	0.28	0.28	0.01	0.09
Queue Length 95th (m)	0.0	0.0	0.0	2.3
Control Delay (s)	0.0	0.0	0.0	12.5
Lane LOS				B
Approach Delay (s)	0.0			12.5
Approach LOS				B

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	32	0	0	0	0	0	110	0	0	0
Future Volume (Veh/h)	0	0	32	0	0	0	0	0	110	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	32	0	0	0	0	0	110	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		352			58							
pX, platoon unblocked												
vC, conflicting volume	0			32			0	0	0	110	32	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			32			0	0	0	110	32	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	90	100	100	100
cM capacity (veh/h)	1622			1579			1023	896	1084	770	860	1084

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	0	0	32	0	0	110
Volume Left	0	0	0	0	0	0
Volume Right	0	0	32	0	0	110
cSH	1700	1700	1700	1700	1700	1084
Volume to Capacity	0.00	0.00	0.02	0.00	0.00	0.10
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	8.7
Lane LOS						A
Approach Delay (s)	0.0			0.0		8.7
Approach LOS						A

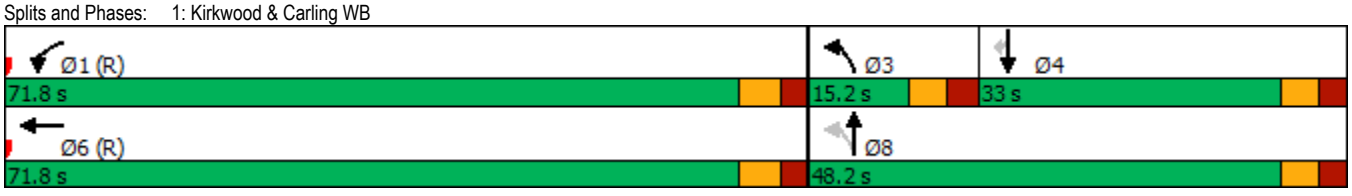
Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	10.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	179	2223	198	495	464	378
Future Volume (vph)	179	2223	198	495	464	378
Lane Group Flow (vph)	179	2498	198	495	464	378
Turn Type	Prot	NA	pm+pt	NA	NA	Perm
Protected Phases	1	6	3	8	4	
Permitted Phases			8			4
Detector Phase	1	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	16.3	40.3	11.2	32.0	32.0	32.0
Total Split (s)	71.8	71.8	15.2	48.2	33.0	33.0
Total Split (%)	59.8%	59.8%	12.7%	40.2%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.9	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.2	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	65.5	65.5	42.0	42.2	27.0	27.0
Actuated g/C Ratio	0.55	0.55	0.35	0.35	0.22	0.22
v/c Ratio	0.10	0.96	0.77	0.79	0.61	0.97
Control Delay	13.3	36.2	54.9	51.7	45.8	73.8
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0
Total Delay	13.3	36.2	54.9	52.6	45.8	73.8
LOS	B	D	D	D	D	E
Approach Delay		34.7		53.2	58.4	
Approach LOS		C		D	E	
Queue Length 50th (m)	10.0	195.2	45.7	125.6	52.0	71.2
Queue Length 95th (m)	15.5	#241.2	#75.9	158.9	69.3	#131.9
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1795	2608	257	627	762	392
Starvation Cap Reductn	0	0	0	26	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.96	0.77	0.82	0.61	0.96

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 42.5	Intersection LOS: D
Intersection Capacity Utilization 106.1%	ICU Level of Service G
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

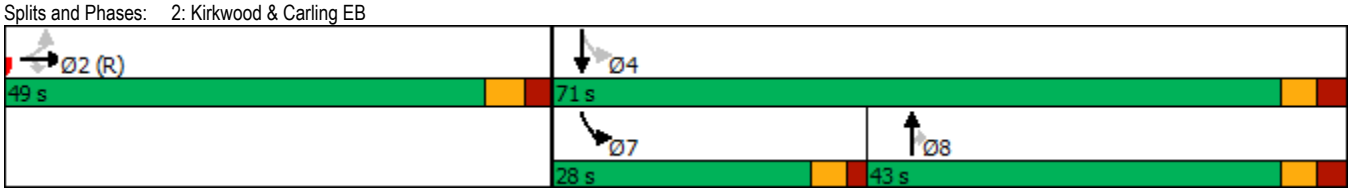
Splits and Phases: 1: Kirkwood & Carling WB



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	393	1198	410	304	321	424	256
Future Volume (vph)	393	1198	410	304	321	424	256
Lane Group Flow (vph)	350	1241	410	304	321	424	256
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	16.1	16.1	10.1	26.1
Total Split (s)	49.0	49.0	49.0	43.0	43.0	28.0	71.0
Total Split (%)	40.8%	40.8%	40.8%	35.8%	35.8%	23.3%	59.2%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.1	6.1	5.1	6.1
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	48.9	48.9	48.9	30.8	30.8	59.8	58.8
Actuated g/C Ratio	0.41	0.41	0.41	0.26	0.26	0.50	0.49
v/c Ratio	0.59	0.66	0.50	0.35	0.84	0.75	0.29
Control Delay	34.3	32.0	4.9	36.6	60.8	16.9	5.5
Queue Delay	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	32.0	4.9	36.6	60.8	16.9	5.5
LOS	C	C	A	D	E	B	A
Approach Delay		26.9		49.0			12.6
Approach LOS		C		D			B
Queue Length 50th (m)	74.7	91.9	0.0	30.4	70.9	13.8	8.5
Queue Length 95th (m)	120.1	117.6	21.4	40.5	99.6	32.3	10.7
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	594	1873	824	1042	460	566	964
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	18	37	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.68	0.50	0.29	0.70	0.75	0.27

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 81 (68%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 28.1	Intersection LOS: C
Intersection Capacity Utilization 106.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Kirkwood & Carling EB

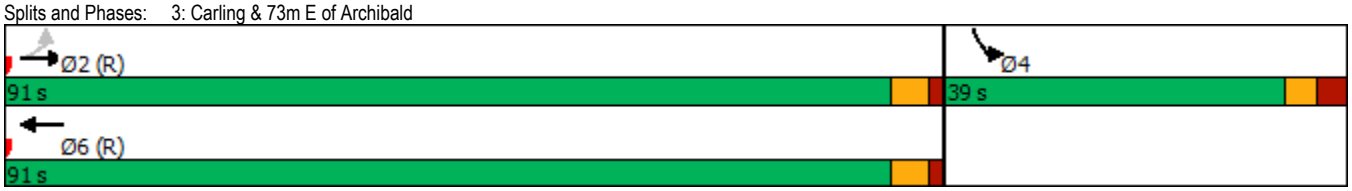


Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	3	1076	1585	31
Future Volume (vph)	3	1076	1585	31
Lane Group Flow (vph)	0	1079	1589	69
Turn Type	Perm	NA	NA	Prot
Protected Phases		2	6	4
Permitted Phases	2			
Detector Phase	2	2	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.3	15.3	42.3	38.1
Total Split (s)	91.0	91.0	91.0	39.0
Total Split (%)	70.0%	70.0%	70.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)		112.4	112.4	10.5
Actuated g/C Ratio		0.86	0.86	0.08
v/c Ratio		0.39	0.54	0.42
Control Delay		2.9	3.3	37.3
Queue Delay		0.0	0.5	0.0
Total Delay		2.9	3.8	37.3
LOS		A	A	D
Approach Delay		2.9	3.8	37.3
Approach LOS		A	A	D
Queue Length 50th (m)		27.7	35.5	7.6
Queue Length 95th (m)		39.5	m58.5	22.2
Internal Link Dist (m)		33.9	110.7	27.9
Turn Bay Length (m)				
Base Capacity (vph)		2786	2929	432
Starvation Cap Reductn		0	773	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.39	0.74	0.16

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 107 (82%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 4.3	Intersection LOS: A
Intersection Capacity Utilization 69.4%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carling & 73m E of Archibald

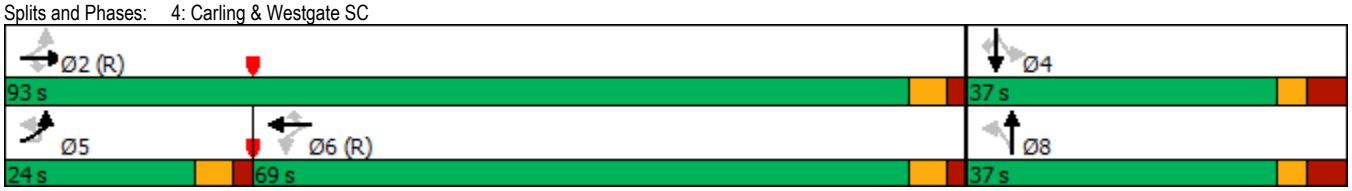


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	188	594	16	6	1688	103	17	4	81	4	152
Future Volume (vph)	115	188	594	16	6	1688	103	17	4	81	4	152
Lane Group Flow (vph)	0	303	594	16	6	1688	103	0	29	0	85	152
Turn Type	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		5	2			6			8		4	
Permitted Phases	5	2		2	6		6	8		4		4
Detector Phase	5	5	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	24.0	24.0	93.0	93.0	69.0	69.0	69.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	18.5%	18.5%	71.5%	71.5%	53.1%	53.1%	53.1%	28.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)		5.6	5.6	5.6	5.6	5.6	5.6		7.0		7.0	7.0
Lead/Lag	Lead	Lead			Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		100.9	100.9	100.9	69.6	69.6	69.6		16.5		16.5	16.5
Actuated g/C Ratio		0.78	0.78	0.78	0.54	0.54	0.54		0.13		0.13	0.13
v/c Ratio		0.78	0.23	0.02	0.02	0.93	0.13		0.16		0.54	0.59
Control Delay		46.9	2.9	0.6	5.7	21.3	0.6		38.4		63.6	34.0
Queue Delay		0.0	0.1	0.0	0.0	20.1	0.0		0.0		0.0	0.0
Total Delay		46.9	3.0	0.6	5.7	41.4	0.6		38.4		63.6	34.0
LOS		D	A	A	A	D	A		D		E	C
Approach Delay			17.6			39.0			38.4		44.6	
Approach LOS			B			D			D		D	
Queue Length 50th (m)		52.9	5.1	0.0	0.2	217.8	0.4		4.9		21.2	17.6
Queue Length 95th (m)		#128.0	39.1	m1.0	m0.3	m#287.5	m0.9		12.5		33.6	34.9
Internal Link Dist (m)			110.7			89.4			10.8		75.6	
Turn Bay Length (m)		70.0		15.0	36.0		20.0					
Base Capacity (vph)		390	2630	1035	388	1813	781		315		288	400
Starvation Cap Reductn		0	1032	0	0	187	0		0		0	0
Spillback Cap Reductn		0	971	0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.78	0.37	0.02	0.02	1.04	0.13		0.09		0.30	0.38

Intersection Summary

Cycle Length: 130
Actuated Cycle Length: 130
Offset: 3 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 32.8 Intersection LOS: C
Intersection Capacity Utilization 120.3% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

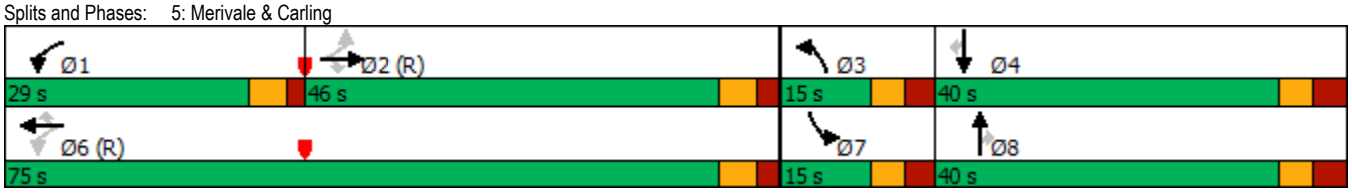
Splits and Phases: 4: Carling & Westgate SC



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	939	185	425	1669	49	113	212	228	70	317	130
Future Volume (vph)	1	939	185	425	1669	49	113	212	228	70	317	130
Lane Group Flow (vph)	0	940	185	425	1669	49	113	212	228	70	317	130
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6			8			4
Detector Phase	2	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	10.4	29.0	29.0	11.3	38.7	38.7	11.3	38.7	38.7
Total Split (s)	46.0	46.0	46.0	29.0	75.0	75.0	15.0	40.0	40.0	15.0	40.0	40.0
Total Split (%)	35.4%	35.4%	35.4%	22.3%	57.7%	57.7%	11.5%	30.8%	30.8%	11.5%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	5.4	6.0	6.0	6.3	6.7	6.7	6.3	6.7	6.7
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)		40.0	40.0	75.2	74.6	74.6	8.7	30.7	30.7	8.3	27.7	27.7
Actuated g/C Ratio		0.31	0.31	0.58	0.57	0.57	0.07	0.24	0.24	0.06	0.21	0.21
v/c Ratio		0.95	0.35	0.97	0.86	0.06	1.00	0.50	0.44	0.65	0.83	0.33
Control Delay		62.3	13.0	74.5	29.9	0.8	144.8	47.8	7.6	81.2	62.7	10.5
Queue Delay		44.1	0.4	0.0	25.7	0.0	0.0	0.0	0.0	0.0	2.0	0.0
Total Delay		106.4	13.5	74.5	55.6	0.8	144.8	47.8	7.6	81.2	64.7	10.5
LOS		F	B	E	E	A	F	D	A	F	E	B
Approach Delay		91.1			58.1			51.1			53.3	
Approach LOS		F			E			D			D	
Queue Length 50th (m)		125.2	11.7	93.3	182.7	0.0	29.5	48.6	0.0	17.8	65.8	5.8
Queue Length 95th (m)		#165.7	31.6	#177.6	#246.8	1.8	#68.3	70.2	19.7	#38.1	85.9	15.7
Internal Link Dist (m)		89.4			139.3			159.9			90.9	
Turn Bay Length (m)			20.0	90.0		20.0	40.0			28.0		35.0
Base Capacity (vph)		994	531	438	1945	830	113	460	544	113	456	456
Starvation Cap Reductn		182	106	0	0	0	0	0	0	0	52	0
Spillback Cap Reductn		0	0	0	352	0	0	0	0	0	0	12
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		1.16	0.44	0.97	1.05	0.06	1.00	0.46	0.42	0.62	0.78	0.29

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 15 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 65.2	Intersection LOS: E
Intersection Capacity Utilization 127.6%	ICU Level of Service H
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

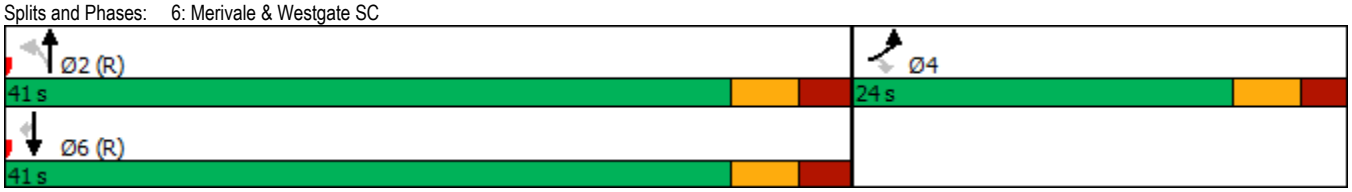
Splits and Phases: 5: Merivale & Carling



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	82	69	66	203	527	90
Future Volume (vph)	82	69	66	203	527	90
Lane Group Flow (vph)	82	69	66	203	527	90
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	15.9	15.9	35.9	35.9
Total Split (s)	24.0	24.0	41.0	41.0	41.0	41.0
Total Split (%)	36.9%	36.9%	63.1%	63.1%	63.1%	63.1%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9	5.9	5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.3	10.3	47.5	47.5	47.5	47.5
Actuated g/C Ratio	0.16	0.16	0.73	0.73	0.73	0.73
v/c Ratio	0.30	0.24	0.11	0.16	0.40	0.08
Control Delay	27.3	9.2	1.2	1.0	6.0	1.3
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	27.3	9.2	1.2	1.0	6.0	1.3
LOS	C	A	A	A	A	A
Approach Delay	19.1			1.1	5.3	
Approach LOS	B			A	A	
Queue Length 50th (m)	8.9	0.0	0.5	1.5	24.5	0.0
Queue Length 95th (m)	19.4	9.0	1.0	2.4	44.6	3.7
Internal Link Dist (m)	74.0			90.9	36.1	
Turn Bay Length (m)			25.0			30.0
Base Capacity (vph)	479	469	578	1302	1302	1106
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	71	0	0	21	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.11	0.16	0.41	0.08

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 27 (42%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 6.2	Intersection LOS: A
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

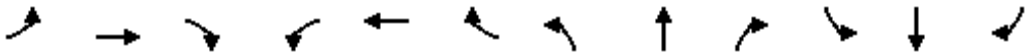
Splits and Phases: 6: Merivale & Westgate SC



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1113	50	0	0	0	24
Future Volume (Veh/h)	1113	50	0	0	0	24
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1113	50	0	0	0	24
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	154			256		
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			1163		1113	556
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			744		683	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			700		312	883

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	556	556	50	24
Volume Left	0	0	0	0
Volume Right	0	0	50	24
cSH	1700	1700	1700	883
Volume to Capacity	0.33	0.33	0.03	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.6
Control Delay (s)	0.0	0.0	0.0	9.2
Lane LOS				A
Approach Delay (s)	0.0			9.2
Approach LOS				A

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	109	0	0	0	0	0	72	0	0	0
Future Volume (Veh/h)	0	0	109	0	0	0	0	0	72	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	109	0	0	0	0	0	72	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		352			58							
pX, platoon unblocked												
vC, conflicting volume	0			109			0	0	0	72	109	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			109			0	0	0	72	109	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	93	100	100	100
cM capacity (veh/h)	1622			1479			1023	896	1084	850	780	1084

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	0	0	109	0	0	72
Volume Left	0	0	0	0	0	0
Volume Right	0	0	109	0	0	72
cSH	1700	1700	1700	1700	1700	1084
Volume to Capacity	0.00	0.00	0.06	0.00	0.00	0.07
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	1.6
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	8.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		8.6
Approach LOS						A

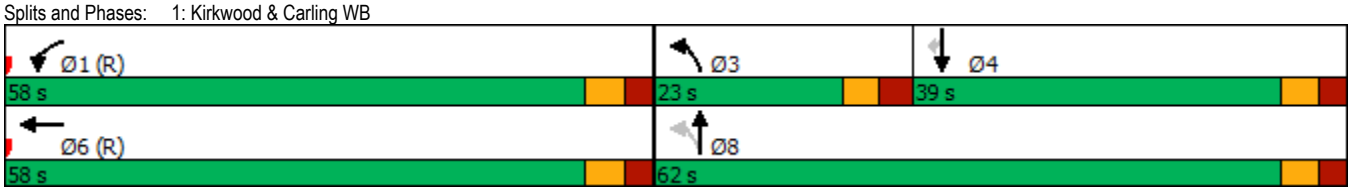
Intersection Summary				
Average Delay	3.4			
Intersection Capacity Utilization	10.5%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	109	1486	278	258	387	345
Future Volume (vph)	109	1486	278	258	387	345
Lane Group Flow (vph)	109	1694	278	258	387	345
Turn Type	Prot	NA	pm+pt	NA	NA	Perm
Protected Phases	1	6	3	8	4	
Permitted Phases			8			4
Detector Phase	1	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	16.3	40.3	11.2	32.0	32.0	32.0
Total Split (s)	58.0	58.0	23.0	62.0	39.0	39.0
Total Split (%)	48.3%	48.3%	19.2%	51.7%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.9	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.2	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	55.8	55.8	51.7	51.9	29.6	29.6
Actuated g/C Ratio	0.46	0.46	0.43	0.43	0.25	0.25
v/c Ratio	0.07	0.76	0.68	0.33	0.46	0.82
Control Delay	19.1	29.6	26.9	18.0	40.0	48.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	29.6	26.9	18.0	40.0	48.2
LOS	B	C	C	B	D	D
Approach Delay		29.0		22.6	43.8	
Approach LOS		C		C	D	
Queue Length 50th (m)	7.2	118.4	54.1	49.3	40.8	59.0
Queue Length 95th (m)	13.1	144.9	m78.2	m72.1	53.8	#93.4
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1528	2222	416	832	932	459
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.76	0.67	0.31	0.42	0.75

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 66 (55%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 31.4	Intersection LOS: C
Intersection Capacity Utilization 92.2%	ICU Level of Service F
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Kirkwood & Carling WB

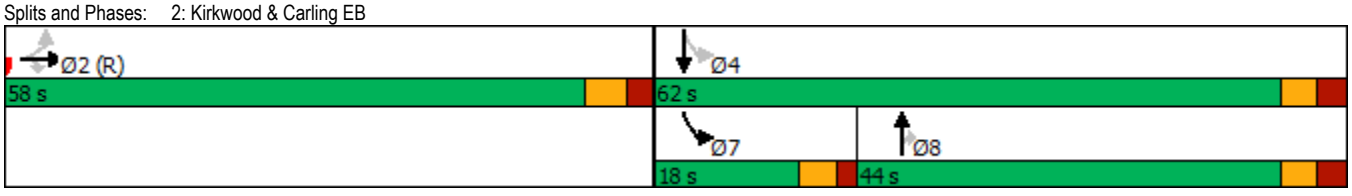


Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	124	1780	416	427	420	330	177
Future Volume (vph)	124	1780	416	427	420	330	177
Lane Group Flow (vph)	112	1792	416	427	420	330	177
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	16.1	16.1	10.1	26.1
Total Split (s)	58.0	58.0	58.0	44.0	44.0	18.0	62.0
Total Split (%)	48.3%	48.3%	48.3%	36.7%	36.7%	15.0%	51.7%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.1	6.1	5.1	6.1
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	53.5	53.5	53.5	36.2	36.2	55.2	54.2
Actuated g/C Ratio	0.45	0.45	0.45	0.30	0.30	0.46	0.45
v/c Ratio	0.17	0.87	0.50	0.42	0.92	0.80	0.22
Control Delay	21.6	36.5	6.7	34.5	66.6	47.9	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	36.5	6.7	34.5	66.6	47.9	25.4
LOS	C	D	A	C	E	D	C
Approach Delay		30.4		50.4			40.0
Approach LOS		C		D			D
Queue Length 50th (m)	18.4	149.3	9.4	41.3	93.3	76.8	39.8
Queue Length 95th (m)	32.5	173.1	33.5	55.7	#149.7	#112.2	61.8
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	649	2051	828	1070	479	415	831
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.87	0.50	0.40	0.88	0.80	0.21

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 36.4	Intersection LOS: D
Intersection Capacity Utilization 92.2%	ICU Level of Service F
Analysis Period (min) 15	

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

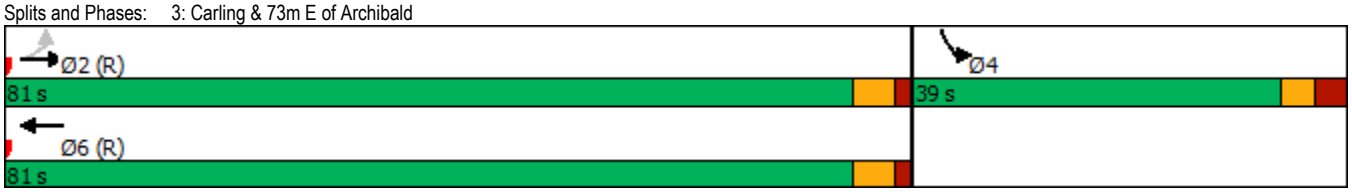
Splits and Phases: 2: Kirkwood & Carling EB



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	3	1099	1082	10
Future Volume (vph)	3	1099	1082	10
Lane Group Flow (vph)	0	1102	1101	33
Turn Type	Perm	NA	NA	Prot
Protected Phases		2	6	4
Permitted Phases	2			
Detector Phase	2	2	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.3	15.3	42.3	38.1
Total Split (s)	81.0	81.0	81.0	39.0
Total Split (%)	67.5%	67.5%	67.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)		107.2	107.2	10.0
Actuated g/C Ratio		0.89	0.89	0.08
v/c Ratio		0.38	0.37	0.22
Control Delay		2.4	0.8	29.4
Queue Delay		0.0	0.1	0.0
Total Delay		2.4	0.8	29.4
LOS		A	A	C
Approach Delay		2.4	0.8	29.4
Approach LOS		A	A	C
Queue Length 50th (m)		28.5	1.8	2.2
Queue Length 95th (m)		35.3	6.6	12.3
Internal Link Dist (m)		33.9	110.7	27.9
Turn Bay Length (m)				
Base Capacity (vph)		2885	3016	445
Starvation Cap Reductn		0	476	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.38	0.43	0.07

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 38 (32%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 2.0	Intersection LOS: A
Intersection Capacity Utilization 58.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 3: Carling & 73m E of Archibald

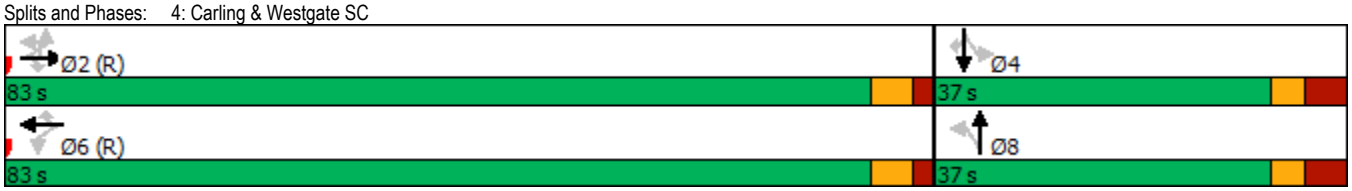


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	145	189	774	10	2	847	92	11	1	51	2	96
Future Volume (vph)	145	189	774	10	2	847	92	11	1	51	2	96
Lane Group Flow (vph)	0	334	774	10	2	847	92	0	24	0	53	96
Turn Type	Perm	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases			2			6			8		4	
Permitted Phases	2	2		2	6		6	8		4		4
Detector Phase	2	2	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	83.0	83.0	83.0	83.0	83.0	83.0	83.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	69.2%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)		5.6	5.6	5.6	5.6	5.6	5.6		7.0		7.0	7.0
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		92.9	92.9	92.9	92.9	92.9	92.9		14.5		14.5	14.5
Actuated g/C Ratio		0.77	0.77	0.77	0.77	0.77	0.77		0.12		0.12	0.12
v/c Ratio		0.76	0.29	0.01	0.00	0.32	0.08		0.13		0.35	0.36
Control Delay		21.9	4.1	0.0	5.5	4.8	2.3		28.5		51.9	11.8
Queue Delay		0.0	0.1	0.0	0.0	0.2	0.0		0.0		0.0	0.0
Total Delay		21.9	4.3	0.0	5.5	5.0	2.3		28.5		51.9	11.8
LOS		C	A	A	A	A	A		C		D	B
Approach Delay			9.5			4.8			28.5		26.1	
Approach LOS			A			A			C		C	
Queue Length 50th (m)		14.3	17.2	0.0	0.1	21.6	0.5		2.7		12.1	0.0
Queue Length 95th (m)		#114.4	26.7	m0.1	m0.6	40.3	3.3		9.0		20.7	13.0
Internal Link Dist (m)			110.7			89.4			10.8		75.6	
Turn Bay Length (m)		70.0		15.0	36.0		20.0					
Base Capacity (vph)		441	2625	1097	475	2625	1131		360		319	444
Starvation Cap Reductn		0	764	0	0	901	0		0		0	0
Spillback Cap Reductn		0	843	0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.76	0.43	0.01	0.00	0.49	0.08		0.07		0.17	0.22

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 26 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 86.0% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

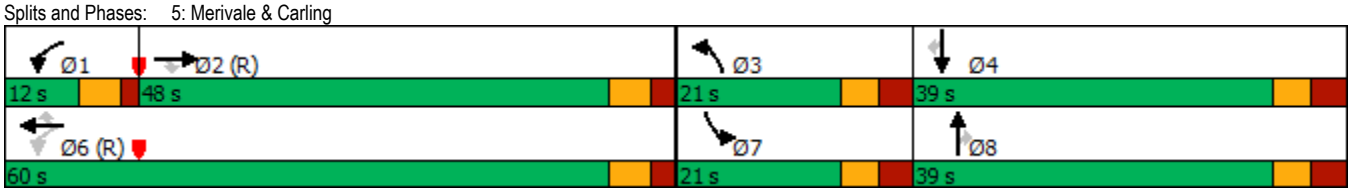
Splits and Phases: 4: Carling & Westgate SC



Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	1132	119	152	477	39	113	230	407	36	256	132
Future Volume (vph)	1132	119	152	477	39	113	230	407	36	256	132
Lane Group Flow (vph)	1132	119	152	477	39	113	230	407	36	256	132
Turn Type	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	2		1	6		3	8		7	4	
Permitted Phases		2	6		6			8			4
Detector Phase	2	2	1	6	6	3	8	8	7	4	4
Switch Phase											
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	10.4	29.0	29.0	11.3	38.7	38.7	11.3	38.7	38.7
Total Split (s)	48.0	48.0	12.0	60.0	60.0	21.0	39.0	39.0	21.0	39.0	39.0
Total Split (%)	40.0%	40.0%	10.0%	50.0%	50.0%	17.5%	32.5%	32.5%	17.5%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	5.4	6.0	6.0	6.3	6.7	6.7	6.3	6.7	6.7
Lead/Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	48.1	48.1	66.3	65.7	65.7	12.4	32.3	32.3	8.0	22.9	22.9
Actuated g/C Ratio	0.40	0.40	0.55	0.55	0.55	0.10	0.27	0.27	0.07	0.19	0.19
v/c Ratio	0.83	0.18	0.65	0.26	0.05	0.65	0.48	0.67	0.32	0.75	0.34
Control Delay	38.1	3.0	35.9	16.2	0.1	68.6	40.5	16.5	58.3	54.8	10.1
Queue Delay	8.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
Total Delay	46.4	3.0	35.9	16.2	0.1	68.6	40.5	16.5	58.3	55.0	10.1
LOS	D	A	D	B	A	E	D	B	E	E	B
Approach Delay	42.3			19.7			31.7			41.3	
Approach LOS	D			B			C			D	
Queue Length 50th (m)	130.1	1.3	18.3	30.1	0.0	25.8	48.0	23.0	8.4	46.0	2.0
Queue Length 95th (m)	#181.0	11.5	#64.8	49.0	0.0	44.4	66.8	54.7	19.3	65.4	14.9
Internal Link Dist (m)	89.4			139.3			159.9			90.9	
Turn Bay Length (m)		20.0	90.0		20.0	40.0			28.0		35.0
Base Capacity (vph)	1358	661	235	1855	820	207	504	628	207	480	492
Starvation Cap Reductn	201	0	0	0	0	0	0	0	0	28	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.18	0.65	0.26	0.05	0.55	0.46	0.65	0.17	0.57	0.27

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 52 (43%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.83	
Intersection Signal Delay: 34.7	Intersection LOS: C
Intersection Capacity Utilization 88.0%	ICU Level of Service E
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

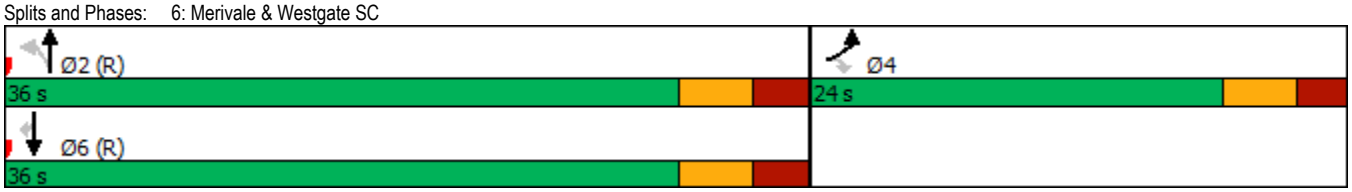
Splits and Phases: 5: Merivale & Carling



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	44	25	65	213	493	62
Future Volume (vph)	44	25	65	213	493	62
Lane Group Flow (vph)	44	25	65	213	493	62
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	15.9	15.9	35.9	35.9
Total Split (s)	24.0	24.0	36.0	36.0	36.0	36.0
Total Split (%)	40.0%	40.0%	60.0%	60.0%	60.0%	60.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9	5.9	5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.0	10.0	47.1	47.1	47.1	47.1
Actuated g/C Ratio	0.17	0.17	0.78	0.78	0.78	0.78
v/c Ratio	0.16	0.09	0.10	0.15	0.35	0.05
Control Delay	23.0	10.7	1.0	0.9	5.0	1.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	10.7	1.0	0.9	5.0	1.5
LOS	C	B	A	A	A	A
Approach Delay	18.6			0.9	4.6	
Approach LOS	B			A	A	
Queue Length 50th (m)	4.2	0.0	0.4	1.2	22.3	0.0
Queue Length 95th (m)	11.6	5.3	1.4	3.6	37.7	2.9
Internal Link Dist (m)	74.0			90.9	36.1	
Turn Bay Length (m)			25.0			30.0
Base Capacity (vph)	519	472	665	1400	1400	1177
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	8	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.05	0.10	0.15	0.35	0.05

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 8 (13%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 4.5	Intersection LOS: A
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

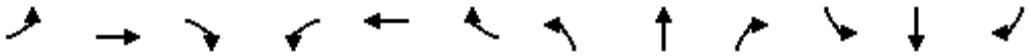
Splits and Phases: 6: Merivale & Westgate SC



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	972	25	0	0	0	69
Future Volume (Veh/h)	972	25	0	0	0	69
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	972	25	0	0	0	69
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	154			256		
pX, platoon unblocked						
vC, conflicting volume			997		972	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			997		972	486
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	87
cM capacity (veh/h)			690		250	527

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	486	486	25	69
Volume Left	0	0	0	0
Volume Right	0	0	25	69
cSH	1700	1700	1700	527
Volume to Capacity	0.29	0.29	0.01	0.13
Queue Length 95th (m)	0.0	0.0	0.0	3.4
Control Delay (s)	0.0	0.0	0.0	12.9
Lane LOS				B
Approach Delay (s)	0.0			12.9
Approach LOS				B

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	41	0	0	0	0	0	132	0	0	0
Future Volume (Veh/h)	0	0	41	0	0	0	0	0	132	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	41	0	0	0	0	0	132	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		352			58							
pX, platoon unblocked												
vC, conflicting volume	0			41			0	0	0	132	41	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			41			0	0	0	132	41	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	88	100	100	100
cM capacity (veh/h)	1622			1567			1023	896	1084	726	850	1084

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	0	0	41	0	0	132
Volume Left	0	0	0	0	0	0
Volume Right	0	0	41	0	0	132
cSH	1700	1700	1700	1700	1700	1084
Volume to Capacity	0.00	0.00	0.02	0.00	0.00	0.12
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	3.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	8.8
Lane LOS						A
Approach Delay (s)	0.0			0.0		8.8
Approach LOS						A

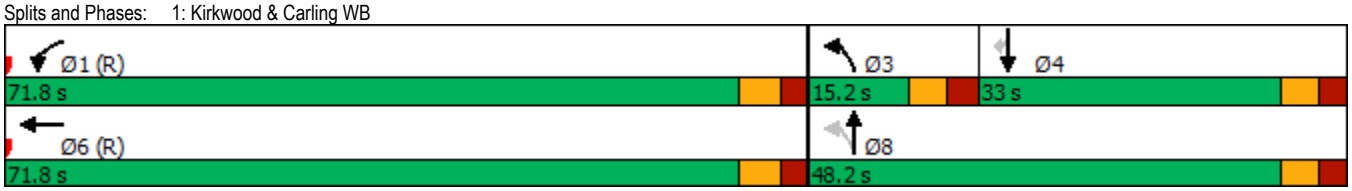
Intersection Summary				
Average Delay	6.7			
Intersection Capacity Utilization	12.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	WBL	WBT	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	196	2240	198	495	464	378
Future Volume (vph)	196	2240	198	495	464	378
Lane Group Flow (vph)	196	2515	198	495	464	378
Turn Type	Prot	NA	pm+pt	NA	NA	Perm
Protected Phases	1	6	3	8	4	
Permitted Phases			8			4
Detector Phase	1	6	3	8	4	4
Switch Phase						
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0
Minimum Split (s)	16.3	40.3	11.2	32.0	32.0	32.0
Total Split (s)	71.8	71.8	15.2	48.2	33.0	33.0
Total Split (%)	59.8%	59.8%	12.7%	40.2%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.6	2.6	2.9	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.3	6.3	6.2	6.0	6.0	6.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	C-Max	C-Max	None	Ped	Ped	Ped
Act Effct Green (s)	65.5	65.5	42.0	42.2	27.0	27.0
Actuated g/C Ratio	0.55	0.55	0.35	0.35	0.22	0.22
v/c Ratio	0.11	0.96	0.77	0.79	0.61	0.97
Control Delay	13.4	37.1	54.9	51.7	45.8	73.8
Queue Delay	0.0	0.0	0.0	0.9	0.0	0.0
Total Delay	13.4	37.1	54.9	52.6	45.8	73.8
LOS	B	D	D	D	D	E
Approach Delay		35.4		53.2	58.4	
Approach LOS		D		D	E	
Queue Length 50th (m)	10.9	197.8	45.7	125.6	52.0	71.2
Queue Length 95th (m)	16.8	#244.0	m#75.8	158.9	69.3	#131.9
Internal Link Dist (m)		110.3		152.2	73.8	
Turn Bay Length (m)	40.0					22.0
Base Capacity (vph)	1795	2611	257	627	762	392
Starvation Cap Reductn	0	0	0	26	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.96	0.77	0.82	0.61	0.96

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 39 (33%), Referenced to phase 1:WBL and 6:WBT, Start of Green	
Natural Cycle: 105	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 42.8	Intersection LOS: D
Intersection Capacity Utilization 106.5%	ICU Level of Service G
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

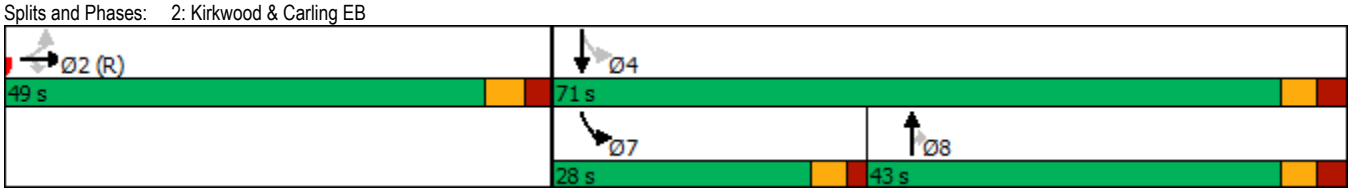
Splits and Phases: 1: Kirkwood & Carling WB



Lane Group	EBL	EBT	EBR	NBT	NBR	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	393	1227	410	304	321	441	256
Future Volume (vph)	393	1227	410	304	321	441	256
Lane Group Flow (vph)	350	1270	410	304	321	441	256
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA
Protected Phases		2		8		7	4
Permitted Phases	2		2		8	4	
Detector Phase	2	2	2	8	8	7	4
Switch Phase							
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	29.2	29.2	29.2	16.1	16.1	10.1	26.1
Total Split (s)	49.0	49.0	49.0	43.0	43.0	28.0	71.0
Total Split (%)	40.8%	40.8%	40.8%	35.8%	35.8%	23.3%	59.2%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	3.3
All-Red Time (s)	2.5	2.5	2.5	2.8	2.8	1.8	2.8
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.2	6.2	6.2	6.1	6.1	5.1	6.1
Lead/Lag				Lag	Lag	Lead	
Lead-Lag Optimize?				Yes	Yes	Yes	
Recall Mode	C-Max	C-Max	C-Max	Min	Min	Min	Min
Act Effct Green (s)	48.9	48.9	48.9	30.8	30.8	59.8	58.8
Actuated g/C Ratio	0.41	0.41	0.41	0.26	0.26	0.50	0.49
v/c Ratio	0.59	0.68	0.50	0.35	0.84	0.78	0.29
Control Delay	34.3	32.4	4.9	36.6	60.8	19.0	5.8
Queue Delay	0.1	0.1	0.0	0.0	0.0	2.8	0.0
Total Delay	34.5	32.4	4.9	36.6	60.8	21.8	5.8
LOS	C	C	A	D	E	C	A
Approach Delay		27.2		49.0			15.9
Approach LOS		C		D			B
Queue Length 50th (m)	74.7	94.9	0.0	30.4	70.9	15.0	9.0
Queue Length 95th (m)	120.1	121.2	21.4	40.5	99.6	33.0	11.2
Internal Link Dist (m)		161.6		158.6			152.2
Turn Bay Length (m)	40.0				90.0		
Base Capacity (vph)	594	1873	824	1042	460	566	964
Starvation Cap Reductn	0	0	0	0	0	55	0
Spillback Cap Reductn	17	37	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.69	0.50	0.29	0.70	0.86	0.27

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 81 (68%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.84	
Intersection Signal Delay: 28.9	Intersection LOS: C
Intersection Capacity Utilization 106.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 2: Kirkwood & Carling EB

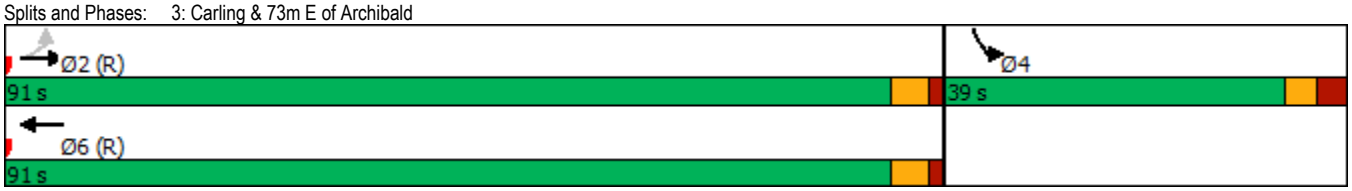


Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	3	1112	1611	31
Future Volume (vph)	3	1112	1611	31
Lane Group Flow (vph)	0	1115	1615	69
Turn Type	Perm	NA	NA	Prot
Protected Phases		2	6	4
Permitted Phases	2			
Detector Phase	2	2	6	4
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	15.3	15.3	42.3	38.1
Total Split (s)	91.0	91.0	91.0	39.0
Total Split (%)	70.0%	70.0%	70.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.0
All-Red Time (s)	1.6	1.6	1.6	3.1
Lost Time Adjust (s)		0.0	0.0	0.0
Total Lost Time (s)		5.3	5.3	6.1
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	C-Max	C-Max	C-Max	None
Act Effct Green (s)		112.3	112.3	10.6
Actuated g/C Ratio		0.86	0.86	0.08
v/c Ratio		0.40	0.55	0.43
Control Delay		3.0	3.4	38.8
Queue Delay		0.0	0.5	0.0
Total Delay		3.0	4.0	38.8
LOS		A	A	D
Approach Delay		3.0	4.0	38.8
Approach LOS		A	A	D
Queue Length 50th (m)		29.1	44.3	8.1
Queue Length 95th (m)		42.2	m57.5	22.7
Internal Link Dist (m)		33.9	110.7	27.9
Turn Bay Length (m)				
Base Capacity (vph)		2785	2928	430
Starvation Cap Reductn		0	785	0
Spillback Cap Reductn		0	0	0
Storage Cap Reductn		0	0	0
Reduced v/c Ratio		0.40	0.75	0.16

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 107 (82%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 4.4	Intersection LOS: A
Intersection Capacity Utilization 70.2%	ICU Level of Service C
Analysis Period (min) 15	

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Carling & 73m E of Archibald

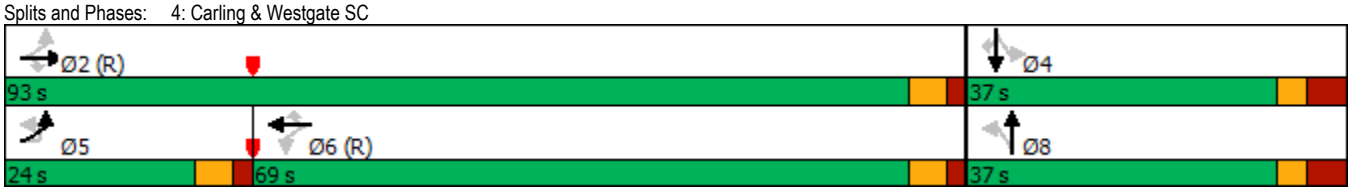


Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	188	617	16	6	1701	103	17	4	81	4	152
Future Volume (vph)	128	188	617	16	6	1701	103	17	4	81	4	152
Lane Group Flow (vph)	0	316	617	16	6	1701	103	0	29	0	85	152
Turn Type	custom	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA	Perm
Protected Phases		5	2			6			8		4	
Permitted Phases	5	2		2	6		6	8		4		4
Detector Phase	5	5	2	2	6	6	6	8	8	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.6	10.6	23.6	23.6	23.6	23.6	23.6	37.0	37.0	37.0	37.0	37.0
Total Split (s)	24.0	24.0	93.0	93.0	69.0	69.0	69.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	18.5%	18.5%	71.5%	71.5%	53.1%	53.1%	53.1%	28.5%	28.5%	28.5%	28.5%	28.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.9	1.9	1.9	1.9	1.9	1.9	1.9	4.0	4.0	4.0	4.0	4.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0	0.0
Total Lost Time (s)		5.6	5.6	5.6	5.6	5.6	5.6		7.0		7.0	7.0
Lead/Lag	Lead	Lead			Lag	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes			Yes	Yes	Yes					
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)		100.9	100.9	100.9	67.3	67.3	67.3		16.5		16.5	16.5
Actuated g/C Ratio		0.78	0.78	0.78	0.52	0.52	0.52		0.13		0.13	0.13
v/c Ratio		0.75	0.23	0.02	0.02	0.97	0.14		0.16		0.54	0.61
Control Delay		44.1	2.9	0.5	6.2	27.6	0.8		38.4		63.6	36.8
Queue Delay		0.0	0.1	0.0	0.0	41.0	0.0		0.0		0.0	0.0
Total Delay		44.1	3.0	0.5	6.2	68.6	0.8		38.4		63.6	36.8
LOS		D	A	A	A	E	A		D		E	D
Approach Delay			16.7			64.5			38.4		46.4	
Approach LOS			B			E			D		D	
Queue Length 50th (m)		55.4	5.3	0.0	0.2	230.5	0.9		4.9		21.2	19.4
Queue Length 95th (m)		#134.4	40.8	m0.9	m0.3	m#295.8	m1.1		12.5		33.6	36.7
Internal Link Dist (m)			110.7			89.4			10.8		75.6	
Turn Bay Length (m)		70.0		15.0	36.0		20.0					
Base Capacity (vph)		419	2630	1035	368	1756	758		315		288	395
Starvation Cap Reductn		0	1003	0	0	206	0		0		0	0
Spillback Cap Reductn		0	1022	0	0	0	0		0		0	0
Storage Cap Reductn		0	0	0	0	0	0		0		0	0
Reduced v/c Ratio		0.75	0.38	0.02	0.02	1.10	0.14		0.09		0.30	0.38

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 3 (2%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 47.8	Intersection LOS: D
Intersection Capacity Utilization 121.4%	ICU Level of Service H
Analysis Period (min) 15	

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

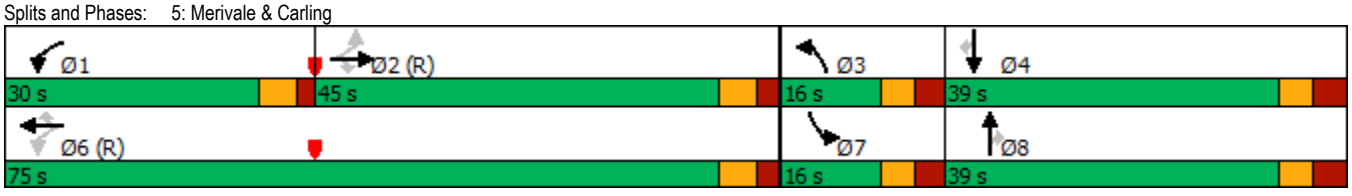
Splits and Phases: 4: Carling & Westgate SC



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	957	190	425	1677	49	117	212	228	70	317	130
Future Volume (vph)	1	957	190	425	1677	49	117	212	228	70	317	130
Lane Group Flow (vph)	0	958	190	425	1677	49	117	212	228	70	317	130
Turn Type	Perm	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases		2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6			8			4
Detector Phase	2	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	29.0	29.0	29.0	10.4	29.0	29.0	11.3	38.7	38.7	11.3	38.7	38.7
Total Split (s)	45.0	45.0	45.0	30.0	75.0	75.0	16.0	39.0	39.0	16.0	39.0	39.0
Total Split (%)	34.6%	34.6%	34.6%	23.1%	57.7%	57.7%	12.3%	30.0%	30.0%	12.3%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.3	1.7	2.3	2.3	3.0	3.4	3.4	3.0	3.4	3.4
Lost Time Adjust (s)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		6.0	6.0	5.4	6.0	6.0	6.3	6.7	6.7	6.3	6.7	6.7
Lead/Lag	Lag	Lag	Lag	Lead			Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)		39.0	39.0	74.4	73.8	73.8	9.7	30.8	30.8	8.9	27.5	27.5
Actuated g/C Ratio		0.30	0.30	0.57	0.57	0.57	0.07	0.24	0.24	0.07	0.21	0.21
v/c Ratio		0.99	0.36	0.96	0.87	0.06	0.93	0.50	0.44	0.60	0.84	0.33
Control Delay		71.5	13.8	72.6	31.2	0.8	122.4	47.9	7.7	75.3	64.1	10.9
Queue Delay		38.1	0.4	0.0	46.3	0.0	0.0	0.0	0.0	0.0	2.4	0.0
Total Delay		109.6	14.2	72.6	77.5	0.8	122.4	47.9	7.7	75.3	66.5	10.9
LOS		F	B	E	E	A	F	D	A	E	E	B
Approach Delay		93.8			74.8			47.1			53.7	
Approach LOS		F			E			D			D	
Queue Length 50th (m)		129.9	12.7	93.1	187.9	0.0	30.3	48.7	0.0	17.6	65.9	5.8
Queue Length 95th (m)		#174.3	33.2	#174.0	#260.0	1.8	#67.5	71.0	20.0	#34.0	87.9	16.4
Internal Link Dist (m)		89.4			139.3			159.9			90.9	
Turn Bay Length (m)			20.0	90.0		20.0	40.0			28.0		35.0
Base Capacity (vph)		969	521	441	1925	822	126	452	538	126	443	446
Starvation Cap Reductn		164	97	0	0	0	0	0	0	0	50	0
Spillback Cap Reductn		0	0	0	399	0	0	0	0	0	0	14
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		1.19	0.45	0.96	1.10	0.06	0.93	0.47	0.42	0.56	0.81	0.30

Intersection Summary	
Cycle Length: 130	
Actuated Cycle Length: 130	
Offset: 15 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 120	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 73.8	Intersection LOS: E
Intersection Capacity Utilization 128.6%	ICU Level of Service H
Analysis Period (min) 15	
# 95th percentile volume exceeds capacity, queue may be longer.	
Queue shown is maximum after two cycles.	

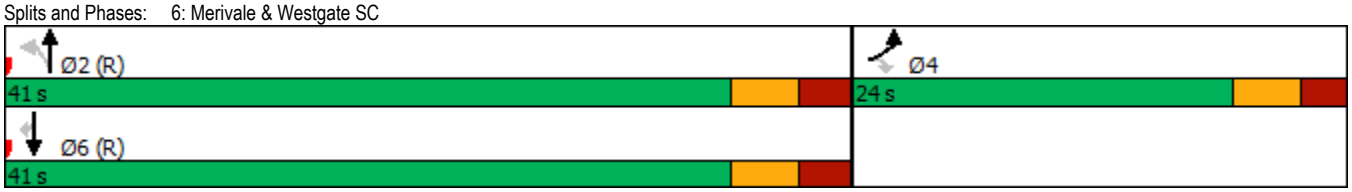
Splits and Phases: 5: Merivale & Carling



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	82	69	66	203	527	90
Future Volume (vph)	82	69	66	203	527	90
Lane Group Flow (vph)	82	69	66	203	527	90
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	23.6	23.6	15.9	15.9	35.9	35.9
Total Split (s)	24.0	24.0	41.0	41.0	41.0	41.0
Total Split (%)	36.9%	36.9%	63.1%	63.1%	63.1%	63.1%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.3	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	5.6	5.9	5.9	5.9	5.9
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	10.3	10.3	47.5	47.5	47.5	47.5
Actuated g/C Ratio	0.16	0.16	0.73	0.73	0.73	0.73
v/c Ratio	0.30	0.24	0.11	0.16	0.40	0.08
Control Delay	27.3	9.2	1.2	1.0	6.0	1.3
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0
Total Delay	27.3	9.2	1.2	1.0	6.0	1.3
LOS	C	A	A	A	A	A
Approach Delay	19.1			1.1	5.3	
Approach LOS	B			A	A	
Queue Length 50th (m)	8.9	0.0	0.5	1.5	24.5	0.0
Queue Length 95th (m)	19.4	9.0	1.0	2.4	44.6	3.7
Internal Link Dist (m)	74.0			90.9	36.1	
Turn Bay Length (m)			25.0			30.0
Base Capacity (vph)	479	469	578	1302	1302	1106
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	72	0	0	32	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.17	0.11	0.16	0.41	0.08

Intersection Summary	
Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 27 (42%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.40	
Intersection Signal Delay: 6.2	Intersection LOS: A
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

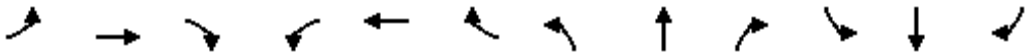
Splits and Phases: 6: Merivale & Westgate SC



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1134	71	0	0	0	40
Future Volume (Veh/h)	1134	71	0	0	0	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1134	71	0	0	0	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	154			256		
pX, platoon unblocked			0.81		0.81	0.81
vC, conflicting volume			1205		1134	567
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			778		690	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			674		306	876

Direction, Lane #	EB 1	EB 2	EB 3	NB 1
Volume Total	567	567	71	40
Volume Left	0	0	0	0
Volume Right	0	0	71	40
cSH	1700	1700	1700	876
Volume to Capacity	0.33	0.33	0.04	0.05
Queue Length 95th (m)	0.0	0.0	0.0	1.1
Control Delay (s)	0.0	0.0	0.0	9.3
Lane LOS				A
Approach Delay (s)	0.0			9.3
Approach LOS				A

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	43.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	128	0	0	0	0	0	90	0	0	0
Future Volume (Veh/h)	0	0	128	0	0	0	0	0	90	0	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	128	0	0	0	0	0	90	0	0	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		352			58							
pX, platoon unblocked												
vC, conflicting volume	0			128			0	0	0	90	128	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			128			0	0	0	90	128	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	92	100	100	100
cM capacity (veh/h)	1622			1456			1023	896	1084	811	762	1084

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	0	0	128	0	0	90
Volume Left	0	0	0	0	0	0
Volume Right	0	0	128	0	0	90
cSH	1700	1700	1700	1700	1700	1084
Volume to Capacity	0.00	0.00	0.08	0.00	0.00	0.08
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	2.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	8.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		8.6
Approach LOS						A

Intersection Summary				
Average Delay	3.6			
Intersection Capacity Utilization	11.7%	ICU Level of Service	A	
Analysis Period (min)	15			