1657-1673 Carling Avenue and 386 Tillbury Avenue

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Strategy Report (Rev #2)

Prepared for:

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March 2025

PN: 2023-088

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1 Screening

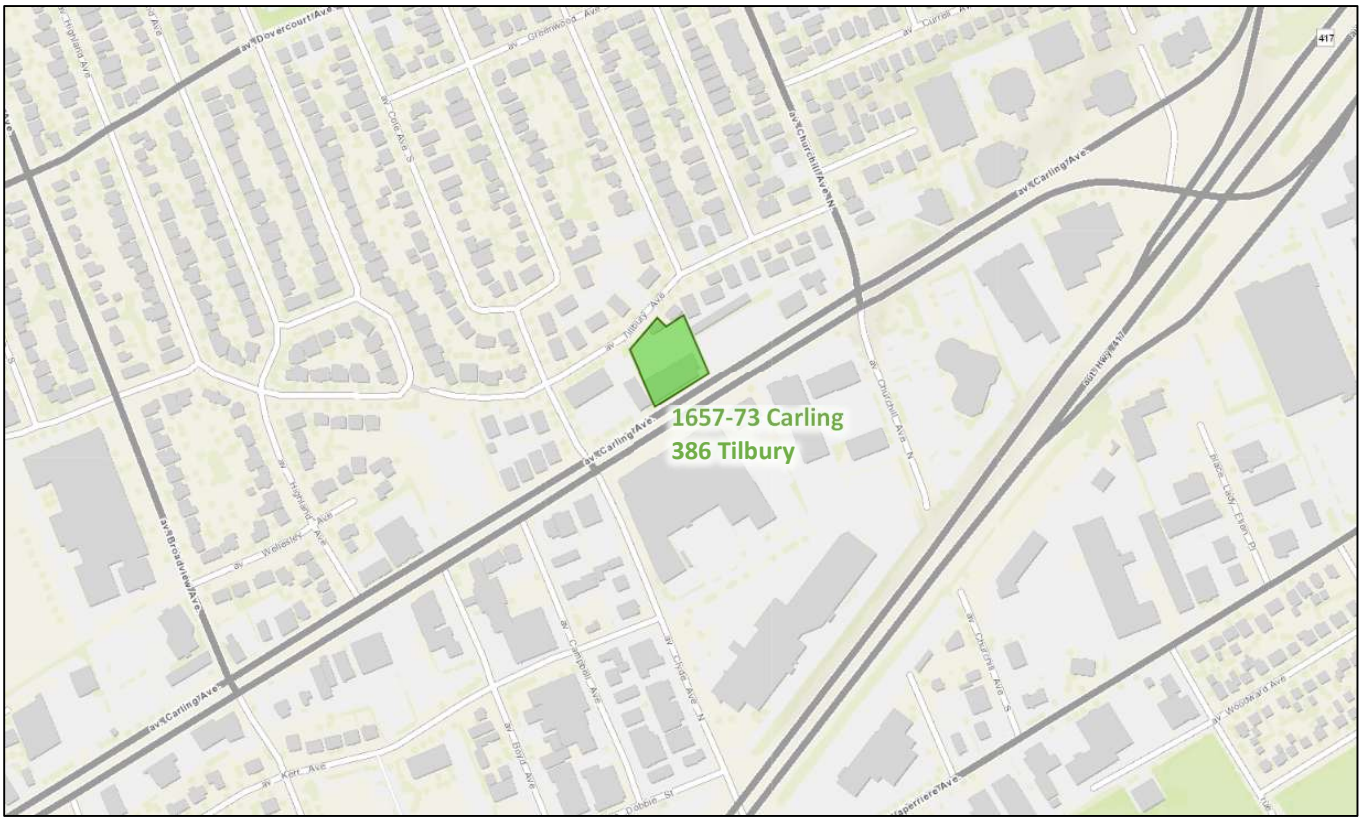
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines, incorporating the 2023 Revision to Transportation Impact Assessment Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for the TIA Study PM. As shown in the Screening Form, a TIA is required, and this study has been prepared to support a zoning bylaw amendment application.

2 Existing and Planned Conditions

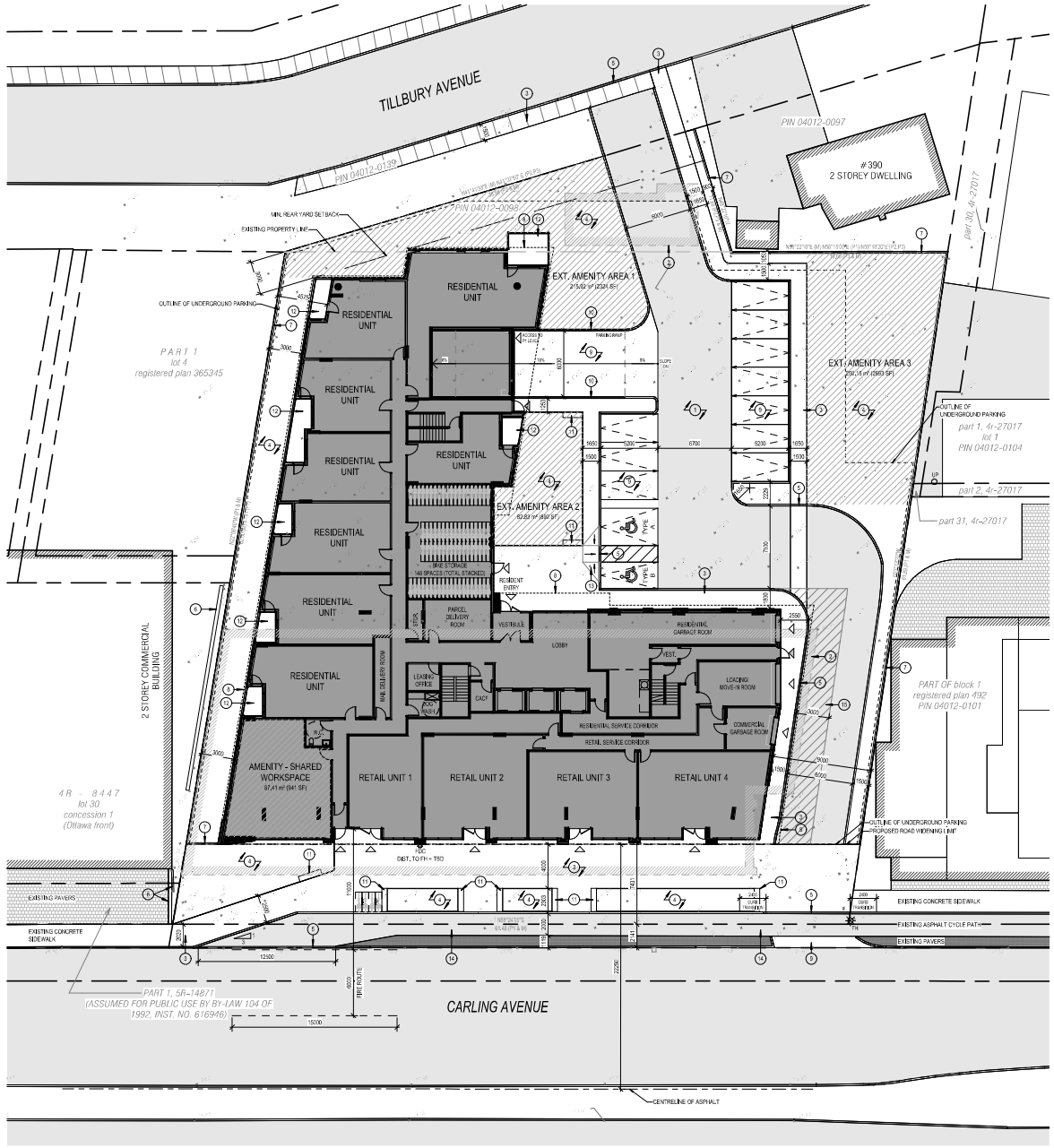
2.1 Proposed Development

The proposed development is located at 1657-1673 Carling Avenue and 386 Tillbury Avenue is zoned as Arterial Mainstreet (AM10) for the Carling Avenue parcels and Residential Fourth Density (R4UC) for the Tillbury Avenue parcel. The proposed redevelopment concept consists of a mixed-use building including 370 residential units, 3,846 square feet retail space, 203 vehicle parking spaces, and 374 bicycle parking spaces. The site proposed two accesses, one located at the existing Carling Avenue access and the other replacing the residential driveway on Tillbury Avenue. The existing access geometry at Carling Avenue will undergo minor modifications, converting it to a right-in-only access. An internal drive aisle will connect through the site between the accesses. Construction will occur in a single phase estimated to proceed after 2025, upon completion of a future site plan application. The existing site includes approximately 2,000 sq. ft. of a single dwelling unit and a 24,772 sq. ft. commercial plaza with surface parking spaces. Figure 1 illustrates the study area context. Figure 2 illustrates the proposed concept plan.

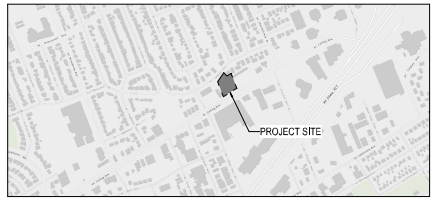
Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: June 27, 2023



1 SP-01 SITE PLAN
SCALE: 1 : 200



2 SP-01 LOCATION PLAN
SCALE: NTS

SITE PLAN SYMBOLS LEGEND

- BUILDING ENTRANCE
- BUILDING EXIT
- BICYCLE PARKING
- PROPERTY LINE
- SETBACK LINE
- PAVERS
- RLL REDUCED LENGTH PARKING SPACE (4600mm x 2600mm)
- RWL REDUCED WIDTH PARKING SPACE (5700mm x 2400mm)
- FDC FIRE DEPARTMENT CONNECTION
- FH FIRE HYDRANT
- FH FIRE HYDRANT TO BE RELOCATED
- UP EXISTING UTILITY POLE TO REMAIN
- EXISTING TOPOGRAPHY

TOPOGRAPHIC PLAN OF SURVEY OF
PART OF LOT 2
REGISTERED PLAN 492
AND
PART OF BLOCK 4
REGISTERED PLAN 310595
GEOGRAPHIC TOWNSHIP OF NEPEAN
CITY OF OTTAWA

STANTEC GEOMATICS LTD, 2023

SURVEY INFO
SCALE: 1 : 200

SITE PLAN NOTES

1. ASPHALT
2. EXISTING STRUCTURE TO BE DEMOLISHED
3. CONCRETE SIDEWALK
4. REFER TO LANDSCAPE
5. DEPRESSED CURB
6. EXISTING RETAINING WALL
7. 2m HIGH WOOD PRIVACY FENCE
8. CANOPY/BULDING ABOVE
9. CONCRETE
10. RAILING
11. REFER TO LANDSCAPE
12. PRIVATE TERRACE
13. CURB RAMP
14. ASPHALT CYCLE TRACK
15. PAINTED LINES

OWNER
INSIDE EDGE PROPERTIES
464 BANK STREET, SUITE 200
OTTAWA, ON, K2P 1Z3

ARCHITECT
PROJECT1 STUDIO
260 ST. PATRICK ST, SUITE 300
OTTAWA, ON, K1N 5K5

PLANNER
FOTENN PLANNING + DESIGN
396 COOPER ST SUITE, SUITE 300
OTTAWA, ON, K2P 2H7

CIVIL ENGINEER
LRL ENGINEERING
5420 CANOTEK RD
OTTAWA, ON,K1J 9G2

SURVEYOR
STANTEC GEOMATICS LTD.
1331 CLYDE AVENUE, SUITE 300
OTTAWA, ON, K2C 0A9

LANDSCAPE ARCHITECT
GJA INC.
110 DIDSBURY ROAD, UNIT 9
OTTAWA, ON, K2T0C2

GENERAL ARCHITECTURAL NOTES:

1. This drawing is the property of the Architect and may not be reproduced or used without the expressed consent of the Architect.
2. Drawings are not to be scaled. The Contractor is responsible for checking and verifying all levels and dimensions and shall report all discrepancies to the Architect and obtain clarification prior to commencing work.
3. Upon notice in writing, the Architect will provide written/graphic clarification or supplementary information regarding the intent of the Contract Documents.
4. The Architectural drawings are to be read in conjunction with all other Contract Documents including Project Manuals and the Structural, Mechanical and Electrical Drawings.
5. Positions of exposed or finished Mechanical or Electrical devices, fittings and fixtures are indicated on the Architectural Drawings. Locations shown on the Architectural Drawings shall govern over Mechanical and Electrical Drawings. Mechanical and Electrical items not clearly located will be located as directed by the Architect.
6. These documents are not to be used for construction unless specifically noted for such purpose.

12	REISSUED FOR RE-ZONING	2025-03-13
11	ISSUED FOR COORDINATION	2025-03-07
10	ISSUED FOR COORDINATION	2025-03-04
9	REISSUED FOR RE-ZONING	2025-01-14
8	ISSUED FOR COORDINATION	2025-01-10
7	ISSUED FOR COORDINATION	2024-10-01
6	ISSUED FOR COORDINATION	2024-09-20
5	REISSUED FOR RE-ZONING	2024-07-05
4	ISSUED FOR COORDINATION	2024-06-27
3	ISSUED FOR RE-ZONING	2024-05-29
2	ISSUED FOR COORDINATION	2024-03-07
1	ISSUED FOR COORDINATION	2023-10-30

ISSUE RECORD

ONTARIO ASSOCIATION OF ARCHITECTS
RAMIN KOOLIVINE
LICENCE
7370

project1 studio
Project1 Studio Incorporated
613.264.3939 | mail@project1studio.ca

1657 CARLING

1657 Carling Ave
Ottawa, ON K2A 0Y2

PROJ	SCALE	DRAWN	REVIEWED
2213	NOTED	JH/BH	RMK

SITE PLAN

SP-01

2.2 Existing Conditions

2.2.1 Area Road Network

Carling Avenue: Carling Avenue is a City of Ottawa arterial road with a six-lane divided urban cross-section. Sidewalks are provided on both sides of the roadway. The posted speed limit is 60 km/h. The Ottawa Official Plan reserves a 44.5 metre right of way.

Churchill Avenue: Churchill Avenue is a City of Ottawa major collector road with a two-lane urban cross-section. Sidewalks and cycle tracks on both sides of the road north of Carling Avenue. The posted speed limit is 50 km/h and on-street parking is provided, predominantly in layby/parking bays. The existing right-of-way is 20 metres.

Clyde Avenue: Clyde Avenue is a City of Ottawa local road with a two-lane urban cross-section, with auxiliary left-turn lanes between Carling Avenue and Doheny Street, transitioning to two-lanes with parking on both sides to the south of Doheny Street. A sidewalk is located on the east side of the road, with varying hard surfaces permitting pedestrian movements on the west side. An unposted speed limit of 50 km/h is assumed for the roadway. The existing right-of-way is 20 metres.

Cole Avenue: Cole Avenue is a City of Ottawa local road with a two-lane urban cross-section and is located within a posted 30 km/h area speed limit. A sidewalk is located on both sides of the road between Carling Avenue and Tillbury Avenue, and a sidewalk is located on the east side of the road to the north of Tillbury Avenue. Parking is permitted on both sides of the roadway. The existing right-of-way is 20 metres.

Tillbury Avenue: Tillbury Avenue is a City of Ottawa local road with a two-lane urban cross-section and is located within a posted 30 km/h area speed limit. A sidewalk is located on the south side to the west of Cole Avenue, on the north side between Cole Avenue and Melbourne Avenue, and both sides of the road between Melbourne Avenue and Churchill Avenue. Parking is permitted on both sides of the roadway. The existing right-of-way is 20 metres.

2.2.2 Existing Intersections

The key intersections within 400 metre of the site have been summarized below:

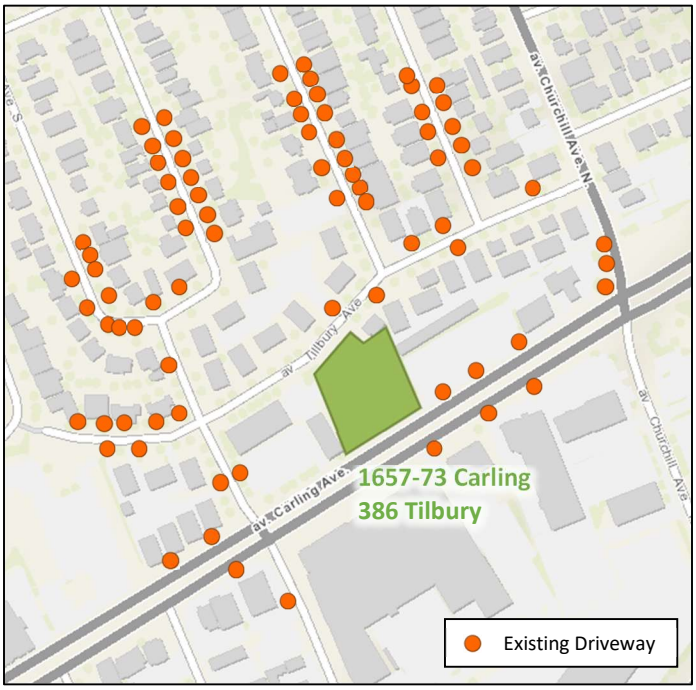
Carling Avenue at Clyde Avenue/Cole Avenue	The intersection of Carling Avenue at Clyde Avenue/Cole Avenue is a signalized intersection. The eastbound and westbound approaches consist of an auxiliary left-turn lane, two through lanes, and a shared through/right-turn lane. The northbound approach consists of an auxiliary left-turn lane, a through lane and a short auxiliary right-turn lane, and the southbound approach consists of an auxiliary left-turn lane and a shared through/right-turn lane. No turn restrictions were noted.
Carling Avenue at Churchill Avenue	The intersection of Carling Avenue at Churchill Avenue is a signalized intersection. The eastbound and westbound approaches consist of an auxiliary left-turn lane, two through lanes, and a shared through/right-turn lane. The northbound and southbound approaches consist of an auxiliary left-turn lane and a shared through/right-turn lane. The northbound approach includes a cycletrack and the southbound approach has a bike lane. No turn restrictions were noted.

Tillbury Avenue at Churchill Avenue	The intersection of Churchill Avenue at Tillbury Avenue is a minor stop-controlled intersection, with all approaches operating as shared all movement lanes. A cycle track cross-ride is present on the Tillbury Avenue approach. No turn restrictions were noted.
Tillbury Avenue at Cole Avenue	The intersection of Cole Avenue at Tillbury Avenue is a minor stop-controlled intersection, with all approaches operating as shared all movement lanes. No turn restrictions were noted.

2.2.3 Existing Driveways

Within 200 metres of the proposed site access, numerous residential driveways are located to the north, and commercial entrances are located along Carling Avenue and Clyde Avenue.

Figure 3: Existing Driveways



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: June 27, 2023

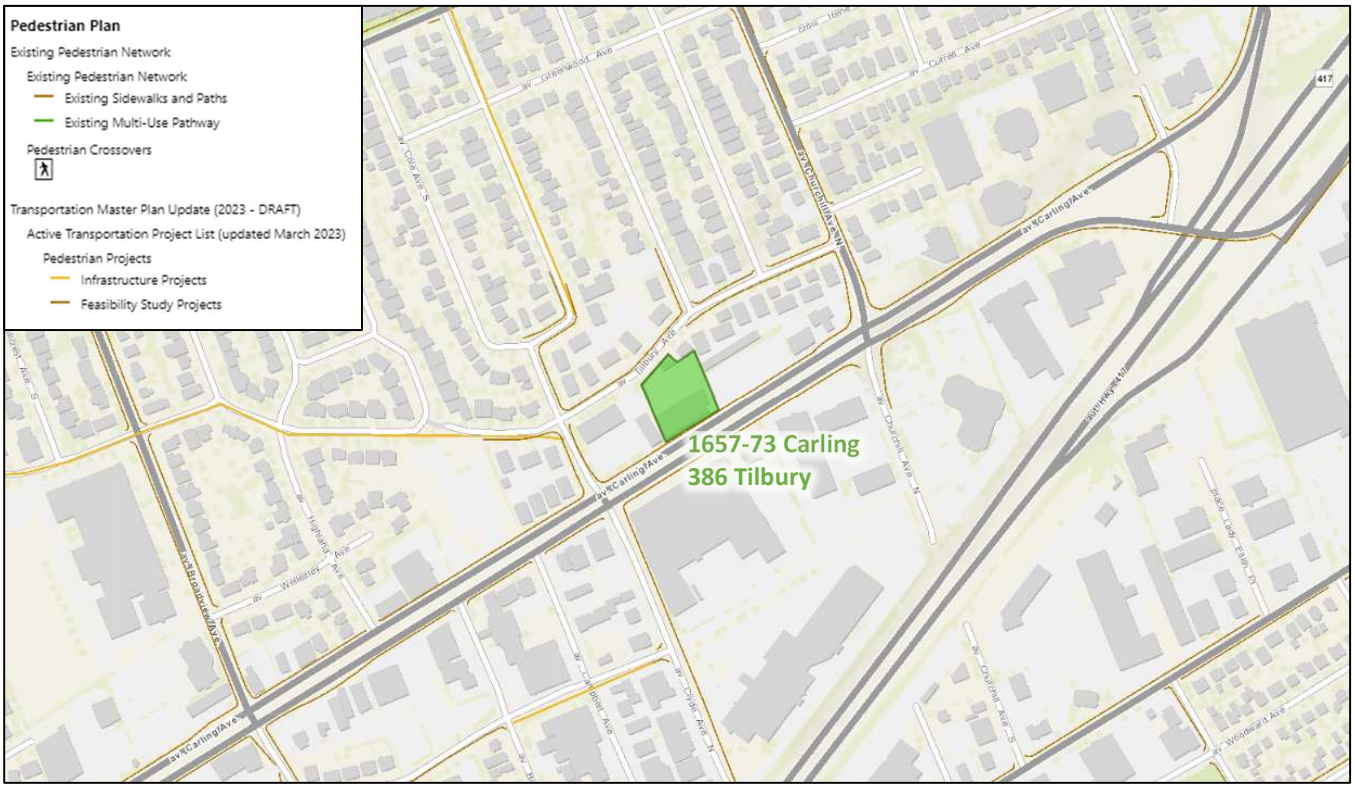
2.2.4 Cycling and Pedestrian Facilities

Figure 4 illustrates the pedestrian facilities in the study area and Figure 5 illustrates the cycling facilities.

Within the study area, sidewalks are provided along both sides of Carling Avenue, Churchill Avenue north of Carling Avenue, and a section of Cole Avenue, with sidewalks on a single side on various local roads. Future projects will extend these sidewalks to connect through the residential community.

Cycletracks are provided along Churchill Avenue north of Carling Avenue with suggested bike routes through the communities to the north and south of Carling Avenue. Carling Avenue is designated a spine route.

Figure 4: Study Area Pedestrian Facilities



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: June 27, 2023

Figure 5: Study Area Cycling Facilities

Source: http://maps.ottawa.ca/geoOttawa/ Accessed: June 27, 2023

Pedestrian and cyclist volumes included in study area intersection counts, presented in Section 2.2.7, have been compiled and are illustrated in Figure 6 and Figure 7, respectively. No pedestrian and cyclist counts are available at the intersections of Churchill Avenue at Tillbury Avenue and Cole Avenue at Tillbury Avenue. The cyclist volumes at the intersections of Churchill Avenue at Tillbury Avenue and Cole Avenue at Tillbury Avenue were assumed from adjacent intersections. Counts only account for crossing volumes for pedestrians, so no pedestrian volumes can be assumed from the existing counts.

Figure 6: Existing Pedestrian Volumes

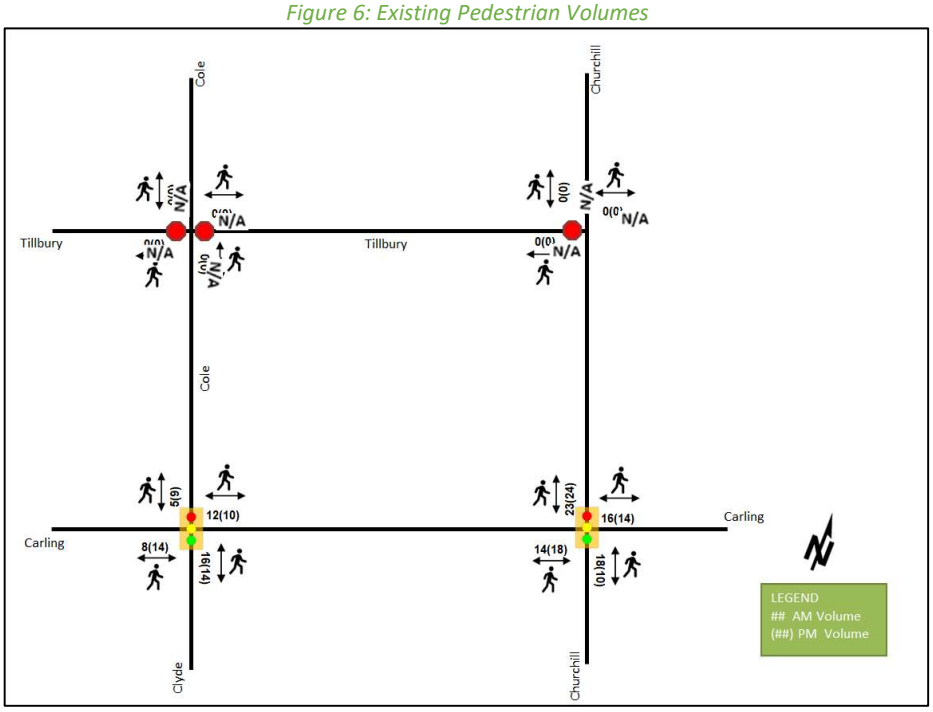
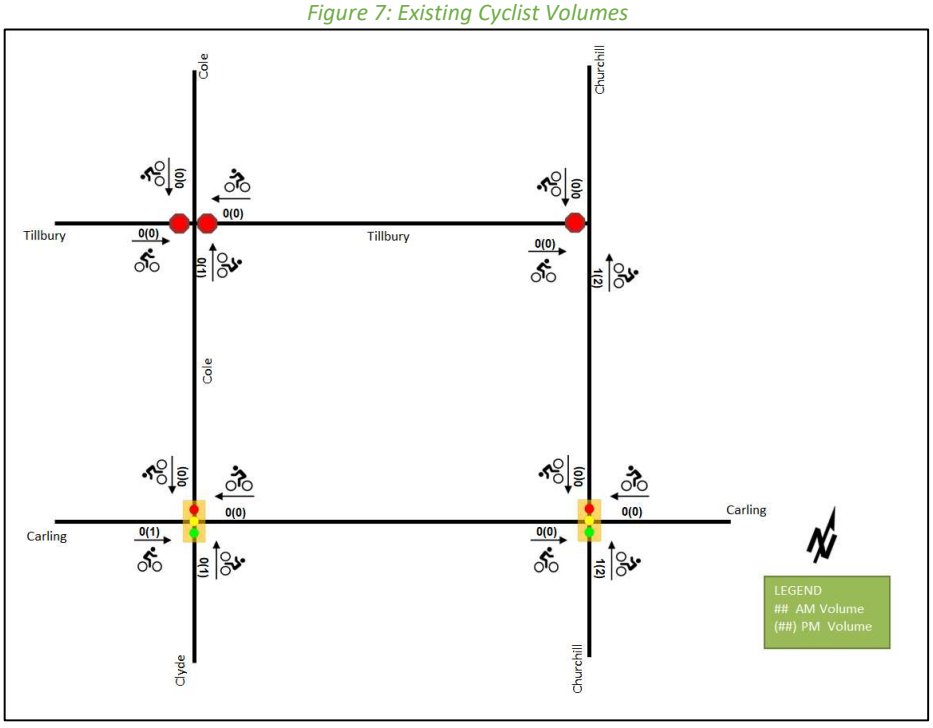


Figure 7: Existing Cyclist Volumes



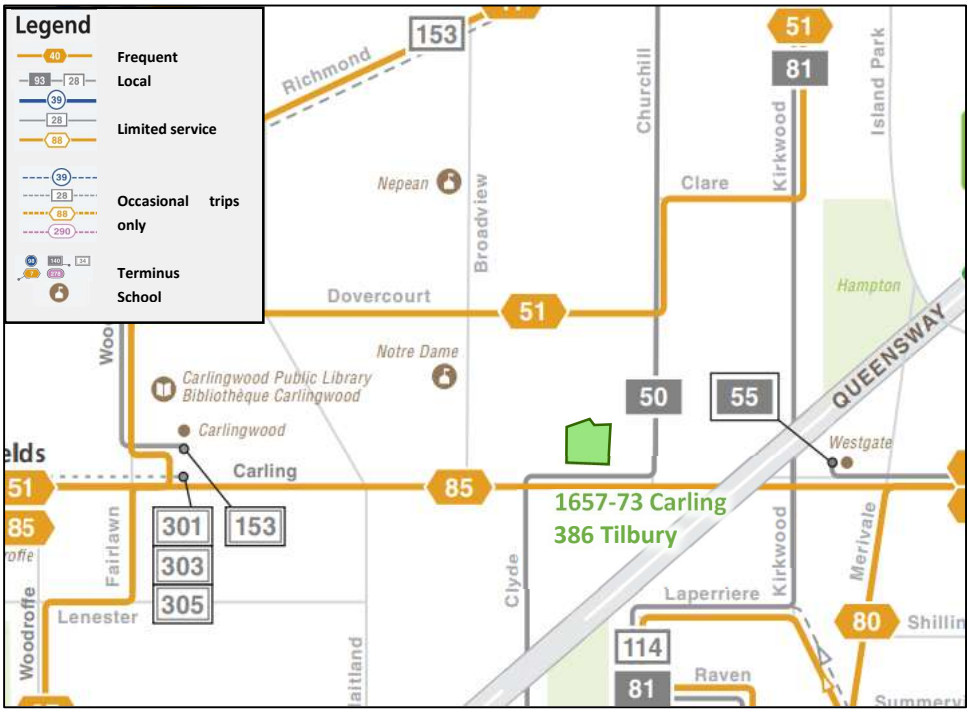
2.2.5 Existing Transit

Figure 8 illustrates the transit system map in the study area and Figure 9 illustrates nearby transit stops. All transit information is from June 27, 2023 and is included for general information purposes and context to the surrounding area.

Within the study area, frequent routes #51, #53, #80 and #85, local routes #50 #55 and #81, and limited-service route #114 are noted to provide service. Along the site frontage, routes #50 and #85 operate and the frequency of these routes within proximity of the proposed site based on May 18, 2023 service levels are:

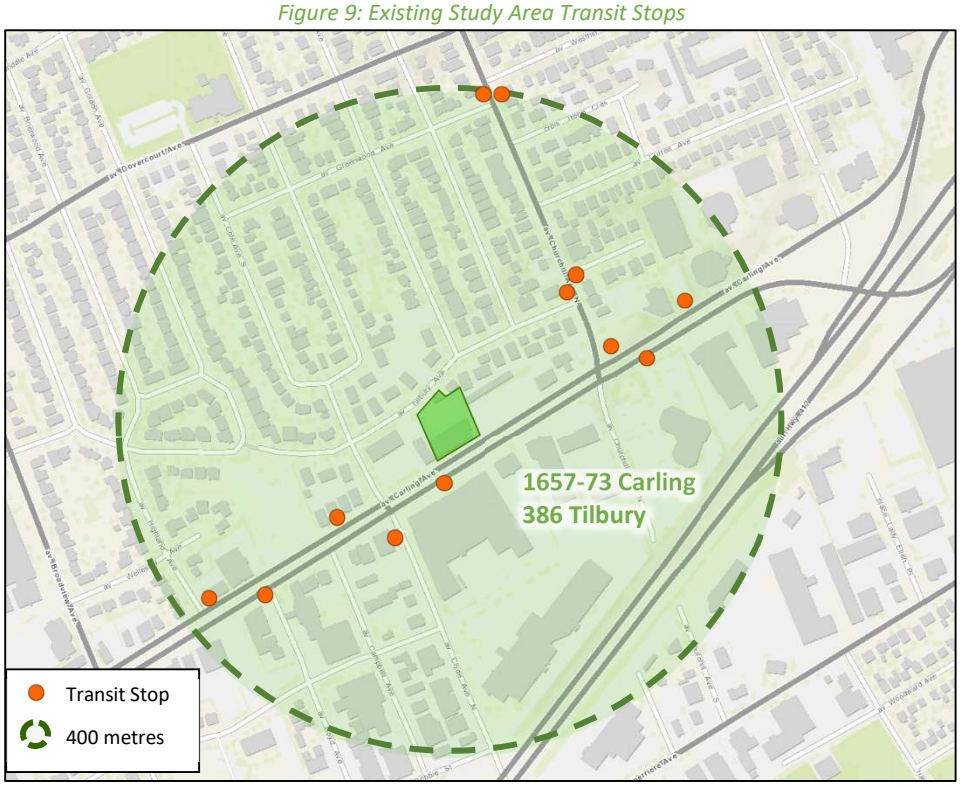
- Route # 50 – 30-minute service all day
- Route # 85 – 15-minute service all day, 20-30-minute service after 6:00 PM

Figure 8: Existing Study Area Transit Service



Source: http://www.octranspo.com/ Accessed: June 27, 2023

Figure 9: Existing Study Area Transit Stops



Source: http://www.octranspo.com/ Accessed: June 27, 2023

2.2.6 Existing Area Traffic Management Measures

There are no existing area traffic management measures within the study area.

2.2.7 Existing Peak Hour Travel Demand

Existing turning movement counts were acquired from the City of Ottawa and The Traffic Specialist for the existing Study Area intersection. Table 1 summarizes the intersection count dates.

Table 1: Intersection Count Date

Intersection	Count Date	Source
Carling Ave at Clyde Ave/Cole Ave	Wednesday, February 23, 2022	City of Ottawa
Carling Ave at Churchill Ave	Tuesday, April 25, 2017	City of Ottawa
Churchill Avenue North at Tillbury Avenue	Monday, 30 September 2019	The Traffic Specialist
Cole Avenue at Tillbury Avenue	Monday, 30 September 2019	The Traffic Specialist

Figure 10 illustrates the existing traffic counts and Table 2 summarizes the existing intersection operations. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and HCM 2000 v/c calculations for the overall intersection, and average delay for unsignalized intersections. Detailed turning movement count data is included in Appendix B and the Synchro worksheets are provided in Appendix C.

Figure 10: Existing Traffic Counts

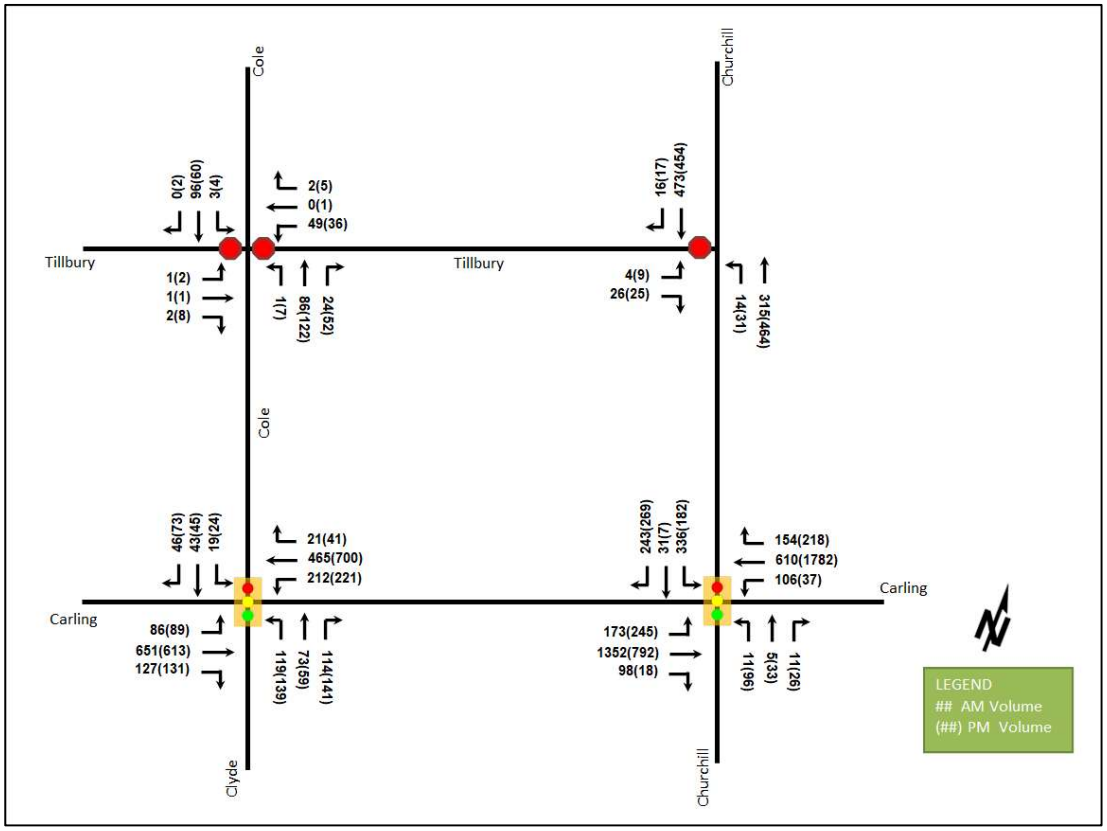


Table 2: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Carling Ave at Clyde Ave/Cole Ave *Signalized*	EBL	A	0.18	8.4	14.2	A	0.24	9.6	15.9
	EBT/R	A	0.35	16.3	57.3	A	0.32	16.8	58.3
	WBL	A	0.56	26.8	58.7	A	0.55	13.2	37.4
	WBT/R	A	0.20	10.9	25.3	A	0.29	14.7	53.2
	NBL	C	0.73	69.9	49.0	D	0.86	**94.2**	**#70.6**
	NBT	A	0.30	45.9	30.2	A	0.22	49.7	28.7
	NBR	A	0.43	17.4	22.6	A	0.45	16.2	26.7
	SBL	A	0.11	42.0	11.1	A	0.13	47.8	14.7
	SBT/R	A	0.35	29.6	27.0	A	0.42	33.2	37.3
	Overall	**A**	**0.59**	**21.0**	-	**B**	**0.61**	**22.2**	-
Carling Ave at Churchill Ave *Signalized*	EBL	D	0.83	**85.7**	**#79.3**	D	0.81	66.3	**#122.4**
	EBT/R	D	0.84	31.8	**#163.8**	A	0.36	18.6	65.6
	WBL	B	0.62	64.3	44.1	A	0.35	60.8	20.4
	WBT/R	A	0.50	27.9	65.6	**F**	**1.24**	**145.8**	**#274.1**
	NBL	A	0.07	33.5	7.0	E	1.00	**134.0**	**#54.2**
	NBT/R	A	0.06	19.2	6.7	A	0.18	22.6	17.4
	SBL	**F**	**1.93**	**464.8**	**#193.6**	C	0.78	64.1	67.2
	SBT/R	A	0.52	9.6	30.2	A	0.57	9.0	23.9
	Overall	**F**	**1.20**	**79.4**	-	**F**	**1.03**	**95.4**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay (s)	Q (95th)	LOS	V/C	Delay (s)	Q (95th)
Churchill Avenue North at Tillbury Avenue *Unsignalized*	EB	A	0.01	9.5	0.0	A	0.01	9.2	0.0
	WB	B	0.08	10.3	2.3	B	0.07	10.5	1.5
	NB	A	0.00	7.4	0.0	A	0.01	7.4	0.0
	SB	A	0.00	7.5	0.0	A	0.00	7.6	0.0
	Overall	**A**	**-**	**2.2**	**-**	**A**	**-**	**2.1**	**-**
Cole Avenue at Tillbury Avenue *Unsignalized*	EBL/R	B	0.07	12.9	1.5	B	0.09	14.9	2.3
	NBL/T	A	0.02	8.6	0.0	A	0.03	8.6	0.8
	SBT/R	-	-	-	-	-	-	-	-
	Overall	**A**	**-**	**0.6**	**-**	**A**	**-**	**0.8**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
Delay = average vehicle delay in seconds
m = metered queue.
# = volume for the 95th %ile cycle exceeds capacity

At the intersection of Carling Avenue at Clyde Avenue/Cole Avenue during the PM peak hour, the northbound left-turn movement may be subject to high delays and extended queues.

At the intersection of Carling Avenue at Churchill Avenue, during the AM peak hour, the eastbound left-turn and eastbound shared through/right-turn movements may exhibit extended queues. High delays may be subject on the eastbound left-turn movement. The southbound left-turn movement is over theoretical capacity and may be subject to high delays and extended queues. During the PM peak hour, the eastbound left-turn and northbound left-turn movements may exhibit extended queues. High delays may be subject on the northbound left-turn movement. The westbound shared through/right-turn movement is over theoretical capacity and may be subject to high delays and extended queues. The overall intersection is forecasted to be over theoretical capacity during both peak hours. It is noted that the City will be upgrading the intersection within 2-3 years and it is recommended that it be reviewed at this time for potential capacity improvements along with the protected pedestrian and cycling improvements.

2.2.8 Collision Analysis

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 3 summarizes the collision types and conditions in the study area, Figure 11 illustrates the intersections and segments analyzed, and Table 4 summarizes the total collisions for each of these locations. Collision data are included in Appendix D.

Table 3: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**92**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	29	32%
	Property Damage Only	63	68%
Initial Impact Type	**Angle**	5	5%
	Rear end	29	32%
	Sideswipe	25	27%
	Turning Movement	27	29%
	SMV Other	5	5%
	Other	1	1%
Road Surface Condition	**Dry**	63	68%
	Wet	14	15%
	Loose Snow	5	5%
	Slush	7	8%

		Number	%
Total Collisions		**92**	**100%**
	Packed Snow	2	2%
	Ice	1	1%
Pedestrian Involved		4	3%
Cyclists Involved		5	5%

Figure 11: Study Area Collision Records, 2018-2022

Table 4: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**92**	**100%**
Carling Ave at Clyde Ave/Cole Ave	48	52%
Carling Ave at Churchill Ave	30	33%
Carling Ave WB btwn Clyde Ave/Cole Ave and Churchill Ave	7	8%
Churchill Ave N Btwn Tillbury Ave & Carling Ave	2	2%
Churchill Ave at Tillbury Ave	2	2%
Cole Ave at Tillbury Ave	1	1%
Carling Ave EB btwn Clyde Ave/Cole Ave and Churchill Ave	1	1%
Cole Ave btwn Carling Ave and Tillbury Ave	1	1%

Within the study area, the intersection of Carling Avenue at Clyde Avenue/Cole Avenue and Carling Avenue at Churchill Avenue are noted to have experienced higher collisions than other intersections. Table 5 and Table 6 summarize the collision types and conditions for each of the intersections.

A total of four pedestrian collisions and five cyclist collisions are noted within the study area, including two pedestrian collisions and two cyclist collisions at Carling Avenue at Clyde Avenue/Cole Avenue, two pedestrian collisions and one cyclist collision on Carling Avenue westbound between Clyde Avenue/Cole Avenue and Churchill Avenue, one cyclist collision on Churchill Avenue North between Tillbury Avenue and Carling Avenue, and one

cyclist collision at Cole Avenue at Tillbury Avenue. The collisions at the Carling Avenue at Clyde Avenue/Cole Avenue will be discussed in the intersection review below.

The two pedestrian collisions along Carling Avenue between between Clyde Avenue/Cole Avenue and Churchill Avenue both involved westbound vehicles and in dark conditions (December and January), and one was in loose snow surface conditions. The cyclist collision occurred in the westbound direction as a vehicle overtook a cyclist.

It is noted that four collisions are noted occurred across the site frontage, which is on the segment of Carling Avenue Westbound between Clyde Avenue/Cole Avenue and Churchill Avenue. Based on the detailed collision records, two collisions are likely due to loose snow surface conditions, one involved a truck going ahead and a automobile turning right along the frontage (approximately 50 metres from the site existing access), and the collision that occurred on October 29, 2021, does not have detailed records available. No further review of this segment is required as part of this study.

and two accidents happened midblock between Carling/Clyde and Carling/Churchill involving through traffic along Carling Avenue and pedestrians attempting to cross the road midblock.

Table 5: Carling Avenue at Clyde Avenue/Cole Avenue Collision Summary

		Number	%
Total Collisions		**48**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	16	33%
	Property Damage Only	32	67%
Initial Impact Type	**Angle**	3	6%
	Rear end	9	19%
	Sideswipe	11	23%
	Turning Movement	22	46%
	SMV Other	2	4%
	Other	1	2%
Road Surface Condition	**Dry**	28	58%
	Wet	12	25%
	Loose Snow	2	4%
	Slush	4	8%
	Packed Snow	1	2%
	Ice	1	2%
Pedestrian Involved		2	4%
Cyclists Involved		2	4%

The Carling Avenue at Clyde Avenue/Cole Avenue intersection had a total of 48 collisions during the 2018-2022 time period, with 32 involving property damage only and the remaining 16 having non-fatal injuries. Turning movement comprised the majority of collision types at this intersection with 22 collisions, followed by eleven sideswipe, nine rear end, three angle collisions, two SMV other collisions, with the remaining one other collision. Weather conditions and daylight conditions do not affect collisions at these locations.

The detailed collision records for this intersection ranges of 2016-2020. A total of 22 turning movement collisions were observed between this range. The detailed collision records outline that a total of nine collisions were involved westbound left and eastbound through vehicles and a total of nine collisions were involved eastbound left and westbound through vehicles. These collisions may be related to the high volumes of eastbound and westbound through movements, as well as the previous protected/permissive phases of the eastbound and westbound left turns. It is noted that the eastbound and westbound left turns at the intersection of Carling Avenue

and Clyde Avenue/Cole Avenue have been modified to fully protected left-turn movements, which are anticipated to help reduce turning movement collisions.

During the 2018-2022 time period, the pedestrian collisions at Carling/Clyde included two accidents involving northbound left-turning vehicles and pedestrians, and the cycling collisions included a westbound through cyclist with a westbound right-turning vehicle, and southbound left turning cyclist and northbound through vehicle. Protected intersection improvements may address the cyclist collisions if separated space is provided, although it is unlikely to directly address the pedestrian collisions.

Table 6: Carling Avenue at Churchill Avenue Collision Summary

		Number	%
Total Collisions		**30**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	8	27%
	Property Damage Only	22	73%
Initial Impact Type	**Angle**	1	3%
	Rear end	16	53%
	Sideswipe	11	37%
	SMV Other	2	7%
Road Surface Condition	**Dry**	24	80%
	Wet	2	7%
	Loose Snow	1	3%
	Slush	3	10%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

The Carling Avenue at Churchill Avenue intersection had a total of 30 collisions during the 2018-2022 time period, with 22 involving property damage only and the remaining eight having non-fatal injuries. The collision types are most represented by rear end with 16 collisions, followed by eleven sideswipe, two SMV other, and the remaining one angle collisions. The collision rates have been decreasing since the peak of nine collisions in 2018, with only one being noted during 2022. The detailed collision records outline that the rear end collisions are predominantly due to the congested conditions along Carling Avenue. Weather conditions do not affect collisions at this location. No further examination is required as part of this study.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

2.3.1.1 Transportation Master Plan

The active transportation projects identify separated cycling facilities and/or bike lanes on Clyde Avenue from Carling Avenue to Laperriere Avenue and sidewalk along Tillbury Avenue from Cole Avenue to David Shentow Park. Since these projects have not been scheduled and the implementation of the projects will be paced by available funding, these projects are assumed beyond the study horizon years and will not be included in the report analysis.

2.3.1.2 Construction and infrastructure projects

The construction and infrastructure projects identify transit priority along Carling Avenue and includes a dedicated westbound shared bus/bike lane across the frontage of the site. It is anticipated that by the buildout year 2025, the curbside bus lanes will be implemented, and it will be included in the report analysis. The Carling Avenue transit priority measures plan is included in Appendix E.

The City has identified the intersection of Carling Avenue at Churchill Avenue is to be improved to a protected intersection over the next 2-3 years. Additionally, the eastbound and westbound left turns at the intersection of Carling Avenue and Clyde Avenue/Cole Avenue have recently been modified to fully protected left-turn movements.

2.3.2 Other Study Area Developments

At the time of this report, the following development applications were available for the adjacent properties.

1619-1655 Carling Avenue

The proposed development application includes a site plan for two residential towers, 16-storeys and 18-storeys are proposed for the site with a total of 418 residential units and over 8,000 sq. ft. of commercial/retail space. The development is expected to generate approximately 116 new vehicle trips during the peak. The site is currently under construction, and it will be included in the future conditions. In addition, the City of Ottawa's TMP has designated Carling Avenue as a Transit Priority Corridor (Continuous Measures) along the frontage of the site, with implementation targeted for the 2031 horizon. Based on the functional design project initiated by the City of Ottawa, the curbside lane will be converted into a dedicated bus lane for transit on both sides of Carling Avenue between Lincoln Fields and Sherwood Drive. Consequently, the existing three general-purpose lanes will be reduced to two general-purpose lanes. A 2-metre cycle track is also being included along the frontage of this site with the intention to connect to the future segment of cycle track planned for the Churchill/Carling intersection. (Parsons, 2022)

1640-1660 Carling Avenue

The proposed development application includes a zoning by-law application and plan of subdivision to redevelop the previous Canadian Tire site with six new residential towers with an estimated 1,700 total units. A new local road will be included through the site and the site is anticipated to proceed through three phases. Phase 1, which consists of 810 units, buildings 5 and 6, is assumed to be constructed by 2026. Phase 2, which consists of 691 units, buildings 2, 3 and 4 is assumed to be constructed by 2031, and Phase 3, which consists of 214 units and building 1 is assumed to be constructed by 2036. The development is expected to generate approximately 391 to 508 new vehicle trips during the peak hours, and a reduction of 100 to 277 vehicle trips with the previous uses being removed. (Parsons, 2022)

1705 Carling Avenue

The proposed development application includes a site plan for replacing an existing motel and restaurant with a 9-storey retirement facility with 158 units and a 22-storey residential high-rise. The development is expected to generate less than 25 vehicle trips during peak hours. The site is currently under construction, and it will be included in the future conditions. (Novatech, 2020)

3 Study Area and Time Periods

3.1 Study Area

The following intersections will be included in this study:

- Carling Avenue at:
  - Clyde Avenue/Cole Avenue
  - Churchill Avenue
- Tillbury Avenue at:
  - Churchill Avenue

- Cole Avenue

The boundary roads will be Carling Avenue and Tillbury Avenue. No TRANS screenlines within the area and no screenline analysis will be performed as part of the study.

3.2 Time Periods

As the proposed development is composed of residential units and ground floor retail, the AM and PM peak hours will be examined.

3.3 Horizon Years

Construction will occur in a single phase estimated to proceed after 2025, upon completion of a future site plan application.

4 Development-Generated Travel Demand

4.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the subject district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use for Ottawa West have been summarized in Table 7.

Table 7: TRANS Trip Generation Manual Recommended Mode Shares – Ottawa West

Travel Mode	Multi-Unit (High-Rise)		Commercial Generator	
	AM	PM	AM	PM
Auto Driver	28%	33%	55%	50%
Auto Passenger	11%	11%	11%	16%
Transit	41%	26%	11%	11%
Cycling	3%	7%	0%	5%
Walking	16%	23%	23%	18%
Total	**100%**	**100%**	**100%**	**100%**

4.2 Trip Generation

This TIA has been prepared using the vehicle and person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for commercial component from the ITE Trip Generation Manual 11th Edition (2021) using the City-prescribed conversion factor of 1.28. Table 8 summarizes the person trip rates for the proposed residential land uses for each peak period and the person trip rates for the non-residential land uses by peak hour.

Table 8: Trip Generation Person Trip Rates

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Multi-Unit (High-Rise)	221 & 222 (TRANS)	AM	-	0.80
		PM	-	0.90

Land Use	Land Use Code	Peak Hour	Vehicle Trip Rate	Person Trip Rates
Strip Retail Plaza (<40k)	822 (ITE)	AM	2.36	3.02
		PM	6.59	8.44

Using the above person trip rates, the total person trip generation has been estimated. Table 9 summarizes the total person trip generation.

Table 9: Total Residential Person Trip Generation

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Multi-Unit (High-Rise)	370	92	204	296	193	140	333
Land Use	**GFA**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Strip Retail Plaza (<40k)	3,846 sq.ft	7	5	12	16	16	32

Internal capture rates from the ITE Trip Generation Handbook 3rd Edition have been assigned to the development's retail component for mixed-use developments. The rates summarized in Table 10 represent the percentage of trips to/from retail use based on the residential component.

Table 10: Internal Capture Rates

Land Use	AM		PM	
	In	Out	In	Out
Residential to/from Strip Retail Plaza (<40k)	17%	14%	10%	26%

Pass-by reductions applied to the retail trip generation at a rate of 40% have been included using the recommended value presented in the ITE Trip Generation Manual 11th Edition (2021) for the most similar land use with a recommended rate, "Retail (40k – 150k sq. ft.)".

Using the above mode share targets, the internal capture and pass-by rates, and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 11 summarizes the residential trip generation and the non-residential trip generation by mode and peak hour.

Table 11: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Multi-Unit (High-Rise)	Auto Driver	**28%**	12	27	39	**33%**	28	20	48
	Auto Passenger	**11%**	5	11	16	**11%**	9	7	16
	Transit	**41%**	21	46	67	**26%**	24	17	41
	Cycling	**3%**	2	3	5	**7%**	7	5	11
	Walking	**16%**	9	19	28	**23%**	23	17	40
	Total	**100%**	**49**	**106**	**155**	**100%**	**91**	**66**	**156**
Strip Retail Plaza (<40k)	Auto Driver	**55%**	1	0	1	**50%**	1	1	2
	Auto Passenger	**11%**	1	0	1	**16%**	2	2	4
	Transit	**11%**	1	0	1	**11%**	2	1	3
	Cycling	**0%**	0	0	0	**5%**	1	1	2
	Walking	**23%**	1	1	2	**18%**	3	2	5
	Internal Capture	*varies*	*-1*	*-1*	*-2*	*varies*	*-2*	*-4*	*-6*
	Pass-by	*40%*	*-2*	*-2*	*-4*	*40%*	*-6*	*-5*	*-11*
	Total	**100%**	**4**	**1**	**5**	**100%**	**9**	**7**	**16**
Total	Auto Driver	-	13	27	40	-	29	21	50
	Auto Passenger	-	6	11	17	-	11	9	20
	Transit	-	22	46	68	-	26	18	44
	Cycling	-	2	3	5	-	8	6	13
	Walking	-	10	20	30	-	26	19	45
	Total	**-**	**53**	**107**	**160**	**-**	**100**	**73**	**172**

As shown above, a total of 40 AM and 50 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

4.3 Trip Distribution

To understand the travel patterns of the subject development, the OD Survey has been reviewed to determine the travel, and these patterns were applied based on the build-out of Ottawa West. Table 12 below summarizes the distributions.

Table 12: OD Survey Distribution – Ottawa West

To/From	% of Trips
North	20%
South	35%
East	30%
West	15%
Total	**100%**

4.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 13 summarizes the proportional assignment to the study area roadways, and Figure 12 illustrates the new site generated volumes and Figure 13 illustrates the pass-by volumes.

Given that the development is anticipated to generate a total of 40 AM and 50 PM new peak hour two-way vehicle trips, it does not require further analysis for future conditions, as identified in Table 14. A breakdown of the existing trips to be removed will not be provided.

Table 13: Trip Assignment

To/From	Via
North	10% Churchill Ave (N), 10% Carling Ave (E)
South	10% Cole Ave (S), 15% Carling Ave (W), 10% Carling Ave (E)
East	30% Carling Ave (E)
West	15% Carling Ave (W)
Total	**100%**

Figure 12: New Site Generation Auto Volumes

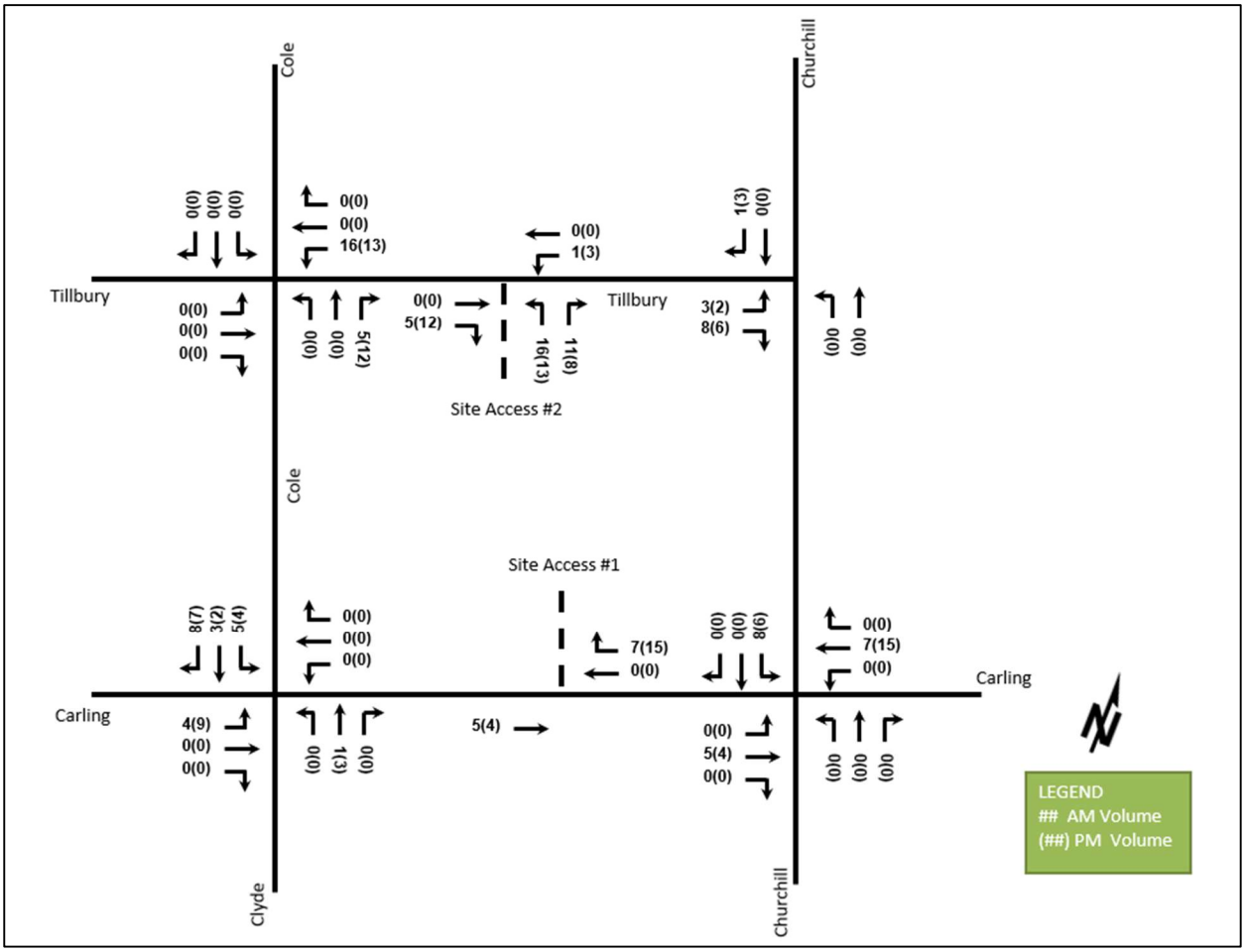
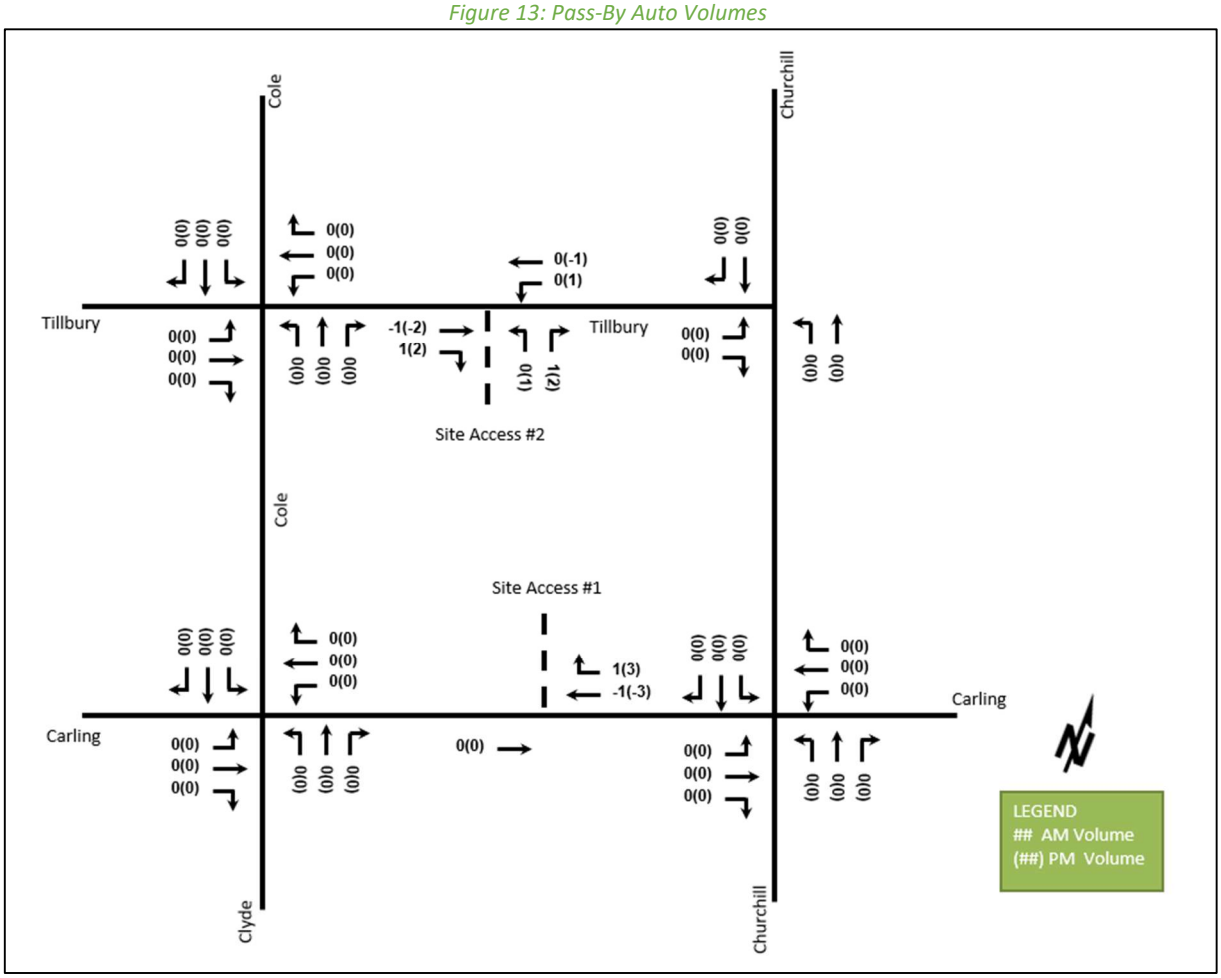


Figure 13: Pass-By Auto Volumes



5 Exemption Review

Table 14 summarizes the exemptions for this TIA.

Table 14: Exemption Review

Module	Element	Explanation	Exempt/Required
Site Design and TDM			
Development Design	4.1.2 Circulation and Access	Only required for site plan and zoning by-law applications	Required
	4.1.3 New Street Networks	Only required for plans of subdivision	Exempt
Parking	4.2.1 Parking Supply	Only required for site plan and zoning by-law applications	Required
Boundary Street Design		All applications	Required
Transportation Demand Management	All Elements	Only required when the development generates more than 60 person-trips	Required
Network Impact			
Background Network Travel Demand	All Elements	Only required when one or more other Network Impact Modules are triggered	Exempt

Module	Element	Explanation	Exempt/Required
Demand Rationalization		Only required when one or more other Network Impact Modules are triggered	Exempt
Neighbourhood Traffic Calming	4.6.1 Adjacent Neighbourhoods	If the development meets all of the following criteria along the route(s) site generated traffic is expected to utilize between an arterial road and the site's access: 1. Access to Collector or Local; 2. "Significant sensitive land use presence" exists, where there is at least two of the following adjacent to the subject street segment: • School (within 250m walking distance); • Park; • Retirement / Older Adult Facility (i.e. long-term care and retirement homes); • Licenced Child Care Centre; • Community Centre; or • 50%, or greater, of adjacent property along the route(s) is occupied by residential • lands and a minimum of 10 occupied residential units are present on the route. 3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision; 4. At least 75 site-generated auto trips; 5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more.	Exempt
Transit	4.7.1 Transit Route Capacity	Only required when the development generates more than 75 transit trips	Exempt
	4.7.2 Transit Priority Requirements	Only required when the development generates more than 75 auto trips	Exempt
Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt
Intersection Design	4.4.1-2/4.9.1 Intersection Control	Only required when the development generates more than 75 auto trips	Exempt
	4.4.3/4.9.2 Intersection Design	Only required when the development generates more than 75 auto trips	Exempt

6 Development Design

6.1 Design for Sustainable Modes

The proposed development includes a mixed-use building with two accesses, a right-in access to Carling Avenue and a full movement access to Tillbury Avenue. A total of 374 bicycle parking spaces are proposed, including four exterior spaces, 148 spaces on the ground floor, and 222 underground spaces. Four surface bicycle parking spaces are located on the southwest side of the proposed building, closer to the commercial units. Hard surface connections are provided from the building entrances to the boundary streets of Carling Avenue and Tillbury Avenue. An existing 2.0-metre sidewalk along Carling Avenue will be adjusted, and a 2.0-metre cycle track is proposed along the frontage of Carling Avenue. The sidewalk and cycle track to be provided will tie into the new sidewalk and cycle track constructed along the frontage of the neighbouring 1619-1655 Carling Avenue site. The walking distance from the proposed entrance to the nearby transit stops is approximately 205 metres.

The infrastructure TDM checklist is provided in Appendix F.

6.2 Circulation and Access

The access on Carling Avenue (Access #1) will operate as a right-in access, and the access on Tillbury Avenue (Access #2) will operate as a full movement access. Access #1 is 10 metres wide measured at the curb line. While it does not meet the private approach by-law maximum width requirements of 9.0 metres due to the larger radii required to support larger truck movements, it has been minimized. Access #2 is 6.0 metres wide. The surface parking will be located in proximity to the Access #2 and the parking garage ramp will be oriented towards Access #2. Accesses will connect to both underground and surface parking. The garbage truck is expected to enter the site via the Access #1 and exit via the Access #2, with garbage collection occurring on the internal drive aisle.

The garbage truck and move-in truck turning movements can be accommodated on site. The turning templates are provided in Appendix G.

7 Parking

7.1 Parking Supply

The site plan proposes 196 vehicle parking spaces, including 154 residential vehicle parking, 30 visitor vehicle parking spaces, and 12 retail vehicle parking. Among these parking spaces, 12 retail vehicle parking spaces are located at grade, and all other parking spaces are located within the parking garage. A total of 374 bicycle parking spaces are proposed, including 370 residential bicycle parking and four retail bicycle parking. Among these bicycle parking spaces, four are located at grade, 148 are on the ground floor, and 222 are underground.

From the zoning by-law, the minimum vehicle parking provision for the site is 161 resident parking spaces, 30 visitor parking spaces and no parking requirements for the retail. The minimum bicycle parking provision for the residents is 185 spaces and for the retail is two spaces.

Although the proposed residential vehicle parking spaces are seven spaces less than the requirement, the proposed residential bicycle parking spaces are 185 spaces more than the requirement. The proposed residential vehicle parking is considered to be sufficient given the site is adjacent to the bus lanes along Carling Avenue. The proposed visitor vehicle parking meets the zoning by-law requirements, while the retail vehicle parking exceeds those requirements. The proposed bicycle parking for both the residential and retail exceed the zoning by-law requirements.

8 Boundary Street Design

Table 15 summarizes the MMLOS analysis for the boundary streets of Carling Avenue and Tillbury Avenue. A cycle track is expected to be along the frontage on Carling Avenue, and it will be considered in the future condition. The existing and future conditions for Tillbury Avenue will be the same and is considered in one row. The boundary street analysis for Carling Avenue is based on the land-use designation of "Arterial Main Street" and Tillbury Avenue is based on the land-use designation of "General Urban Area". The MMLOS worksheets have been provided in Appendix H.

Table 15: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Carling Avenue (Existing)	D	C	F	C	D	C	A	D
Carling Avenue (Future)	B	C	A	C	B	C	A	D
Tillbury Avenue (Existing/Future)	B	C	A	D	N/A	N/A	N/A	N/A

The pedestrian LOS targets will not be met along the segment of Carling Avenue for the existing condition, but they will be met in future conditions as the boulevard width will be increased.

The bicycle LOS target will not be met along the segment of Carling Avenue for the existing conditions. Once the cycle track is implemented, the bicycle LOS will improve from F to A.

The transit LOS target is not met along the segment of Carling Avenue for the existing condition, but it will be met in the future condition once the shared bus/bike lanes are implemented.

9 Transportation Demand Management

9.1 Context for TDM

The mode shares used within the TIA represent the unmodified district mode shares and represent a conservative assessment in the context of the future Carling Avenue bus lanes. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided to encourage shifts towards sustainable modes.

The subject site within a design priority area. The total bedroom count within the development is subject to the final unit breakdown and layout selections by purchasers. No age restrictions are noted.

9.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel and transit and those assumptions have been carried through the analysis. As the unmodified district mode shares have been applied, and as they are considered conservative for analysis purposes, the risks of failing to meet mode share targets are low.

9.3 TDM Program

The "suite of post occupancy TDM measures" has been summarized in the TDM checklists for both the residential and non-residential land uses. The checklist is provided in Appendix F. The key TDM measures recommended include:

- Display area walking, cycling, and transit maps with route schedules
- Contract with providers to install on-site bikeshare (or other micromobility alternatives) and carshare spaces
- Inclusion of a 1-year Presto card for first time new dwelling unit rental, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site

- Unbundle parking cost from purchase or rental costs
- Provide a multimodal travel option information package to new residents

10 Access Intersection Design

10.1 Location and Design of Access

The accesses will be located approximately at the existing access on Carling Avenue and existing residential driveway on Tillbury Avenue. Access on Carling Avenue (Access #1) is 7.3 meters wide at the property line and 16.4 meters wide at the curb line. The width of Access #1 complies with the private approach by-law maximum width requirement of 9.0 meters at the property line; however, it does not comply at the curb line due to the larger radii required to accommodate larger truck movements. Access on Tillbury Avenue (Access #2) is 6.0 metres wide. The internal aisle through the surface parking is 6.7 metres wide. Access #1 will operate as a right-in-only access, and the Access #2 will operate as a full movement access. Both accesses meet the private approach by-law maximum number of private approaches permitted. By restricting outbound movements at Access #1, potential sightline issues between outbound vehicles and westbound cyclists or buses have been eliminated, enhancing the safety of this access compared to existing conditions.

The TAC Geometric Design Guidelines throat length requirements for an apartment of this size on an arterial road is 40.0 metres, as measured from the end of the corner radii. Access #1 will have a throat length of 13.0 meters from the end of the corner radii to the commercial garbage room, a throat length of 17.0 meters from the end of the corner radii to the loading/move-in room, and 50.0 meters from the end of the corner radii to the surface parking. The throat length is provided for general traffic into the site, and only loading and garbage is within the measured throat length. The placement of the underground garage and surface parking reduce the possible conflicts in this area and the drive aisle provides two-way travel to be accommodated. Therefore, the proposed site configuration and throat length is considered supportable for Access #1. Access #2 will have a throat length of 18.5 metres, and no throat length requirement for access on a local road.

Section 25(1)(p) of the Private Approach By-law requires a 3.0 metres off-set between the end of the curb return and the property line. Access #1 has a 1.4-metre offset from the property line. Due to truck movements, the curb radius ends near the adjacent parcel's property line at 1655 Carling Avenue. It is noted that the adjacent parcel access is proposed to be located approximately 70 meters east of Access #1, providing sufficient separation. Therefore, it is recommended that this access be approved by the City.

Access #1 will comply with the City of Ottawa standard drawing SC36.1.

11 Summary of Improvements Indicated and Modifications Options

The following summarizes the analysis and results presented in this TIA report:

Proposed Site and Screening

- The proposed development concept consists of a mixed-use building including 370 residential units, 3,846 square feet retail space, 196 vehicle parking spaces, and 374 bicycle parking spaces
- The existing site includes approximately 2,000 sq. ft. of a single dwelling unit and a 24,772 sq. ft. commercial plaza with surface parking spaces
- The site proposed two accesses, one located at the existing Carling Avenue access and the other replacing the residential driveway on Tillbury Avenue. The existing Carling Avenue access will be modified and restricted to right-in only

- Construction will occur in a single phase estimated to proceed after 2025, upon completion of a future site plan application

TIA Screening and Exemptions

- The TIA Screening form indicated a full TIA was required due to trip generation, location, and safety triggers
- The exemption review for the TIA did not require new street networks, background network travel demand, demand rationalization, neighbourhood traffic calming, transit review, network concept review, intersection control review or intersection design review

Existing Conditions

- Carling Avenue is an arterial road, Churchill Avenue is a major collector road, and Clyde Avenue, Cole Avenue, and Tillbury Avenue are local roads in the study area
- Sidewalks are provided along both sides of Carling Avenue, Churchill Avenue north of Carling Avenue, and a section of Cole Avenue, with sidewalks on a single side on various local road
- Cycletracks are provided along Churchill Avenue north of Carling Avenue with suggested bike routes through the communities to the north and south of Carling Avenue
- Carling Avenue is designated a spine route
- Within the study area, a total of four pedestrian collisions and five cyclist collisions are noted within the study area, including two pedestrian collisions and two cyclist collisions at Carling Avenue at Clyde Avenue/Cole Avenue, two pedestrian collisions and one cyclist collision on Carling Avenue westbound between Clyde Avenue/Cole Avenue and Churchill Avenue, one cyclist collision on Churchill Avenue North between Tillbury Avenue and Carling Avenue, and one cyclist collision at Cole Avenue at Tillbury Avenue
- Within the study area, the intersection of Carling Avenue at Clyde Avenue/Cole Avenue and Carling Avenue at Churchill Avenue are noted to have experienced higher collisions than other intersections
- The pedestrian collisions at Clyde Avenue/Cole Avenue involved a northbound left-turning vehicle with pedestrian crossing on the west side of the intersection, and one cyclist collision involved a westbound right turning vehicle and westbound through bicycle and a northbound through vehicle and southbound left turning bicycle. A protected intersection may reduce the cycling collisions with a separation of both uses, while it may not address the pedestrian collisions
- The detailed collision records for Carling Avenue at Clyde Avenue/Cole Avenue intersection outline that turning movement collisions are predominantly due to the eastbound and westbound left-turn movements interacting with the opposing westbound and eastbound through movements
- The eastbound and westbound left turns at the intersection of Carling Avenue and Clyde Avenue/Cole Avenue have been modified to fully protected left-turn movements, which may help reduce turning movement collisions
- At Carling Avenue at Churchill Avenue intersection, the collision rates have been decreasing since the peak of nine collisions in 2018, with only one being noted during 2022
- The collisions along the frontage do not appear to be related to the existing accesses, and may be a function of loading activities or stoppings on the curb side lane of Carling Avenue
- No further collision examination is required as part of this study

Planned Conditions

- Separated cycling facilities and/or bike lanes on Clyde Avenue from Carling Avenue to Laperriere Avenue and sidewalk along Tillbury Avenue from Cole Avenue to David Shentow Park in the active transportation projects lists will not be included in the report analysis because these projects have not been scheduled
- The construction and infrastructure projects identify transit priority along Carling Avenue and include a dedicated westbound bus lane across the frontage of the site, which will be included in the report analysis
- The City has identified the intersection of Carling Avenue at Churchill Avenue is to be improved to a protected intersection over the next 2-3 years
- The eastbound and westbound left-turns at the intersection of Clyde Avenue/Cole Avenue have recently been modified to fully protected left-turn movements

Development Generated Travel Demand

- The proposed development is forecasted to produce 162 two-way people trips during the AM peak hour and 178 two-way people trips during the PM peak hour
- Of the forecasted people trips, 42 two-way trips will be vehicle trips during the AM peak hour and 56 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted people trips, 68 two-way trips will be transit trips during the AM peak hour and 44 two-way trips will be transit trips during the PM peak hour
- Of the forecasted trips, 20% are anticipated to travel north, 35% to the south, 30% to the east, and 15% to the west

Development Design

- The site proposed two accesses, one located at the existing Carling Avenue access and the other replacing the residential driveway on Tillbury Avenue
- The accesses will operate as right-in-only along Carling Avenue and full movements on Tillbury Avenue, with surface parking located near Tillbury Avenue and the underground parking ramp oriented towards Tillbury Avenue
- Access #1 is 10.0 metres wide measured at the curb line due to the larger radii required to support larger truck movements, and Access #2 is 6.0 metres wide
- A total of 374 bicycle parking spaces are proposed, including four exterior spaces, 148 spaces on the ground floor, and 222 underground spaces
- Hard surface connections are provided from the building entrances to the boundary streets of Carling Avenue and Tillbury Avenue and surround the site
- An existing 2.0-metre sidewalk along Carling Avenue will be adjusted, and a cycle track is proposed the frontage on Carling Avenue
- The walking distance from the proposed entrance to the nearby transit stops is approximately 205 metres
- The garbage truck is expected to enter the site via the Access #1 and exit via the Access #2, with garbage collection occurring on the internal drive aisle
- The garbage truck and move-in truck turning movements can be accommodated on site

Parking

- The site plan proposes 196 vehicle parking spaces, including 154 residential vehicle parking, 30 visitor vehicle parking spaces, and 12 retail vehicle parking
- A total of 374 bicycle parking spaces are proposed, including 370 residential bicycle parking and four retail bicycle parking

- Although the proposed residential vehicle parking spaces are seven spaces less than the requirement, the proposed residential bicycle parking spaces are 185 spaces more than the requirement, and the proposed residential vehicle parking is considered to be sufficient given the site is adjacent to the bus lanes along Carling Avenue
- The proposed visitor vehicle parking meets the zoning by-law requirements, while the retail vehicle parking exceeds those requirements
- The proposed bicycle parking for both the residential and retail exceed the zoning by-law requirements

Boundary Street Design

- The pedestrian LOS target will not be met along the segment of Carling Avenue for the existing conditions, but it will be met in the future condition
- The bicycle LOS target will not be met along the segment of Carling Avenue for the existing conditions, but it will be met in the future condition
- The transit LOS target is not met along the segment of Carling Avenue for the existing condition, but it will be met in the future condition with shared bus/bike lane provided

TDM

- Supportive TDM measures to be included within the proposed development should include:
    - Display area walking, cycling, and transit maps with route schedules
    - Contract with providers to install on-site bikeshare (or other micromobility alternatives) and carshare spaces
    - Inclusion of a 1-year Presto card for first time new townhome purchase, with a set time frame for this offer (e.g. 6-months) from the initial opening of the site
    - Unbundle parking cost from purchase or rental costs
    - Provide a multimodal travel option information package to new residents

Access Intersection Design

- Access #1 is 7.3 meters wide at the property line and 10.0 meters wide at the curb line. While Access #1 meets the 9.0-meter width requirement at the property line, it exceeds this limit at the curb line because of the larger turning radius required to support larger truck movements
- Access #2 is 6.0 metres wide, and the internal aisle through the surface parking is 6.7 metres wide
- Both accesses meet the private approach by-law maximum number of private approaches permitted
- Access #1 will have a throat length of 50.0 meters from the end of the corner radii to the surface parking, 17.5 meters from the end of the corner radii to the loading/move-in room and 13.0 meters from the end of the corner radii to the commercial garbage room
- Although loading and garbage vehicles are included within the 50.0-meter throat length, the design of the underground garage and surface parking helps minimize conflicts in this area, and the drive aisle supports two-way traffic. Therefore, the throat length is considered suitable for Access #1
- Access #2 will have a throat length of 18.5 metres, and no throat length requirement for access on a local road
- Although Access #1 does not meet Section 25(1)(p) of the Private Approach By-law, the adjacent parcel access is proposed to be located approximately 70 meters east of Access #1, providing sufficient separation. Therefore, it is recommended that this access be approved by the City
- Access #1 will comply with the City of Ottawa standard drawing SC36.1

12 Conclusion

It is recommended that, from a transportation perspective, the proposed development applications proceed.

Prepared By:

Yu-Chu Chen
Transportation Engineering-Intern

Reviewed By:

Andrew Harte, P.Eng.
Senior Transportation Engineer

Appendix A

TIA Screening Form and PM Certification Form

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 30-Jun-23
Project Number: 2023-083
Project Reference: 1657-1673 Carling Avenue and 386 Tillbury Avenue

1.1 Description of Proposed Development	
Municipal Address	1657-1673 Carling Avenue, 386 Tillbury Avenue
Description of Location	Approximatly 65 metres east of Carling Avenue at Clyde Avenue/Cole Avenue intersection
Land Use Classification	Arterial Mainstreet (AM10) for the Carling Avenue parcels and Residential Fourth Density (R4UC) for the Tillbury Avenue parcel
Development Size	25-storey mixed-use building
Accesses	Access is proposed via Tillbury Avenue
Phase of Development	Single
Buildout Year	2025
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	295	Units
Trip Generation Trigger	Yes	

1.3 Location Triggers	
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?	No
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?	Yes
Location Trigger	Yes

1.4. Safety Triggers		
Are posted speed limits on a boundary street 80 km/hr or greater?	No	
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	No	
Is the proposed driveway within auxiliary lanes of an intersection?	No	
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	Yes	High collisions at the intersections of Carling Avenue at Clyde Avenue/Cole Avenue and Carling Avenue at Churchill Avenue
Does the development include a drive-thru facility?	No	
Safety Trigger	Yes	

TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise [check √ appropriate field(s)] is either transportation engineering √ or transportation planning □.

[1,2] License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Ville d'Ottawa
Services d 'infrastructure et Viabilité des collectivités
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest
Ottawa (Ontario) K1P 1J1
Tél. : 613-580-2424
Télécopieur: 613-560-6006

Dated at ___Ottawa_____ this __20__ day of _____September_____, 2018.
(City)

Name: _____Andrew Harte_____
(Please Print)

Professional Title: _____Professional Engineer_____

_____
Signature of Individual certifier that s/he meets the above four criteria

Office Contact Information (Please Print)
Address: 6 Plaza Court
City / Postal Code: Ottawa / K2H 7W1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com

Appendix B

Turning Movement Counts

Transportation Services - Traffic Services

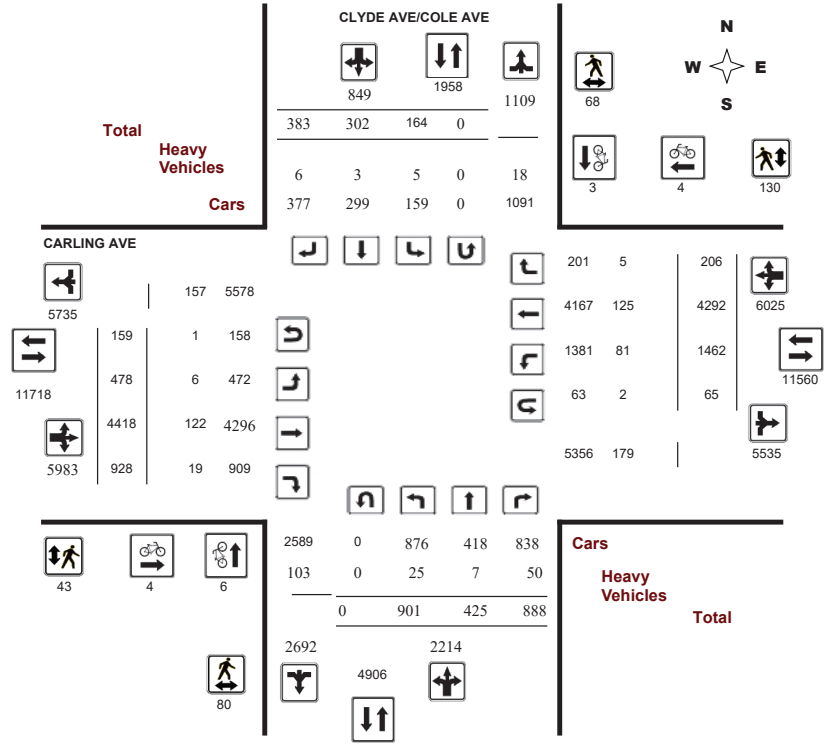
Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study Diagram



Transportation Services - Traffic Services

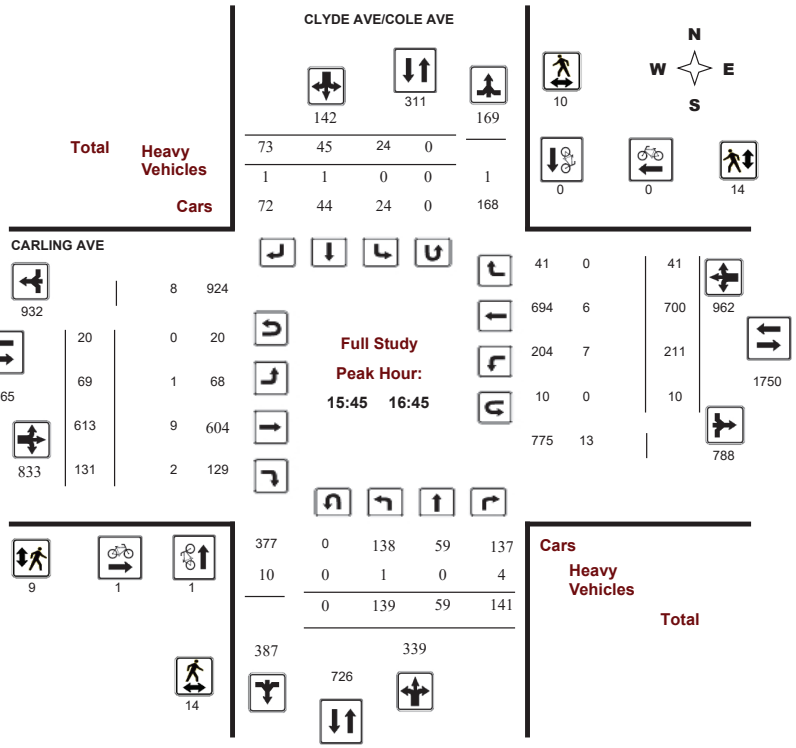
Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study Peak Hour Diagram



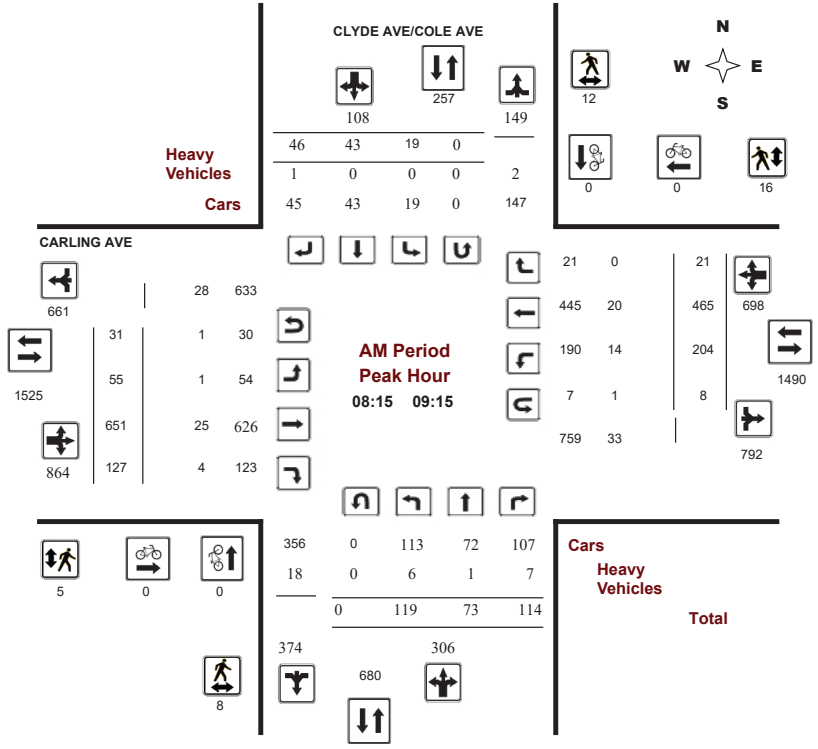
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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



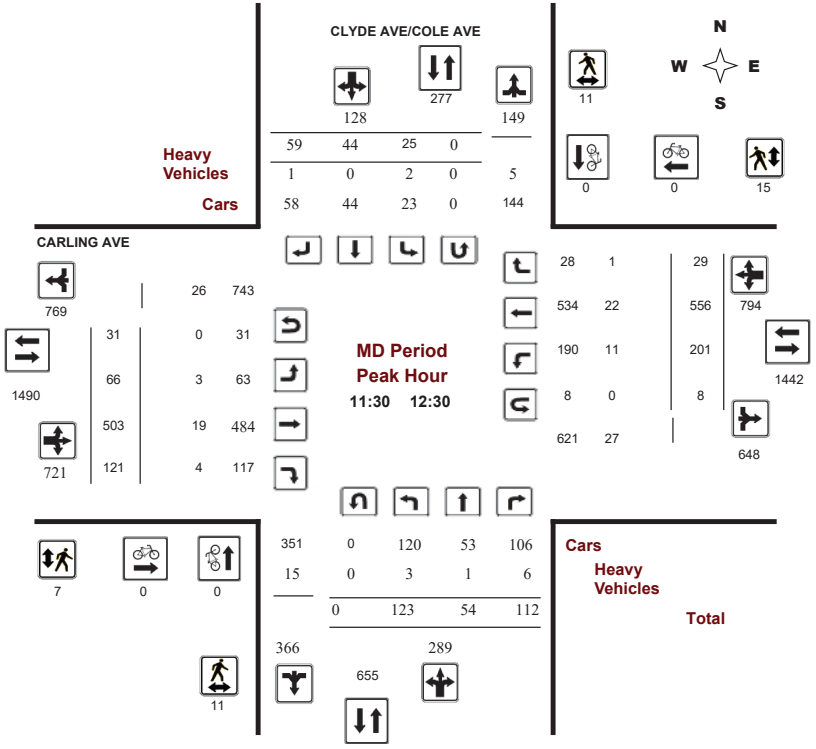
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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



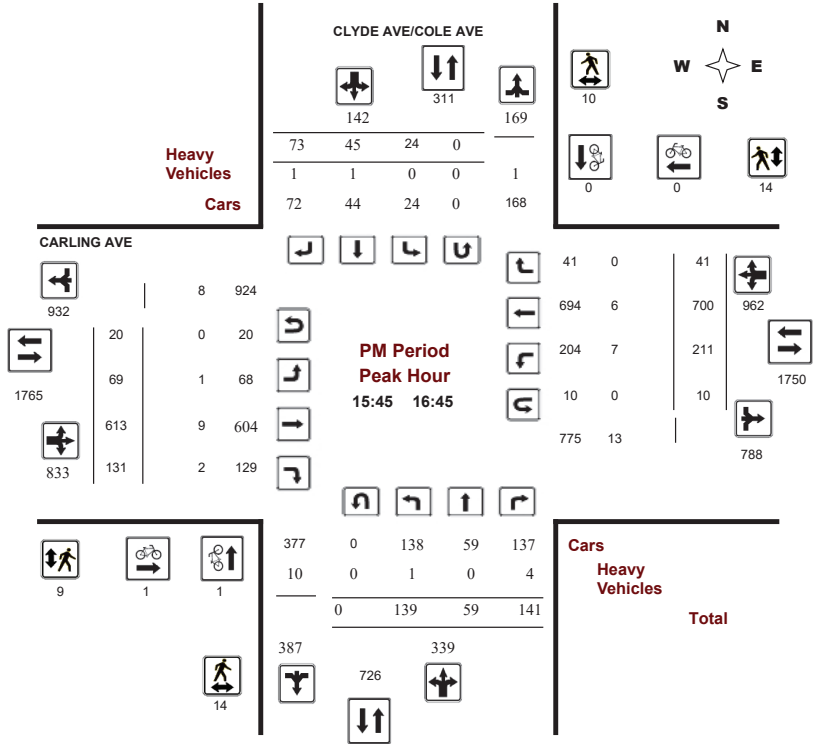
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, February 23, 2022

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 159 Westbound: 65

AADT Factor 1.00

	CLYDE AVE/COLE AVE								CARLING AVE									
	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	49	22	52	**123**	11	18	25	**54**	**177**	35	522	67	**624**	142	300	8	**450**	**1074**	**1251**
08:00 09:00	123	66	87	**276**	17	39	49	**105**	**381**	58	663	131	**852**	205	461	18	**684**	**1536**	**1917**
09:00 10:00	80	30	122	**232**	12	27	38	**77**	**309**	61	529	95	**685**	183	410	24	**617**	**1302**	**1611**
11:30 12:30	123	54	112	**289**	25	44	59	**128**	**417**	66	503	121	**690**	201	556	29	**786**	**1476**	**1893**
12:30 13:30	124	48	130	**302**	25	44	43	**112**	**414**	68	503	114	**685**	187	551	19	**757**	**1442**	**1856**
15:00 16:00	131	78	141	**350**	29	40	40	**109**	**459**	55	619	139	**813**	180	689	26	**895**	**1708**	**2167**
16:00 17:00	142	59	132	**333**	22	47	74	**143**	**476**	70	573	122	**765**	195	700	42	**937**	**1702**	**2178**
17:00 18:00	129	68	112	**309**	23	43	55	**121**	**430**	65	506	139	**710**	169	625	40	**834**	**1544**	**1974**
Sub Total	901	425	888	**2214**	164	302	383	**849**	**3063**	478	4418	928	**5824**	1462	4292	206	**5960**	**11784**	**14847**
U Turns				**0**				**0**	**0**				**159**				**65**	**224**	**224**
Total	901	425	888	**2214**	164	302	383	**849**	**3063**	478	4418	928	**5983**	1462	4292	206	**6025**	**12008**	**15071**
EQ 12Hr	1252	591	1234	**3077**	228	420	532	**1180**	**4258**	664	6141	1290	**8316**	2032	5966	286	**8375**	**16691**	**20949**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr	1252	591	1234	**3077**	228	550	697	**1180**	**4258**	664	6141	1290	**8316**	2032	5966	286	**8375**	**16691**	**20949**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1.00**

AVG 24Hr	1640	774	1617	**4031**	299	720	913	**1546**	**5578**	870	8045	1690	**10894**	2662	7815	375	**10971**	**21865**	**27443**

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

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study 15 Minute Increments

		CLYDE AVE/COLE AVE									CARLING AVE									
		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	8	6	20	34	0	6	2	8	42	5	105	15	128	28	67	3	100	228	270
07:15	07:30	14	3	4	21	4	2	7	13	34	9	123	22	158	34	63	5	102	260	294
07:30	07:45	9	5	17	31	2	4	6	12	43	9	147	15	172	34	82	0	118	290	333
07:45	08:00	18	8	11	37	5	6	10	21	58	12	147	15	180	46	88	0	134	314	372
08:00	08:15	27	9	10	46	2	5	11	18	64	15	145	29	191	53	106	2	161	352	416
08:15	08:30	31	11	18	60	3	10	11	24	84	18	175	34	237	52	112	3	171	408	492
08:30	08:45	33	24	31	88	8	11	17	36	124	12	180	34	233	38	111	6	157	390	514
08:45	09:00	32	22	28	82	4	13	10	27	109	13	163	34	216	62	132	7	202	418	527
09:00	09:15	23	16	37	76	4	9	8	21	97	12	133	25	178	52	110	5	168	346	443
09:15	09:30	23	4	28	55	1	6	15	22	77	21	150	25	198	52	97	7	157	355	432
09:30	09:45	21	2	25	48	4	9	7	20	68	18	133	23	177	35	102	5	143	320	388
09:45	10:00	13	8	32	53	3	3	8	14	67	10	113	22	150	44	101	7	153	303	370
11:30	11:45	25	14	25	64	6	8	12	26	90	20	126	28	180	66	130	5	203	383	473
11:45	12:00	26	20	33	79	3	11	23	37	116	14	136	26	185	48	150	6	205	390	506
12:00	12:15	31	10	31	72	14	11	12	37	109	18	123	36	183	43	153	13	210	393	502
12:15	12:30	41	10	23	74	2	14	12	28	102	14	118	31	173	44	123	5	176	349	451
12:30	12:45	35	9	31	75	5	10	16	31	106	24	110	26	162	45	151	4	202	364	470
12:45	13:00	32	16	25	73	7	12	7	26	99	18	161	32	216	56	127	7	193	409	508
13:00	13:15	30	17	38	85	9	14	13	36	121	14	95	28	141	40	141	5	188	329	450
13:15	13:30	27	6	36	69	4	8	7	19	88	12	137	28	182	46	132	3	185	367	455
15:00	15:15	35	22	31	88	11	7	4	22	110	11	117	23	154	46	164	9	220	374	484
15:15	15:30	41	16	50	107	5	20	12	37	144	9	179	49	240	41	167	5	215	455	599
15:30	15:45	25	28	28	81	4	3	12	19	100	18	154	28	202	42	179	4	225	427	527
15:45	16:00	30	12	32	74	9	10	12	31	105	17	169	39	226	51	179	8	240	466	571
16:00	16:15	40	20	46	106	7	9	24	40	146	16	140	30	192	51	180	5	238	430	576
16:15	16:30	32	7	32	71	4	15	20	39	110	21	159	35	219	55	173	11	243	462	572
16:30	16:45	37	20	31	88	4	11	17	32	120	15	145	27	196	54	168	17	241	437	557
16:45	17:00	33	12	23	68	7	12	13	32	100	18	129	30	182	35	179	9	224	406	506
17:00	17:15	38	26	33	97	3	10	13	26	123	16	150	42	210	45	156	10	219	429	552
17:15	17:30	38	8	25	71	6	13	18	37	108	23	127	31	193	49	178	11	238	431	539
17:30	17:45	26	22	33	81	11	8	17	36	117	15	126	34	180	36	163	10	214	394	511
17:45	18:00	27	12	21	60	3	12	7	22	82	11	103	32	149	39	128	9	180	329	411
Total:		901	425	888	2214	164	302	383	849	3063	478	4418	928	5983	1462	4292	206	6025	12008	15,071

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study Cyclist Volume

		CLYDE AVE/COLE AVE			CARLING AVE			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	1	1	1
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	1	0	1	1	0	1	2
08:00	08:15	0	1	1	0	0	0	1
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0
09:45	10:00	2	0	2	0	1	1	3
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	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	1	1	2	2
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	0	0	0	0	0	0
15:45	16:00	1	0	1	0	0	0	1
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	1	0	1	1
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	1	0	1	0	0	0	1
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	1	0	1	1	0	1	2
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	2	2	0	1	1	3
Total		6	3	**9**	4	4	8	17

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study Pedestrian Volume

		CLYDE AVE/COLE AVE			CARLING AVE			
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	1	1	**2**	1	3	**4**	**6**
07:15	07:30	0	3	**3**	2	2	**4**	**7**
07:30	07:45	1	1	**2**	1	2	**3**	**5**
07:45	08:00	1	1	**2**	1	3	**4**	**6**
08:00	08:15	1	2	**3**	0	4	**4**	**7**
08:15	08:30	4	2	**6**	1	5	**6**	**12**
08:30	08:45	2	5	**7**	2	7	**9**	**16**
08:45	09:00	0	5	**5**	1	4	**5**	**10**
09:00	09:15	2	0	**2**	1	0	**1**	**3**
09:15	09:30	0	0	**0**	1	0	**1**	**1**
09:30	09:45	2	0	**2**	1	2	**3**	**5**
09:45	10:00	0	1	**1**	1	1	**2**	**3**
11:30	11:45	5	6	**11**	3	5	**8**	**19**
11:45	12:00	2	2	**4**	0	4	**4**	**8**
12:00	12:15	1	1	**2**	4	5	**9**	**11**
12:15	12:30	3	2	**5**	0	1	**1**	**6**
12:30	12:45	2	6	**8**	1	3	**4**	**12**
12:45	13:00	2	3	**5**	0	5	**5**	**10**
13:00	13:15	2	2	**4**	1	4	**5**	**9**
13:15	13:30	3	1	**4**	1	4	**5**	**9**
15:00	15:15	10	5	**15**	2	21	**23**	**38**
15:15	15:30	5	1	**6**	1	15	**16**	**22**
15:30	15:45	2	0	**2**	2	10	**12**	**14**
15:45	16:00	3	1	**4**	1	4	**5**	**9**
16:00	16:15	7	2	**9**	4	8	**12**	**21**
16:15	16:30	3	5	**8**	3	2	**5**	**13**
16:30	16:45	1	2	**3**	1	0	**1**	**4**
16:45	17:00	3	2	**5**	2	1	**3**	**8**
17:00	17:15	3	1	**4**	3	2	**5**	**9**
17:15	17:30	2	0	**2**	0	1	**1**	**3**
17:30	17:45	2	1	**3**	1	2	**3**	**6**
17:45	18:00	5	4	**9**	0	0	**0**	**9**
Total	.....	80	68	**148**	43	130	**173**	**321**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study Heavy Vehicles

		CLYDE AVE/COLE AVE									CARLING AVE									
		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	1	**4**	0	0	0	**0**	**4**	0	2	0	**5**	3	3	0	**9**	**14**	**9**
07:15	07:30	3	1	2	**9**	0	0	0	**1**	**10**	0	7	1	**13**	2	2	0	**13**	**26**	**18**
07:30	07:45	0	2	2	**8**	0	0	1	**3**	**11**	0	6	1	**15**	3	7	0	**18**	**33**	**22**
07:45	08:00	1	1	1	**7**	0	0	0	**1**	**8**	0	4	0	**8**	4	3	0	**12**	**20**	**14**
08:00	08:15	2	0	1	**6**	0	0	0	**1**	**7**	1	6	0	**11**	3	2	0	**12**	**23**	**15**
08:15	08:30	1	0	3	**10**	0	0	0	**0**	**10**	0	7	1	**13**	5	4	0	**21**	**34**	**22**
08:30	08:45	2	1	3	**8**	0	0	0	**2**	**10**	1	3	0	**10**	2	4	0	**12**	**22**	**16**
08:45	09:00	3	0	1	**8**	0	0	1	**1**	**9**	0	6	1	**17**	3	6	0	**16**	**33**	**21**
09:00	09:15	0	0	0	**6**	0	0	0	**0**	**6**	0	9	2	**19**	4	6	0	**19**	**38**	**22**
09:15	09:30	1	0	7	**13**	0	0	1	**1**	**14**	0	3	1	**10**	4	4	0	**18**	**28**	**21**
09:30	09:45	3	0	3	**13**	0	0	0	**2**	**15**	0	6	2	**17**	5	6	2	**22**	**39**	**27**
09:45	10:00	0	0	3	**5**	0	0	1	**2**	**7**	0	3	0	**8**	2	4	1	**13**	**21**	**14**
11:30	11:45	1	0	1	**7**	0	0	0	**1**	**8**	1	3	3	**12**	2	4	0	**10**	**22**	**15**
11:45	12:00	0	1	0	**2**	0	0	0	**2**	**4**	1	8	1	**15**	0	5	0	**13**	**28**	**16**
12:00	12:15	2	0	3	**8**	1	0	0	**3**	**11**	1	2	0	**9**	3	4	1	**14**	**23**	**17**
12:15	12:30	0	0	2	**8**	1	0	1	**2**	**10**	0	6	0	**16**	6	9	0	**24**	**40**	**25**
12:30	12:45	3	0	3	**10**	0	0	0	**0**	**10**	0	4	2	**20**	2	11	0	**20**	**40**	**25**
12:45	13:00	0	0	1	**5**	0	0	0	**0**	**5**	0	1	0	**7**	4	6	0	**12**	**19**	**12**
13:00	13:15	1	0	1	**5**	0	0	0	**1**	**6**	0	4	0	**10**	3	5	1	**14**	**24**	**15**
13:15	13:30	0	0	1	**4**	1	0	0	**1**	**5**	0	4	1	**9**	2	4	0	**12**	**21**	**13**
15:00	15:15	1	0	2	**6**	0	0	0	**0**	**6**	0	2	0	**6**	3	3	0	**10**	**16**	**11**
15:15	15:30	0	0	0	**2**	0	0	0	**0**	**2**	0	3	0	**7**	2	4	0	**9**	**16**	**9**
15:30	15:45	0	0	3	**5**	0	0	0	**0**	**5**	0	3	0	**6**	2	3	0	**11**	**17**	**11**
15:45	16:00	0	0	0	**4**	0	1	0	**2**	**6**	1	3	1	**6**	2	1	0	**6**	**12**	**9**
16:00	16:15	0	0	2	**5**	0	0	1	**1**	**6**	0	2	1	**5**	2	1	0	**7**	**12**	**9**
16:15	16:30	1	0	1	**4**	0	0	0	**0**	**4**	0	2	0	**6**	2	3	0	**8**	**14**	**9**
16:30	16:45	0	0	1	**2**	0	0	0	**0**	**2**	0	2	0	**3**	1	1	0	**5**	**8**	**5**
16:45	17:00	0	1	1	**3**	0	1	0	**2**	**5**	0	1	0	**5**	0	4	0	**8**	**13**	**9**
17:00	17:15	0	0	0	**3**	0	0	0	**0**	**3**	0	3	1	**6**	2	2	0	**7**	**13**	**8**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**4**	0	1	0	**4**	**8**	**4**
17:30	17:45	0	0	1	**4**	1	0	0	**1**	**5**	0	2	0	**2**	3	0	0	**7**	**9**	**7**
17:45	18:00	0	0	0	**1**	1	1	0	**2**	**3**	0	2	0	**5**	0	3	0	**6**	**11**	**7**
Total:	None	25	7	50	**185**	5	3	6	**32**	**217**	6	122	19	**305**	81	125	5	**392**	**697**	**457**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022 **WO No:** 40170

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

Full Study 15 Minute U-Turn Total

		CLYDE AVE/COLE AVE		CARLING AVE		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	3	2	5
07:15	07:30	0	0	4	0	4
07:30	07:45	0	0	1	2	3
07:45	08:00	0	0	6	0	6
08:00	08:15	0	0	2	0	2
08:15	08:30	0	0	10	4	14
08:30	08:45	0	0	7	2	9
08:45	09:00	0	0	6	1	7
09:00	09:15	0	0	8	1	9
09:15	09:30	0	0	2	1	3
09:30	09:45	0	0	3	1	4
09:45	10:00	0	0	5	1	6
11:30	11:45	0	0	6	2	8
11:45	12:00	0	0	9	1	10
12:00	12:15	0	0	6	1	7
12:15	12:30	0	0	10	4	14
12:30	12:45	0	0	2	2	4
12:45	13:00	0	0	5	3	8
13:00	13:15	0	0	4	2	6
13:15	13:30	0	0	5	4	9
15:00	15:15	0	0	3	1	4
15:15	15:30	0	0	3	2	5
15:30	15:45	0	0	2	0	2
15:45	16:00	0	0	1	2	3
16:00	16:15	0	0	6	2	8
16:15	16:30	0	0	4	4	8
16:30	16:45	0	0	9	2	11
16:45	17:00	0	0	5	1	6
17:00	17:15	0	0	2	8	10
17:15	17:30	0	0	12	0	12
17:30	17:45	0	0	5	5	10
17:45	18:00	0	0	3	4	7
Total		0	0	159	65	224

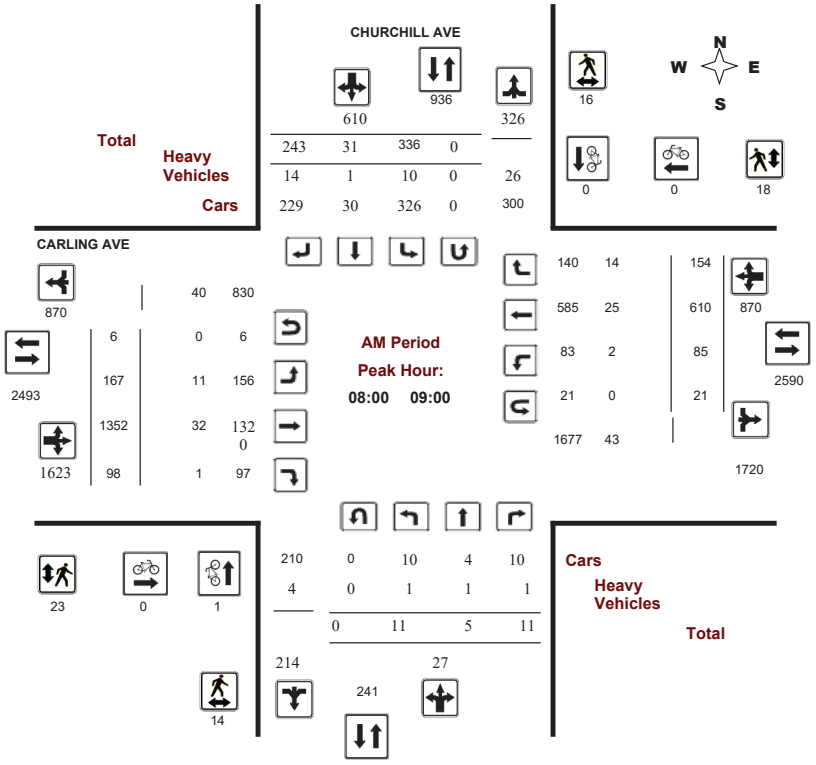
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017 **WO No:** 36955

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



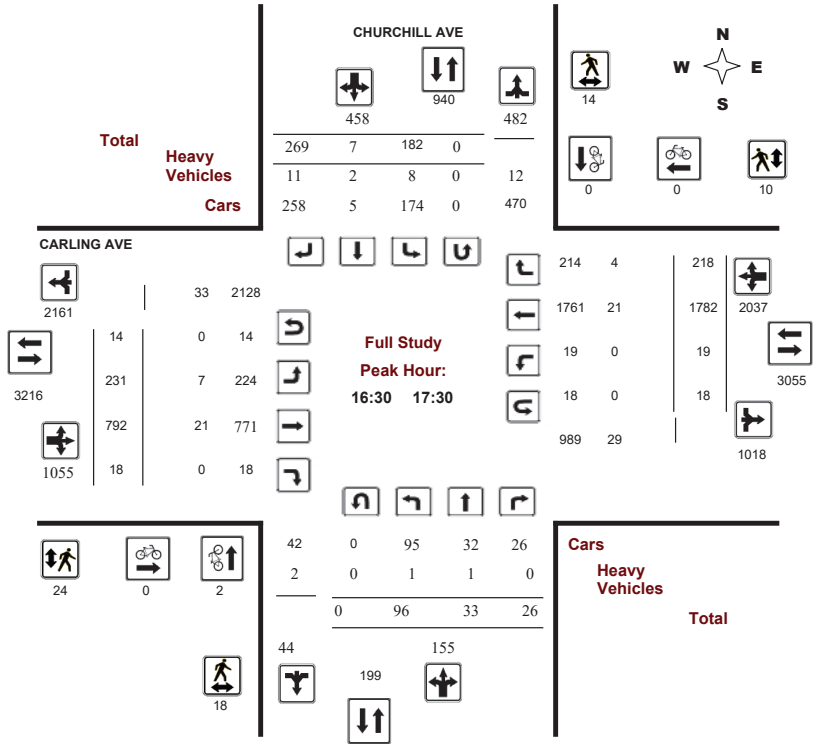
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017 **WO No:** 36955

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



Comments

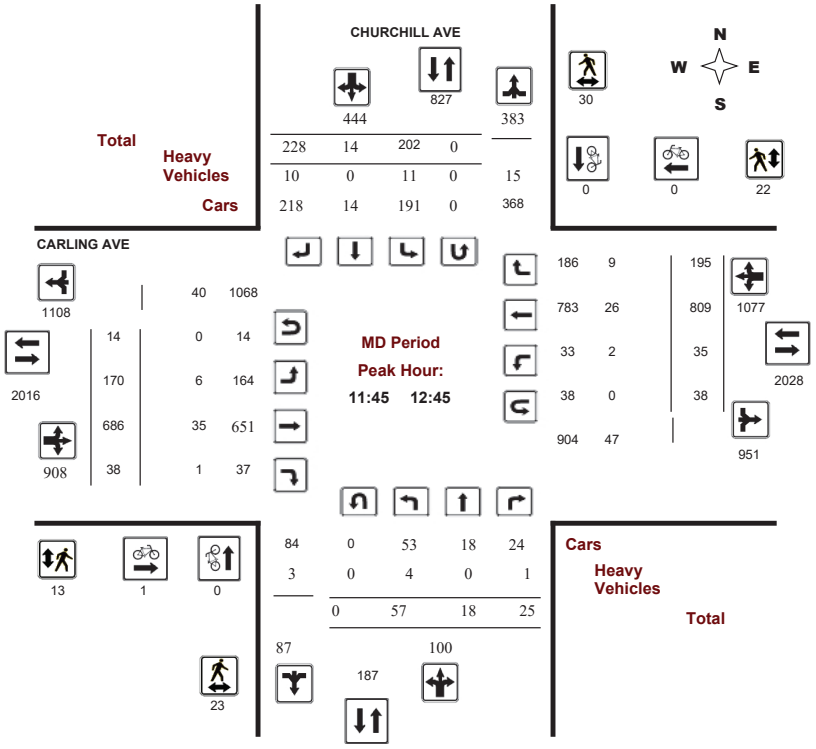
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017 **WO No:** 36955

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



Comments

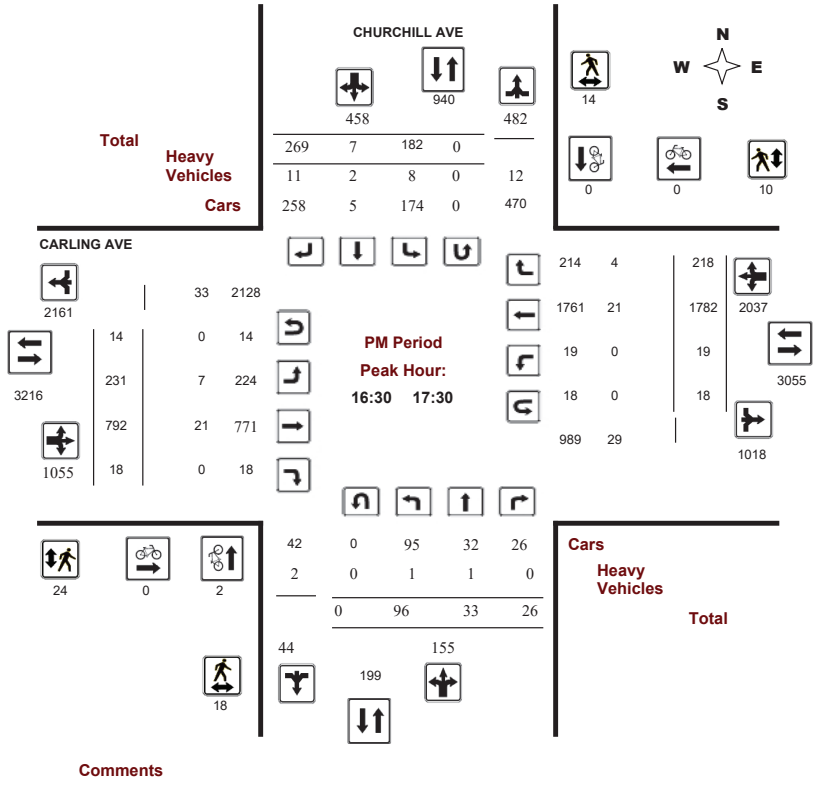
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017 **WO No:** 36955

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



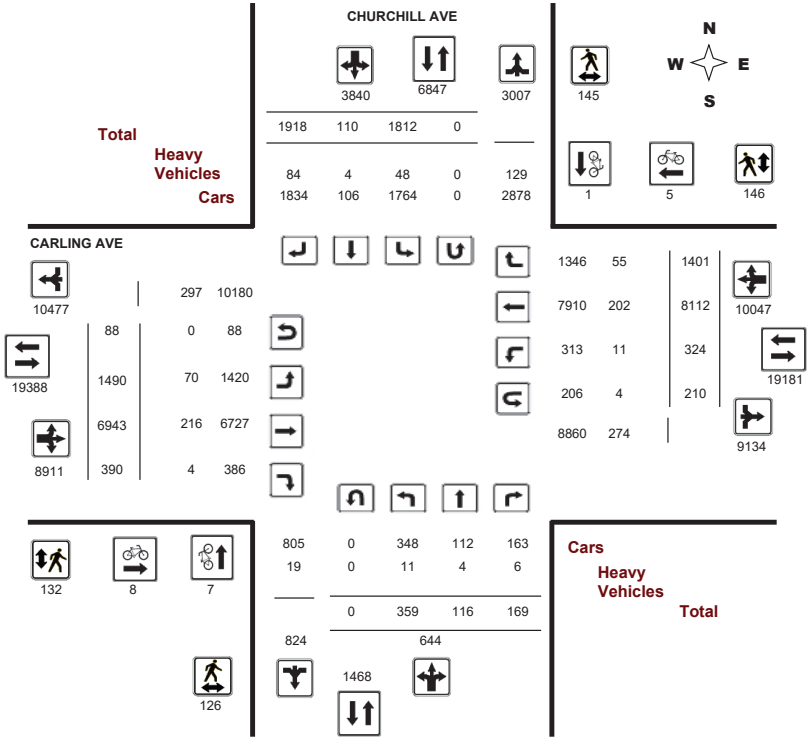
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017 **WO#:** 36955

Device: Miovision



Transportation Services - Traffic Services

Work Order 36955

Turning Movement Count - Full Study Summary Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 88 Westbound: 210

AADT Factor .90

Full Study

	CHURCHILL AVE									CARLING AVE									
	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	14	6	9	**29**	252	11	180	**443**	**472**	144	1213	76	**1433**	55	416	118	**589**	**2022**	**2494**
08:00 09:00	11	5	11	**27**	336	31	243	**610**	**637**	167	1352	98	**1617**	85	610	154	**849**	**2466**	**3103**
09:00 10:00	24	5	25	**54**	224	19	212	**455**	**509**	171	790	77	**1038**	47	618	151	**816**	**1854**	**2363**
11:30 12:30	54	16	23	**93**	204	10	237	**451**	**544**	164	637	34	**835**	35	823	188	**1046**	**1881**	**2425**
12:30 13:30	46	11	30	**87**	188	13	241	**442**	**529**	192	749	51	**992**	45	713	185	**943**	**1935**	**2464**
15:00 16:00	38	18	21	**77**	220	12	259	**491**	**568**	203	709	22	**934**	24	1403	174	**1601**	**2535**	**3103**
16:00 17:00	87	24	31	**142**	175	11	276	**462**	**604**	239	740	17	**996**	22	1762	208	**1992**	**2988**	**3592**
17:00 18:00	85	31	19	**135**	213	3	270	**486**	**621**	210	753	15	**978**	11	1767	223	**2001**	**2979**	**3600**
Sub Total	359	116	169	**644**	1812	110	1918	**3840**	**4484**	1490	6943	390	**8823**	324	8112	1401	**9837**	**18660**	**23144**
U Turns				**0**				**0**	**0**				**88**				**210**	**298**	**298**
Total	359	116	169	**644**	1812	110	1918	**3840**	**4484**	1490	6943	390	**8911**	324	8112	1401	**10047**	**18958**	**23442**
EQ 12Hr	499	161	235	**895**	2519	153	2666	**5338**	**6233**	2071	9651	542	**12386**	450	11276	1947	**13965**	**26351**	**32584**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**																			
AVG 12Hr	449	145	211	**806**	2267	138	2399	**4804**	**5610**	1864	8686	488	**11148**	405	10148	1753	**12569**	**23717**	**29327**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**																			
AVG 24Hr	588	190	277	**1055**	2970	180	3143	**6293**	**7348**	2442	11378	639	**14603**	531	13294	2296	**16465**	**31068**	**38416**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**																			

Comments:

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

Transportation Services - Traffic Services

W.O. 36955

Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 88 Westbound: 210

	CHURCHILL AVE									CARLING AVE									
	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	3	2	2	**7**	48	2	36	**86**	**93**	23	227	16	**267**	14	81	25	**123**	**390**	**483**
07:15 07:30	1	0	1	**2**	43	1	40	**84**	**86**	26	295	14	**337**	12	94	32	**140**	**477**	**563**
07:30 07:45	6	1	3	**10**	76	4	54	**134**	**144**	39	328	15	**383**	15	99	25	**148**	**531**	**675**
07:45 08:00	4	3	3	**10**	85	4	50	**139**	**149**	56	363	31	**451**	14	142	36	**197**	**648**	**797**
08:00 08:15	4	0	5	**9**	85	7	67	**159**	**168**	29	370	26	**426**	11	108	35	**158**	**584**	**752**
08:15 08:30	1	1	2	**4**	73	5	53	**131**	**135**	36	330	27	**395**	24	162	42	**235**	**630**	**765**
08:30 08:45	1	2	2	**5**	95	9	71	**175**	**180**	50	322	18	**392**	24	165	38	**234**	**626**	**806**
08:45 09:00	5	2	2	**9**	83	10	52	**145**	**154**	52	330	27	**410**	26	175	39	**243**	**653**	**807**
09:00 09:15	4	2	8	**14**	86	8	51	**145**	**159**	46	211	26	**285**	9	146	32	**196**	**481**	**640**
09:15 09:30	5	1	3	**9**	34	4	43	**81**	**90**	39	213	26	**280**	12	147	40	**205**	**485**	**575**
09:30 09:45	6	1	9	**16**	59	5	58	**122**	**138**	44	203	12	**263**	16	146	42	**211**	**474**	**612**
09:45 10:00	9	1	5	**15**	45	2	60	**107**	**122**	42	163	13	**221**	10	179	37	**236**	**457**	**579**
11:30 11:45	9	1	7	**17**	47	0	60	**107**	**124**	44	149	7	**201**	8	196	47	**264**	**465**	**589**
11:45 12:00	15	3	5	**23**	63	3	58	**124**	**147**	41	165	6	**217**	8	195	45	**263**	**480**	**627**
12:00 12:15	17	6	9	**32**	54	2	63	**119**	**151**	37	146	12	**199**	12	229	48	**296**	**495**	**646**
12:15 12:30	13	6	2	**21**	40	5	56	**101**	**122**	42	177	9	**232**	7	203	48	**267**	**499**	**621**
12:30 12:45	12	3	9	**24**	45	4	51	**100**	**124**	50	198	11	**260**	8	182	54	**251**	**511**	**635**
12:45 13:00	17	3	10	**30**	46	2	69	**117**	**147**	44	164	12	**224**	18	176	42	**243**	**467**	**614**
13:00 13:15	9	4	6	**19**	47	5	62	**114**	**133**	51	173	14	**240**	7	197	46	**259**	**499**	**632**
13:15 13:30	8	1	5	**14**	50	2	59	**111**	**125**	47	214	14	**278**	12	158	43	**227**	**505**	**630**
15:00 15:15	10	3	6	**19**	53	3	61	**117**	**136**	44	186	6	**240**	9	286	32	**334**	**574**	**710**
15:15 15:30	11	4	5	**20**	51	7	69	**127**	**147**	47	172	5	**229**	5	317	38	**367**	**596**	**743**
15:30 15:45	6	9	4	**19**	63	0	70	**133**	**152**	68	175	7	**254**	5	354	48	**414**	**668**	**820**
15:45 16:00	11	2	6	**19**	53	2	59	**114**	**133**	44	176	4	**227**	5	446	56	**510**	**737**	**870**
16:00 16:15	25	4	9	**38**	47	2	79	**128**	**166**	63	175	4	**245**	7	394	45	**449**	**694**	**860**
16:15 16:30	26	4	9	**39**	54	4	63	**121**	**160**	57	182	3	**243**	4	476	50	**533**	**776**	**936**
16:30 16:45	16	6	9	**31**	45	2	55	**102**	**133**	59	194	2	**262**	6	408	59	**481**	**743**	**876**
16:45 17:00	20	10	4	**34**	29	3	79	**111**	**145**	60	189	8	**259**	5	484	54	**547**	**806**	**951**
17:00 17:15	38	10	11	**59**	43	1	68	**112**	**171**	67	205	4	**278**	3	422	54	**482**	**760**	**931**
17:15 17:30	22	7	2	**31**	65	1	67	**133**	**164**	45	204	4	**256**	5	468	51	**527**	**783**	**947**
17:30 17:45	13	6	1	**20**	48	0	62	**110**	**130**	58	161	3	**228**	2	440	49	**493**	**721**	**851**
17:45 18:00	12	8	5	**25**	57	1	73	**131**	**156**	40	183	4	**229**	1	437	69	**514**	**743**	**899**
TOTAL:	359	116	169	**644**	1812	110	1918	**3840**	**4484**	1490	6943	390	**8911**	324	8112	1401	**10047**	**18958**	**23442**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order 36955

CARLING AVE @ CHURCHILL AVE

Count Date: Tuesday, April 25, 2017 **Start Time:** 07:00

	CHURCHILL AVE			CARLING AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	2	1	**3**	**3**
08:00 09:00	1	0	**1**	0	0	**0**	**1**
09:00 10:00	2	1	**3**	2	0	**2**	**5**
11:30 12:30	0	0	**0**	0	1	**1**	**1**
12:30 13:30	0	0	**0**	3	1	**4**	**4**
15:00 16:00	2	0	**2**	1	1	**2**	**4**
16:00 17:00	0	0	**0**	0	1	**1**	**1**
17:00 18:00	2	0	**2**	0	0	**0**	**2**
Total	7	1	**8**	8	5	**13**	**21**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 36955

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

	CHURCHILL AVE									CARLING AVE									
	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 08:00	0	0	0	**0**	6	0	8	**14**	**14**	16	22	0	**38**	1	22	9	**33**	**71**	**85**
08:00 09:00	1	1	1	**3**	10	1	14	**25**	**28**	11	32	1	**44**	2	25	14	**41**	**85**	**113**
09:00 10:00	2	1	3	**6**	7	0	9	**16**	**22**	9	34	2	**45**	6	25	5	**38**	**83**	**105**
11:30 12:30	5	0	0	**5**	10	0	10	**20**	**25**	10	29	1	**40**	2	34	13	**49**	**89**	**114**
12:30 13:30	1	0	1	**2**	2	0	13	**15**	**17**	6	35	0	**41**	0	31	3	**35**	**76**	**93**
15:00 16:00	0	1	1	**2**	4	0	11	**15**	**17**	7	24	0	**31**	0	26	5	**31**	**62**	**79**
16:00 17:00	1	0	0	**1**	2	3	9	**14**	**15**	7	23	0	**30**	0	23	3	**26**	**56**	**71**
17:00 18:00	1	1	0	**2**	7	0	10	**17**	**19**	4	17	0	**21**	0	16	3	**19**	**40**	**59**
Sub Total	11	4	6	**21**	48	4	84	**136**	**157**	70	216	4	**290**	11	202	55	**272**	**562**	**719**
U-Turns (Heavy Vehicles)				**0**				**0**	**0**				**0**				**4**	**4**	**4**
Total	11	4	6	**0**	48	4	84	**136**	**157**	70	216	4	**290**	11	202	55	**276**	**566**	**723**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order 36955

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ CHURCHILL AVE

Count Date: Tuesday, April 25, 2017 **Start Time:** 07:00

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	3	3	6	1	4	5	11
07:15 07:30	3	5	8	6	7	13	21
07:30 07:45	4	2	6	2	5	7	13
07:45 08:00	1	2	3	5	5	10	13
07:00 08:00	11	12	23	14	21	35	58
08:00 08:15	1	2	3	5	3	8	11
08:15 08:30	5	3	8	6	4	10	18
08:30 08:45	4	3	7	8	4	12	19
08:45 09:00	4	8	12	4	7	11	23
08:00 09:00	14	16	30	23	18	41	71
09:00 09:15	3	4	7	7	2	9	16
09:15 09:30	1	5	6	2	7	9	15
09:30 09:45	5	5	10	3	7	10	20
09:45 10:00	1	3	4	0	3	3	7
09:00 10:00	10	17	27	12	19	31	58
11:30 11:45	4	5	9	5	6	11	20
11:45 12:00	2	9	11	1	5	6	17
12:00 12:15	4	7	11	2	6	8	19
12:15 12:30	9	9	18	5	2	7	25
11:30 12:30	19	30	49	13	19	32	81
12:30 12:45	8	5	13	5	9	14	27
12:45 13:00	8	6	14	6	9	15	29
13:00 13:15	9	3	12	6	6	12	24
13:15 13:30	3	4	7	2	6	8	15
12:30 13:30	28	18	46	19	30	49	95
15:00 15:15	2	5	7	2	4	6	13
15:15 15:30	5	6	11	8	4	12	23
15:30 15:45	10	2	12	3	4	7	19
15:45 16:00	1	3	4	3	2	5	9
15:00 16:00	18	16	34	16	14	30	64
16:00 16:15	2	4	6	3	3	6	12
16:15 16:30	5	6	11	3	6	9	20
16:30 16:45	1	7	8	5	3	8	16
16:45 17:00	3	1	4	3	1	4	8
16:00 17:00	11	18	29	14	13	27	56
17:00 17:15	6	4	10	9	4	13	23
17:15 17:30	8	2	10	7	2	9	19
17:30 17:45	1	7	8	4	4	8	16
17:45 18:00	0	5	5	1	2	3	8
17:00 18:00	15	18	33	21	12	33	66
Total	126	145	271	132	146	278	549

Comment:

Transportation Services - Traffic Services

Work Order 36955

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ CHURCHILL AVE

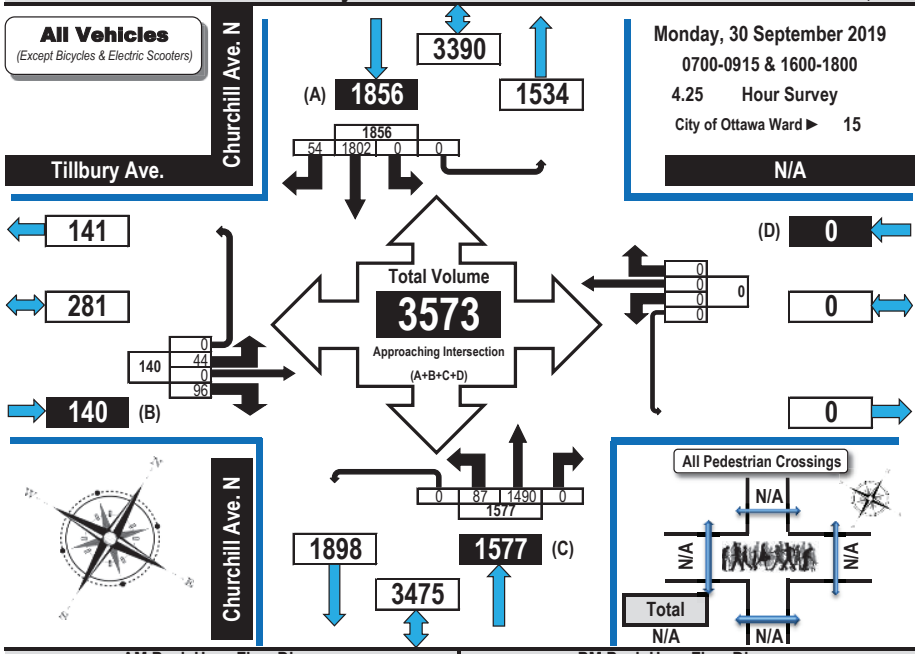
Survey Date: Tuesday, April 25, 2017

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	1	3	4
07:15	07:30	0	0	2	2	4
07:30	07:45	0	0	1	9	10
07:45	08:00	0	0	1	5	6
08:00	08:15	0	0	1	4	5
08:15	08:30	0	0	2	7	9
08:30	08:45	0	0	2	7	9
08:45	09:00	0	0	1	3	4
09:00	09:15	0	0	2	9	11
09:15	09:30	0	0	2	6	8
09:30	09:45	0	0	4	7	11
09:45	10:00	0	0	3	10	13
11:30	11:45	0	0	1	13	14
11:45	12:00	0	0	5	15	20
12:00	12:15	0	0	4	7	11
12:15	12:30	0	0	4	9	13
12:30	12:45	0	0	1	7	8
12:45	13:00	0	0	4	7	11
13:00	13:15	0	0	2	9	11
13:15	13:30	0	0	3	14	17
15:00	15:15	0	0	4	7	11
15:15	15:30	0	0	5	7	12
15:30	15:45	0	0	4	7	11
15:45	16:00	0	0	3	3	6
16:00	16:15	0	0	3	3	6
16:15	16:30	0	0	1	3	4
16:30	16:45	0	0	7	8	15
16:45	17:00	0	0	2	4	6
17:00	17:15	0	0	2	3	5
17:15	17:30	0	0	3	3	6
17:30	17:45	0	0	6	2	8
17:45	18:00	0	0	2	7	9
Total		0	0	88	210	298

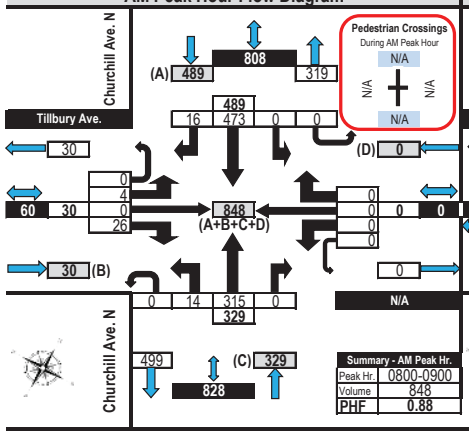
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Churchill Avenue North & Tillbury Avenue — Ottawa, ON

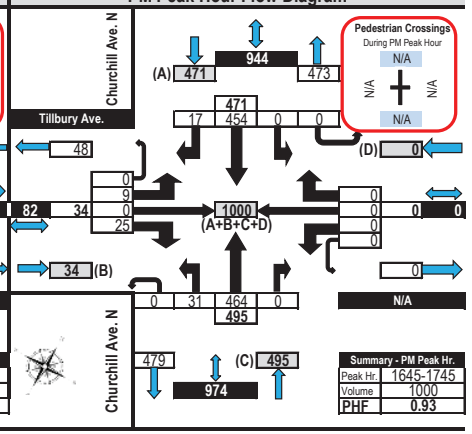


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	848
PHF	0.88

PM Peak Hour Flow Diagram

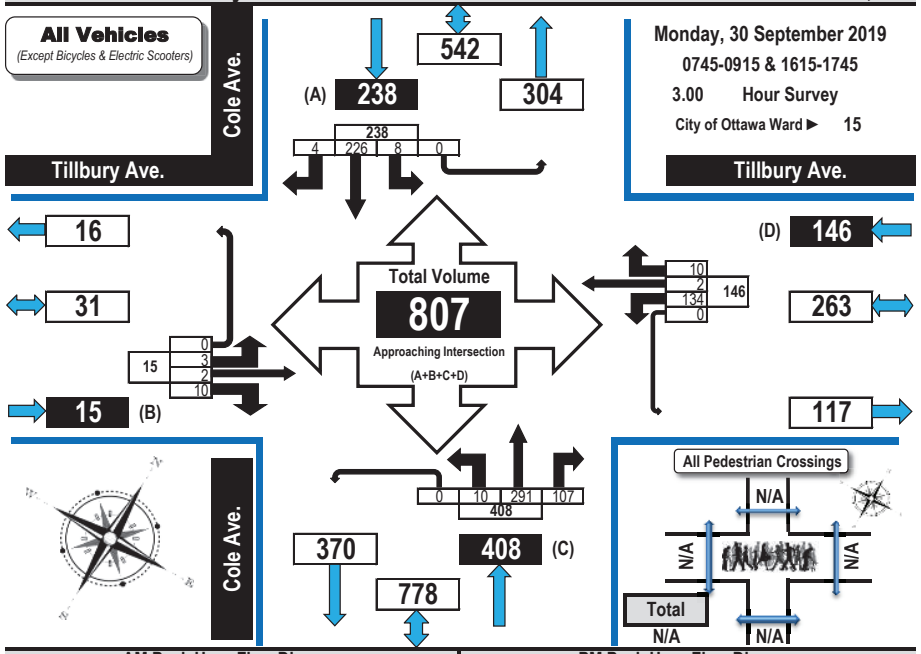


Summary - PM Peak Hr.	
Peak Hr.	1645-1745
Volume	1000
PHF	0.93

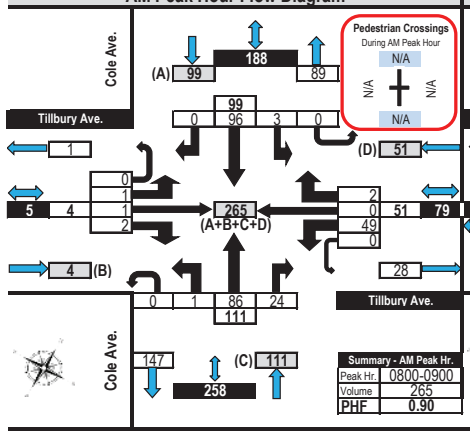
Turning Movement Count
Summary, AM and PM Peak Hour Flow Diagrams

Automobiles, Taxis, Light Trucks, Vans, SUV's, Motorcycles, Heavy Trucks, Buses, and School Buses

Cole Avenue & Tillbury Avenue — Ottawa, ON

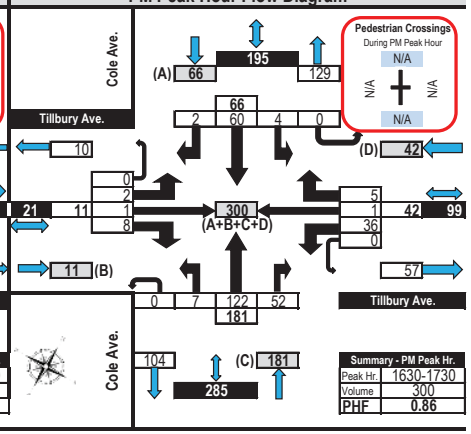


AM Peak Hour Flow Diagram



Summary - AM Peak Hr.	
Peak Hr.	0800-0900
Volume	265
PHF	0.90

PM Peak Hour Flow Diagram



Summary - PM Peak Hr.	
Peak Hr.	1630-1730
Volume	300
PHF	0.86

Appendix C

Synchro Intersection Worksheets – Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	651	127	212	465	21	119	73	114	19	43	46
Future Volume (vph)	86	651	127	212	465	21	119	73	114	19	43	46
Satd. Flow (prot)	1658	4539	0	1580	4639	0	1610	1745	1427	1658	1595	0
Flt Permitted	0.440			0.269			0.693			0.704		
Satd. Flow (perm)	758	4539	0	445	4639	0	1167	1745	1377	1202	1595	0
Satd. Flow (RTOR)		44			7				98		40	
Lane Group Flow (vph)	96	864	0	236	540	0	132	81	127	21	99	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.4	30.8		10.4	30.8		30.6	30.6	30.6	30.6	30.6	
Total Split (s)	23.0	60.0		23.0	60.0		31.0	31.0	31.0	31.0	31.0	
Total Split (%)	19.2%	50.0%		19.2%	50.0%		25.8%	25.8%	25.8%	25.8%	25.8%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.7	2.1		1.7	2.1		3.3	3.3	3.3	3.3	3.3	
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)	5.4	5.8		5.4	5.8		6.6	6.6	6.6	6.6	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)	73.5	65.2		82.0	69.7		18.7	18.7	18.7	18.7	18.7	
Actuated g/C Ratio	0.61	0.54		0.68	0.58		0.16	0.16	0.16	0.16	0.16	
v/c Ratio	0.18	0.35		0.56	0.20		0.73	0.30	0.43	0.11	0.35	
Control Delay	8.4	16.3		26.8	10.9		69.9	45.9	17.4	42.0	29.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	8.4	16.3		26.8	10.9		69.9	45.9	17.4	42.0	29.6	
LOS	A	B		C	B		E	D	B	D	C	
Approach Delay		15.5			15.8			44.6			31.7	
Approach LOS		B			B			D			C	
Queue Length 50th (m)	6.6	37.7		31.9	14.3		29.9	17.1	6.0	4.3	12.3	
Queue Length 95th (m)	14.2	57.3		58.7	25.3		49.0	30.2	22.6	11.1	27.0	
Internal Link Dist (m)		55.6			276.6			99.8			61.7	
Turn Bay Length (m)	24.0			120.0			98.0		5.0	20.0		
Base Capacity (vph)	649	2485		475	2695		237	354	358	244	356	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	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	0.15	0.35		0.50	0.20		0.56	0.23	0.35	0.09	0.28	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 84 (70%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

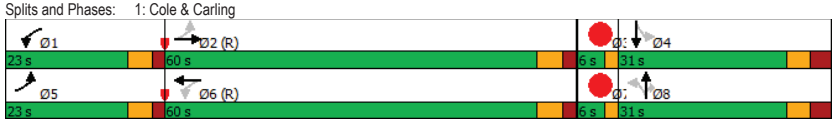
Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	6.0	6.0
Total Split (%)	5%	5%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization 64.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Cole & Carling



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	173	1352	98	106	610	154	11	5	11	336	31	243
Future Volume (vph)	173	1352	98	106	610	154	11	5	11	336	31	243
Satd. Flow (prot)	1595	4701	0	1658	4440	0	1551	1392	0	1642	1413	0
Flt Permitted	0.950			0.950			0.575			0.413		
Satd. Flow (perm)	1578	4701	0	1653	4440	0	926	1392	0	700	1413	0
Satd. Flow (RTOR)		11			58			12			270	
Lane Group Flow (vph)	192	1611	0	118	849	0	12	18	0	373	304	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	34.1		11.1	34.1		40.0	40.0		40.0	40.0	
Total Split (s)	25.0	50.0		25.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	20.8%	41.7%		20.8%	41.7%		33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.5	3.5		3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.8	6.8		6.8	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	17.4	49.1		13.7	45.4		23.9	23.9		33.2	33.2	
Actuated g/C Ratio	0.14	0.41		0.11	0.38		0.20	0.20		0.28	0.28	
v/c Ratio	0.83	0.84		0.62	0.50		0.07	0.06		1.93	0.52	
Control Delay	85.7	31.8		64.3	27.9		33.5	19.2		464.8	9.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	85.7	31.8		64.3	27.9		33.5	19.2		464.8	9.6	
LOS	F	C		E	C		C	B		F	A	
Approach Delay		37.5			32.4			25.0			260.4	
Approach LOS		D			C			C			F	
Queue Length 50th (m)	42.1	123.4		26.9	52.6		2.1	1.0		~135.3	6.0	
Queue Length 95th (m)	#79.3	#163.8		44.1	65.6		7.0	6.7		#193.6	30.2	
Internal Link Dist (m)		276.6			94.1			108.6			70.1	
Turn Bay Length (m)	66.5			65.0						19.5		
Base Capacity (vph)	251	1928		261	1714		256	393		193	586	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.76	0.84		0.45	0.50		0.05	0.05		1.93	0.52	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 101 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

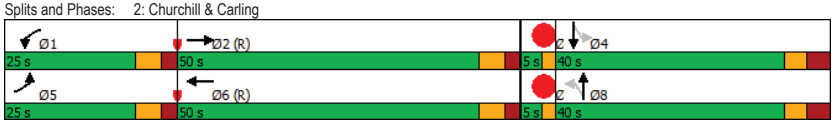
Intersection Summary

Maximum v/c Ratio: 1.93

Intersection Signal Delay: 79.4	Intersection LOS: E
Intersection Capacity Utilization 79.0%	ICU Level of Service D
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: Churchill & Carling



Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	2	49	0	2	1	86	24	3	96	0
Future Vol, veh/h	1	1	2	49	0	2	1	86	24	3	96	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	2	54	0	2	1	96	27	3	107	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	226	238	107	227	225	110	107	0	0	123	0	0
Stage 1	113	113	-	112	112	-	-	-	-	-	-	-
Stage 2	113	125	-	115	113	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	729	663	947	728	674	943	1484	-	-	1464	-	-
Stage 1	892	802	-	893	803	-	-	-	-	-	-	-
Stage 2	892	792	-	890	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	725	661	947	724	672	943	1484	-	-	1464	-	-
Mov Cap-2 Maneuver	725	661	-	724	672	-	-	-	-	-	-	-
Stage 1	891	800	-	892	802	-	-	-	-	-	-	-
Stage 2	889	791	-	885	800	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	10.3	0.1	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1484	-	-	799	731	1464	-	-
HCM Lane V/C Ratio	0.001	-	-	0.006	0.078	0.002	-	-
HCM Control Delay (s)	7.4	0	-	9.5	10.3	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↓			↰	↑	
Traffic Vol, veh/h	4	26	14	315	473	16
Future Vol, veh/h	4	26	14	315	473	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	29	16	350	526	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	917	535	544	0	-	0
Stage 1	535	-	-	-	-	-
Stage 2	382	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	302	545	1025	-	-	-
Stage 1	587	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	296	545	1025	-	-	-
Mov Cap-2 Maneuver	296	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	690	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1025	-	490	-	-
HCM Lane V/C Ratio	0.015	-	0.068	-	-
HCM Control Delay (s)	8.6	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	613	131	221	700	41	139	59	141	24	45	73
Future Volume (vph)	89	613	131	221	700	41	139	59	141	24	45	73
Satd. Flow (prot)	1658	4592	0	1642	4713	0	1658	1745	1469	1658	1556	0
Flt Permitted	0.327			0.283			0.603			0.714		
Satd. Flow (perm)	567	4592	0	484	4713	0	1039	1745	1415	1218	1556	0
Satd. Flow (RTOR)		44			9				128		53	
Lane Group Flow (vph)	99	827	0	246	824	0	154	66	157	27	131	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	5	2		1	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	10.4	30.8		10.4	30.8		30.6	30.6	30.6	30.6	30.6	
Total Split (s)	28.0	70.0		28.0	70.0		36.0	36.0	36.0	36.0	36.0	
Total Split (%)	20.0%	50.0%		20.0%	50.0%		25.7%	25.7%	25.7%	25.7%	25.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3	3.3	3.3	3.3	
All-Red Time (s)	1.7	2.1		1.7	2.1		3.3	3.3	3.3	3.3	3.3	
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)	5.4	5.8		5.4	5.8		6.6	6.6	6.6	6.6	6.6	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag	Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None	None	None	None	
Act Effct Green (s)	87.5	78.8		96.9	83.8		24.1	24.1	24.1	24.1	24.1	
Actuated g/C Ratio	0.62	0.56		0.69	0.60		0.17	0.17	0.17	0.17	0.17	
v/c Ratio	0.24	0.32		0.55	0.29		0.86	0.22	0.45	0.13	0.42	
Control Delay	9.6	16.8		13.2	14.7		94.2	49.7	16.2	47.8	33.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	9.6	16.8		13.2	14.7		94.2	49.7	16.2	47.8	33.2	
LOS	A	B		B	B		F	D	B	D	C	
Approach Delay		16.1			14.3			53.9			35.7	
Approach LOS		B			B			D			D	
Queue Length 50th (m)	8.3	41.3		22.9	39.2		41.5	15.7	6.8	6.3	18.8	
Queue Length 95th (m)	15.9	58.3		37.4	53.2		#70.6	28.7	26.7	14.7	37.3	
Internal Link Dist (m)		55.6			276.6			99.8			61.7	
Turn Bay Length (m)	24.0			120.0			98.0		5.0	20.0		
Base Capacity (vph)	571	2603		525	2823		218	366	398	255	368	
Starvation Cap Reductn	0	0		0	0		0	0	0	0	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	0.17	0.32		0.47	0.29		0.71	0.18	0.39	0.11	0.36	

Intersection Summary
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 93 (66%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	3.0	3.0
Total Split (s)	6.0	6.0
Total Split (%)	4%	4%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

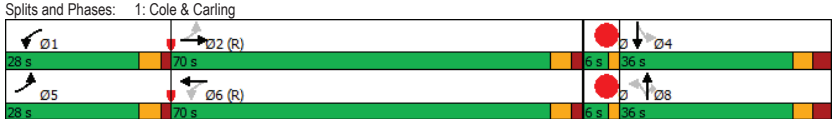
Intersection Summary

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 65.3%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 1: Cole & Carling



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	245	792	18	37	1782	218	96	33	26	182	7	269
Future Volume (vph)	245	792	18	37	1782	218	96	33	26	182	7	269
Satd. Flow (prot)	1642	4699	0	1658	4663	0	1658	1604	0	1626	1399	0
Flt Permitted	0.950			0.950			0.292			0.714		
Satd. Flow (perm)	1639	4699	0	1640	4663	0	502	1604	0	1210	1399	0
Satd. Flow (RTOR)		3			20			29			299	
Lane Group Flow (vph)	272	900	0	41	2222	0	107	66	0	202	307	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.1	34.1		11.1	34.1		40.0	40.0		40.0	40.0	
Total Split (s)	25.0	50.0		25.0	50.0		40.0	40.0		40.0	40.0	
Total Split (%)	20.8%	41.7%		20.8%	41.7%		33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.4	2.4		2.4	2.4		3.5	3.5		3.5	3.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.1	6.1		6.1	6.1		6.8	6.8		6.8	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Act Effct Green (s)	24.5	64.2		8.4	45.8		25.7	25.7		25.7	25.7	
Actuated g/C Ratio	0.20	0.54		0.07	0.38		0.21	0.21		0.21	0.21	
v/c Ratio	0.81	0.36		0.35	1.24		1.00	0.18		0.78	0.57	
Control Delay	66.3	18.6		60.8	145.8		134.0	22.6		64.1	9.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	66.3	18.6		60.8	145.8		134.0	22.6		64.1	9.0	
LOS	E	B		E	F		F	C		E	A	
Approach Delay		29.7			144.3			91.5			30.8	
Approach LOS		C			F			F			C	
Queue Length 50th (m)	60.0	44.3		9.4	~244.9		~25.8	7.1		45.4	1.5	
Queue Length 95th (m)	#122.4	65.6		20.4	#274.1		#54.2	17.4		67.2	23.9	
Internal Link Dist (m)		276.6			94.1			108.6			70.1	
Turn Bay Length (m)	66.5			65.0						19.5		
Base Capacity (vph)	335	2516		261	1793		138	464		334	603	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.81	0.36		0.16	1.24		0.78	0.14		0.60	0.51	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 92 (77%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 145
Control Type: Actuated-Coordinated

Lane Group	Ø3	Ø7
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	3	7
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	4%	4%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	Max	Max
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

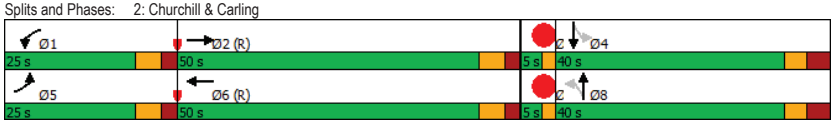
Intersection Summary

Maximum v/c Ratio: 1.24

Intersection Signal Delay: 95.4	Intersection LOS: F
Intersection Capacity Utilization 110.0%	ICU Level of Service H
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: Churchill & Carling



Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	1	8	36	1	5	7	122	52	4	60	2
Future Vol, veh/h	2	1	8	36	1	5	7	122	52	4	60	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	1	9	40	1	6	8	136	58	4	67	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	261	286	68	262	258	165	69	0	0	194	0	0
Stage 1	76	76	-	181	181	-	-	-	-	-	-	-
Stage 2	185	210	-	81	77	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	692	623	995	691	646	879	1532	-	-	1379	-	-
Stage 1	933	832	-	821	750	-	-	-	-	-	-	-
Stage 2	817	728	-	927	831	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	682	617	995	679	640	879	1532	-	-	1379	-	-
Mov Cap-2 Maneuver	682	617	-	679	640	-	-	-	-	-	-	-
Stage 1	927	830	-	816	746	-	-	-	-	-	-	-
Stage 2	806	724	-	915	829	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	10.5	0.3	0.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1532	-	-	873	697	1379	-	-
HCM Lane V/C Ratio	0.005	-	-	0.014	0.067	0.003	-	-
HCM Control Delay (s)	7.4	0	-	9.2	10.5	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑			↰	↱	
Traffic Vol, veh/h	9	25	31	464	454	17
Future Vol, veh/h	9	25	31	464	454	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	28	34	516	504	19

Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	1098	514	523	0	-	0
Stage 1	514	-	-	-	-	-
Stage 2	584	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	235	560	1043	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	557	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	560	1043	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	572	-	-	-	-	-
Stage 2	557	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1043	-	401	-	-
HCM Lane V/C Ratio	0.033	-	0.094	-	-
HCM Control Delay (s)	8.6	0	14.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Appendix D

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
1/9/2018	2018	21:41	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	04 - Slush	0	0	0	0
1/10/2018	2018	21:16	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
1/13/2018	2018	10:12	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	05 - Drifting Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	06 - Ice	0	0	0	0
2/1/2018	2018	7:07	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
2/6/2018	2018	18:13	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
2/9/2018	2018	12:58	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
5/12/2018	2018	14:30	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
5/18/2018	2018	11:37	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
5/31/2018	2018	8:11	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
6/29/2018	2018	15:48	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
8/13/2018	2018	16:20	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
8/17/2018	2018	10:38	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
8/11/2018	2018	12:51	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
10/24/2018	2018	12:43	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
10/19/2018	2018	9:19	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
10/27/2018	2018	22:36	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
11/16/2018	2018	7:23	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	02 - Angle	03 - Loose snow	0	0	0	0
11/23/2018	2018	13:08	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	1
1/3/2019	2019	11:46	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
1/25/2019	2019	10:49	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	04 - Slush	0	0	0	0
1/21/2019	2019	20:49	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	02 - Angle	05 - Packed snow	0	0	0	0
2/6/2019	2019	16:17	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	02 - Rain	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
5/21/2019	2019	18:53	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
6/25/2019	2019	7:07	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	02 - Wet	0	0	0	0
6/12/2019	2019	9:14	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
6/10/2019	2019	19:51	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	1	0
8/17/2019	2019	16:38	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
10/17/2019	2019	6:50	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	02 - Rain	03 - Dawn	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	02 - Wet	0	0	0	0
1/31/2020	2020	17:53	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	1
3/12/2020	2020	12:00	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	99 - Other	01 - Dry	0	0	0	0
2/22/2020	2020	2:05	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	0	0	0	0
2/28/2020	2020	15:40	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/26/2020	2020	19:34	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	04 - Slush	0	0	0	0
4/21/2020	2020	12:31	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	02 - Wet	0	0	0	0
7/16/2020	2020	13:21	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
10/7/2020	2020	11:33	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
9/29/2020	2020	19:44	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
10/27/2020	2020	11:59	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
5/31/2021	2021	11:00	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
6/7/2021	2021	17:50	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
9/12/2021	2021	18:16	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	1	0
10/19/2021	2021	13:14	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
12/9/2021	2021	16:33	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	05 - Dusk	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
12/14/2021	2021	17:01	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
2/17/2022	2022	17:37	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	05 - Turning movement	04 - Slush	0	0	0	0
2/14/2022	2022	8:15	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
3/15/2022	2022	6:41	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	01 - Clear	03 - Dawn	01 - Traffic signal	0	02 - Non-fatal injury	05 - Turning movement	02 - Wet	0	0	0	0
5/21/2022	2022	21:30	CARLING AVE @ CLYDE AVE/COLE AVE (0006984)	02 - Rain	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	0	0	0	0
1/16/2018	2018	18:18	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	07 - Dark	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
2/27/2018	2018	11:26	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
3/27/2018	2018	10:50	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
7/23/2018	2018	18:59	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
9/4/2018	2018	8:30	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
9/5/2018	2018	8:46	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
8/27/2018	2018	12:02	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
10/12/2018	2018	10:20	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
12/25/2018	2018	12:19	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
1/2/2019	2019	22:19	CARLING AVE @ CHURCHILL AVE (0002149)	03 - Snow	07 - Dark	01 - Traffic signal	0	03 - P.D. only	07 - SMV other	03 - Loose snow	0	0	0	0
1/29/2019	2019	14:45	CARLING AVE @ CHURCHILL AVE (0002149)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	04 - Slush	0	0	0	0
4/9/2019	2019	14:52	CARLING AVE @ CHURCHILL AVE (0002149)	03 - Snow	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	04 - Sideswipe	02 - Wet	0	0	0	0
5/28/2019	2019	17:48	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
6/18/2019	2019	16:50	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
9/24/2019	2019	15:15	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
9/15/2019	2019	14:40	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/18/2020	2020	8:11	CARLING AVE @ CHURCHILL AVE (0002149)	03 - Snow	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	04 - Slush	0	0	0	0
2/3/2020	2020	17:19	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	05 - Dusk	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	02 - Wet	0	0	0	0
7/14/2020	2020	12:15	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
7/6/2020	2020	13:40	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
8/22/2020	2020	13:39	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
10/14/2020	2020	9:12	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
11/18/2020	2020	10:13	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/23/2021	2021	11:37	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
2/12/2021	2021	10:45	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
3/5/2021	2021	17:49	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
7/18/2021	2021	22:34	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	07 - Dark	01 - Traffic signal	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	0	0	0	0
9/20/2021	2021	7:20	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
12/8/2021	2021	16:00	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	05 - Dusk	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
2/23/2022	2022	15:36	CARLING AVE @ CHURCHILL AVE (0002149)	01 - Clear	01 - Daylight	01 - Traffic signal	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
8/2/2018	2018	17:43	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
1/21/2019	2019	19:30	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	03 - Snow	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	03 - Loose snow	0	0	0	1
2/4/2019	2019	17:31	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	03 - Snow	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	03 - Loose snow	0	0	0	0
8/27/2019	2019	15:05	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
9/26/2019	2019	13:48	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
9/21/2020	2020	20:32	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
10/29/2021	2021	17:22	CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE (__3ZA4T0)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	0	0	1	0
3/10/2020	2020	21:00	CHURCHILL AVE N btwn CARLING AVE & TILLBURY AVE (__3ZBOD9)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
11/20/2020	2020	15:29	CHURCHILL AVE N btwn CARLING AVE & TILLBURY AVE (__3ZBOD9)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	04 - Sideswipe	01 - Dry	0	0	1	0
2/26/2018	2018	21:51	CHURCHILL AVE @ TILLBURY AVE (0006777)	01 - Clear	07 - Dark	02 - Stop sign	0	03 - P.D. only	05 - Turning movement	01 - Dry	0	0	0	0
11/21/2020	2020	18:03	CHURCHILL AVE @ TILLBURY AVE (0006777)	01 - Clear	07 - Dark	02 - Stop sign	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
7/24/2019	2019	16:30	COLE AVE @ TILLBURY AVE (0006782)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	1	0
1/21/2022	2022	7:55	CARLING AVE EB btwn CHURCHILL AVE N & CLYDE AVE (__3ZA4T9)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	04 - Sideswipe	05 - Packed snow	0	0	0	0
3/16/2018	2018	17:56	COLE AVE btwn CARLING AVE & TILLBURY AVE (__3ZBOPM)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CHURCHILL AVE

Traffic Control: Traffic signal **Total Collisions:** 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-04, Fri,11:19	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	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-May-19, Thu,13:41	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jul-08, Fri,14:38	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Truck - open	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-10, Fri,09:52	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-19, Wed,16:45	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Aug-16, Wed,15:00	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Delivery van	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Sep-20, Wed,19:20	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-Jan-16, Tue,18:18	Clear	Rear end	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-27, Tue,11:26	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - closed	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-27, Tue,10:50	Clear	SMV other	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Curb	0
2018-Jul-23, Mon,18:59	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	
2018-Aug-27, Mon,12:02	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CHURCHILL AVE

Traffic Control: Traffic signal **Total Collisions:** 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-04, Tue,08:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - dump	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-05, Wed,08:46	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-12, Fri,10:20	Clear	Rear end	P.D. only	Dry	East	Turning left	Truck - dump	Other motor vehicle	0
					East	Turning left	Delivery van	Other motor vehicle	
2018-Dec-25, Tue,12:19	Clear	Rear end	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-02, Wed,22:19	Snow	SMV other	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Snowbank/drift	0
2019-Jan-29, Tue,14:45	Snow	Sideswipe	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2019-Apr-09, Tue,14:52	Snow	Sideswipe	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-May-28, Tue,17:48	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-Jun-18, Tue,16:50	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	
2019-Sep-15, Sun,14:40	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	
2019-Sep-24, Tue,15:15	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Feb-03, Mon,17:19	Clear	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CHURCHILL AVE

Traffic Control: Traffic signal **Total Collisions:** 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Feb-18, Tue,08:11	Snow	Rear end	P.D. only	Slush	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jul-06, Mon,13:40	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2020-Jul-14, Tue,12:15	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Delivery van	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2020-Aug-22, Sat,13:39	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	
2020-Oct-14, Wed,09:12	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Nov-18, Wed,10:13	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ CLYDE AVE/COLE AVE

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-Feb-12, Fri,09:41	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Aug-02, Tue,10:00	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-08, Sat,15:20	Clear	SMV other	P.D. only	Dry	East	Turning right	Truck and trailer	Pole (utility, power)	0
2016-Nov-28, Mon,08:41	Clear	SMV other	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Pedestrian	1
2017-May-18, Thu,08:36	Clear	Turning movement	Non-fatal injury	Dry	West	Going ahead	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, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CLYDE AVE/COLE AVE

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
2017-Jun-27, Tue,14:30	Clear	Turning movement	P.D. only	Dry	West	Turning left	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jun-28, Wed,17:55	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-07, Fri,15:43	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Motorcycle	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-20, Thu,15:48	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					South	Turning left	Municipal transit bus	Other motor vehicle	
2017-Jul-26, Wed,08:34	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	
2017-Sep-21, Thu,16:00	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-Sep-22, Fri,15:43	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - dump	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Oct-14, Sat,13:15	Clear	Turning movement	P.D. only	Dry	North	Turning right	Delivery van	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Oct-26, Thu,16:59	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	
2017-Nov-30, Thu,14:31	Clear	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2018-Jan-09, Tue,21:41	Clear	Sideswipe	P.D. only	Slush	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-10, Wed,21:16	Clear	Turning movement	P.D. only	Wet	West	Going ahead	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, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CLYDE AVE/COLE AVE

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,10:12	Drifting Snow	Sideswipe	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Skidding/sliding	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Feb-01, Thu,07:07	Snow	Sideswipe	P.D. only	Loose snow	West	Turning left	School bus	Other motor vehicle	0
					West	Changing lanes	Pick-up truck	Other motor vehicle	
2018-Feb-06, Tue,18:13	Clear	Turning movement	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	
2018-Feb-09, Fri,12:58	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Truck - dump	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2018-May-12, Sat,14:30	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	
2018-May-18, Fri,11:37	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - closed	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-31, Thu,08:11	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-29, Fri,15:48	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	
2018-Aug-11, Sat,12:51	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	
2018-Aug-13, Mon,16:20	Clear	Turning movement	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-17, Fri,10:38	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Truck - closed	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CLYDE AVE/COLE AVE

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-Oct-19, Fri,09:19	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	
2018-Oct-24, Wed,12:43	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	
2018-Oct-27, Sat,22:36	Snow	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Nov-16, Fri,07:23	Snow	Angle	Non-fatal injury	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2018-Nov-23, Fri,13:08	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2019-Jan-03, Thu,11:46	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	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jan-21, Mon,20:49	Snow	Angle	P.D. only	Packed snow	East	Turning right	Automobile, station wagon	Skidding/sliding	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-25, Fri,10:49	Clear	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Delivery van	Other motor vehicle	
2019-Feb-06, Wed,16:17	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-May-21, Tue,18:53	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-10, Mon,19:51	Clear	Turning movement	P.D. only	Dry	West	Turning right	Unknown	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CLYDE AVE/COLE AVE

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-Jun-12, Wed,09:14	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-25, Tue,07:07	Clear	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	
					North	Stopped	Pick-up truck	Other motor vehicle	
2019-Aug-17, Sat,16:38	Clear	Sideswipe	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-17, Thu,06:50	Rain	Sideswipe	P.D. only	Wet	West	Going ahead	Unknown	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Jan-31, Fri,17:53	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2020-Feb-22, Sat,02:05	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2020-Feb-26, Wed,19:34	Snow	Turning movement	Non-fatal injury	Slush	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Feb-28, Fri,15:40	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Mar-12, Thu,12:00	Clear	Other	P.D. only	Dry	East	Stopped	Automobile, station wagon	Debris falling off vehicle	0
					East	Slowing or stopping	Pick-up truck	Other	
2020-Apr-21, Tue,12:31	Snow	Angle	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jul-16, Thu,13:21	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	
2020-Sep-29, Tue,19:44	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CARLING AVE @ CLYDE AVE/COLE AVE

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
2020-Oct-07, Wed,11:33	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Oct-27, Tue,11:59	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: CARLING AVE EB btwn CHURCHILL AVE N & CLYDE 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-Mar-27, Mon,15:30	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	

Location: CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE

Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Oct-07, Fri,14:55	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-May-04, Thu,16:47	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-Aug-02, Thu,17:43	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-21, Mon,19:30	Snow	SMV other	Non-fatal injury	Loose snow	West	Going ahead	Automobile, station wagon	Pedestrian	1
2019-Feb-04, Mon,17:31	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-27, Tue,15:05	Clear	Turning movement	P.D. only	Dry	West	Turning right	Passenger van	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, 2016 **To:** December 31, 2020

Location: CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE

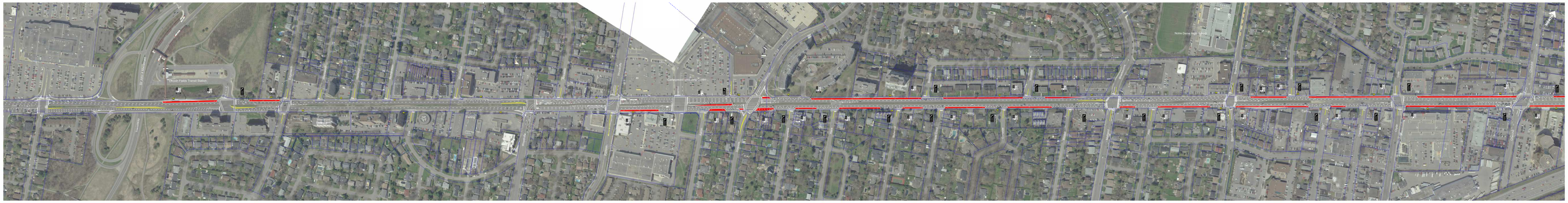
Traffic Control: No control **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Sep-26, Thu,13:48	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - closed	Other motor vehicle	
2020-Sep-21, Mon,20:32	Clear	Rear end	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Appendix E

Carling Avenue Transit Priority Measures Plan

CGH TRANSPORTATION



CARLING AVENUE TRANSIT PRIORITY MEASURES

PRIORITÉ AUX TRANSPORTS EN COMMUN SUR L'AVENUE CARLING

MMM GROUP

1 of 2

Appendix F

TDM Checklist

CGH TRANSPORTATION

TDM-Supportive Development Design and Infrastructure Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☐
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☐
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☐
	1.2	**Facilities for walking & cycling**	
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

		TDM-supportive design & infrastructure measures: *Non-residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.4	Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.5	Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☐
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☐
BASIC	1.2.8	Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☐
BASIC	1.3.2	Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☐

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	☐
BETTER	2.1.5	Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☐
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	☐
	2.3	**Shower & change facilities**	
BASIC	2.3.1	Provide shower and change facilities for the use of active commuters	☐
BETTER	2.3.2	In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	☐
	2.4	**Bicycle repair station**	
BETTER	2.4.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	4.2	**Carpool parking**	
BASIC	4.2.1	Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	☐
BETTER	4.2.2	At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐

	TDM-supportive design & infrastructure measures: *Non-residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	6. PARKING		
	6.1 Number of parking spaces		
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2 Separate long-term & short-term parking areas		
BETTER	6.2.1	Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	☐
	7. OTHER		
	7.1 On-site amenities to minimize off-site trips		
BETTER	7.1.1	Provide on-site amenities to minimize mid-day or mid-commute errands	☐

TDM-Supportive Development Design and Infrastructure Checklist:
Residential Developments (multi-family or condominium)

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

	TDM-supportive design & infrastructure measures: *Residential developments*		Check if completed & add descriptions, explanations or plan/drawing references
	1. WALKING & CYCLING: ROUTES		
	1.1 Building location & access points		
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	☐
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☐
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☐
	1.2 Facilities for walking & cycling		
REQUIRED	1.2.1	Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations *(see Official Plan policy 4.3.3)*	☐
REQUIRED	1.2.2	Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible *(see Official Plan policy 4.3.12)*	☑

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3	Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.4	Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps *(see Official Plan policy 4.3.10)*	☑
REQUIRED	1.2.5	Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians *(see Official Plan policy 4.3.11)*	☑
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☐
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☐
BASIC	1.2.8	Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☐
BASIC	1.3.2	Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☐

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	☑
REQUIRED	2.1.2	Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas *(see Zoning By-law Section 111)*	☑
REQUIRED	2.1.3	Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored *(see Zoning By-law Section 111)*	☑
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☑
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers *(see Zoning By-law Section 111)*	☑
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐
	2.3	**Bicycle repair station**	
BETTER	2.3.1	Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2	Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
BASIC	4.1.1	Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	6.1.1	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☑
BASIC	6.1.2	Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐
BETTER	6.1.4	Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☐

TDM Measures Checklist:
Non-Residential Developments (office, institutional, retail or industrial)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — The measure could maximize support for users of sustainable modes, and optimize development performance

★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		1.	**TDM PROGRAM MANAGEMENT**	
		1.1	**Program coordinator**	
BASIC	★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2	**Travel surveys**	
BETTER		1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2.	**WALKING AND CYCLING**	
		2.1	**Information on walking/cycling routes & destinations**	
BASIC		2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances	☐
		2.2	**Bicycle skills training**	
			Commuter travel	
BETTER	★	2.2.1	Offer on-site cycling courses for commuters, or subsidize off-site courses	☐
		2.3	**Valet bike parking**	
			Visitor travel	
BETTER		2.3.1	Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC	3.1.1	Display relevant transit schedules and route maps at entrances	☐
BASIC	3.1.2	Provide online links to OC Transpo and STO information	☐
BETTER	3.1.3	Provide real-time arrival information display at entrances	☐
		3.2 Transit fare incentives	
		Commuter travel	
BETTER	3.2.1	Offer preloaded PRESTO cards to encourage commuters to use transit	☐
BETTER ★	3.2.2	Subsidize or reimburse monthly transit pass purchases by employees	☐
		Visitor travel	
BETTER	3.2.3	Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	☐
		3.3 Enhanced public transit service	
		Commuter travel	
BETTER	3.3.1	Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER	3.3.2	Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	☐
		3.4 Private transit service	
		Commuter travel	
BETTER	3.4.1	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	☐
		Visitor travel	
BETTER	3.4.2	Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	☐

		TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		4. RIDESHARING	
		4.1 Ridematching service	
		Commuter travel	
BASIC ★	4.1.1	Provide a dedicated ridematching portal at OttawaRideMatch.com	☐
		4.2 Carpool parking price incentives	
		Commuter travel	
BETTER	4.2.1	Provide discounts on parking costs for registered carpools	☐
		4.3 Vanpool service	
		Commuter travel	
BETTER	4.3.1	Provide a vanpooling service for long-distance commuters	☐
		5. CARSHARING & BIKESHARING	
		5.1 Bikeshare stations & memberships	
BETTER	5.1.1	Contract with provider to install on-site bikeshare station for use by commuters and visitors	☐
		Commuter travel	
BETTER	5.1.2	Provide employees with bikeshare memberships for local business travel	☐
		5.2 Carshare vehicles & memberships	
		Commuter travel	
BETTER	5.2.1	Contract with provider to install on-site carshare vehicles and promote their use by tenants	☐
BETTER	5.2.2	Provide employees with carshare memberships for local business travel	☐
		6. PARKING	
		6.1 Priced parking	
		Commuter travel	
BASIC ★	6.1.1	Charge for long-term parking (daily, weekly, monthly)	☐
BASIC	6.1.2	Unbundle parking cost from lease rates at multi-tenant sites	☐
		Visitor travel	
BETTER	6.1.3	Charge for short-term parking (hourly)	☐

			TDM measures: *Non-residential developments*	Check if proposed & add descriptions
		7.	**TDM MARKETING & COMMUNICATIONS**	
		7.1	**Multimodal travel information**	
			Commuter travel	
BASIC	★	7.1.1	Provide a multimodal travel option information package to new/relocating employees and students	☑
			Visitor travel	
BETTER	★	7.1.2	Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	☐
		7.2	**Personalized trip planning**	
			Commuter travel	
BETTER	★	7.2.1	Offer personalized trip planning to new/relocating employees	☐
		7.3	**Promotions**	
			Commuter travel	
BETTER		7.3.1	Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	☐
		8.	**OTHER INCENTIVES & AMENITIES**	
		8.1	**Emergency ride home**	
			Commuter travel	
BETTER	★	8.1.1	Provide emergency ride home service to non-driving commuters	☐
		8.2	**Alternative work arrangements**	
			Commuter travel	
BASIC	★	8.2.1	Encourage flexible work hours	☐
BETTER		8.2.2	Encourage compressed workweeks	☐
BETTER	★	8.2.3	Encourage telework	☐
		8.3	**Local business travel options**	
			Commuter travel	
BASIC	★	8.3.1	Provide local business travel options that minimize the need for employees to bring a personal car to work	☐
		8.4	**Commuter incentives**	
			Commuter travel	
BETTER		8.4.1	Offer employees a taxable, mode-neutral commuting allowance	☐
		8.5	**On-site amenities**	
			Commuter travel	
BETTER		8.5.1	Provide on-site amenities/services to minimize mid-day or mid-commute errands	☐

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

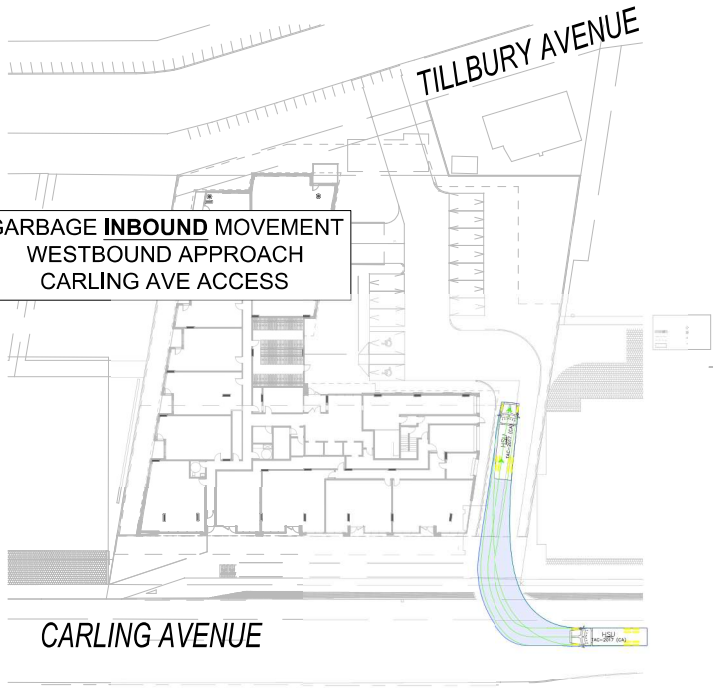
			TDM measures: *Residential developments*	Check if proposed & add descriptions
		1.	**TDM PROGRAM MANAGEMENT**	
		1.1	**Program coordinator**	
BASIC	★	1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2	**Travel surveys**	
BETTER		1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2.	**WALKING AND CYCLING**	
		2.1	**Information on walking/cycling routes & destinations**	
BASIC		2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☑
		2.2	**Bicycle skills training**	
BETTER		2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☑
BETTER		3.1.2	Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
		3.2	**Transit fare incentives**	
BASIC	★	3.2.1	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☐
BETTER		3.2.2	Offer at least one year of free monthly transit passes on residence purchase/move-in	☑
		3.3	**Enhanced public transit service**	
BETTER	★	3.3.1	Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
		3.4	**Private transit service**	
BETTER		3.4.1	Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
		4.	**CARSHARING & BIKESHARING**	
		4.1	**Bikeshare stations & memberships**	
BETTER		4.1.1	Contract with provider to install on-site bikeshare station (*multi-family)*	☑
BETTER		4.1.2	Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
		4.2	**Carshare vehicles & memberships**	
BETTER		4.2.1	Contract with provider to install on-site carshare vehicles and promote their use by residents	☑
BETTER		4.2.2	Provide residents with carshare memberships, either free or subsidized	☐
		5.	**PARKING**	
		5.1	**Priced parking**	
BASIC	★	5.1.1	Unbundle parking cost from purchase price *(condominium)*	☑
BASIC	★	5.1.2	Unbundle parking cost from monthly rent *(multi-family)*	☑

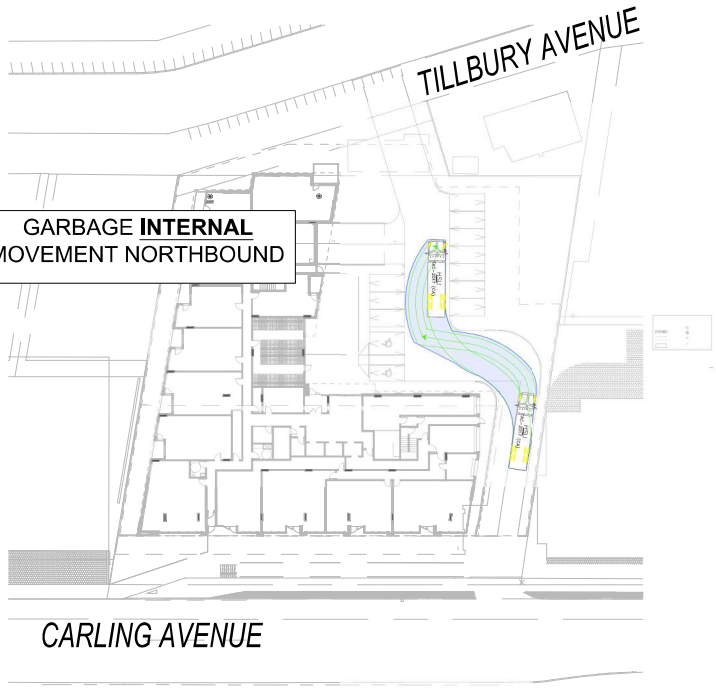
			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☑
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

Appendix G

Turing Templates

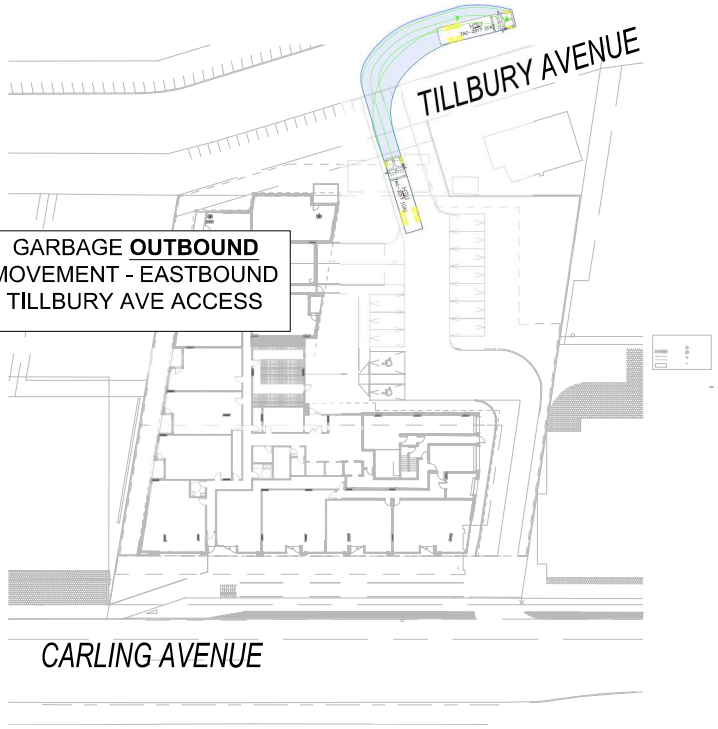


GARBAGE **INBOUND** MOVEMENT
WESTBOUND APPROACH
CARLING AVE ACCESS



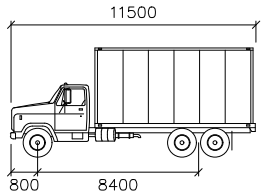
GARBAGE **INTERNAL**
MOVEMENT NORTHBOUND

GARBAGE **OUTBOUND**
MOVEMENT - WESTBOUND
TILLBURY AVE ACCESS



GARBAGE **OUTBOUND**
MOVEMENT - EASTBOUND
TILLBURY AVE ACCESS

Notes:



HSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review		

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Insdie Edge Properties
464 Bank Street, Suite 200
Ottawa, ON
K2P 1Z3

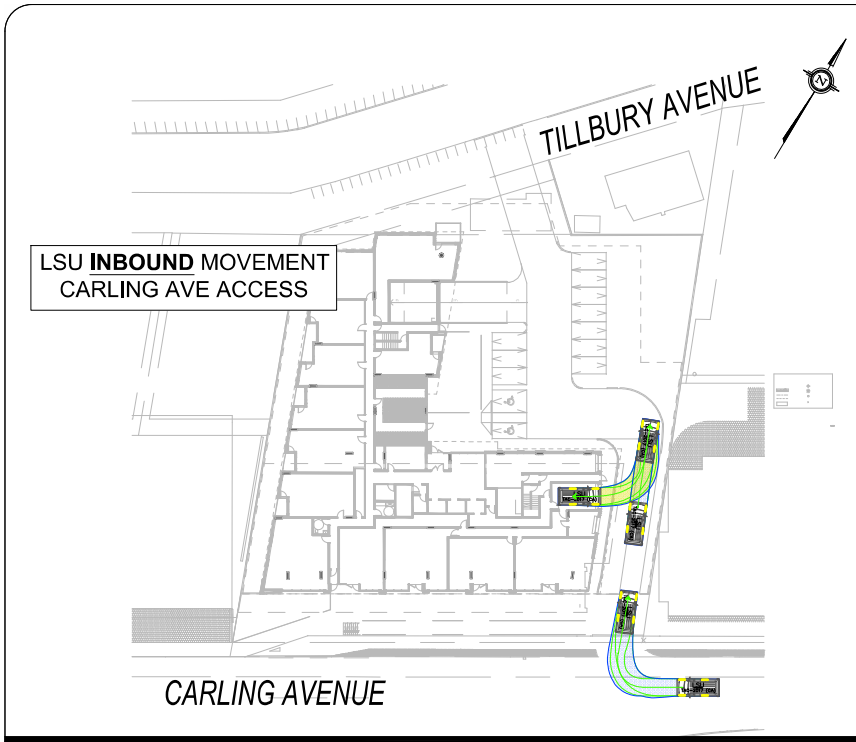
ARCHITECT:

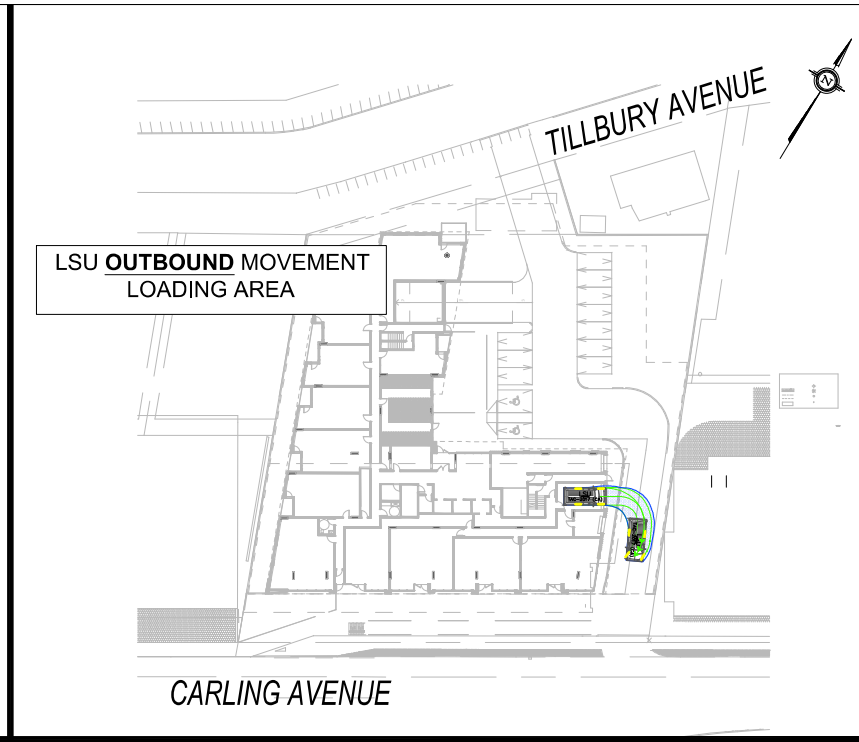
SITE: 1675-1673 Carling Ave / 386 Tilbury

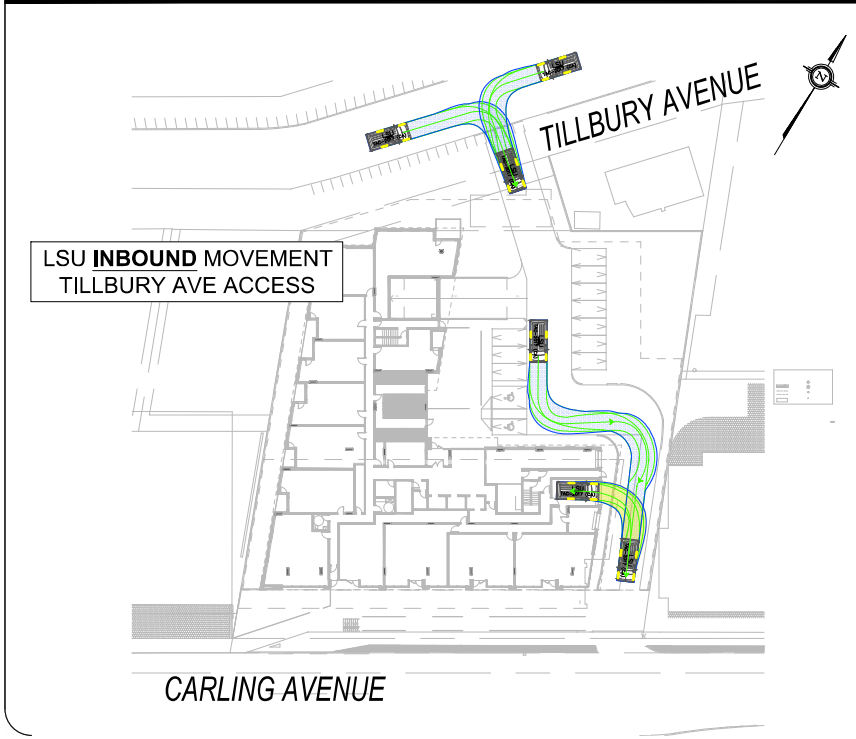
TITLE: Garbage Turning Movements Carling Avenue Access

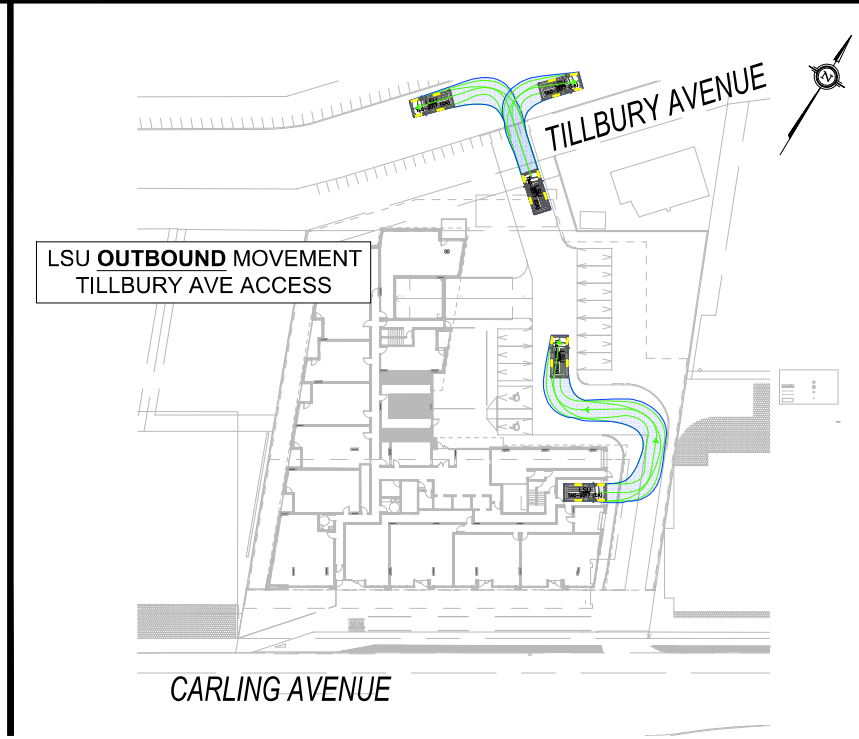
SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-03-10	EA	AH

PROJECT NO:	DRAWING NO:	REVISION:
2023-083	001	01









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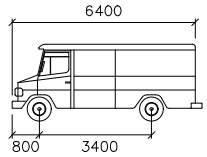

LSU

	mm
Width	: 2600
Track	: 2600
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

REV:	DESCRIPTION:	BY:	DATE:
01	Issued for Review		

STATUS:

CGH Transportation
6 Plaza Court
Ottawa, ON
K2H 7W1
(343) 999-9117

CLIENT: Insdie Edge Properties
464 Bank Street, Suite 200
Ottawa, ON
K2P 1Z3

ARCHITECT:

SITE: 1675-1673 Carling Ave / 386 Tilbury

TITLE: Garbage Turning Movements Carling Avenue Access

SCALE AT A3:	DATE:	DRAWN:	CHECKED:
NTS	2025-03-10	EA	AH

PROJECT NO:	DRAWING NO:	REVISION:
2023-083	002	01

Appendix H

MMLOS Analysis

CGH TRANSPORTATION

Multi-Modal Level of Service - Segments Form

Consultant	**CGH Transportation Inc**	**Project**	**2023-083**
Scenario	**Existing/Future**	**Date**	**9/23/2023**
Comments			

SEGMENTS			Carling Existing	Carling Future	Tillbury Existing/Future
Pedestrian	Sidewalk Width Boulevard Width	-	≥ 2 m < 0.5	≥ 2 m 0.5 - 2 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	> 30 to 50 km/h yes
	Exposure to Traffic PLoS		**D**	**B**	**B**
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		-	-	-
	Level of Service		**-**	**-**	**-**
Bicycle	Type of Cycling Facility	**F**	Mixed Traffic	Physically Separated	Mixed Traffic
	Number of Travel Lanes		≥ 6 lanes total		≤ 2 (no centreline)
	Operating Speed		≥ 60 km/h		≤ 40 km/h
	# of Lanes & Operating Speed LoS		**F**	**-**	**A**
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS		-	-	-
	Bike Lane Blockages				
	Blockage LoS		-	-	-
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge		
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes		
	Sidestreet Operating Speed		>60 to <65 km/h		
	Unsignalized Crossing - Lowest LoS		**D**	**A**	**-**
	Level of Service		**F**	**A**	**-**
Transit	Facility Type	**D**	Mixed Traffic	Bus lane	
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8	Cf ≤ 60	
	Level of Service		**D**	**B**	**-**
Truck	Truck Lane Width	**A**	≤ 3.5 m	≤ 3.5 m	
	Travel Lanes per Direction		> 1	> 1	
	Level of Service		**A**	**A**	**-**