180 Metcalfe Street Apartment Development

TIA Strategy Report

prepared for:

Jadco Group
345 Boulevard Samson
Laval, QC H7X 2Z7

prepared by:

PARSONS
1223 Michael Street North
Suite 100
Ottawa, ON K1J 7T2

August 14, 2018

476811 01000

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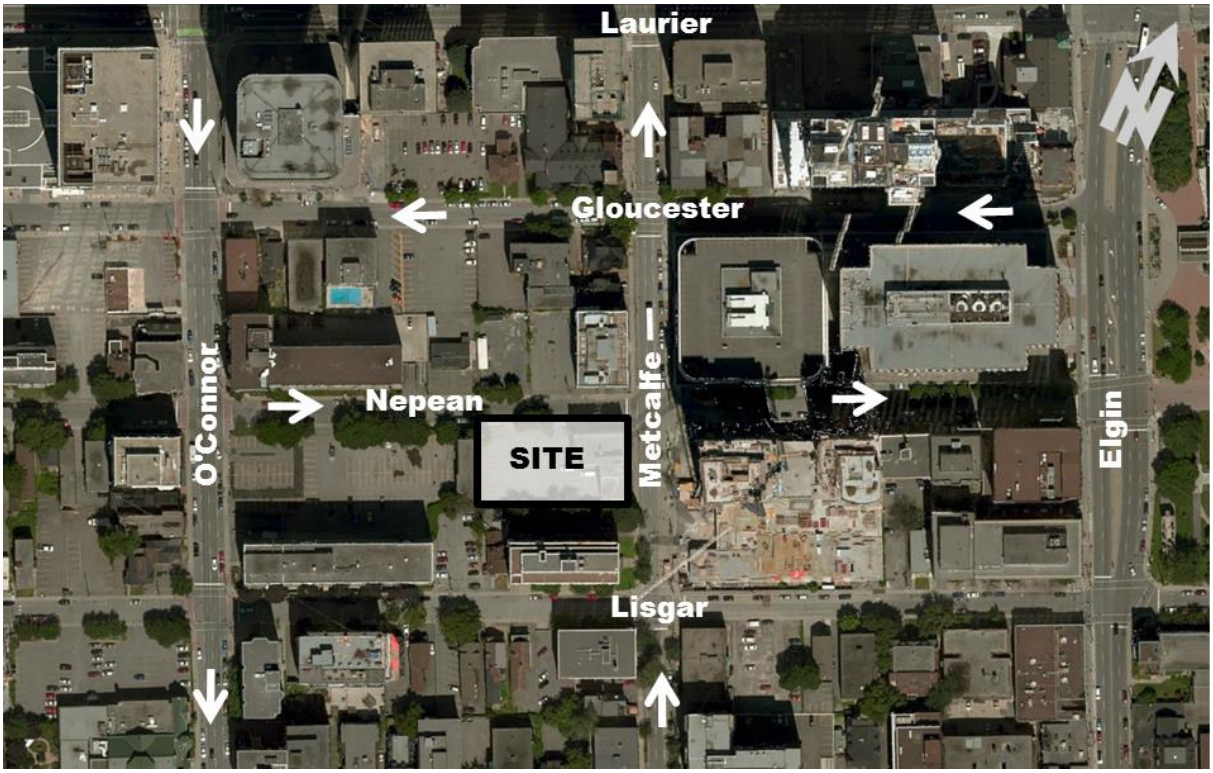
1.0 PROPOSED DEVELOPMENT

From the information provided, a 27-storey building consisting of approximately 303 residential apartment units and 490 m^2 of retail is being proposed on the southwest quadrant of the Metcalfe/Nepean intersection. Approximately 198 underground parking spaces and 157 bicycle parking spaces are also proposed. The site, which is municipally known as 180 Metcalfe, is currently occupied by a 6-storey office building (which will be demolished, except for the façade) and an approximate 70 space parking lot. Access to/from the existing and proposed parking is to Nepean Street, which operates one-way eastbound. Access/egress to the proposal loading dock/garbage room is proposed via a lane connection to Metcalfe at the southwest corner of the site. The site's local context is depicted as Figure 1 and the proposed Site Plan is depicted in Figure 2.

Figure 1: Local Context



2.0 EXISTING CONDITIONS

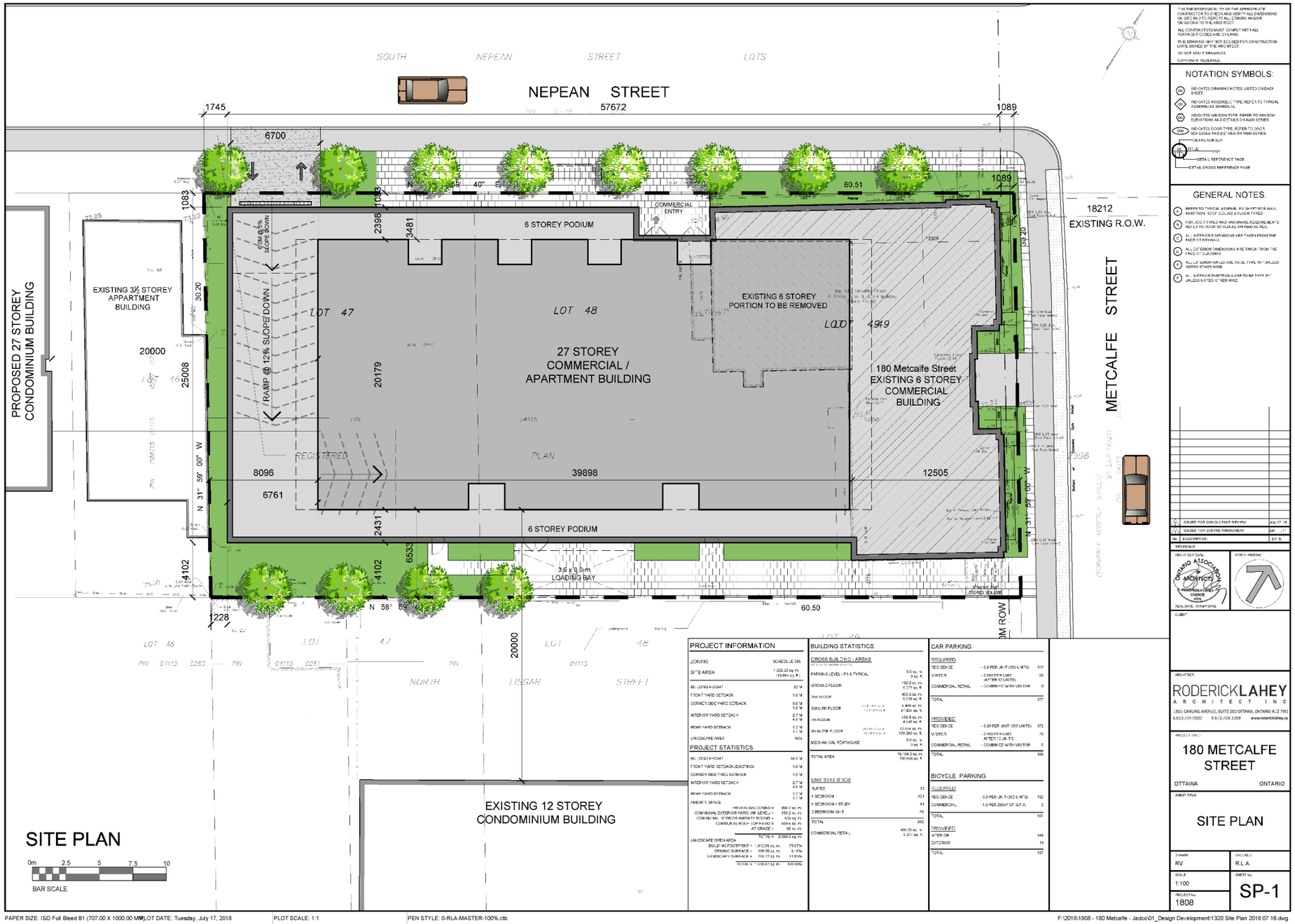
2.1 Area Road Network

O'Connor Street is an arterial roadway, which operates one-way in the southbound direction. Within the study area, O'Connor Street has a three-lane cross section and an unposted speed limit understood to be 50 km/h. On-street parking is permitted along the west side of the road outside the from 8:00am to 5:30pm. A bi-directional north-south bike facility is provided along the east side of the roadway. Sidewalks exist on both sides.

Metcalfe Street is an arterial roadway, which operates one-way in the northbound direction. It's right-of-way protection is for 20 m, with the maximum land requirement from the adjacent subject property being 0.9 m. Within the study area, Metcalfe Street has a three-lane cross section and an unposted speed limit understood to be 50 km/h. On-street parking is permitted along the east side of the road outside morning and afternoon peak hours. Sidewalks exist on both sides.

Gloucester Street is a local roadway, which operates one-way in the westbound direction. Its cross section consists of a single travel lane with on-street parking provided along both sides of the road. The unposted speed limit along Gloucester Street is understood to be 50 km/h. Sidewalks exist on both sides.

Figure 2: Proposed Site Plan



PROJECT INFORMATION

ZONING	SCHEDULE 345
SITE AREA	1 828.02 sq. m. (19,664 sq. ft.)
BUILDING HEIGHT	93 M
FRONT YARD SETBACK	1.0 M
CORNER SIDE YARD SETBACK	0.6 M 1.0 M
INTERIOR YARD SETBACK	2.7 M 4.5 M
REAR YARD SETBACK	1.2 M 3.7 M
LANDSCAPE AREA	90%

PROJECT STATISTICS

BUILDING HEIGHT	84.5 M
FRONT YARD SETBACK (EXISTING)	1.0 M
CORNER SIDE YARD SETBACK	1.5 M
INTERIOR YARD SETBACK	2.7 M 4.5 M
REAR YARD SETBACK	1.2 M 3.7 M
AMENITY SPACE	
PRIVATE BALCONIES =	880.7 sq. m.
COMMUNAL EXTERIOR PATIO (@ LEVEL) =	150.2 sq. m.
COMMUNAL INTERIOR AMENITY ROOMS =	433 sq. m.
COMMUNAL ROOF TOP PATIO =	429.4 sq. m.
AT GRADE =	55 sq. m.
TOTAL =	2,099.3 sq. m.
LANDSCAPE OPEN AREA	
BUILDING FOOTPRINT =	1,412.04 sq. m. 75.67%
DRIVING SURFACE =	155.59 sq. m. 8.18%
LANDSCAPED SURFACE =	218.72 sq. m. 11.85%
TOTAL =	1,828.02 sq. m. 100.00%

BUILDING STATISTICS

CROSS BUILDING - AREAS

PARKING LEVEL - P1 & TYPICAL	0.0 sq. m. 0 sq. ft.
GROUND FLOOR	450.2 sq. m. 5,277 sq. ft.
2nd FLOOR	900.9 sq. m. 9,738 sq. ft.
3rd to 5th FLOOR	4,466 sq. m. 47,424 sq. ft.
6th FLOOR	450.5 sq. m. 4,848 sq. ft.
6th to 27th FLOOR	12,004 sq. m. 129,264 sq. ft.
MECHANICAL PENTHOUSE	0.0 sq. m. 0 sq. ft.
TOTAL AREA	19,104.3 sq. m. 205,638 sq. ft.

UNIT STATISTICS

SUITES	31
1 BEDROOM	121
1 BEDROOM + STUDY	81
2 BEDROOM UNIT	70
TOTAL	303
COMMERCIAL RETAIL	450.25 sq. m. 5,277 sq. ft.

CAR PARKING

REQUIRED		
RESIDENCE	- 0.5 PER UNIT (303 UNITS)	152
VISITOR	- 0.083 PER UNIT AFTER 12 UNITS	25
COMMERCIAL, RETAIL	- COMBINED WITH VISITOR	0
TOTAL		177
PROVIDED		
RESIDENCE	- 0.57 PER UNIT (303 UNITS)	173
VISITOR	- 0.083 PER UNIT AFTER 12 UNITS	15
COMMERCIAL, RETAIL	- COMBINED WITH VISITOR	0
TOTAL		188

BICYCLE PARKING

REQUIRED		
RESIDENCE	- 0.5 PER UNIT (303 UNITS)	152
COMMERCIAL	- 1.0 PER 250m² OF G.F.A.	2
TOTAL		154
PROVIDED		
INTERIOR		146
EXTERIOR		11
TOTAL		157

NOTATION SYMBOLS:

GENERAL NOTES:

ISSUED FOR CONSULTANT REVIEW — July 17, 18
ISSUED FOR ZONING AMENDMENT — SEP. 17

ARCHITECT SEAL — NORTH ARROW

ARCHITECT:
RODERICK LAHEY ARCHITECT INC
1501 CARLING AVENUE, SUITE 200 OTTAWA, ONTARIO K1Z 7M1
t. 613.724.0992 f. 613.724.1209 www.rodericklahey.ca

PROJECT TITLE:
180 METCALFE STREET
OTTAWA ONTARIO

SHEET TITLE:
SITE PLAN

DRAWN: RV | CHECKED: R.L.A.
SCALE: 1:100 | SHEET No.: SP-1
PROJECT No.: 1808

PAPER SIZE: ISO Full Bleed B1 (707.00 X 1000.00 MM) | PLOT DATE: Tuesday, July 17, 2018 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb | F:\2018\1808 - 180 Metcalfe - Jadco\01_Design Development\1320 Site Plan 2018 07 16.dwg

Nepean Street is a local roadway, which operates one-way in the eastbound direction. Its cross section consists of a single travel lane with on-street 2 hour parking provided along both sides of the road. The unposted speed limit along Nepean Street is understood to be 50 km/h. Sidewalks exist on both sides.

2.2 Area Bicycle Network

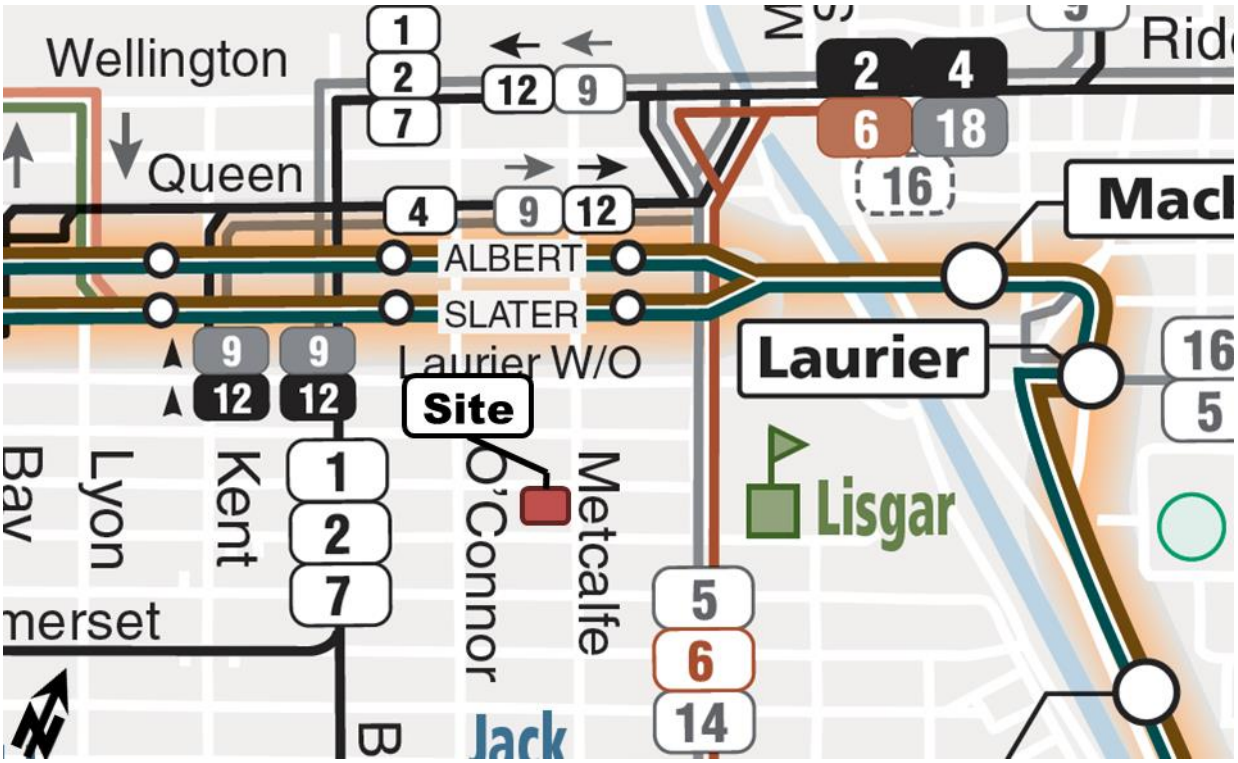
The study area's bicycle network currently consists of a two-way cycle track on the east side of O'Connor Street, segregated bike lanes in each direction on Laurier Avenue, and the multi-use pathways located on either side of the Rideau Canal.

2.3 Transit Network

Transit service within the vicinity of the site is currently provided by OC Transpo Routes #1, 2, 5, 6, 7 and 14. Regular Routes #1, 2, 5, 7 and 14 provide frequent all-day service and Peak Route #6 provides service during the peak hours only. Bus stops for Routes #1, 2 and 7 are located along Bank Street, approximately 400 m from the subject site and bus stops for Routes #5, 6, and 14 are located along Elgin Street, approximately 250 m from the subject site.

Bus rapid transit service is currently provided along Slater Street and Albert Street approximately 300 m north of the subject site. The planned opening of the Confederation Line LRT project in November 2018 will replace existing rapid transit bus services on Slater and Albert Streets. The closest LRT station to the site will be Parliament Station, located approximately 500 m walking distance away.

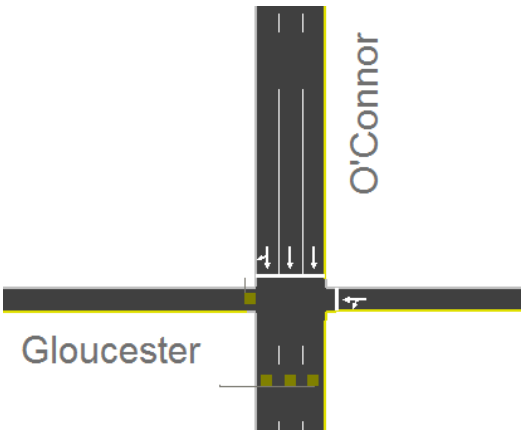
Figure 3: Area Transit Network



2.4 Existing Study Area Intersections

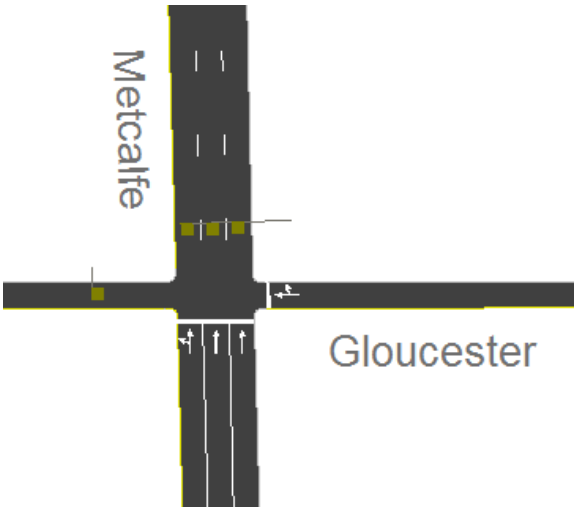
O'Connor/Gloucester[1]

The O'Connor/Gloucester intersection is a signalized four-legged intersection. The westbound approach consists of a single shared through/left-turn lane. The southbound approach consists of two through lanes and a shared through/right-turn lane. O'Connor Street and Gloucester Street both operate as one-way roadways in the south and westbound directions, respectively.



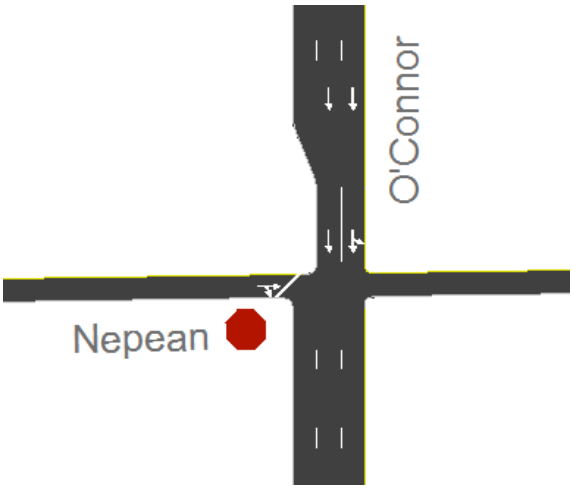
Metcalfe/Gloucester

The Metcalfe/Gloucester intersection is a signalized four-legged intersection. The northbound approach consists of two through lanes and a shared through/left-turn lane. The westbound approach consists of a single shared through/right-turn lane. Metcalfe Street and Gloucester Street both operate as one-way roadways in the north and westbound directions, respectively.



O'Connor/Nepean[2]

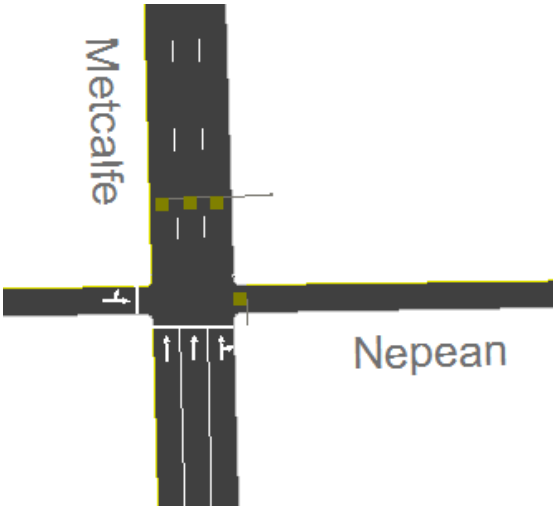
The O'Connor/Nepean intersection is an unsignalized four-legged intersection with STOP control on the eastbound approach only. The southbound approach consists of a single through lane and a shared through/left-turn lane. A third through lane is provided south of the intersection. The eastbound approach consists of a single shared through/right-turn lane. O'Connor Street and Nepean Street both operate as one-way roadways in the south and eastbound directions, respectively.



[1] On-street parking is permitted along the west side of O'Connor Street during the morning and afternoon peak hours. As such, O'Connor Street was assessed as a two-lane roadway during both peak hours.
[2] On-street parking is permitted along the west side of O'Connor Street during the morning and afternoon peak hours. As such, O'Connor Street was assessed as a two-lane roadway during both peak hours.

Metcalfe/Nepean

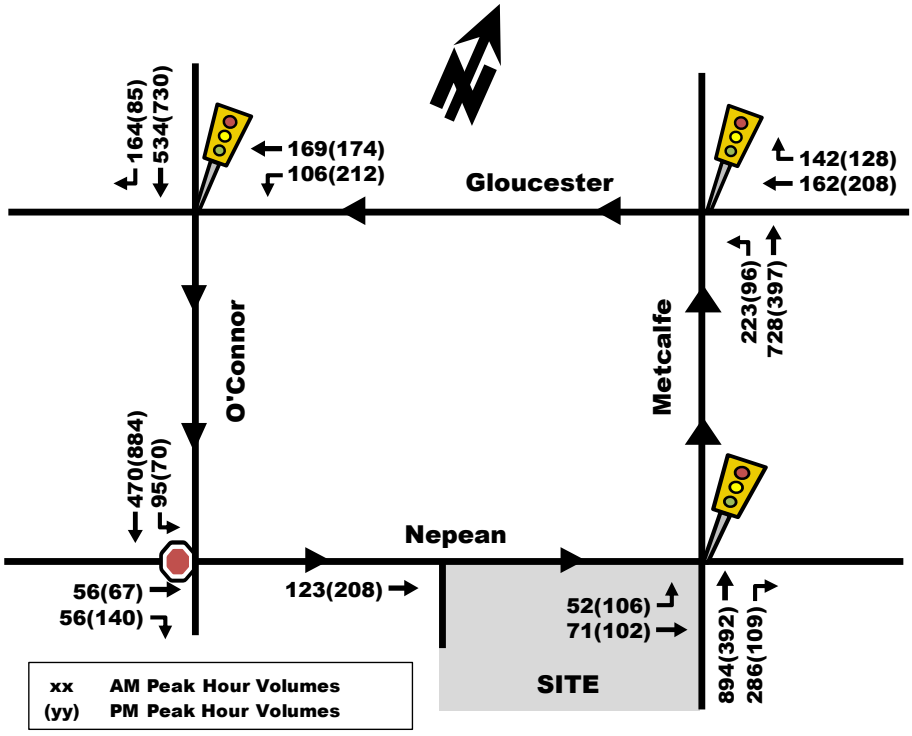
The Metcalfe/Nepean intersection is a signalized four-legged intersection. The northbound approach consists of two through lanes and a shared through/right-turn lane. The eastbound approach consists of a single shared through/left-turn lane. Metcalfe Street and Nepean Street both operate as one-way roadways in the north and eastbound directions, respectively.



2.5 Existing Intersection Operations

Illustrated as Figure 4 are the most recent weekday morning and afternoon peak hour traffic volumes at study area intersections, as provided by the City of Ottawa. Detailed peak hour traffic volumes are included as Appendix A.

Figure 4: Existing Peak Hour Traffic Volumes



The following Table 1 provides a summary of existing traffic operations at the study area intersections, based on the Synchro (V10) traffic analysis software. The signalized study area intersections were assessed in terms of the volume-to-capacity (v/c) ratio and the corresponding Level of Service (LoS) for the 'critical movement(s)'.

The study area intersections 'as a whole' were assessed based on a weighted v/c ratio. The Synchro model output of existing conditions is provided within Appendix B.

Table 1: Existing Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Metcalfe/Nepean	A(A)	0.38(0.39)	NBT(EBT)	6.7(6.9)	A(A)	0.37(0.26)
O'Connor/Nepean	B(C)	13.0(18.0)	EB(EB)	3.3(3.8)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 1, the signalized study area intersections, 'as a whole', are currently operating at an excellent LoS 'A' during both peak hours. This satisfies the City of Ottawa's current operating standard of LoS 'D' or better.

With regard to 'critical movements' at study area intersections, they are all operating at an acceptable LoS 'C' or better during the weekday morning and afternoon peak hours.

2.6 Pedestrian and Cycling Volumes

To the east of the site at the Nepean/Metcalfe intersection 8-hour bicycle volumes totalled 7 eastbound on Nepean and 9 northbound on Metcalfe. With regard to pedestrian volumes, they totalled 2,150 walking north-south across the west leg of the intersection and 2,020 walking east-west across Metcalfe Street over an 8-hour period.

To the west of the site, along O'Connor Street, 8-hour bicycle volumes totalled 67 (March 21, 2017 count). These would be higher in summer months when, for example, a July 2011 City count identified approximately 190 cyclists on O'Connor over an 8-hour period. With regard to pedestrian volumes, from the available 8-hour data, these totalled 1,010 north-south across Nepean, and 1,060 east-west across O'Connor. It is noteworthy that the pedestrians crossing O'Connor at Nepean do so without a crosswalk.

2.7 Collision Analysis

Collision history for study area intersections and roads (2012 to 2016, inclusive) was obtained from the City of Ottawa and most collisions (88%) involved only property damage, indicating low impact speeds, and 12% involved personal injuries. The primary causes of collisions cited by police include; angle (47%), turning movement (16%) and single unattended vehicle (16%) type collisions.

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

- 0.32/MEV at the Nepean/Metcalfe intersection; and,
- 1.04/MEV at the Nepean/O'Connor intersection.

It is noteworthy that within the five-years of recorded collision data there was one collision involving a pedestrian resulting in non-fatal injuries and one collision involving a cyclist resulting in property damage only. The source collision data as provided by the City of Ottawa and related analysis is provided as Appendix C.

3.0 PLANNED CONDITIONS

3.1 Planned Study Area Transportation Network Changes

Road Projects

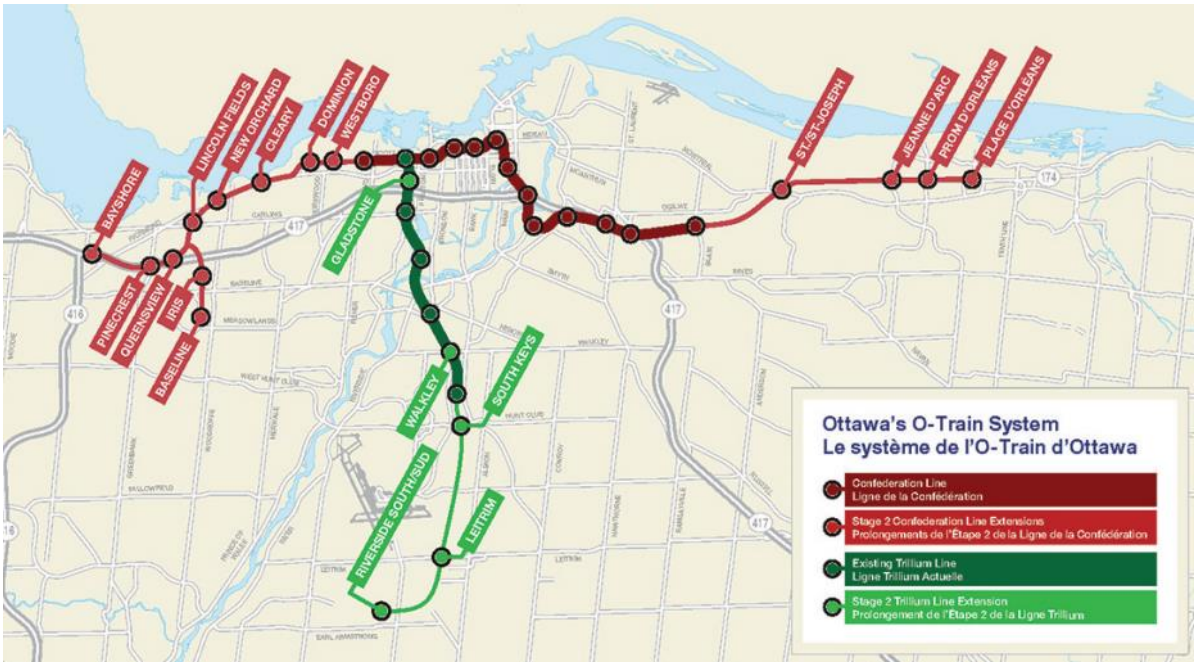
Metcalfe Street from Wellington south to Isabella, is scheduled to be resurfaced in 2020.

Transit Projects

A notable transportation network change within the study area is the Phase I construction of the east-west LRT, which is the conversion of the City's existing BRT corridor to LRT between the current Blair transit station and the Tunney's Pasture station which includes a tunnel through the City's Downtown. Currently, this phase of construction is underway and is expected to be completed by end of 2018.

Phase II of the LRT construction, which will extend the City's LRT further east, west and south (further improving transit within the vicinity of the site), is expected to begin by 2019 and be completed by 2023. The following Figure 5 illustrates the planned Phases I and II of the future Confederation/Trillium Lines.

Figure 5: Planned LRT Phase II



3.2 Other Area Development

According to the City's development application search tool, the following developments are planned within the vicinity of the subject site.

96 Nepean Street

A residential development with 201 units is proposed at the above-noted address, located adjacent to the subject site. The Community Transportation Study (prepared by Novatech) projects an increase in two-way traffic volumes of approximately 85 to 90 veh/h during peak hours.

235-241 Bank Street, 318-320 Lisgar Street

A six-storey mixed-use development is proposed at the above noted addresses which is located approximately 230m southwest of the subject development. The Transportation Brief (prepared by Delcan) projected a negligible increase in vehicle traffic.

In addition, we are advised by the City's Transportation Project Manager for this area that the following developments are planned within close proximity to the site, however no information is available on the City's development application search tool.

70 Gloucester

Claridge is proposing the construction of a 27-storey residential development consisting of 235 units. The Transportation Impact Assessment is not currently available (August 2018).

179 Gloucester

A 17-storey residential development is being proposed at the above-noted address. The Transportation Impact Assessment is not currently available (August 2018).

150 Elgin

A 17-storey mixed-use development is being proposed at the above-noted address. The Transportation Impact Assessment is not currently available (August 2018).

4.0 STUDY AREA, TIME PERIODS AND HORIZON YEAR

As the proposed development's "net" increase in peak hour traffic generation will be relatively low (apartment use and a net increase of only 125 parking spaces), the proposed study area is the adjacent section of Nepean Street and the adjacent Metcalfe and O'Connor intersections. As the predominant land use is apartments, the analysed time periods are proposed to be the weekday morning and afternoon peak hours. Assuming project build out by 2022/23, a horizon year of 2027 is considered appropriate.

5.0 EXEMPTIONS REVIEW

From review of the foregoing in combination with the TIA Guidelines Possible Exemptions table, the following analysis exemptions are identified:

- 4.1.3 New Street Networks .....exempt
- 4.2.2 Spillover Parking .....exempt
- 4.6 Neighbourhood Traffic Management.....exempt
- 4.8 Network Concept.....exempt (development is not expected to generate 200 person trips more than more than land uses allowed under the established zoning)

6.0 DEVELOPMENT – GENERATED TRAFFIC

6.1 Site Trip Generation

Appropriate trip generation rates for the proposed development consisting of approximately 303 residential units and approximately 5,274 ft^2 (490 m^2) of ground floor retail were obtained from the City's 2009 TRANS Trip Generation Report and the ITE Trip Generation Manual (10^{th} Edition), respectively. These rates are summarized in Table 2.

Table 2: 2009 TRANS and ITE Trip Generation Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
High-Rise Apartments	TRANS	T = 0.17(du)	T = 0.16(du)
Shopping Centre	ITE 820	T = 0.94(X)	T = 3.81(X)

Notes: T = Average Vehicle Trip Ends
du = Dwelling units
X = 1000 ft² Gross Floor Area

6.1.1 Residential Trips

Using the TRANS Trip Generation rates for the residential component of the site, the total amount of vehicle trips generated by the proposed 303 residential units was projected. The results are summarized in Table 3.

Table 3: Projected Vehicle Trip Generation – TRANS

Land Use	Area	AM Peak (Veh/h)			PM Peak (Veh/h)		
		In	Out	Total	In	Out	Total
High-Rise Apartments	303 units	12	40	52	36	12	48

As shown in Table 3, a total of 52 and 48 veh/h (two-way total) are projected to travel to/from the proposed development during the weekday morning and afternoon commuter peak hours, respectively. Using these TRANS auto trips summarized in Table 3 and the mode share percentages outline in Table 3.13 of the TRANS Trip Generation Report, the person trips for the residential land use within the proposed development are summarized in Table 4.

Table 4: TRANS Person Trip Generation – Residential Use

Travel Mode	Mode Share	AM Peak (Person Trips/h)			Mode Share	PM Peak (Person Trips/h)		
		In	Out	Total		In	Out	Total
Auto Driver	27%	12	40	52	23%	36	12	48
Auto Passenger	3%	2	4	6	6%	11	2	13
Transit	27%	13	40	53	29%	46	15	61
Non-motorized	43%	20	62	82	42%	66	21	87
Total Person Trips	**100%**	**47**	**146**	**193**	**100%**	**159**	**50**	**209**

As shown in Table 4, based on the TRANS Trip Generation method, the proposed site is projected to generate approximately 193 to 209 person-trips per hour during the weekday commuter peak hours. The increase in two-way transit trips is estimated to be 53 to 61 persons per hour, and the increase in bike/walk trips is approximately 82 to 87 persons per hour.

6.1.2 Retail Trips

The retail trip generation is based on the ITE trip generation rates, outline in Table 2. As ITE trip generation surveys only record vehicle trips and typically reflect highly suburban locations (with little to no access by travel modes other than private automobiles), adjustment factors appropriate to the more urban study area context were applied to attain estimates of person trips for the proposed development.

To convert ITE vehicle trip rates to person trips, an auto occupancy factor and a non-auto trip factor were applied to the ITE vehicle trip rates. Based on the TIA Guidelines and our review of available literature, a combined factor of approximately 1.28 is considered reasonable to account for typical North American auto occupancy values of approximately 1.15 and combined transit/non-motorized modal shares of 10%. As such, the person trip generation for the proposed retail development is summarized in Table 5. It is noteworthy that the only relevant ITE land use is “shopping centre”, however, in reality this retail will be more “local convenience” with a minimal auto component.

Table 5: Modified Person Trip Generation - Retail

Land Use	Area	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Shopping Center	5,274 ft2	3	3	6	12	14	26

Based on the site's location in the downtown area and its proximity to transit amenities and significant residential development, it is expected that the majority of retail-generated trips will be "convenience" related and therefore will be cycling or walking trips. As such, the vehicle component of the retail development is considered negligible and is not accounted for herein.

6.1.3 Mode Shares

Given the existing modal share values reflect high non-motorized (~43%) and transit (~27%) mode splits that are appropriate for a site located in the downtown core with good access to transit, the future mode shares for this development are assumed to be the same as existing. These values, taken from the TRANS Trip-Generation Report and confirmed using the TRANS OD Survey, can be found in the foregoing tables.

It is also noteworthy that given the proposed development's proximity to the future (November 2018) Parliament LRT station, the City's Transit Oriented Development Guidelines are applicable. These Guidelines will be shared with the proponent/architect for their consideration with regard to building design/amenities. As an example, as part of the new buildings interior lobby, a display screen could be installed providing multi-modal information such as real time transit arrival, and the location of nearby bike-share and car-share services.

6.2 Vehicle Traffic Distribution and Assignment

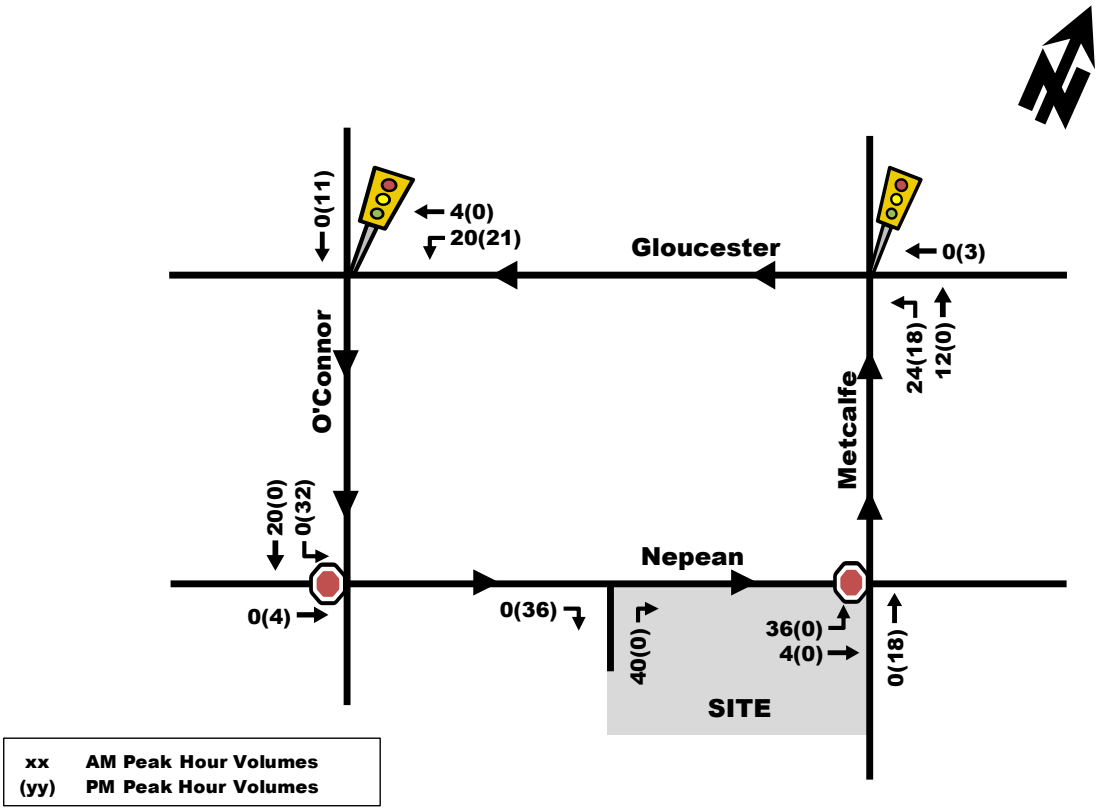
Given the proposed development is located approximately 500 m (approximately 5 to 10 minutes walking distance) from the center of Ottawa's Downtown Central Business District area, it is reasonable to assume the majority of site-generated trips to/from the north will be non-motorized person trips. Therefore, with respect to site-generated vehicle trips, the majority will be to/from the south, towards the HWY 417. The resultant distribution is outlined as follows:

- 50% to/from the south via Metcalfe Street and O'Connor Street;
- 30% to/from the north via Metcalfe Street and O'Connor Street;
- 10% to/from west via Nepean Street and Gloucester Street; and
- 10% to/from east via Nepean Street and Gloucester Street.

6.3 Net Site-Generated Vehicle Trips

The site is currently occupied by an approximate 70 space surface parking lot. July 2018 counts conducted by Parsons (Appendix E) identified 22 vehicles entering during the morning peak hour and 18 vehicles existing during the afternoon peak hour. Review of Table 3 reveals that the project, once built, will generate only 12 inbound vehicles and 12 outbound vehicles during the morning and afternoon peak hours, respectively. As such, the only "net" impact of the proposed development are the 40 veh/h outbound in the morning peak hour and the 36 veh/h inbound during the afternoon peak hour. This "net" increase in site-generated vehicle trips was assigned to the area road network as per the distribution in Section 6.2, with the results depicted in Figure 6.

Figure 6: "Net" New Site-Generated Peak Hour Traffic



7.0 BACKGROUND TRAFFIC NETWORK

7.1 Transportation Network Changes

Recent/planned transportation network changes in the broader study area include:

- Replacement of the surface transit lanes on Albert and Slater with the below-grade LRT line (November 2018);
- Road modifications on Queen Street including wider sidewalks, raised intersections, and some reduction in turn lanes;
- Road modifications on Albert and Slater Streets with wider sidewalks and replacement of the bus-only lanes with a raised cycle track; and
- Reconstructing Elgin Street as a more “complete street” with wider sidewalks, reduced speed limit, some loss of on-street parking and loss of peak hour traffic lanes due to permanent on-street parking.

7.2 Background Traffic Growth

This is not applicable to new downtown developments.

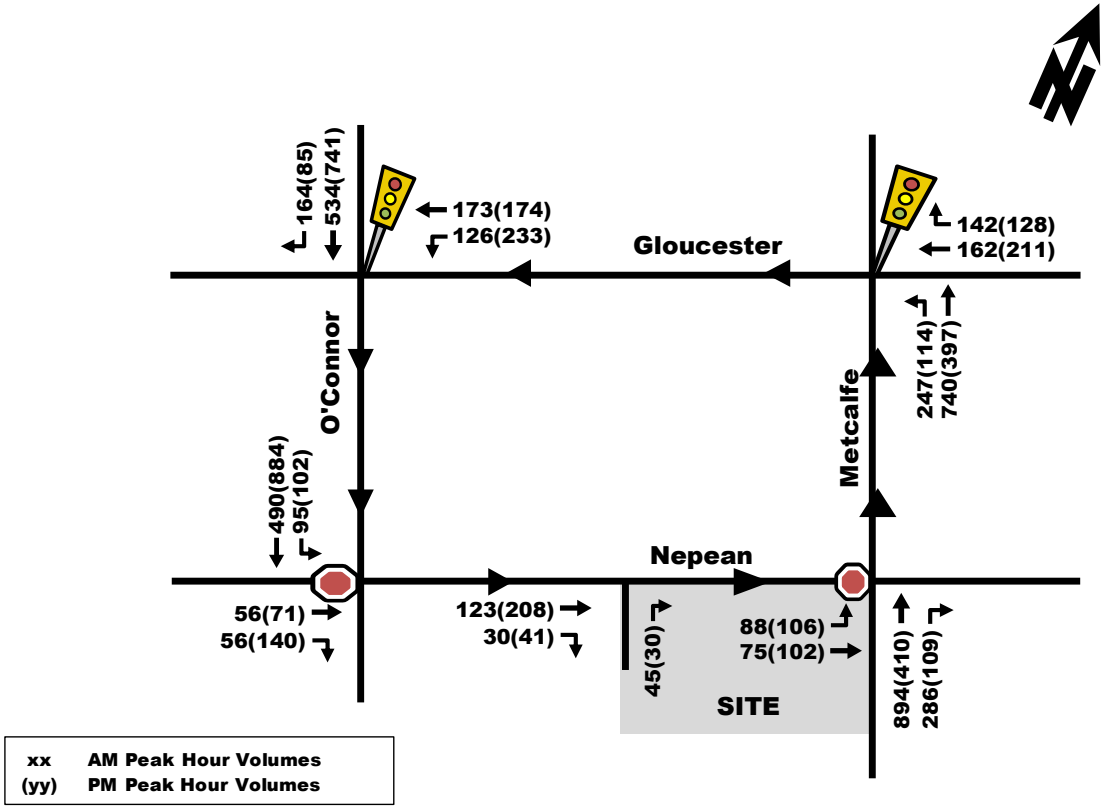
7.3 Other Area Development

See Section 3.2.

8.0 FUTURE TRAFFIC OPERATIONS

For this project in its downtown location, future traffic conditions are determined by analysing the combination of existing traffic (Figure 4) plus the "net" increase in site-generated traffic (Figure 6). The result is depicted in Figure 7.

Figure 7: Projected Peak Hour Traffic Volumes



The following Table 6 provides a summary of projected peak hour performance of the study area intersections. The Synchro model output of projected conditions is provided within Appendix F.

Table 6: Projected Performance at Study Area Intersections

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'as a whole'		
	LoS	max. v/c or avg. delay (s)	Movement	Delay (s)	LoS	v/c
Metcalfe/Nepean	A(A)	0.45(0.36)	NBT(EBT)	7.0(6.1)	A(A)	0.44(0.25)
O'Connor/Nepean	B(C)	13.2(20.8)	EB(EB)	3.2(4.4)	A(A)	-
Note: Analysis of signalized intersections assumes a PHF of 0.95 and a saturation flow rate of 1800 veh/h/lane.						

As shown in Table 6, the study area intersections and the 'critical movements' are projected to operate at an acceptable LoS 'D' or better during both peak hours. This is the same or very similar to existing conditions summarized in Table 1 and no modifications are required to the study area roads or intersections.

9.0 DEMAND RATIONALIZATION

Due to the minimal increase in site-generated traffic and negligible impact on study area traffic operations, demand rationalization is not required for this project.

10.0 DEVELOPMENT DESIGN

10.1 Introduction

The proposed development replaces an existing building at the east end of the site and a surface parking lot at the west end of the site. A 198 space underground garage will replace the existing 70 space surface parking lot. The existing parking lot's access driveway is located mid-site on Nepean. This access will be closed and replaced by a garage ramp at the far west end of the site as shown on Figure 2. This change in driveway location is the only required change to the study area roads/intersections as a result of the proposed development, except for the proposed 2.78 m wide service lane connection to Metcalfe at the south boundary of the site.

10.2 Design for Sustainable Modes

Automobile Parking:

The By-Law parking requirement is for 177 spaces and 198 are proposed in a six level below-grade garage. The site's existing driveway connection to Nepean Street will be replaced by a 6.7 m wide driveway/ramp at the west end of the site, offset 1.745 m from the west property line. We are advised that all parking space and circulation aisle dimensions meet the By-Law requirements of 2.6 m x 5.2 m for regular-sized spaces, 2.4 m x 4.6 m for a few small car spaces and a minimum 6.0 m width for all circulation aisles. The floor to floor ramp grades are 3.8% and with regard to the entrance/exit ramp, its primary grade is approximately 15% with 3.0 m of 8% transition grade at the top and bottom of the ramp. From the back of the sidewalk to the property line will be 4% up for approximately 2.7 m then down at 2% to the garage door. Due to the depth of the site, the By-Law requirement of 9 m of 2% grade back from the property line cannot be met and a variance will be required. However, as the proposed building is set back approximately 4.2 m from the back of the sidewalk, as there are no adjacent driveways or buildings to block sight lines, and as on-street parking is permitted along the south curb of Nepean, exiting drivers will have good sight lines for both sidewalk pedestrians and traffic travelling eastbound on Nepean.

Bicycle Parking:

The By-Law requires 154 bicycle parking spaces and 157 are proposed. Of this total, 11 are surface parking spaces located on the site's Nepean frontage near the garage entrance and the remainder will be provided in secure locations within the garage.

Bus Stops:

OC Transpo bus service within the vicinity of the site is currently provided north-south along Bank Street and Elgin Street. Existing bus rapid transit service is provided along Slater Street and Albert Street approximately 300 m north of the subject site. It will be replaced by the LRT facility in late 2018, with the Parliament LRT station being located approximately 500 m north of the site.

Sidewalks:

These are provided on both sides of all study area streets and are a minimum of 1.8 m wide.

Cycling Facilities:

According to the City's Cycling Plan, Nepean Street has no cycling description while Metcalfe Street is classified as a "spine" cycling route, as is O'Connor Street to the west. The closest cycling facilities are summarized in Section 2.2 of this report.

10.3 Circulation and Access

The parking garage is laid out efficiently with dimensions meeting By-Law requirements. The 6.7 m wide access/egress ramp is standard width and can easily accommodate inbound right and outbound right turns from/to Nepean Street. Loading is proposed to occur adjacent to the south curb on Nepean opposite the building's commercial entrance which is located at the approximate mid-point of the site.

With regard to other transportation-related functions, passenger drop-off/pick-up is proposed along the site's frontages, as lay-by lanes are not permitted. With regard to garbage and service, the loading bay is proposed at the south side of the site and connected to Metcalfe via a 2.78 m wide lane, and as such, vehicles using the loading bay will have to either back-in or back-out from/to Metcalfe.

10.4 Parking

This topic is addressed in Section 10.2. As the on-site parking supply exceeds By-Law requirements, there is no spill over parking anticipated. Regardless, on-street parking is currently provided on both sides of Nepean Street and the east side of Metcalfe Street. Given the site's downtown location and its close proximity to both City-wide bicycle facilities and the "soon to be operational" LRT system, there should be no spill over parking issues.

10.5 Boundary Street Design

Mobility:

The boundary streets for the development are Nepean Street and Metcalfe Street. At this time, there has not been any "complete street" concepts prepared for either street. The existing roadways' geometries consist of the following features:

Nepean Street

- 1 vehicle travel lane in the eastbound direction;
- 1.8 m sidewalks along both sides of the roadway;
- Mixed traffic for cyclists;
- Less than 3,000 vehicles per day per lane;
- Operating speed assumed to be 50 km/h;
- >3.7 m wide lane;
- On-street parking provided along the southern side of the street; and
- No transit service.

Metcalfe Street

- 3 vehicle travel lanes in the northbound direction;
- 1.8 m sidewalks with 1.4 m boulevard along the western side and >2 m sidewalks along the eastern side of the street;
- Mixed traffic for cyclists;
- Approximately 3,000 vehicles per day per lane;
- Operating speed assumed to be 50 km/h;
- 3.0 to 3.7 m wide lanes;
- On-street parking provided along the eastern side of the street during off-peak times; and
- No transit service.

The multi-modal level of service analysis for the road segment along these boundary streets adjacent to the site is summarized in Table 7with detail analysis provided in Appendix G. The target levels of service are also provided based on the site's location within 600 m of a rapid transit station and the City's MMLoS Guidelines.

Table 7: MMLoS – Boundary Street Segments

Road Segment	Level of Service							
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TLoS	Target
Nepean Street	B	A	B	D	N/A		B	No target
Metcalfe Street	B	A	D	C			A	D

As shown in Table 7, the target pedestrian level of service for all roadways within 600 m of a rapid transit station is PLoS 'A' and the existing pedestrian level of service along Nepean Street and Metcalfe Street, adjacent to the site, is calculated to be PLoS 'B'. To improve the level of service for pedestrians, wider boulevards or sidewalks would be required. However, given the site's location in the downtown core, there are

limited opportunities to increase the width of the sidewalks and boulevards. As such, no pedestrian facility improvements are recommended as space is limited in the downtown area.

With respect to cyclists, the target bicycle level of service on Nepean Street is currently met, however, along Metcalfe Street, the target is BLoS 'C' and the existing level of service is BLoS 'D'. Metcalfe Street runs parallel to O'Connor Street, which are adjacent one-way roadways that provide northbound (Metcalfe) and southbound (O'Connor) vehicle access to/from the downtown core and HWY 417. For cyclists, there is a bi-directional segregated cycle track along O'Connor Street, approximately 175 m west of Metcalfe Street. As such, the majority of cyclists will elect to use O'Connor Street's segregated cycling facility as oppose to Metcalfe Street. It is noteworthy, that during off peak hours, when parking is available, the level of service for cyclists increases to BLoS 'B' along Metcalfe Street. Based on the foregoing, no cycling facilities are recommended along Metcalfe Street as part of this development.

As there are no transit routes along either Nepean Street or Metcalfe Street, the transit level of service is not applicable. With regards to trucks, Metcalfe Street, which forms part of the truck route, is currently meeting the target TkLoS and Nepean Street does not form part of the Truck Route and as such, has no target TkLoS.

Road Safety:

This is addressed in Section 2.7.

Neighbourhood Traffic Management:

Exempt

10.6 Access Intersection Design

Location, Design and Control:

As previously noted, the proposed 6.7 m garage ramp replaces the site's exiting two-way driveway connection to the surface parking lot. The proposed garage ramp is 1.7 m from the west property line and is located mid-block approximately 60 m from Metcalfe Street and approximately 100 m from O-Connor Street. There are no other site driveway connections along the south side of Nepean from Metcalfe to O'Connor. On the north side, there are a number of individual driveways to various surface parking lots and garages. As previously noted, Nepean operates as a one-way eastbound with one traffic lane and a parking lane adjacent to the south curb. Details of the ramp design are provided in Section 10.2. With regard to control at the proposed site driveway connection to Nepean, it will be STOP sign controlled.

10.7 Intersection Design

No modifications are proposed for either the adjacent Nepean/Metcalfe or Nepean/O'Connor intersections. As the Nepean/O'Connor intersection is not traffic signal controlled (STOP sign on the Nepean approach to O'Connor), the MMLoS was only done for the signalized Nepean/Metcalfe intersection as summarized in Table 8 and included in Appendix I.

Table 8: MMLoS – Signalized Nepean/Metcalfe Intersection, Existing Conditions

Intersection	Level of Service									
	Pedestrian (PLoS)		Bicycle (BLoS)		Transit (TLoS)		Truck (TkLoS)		Vehicles (LoS)	
	PLoS	Target	BLoS	Target	TLoS	Target	TLoS	Target	LoS	Target
Nepean/Metcalfe	C	A	B	C	n/a		D	D	A	E

As shown in Table 8, all MMLoS targets are met at the existing Nepean/Metcalfe intersection with the exception of the pedestrian level of service. This does not change when the net increase in site-generated traffic is added in. It is noteworthy that the PLoS target of 'A' is impossible to achieve at signalized intersections due to the delay score calculation. As such, the best score achievable is PLoS 'B'. At this intersection, the PLoS 'C' is

achieved because of the delay for pedestrians crossing Metcalfe Street. This can be improved to the PLoS 'B' (maximum score) if more green time was allotted to the east-west movement. However, this is not recommended given the significant vehicle demand on the northbound Metcalfe Street corridor.

The transit level of service is not applicable at this location as there are no transit routes that run along either Metcalfe Street or Nepean Street.

10.8 Transportation Demand Management

The proposed development is located in a Design Priority Area (DPA) and a Transit Oriented Development (TOD) area. With regard to TOD, as part of this new building's interior lobby, consideration should be given to allowing space for installation of a display screen to provide multi-modal mobility information, including real-time transit arrival information and information on nearby bike-share and car-share services. This amenity presents mobility choices in a user-friendly fashion.

The preceding analysis has identified a high percentage of non-auto peak hour person trips. The transit mode share ranged from 27% to 29% and the bike/walk share was in the 42% to 43% range. The projected person trips from the residential component were generated by the proposed 303 residential units comprised of 31 suites, 121 one bedrooms, 81 one bedrooms plus study and 70 two bedrooms. As previously noted, the proposed development is close to bus and rapid transit, close to City-wide bicycle facilities, the study area has very good sidewalk systems and on-site bicycle parking meets the By-Law requirements. The TDM measured checklist is provided in Appendix H.

10.9 Neighbourhood Traffic Management

Exempt.

10.10 Transit

As previously noted, the proposed residential apartment development is projected to generate between approximately 50 to 60 two-way transit riders during peak hours. Given the number of new transit riders compared to the existing and planned study area transit service summarized in Section 2.3, there will be no adverse impacts on transit facility capacity.

10.11 Network Concept Review

Exempt.

10.12 Intersection Design

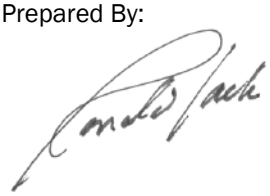
No modifications are proposed to the study area intersections as a result of the proposed development. The MMLoS analysis for the adjacent signalized Nepean/Metcalfe intersection is provided in Section 10.7 and Appendix I.

11.0 CONCLUSION AND RECOMMENDATION

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

Therefore, the proposed 180 Metcalfe Street development is recommended from a transportation perspective.

Prepared By:



Ronald Jack, P.Eng.
Senior Transportation Engineer
Ottawa Operations

Attachments

Appendix A:
Current Peak Hour Traffic Counts

5299320 - Gloucester and Metcalfe - Apr - 4th - TMC

Tue Apr 4, 2017

AM Peak (8AM - 9AM) - Overall Peak Hour

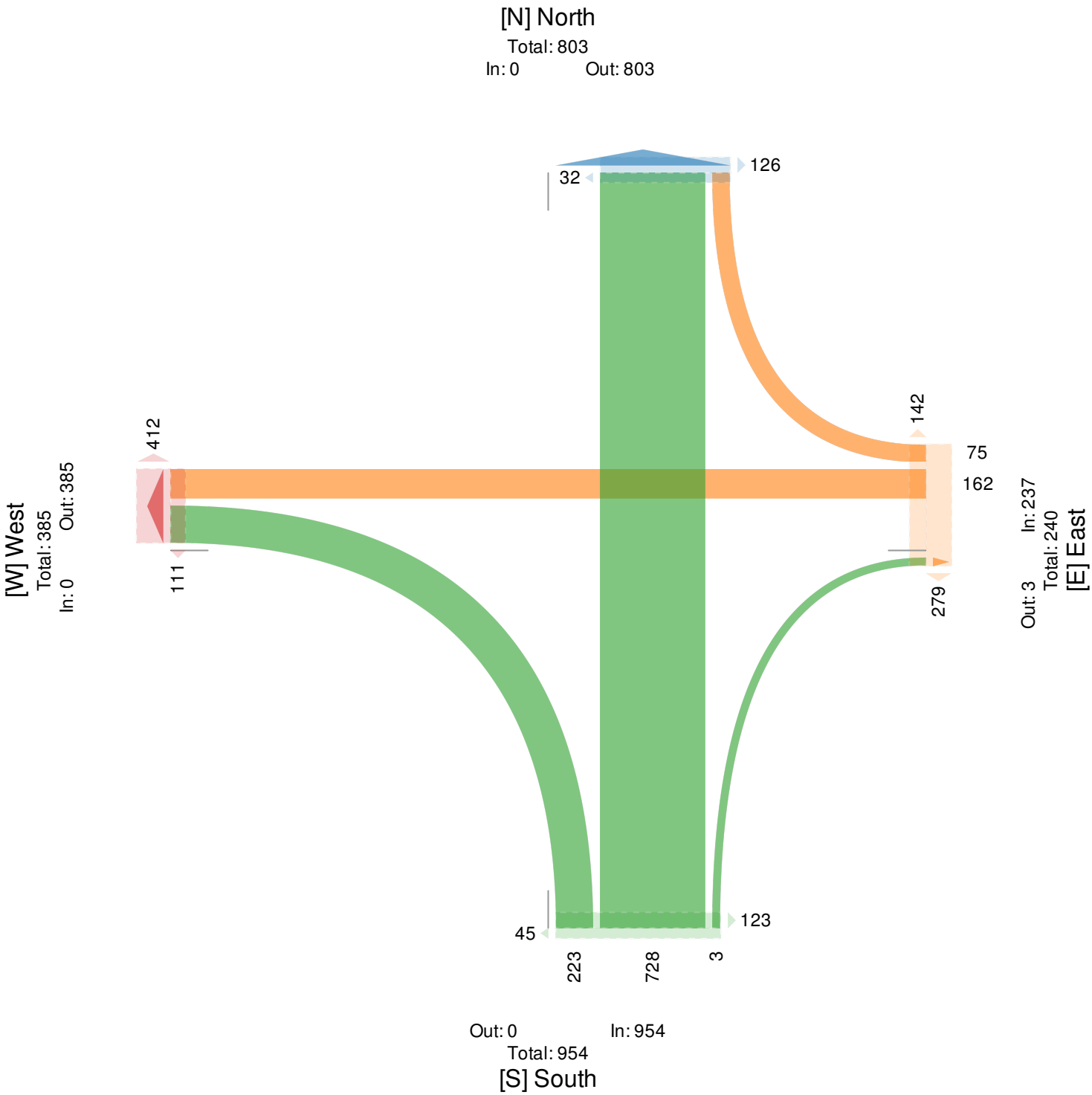
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road)

All Movements

ID: 397236, Location: 45.419557, -75.694652, Site Code: 36839103

Provided by: City of Ottawa

100 Constellation Dr, Nepean, ON, K2G 5J9, CA



5299320 - Gloucester and Metcalfe - Apr - 4th - TMC

Tue Apr 4, 2017

PM Peak (4:30PM - 5:30PM)

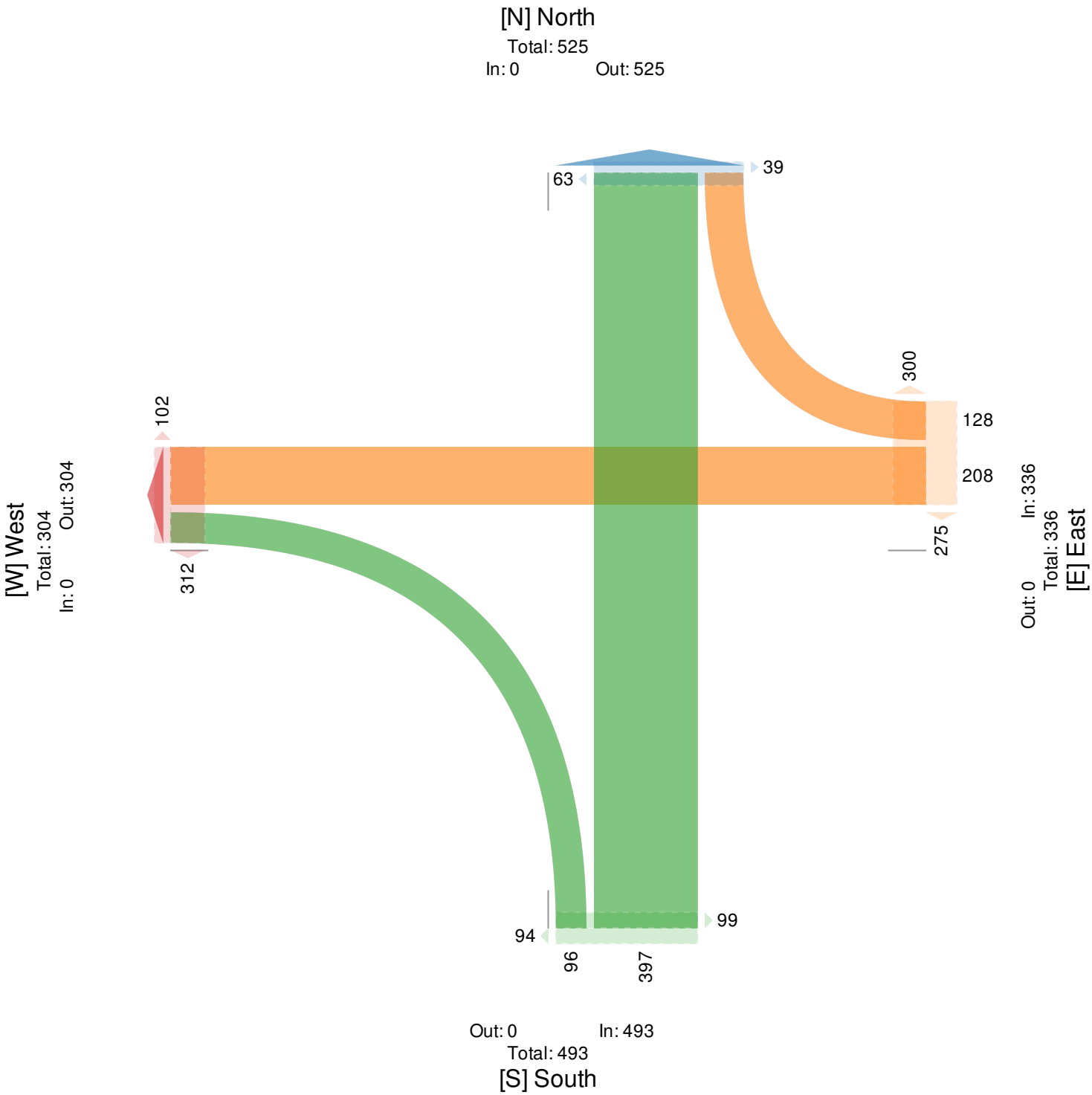
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road)

All Movements

ID: 397236, Location: 45.419557, -75.694652, Site Code: 36839103

Provided by: City of Ottawa

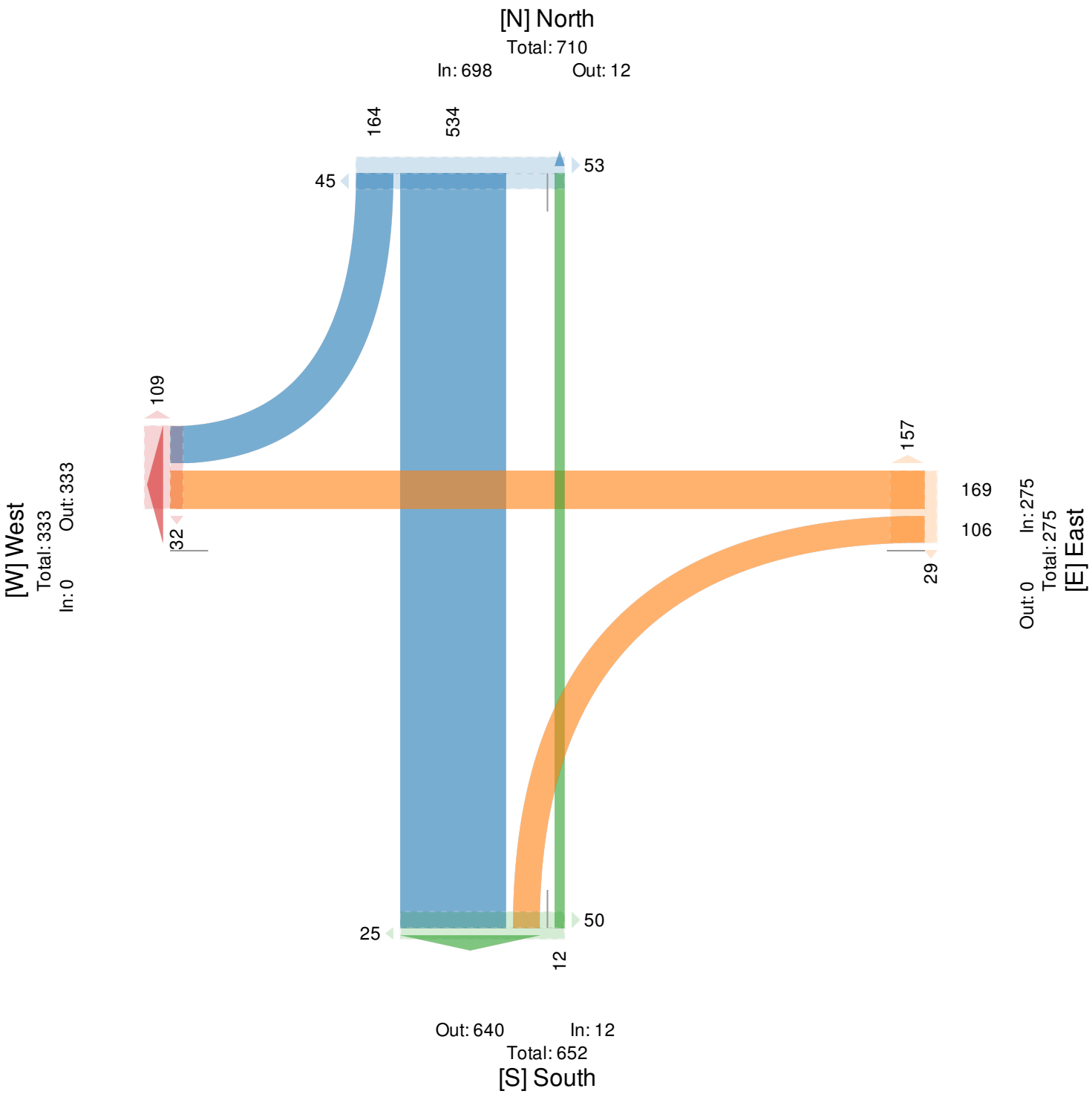
100 Constellation Dr, Nepean, ON, K2G 5J9, CA



5299309 - Gloucester St and O'Connor St - TMC

Tue Mar 21, 2017
AM Peak (9AM - 10AM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Pedestrians, Bicycles on Road)
All Movements
ID: 393984, Location: 45.418752, -75.696535, Site Code: 36782103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA



5299309 - Gloucester St and O'Connor St - TMC

Tue Mar 21, 2017

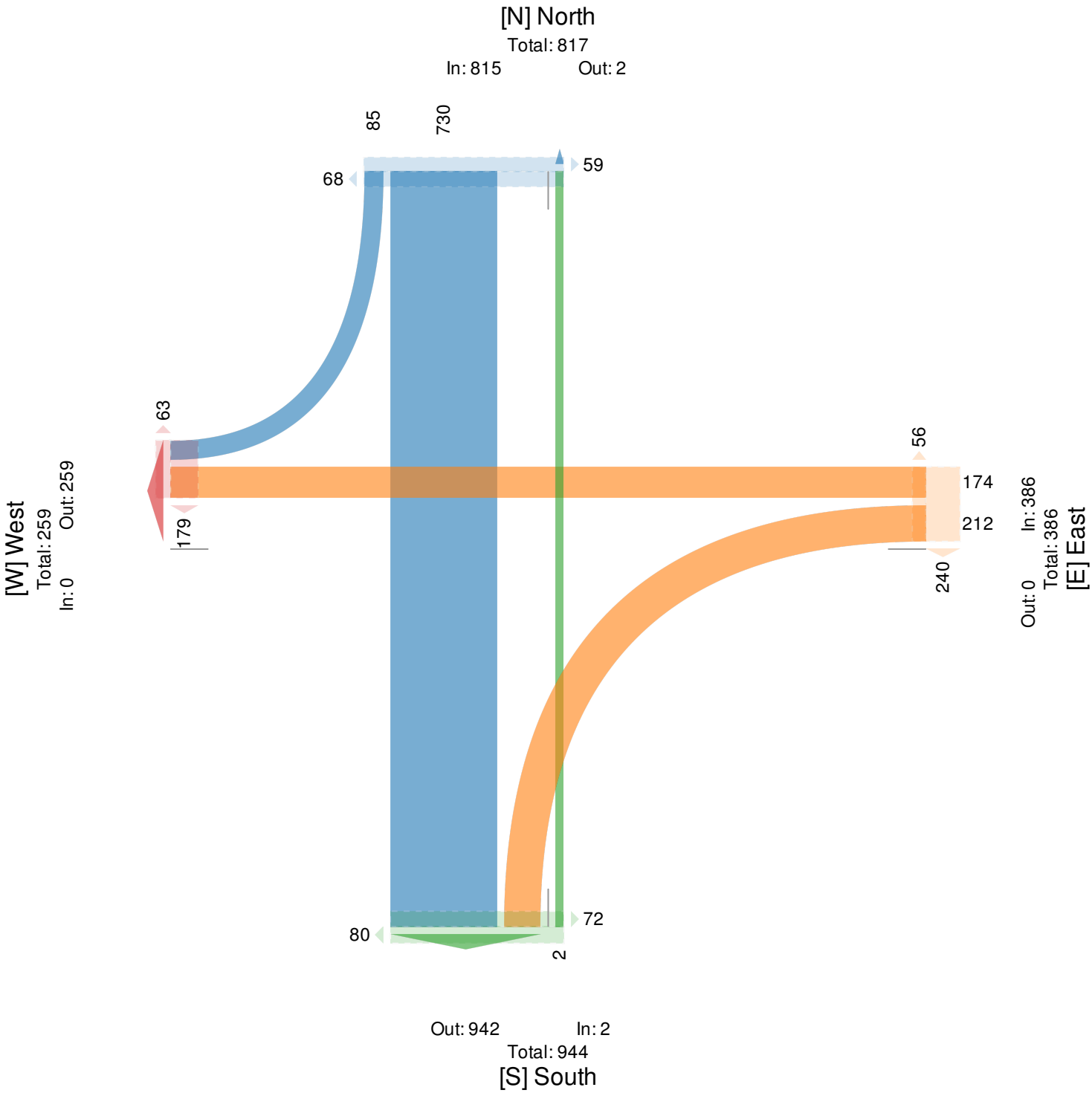
PM Peak (4:30PM - 5:30PM) - Overall Peak Hour

All Classes (Lights and Motorcycles, Heavy, Pedestrians, Pedestrians, Bicycles on Road)

All Movements

ID: 393984, Location: 45.418752, -75.696535, Site Code: 36782103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA



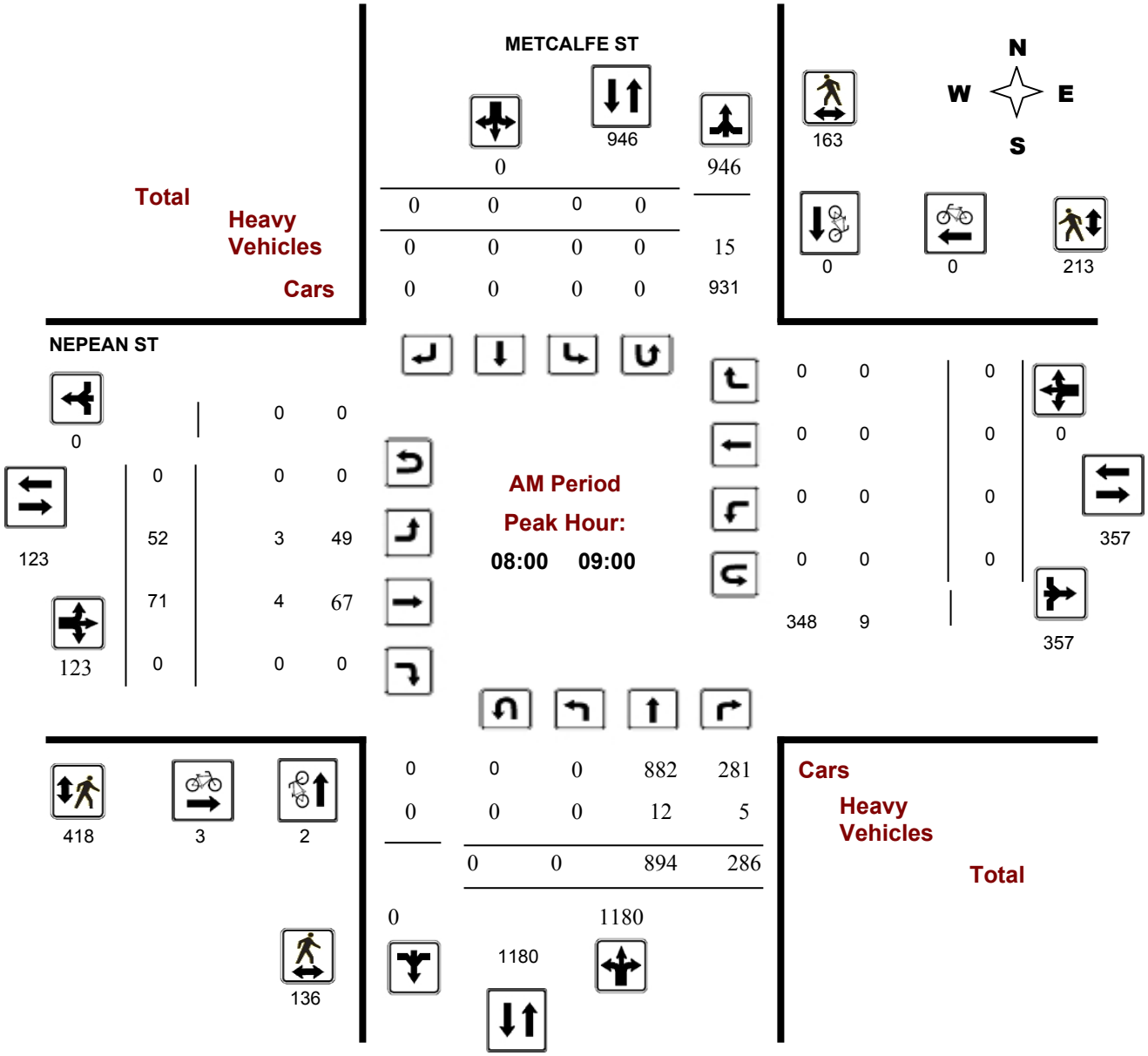
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

METCALFE ST @ NEPEAN ST

Survey Date: Tuesday, April 04, 2017
Start Time: 07:00

WO No: 36838
Device: Miovision



Comments

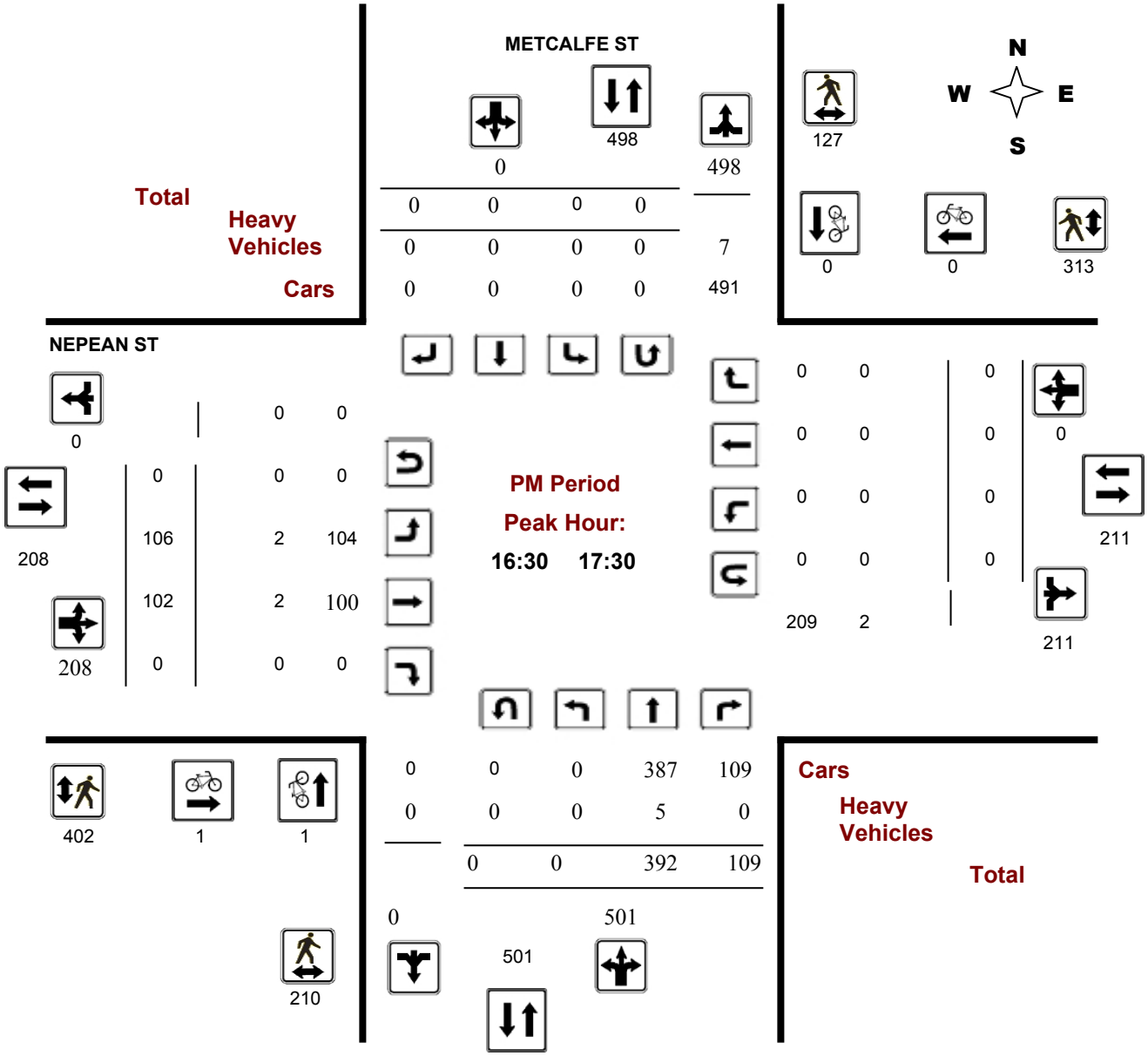
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

METCALFE ST @ NEPEAN ST

Survey Date: Tuesday, April 04, 2017
Start Time: 07:00

WO No: 36838
Device: Miovision



Comments

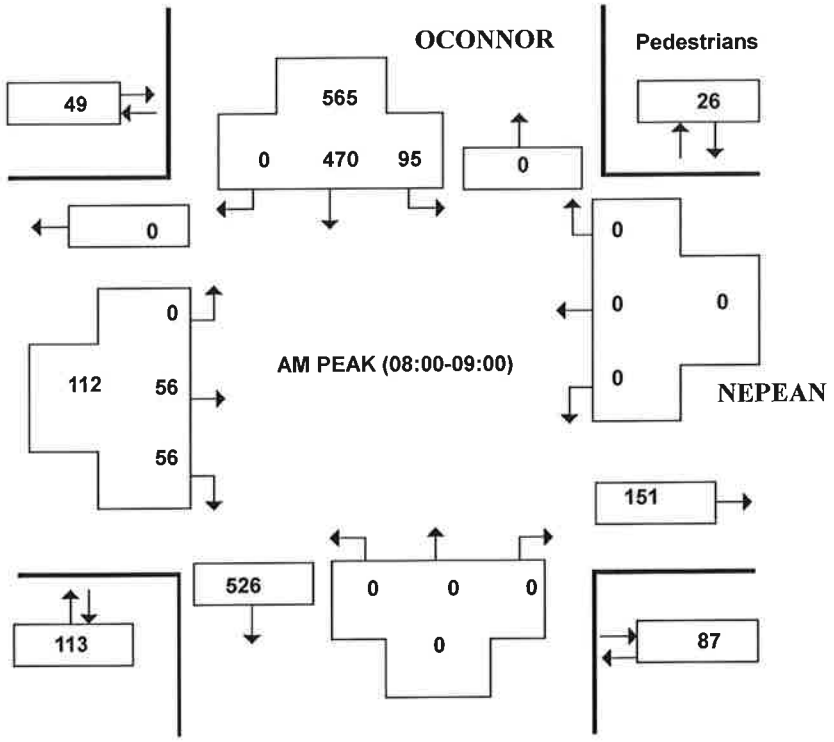
NEPEAN ST and O'CONNOR ST

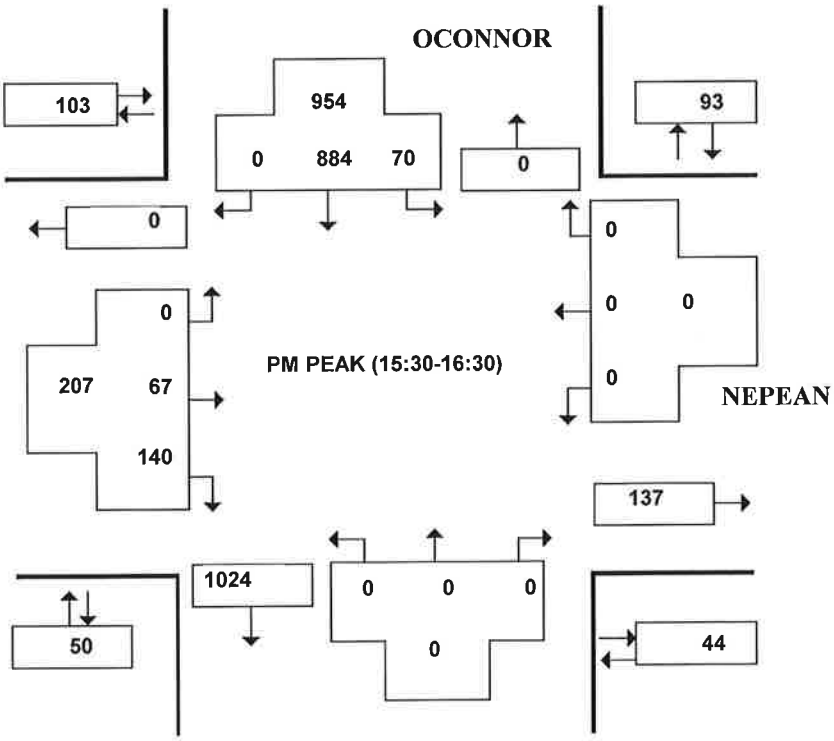
(ULRS Listing NEPEAN & OCONNOR)

Survey Date: Friday 29 July 2011
Conditions: dry
Start Time: 0700

Total Observed U-Turns
Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor
Friday in July is 0.9





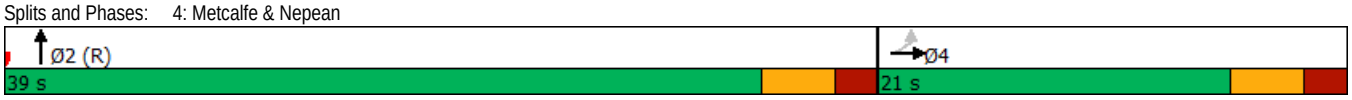
Appendix B:
SYNCHRO Capacity Analysis: Existing Conditions

Lane Group	EBT	NBT
Lane Configurations		
Traffic Volume (vph)	81	760
Future Volume (vph)	81	760
Lane Group Flow (vph)	153	1041
Turn Type	NA	NA
Protected Phases	4	2
Permitted Phases		
Minimum Split (s)	18.3	23.2
Total Split (s)	21.0	39.0
Total Split (%)	35.0%	65.0%
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	1.9
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.3	5.2
Lead/Lag		
Lead-Lag Optimize?		
Act Effct Green (s)	15.7	33.8
Actuated g/C Ratio	0.26	0.56
v/c Ratio	0.30	0.38
Control Delay	10.5	6.1
Queue Delay	0.0	0.0
Total Delay	10.5	6.1
LOS	B	A
Approach Delay	10.5	6.1
Approach LOS	B	A
Queue Length 50th (m)	8.2	15.8
Queue Length 95th (m)	m20.7	22.4
Internal Link Dist (m)	163.2	97.0
Turn Bay Length (m)		
Base Capacity (vph)	504	2738
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.30	0.38

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 42 (70%), Referenced to phase 2:NBT and 6:, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 6.7	Intersection LOS: A
Intersection Capacity Utilization 38.0%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Metcalfe & Nepean



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	56	0	0	0	0	0	0	95	470	0
Future Volume (Veh/h)	0	56	56	0	0	0	0	0	0	95	470	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	59	59	0	0	0	0	0	0	100	495	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											89	
pX, platoon unblocked	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	695	695	248	536	695	0	495			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	513	513	31	342	513	0	298			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	85	94	100	100	100	100			94		
cM capacity (veh/h)	392	403	961	433	403	1084	1168			1622		

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	118	265	330
Volume Left	0	100	0
Volume Right	59	0	0
cSH	568	1622	1700
Volume to Capacity	0.21	0.06	0.19
Queue Length 95th (m)	5.9	1.5	0.0
Control Delay (s)	13.0	3.1	0.0
Lane LOS	B	A	
Approach Delay (s)	13.0	1.4	
Approach LOS	B		

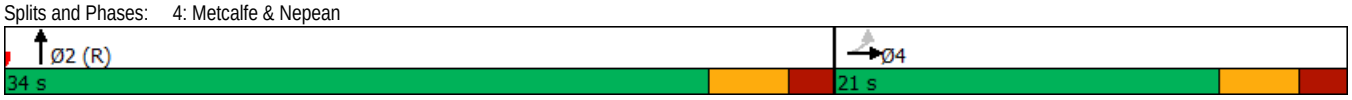
Intersection Summary					
Average Delay	3.3				
Intersection Capacity Utilization	30.0%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBT	NBT
Lane Configurations		
Traffic Volume (vph)	81	760
Future Volume (vph)	81	760
Lane Group Flow (vph)	153	1041
Turn Type	NA	NA
Protected Phases	4	2
Permitted Phases		
Minimum Split (s)	18.3	21.2
Total Split (s)	21.0	34.0
Total Split (%)	38.2%	61.8%
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	1.9
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.3	5.2
Lead/Lag		
Lead-Lag Optimize?		
Act Effct Green (s)	15.7	28.8
Actuated g/C Ratio	0.29	0.52
v/c Ratio	0.28	0.41
Control Delay	8.6	6.7
Queue Delay	0.0	0.0
Total Delay	8.6	6.7
LOS	A	A
Approach Delay	8.6	6.7
Approach LOS	A	A
Queue Length 50th (m)	6.9	15.8
Queue Length 95th (m)	m18.4	22.9
Internal Link Dist (m)	163.2	97.0
Turn Bay Length (m)		
Base Capacity (vph)	546	2560
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.28	0.41

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 9 (16%), Referenced to phase 2:NBT and 6:, Start of Green	
Natural Cycle: 40	
Control Type: Pretimed	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 7.0	Intersection LOS: A
Intersection Capacity Utilization 38.0%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Metcalfe & Nepean



Existing PM
3: O'Connor & Nepean

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	56	0	0	0	0	0	0	95	470	0
Future Volume (Veh/h)	0	56	56	0	0	0	0	0	0	95	470	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	59	59	0	0	0	0	0	0	100	495	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											89	
pX, platoon unblocked	0.92	0.92	0.92	0.92	0.92		0.92					
vC, conflicting volume	695	695	248	536	695	0	495			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	506	506	21	334	506	0	289			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	85	94	100	100	100	100			94		
cM capacity (veh/h)	396	406	971	438	406	1084	1173			1622		

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	118	265	330
Volume Left	0	100	0
Volume Right	59	0	0
cSH	572	1622	1700
Volume to Capacity	0.21	0.06	0.19
Queue Length 95th (m)	5.8	1.5	0.0
Control Delay (s)	12.9	3.1	0.0
Lane LOS	B	A	
Approach Delay (s)	12.9	1.4	
Approach LOS	B		

Intersection Summary					
Average Delay	3.3				
Intersection Capacity Utilization	30.0%	ICU Level of Service		A	
Analysis Period (min)	15				

Appendix C:
Collision History at Nepean/Metcalfe and Nepean/O'Connor

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2012 **To:** December 31, 2016

Location: METCALFE ST @ NEPEAN ST

Traffic Control: Stop sign

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Oct-27, Mon,08:05	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Delivery van	Pedestrian	1
2016-Jun-03, Fri,17:15	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Nov-16, Mon,08:30	Clear	Angle	P.D. only	Dry	North	Turning left	Bicycle	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Cyclist	
2016-Oct-12, Wed,10:10	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	
2013-Oct-02, Wed,08:35	Clear	Angle	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	
					North	Going ahead	Pick-up truck	Other motor vehicle	
2013-Dec-15, Sun,15:00	Snow	Angle	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: NEPEAN ST @ O'CONNOR ST

Traffic Control: Stop sign

Total Collisions: 20

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Mar-12, Wed,18:05	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2014-Mar-27, Thu,09:49	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2014-Jun-02, Mon,17:25	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jan-02, Fri,07:42	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Aug-28, Fri,10:59	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Passenger van	Other motor vehicle	
2016-Jun-22, Wed,16:20	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-12, Sat,10:03	Rain	Turning movement	P.D. only	Wet	South	Turning left	Pick-up truck	Other motor vehicle	

					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Jan-11, Mon,13:32	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2016-Jan-20, Wed,13:28	Clear	Angle	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Feb-11, Thu,17:15	Snow	Angle	P.D. only	Loose snow	East	Turning right	Pick-up truck	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-May-12, Thu,17:29	Clear	Angle	P.D. only	Dry	East	Going ahead	Passenger van	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle
2016-Sep-22, Thu,09:00	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Police vehicle	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle
2013-Mar-28, Thu,20:00	Clear	Angle	Non-fatal injury	Wet	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Construction equipment	Other motor vehicle
2013-Apr-26, Fri,14:52	Clear	Angle	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Passenger van	Other motor vehicle

2012-Jan-19, Thu,11:10	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Pick-up truck	Skidding/sliding
					East	Stopped	Automobile, station wagon	Other motor vehicle
2012-Jan-22, Sun,17:37	Clear	Angle	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Apr-02, Mon,10:01	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Feb-25, Sat,12:57	Clear	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Jun-21, Thu,17:14	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Automobile, station wagon	Other motor vehicle
2012-Sep-11, Tue,13:20	Clear	Other	P.D. only	Dry	West	Reversing	Pick-up truck	Other motor vehicle
					East	Stopped	Automobile, station wagon	Other motor vehicle

Location: NEPEAN ST btwn O'CONNOR ST & METCALFE ST

Traffic Control: No control

Total Collisions: 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-Jun-14, Sat,09:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	

2015-May-26, Tue,23:03	Clear	SMV unattended vehicle	P.D. only	Dry	North	Turning right	Truck and trailer	Unattended vehicle
2015-Aug-26, Wed,16:07	Clear	SMV unattended vehicle	P.D. only	Dry	West	Pulling onto shoulder or toward curb	Automobile, station wagon	Unattended vehicle
2016-Apr-12, Tue,17:21	Clear	Sideswipe	P.D. only	Dry	East	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle
					East	Going ahead	Passenger van	Other motor vehicle
2016-Sep-20, Tue,11:12	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle
2013-Aug-31, Sat,13:30	Clear	SMV unattended vehicle	P.D. only	Dry	West	Reversing	Delivery van	Unattended vehicle

Appendix D:
Signal Warrant Analysis – Metcalfe/Nepean Intersection

Metcalfe / Nepean - (peak hour signal warrant)

Signal Warrant			Description	Minimum Requirement for Two Lane Roadways	Compliance		
				Restricted Flow - Operating Speed Less Than 70 km/h	Sectional %	Entire %	Warrant
Intersection	1. Minimum Vehicular Volume	(1) A	Vehicle Volume, All Approaches for Each of the Heaviest 8 Hours of on Average Day, and	900	51%	51%	**51% No**
		(4) B	Vehicle Volume, Along Minor Streets for Each of the Same 8 Hours	170	62%		
	2. Delay to Cross Traffic	(1) A	Vehicle Volume, Along Major Street for Each of the Heaviest 8 Hours of an Average Day, and	900	40%	40%	
		(2) B	Combined Vehicle and Pedestrian Volume Crossing the Major Street for Each of the Same 8 Hours	75	140%		

Notes

1 *Vehicle Volume Warrants (1A), (2A) and (5B) for Roadways Having Two or More Moving Lanes in one Direction Should Be 25% Higher Than Values Given Above*

2 *For Definition of Crossing Volume Refer to Note 4 on the Signal Warrant Analysis Form B2.03.08*

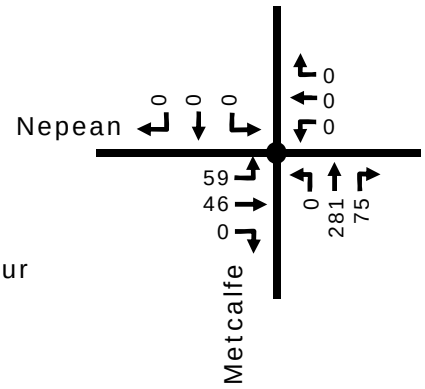
3 *The Lowest Sectional Percentage Governs the Entire Warrant*

4 *For "T" Intersections the Warrant Values for Minor Street Should be Increased by 50% (Warrant 1B only)*

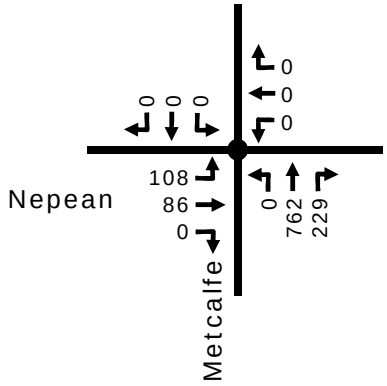
Yes

No

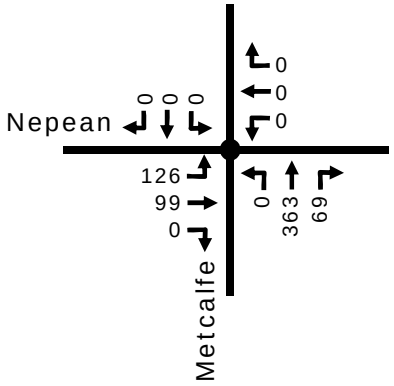
Average 8 Hour Volumes



AM Peak Hour Volumes



PM Peak Hour Volumes

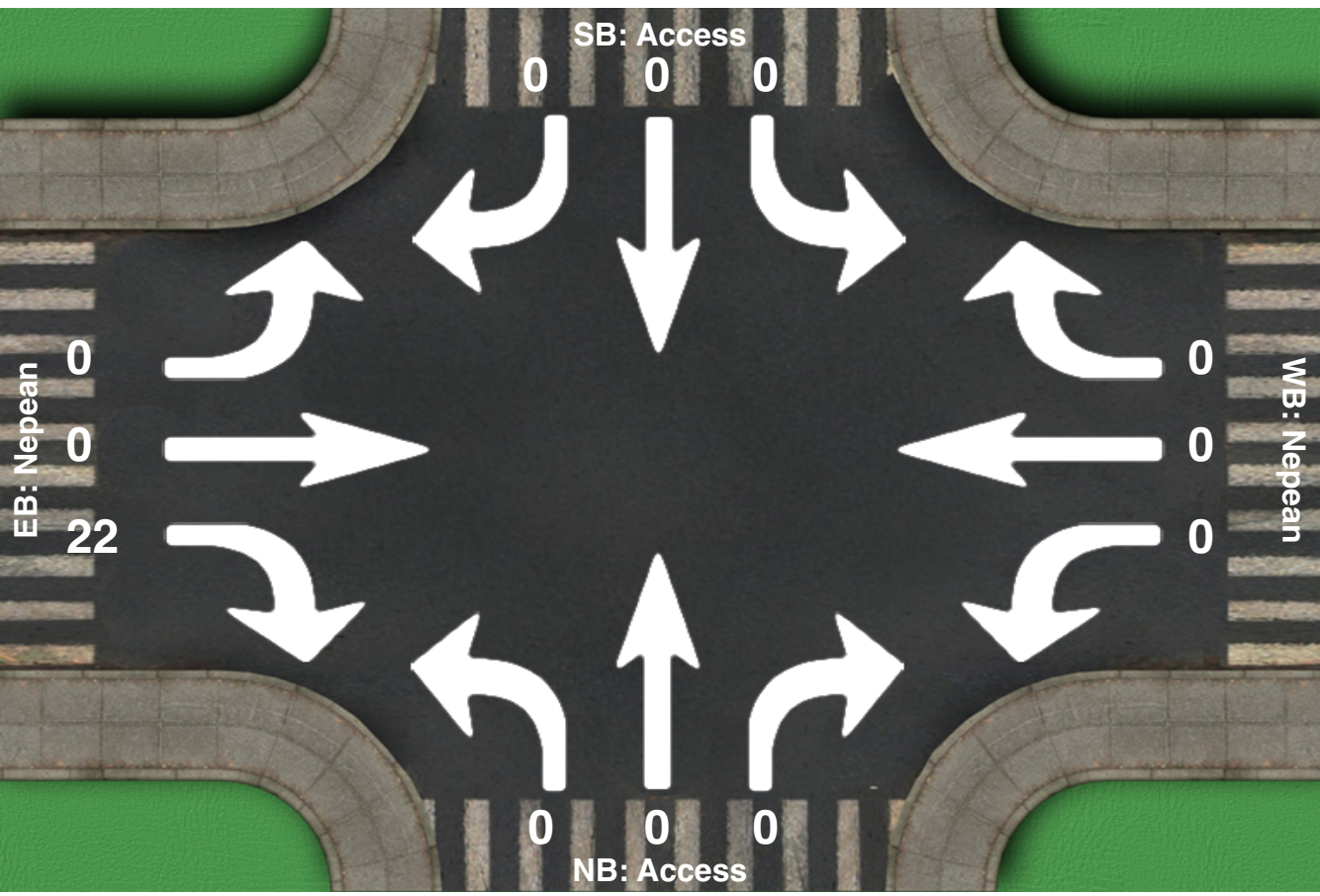


Appendix E:

Peak Hour Traffic Counts of Existing Surface Parking Lot

Intersection Peak Hour

Location: Access at Nepean, Ottawa
GPS Coordinates:
Date: 2018-07-17
Day of week: Tuesday
Weather: Cloudy
Analyst: Rani Nahas



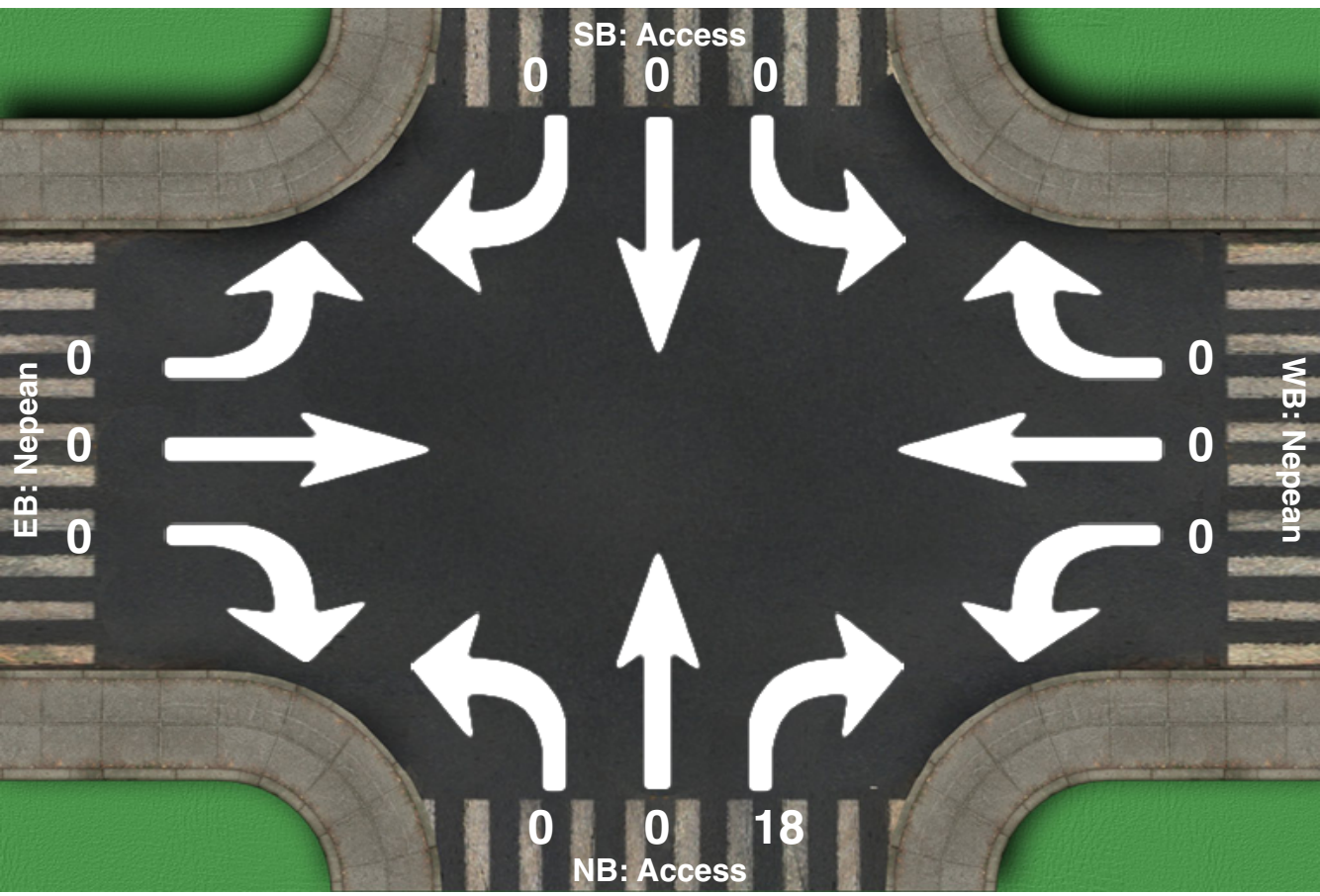
Intersection Peak Hour

08:00 - 09:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	0	0	0	0	0	0	0	0	22	22
Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.69	0.69
Approach Factor	0.00			0.00			0.00			0.69			

Intersection Peak Hour

Location: Access at Nepean, Ottawa
GPS Coordinates:
Date: 2018-07-17
Day of week: Tuesday
Weather: Partly Sunny
Analyst: Rani Nahas



Intersection Peak Hour

16:00 - 17:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	0	0	0	0	0	0	0	0	18	0	0	0	18
Factor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.00	0.56
Approach Factor	0.00			0.00			0.56			0.00			

Appendix F:
SYNCHRO Files for Projected Conditions

Lane Group	EBT	NBT
Lane Configurations		
Traffic Volume (vph)	75	894
Future Volume (vph)	75	894
Lane Group Flow (vph)	172	1242
Turn Type	NA	NA
Protected Phases	4	2
Permitted Phases		
Minimum Split (s)	18.3	23.2
Total Split (s)	21.0	39.0
Total Split (%)	35.0%	65.0%
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	1.9
Lost Time Adjust (s)	-1.3	-1.2
Total Lost Time (s)	4.0	4.0
Lead/Lag		
Lead-Lag Optimize?		
Act Effct Green (s)	17.0	35.0
Actuated g/C Ratio	0.28	0.58
v/c Ratio	0.31	0.44
Control Delay	8.4	6.1
Queue Delay	0.0	0.0
Total Delay	8.4	6.1
LOS	A	A
Approach Delay	8.4	6.1
Approach LOS	A	A
Queue Length 50th (m)	7.1	18.9
Queue Length 95th (m)	20.1	26.5
Internal Link Dist (m)	163.2	97.0
Turn Bay Length (m)		
Base Capacity (vph)	559	2835
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.31	0.44

Intersection Summary	
Cycle Length: 60	
Actuated Cycle Length: 60	
Offset: 42 (70%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 45	
Control Type: Pretimed	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 40.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Metcalfe & Nepean

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	56	56	0	0	0	0	0	0	95	490	0
Future Volume (Veh/h)	0	56	56	0	0	0	0	0	0	95	490	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	59	59	0	0	0	0	0	0	100	516	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											89	
pX, platoon unblocked	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	716	716	258	546	716	0	516			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	537	537	43	354	537	0	321			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	85	94	100	100	100	100			94		
cM capacity (veh/h)	377	391	944	423	391	1084	1146			1622		

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	118	272	344
Volume Left	0	100	0
Volume Right	59	0	0
cSH	553	1622	1700
Volume to Capacity	0.21	0.06	0.20
Queue Length 95th (m)	6.1	1.5	0.0
Control Delay (s)	13.3	3.0	0.0
Lane LOS	B	A	
Approach Delay (s)	13.3	1.3	
Approach LOS	B		

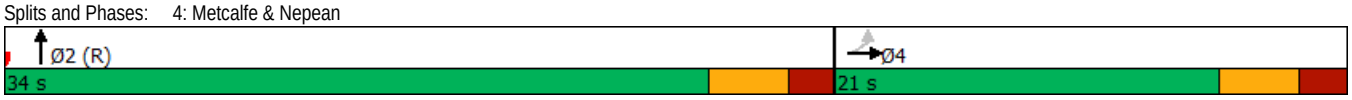
Intersection Summary					
Average Delay	3.3				
Intersection Capacity Utilization	30.6%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBT	NBT
Lane Configurations		
Traffic Volume (vph)	102	410
Future Volume (vph)	102	410
Lane Group Flow (vph)	219	547
Turn Type	NA	NA
Protected Phases	4	2
Permitted Phases		
Minimum Split (s)	18.3	21.2
Total Split (s)	21.0	34.0
Total Split (%)	38.2%	61.8%
Yellow Time (s)	3.3	3.3
All-Red Time (s)	2.0	1.9
Lost Time Adjust (s)	-1.3	-1.2
Total Lost Time (s)	4.0	4.0
Lead/Lag		
Lead-Lag Optimize?		
Act Effct Green (s)	17.0	30.0
Actuated g/C Ratio	0.31	0.55
v/c Ratio	0.36	0.21
Control Delay	8.4	5.2
Queue Delay	0.0	0.0
Total Delay	8.4	5.2
LOS	A	A
Approach Delay	8.4	5.2
Approach LOS	A	A
Queue Length 50th (m)	9.2	6.9
Queue Length 95th (m)	m23.5	11.2
Internal Link Dist (m)	163.2	97.0
Turn Bay Length (m)		
Base Capacity (vph)	606	2624
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.36	0.21

Intersection Summary	
Cycle Length: 55	
Actuated Cycle Length: 55	
Offset: 9 (16%), Referenced to phase 2:NBT, Start of Green	
Natural Cycle: 40	
Control Type: Pretimed	
Maximum v/c Ratio: 0.36	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 29.5%	ICU Level of Service A
Analysis Period (min) 15	

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

Splits and Phases: 4: Metcalfe & Nepean



Projected PM
3: O'Connor & Nepean

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	71	140	0	0	0	0	0	0	102	884	0
Future Volume (Veh/h)	0	71	140	0	0	0	0	0	0	102	884	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	75	147	0	0	0	0	0	0	107	931	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)											89	
pX, platoon unblocked	0.87	0.87	0.87	0.87	0.87		0.87					
vC, conflicting volume	1145	1145	466	864	1145	0	931			0		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	871	871	91	548	871	0	625			0		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	68	82	100	100	100	100			93		
cM capacity (veh/h)	203	234	826	215	234	1084	830			1622		

Direction, Lane #	EB 1	SB 1	SB 2
Volume Total	222	417	621
Volume Left	0	107	0
Volume Right	147	0	0
cSH	446	1622	1700
Volume to Capacity	0.50	0.07	0.37
Queue Length 95th (m)	20.6	1.6	0.0
Control Delay (s)	20.8	2.3	0.0
Lane LOS	C	A	
Approach Delay (s)	20.8	0.9	
Approach LOS	C		

Intersection Summary					
Average Delay	4.4				
Intersection Capacity Utilization	48.6%	ICU Level of Service		A	
Analysis Period (min)	15				

Appendix G:
MMLoS Analysis – Boundary Streets

Multi-Modal Level of Service - Segments Form

Consultant	**Parsons**	**Project**	**180 Metcalfe**
Scenario	**Existing and Future**	**Date**	**Jul-18**
Comments			

SEGMENTS		Street A	Nepean	Metcalfe	Section	Section	Section	Section	Section	Section	Section
			1	2	3	4	5	6	7	8	9
Pedestrian	Sidewalk Width Boulevard Width	B	1.8 m < 0.5 m	1.8 m 0.5 - 2 m							
	Avg Daily Curb Lane Traffic Volume		≤ 3000	≤ 3000							
	Operating Speed On-Street Parking		> 30 to 50 km/h yes	> 30 to 50 km/h no							
	Exposure to Traffic PLoS		**B**	**B**	-	-	-	-	-	-	-
	Effective Sidewalk Width		1.2 m	1.5 m							
	Pedestrian Volume		500 ped /hr	500 ped /hr							
	Crowding PLoS		**B**	**B**	-	-	-	-	-	-	-
	Level of Service		**B**	**B**	-	-	-	-	-	-	-
Bicycle	Type of Cycling Facility	-	Mixed Traffic	Mixed Traffic							
	Number of Travel Lanes		≤ 2 (no centreline)	2-3 lanes total							
	Operating Speed		>40 to <50 km/h	>40 to <50 km/h							
	# of Lanes & Operating Speed LoS		**B**	**D**	-	-	-	-	-	-	-
	Bike Lane (+ Parking Lane) Width										
	Bike Lane Width LoS		-	-	-	-	-	-	-	-	-
	Bike Lane Blockages										
	Blockage LoS		-	-	-	-	-	-	-	-	-
	Median Refuge Width (no median = < 1.8 m)										
	No. of Lanes at Unsignalized Crossing										
	Sidestreet Operating Speed										
	Unsignalized Crossing - Lowest LoS		-	-	-	-	-	-	-	-	-
	Level of Service		-	-	-	-	-	-	-	-	-
Transit	Facility Type	-									
	Friction or Ratio Transit:Posted Speed										
	Level of Service		-	-	-	-	-	-	-	-	-
Truck	Truck Lane Width	B	> 3.7 m	> 3.7 m							
	Travel Lanes per Direction		1	> 1							
	Level of Service		**B**	**A**	-	-	-	-	-	-	-

Appendix H:
TDM Measure Checklist

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)*	☐ N/A
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)	☐ N/A

		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)	☐ N/A
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐ N/A
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	☐ N/A
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐ N/A

	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)*	☐ Proponent has been advised.
	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	☐ Proponent has been advised.
	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)*	☐ N/A
	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)	☐ N/A

Appendix I:

MMLoS Analysis – Nepean/Metcalfe Intersection

Multi-Modal Level of Service - Intersections Form

Consultant	**Parsons**	**Project**	**180 Metcalfe Street**
Scenario	**Existing and future**	**Date**	**Jul-18**
Comments			

Unlocked Rows for Replicating

	INTERSECTIONS	Metcalfe/Nepean				Intersection B				Intersection C			
	Crossing Side	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	3	3	0 - 2	0 - 2								
	Median	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m	No Median - 2.4 m								
	Conflicting Left Turns	Permissive	No left turn / Prohib.	No left turn / Prohib.	No left turn / Prohib.								
	Conflicting Right Turns	No right turn	No right turn	Permissive or yield control	No right turn								
	Right Turns on Red (RToR) ?	RTOR prohibited	RTOR allowed	RTOR prohibited	RTOR prohibited								
	Ped Signal Leading Interval?	No	No	No	No								
	Right Turn Channel	No Channel	No Channel	No Channel	No Channel								
	Corner Radius	0-3m	0-3m	3-5m	0-3m								
	Crosswalk Type	Std transverse markings	Std transverse markings	Std transverse markings	Std transverse markings								
	PETSI Score	**81**	**86**	**98**	**104**								
	Ped. Exposure to Traffic LoS	**B**	**B**	**A**	**A**	-	-	-	-	-	-	-	-
	Cycle Length	60	60	60	60								
	Effective Walk Time	7	7	28	28								
	Average Pedestrian Delay	**23**	**23**	**9**	**9**								
	Pedestrian Delay LoS	**C**	**C**	**A**	**A**	-	-	-	-	-	-	-	-
	Level of Service	**C**	**C**	**A**	**A**	-	-	-	-	-	-	-	-
		C				**-**				**-**			
	Approach From	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST	NORTH	SOUTH	EAST	WEST
Bicycle	Bicycle Lane Arrangement on Approach	Mixed Traffic		Mixed Traffic	Mixed Traffic								
	Right Turn Lane Configuration												
	Right Turning Speed												
	Cyclist relative to RT motorists	**#N/A**	**-**	**#N/A**	**#N/A**	-	-	-	-	-	-	-	-
	Separated or Mixed Traffic	**Mixed Traffic**	**-**	**Mixed Traffic**	**Mixed Traffic**	-	-	-	-	-	-	-	-
	Left Turn Approach				No lane crossed								
	Operating Speed				> 40 to ≤ 50 km/h								
	Left Turning Cyclist	**-**	**-**	**-**	**B**	-	-	-	-	-	-	-	-
	Level of Service	**#N/A**	**-**	**#N/A**	**#N/A**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		#N/A				**-**				**-**			
Transit	Average Signal Delay												
	Level of Service	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		-				**-**				**-**			
Truck	Effective Corner Radius		< 10 m										
	Number of Receiving Lanes on Departure from Intersection		≥ 2										
	Level of Service	**-**	**D**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
		D				**-**				**-**			
Auto	Volume to Capacity Ratio		0.0 - 0.60										
	Level of Service	**A**				**-**				**-**			