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Proposed Residential Development

249-255 Richmond Road & 372 Tweedsmuir Avenue, Ottawa

Transportation Impact Assessment

Proposed Residential Development

249-255 Richmond Road & 372 Tweedsmuir Avenue

Transportation Impact Assessment

Prepared By:

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October 26, 2021

Novatech File: 121193
Ref: R-2021-124

NOVATECH
Engineers, Planners & Landscape Architects

October 26, 2021

City of Ottawa
Planning and Growth Management Department
110 Laurier Ave. E., 4th Floor
Ottawa, Ontario K1P 1J1

Attention: **Wally Dubyk**
Project Manager, Infrastructure Approvals

Reference: **249-255 Richmond Road & 372 Tweedsmuir Avenue**
TIA Report
Our File No.: 121193

We are pleased to submit the following Transportation Impact Assessment Report in support of Zoning By-law Amendment and Site Plan Control applications for the above noted properties, for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa Transportation Impact Assessment Guidelines (June 2017).

If you have any questions or comments regarding this report, please feel free to contact Brad Byvelds or the undersigned.

Yours truly,

NOVATECH

Brishank Adhikari
Engineering-in-Training

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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared in support of Zoning By-law Amendment and Site Plan Control applications for the subject property at 249-255 Richmond Road and 372 Tweedsmuir Avenue located in Ward 15, Kitchissippi, in Ottawa. Currently, the site has an area of approximately 0.22 hectares (0.54 acres) and is occupied by a commercial retail building, a restaurant, and a single-family dwelling.

The subject site is surrounded by the following:

- Residential properties to the north;
- Existing commercial developments and Tweedsmuir Avenue to the east;
- Gas station, existing residential properties and Richmond Road to the south;
- Existing commercial developments and Athlone Avenue to the west.

The subject site has frontage on Richmond Road which is designated as a Traditional Mainstreet on Schedule B of the City of Ottawa's Official Plan. The implemented zoning for the property is part of the Mixed Use/Commercial Zones, and more specifically the Traditional Mainstreet Zone (TM), which allows for "a broad range of uses including retail, service commercial, office, residential and institutional uses, including mixed-use buildings but excluding auto-related uses, in areas designated Traditional Mainstreet in the Official Plan".

The proposed development will replace the existing commercial retail building, restaurant, and single residential unit with a nine-storey condo building containing 87 dwelling units, approximately 410 square metres of retail space and 240 square metres of restaurant space. The development is anticipated to be constructed in a single phase with full occupancy in the year 2023. Access will be provided via the existing commercial driveway to Tweedsmuir Avenue. An existing residential driveway to Tweedsmuir Avenue will be removed, as well as two existing driveways to Richmond Road. In addition, the development has proposed 98 underground parking spaces and 11 electric vehicle charging stations.

The conclusions and recommendations of this TIA can be summarized as follows:

Development Design

- Sidewalk connections will be provided between the building entrance and Richmond Road and Tweedsmuir Avenue.
- Sidewalks will be depressed and continuous across the parking garage access in accordance with City standards.
- Two bicycle parking spaces will be provided at-grade near the Richmond Road building entrance and 194 bicycle parking spaces will be provided within the underground parking garage. In total, 196 bicycle parking spaces will be provided.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

Parking

- The proposed vehicular and bicycle parking spaces adhere to the requirements of the City's Zoning By-law.

Boundary Street Design

- Richmond Road and Tweedsmuir Avenue have been evaluated using the targets set for arterial and local roadways within 600m of a rapid transit stop.
- The target PLOS is not achieved on either Richmond Road or Tweedsmuir Avenue. To achieve the target PLOS A along Richmond Road, either a reduction in the posted speed or Annual Average Daily Traffic (AADT) volumes is required. To achieve the target PLOS A along Tweedsmuir Avenue, a 2m sidewalk and boulevard greater than 0.5m is required. The proposed development will provide a 2.0m sidewalk adjacent to the curb with planters behind the sidewalk.
- The target BLOS is not achieved on either Richmond Road or Tweedsmuir Avenue. To achieve the target BLOS C along Richmond Road, bike lanes are required. To achieve the target BLOS D along Tweedsmuir Avenue, a reduction in the operating speed is required. This is identified for the City's consideration.
- The target TLOS is not achieved on Richmond Road. To achieve the target TLOS D along Richmond Road, a reduction in parking/driveway friction is required.
- The target Truck LOS target of E is met on Richmond Road due to lanes that measure more than 3.7 metres.

Access Intersections

- The width of the proposed access adheres to the requirements of the PABL and ZBL.
- The location of the proposed access adheres to the requirements of the PABL.
- A maximum grade of 5% will be provided for a distance of 12.6 metres behind the sidewalk and 10 metres within the private property. As the proposed grading meets the TAC recommendations, a waiver to the Section 25 (1)(u) of the PABL is recommended.

Transportation Demand Management

- The following measures will be implemented upon completion of the proposed development:
    - Display local area maps with walking/cycling access routes and key destinations at major entrances (multi-family, condominium).
    - Display relevant transit schedules and route maps at entrances (multi-family, condominium).
    - Provide real-time arrival information display at entrances (multi-family, condominium).
    - Unbundle parking cost from purchase price (condominium).
    - Provide a multimodal travel option information package to new residents.
    - The proposed development will provide bicycle parking spaces at a rate of over 2 spaces per unit.

1.0 SCREENING

1.1 Introduction

This Transportation Impact Assessment (TIA) has been prepared in support of Zoning By-law Amendment and Site Plan Control applications for the subject property at 249-255 Richmond Road and 372 Tweedsmuir Avenue located in Ward 15, Kitchissippi, in Ottawa. Currently, the site has an area of approximately 0.22 hectares (0.54 acres) and is occupied by a commercial retail building, a restaurant, and a single-family dwelling.

The subject site is surrounded by the following:

- Residential properties to the north;
- Existing commercial developments and Tweedsmuir Avenue to the east;
- Gas station, existing residential properties and Richmond Road to the south;
- Existing commercial developments and Athlone Avenue to the west.

A view of the subject site and study area is provided in **Figure 1**.

Figure 1: Study Site

1.2 Proposed Development

The subject site has frontage on Richmond Road which is designated as a Traditional Mainstreet on Schedule B of the City of Ottawa's Official Plan. The implemented zoning for the property is part of the Mixed Use/Commercial Zones, and more specifically the Traditional Mainstreet Zone (TM), which allows for "a broad range of uses including retail, service commercial, office, residential and institutional uses, including mixed-use buildings but excluding auto-related uses, in areas designated Traditional Mainstreet in the Official Plan".

The proposed development will replace the existing commercial retail building, restaurant, and single residential unit with a nine-storey condo building containing 87 dwelling units, approximately 410 square metres of retail space and 240 square metres of restaurant space. The development is anticipated to be constructed in a single phase with full occupancy in the year 2023. Access will be provided via the existing commercial driveway to Tweedsmuir Avenue. An existing residential driveway to Tweedsmuir Avenue will be removed, as well as two existing driveways to Richmond Road. The development has proposed 98 underground parking spaces and 11 electric vehicle charging stations. Additionally, two bicycle parking spaces will be provided at-grade near the Richmond Road building entrance and 194 will be provided within the underground parking garage. In total, 196 bicycle parking spaces will be provided.

A copy of the preliminary site plan is included in Appendix A.

1.3 Screening Form

The City's 2017 TIA Guidelines identify three triggers for completing a TIA report, including trip generation, location, and safety. The criteria for each trigger are outlined in the City's TIA Screening Form. The trigger results are as follows:

- **Trip Generation Trigger** – The net traffic generated by the site development is not anticipated to generate over 60 person trips/peak hour; further assessment is not required based on this trigger.
- **Location Triggers** – The proposed development is located within the City's 'Design Priority Area and/or Transit-oriented Development zone'; further assessment is required based on this trigger.
- **Safety Triggers** – The proposed development does not flag any safety triggers further assessment is not required based on this trigger.

A copy of the TIA Screening Form is included in Appendix B.

2.0 SCOPING

2.1 Existing Conditions

2.1.1 Roadways

All roadways within the study area fall under the jurisdiction of the City of Ottawa.

Richmond Road is an arterial roadway that runs on an east-west alignment between Baseline Road and Island Park Drive. East of Island Park Drive, Richmond Road continues as Wellington Street and West of Baseline Road, Richmond Road continues as Robertson Road. Within the study area, Richmond Road has a two-lane undivided urban cross-section, sidewalks on both sides of the roadway, and a regulatory speed limit of 50 km/h under the Highway Traffic Act. Richmond Road is classified as a full-load truck route within the study area. On-street parking is permitted on both sides of the road with a maximum 90-minute time restriction between 7:00AM and 7:00PM. The City of Ottawa's Official Plan does not identify any ROW protection on Richmond Road adjacent to the site.

Athlone Avenue is a local roadway that runs on a north-south alignment between Scott Street and south of Wesley Avenue. North of Richmond Road, Athlone Avenue has a two-lane undivided urban cross-section, sidewalks on the west side of the roadway. South of Richmond Road, it has a two-lane undivided rural cross section and has an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. Within the study area, Athlone Avenue is not classified as a truck route and prohibits trucks from entering the road. On-street parking is permitted on the east side of the road, with a maximum 60-minute time restriction between 7:00AM and 7:00PM on weekdays.

Tweedsmuir Avenue is a local roadway that runs on a north-south alignment between Scott Street and Currell Avenue. Within the study area, Tweedsmuir Avenue has a two-lane undivided urban cross-section, sidewalks on the eastern side of the roadway, and an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. Tweedsmuir Avenue is not classified as a truck route and prohibits trucks from entering the road. On-street parking is permitted only on the western side of the road.

McRae Avenue is a local roadway that runs on a north-south alignment between Scott Street and Richmond Road. Within the study area, McRae Avenue typically has a two-lane undivided urban cross-section, sidewalks on both sides of the roadway, and an unposted regulatory speed limit of 50 km/h under the Highway Traffic Act. McRae Avenue is classified as a restricted load truck route. On-street parking is not permitted on both sides of the road.

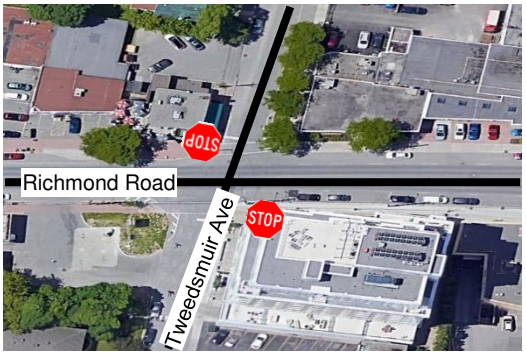
2.1.2 Study Intersections

<u>Richmond Rd & Athlone Ave</u>

- Unsignalized (two-way stop-controlled) four-legged intersection
- All Approaches: one left-turn/ through/right-turn shared lane
- Additional Information: an intersection pedestrian signal is provided on the west approach and standard pedestrian crossings on the north and south approaches

<u>Richmond Rd & Tweedsmuir Ave</u>

- Unsignalized (two-way stop-controlled) four-legged intersection
- All Approaches: one left-turn/ through/right-turn shared lane
- Additional Information: standard pedestrian crossings on the north and south approaches



<u>Richmond Rd & McRae Rd</u>

- Signalized four-legged intersection
- North/South/East Approaches: one left-turn/ through/right-turn shared lane
- West Approach: one left-turn/through/right-turn shared lane
- Additional Information: standard pedestrian crossings on all approaches

2.1.3 Driveways

In accordance with the City's 2017 TIA Guidelines, a review of driveways on the boundary streets within 200m of the proposed development is provided as follows:

Richmond Road, North Side:

- 1 commercial driveway to businesses at 205 Richmond Road
- 2 driveways to car dealership at 225 Richmond Road
- 1 private driveway to businesses at 277 Richmond Road

Richmond Road, South Side:

- 2 driveways to gas station at 256 Richmond Road
- 1 private driveway to business at 274 Richmond Road
- 1 private driveway to bank at 288 Richmond Road

Tweedsmuir Avenue, North of Richmond Road:

- 1 commercial driveway to businesses at the car dealership
- 12 and 20 private driveways to residential developments on the east and west curbs, respectively

2.1.4 Pedestrian and Cycling Facilities

Concrete and/or unit paver sidewalks are provided on both sides of Richmond Road, McRae Avenue and on one side of Tweedsmuir Avenue and Athlone Avenue north of Richmond Road.

In the City of Ottawa's existing cycling network, Richmond Road is classified as a suggested bike route. Scott Street, and Byron Avenue, north and south of the study area, have bicycle lanes throughout the corridor. In the City of Ottawa's ultimate cycling network, Richmond Road is classified as a spine route.

2.1.5 Area Traffic Management

The following Transportation Management Implementation Plan was developed by the City of Ottawa and will have an impact on the proposed development:

- Richmond Road/Westboro Transportation Management Implementation Plan: this long-term plan identifies a set of programs, policies, and infrastructure improvements that promote a shift to more sustainable modes of transport.

In addition, the following has been completed as part of the area traffic management:

- Richmond Road eastbound has lane hatch markings on the curb at the intersection with Athlone Avenue and Tweedsmuir Avenue to prevent drivers from using it as a turn lane.
- No Heavy Trucks (Rb-62) signs are implemented on Athlone Avenue and Tweedsmuir Avenue north of Richmond Road.
- Athlone Avenue north of Richmond Road has a playground ahead (Wc-3) sign in advance of the pedestrian connection to Lion's Park.
- Tweedsmuir Avenue, south of Richmond Road, has a speed bump, mid-block and intersection narrowings.

2.1.6 Transit

The Westboro Transit Station (future Light Rail Transit station) is located north of Scott Street at Tweedsmuir Avenue, at a walking distance of approximately 300m from the subject site. There are several OC transit and bus stops within 400 m of the subject site. A summary of the closest bus stops and routes along Richmond Road is provided as follows:

Richmond Road/Kirkwood Avenue:

- Bus Stop #2389: Services bus routes 11, 81, 153
- Bus Stop #6929: Services bus routes 51, 81
- Bus Stop #6930: Services bus route 51

Richmond Road/McRae Avenue:

- Bus Stop #4863: Services bus route 11
- Bus Stop #2356: Services bus routes 11, 81, 153
- Bus Stop #7377: Services bus routes 81, 153

Richmond Road/Eden Avenue

- Bus Stop #4864: Services bus route 11

Richmond Road/Edgewood Avenue

- Bus Stop #4865: Services bus route 11

Richmond Road/Churchill Avenue

- Bus Stop #4987: Services bus routes 50, 153
- Bus Stop #5616: Services bus routes 50, 153
- Bus Stop #4870: Services bus route 11
- Bus Stop #4876: Services bus routes 11, 153

Location of these transit stops are shown in **Figure 2**.

OC Transpo Route 11 travels between Laurier Avenue and Bayshore Station. The route operates every 15 to 40 minutes from 5:00am to 1:00am on weekdays, every 15 to 30 minutes on Saturdays from 6:00AM to 2:00AM, and every 15 to 30 minutes from 7:00AM to 1:00AM on Sundays.

OC Transpo Route 50 travels between Lincoln Fields Station and Tunney's Pasture Station. The route operates every 30 minutes from 6:00am to 9:00pm on weekdays, and every 30 to 60 minutes from 8:00AM to 7:30PM on Saturdays.

OC Transpo Route 51 travels between Tunney's Pasture Station and Britannia Park. The route operates every 15 to 30 minutes from 6:00AM to 11:00PM on weekdays, every 15 to 30 minutes from 7:00AM to 11:00PM on Saturdays, every 15 to 30 minutes from 8:00AM and 11:30PM on Sundays

OC Transpo Route 81 travels between Clyde Avenue and Tunney's Pasture Station. The route operates every 30 minutes from 6:00am to 8:00PM on weekdays, every 30 to 60 minutes from 8:00AM to 8:00PM on Saturdays, and every 30 to 60 minutes from 8:00AM to 7:00PM on Sundays.

OC Transpo Route 153 travels between Lincoln Field's Station and Tunney's Pasture Station. The route operates every 120 minutes from 11:00am to 7:00pm on weekdays, every 120 minutes from 11:00AM to 5:00PM on Saturdays and Sundays.

OC Transpo maps for the routes outlined above and a portion of the OC Transpo System Map are included in Appendix C

2.1.7 Existing Traffic Volumes

Weekday traffic counts completed by the City of Ottawa were used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. The traffic counts were completed on the following dates:

- Richmond Rd & Athlone Ave 2019-Jul-18
- Richmond Rd & McRae Ave 2020-Jan-23

It is noted that the City of Ottawa does not have any traffic counts at the Richmond Road/Tweedsmuir Avenue intersection. Through traffic volumes along Richmond Road have been estimated based on the January 2020 traffic count at Richmond Road/Athlone Avenue. Traffic count data is included in Appendix D. Traffic volumes within the study area are shown in **Figure 3.**

Figure 2: Transit Stops with 400m of Proposed Development

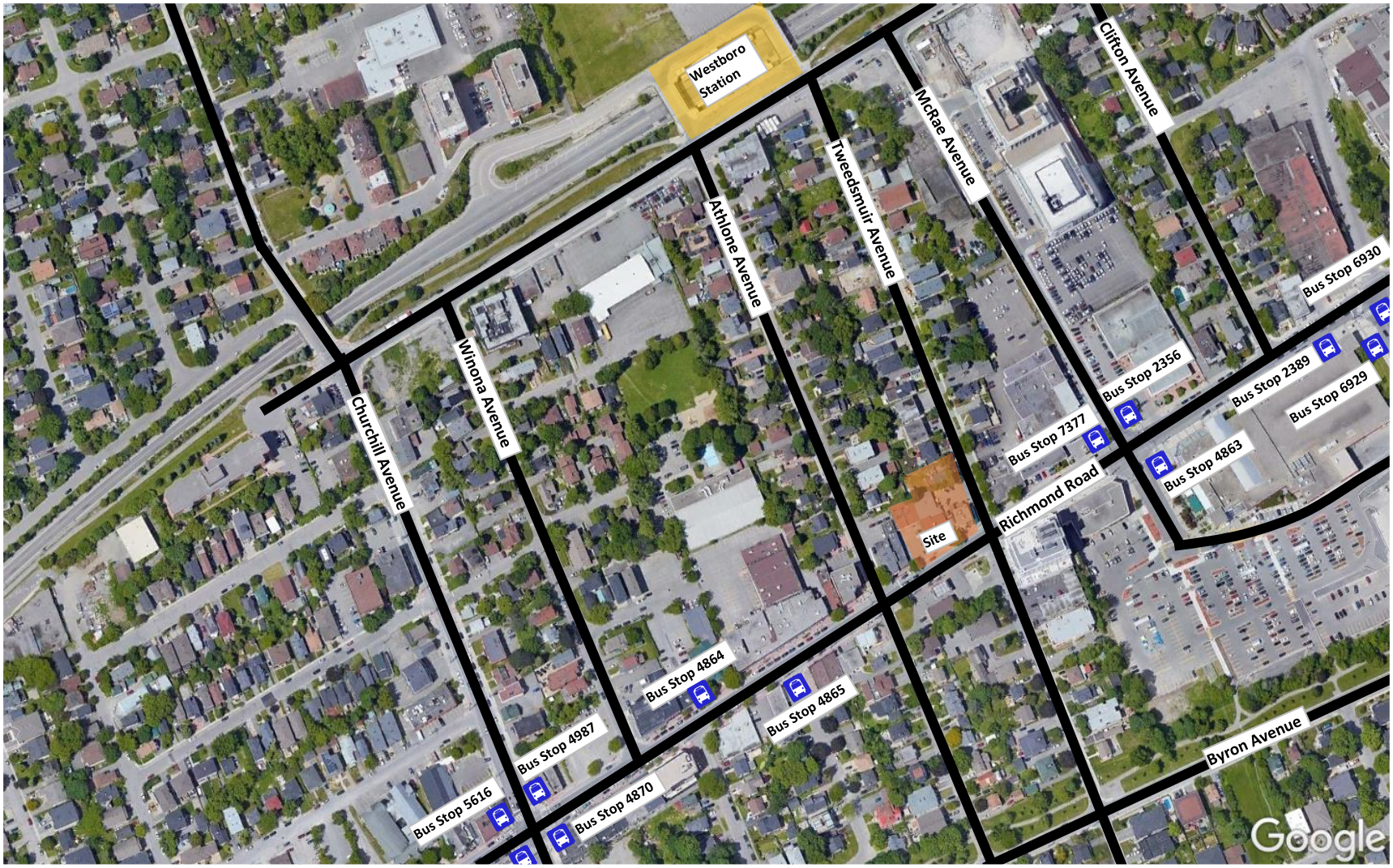
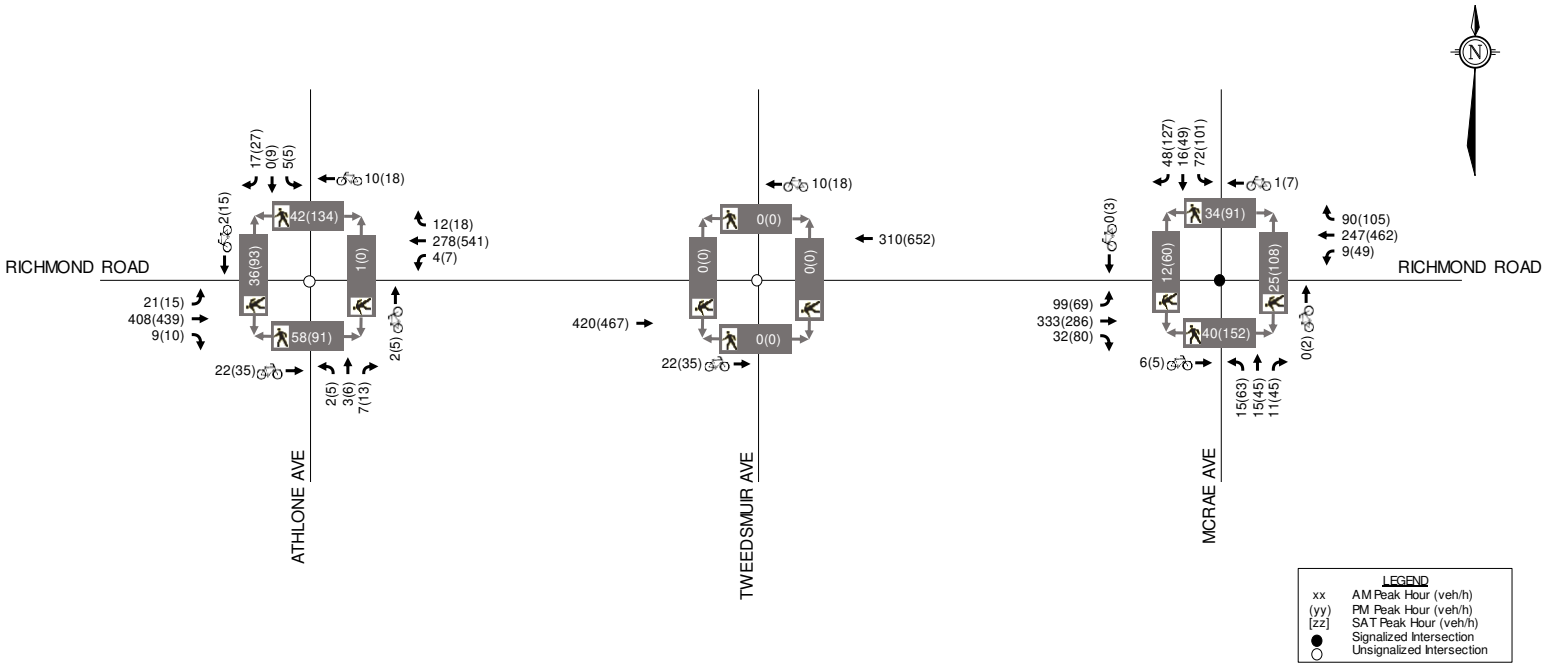


Figure 3: 2019 Existing Traffic Volumes



2.1.8 Collision Records

Historical collision data from the last five years was obtained from the City's Public Works and Service Department for the study area intersections. Copies of the collision summary reports are included in Appendix D.

The collision data has been evaluated to determine if there are any identifiable collision patterns, which are defined in the 2017 TIA Guidelines as 'more than six collisions in five years' for any one movement. The number of collisions at each intersection from January 1, 2015 to December 31, 2019 is summarized in Table 1.

Table 1: Collision History Summary

		Impact Types					Total
		Angle	Rear-end	Sideswipe	Turning	SMV[1]/ Other	
Intersection	Richmond Rd & Athlone Ave	5	1	1	-	1	**8**
	Richmond Rd & Tweedsmuir Ave	4	1	-	1	1	**7**
	Richmond Rd & McRae Ave	2	6	1	1	4	**14**
Road Segment	Richmond Rd btwn Athlone and Tweedsmuir Ave	4	-	1	-	1	**6**
	Richmond Rd btwn Tweedsmuir and McRae Ave	-	-	-	-	2	**2**

Richmond Road / Athlone Avenue
A total of 8 collisions were reported at this intersection over the last five years, of which there were one rear-end impact, one sideswipe impact, five angle impacts, and one single-vehicle/other impacts. Only one of the collisions at this location caused injuries, but none caused fatalities. None of the collisions involved cyclists, and none involved a pedestrian.

Of the eight collisions at this location, six of them occurred during clear conditions where weather was not a factor. Additionally, of the eight collisions, four of them occurred during daylight hours.

As there are less than 6 collisions of any specific impact type, there are no identifiable collision patterns at the intersection of Richmond Road and Athlone Avenue.

Richmond Road / Tweedsmuir Avenue
A total of 7 collisions were reported at this intersection over the last five years, of which there were one rear-end impact, one turning movement impact, four angle impacts, and one single-vehicle/other impacts. Three of the collisions caused injuries, but none caused fatalities. One of the collisions involved cyclists, and none involved a pedestrian.

Of the seven collisions at this location, four of them occurred during clear conditions where weather was not a factor. Additionally, of the seven collisions, four of them occurred during daylight hours.

As there are less than 6 collisions of any specific impact type, there are no identifiable collision patterns at the intersection of Richmond Road and Tweedsmuir Avenue.

Richmond Road / McRae Avenue
A total of 14 collisions were reported at this intersection over the last five years, of which there were six rear-end impacts, one sideswipe impact, one turning movement impact, two angle impacts, and four single-vehicle/other impacts. Four of the collisions caused injuries, but none caused fatalities. None of the collisions involved cyclists, and three involved a pedestrian.

Of the 14 collisions at this location, eleven of them occurred during clear conditions where weather was not a factor. Additionally, of the 14 collisions, twelve of them occurred during daylight hours.

Of the six rear-end collisions, three involved westbound vehicles, two involved eastbound vehicles, and one involved southbound vehicle. All of the rear-end impacts were a result of vehicles following too close, speeding too fast for conditions, or lost control.

As there are less than 6 collisions of any other specific impact type, there are no other identifiable collision patterns at the Richmond Road segment between Richmond Road and McRae Avenue.

Richmond Road between Athlone Avenue and Tweedsmuir Avenue
A total of 6 collisions were reported at this intersection over the last five years, of which there were four angle impacts, one sideswipe impacts, and one single-vehicle/other impacts. Two of the collisions caused injuries, but none caused fatalities. One of the collisions involved cyclists, and none involved a pedestrian. All of the collisions occurred during clear environment and four of the collisions occurred during daylight hours.

As there are less than 6 collisions of any specific impact type, there are no identifiable collision patterns at the Richmond Road segment between Athlone Avenue and Tweedsmuir Avenue.

Richmond Road between Tweedsmuir Avenue and McRae Avenue
A total of 2 collisions were reported at this intersection over the last five years, of which both were four single-vehicle/other impacts. One of the collisions caused injuries, but none caused fatalities. None of the collisions involved cyclists, and none involved a pedestrian.

As there are less than 6 collisions of any specific impact type, there are no identifiable collision patterns at the Richmond Road segment between Tweedsmuir Avenue and McRae Avenue.

2.2 Planned Conditions

2.2.1 Transportation Projects

The City of Ottawa's Transportation Master Plan (TMP) 2031 Affordable Rapid Transit and Transit Priority (RTTP) Network identifies the implementation of transit signal priority and queue jump lanes at select intersections along Richmond Road, Wellington Street W. and Somerset Street. In addition, the affordable RTTP Network identifies the extension of Light Rail Transit (LRT) to the east, west, and south (Phase 2).

Construction for Phase 2 of the LRT began in 2019. The Confederation Line Extension West is

anticipated to be completed by 2023 and Westboro Transit Station will open as Westboro LRT Station. The proposed western Confederation Line extension is shown in **Figure 4**.

The Cycling Plan does not show any planned projects within the study site.

2.2.2 Other Area Developments:

The Ottawa Development Application search tool allows review of any applications that have been submitted to the City of Ottawa. Upon examining the applications, the following developments are proposed in close proximity to the study area of 255 Richmond Road:

- *114 Richmond Road*: nine storey addition consisting of an apartment building and conversion of the convent into a mixed-use building.
- *175 Richmond Road*: nine-storey mixed-use building to accommodate commercial uses on the main floors and residential uses above. There are 241 residential units proposed and approximately 675 m² of retail commercial along Richmond Road.
- *319-327 Richmond Road*: a nine-storey mixed-use building with ground floor commercial units and approximately 185 dwelling units on the upper storeys.
- *70 Richmond:* nine-storey mixed-use building with 60 residential units and a retail use at grade.
- *316-332 Clifton Road*: low-rise planned unit development consisting of 29 dwelling units, comprising of townhouses and back-to-back townhouses and an internal private road.
- *398-406 Roosevelt Avenue:* redevelopment of the site for a six-storey mixed-use building including two commercial units, 35 dwelling units, underground parking and rear surface parking.
- *349 Danforth Avenue*: three-storey mixed-use building with 13 residential units and 2 commercial, ground-floor units.
- *335 Roosevelt Avenue:* two high-rise residential buildings, three low-rise residential buildings with common underground parking lot with a total of 361 units and with 343 parking spaces.
- *397-399 Winston Avenue*: seven-storey mixed use development with a commercial use on the ground floor and 42 residential units above and two levels of underground parking with 18 parking spaces.

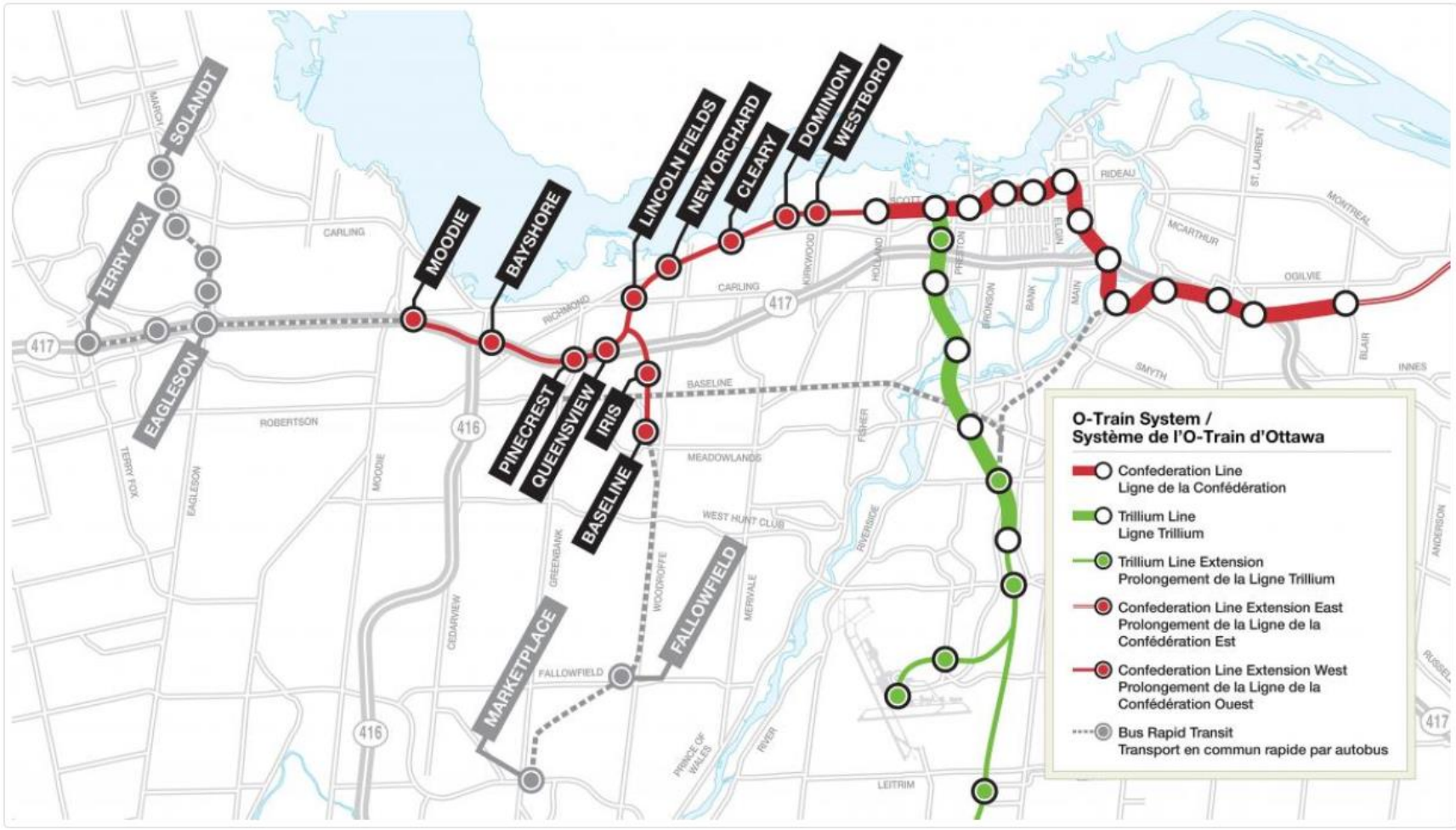
2.3 Study Area and Time Periods

The study area for this report includes the boundary street Richmond Road, and the study area intersections at Richmond Road/Athlone Avenue, Richmond Road/Tweedsmuir Avenue, and Richmond Road/McRae Avenue.

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic.

The proposed development is expected to be completed with full occupancy by the year 2022. As such, this TIA considers the weekday AM and PM peak periods for the buildout year 2022 and the horizon year 2027.

Figure 4: LRT Phase 2 - Confederation Line Extension West



2.4 Exemptions Review

This section reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the 2017 TIA Guidelines. The applicable exemptions for the site are shown below in **Table 2**.

Table 2: City of Ottawa Exemptions Review

Module	Element	Exemption Criteria	Status
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans.	Not exempted.
	4.1.3 New Street Networks	Only required for plans of subdivision.	Exempted.
4.2 Parking	4.2.1 Parking Supply	Only required for site plans.	Not exempted.
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand.	Exempted.
Network Impact Component			
4.5 Transportation Demand Management	All elements	Not required for site plans expected to have fewer than 60 employees and/or students on location at any given time.	Not exempted.
4.6 Neighbourhood Traffic Management	4.6.1 Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds.	Exempted.
4.8 Network Concept	All elements	Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning	Exempted.

As the proposed development does not meet the trip generation trigger, the TIA report is limited to the Design Review components. Per City request, Module 4.5 - Transportation Demand Management will also be completed as part of the TIA.

3.0 FORECASTING

3.1 Development-Generated Travel Demand

3.1.1 Trip Generation

Trips Generated from Existing Development

Currently, the subject site is occupied by a retail building, and a high turnover restaurant, with a total gross floor area of approximately 11,000 square feet (approximated using aerial photography). Trips generated by the existing development has been estimated using the rates outlined in the ITE Trip Generation Manual, 10th Edition for the Shopping Centre (Land Use 820) and High Turnover Restaurant (Land Use 932) land uses.

The person trips generated by the existing development are summarized in **Table 3**.

Table 3: Person Trips Generated by Existing Development

Land Use	ITE Code	Gross Floor Area	AM Peak (PPH)[1]			PM Peak (PPH)[1]		
			In	Out	Total	In	Out	Total
Shopping Centre	820	7,000	6	3	9	17	18	35
High Turnover Restaurant	932	4,000	28	23	51	31	19	50
TOTAL			34	26	60	48	37	85

1. PPH = Persons Trips per Hour - Calculated using an ITE Trip to Person Trip factor of 1.28, consistent with the 2017 TIA Guidelines

The modal shares for the existing retail development are assumed to be consistent with the modal shares outlined in the 2020 TRANS Trip Generation Manual, specific to the Ottawa West Area region. The assumed modal shares have been taken as the average of the TRANS AM and PM peak hour modal shares. As the modal shares presented in the 2020 TRANS report do not include restaurants, the modal shares for the existing restaurant have been estimated based on the 2011 TRANS O-D Survey Report. The modal share values applied to the existing restaurant development are based on all observed trips within the Ottawa West Area during the AM peak hour and PM peak hour. A full breakdown of the existing trips by modal share is shown in **Table 4**.

Table 4: Person Trips by Modal Shares from Existing Development

Travel Mode	Mode Share	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Peak Hour Person Trips Shopping Centre		6	3	9	17	18	35
Auto-Driver	50%	3	2	5	8	9	17
Auto-Passenger	15%	1	0	1	3	2	5
Transit	10%	1	0	1	2	2	4
Cyclist	5%	0	0	0	1	1	2
Pedestrian	20%	1	1	2	3	4	7
Peak Hour Person Trips High Turnover Restaurant		28	23	51	31	19	50
Auto-Driver	35%	10	8	18	11	7	18
Auto-Passenger	10%	3	2	5	3	2	5
Transit	5%	1	2	3	2	1	3
Cyclist	5%	1	2	3	2	1	3
Pedestrian	45%	13	9	22	13	8	21

From the previous tables, the existing development is estimated to generate 60 person trips (including 23 vehicle trips) during the AM Peak Hour and 85 person trips (including 35 vehicle trips during the PM peak hour.

Trips Generated from Proposed Residential Development

The proposed redevelopment will include 87 residential units. Trips generated by the proposed residential units during the AM and PM peak period have been estimated using the recommended rates from the TRANS Trip Generation Manual, prepared in 2020 by WSP Canada. The trip generation rates are taken from Table 3 and correspond to High-Rise Residential in the Ottawa West Area. The directional split between inbound and outbound trips are based on the blended splits presented in Table 9 of the report.

The estimated number of trips generated by the proposed residential units is shown in **Table 5**.

Table 5: Trips Generated by Proposed Residential Development

Land Use	TRANS Rate	Units	AM Peak (PPP)[1]			PM Peak (PPP)[1]		
			In	Out	Total	In	Out	Total
High-Rise Residential, Ottawa West	AM: 0.80 PM: 0.90	87	22	48	70	45	33	78

1. PPP = Person Trips per Period

The 2020 TRANS Trip Generation Manual provides modal shares for residential developments within the Ottawa West Area. However, developments within 600m of rapid transit stations can be considered as Transit Oriented Developments (TOD). In TOD zones, the transit share is assumed to increase significantly compared to any TRANS O-D District. A summary of the TRANS residential mode shares, TOD mode shares, and assumed residential mode shares is provided in **Table 6**.

Table 6: TRANS and TOD Mode Share Comparison

	Auto-Driver	Auto-Passenger	Transit	Cycling	Walking
Trans	30%	10%	35%	5%	20%
T.O.D.	15%	5%	65%	5%	10%
Proposed	25%	10%	40%	5%	20%

The proposed residential modal shares reflect a 5% reduction in auto trips compared to the Ottawa Inner Area to account for the development's proximity to the Westboro Transit Station. A full breakdown of the projected person trips by modal share is shown in **Table 7**.

Table 7: Person Trips by Modal Share from Proposed Residential Development

Travel Mode	Mode Share	AM Peak (PPP)			PM Peak (PPP)		
		In	Out	Total	In	Out	Total
Residential Peak Period Person Trips							
Total Trips		22	48	70	45	33	78
Auto-Driver	25%	6	12	18	11	9	20
Auto-Passenger	10%	2	5	7	5	3	8
Transit	40%	9	18	27	18	12	30
Cyclist	5%	1	3	4	2	2	4
Pedestrian	20%	4	10	14	9	7	16

Table 4 of the 2020 O-D TRANS Trip Generation Manual includes adjustment factors to convert the estimated number of trips generated for each mode from peak period to peak hour. A breakdown of the peak hour trips by mode is shown in **Table 8**.

Table 8: Residential Peak Hour Persons Trips Generated by Residential Development

Travel Mode	Adjustment Factor		AM Peak (PPH)			PM Peak (PPH)		
	AM	PM	In	Out	Total	In	Out	Total
Residential Peak Hour Person Trips								
Auto-Driver	0.48	0.44	3	6	9	5	4	9
Auto-Passenger	0.48	0.44	1	2	3	2	2	4
Transit	0.55	0.47	5	10	15	8	6	14
Cyclist	0.58	0.48	1	1	2	1	1	2
Pedestrian	0.58	0.52	2	6	8	5	3	8
Total Trips			12	25	37	21	16	37

From the previous tables, the existing development is estimated to generate 37 person trips (including 9 vehicle trips) during the AM Peak Hour and 37 person trips (including 9 vehicle trips during the PM peak hour.

Trips Generated from Proposed Commercial Development

The proposed redevelopment will also include two retail units with a combined gross floor area of approximately 4,400 square feet and a restaurant with a gross floor area of approximately 2,600 square feet. Consistent with the existing development, trips generated by the commercial uses

have been calculated using the Shopping Centre (LU 820) and High Turnover Sit Down Restaurant (LU 932) land uses in the ITE Trip Generation Manual, 10th Edition.

The estimated number of trips generated by the proposed commercial development is shown in **Table 9**.

Table 9: Trips Generated by Proposed Commercial Development

Land Use	ITE Code	Gross Floor Area (sq ft)	AM Peak (PPH)[1]			PM Peak (PPH)[1]		
			In	Out	Total	In	Out	Total
Shopping Centre	820	4,400	3	2	5	11	11	22
Restaurant	932	2,600	18	15	33	20	12	32
Total			21	17	38	31	23	54

1. PPH = Persons Trips per Hour - Calculated using an ITE Trip to Person Trip factor of 1.28, consistent with the 2017 TIA Guidelines

The modal shares for the proposed commercial development are anticipated to be consistent with the modal shares outlined for the existing commercial developments.

A full breakdown of the projected person trips by modal share is shown in **Table 10**.

Table 10: Person Trips by Modal Share from Proposed Commercial Development

Travel Mode	Mode Share	AM Peak (PPP)			PM Peak (PPP)		
		In	Out	Total	In	Out	Total
Shopping Centre Peak Hour Person Trips							
Total Trips		3	2	5	11	11	22
Auto-Driver	50%	2	0	2	5	7	12
Auto-Passenger	15%	0	1	1	2	1	3
Transit	10%	0	1	1	1	1	2
Cyclist	5%	0	0	0	1	0	1
Pedestrian	20%	1	0	1	2	2	4
High Turnover Sit Down Restaurant Peak Hour Person Trips							
Total Trips		18	15	33	20	12	32
Auto-Driver	35%	6	6	12	7	4	11
Auto-Passenger	10%	2	1	3	2	1	3
Transit	5%	1	1	2	1	1	2
Cyclist	5%	1	1	2	1	1	2
Pedestrian	45%	8	6	14	9	5	14

Based on the previous table, the proposed commercial development is projected to generate 38 person trips during the AM peak period and 54 person trips during the PM peak period. Of the trips generated, 14 and 23 are expected to be vehicle trips during the AM and PM peak periods, respectively.

Net Trips Generated

A full breakdown of the net person trips generated by modal share is shown in **Table 11**.

Table 11: Net Person Trip Generation

Travel Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Existing Development						
Auto-Driver	13	10	23	19	16	35
Auto-Passenger	4	2	6	6	4	10
Transit	2	2	4	4	3	7
Cyclist	1	2	3	3	2	5
Pedestrian	14	10	24	16	12	28
Proposed Development						
Auto-Driver	11	12	23	17	15	32
Auto-Passenger	3	4	7	6	4	10
Transit	6	12	18	10	8	18
Cyclist	2	2	4	3	2	5
Pedestrian	11	12	23	16	10	26
Net Trips						
Auto-Driver	-2	2	0	-2	-1	-3
Auto-Passenger	-1	2	1	0	0	0
Transit	4	10	14	6	5	11
Cyclist	1	0	1	0	0	0
Pedestrian	-3	2	-1	0	-2	-2

Based on the previous table, the vehicle trip generation for the proposed development is not expected to increase during the AM peak hours and is anticipated to decrease during the PM peak hour. The proposed development is expected to generate an additional 14 and 11 transit trips during the AM and PM peak hours, respectively, compared to the existing development.

3.1.2 Trip Distribution

For the purpose of this analysis, this report does not include trip distribution.

3.2 Background Traffic

3.2.1 Other Area Developments

A description of other study area developments is included in Section 2.2.

A review of traffic studies for the following study area developments suggest that traffic generated by these developments is expected to have a negligible impact on the adjacent roadways:

- *114 Richmond Road*: nine storey addition consisting of an apartment building and conversion of the convent into a mixed-use building.
- *70 Richmond:* nine-storey mixed-use building with 60 residential units and a retail use at grade.
- *316-332 Clifton Road*: low-rise planned unit development consisting of 29 dwelling units, comprising of townhouses and back-to-back townhouses and an internal private road.
- *398-406 Roosevelt Avenue:* redevelopment of the site for a six-storey mixed-use building including two commercial units, 35 dwelling units, underground parking and rear surface parking.

- *349 Danforth Avenue*: three-storey mixed-use building with 13 residential units and 2 commercial, ground-floor units.
- *397-399 Winston Avenue*: seven-storey mixed use development with a commercial use on the ground floor and 42 residential units above and two levels of underground parking with 18 parking spaces

The projected traffic volumes generated by the following developments have been added to the background traffic at all relevant intersections within the study area:

- *175 Richmond Road*: nine-storey mixed-use building to accommodate commercial uses on the main floors and residential uses above. There are 241 residential units proposed and approximately 675 m² of retail commercial along Richmond Road.
- *335 Roosevelt Avenue:* two high-rise residential buildings, three low-rise residential buildings with common underground parking lot with a total of 361 units and with 343 parking spaces
- *319-327 Richmond Road*: a nine-storey mixed-use building with ground floor commercial units and approximately 185 dwelling units on the upper storeys.

Excerpts of site generated traffic figures from the respective traffic studies for the above developments are included in Appendix F.

Background traffic volumes for the 2022 build-out and 2027 horizon years are shown in **Figure 5 and Figure 6**.

3.2.2 General Background Growth Rate

A rate of background growth has been established through a review of the city of Ottawa's Strategic Long-Range Model (comparing snapshots of 2011 and 2031 AM peak volumes) from the Richmond Road corridor. On the roadways within and around the study area, the snapshots suggest a growth rate between -1% and +2% per annum.

A background growth rate of 1% per annum has been conservatively applied to through traffic along Richmond Road based on the snapshots from the City's Strategic Long-Range Model.

The background traffic volumes in 2022 and 2027 is shown in **Figure 5 and Figure 6**.

Figure 5: 2023 Background Traffic Volumes

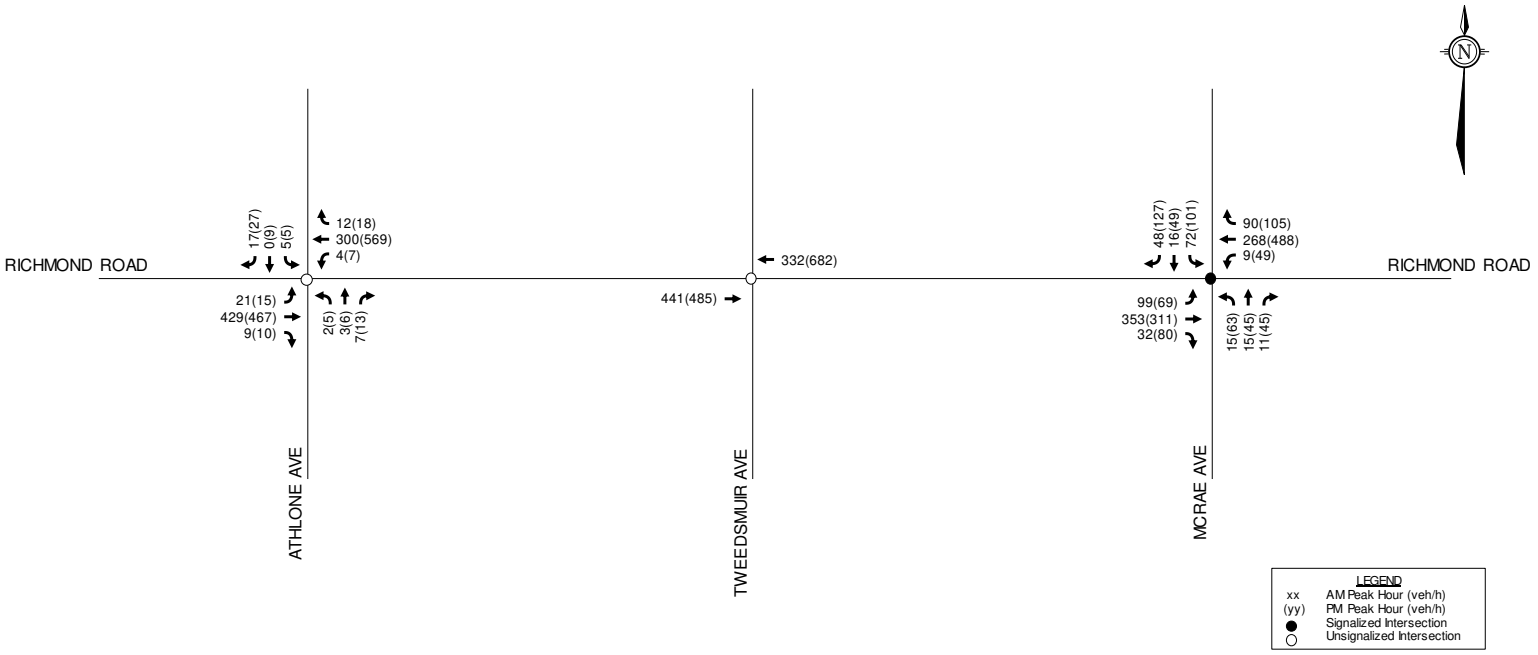
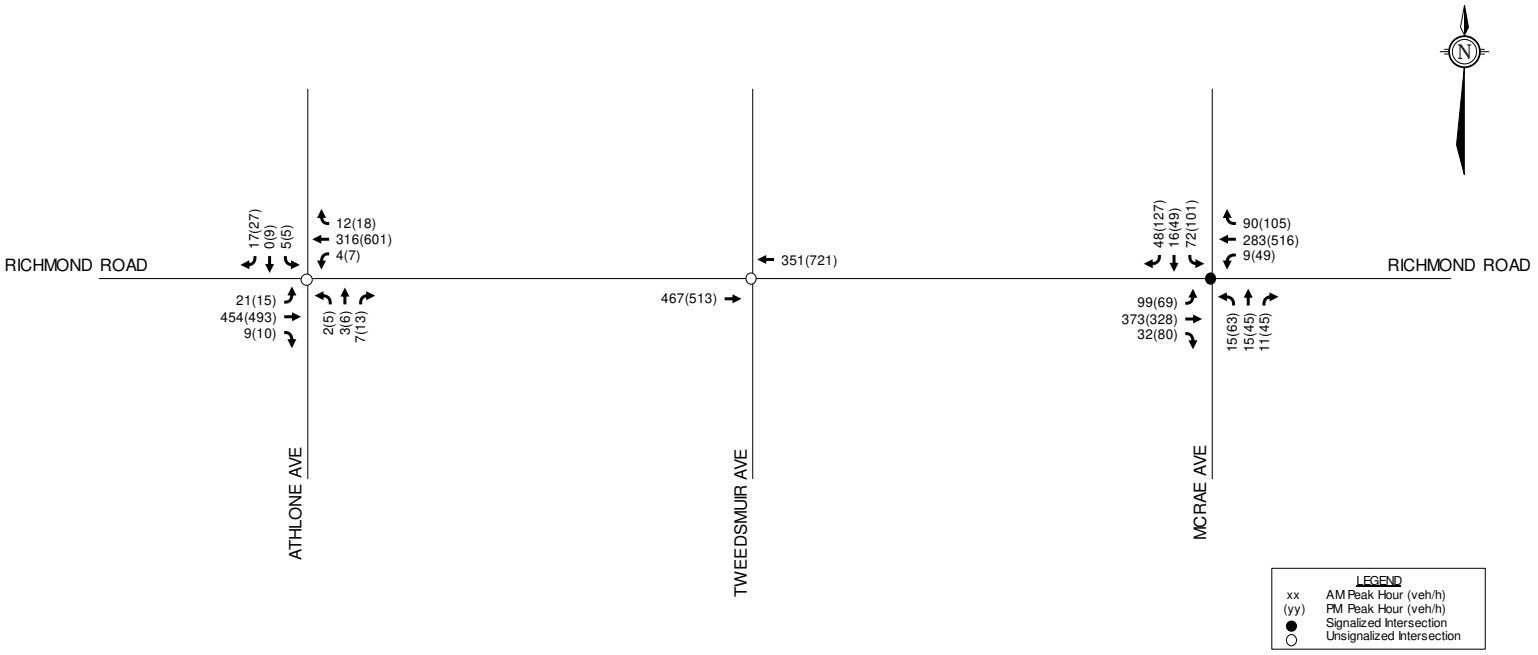


Figure 6: 2028 Background Traffic Volumes



4.0 ANALYSIS

4.1 Development Design

4.1.1 Design for Sustainable Modes

Sidewalk connections will be provided between the building entrance and Richmond Road and Tweedsmuir Avenue. Sidewalks will be depressed and continuous across the parking garage access in accordance with City standards.

Charging stations for electric vehicles will be provided in the underground parking garage. In total, 11 charging stalls will be provided. These will be short-term stalls meant for charging electric vehicles, not permanent parking spots.

Two bicycle parking spaces will be provided at-grade near the Richmond Road building entrance and 194 will be provided within the underground parking garage. In total, 196 bicycle parking spaces will be provided. Further review of the number of bicycle parking spaces is included in Section 4.2: Parking.

OC Transpo guidelines recommend that all developments within the vicinity of a bus route should have at least one bus stop within a walking distance of 400m, roughly a 5-minute walk. All of the transit stops outlined in Section 2.1.6 are within the 400m distance. The stops within 400m walking distance of the subject site provide service to routes 11, 50, 51, 81, and 153.

A review of the Transportation Demand Management (TDM) – Supportive Development Design and Infrastructure Checklist has been conducted. A copy of the TDM checklist is included in Appendix G. All required TDM-supportive design and infrastructure measures in the TDM checklist are met. In addition to the required measures, the proposed development also meets the following 'basic' or 'better' measures as defined on the TDM - Supportive Development Design and Infrastructure Checklist:

- Locate building close to the street, and do not locate parking areas between the street and building entrances.
- Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations.
- Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort.
- Provide safe, direct and attractive walking routes from building entrances to nearby transit stops.
- Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible.
- Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails.

Garbage bins will be wheeled up the parking ramp for curbside private pick-up on Tweedsmuir Avenue. The fire route for the development is curbside along Richmond Road and Tweedsmuir Avenue.

4.2 Parking

The subject site is located in Area B of Schedule 1 and Area Y of Schedule 1A of the City of Ottawa's Zoning By-Law (ZBL).

Vehicle Parking

Section 101 and 103 of the ZBL summarizes the minimum parking space rates for various land uses. The minimum required vehicle parking spaces for the proposed development is summarized in **Table 12**.

Table 12: Minimum Vehicle Parking Requirements

Land Use	Rate	Units/GFA	Required
Residential	Tenant: 0.5 per dwelling units after the first 12 units	87 units	38
	Visitor: 0.1 per dwelling units after the first 12 units		8
Commercial Centre	Retail: 0 off-street parking required for GFA < 500 m^2	410 m^2	0
	Restaurant: 0 off-street parking required for GFA < 350 m^2	240 m^2	0
		Minimum	**46**
		Provided	**98**

Section 103 of the ZBL summarizes the maximum parking space rates for developments located 600 metres of a transit station. The maximum vehicle parking spaces for the proposed development is summarized in **Table 13**.

Table 13: Maximum Vehicle Parking Spaces

Land Use	Rate	Units/GFA	Maximum
Residential	Residential + Visitor: 1.75 per dwelling units	87 units	152
Commercial	Retail: 1 per 250 m^2 of GFA	410 m^2	2
		Maximum	**154**
		Provided	**98**

Bicycle Parking

Section 111 of the ZBL summarizes the minimum bicycle parking space rates for various land uses. The minimum required bicycle parking spaces for the proposed development is summarized in **Table 14**.

Table 14: Bicycle Parking Requirements

Land Use	Rate	Units/GFA	Required
Residential	0.5 per dwelling units	87 units	44
Commercial Centre	Retail: 1 per 250m^2 of GFA	410 m^2	2
	Restaurant: 1 per 250m^2 of GFA	240 m^2	0
		Minimum	**46**
		Provided	**196**

Based on the previous tables, the amount of vehicle and bicycle parking provided meets the requirements of the City of Ottawa ZBL.

As described in Section 4.1, 11 charging stations for electric vehicles will be provided in the underground parking garage. These are short-term charging stations not permanent parking spots.

4.3 Boundary Streets

This section provides a review of the boundary streets, Richmond Road and Tweedsmuir Avenue using complete streets principles. The Multi-Modal Level of Service (MMLOS) guidelines produced by IBI Group in October 2015 have been used to evaluate the LOS of boundary roadways for each mode of transportation.

Both roadways are located within 600m of the Westboro Transit Station. Richmond Road is classified as an arterial roadway and Tweedsmuir Avenue is classified as a local roadway.

4.3.1 Pedestrian Level of Service (PLOS)

Exhibit 4 of the MMLOS guidelines has been used to evaluate the segment PLOS of Richmond Road and Tweedsmuir Avenue. Exhibit 22 of the MMLOS guidelines suggests a target PLOS A for all roadways within 600m of a rapid transit station. The results of the segment PLOS analysis are summarized in **Table 15**.

Table 15: Segment PLOS Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed[1]	Segment PLOS
Richmond Road (North Curb)					
> 2.0	> 2.0	> 3000	Yes	60 km/h	B
Richmond Road (South Curb)					
> 2.0	0.5 to 2.0	> 3000	Yes	60 km/h	C
Tweedsmuir Road (East Curb)					
> 2.0	> 2.0	< 3000	No	60 km/h	A
Tweedsmuir Road (West Curb)					
N/A	N/A	< 3000	Yes	60 km/h	F

4.3.2 Bicycle Level of Service (BLOS)

Exhibit 11 of the MMLOS guidelines has been used to evaluate the segment BLOS of Richmond Road and Tweedsmuir Avenue. Exhibit 22 of the MMLOS guidelines suggests a target BLOS C for Richmond Road and BLOS D for Tweedsmuir Avenue. The results of the segment BLOS analysis are summarized in **Table 16**.

Table 16: Segment BLOS Analysis

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Operating Speed	Segment BLOS
Richmond Road					
Arterial	Spine	Mixed Traffic	2	60 km/h	F
Tweedsmuir Road					
Local	N/A	Mixed Traffic	2	60 km/h	F

4.3.3 Transit Level of Service (TLOS)

Exhibit 15 of the MMLOS guidelines has been used to evaluate the segment TLOS of Richmond Road. Exhibit 22 of the MMLOS guidelines suggests a target TLOS D for arterial roadways along a transit priority corridor (isolated measures). Since Tweedsmuir Avenue does not provide transit service, the transit level of service (TLOS) has not been evaluated. The results of the segment TLOS analysis are summarized in **Table 17**.

Table 17: Segment TLOS Analysis

Facility Type	Congestion	Friction	Incident Potential	LOS
Richmond Road				
Mixed Traffic	Yes	High	High	F

4.3.4 Truck Level of Service (TkLOS)

Exhibit 20 of the MMLOS guidelines has been used to evaluate the segment TkLOS of Richmond Road and Tweedsmuir Avenue. Exhibit 22 of the MMLOS guidelines suggests a target TkLOS D for Richmond Road and no target for Tweedsmuir Avenue. The results of the segment TkLOS analysis are summarized in **Table 18**.

Table 18: Segment TkLOS Analysis

Curb Lane Width	Number of Travel Lanes per Direction	Segment TkLOS
Richmond Road		
> 3.7	1	B
Tweedsmuir Avenue		
> 3.7	1	B

4.3.5 Segment MMLOS Summary

A summary of the results of the segment MMLOS analysis for the boundary roads is provided in **Table 19**.

Table 19: Segment MMLOS Summary

Segment	PLOS	BLOS	TLOS	TkLOS
Richmond Road	C	F	F	B
Target	**A**	**C**	**D**	**E**
Tweedsmuir Avenue	F	F	-	B
Target	**A**	**B**	**D**	**N/A**

The target **PLOS** is not achieved in either segment. To achieve the target PLOS A along Richmond Road, either a reduction in the posted speed or Annual Average Daily Traffic (AADT) volumes is required. To achieve the target PLOS A along Tweedsmuir Avenue, a 2m sidewalk and boulevard greater than 0.5m is required. The proposed development will provide a 2.0m sidewalk adjacent to the curb on Tweedsmuir Avenue with planters behind the sidewalk.

The target **BLOS** is not achieved in either segment. To achieve the target BLOS D along Tweedsmuir Avenue, a reduction in the operating speed is required. To achieve the target BLOS C along Richmond Road, bike lanes are required. This is identified for the City's consideration.

The target **TLOS** is not achieved on the Richmond Road Segment. To achieve the target TLOS D along Richmond Road, a reduction in parking/driveway friction is required.

The target **TkLOS** is met on Richmond Road due to lanes that measure more than 3.7 metres.

4.4 Access Intersections

The proposed redevelopment will be served by a two-way underground parking garage access along Tweedsmuir Avenue. The proposed underground parking ramp will have a width of approximately 6.0m and will be located approximately 26m from the Richmond Road right-of-way limit and 14m from the northern property line.

Section 25 (1)(c) of the Private Approach By-law (PABL) states that two-way accesses to have a width no greater than 9m, as measured at the street line. Furthermore, the City of Ottawa's ZBL identifies a minimum width of 6.0m and maximum width of 6.7m for a two-way driveway leading to an underground parking garage with more than 50 spaces. The width of the proposed driveway adheres to the requirements of the PABL and ZBL.

Section 25 (1)(m)(ii) of the PABL states where a property abuts an arterial roadway and has less than 100 parking spaces, that the distance between private approach and nearest intersecting street line be 18 metres. Section 25 (1)(p) of the PABL identifies a minimum spacing requirement of 3.0m between the nearest limit of a private approach and the property line, as measured at the street line. The location of the proposed driveway adheres to section 25 (1)(m)(ii) and 25 (1)(p) of the PABL.

Section 25 (1)(u) of the PABL identifies a maximum grade of 2% for a distance of 9m within the property, where the access leads to 50 or more parking spaces. A distance of 2.6m with a grade of 0.1% sloping towards the roadway will be provided between the back of sidewalk and the property line. Within the property, a 0.1% slope will be provided in the direction of the roadway for an additional 4.8m, transitioning to a 5% downslope at the garage door for approximately 5.2m and a 13.5% slope to the parking garage.

The Transportation Association of Canada (TAC) Geometric Design Guidelines Section 8.9.11 identifies a maximum recommended downgrade of 7% for low volume driveways on local roadways. Based on the proposed grading identified above, a maximum grade of 5% will be provided for a distance of 12.6m behind the sidewalk and 10m within the private property. As the proposed grading meets the TAC recommendations, a waiver to the Section 25 (1)(u) of the PABL is recommended.

4.5 Transportation Demand Management

4.5.1 Context for TDM

The proposed development consists of a total of 87 residential units. The residential unit breakdown is provided as follows:

- One Bedroom: 16 units
- One Bedroom & Den: 27 units
- Two Bedroom: 35 units
- Two Bedroom & Den: 9 units

4.5.2 Need and Opportunity

As the proposed development is located within a TOD zone, the Ottawa West modal shares presented in the 2020 TRANS Trip Generation Manual have been adjusted to reflect a slightly higher transit mode share. The assumed modal shares for the development decrease the auto modal share from 30% (Ottawa West) to 25%. Should the development only meet the TRANS modal shares, the development is anticipated to generate an additional three vehicle trips two-way during the peak hours. However, as the proposed development is located in close proximity to the future Westboro LRT station, bicycle parking will be provided at a rate of approximately two spaces per unit, and the development will provide a suite of TDM measures described in the following section, the development is anticipated to meet the target TOD modal shares.

4.5.3 TDM Program

A review of the Transportation Demand Management (TDM) – Measures Checklist has been conducted. A copy of the TDM checklist is included in Appendix G.

The following measures will be implemented upon completion of the proposed development:

- Display local area maps with walking/cycling access routes and key destinations at major entrances (multi-family, condominium)
- Display relevant transit schedules and route maps at entrances (multi-family, condominium)
- Provide real-time arrival information display at entrances (multi-family, condominium)
- Unbundle parking cost from purchase price (condominium)
- Provide a multimodal travel option information package to new residents

In addition to the above, bicycle parking will be provided at a rate of over two per unit, four times the minimum zoning requirement.

5.0 CONCLUSION AND RECOMMENDATIONS

Based on the foregoing, the conclusions and recommendations of this TIA can be summarized as follows:

Development Design

- Sidewalk connections will be provided between the building entrance and Richmond Road and Tweedsmuir Avenue.
- Sidewalks will be depressed and continuous across the parking garage access in accordance with City standards.
- Two bicycle parking spaces will be provided at-grade near the Richmond Road building entrance and 194 bicycle parking spaces will be provided within the underground parking garage. In total, 196 bicycle parking spaces will be provided.
- 11 charging stalls for electric vehicles will be provided in the underground parking garage.
- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

Parking

- The proposed vehicular and bicycle parking spaces adhere to the requirements of the City's Zoning By-law.

Boundary Street Design

- Richmond Road and Tweedsmuir Avenue have been evaluated using the targets set for arterial and local roadways within 600m of a rapid transit stop.
- The target PLOS is not achieved on either Richmond Road or Tweedsmuir Avenue. To achieve the target PLOS A along Richmond Road, either a reduction in the posted speed or Annual Average Daily Traffic (AADT) volumes is required. To achieve the target PLOS A along Tweedsmuir Avenue, a 2m sidewalk and boulevard greater than 0.5m is required. The proposed development will provide a 2.0m sidewalk adjacent to the curb with planters behind the sidewalk.
- The target BLOS is not achieved on either Richmond Road or Tweedsmuir Avenue. To achieve the target BLOS C along Richmond Road, bike lanes are required. To achieve the target BLOS D along Tweedsmuir Avenue, a reduction in the operating speed is required. This is identified for the City's consideration.
- The target TLOS is not achieved on Richmond Road. To achieve the target TLOS D along Richmond Road, a reduction in parking/driveway friction is required.
- The target Truck LOS target of E is met on Richmond Road due to lanes that measure more than 3.7 metres.

Access Intersections

- The width of the proposed access adheres to the requirements of the PABL and ZBL.
- The location of the proposed access adheres to the requirements of the PABL.
- A maximum grade of 5% will be provided for a distance of 12.6 metres behind the sidewalk and 10 metres within the private property. As the proposed grading meets the TAC recommendations, a waiver to the Section 25 (1)(u) of the PABL is recommended.

Transportation Demand Management

- The following measures will be implemented upon completion of the proposed development:
    - Display local area maps with walking/cycling access routes and key destinations at major entrances (multi-family, condominium)
    - Display relevant transit schedules and route maps at entrances (multi-family, condominium)
    - Provide real-time arrival information display at entrances (multi-family, condominium)
    - Unbundle parking cost from purchase price (condominium)
    - Provide a multimodal travel option information package to new residents
    - The proposed development will provide bicycle parking spaces at a rate of over 2 spaces per unit.

Based on the foregoing, the proposed development is recommended from transportation perspective.

NOVATECH

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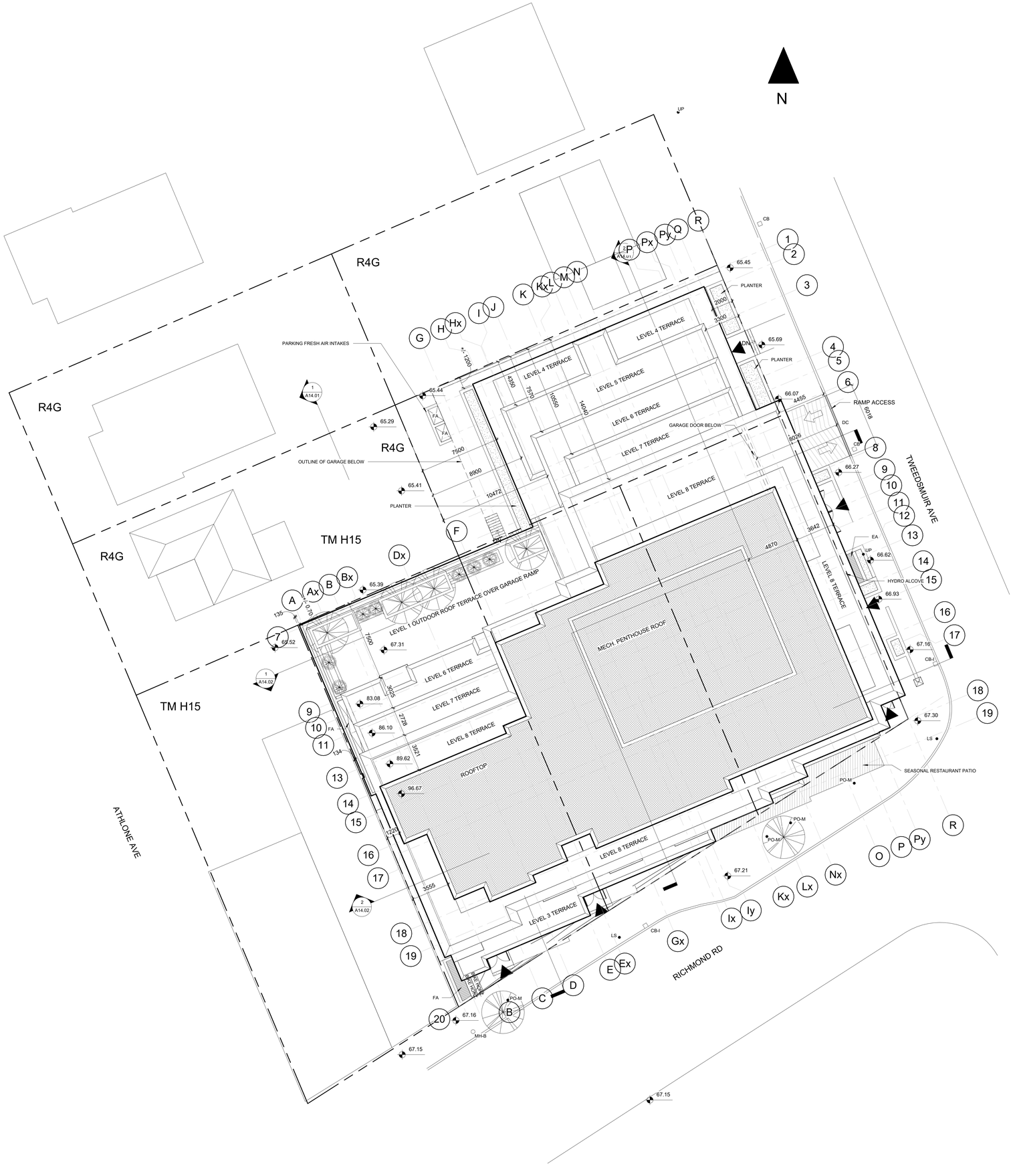
Appendix A: Site Plan



ZONING INFORMATION

ZONE DESIGNATION

TM H(15)

ZONING REQUIREMENTS

NOTE:

MIN. LOT WIDTH REQUIRED:	NO MINIMUM
LOT WIDTH PROVIDED (NORTH PROPERTY LINE):	48.8M
LOT WIDTH PROVIDED (SOUTH PROPERTY LINE):	49.6M
MIN. LOT AREA REQUIRED (M^2):	NO MINIMUM
LOT AREA PROVIDED:	2181.2M^2
MAX BUILDING HEIGHT:	15.0M
BUILDING HEIGHT FROM AVG GRADE:	31.0M
MAX FRONT YARD SETBACK:	2M
FRONT YARD SETBACK(RETAIL) (VARIES AT GRADE)	0M
FRONT YARD SETBACK (RESIDENTIAL, AT L2)	1.1M
MIN. REAR YARD SETBACK:	7.5M
REAR YARD SETBACK (FORMER R4 ZONE):	1.2M
REAR YARD SETBACK (AMENITY AREAS):	0.070M
REAR YARD SETBACK (BUILDING ABOVE GRADE):	7.5M
MAX INTERIOR SIDE YARD SETBACK:	3M
INTERIOR SIDE YARD SETBACK (FORMER R4 ZONE):	7.5M
INTERIOR SIDE YARD SETBACK (TM ZONE):	0.135M
INTERIOR SIDE YARD SETBACK (WEST):	1.2M
MIN. CORNER YARD SETBACK (EAST):	3M
MIN. CORNER YARD SETBACK (ABOVE 15M):	2M
CORNER YARD SETBACK (EAST) PROVIDED:	0M
CORNER YARD SETBACK (ABOVE 15M) PROVIDED:	2.5M
MIN. DRIVEWAY AISLE WIDTH:	6.7M
DRIVEWAY AISLE WIDTH:	6M

DEVELOPMENT INFORMATION

PROPOSED:

GROUND FLOOR G.F.A. (RETAIL/RESIDENTIAL LOBBY/RAMP):	1661.64M^2
SECOND FLOOR GFA:	1640.02M^2
THIRD FLOOR GFA:	1550.32M^2
FOURTH FLOOR GFA:	1479.74M^2
FIFTH FLOOR GFA:	1394.35M^2
SIXTH FLOOR GFA:	1289.20M^2
SEVENTH FLOOR GFA:	1180.68M^2
EIGHTH FLOOR GFA:	854.94M^2
NINTH FLOOR GFA:	854.89M^2
TOTAL GFA (RETAIL/LOBBY/RAMP):	1661.64M^2
TOTAL GFA (RESIDENTIAL):	16287.56M^2
TOTAL BUILDING GFA:	17949.20M^2
PROPOSED # UNIT (RETAIL):	3 UNITS
PROPOSED # UNITS (RESIDENTIAL):	87 UNITS

PAKRING REQUIREMENTS

NOTE:

MIN. RESIDENT PARKING STALLS REQUIRED: (STALLS/DWELLING UNIT)	0.5
MIN. VISITOR PARKING STALLS REQUIRED: (STALLS/DWELLING UNIT)	0.2

PROPOSED PARKING

DRIVE AISLE WIDTH (RETAIL AND VISITOR PARKING SHARED)	6.0M
PINCH POINT IN GARAGE:	5.9M
REQUIRED RETAIL PARKING:	0
REQUIRED RESIDENTIAL PARKING (@ 0.5/UNIT):	44
REQUIRED VISITOR PARKING (@ 0.1/UNIT):	9
SUBTOTAL OF REQUIRED PARKING:	53
UNDERGROUND PARKING PROVIDED:	98

PROPOSED BICYCLE PARKING

REQUIRED RETAIL BICYCLE PARKING:	2
REQUIRED RESIDENTIAL BICYCLE PARKING (@ 1/UNIT):	87
SUB-TOTAL OF REQUIRED BYCYCLE PARKING:	89
PROVIDED RESIDENTIAL BICYCLE PARKING	2.2/SUITE
BICYCLE PARKING PROVIDED (UNDERGROUND):	194
BICYCLE PARKING PROVIDED (EXTERIOR):	2
BICYCLE PARKING PROVIDED (TOTAL):	196

AMENITY AREA CALCULATIONS - PROPOSED

NOTE: CALCULATIONS DONE IN ACCORDANCE WITH CITY OF OTTAWA BY-LAW 2008-250, SECTION 137 - AMENITY AREA

RESIDENTIAL TOTAL REQUIRED AMENITY AREA (MIN.): (87 UNITS @ 6.0M^2/UNIT	522.0M^2
COMMUNAL AREA (MIN.): (50% OF REQ'D TOTAL AMENITY AREA)	261.0M^2
TOTAL RESIDENTIAL AMENITY AREA REQUIRED:	**783.0M^2**
TOTAL AMENITY AREA PROVIDED:	
BALCONY AREA (87 UNITS):	944.9M^2
INDOOR AMENITY AREA (COMMUNAL):	497.3M^2
OUTDOOR AMENITY AREA (COMMUNAL):	367.9M^2
TOTAL RESIDENTIAL AMENITY AREA PROVIDED:	**1,810.1M^2**
LANDSCAPED AREA REQUIRED:	NON MINIMUM
LANDSCAPED AREA PROVIDED:	471.2M^2
MINIMUM WIDTH OF LANDSCAPE AREA ABUTTING A RESIDENTIAL ZONE:	1.0M WITH FENCE
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (FORMER R4 REAR YARD):	1.2M WITH FENCE
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (FORMER R4 SIDE YARD):	7.5M
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (TM ZONE REAR YARD):	0.070M
WIDTH OF LANDSCAPE AREA PROVIDED ABUTTING RESIDENTIAL ZONE (TM ZONE ABOVE GARAGE RAMP):	7.5M

No.	DESCRIPTION	DATE	CHD

REVISIONS

CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND REPORT ANY OMMISSIONS OR DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.

DO NOT SCALE THE DRAWINGS

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL SIGNED BY THE ARCHITECT.

DATE: 05/09/21

DRAWN: Author

DATE: 05/09/21

CHECKED: Checker

DATE PRINTED: 2021-10-26 12:13:25 PM

VINCENT P. COLIZZA ARCHITECT INCORPORATED

255 Richmond Road

Ottawa, ON

DWG. TITLE: SITE PLAN

SCALE: As indicated

DWG. NO.: A01.00

PROJ. NO.: 2219

Appendix B: Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	**249-255 Richmond Road & 372 Tweedsmuir Avenue**
Description of Location	**Approximately 0.54 acres in area, located north of Richmond Road and west of Tweedsmuir Avenue**
Land Use Classification	**Mid-Rise Residential with Ground-Floor Retail**
Development Size (units)	**91 dwellings**
Development Size (m^2)	**647 m^2 (6,964 ft^2) of retail space**
Number of Accesses and Locations	**One proposed access to Tweedsmuir Avenue**
Phase of Development	**1**
Buildout Year	**2022**

If available, please attach a sketch of the development or site plan to this form.

2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2
Gas station or convenience market	75 m^2

** If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.

3. Location Triggers

	Yes	No
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?		✓
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	✓	

**DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.

4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		✓
Are there any horizontal/vertical curvatures on a boundary street limiting sight lines at a proposed driveway?		✓
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)?		✓
Is the proposed driveway within auxiliary lanes of an intersection?		✓
Does the proposed driveway make use of an existing median break that serves an existing site?		✓
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		✓
Does the development include a drive-thru facility?		✓

If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.

5. Summary

	Yes	No
Does the development satisfy the Trip Generation Trigger?		✓
Does the development satisfy the Location Trigger?	✓	
Does the development satisfy the Safety Trigger?		✓

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

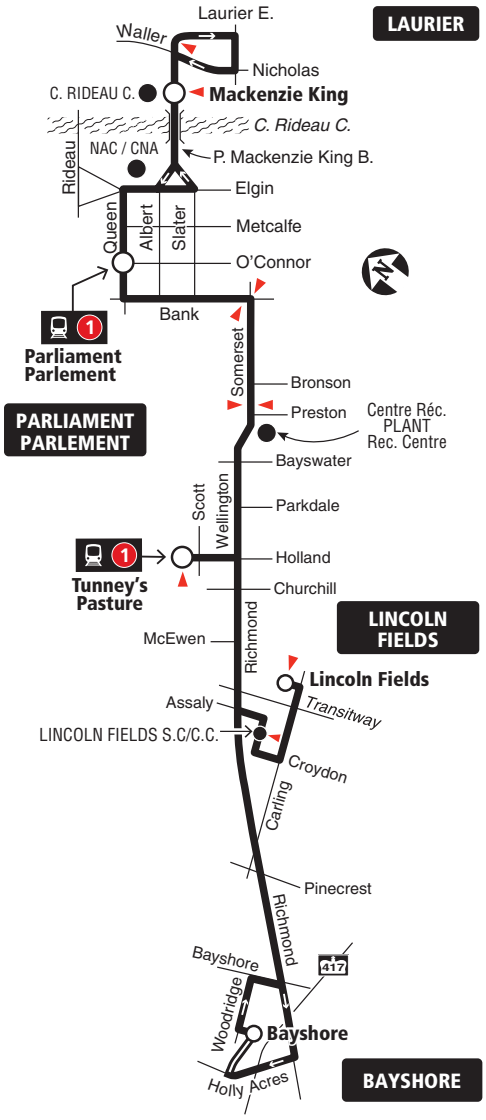
Appendix C: OC Transpo Map

11 Fréquent

LINCOLN FIELDS BAYSHORE
LAURIER

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Transitway & Station

Timepoint / Heures de passage

2021.09

Schedule / Horaire 613-560-1000
Text / Texto* 560560
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres
*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

Customer Service
Service à la clientèle **613-560-5000**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité..... **613-741-2478**

Effective September 5, 2021
En vigueur 5 septembre 2021

OC Transpo
INFO 613-560-5000
octranspo.com

50 LINCOLN FIELDS / TUNNEY'S PASTURE

Local

Monday to Saturday / Lundi au samedi

No service Sat. eve. or all day Sunday / Aucun service le soir le sam. ou toute la journée dimanche

Transitway & Station

Peak Periods only / Périodes de pointe seulement

Timepoint / Heures de passage

2019.06

Schedule / Horaire 613-560-1000
Text / Texto 560560
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Customer Service
Service à la clientèle **613-842-3600**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité **613-741-2478**

Effective April 24, 2017
En vigueur 24 avril 2017

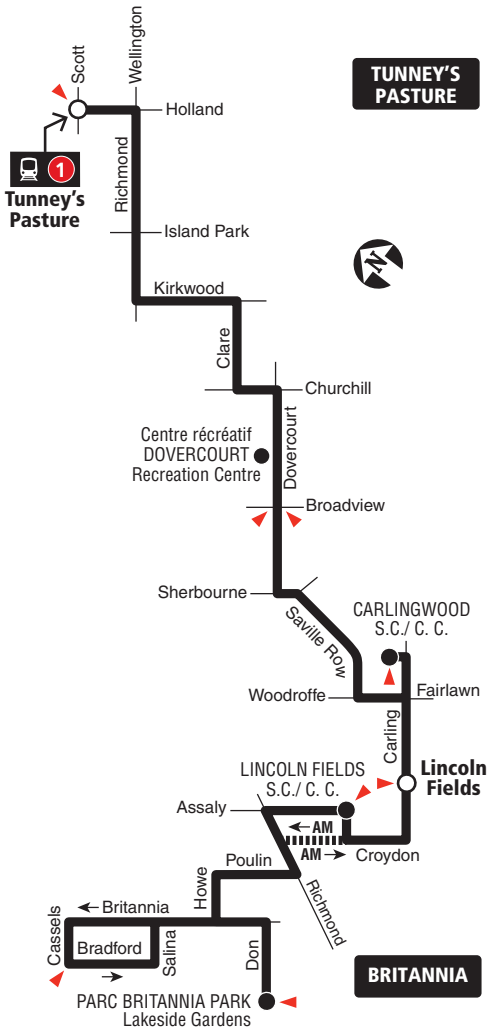
OC Transpo **INFO 613-741-4390**
octranspo.com

51 Fréquent

BRITANNIA
TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day service
Service toute la journée



Station

Some trips / Quelques trajets

Timepoint / Heures de passage

2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

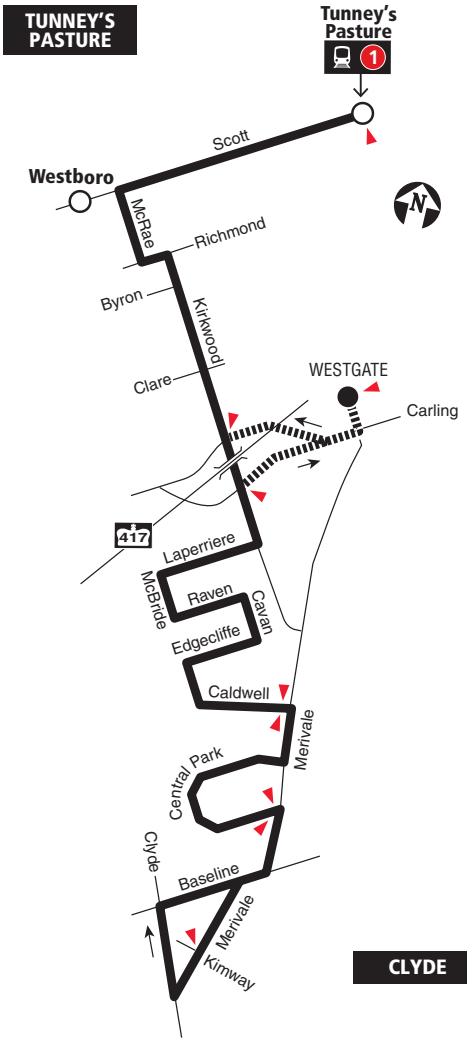
Transpo **INFO 613-741-4390**
octranspo.com

81 CLYDE / TUNNEY'S PASTURE

Local

7 days a week / 7 jours par semaine

No service in the evening on weekends
Aucun service le soir les fins de semaine



Station

Some trips / Quelques trajets

Timepoint / Heures de passage

2019.07

Future route after O-Train Line 1 is open
Trajet du circuit après l'ouverture de la Ligne 1 de l'O-Train

Lost and Found / Objets perdus..... **613-563-4011**
Security / Sécurité..... **613-741-2478**

OC Transpo **INFO 613-741-4390**
octranspo.com

153 LINCOLN FIELDS / TUNNEY'S PASTURE / CARLINGWOOD

Local

7 days a week / 7 jours par semaine

Selected time periods only
Périodes sélectionnées seulement

Station
Some trips / Quelques trajets
Timepoint / Heures de passage

2019.10

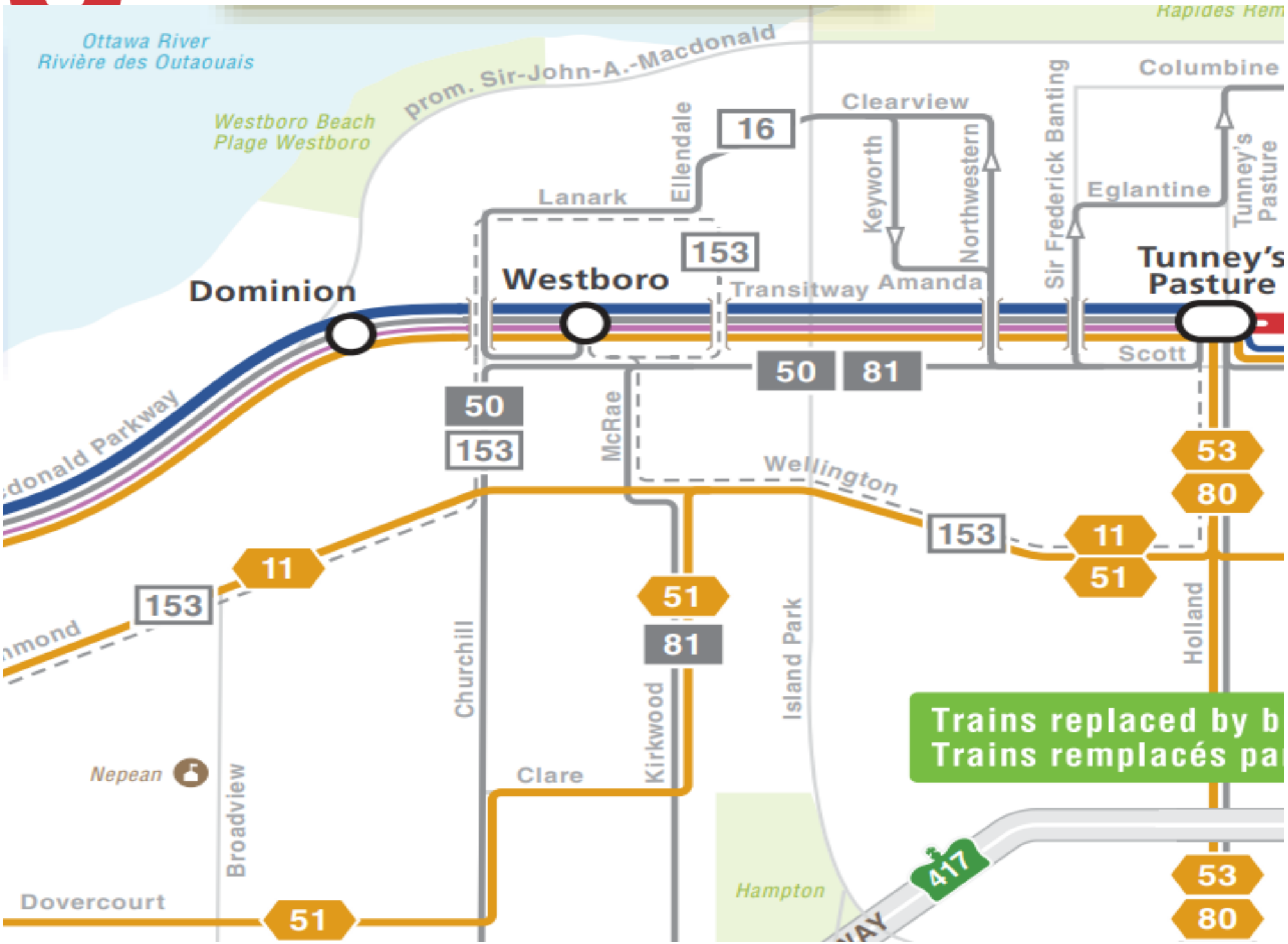
Schedule / Horaire.....613-560-1000
Text / Texto 560560
plus your four digit bus stop number / *plus* votre numéro d'arrêt à quatre chiffres

Customer Relations
Service à la clientèle **613-842-3600**
Lost and Found / Objets perdus.....**613-563-4011**
Security / Sécurité.....**613-741-2478**

Effective October 6, 2019
En vigueur 6 octobre 2019

OC Transpo **INFO 613-741-4390**
octranspo.com

Transit Map Carte du réseau



Appendix D: Traffic Count Data

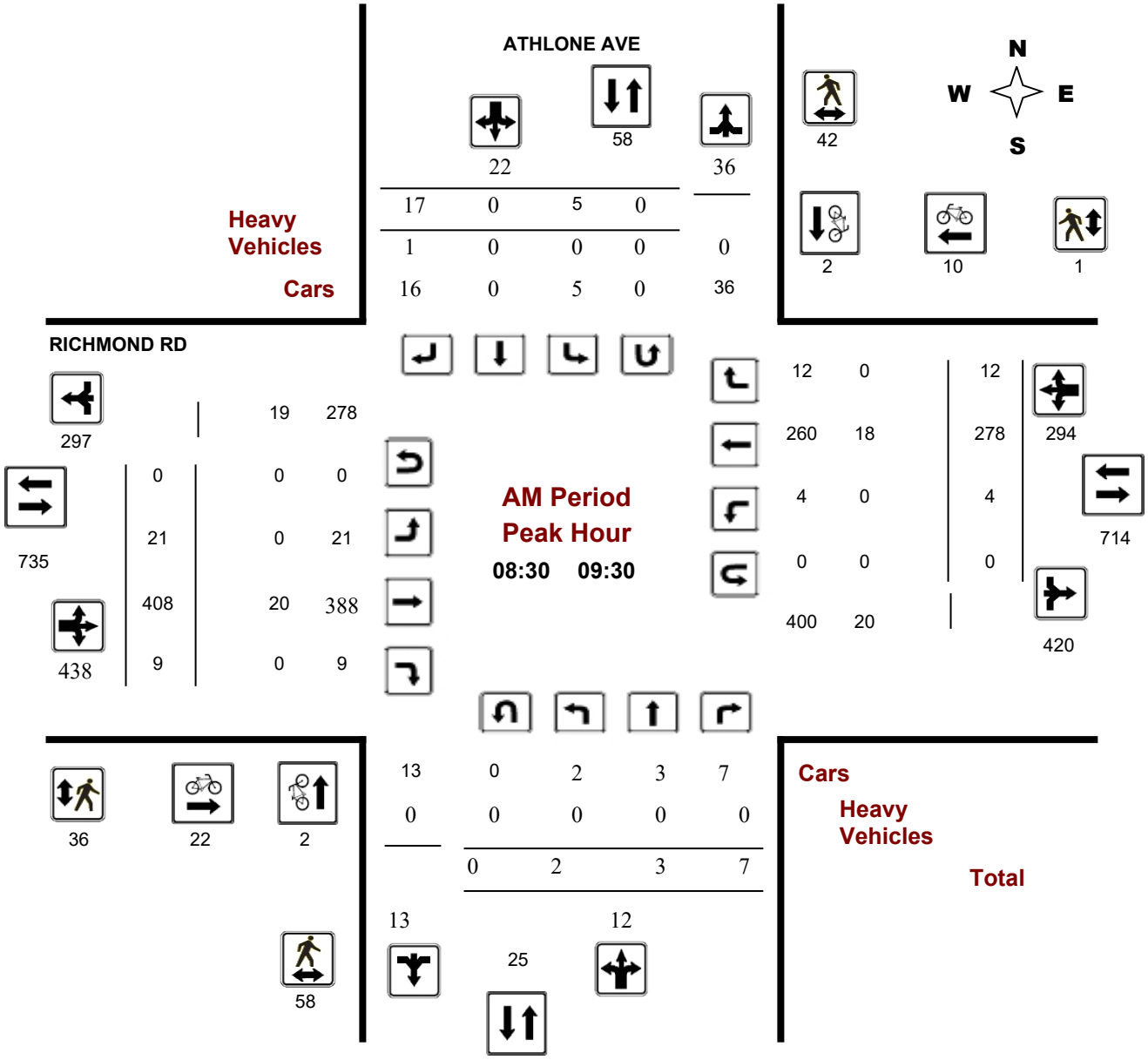
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 18, 2019
Start Time: 07:00

WO No: 38412
Device: Miovision



Comments

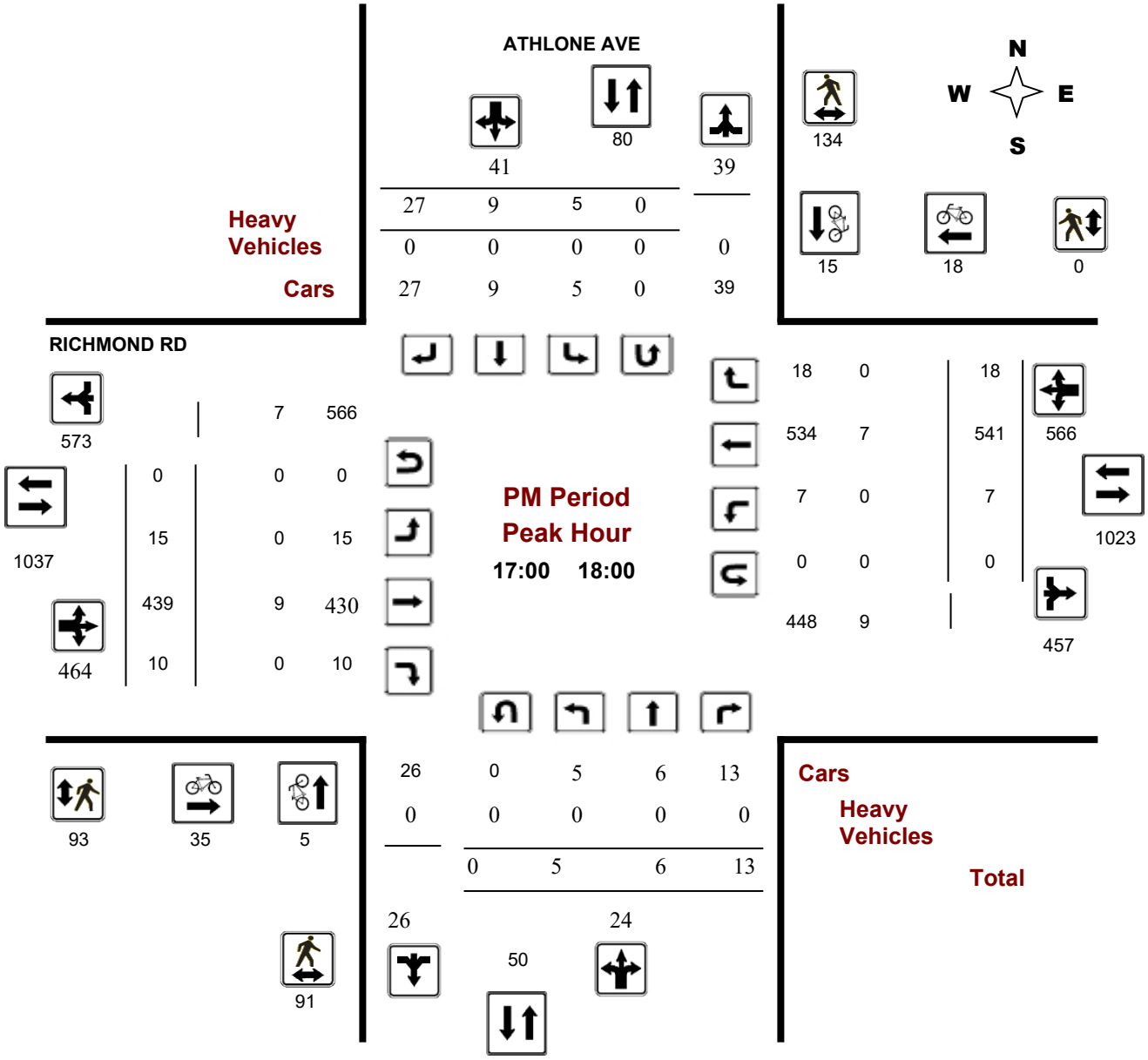
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 18, 2019
Start Time: 07:00

WO No: 38412
Device: Miovision



Comments

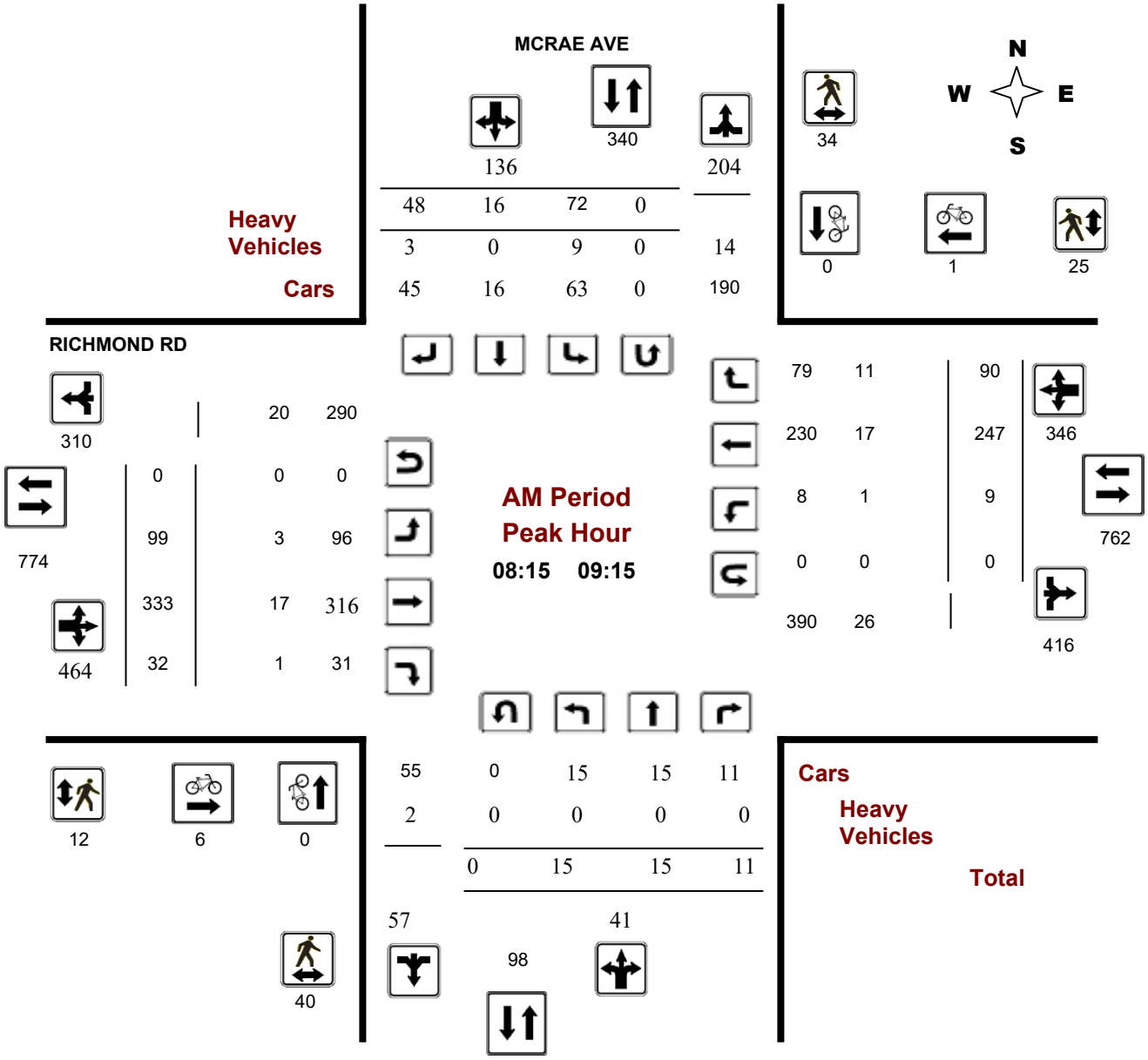
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39388

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



Comments 5472206 - THU JAN 23, 2020 - 8HRS - LORETTA

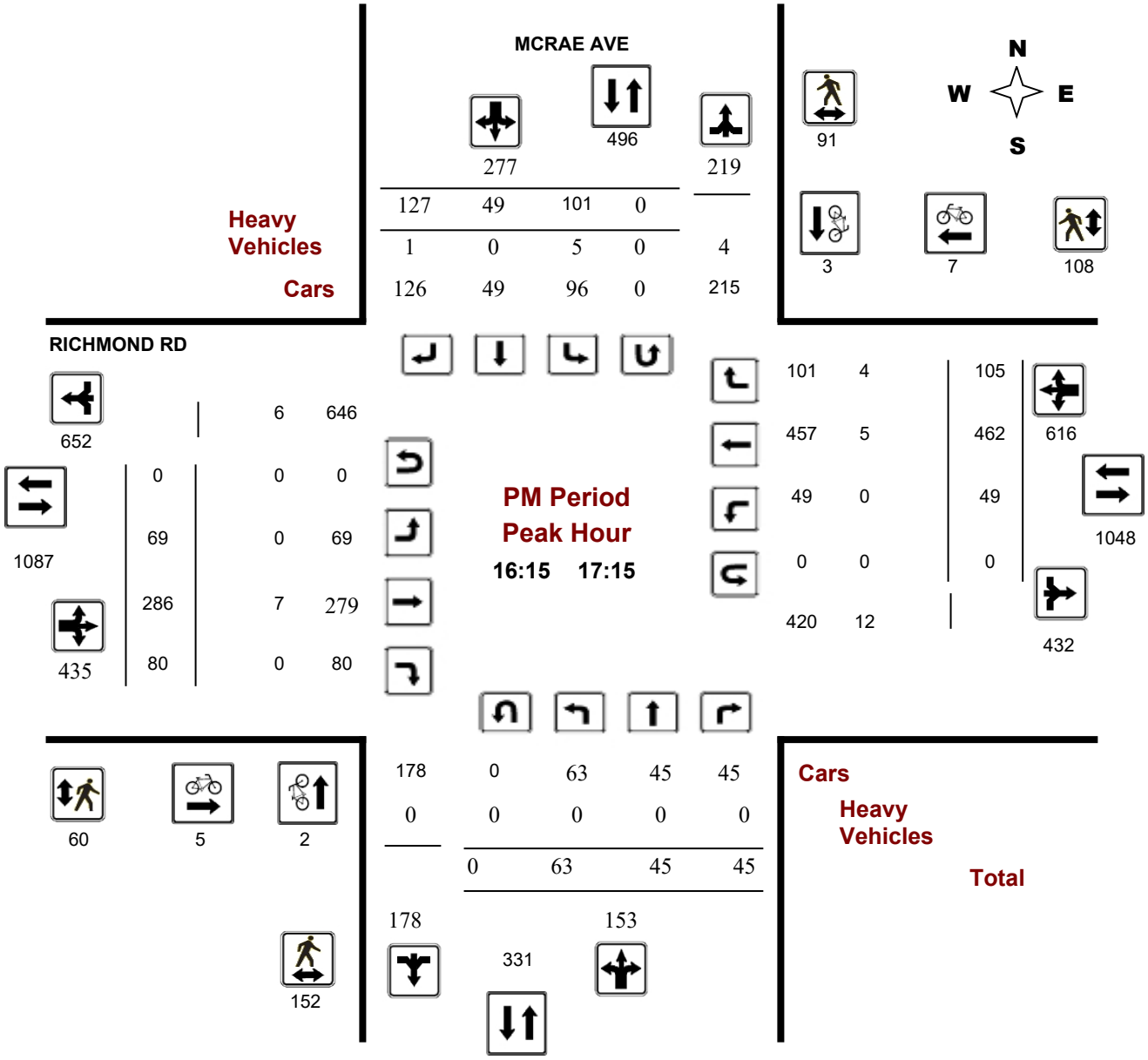
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39388

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



Comments 5472206 - THU JAN 23, 2020 - 8HRS - LORETTA

Appendix E: Collision History Summary

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: ATHLONE AVE @ RICHMOND RD

Traffic Control: Traffic signal **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Mar-28, Sat,11:02	Clear	Angle	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Sep-16, Wed,15:32	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Nov-20, Fri,17:57	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Feb-17, Sat,21:15	Clear	Angle	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jul-09, Mon,12:20	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-Aug-28, Tue,19:26	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-03, Sun,17:12	Snow	SMV unattended vehicle	P.D. only	Loose snow	East	Going ahead	Municipal transit bus	Unattended vehicle	0
2019-Nov-01, Fri,19:19	Rain	Angle	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: MCRAE AVE @ RICHMOND RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Aug-29, Sat,08:15	Clear	Rear end	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2015-Dec-12, Sat,08:55	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: MCRAE AVE @ RICHMOND RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jan-30, Mon,13:48	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Pedestrian	1
2017-Jul-15, Sat,13:28	Clear	SMV other	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Pedestrian	1
2017-Dec-23, Sat,15:30	Snow	Rear end	P.D. only	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-16, Fri,13:02	Clear	SMV other	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Pedestrian	1
2018-Mar-11, Sun,16:28	Clear	Angle	P.D. only	Dry	South	Reversing	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Apr-06, Fri,12:32	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Apr-12, Thu,08:30	Freezing Rain	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jun-27, Wed,17:01	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-Nov-22, Thu,19:35	Clear	Turning movement	Non-fatal injury	Dry	East	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2019-Jan-12, Sat,10:00	Clear	Rear end	P.D. only	Packed snow	South	Slowing or stopping	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-19, Sat,16:30	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-Feb-16, Sat,15:34	Clear	SMV unattended vehicle	P.D. only	Dry	East	Turning right	Truck and trailer	Unattended vehicle	0

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: RICHMOND RD @ TWEEDSMUIR AVE

Traffic Control: Stop sign **Total Collisions:** 7

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Mar-03, Tue,18:55	Snow	Angle	P.D. only	Packed snow	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Jun-10, Wed,12:17	Clear	Turning movement	Non-fatal injury	Dry	West	Going ahead	Bicycle	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Cyclist	
2015-Aug-22, Sat,14:58	Rain	SMV other	Non-fatal injury	Wet	West	Going ahead	Motorcycle	Skidding/sliding	0
2017-Sep-16, Sat,18:42	Clear	Angle	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-16, Tue,21:21	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-15, Fri,13:30	Unknown	Rear end	P.D. only	Wet	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Unknown	Other motor vehicle	
2019-Dec-29, Sun,03:11	Clear	Angle	Non-fatal injury	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: RICHMOND RD btwn ATHLONE AVE & TWEEDSMUIR AVE

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
2015-May-21, Thu,16:45	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2015-May-22, Fri,12:55	Clear	Other	P.D. only	Dry	West	Reversing	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Pick-up truck	Other motor vehicle	
2015-Oct-30, Fri,19:40	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: RICHMOND RD btwn ATHLONE AVE & TWEEDSMUIR AVE

Traffic Control: No control **Total Collisions:** 6

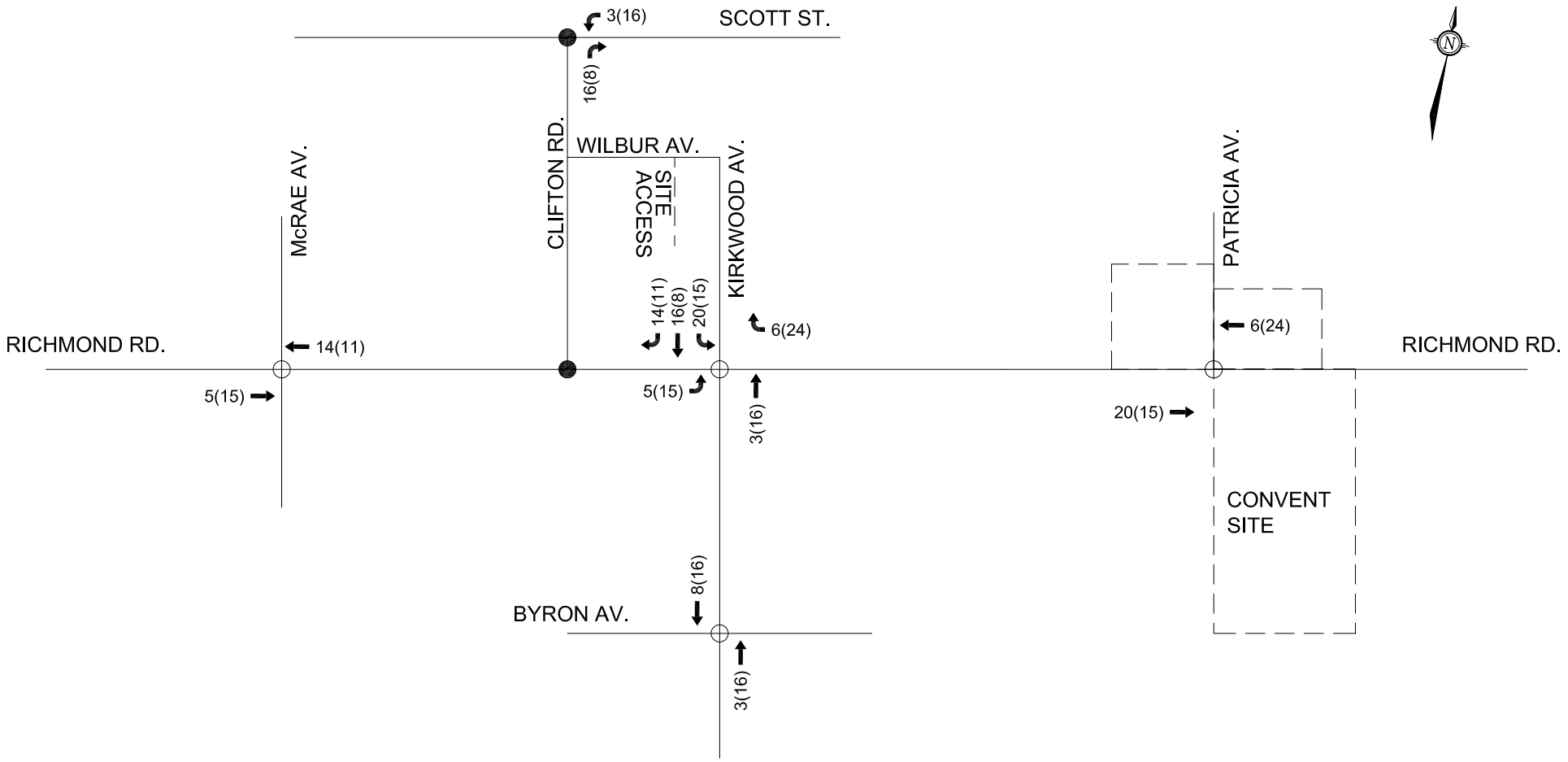
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Apr-28, Thu,19:30	Clear	Sideswipe	Non-fatal injury	Dry	East	Stopped	Automobile, station wagon	Cyclist	0
					East	Going ahead	Bicycle	Other motor vehicle	
2019-Jun-02, Sun,19:30	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jul-24, Wed,18:08	Clear	Angle	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Motorcycle	Other motor vehicle	

Location: RICHMOND RD btwn TWEEDSMUIR AVE & MCRAE AVE

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2015-Sep-14, Mon,09:24	Clear	SMV unattended vehicle	Non-fatal injury	Dry	East	Going ahead	Passenger van	Unattended vehicle	0
2017-Jan-16, Mon,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0

Appendix F: Other Area Developments



NOVATECH
ENGINEERING CONSULTANTS LTD.
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Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada
K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Email: novainfo@novatech-eng.com

LEGEND

- Unsignalized Intersection
- Signalized Intersection
- xx VPH AM Peak Hour
- (xx) VPH PM Peak Hour

175 RICHMOND ROAD

PROPOSED SITE TRAFFIC

SEP 2011 111130 FIGURE 9

SHT8X11.DWG - 216mmX278mm

Figure 13: New Site Generation Auto Volumes

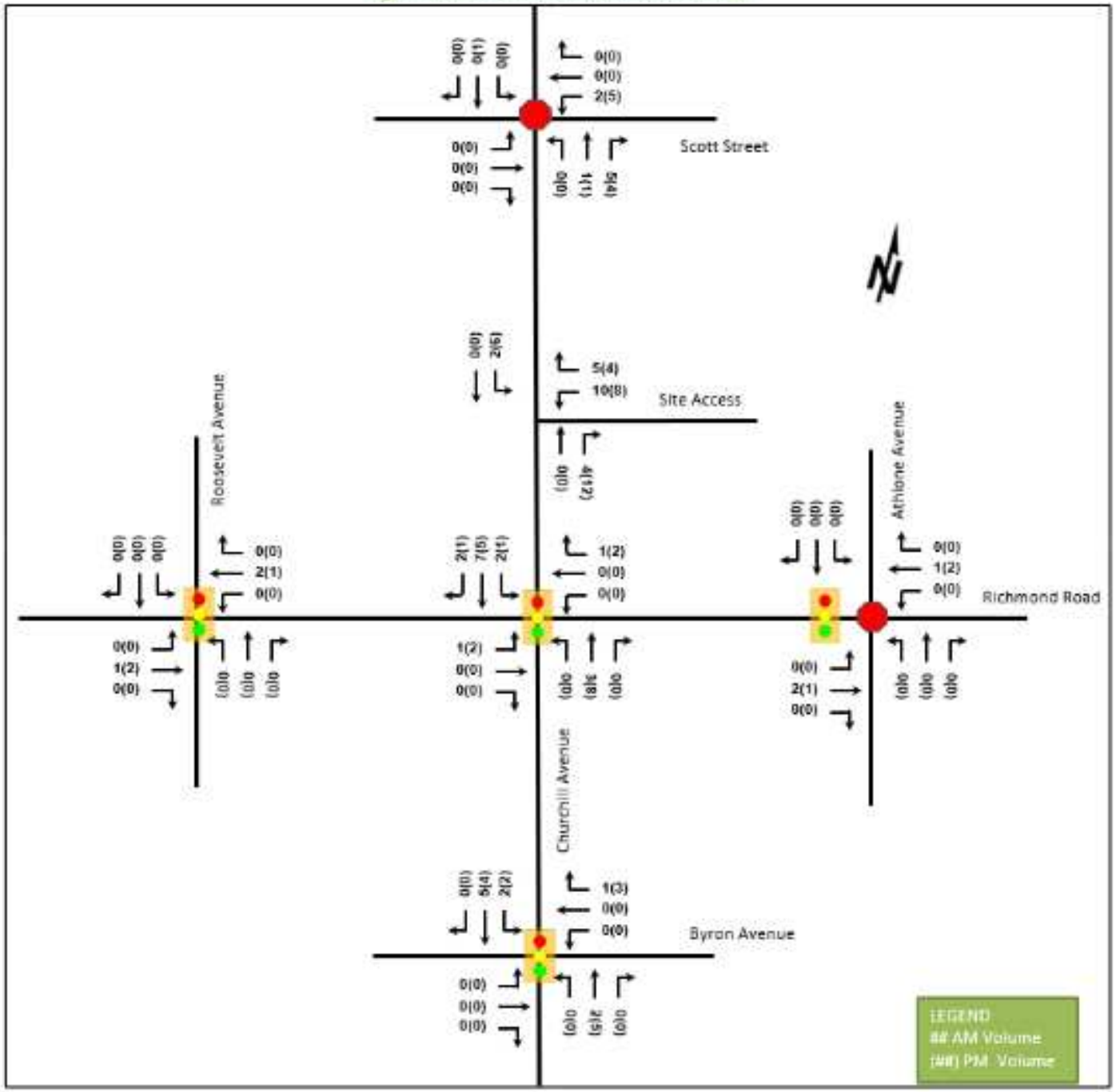
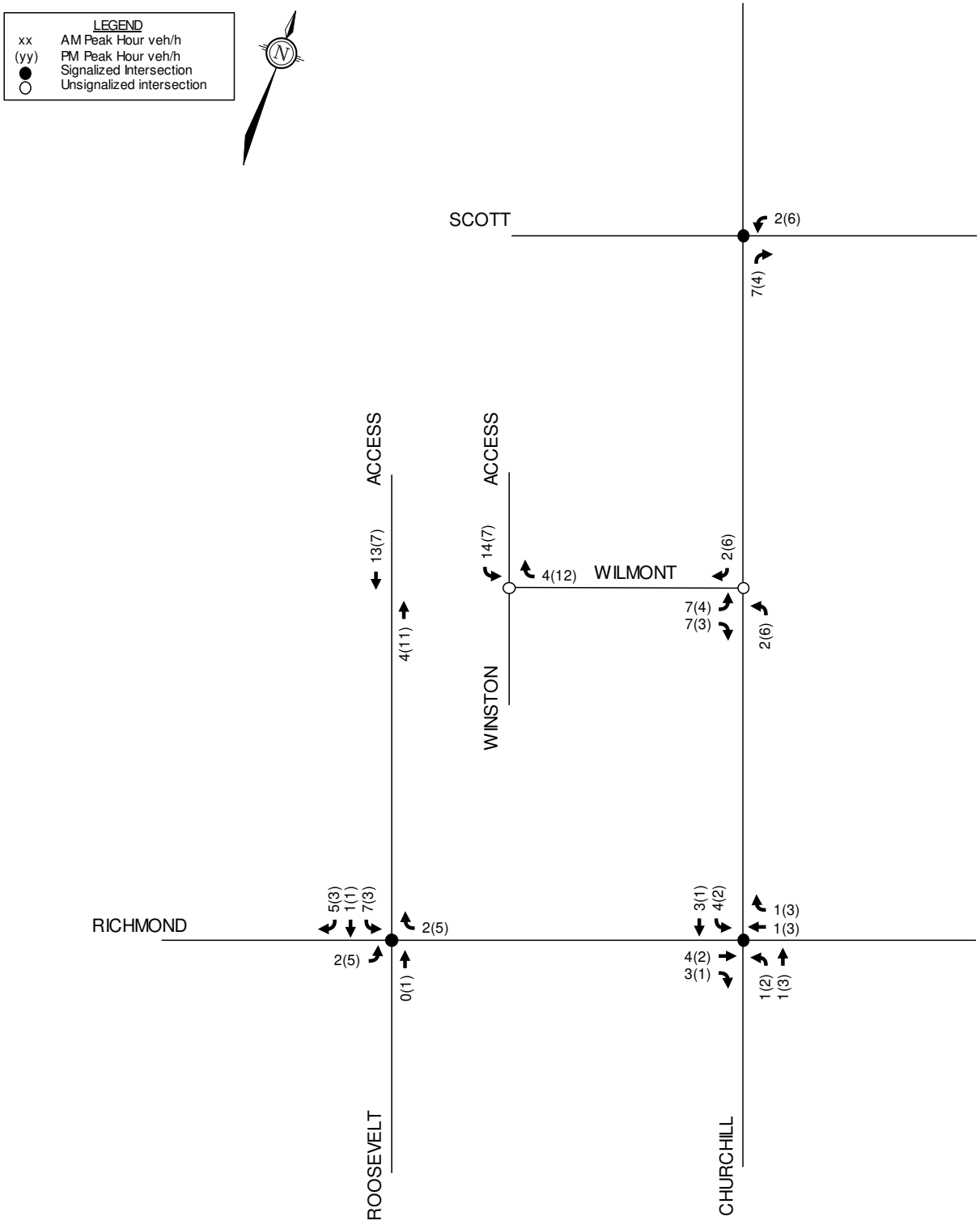


Figure 10: Site Generated Traffic



Appendix G: TDM Checklist

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:
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	☐