

1068-1090 Cummings Avenue

Transportation Impact Assessment

Step 1 Screening Report

Step 2 Scoping Report

Step 3 Forecasting Report

Step 4 Strategy Report

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1 Screening

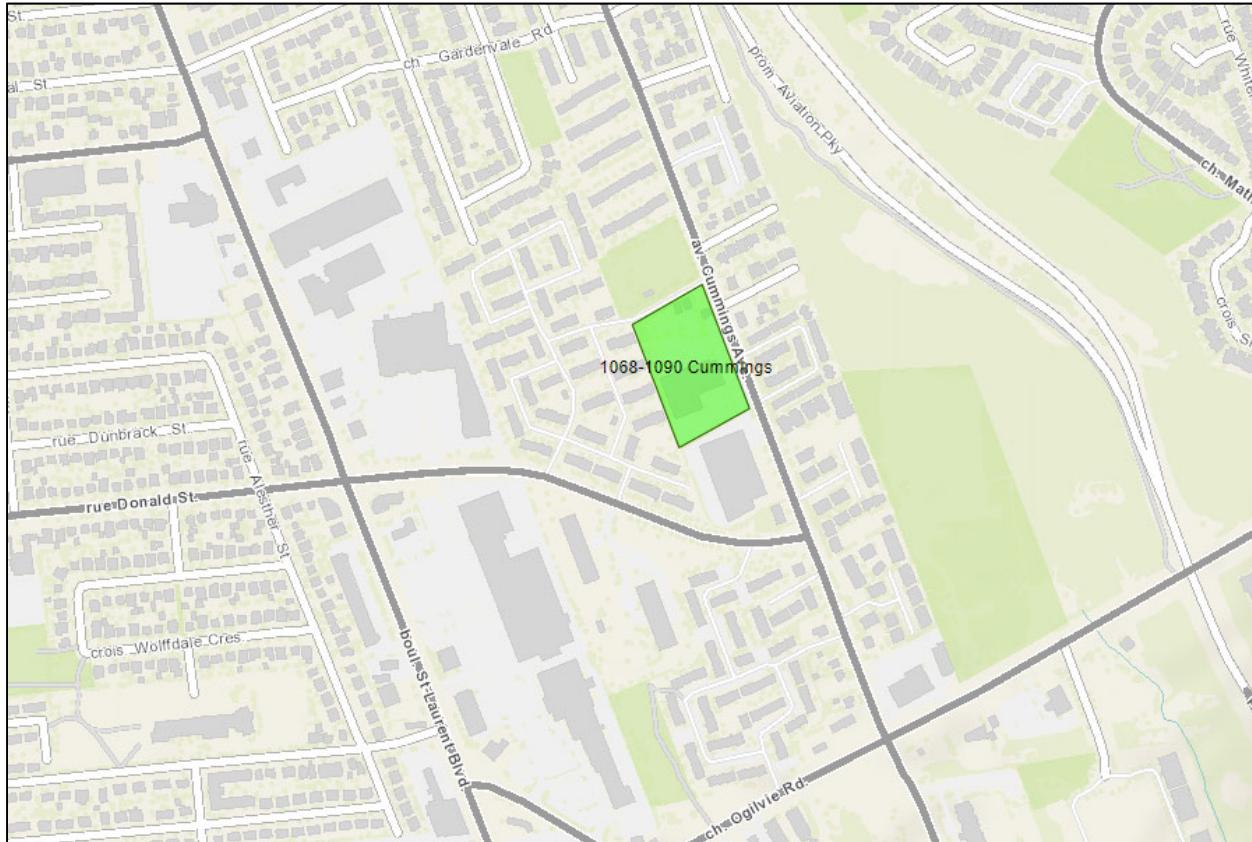
This study has been prepared according to the City of Ottawa's 2017 Transportation Impact Assessment (TIA) Guidelines. Accordingly, a Step 1 Screening Form has been prepared and is included as Appendix A, along with the Certification Form for TIA Study PM. As shown in the Screening Form, the trip generation trigger was met and a TIA is required including the Design Review component and the Network Impact Component.

2 Existing and Planned Conditions

2.1 Proposed Development

The proposed site is located at 1068-1090 Cummings Avenue, currently zoned as Residential 1 (R1M), is being planned to include a total of 186 retirement apartment units and 130 senior apartment units. The existing site is currently an industrial use. The anticipated full build-out and occupancy horizon is 2022. The site outside of any community design plans, secondary plan or design priority area. Figure 1 illustrates the Study Area Context. Figure 2 illustrates the proposed concept plan.

Figure 1: Area Context Plan



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: June 26, 2019

2.2 Existing Conditions

2.2.1 Area Road Network

Donald Street: Donald Street is a City of Ottawa major collector road with a two-lane urban cross-section with sidewalks on both sides of the road and on-street parking permitted on the south side. The unposted speed limit is 50 km/h and the existing right-of-way is approximately 26.0 metres with additional right of way provided near Cummings Avenue. Donald Street is a truck route between St Laurent Boulevard and Cummings Avenue.

Cummings Avenue: Cummings Avenue is a City of Ottawa collector road with a two-lane urban cross-section with sidewalks on both sides of the road, and no on-street parking is permitted. The posted speed limit is 50 km/h and the existing right-of-way is 20.0 metres with easements up to 6.5 metres on the east side of the roadway. Cummings Avenue is a restricted load truck route, south of Donald Street.

Caron Street: Caron Street is a City of Ottawa local road with a two-lane urban cross-section. The unposted speed limit is 50 km/h, an asphalt sidewalk is provided on one side, and the existing right-of-way is 10.0 metres.

Snow Street: Snow Street is a City of Ottawa local road with a two-lane rural cross-section. The unposted speed limit is 50 km/h and the existing right-of-way is 15.0 metres.

Thibault Street: Caron Street is a City of Ottawa local road with a two-lane rural cross-section. The unposted speed limit is 50 km/h and the existing right-of-way is 15.0 metres.

2.2.2 Existing Intersections

The existing area intersections adjacent to the proposed site and additional signalized intersections within 1 km have been summarized below:

Donald Street & Cummings Avenue

The intersection of Donald Street and Cummings Avenue is a signalized intersection. The northbound approach consists of a left-turn and a shared through/right, the southbound approach consists of a shared through/right-lane, and the eastbound approach consists of a left-turn lane and right-turn lane. No turn restrictions are noted.

Cummings Avenue & Caron Street

The intersection of Cummings Avenue and Caron Street is an unsignalized intersection, with minor stop-controlled on Caron Street. The north, south, and east bound approaches consist of shared movement lanes. No turn restrictions are noted.

Cummings Avenue & Snow Street

The intersection of Cummings Avenue and Snow Street is an unsignalized intersection, with minor stop-controlled on Snow Street. The north, south, and west bound approaches consist of shared movement lanes. No turn restrictions are noted.

Cummings Avenue & Thibault Street

The intersection of Cummings Avenue and Thibault Street is an unsignalized intersection, with minor stop-controlled on Thibault Street. The north, south, and west bound approaches consist of shared movement lanes. No turn restrictions are noted.

2.2.3 Existing Driveways

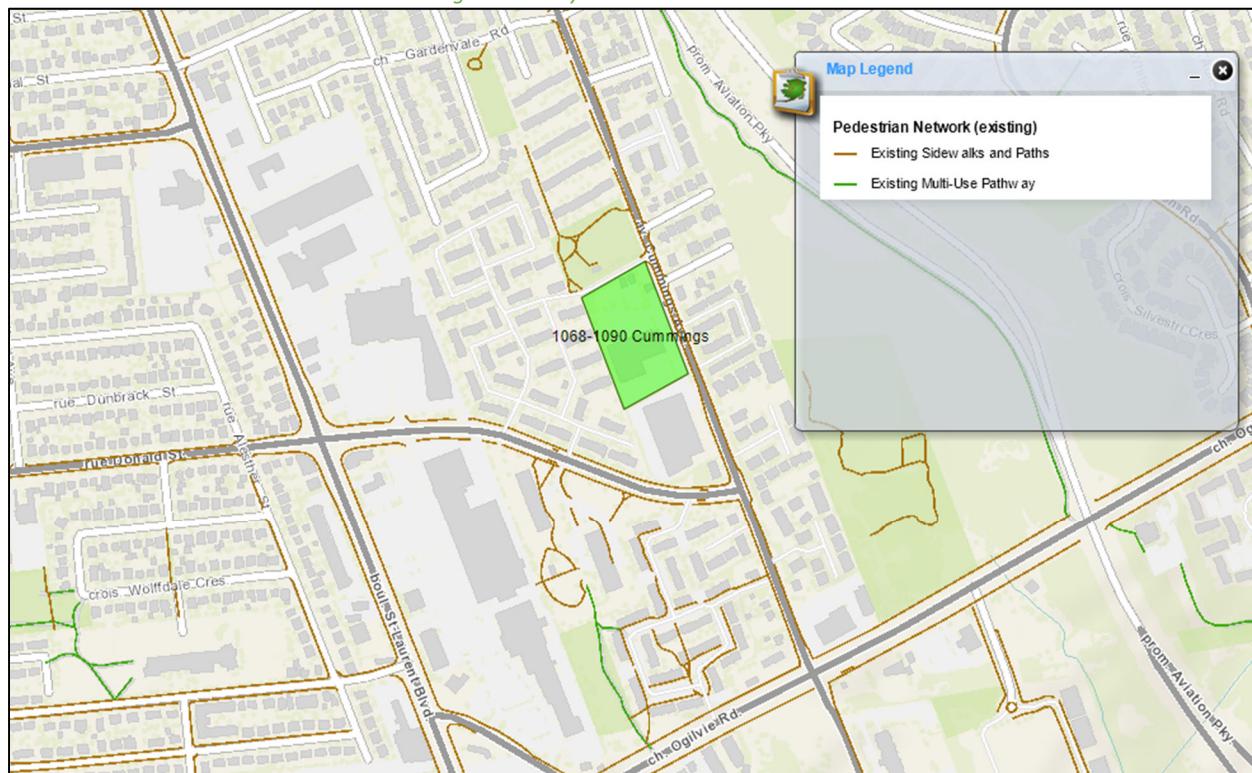
Within 200 metres of the proposed site, private accesses are located on both sides of Cummings Avenue, including three for the adjacent property and seven residential driveways and private streets on the opposite side of the roadway.

2.2.4 Cycling and Pedestrian Facilities

Figure 3 illustrates the pedestrian facilities in the study area and Figure 4 illustrates the cycling facilities.

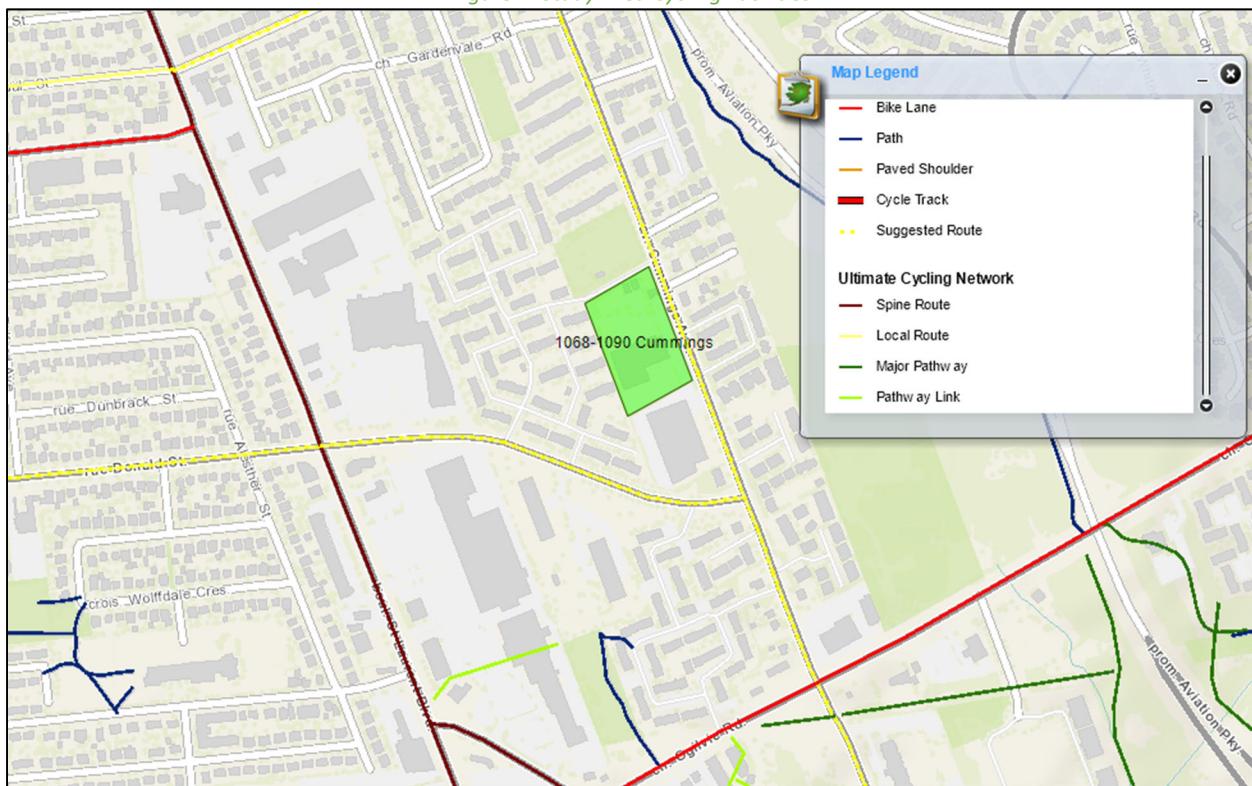
Sidewalks are provided along both sides of the collector roads of Cummings Avenue and Donald Street, within adjacent parks and on one side of a few local roads. South of the site, pathways connect the park to the adjacent roads. Donald Street and Cummings Avenue are suggested local routes for cycling. No dedicated cycling facilities are located near to proposed site.

Figure 3: Study Area Pedestrian Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: June 26, 2019

Figure 4: Study Area Cycling Facilities



Source: <http://maps.ottawa.ca/geoOttawa/> Accessed: June 26, 2019

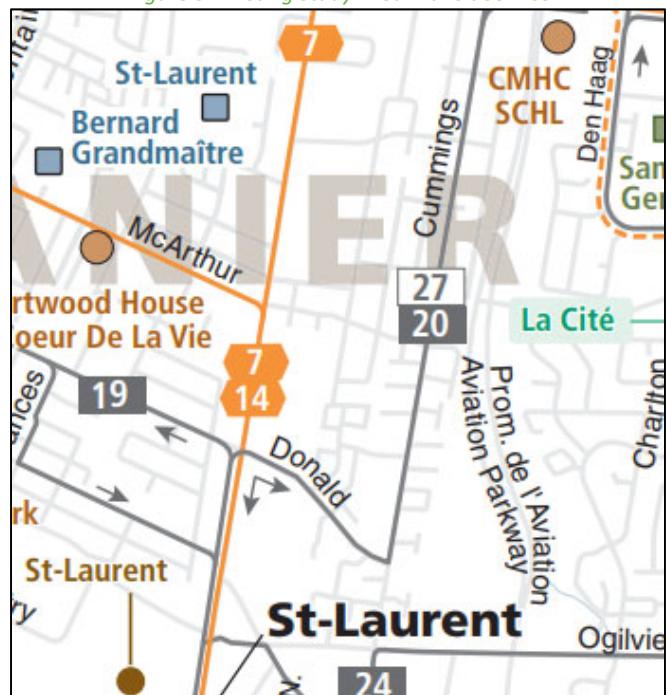
2.2.5 Existing Transit

Within the study area, the routes #20 and 27 travel along Cummings Avenue and beyond a 400m walking distance, routes #7 and #14 travel along St Laurent Boulevard. Stops are located on Cummings Avenue at Caron Street, at 1043 Cummings Avenue, and on Donald Street. The frequency of these routes within proximity of the proposed site currently are:

- Route #20 – 30-minute service all day
- Route #27 – 30-minute service during the peak hours, in only the peak direction

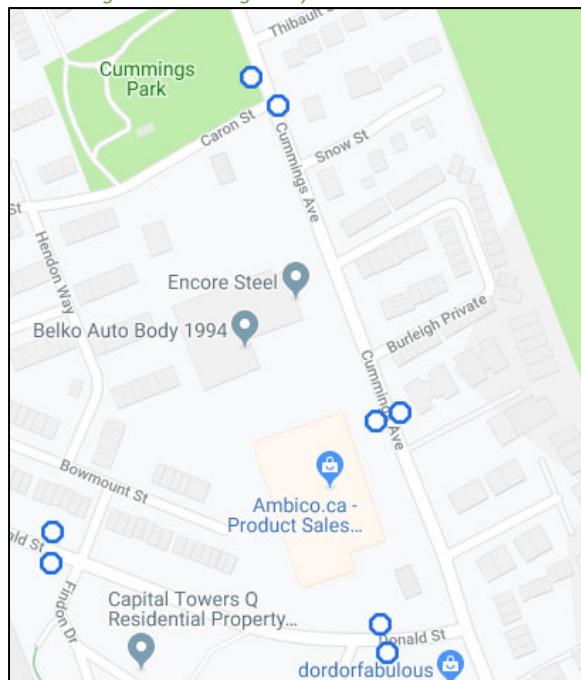
Figure 5 illustrates the transit system map in the study area and Figure 6 illustrates nearby transit stops.

Figure 5: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: June 26, 2019

Figure 6: Existing Study Area Transit Service



Source: <http://www.octranspo.com/> Accessed: June 26, 2019

2.2.6 Existing Area Traffic Management Measures

No traffic calming measures were documented in the area.

2.2.7 Existing Peak Hour Travel Demand

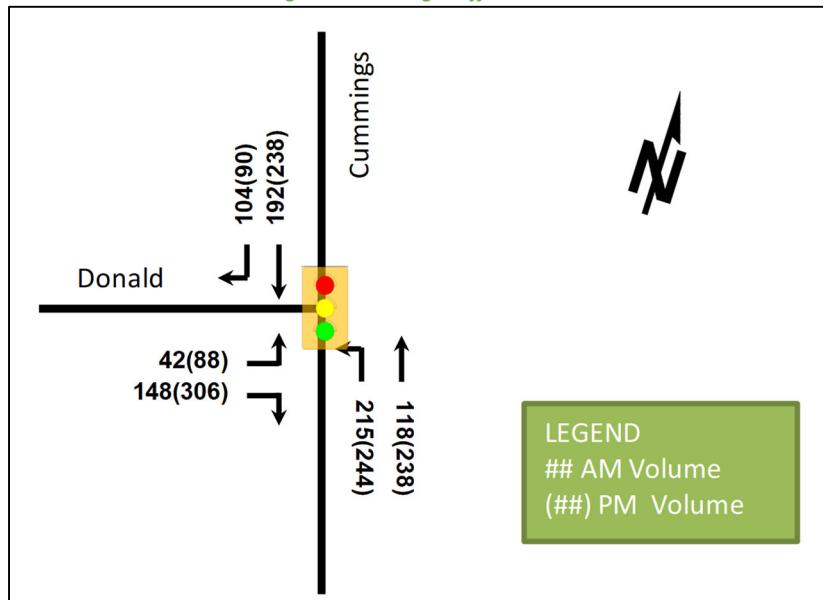
Existing turning movement counts were acquired from City counts for the existing Study Area intersection. Table 1 summarizes the intersection count dates. The local road intersections have not been counted and will not be assessed in this TIA.

Table 1: Intersection Count Date

Intersection	Count Date
Donald Street & Cummings Avenue	Wednesday, April 11, 2018

Figure 7 illustrates the existing traffic counts. The signal timing plan has been requested from the City, and the operations will be provided once the data has been received. Detailed turning movement count data is included in Appendix B.

Figure 7: Existing Traffic Counts



2.2.8 Collision Analysis

Collision data has been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years prior to the commencement of this TIA for the surrounding study area road network. Table 2 summarizes the collisions types and conditions in the study area, Figure 8 illustrates the intersections and segments analyzed, and Table 3 summarizes the total collisions for each of these locations. Collision data is included in Appendix C.

Table 2: Study Area Collision Summary, 2013-2017

		Number	%
Total Collisions		25	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	9	32%
	Property Damage Only	17	68%
Initial Impact Type	Angled	3	12%
	Rear end	10	40%
	Sideswipe	1	4%
	Turning Movement	7	28%
	SMV Unattended	2	8%
	SMV Other	2	8%

		Number	%
Total Collisions		25	100%
Road Surface Condition	Dry	18	72%
	Wet	3	12%
	Loose Snow	2	8%
	Packed Snow	1	4%
	Ice	1	4%
Pedestrian Involved		1	4%
Cyclists Involved		1	4%

Figure 8: Study Area Collision Records – Representation of 2014-2016

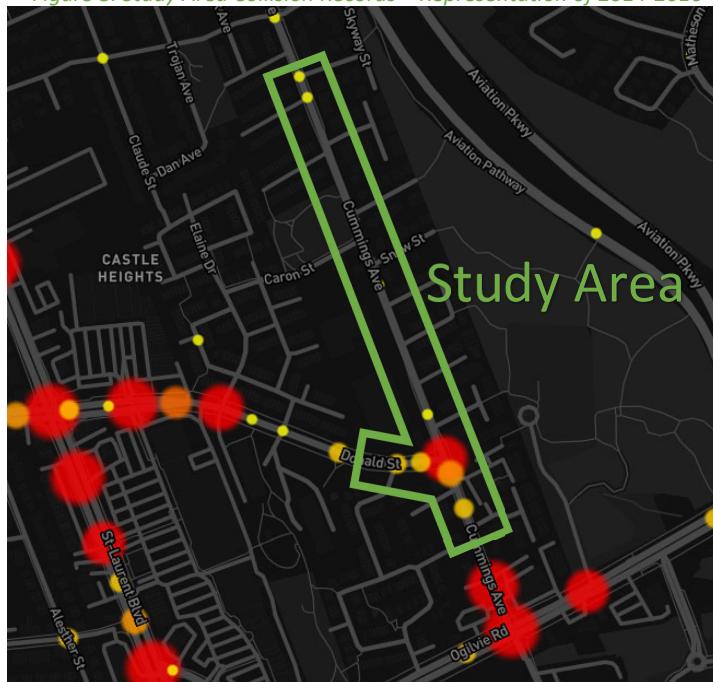


Table 3: Summary of Collision Locations, 2013-2017

Intersections / Segments	Number	%
Intersections / Segments	25	100%
Caron St @ Cummings Ave	1	4%
Cummings Ave @ Donald St	16	64%
Cummings Ave @ Shane St	1	4%
Cummings Ave @ Steele Park Priv	1	4%
Cummings Ave btwn Cummings Ave & Thibault St	1	4%
Cummings Ave btwn Shane St & Cummings Ave	1	4%
Cummings Ave btwn Snow St & Burleigh Priv	1	4%
Cummings Ave btwn Thibault St & Caron St	1	4%
Donald St btwn Belgate Way & Cummings Ave	2	8%

Within the study area, the intersection of Cummings Avenue and Donald Street had a higher collision rate than the other study area intersections and Table 4 summarizes the collision types and conditions for the intersection.

Table 4: Cummings Avenue at Donald Street Collision Summary

		Number	%
Total Collisions		16	100%
Classification	Fatality	0	0%
	Non-Fatal Injury	5	31%
	Property Damage Only	11	69%
Initial Impact Type	Angle	1	6%
	Rear end	9	56%
	Sideswipe	1	6%
	Turning Movement	4	25%
	SMV Other	1	6%
Road Surface Condition	Dry	13	81%
	Wet	1	6%
	Loose Snow	1	6%
	Ice	1	6%
Pedestrian Involved		1	6%
Cyclists Involved		0	0%

The Cummings Avenue and Donald Street intersection had a total of 16 collisions during the 2013-2017 time period, with 11 involving property damage only and the remaining 5 having non-fatal injuries. The predominant collision type is rear end collisions which would indicate congestion being a major factor in the cause for these collisions. No geometric issues were noted, and weather conditions are not considered a factor at this location.

2.3 Planned Conditions

2.3.1 Changes to the Area Transportation Network

The only roadway improvements included within the 2031 Affordable Network of the Ottawa TMP is the widening of Coventry Road from two lanes to four lanes between Belfast Road and St Laurent Centre, and isolated transit priority measures along St Laurent Boulevard.

The Network Concept includes the widening of Cyrville Road to four lanes between St Laurent Boulevard and Innes Road, widening of Ottawa Road 174 to six lanes between Highway 417 and Trim Road, and isolated transit priority measures along Ogilvie Road.

2.3.2 Other Study Area Developments

Ogilvie Mercedes Dealership – 1110 St Laurent Boulevard

The existing dealership has proposed the addition of a two-storey building as accessory space to support the existing site operations. It will be constructed in the existing parking lot behind the primary dealership building.

Riocan St Laurent – 1021 St Laurent Boulevard

The proposed development included the demolition and reconstruction of existing building to a two-storey large format retail use on the northeast quadrant of the mall site. The plan for Target and Metro to occupy the site never occurred and Giant Tiger has replaced Metro as a tenant. Current renovations are ongoing on site, but no tenant is known.

Richcraft – 1220 Ogilvie Road, 1235 Cyrville Road

The proposed site includes a total of 957 proposed apartment and townhome units, of which a total of 273 units (128 apartment and 145 townhomes) have been completed. The remaining 637 apartment and 161 townhome units will be developed in the future. No traffic study is available for this development.

Townhouse Development – 1098 Ogilvie Road, 1178 Cummings Avenue

The development is proposed with approximately 100 townhomes on the southwest quadrant of the Ogilvie Road and Cummings Avenue intersection. The development is anticipated to generate less than 75 vehicles per hour during the peaks and access Cummings Avenue south of Ogilvie Road. The file has been dormant since 2012.

3 Study Area and Time Periods

3.1 Study Area

The study area will include the intersection of Donald Street and Cummings Avenue and Cummings Avenue and Caron Street are the boundary roads for the proposed development.

No screenlines are present near the proposed site and none will be reviewed as part of this study.

3.2 Time Periods

The AM and PM peak hours will be examined for the proposed development.

3.3 Horizon Years

The anticipated build-out year is 2022. As a result, the full build-out plus five years horizon year is 2027.

4 Exemption Review

Table 5 summarizes the exemptions for this TIA.

Table 5: Exemption Review

Module	Element	Explanation	Exempt/Required
Design Review Component			
4.1 Development Design	4.1.2 Circulation and Access	Only required for site plans	Required
	4.2.3 New Street Networks	Only required for plans of subdivision	Exempt
4.2 Parking	4.2.1 Parking Supply	Only required for site plans	Required
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	Exempt
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	Required
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	Required
4.8 Network Concept		Only required when proposed development generates more than 200 person-trips during the peak hour in excess of equivalent volume permitted by established zoning	Exempt

5 Development Generated Travel Demand

5.1 Trip Generation and Travel Modes

This TIA has been prepared using the vehicle and person trip rates for the senior and retirement development using the ITE Trip Generation Manual 10th Edition (2017). Table 6 summarizes the person trip rates for the proposed land uses.

Table 6: Trip Generation Person Trip Rates

Dwelling Type	Land Use Code	Peak Hour	Vehicle Trip Rate	Person Trip Rates
Senior Adult Housing	252 (ITE)	AM	0.20	0.26
		PM	0.26	0.33
Continuing Care Retirement	255 (ITE)	AM	0.20	0.26
		PM	0.21	0.27

Using the above Person Trip rates, the total person trip generation has been estimated. Table 7 below illustrates the total person trip generation by dwelling type.

Table 7: Total Person Trip Generation

Land Use	Units	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Senior Adult Housing	130	12	22	34	24	19	43
Continuing Care Retirement	186	31	17	48	19	31	50
Total Person Trips	43	39	82	43	50	93	

Using the most recent National Capital Region Origin-Destination survey (OD Survey), the existing mode shares for Ottawa East have been summarized in Table 8.

Table 8: Mode Share – Ottawa East

Travel Mode	Ottawa East
Auto Driver	55%
Auto Passenger	15%
Transit	20%
Non-Auto	10%
Total	100%

Using the above mode shares and person trip rates the person trips by mode have been projected. Table 9 summarizes the trip generation by mode.

Table 9: Trip Generation by Mode

Travel Mode	Mode Share	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Auto Driver	55%	24	21	45	23	27	52
Auto Passenger	15%	7	6	12	7	8	14
Transit	20%	8	7	17	9	10	19
Non-Auto Modes	10%	4	4	8	4	5	9
Total	100%	43	39	82	43	50	93

As shown above, 82 AM and 93 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

5.2 Trip Distribution

To understand the travel patterns of the subject development the OD Survey has been reviewed to determine the travel for the residential development patterns were applied based on the build-out of Ottawa East. Table 10 below summarizes the distributions.

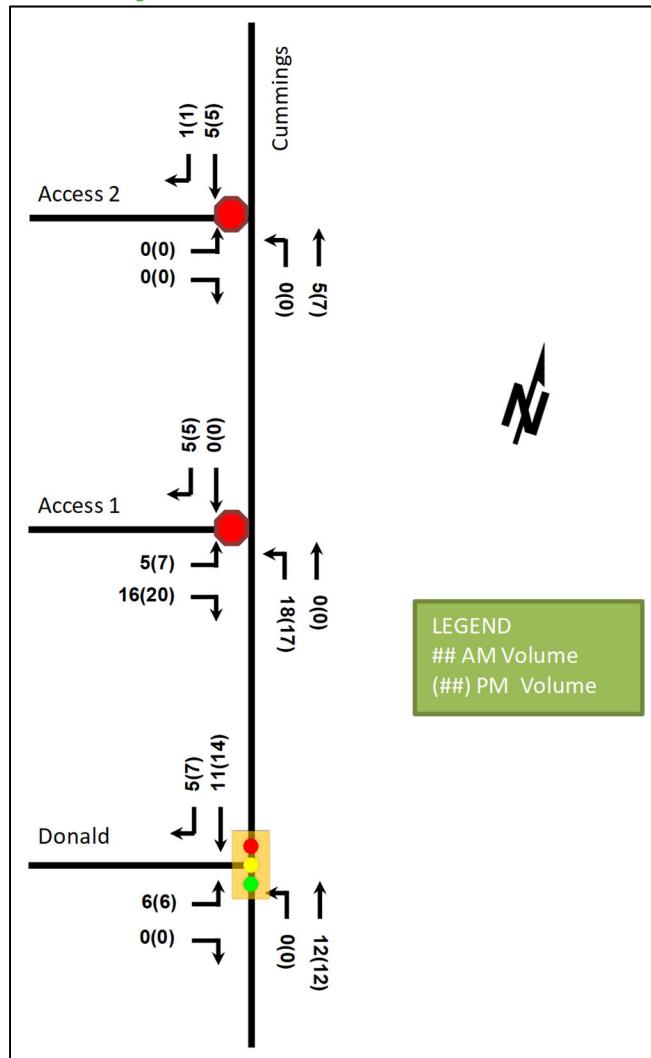
Table 10: OD Survey Existing Mode Share – Ottawa East

To/From	Residential % of Trips
North	5%
South	30%
East	25%
West	40%
Total	100%

5.3 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the Study Area road network. Figure 9 illustrates the new site generated volumes.

Figure 9: New Site Generation Auto Volumes



6 Background Network Travel Demand

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3 and are not anticipated to impact to site, trip generation, or distribution.

6.2 Background Growth

The historic 2010 count at the Donald Street and Cummings Avenue intersection, in general, illustrates a 1% growth overall, with the eastbound left movement experiencing a negative growth. As such, the 1% was applied to all movements with the exception of the eastbound left-turn.

6.3 Other Developments

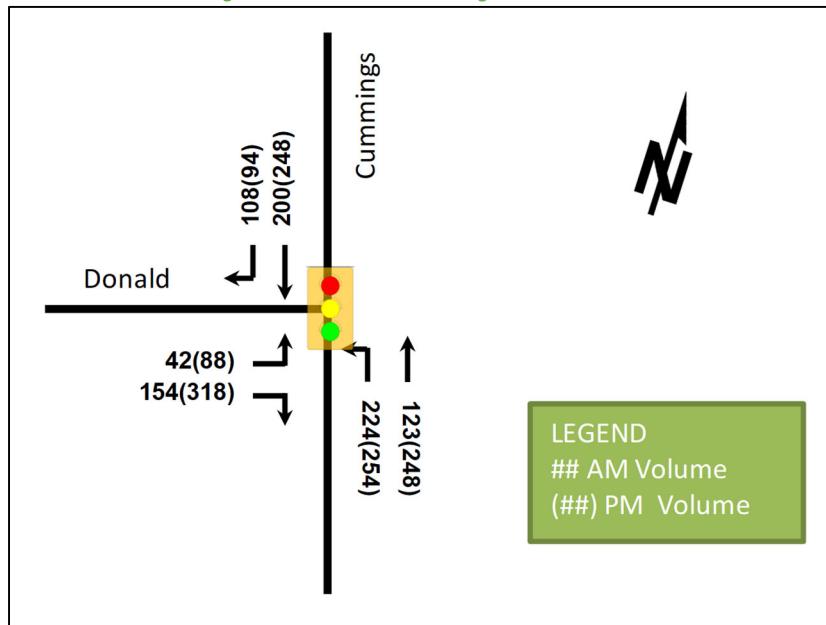
No background developments are anticipated to impact the study area intersection and the background growth is expected to account for any additional area traffic.

7 Demand Rationalization

7.1 2022 Future Background Intersection Operations

Figure 10 illustrates the 2022 background volumes. The signal timing has been requested from the City, and the operations will be provided once the data has been received.

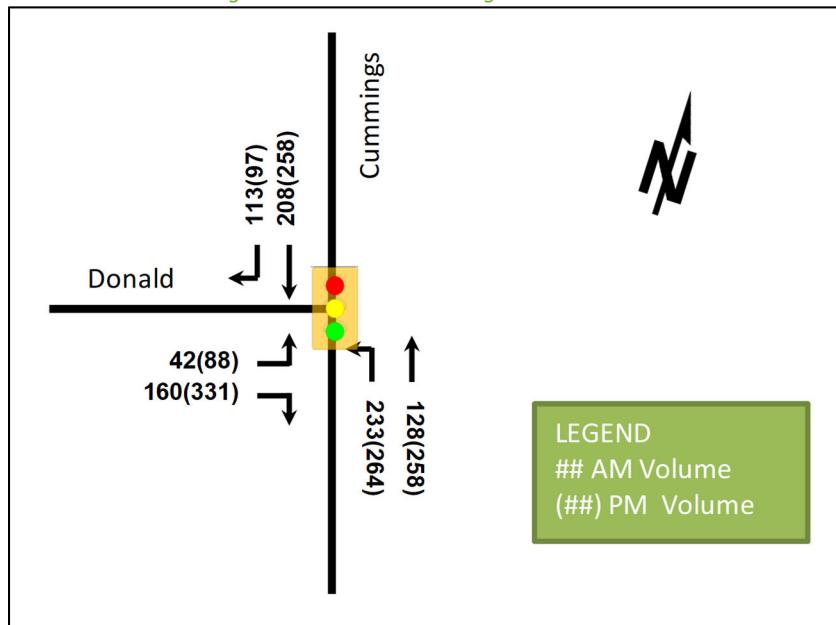
Figure 10: 2022 Future Background Volumes



7.2 2027 Future Background Intersection Operations

Figure 11 illustrates the 2027 background volumes. The signal timing plan has been requested from the City, and the operations will be provided once the data has been received.

Figure 11: 2027 Future Background Volumes



8 Development Design

8.1 Design for Sustainable Modes

The proposed development is a senior and retirement site with perpendicular parking at the front of the building and south side (76 spaces) and an additional internal parking (90 spaces). Bicycle parking is provided internal to the building. The existing sidewalk along Cummings Avenue will remain and hard surface connections are provided to the main and secondary entrances.

8.2 Circulation and Access

The access is provided via a one-way loop with a two-way access at the south end of the site to Cummings Avenue. The existing curb depressions will be removed and revised to the new locations, including a depressed sidewalk and curb across the new access locations. The drive aisle and proposed parking stall sizes meet the by-law requirements.

Garbage pick up will be located internally on the south side of the building. No issues noted for the turning radius of vehicles.

9 Parking

9.1 Parking Supply

The site provides 164 vehicle parking spaces, including 6 accessible spaces, 7 for on site staff and 12 visitor spaces, and 112 bicycle parking spaces. The vehicle and bicycle parking meet the minimum by-law requirements.

10 Boundary Streets

Table 11 summarizes the MMLOS analysis for the boundary road of Cummings Avenue and Caron Street. The existing and future conditions will be the same and are considered in one row. The targets are based on the general urban area. The MMLOS worksheet has been provided in Appendix D.

Table 11: Boundary Street MMLOS Analysis

Segment	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target
Cummings Avenue	F	C	D	B	D	D	B	N/A
Caron Street	E	C	B	B	N/A	D	C	N/A

Cummings Avenue does not meet the MMLOS targets for pedestrian and bicycle level of service. The daily traffic and lack of boulevard along Cummings Avenue limits the ability to meet the pedestrian level of service, and the operating speed limits both the pedestrian and bicycle level of service. Caron Street also does not meet the pedestrian level of service due to the undersized asphalt path on the north side.

No mitigation or improvements are recommended as part of this development due to the inability to meet the targets along Cummings Avenue and Caron Street improvements would be located on the opposite side of the roadway along the park frontage.

11 Access Intersections

11.1 Location and Design of Access

The site accesses will connect directly to the adjacent collector road of Cummings Avenue, and to adjacent arterial roads via Cummings Avenue and Donald Street. The accesses will consist of depressed curbs and sidewalks.

11.2 Access Intersection Control

The access at the north end of the site will operate as a one-way in, and the south access will operate as a two-way access with a stop-control on site.

11.3 Access Intersection Design

11.3.1 2022 Future Total Access Intersection Operations

Error! Reference source not found. illustrates the 2022 future total intersection volumes and Table 12 summarizes the access intersection operations. The level of service is based on the HCM criteria for average delay at unsignalized intersections. The synchro worksheets have been provided in Appendix E.

Figure 12: 2022 Future Total Volumes

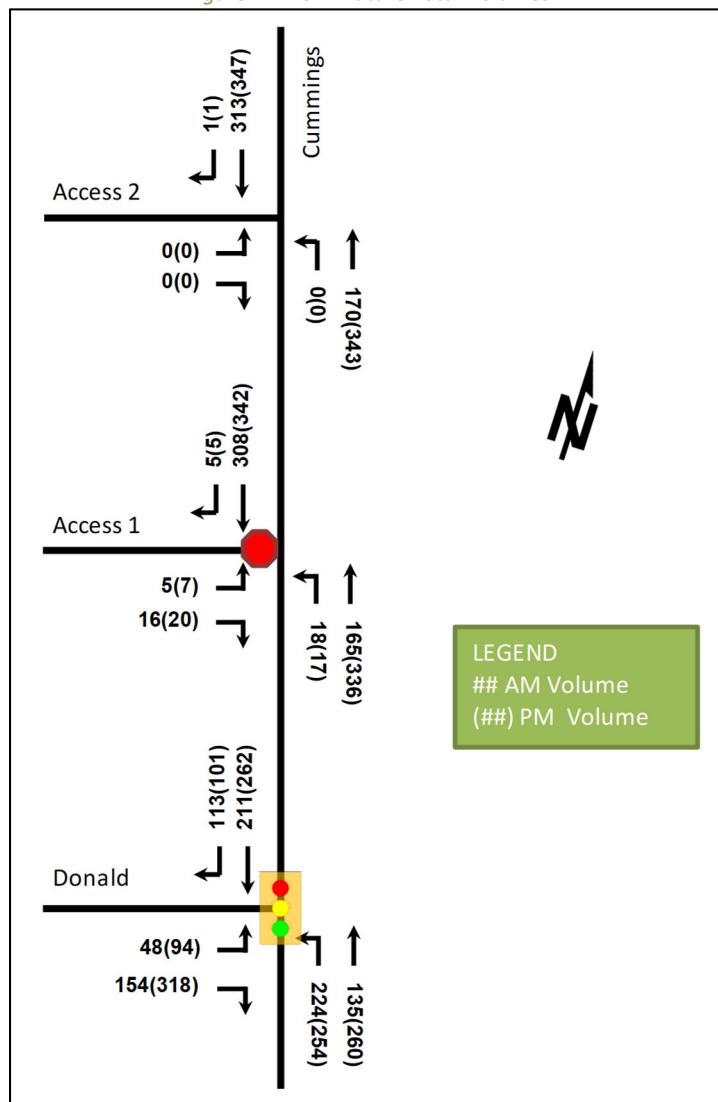


Table 12: 2022 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 th)	LOS	Delay	V/C	Q (95 th)
Cummings Avenue & Site Access Unsignalized	EBL/R	B	10.6	0.03	0.1	B	11.5	0.05	0.1
	NBL/T	A	7.6	0.01	0.0	A	8.0	0.01	0.0
	SBT/R	-	-	-	-	-	-	-	-
	Overall	A	0.7	-	-	A	0.6	-	-

Notes: Saturation flow rate of 1800 veh/h/lane

PHF = 1.00

The access intersection operations for the 2022 future total horizon generally operate satisfactorily during the peak hours.

11.3.2 2027 Future Total Access Intersection Operations

Error! Reference source not found. illustrates the 2027 future total intersection volumes and Table 13 summarizes the access intersection operations. The level of service is based on the HCM criteria for average delay at unsignalized intersections. The synchro worksheets have been provided in Appendix F.

Figure 13: 2027 Future Total Volumes

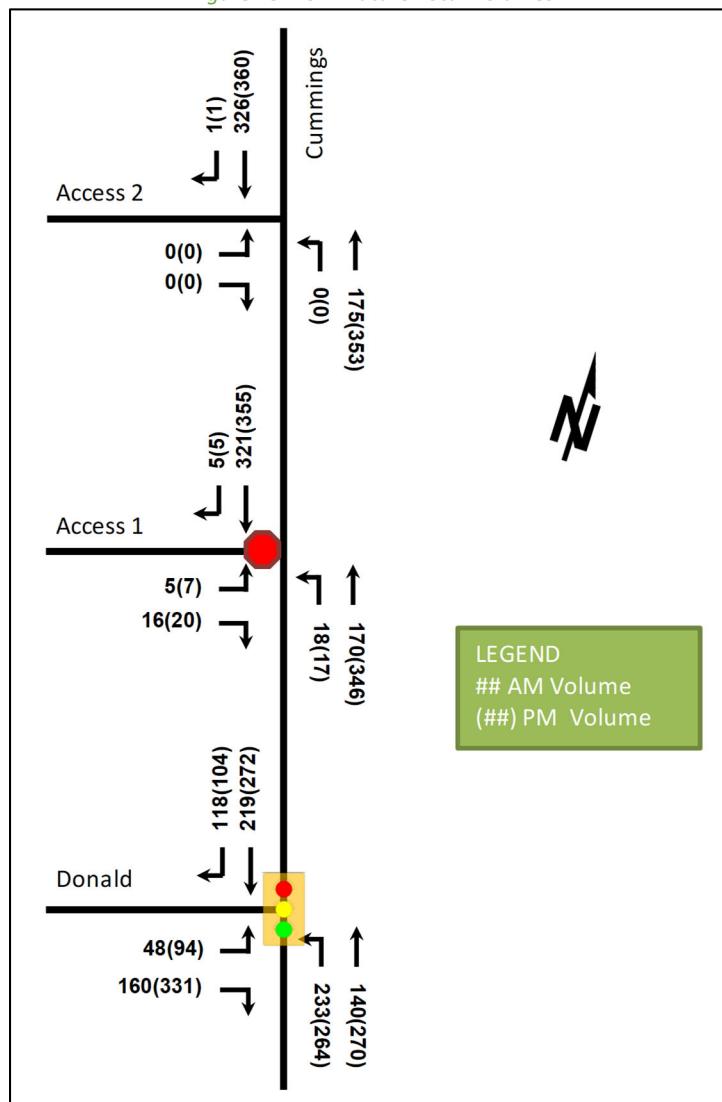


Table 13: 2027 Future Total Access Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	Delay	V/C	Q (95 th)	LOS	Delay	V/C	Q (95 th)
Cummings Avenue & Site Access Unsignalized	EBL/R	B	10.7	0.03	0.1	B	11.7	0.05	0.1
	NBL/T	A	8.0	0.02	0.0	A	8.0	0.01	0.0
	SBT/R	-	-	-	-	-	-	-	-
	Overall	A	0.7	-	-	A	0.6	-	-

Notes: Saturation flow rate of 1800 veh/h/lane

PHF = 1.00

The access intersection operations for the 2027 future total horizon generally operate satisfactorily during the peak hours.

11.3.3 Access Intersection MMLOS

No signalized intersections provide access to the site.

11.3.4 Recommended Design Elements

No access intersection design elements are proposed as part of this study beyond the typical private approach standards.

12 Transportation Demand Management

12.1 Context for TDM

The mode shares used within the TIA represent this area of the City and have not been altered. The modal shares are likely to be achieved.

A total of 316 bedrooms are anticipated within the development and the development will be for senior and retirement living.

12.2 Need and Opportunity

The subject site has been assumed to rely predominantly on auto travel and those assumptions have been carried through the analysis.

12.3 TDM Program

The “suite of post occupancy TDM measures” has been summarized in the TDM checklists for the residential land uses. The checklist is provided in Appendix G.

The key TDM measures recommended include

- Enhanced connectivity of pedestrians to adjacent network and have visibility to on-site walkways
- Provide on-site coordinator for trip planning for new or existing residents
- Provide shuttle service opportunity for residents needed
- Unbundle parking from rental costs

13 Neighbourhood Traffic Management

13.1 Adjacent Neighbourhoods

Overall the site is anticipated to generate approximately 45-52 vehicle trips during the peak hours and will access the collector road of Cummings Avenue. The 300-vehicle threshold for collector roads is already exceeded along Cummings Avenue during the peak hours. The additional two-way trips anticipated on Cummings Avenue is not considered a significant impact and can be accommodated by the roadway.

14 Transit

14.1 Route Capacity

Overall, the forecasted new transit trips would result in a total of 17 new two-way trips during the AM peak hour and 19 during the PM peak hour. These trips are split approximately evenly between inbound and outbound trips and would require approximately 0.2 of a single bus (55-person capacity) during the peak hours for local service.

14.2 Transit Priority

No transit priority was considered for the study area.

15 Network Intersection Design

15.1 Network Intersection Control

No changes are recommended for the network intersections and are consistent with the Strandherd Drive widening design.

15.2 Network Intersection Design

15.2.1 2022 Future Total Network Intersection Operations

The signal timing plan has been requested from the City, and the operations will be provided once the data has been received.

15.2.2 2027 Future Total Network Intersection Operations

The signal timing plan has been requested from the City, and the operations will be provided once the data has been received.

15.2.3 Network Intersection MMLOS

Table 14 summarizes the MMMLOS analysis for the network intersection of Donald Street and Cummings Avenue. The existing and future conditions will be the same and are considered in one row. The analysis is based on general urban area. The MMLOS worksheets has been provided in Appendix D.

Table 14: Study Area Intersection MMLOS Analysis

Intersection	Pedestrian LOS		Bicycle LOS		Transit LOS		Truck LOS		Auto LOS	
	PLOS	Target	BLOS	Target	TLOS	Target	TrLOS	Target	ALOS	Target
Donald Street & Cummings Avenue	C	C	D	B	N/A	B	E	D		D

The MMLOS targets for the bicycle and truck LOS will not be met at the signalized network intersection.

The mixed traffic approaches and operation speeds drive the bicycle LOS D for the intersection, requiring high order cycling facilities at the intersection approaches and reduced speeds to meet the level of service target B.

The truck level of service target does not appear to be met due to the single receiving lane on all approaches. While this is correct as lane arrangement assessment, the receiving lanes are 4.0 metres or greater. It is anticipated that the wider lanes and larger curb radii operate better in the field than the MMLOS analysis shows.

Considering the limitations of the MMLOS analysis and geometry of the intersection, no mitigation measures are proposed.

The transit LOS will be updated once the signal timing for Donald Street and Cummings Avenue have been provided by the City.

15.2.4 Recommended Design Elements

No network intersection design elements are proposed as part of this study.

16 Summary of Improvements Indicated and Modifications Options

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

Proposed Site and Screening

- The proposed site includes 316 senior and retirement apartment units
- Two private approach accesses are proposed along Cummings Avenue, reduced from the existing three accesses
- The development is proposed to be completed as a single phase by 2022
- The Trip Generation trigger were met for the TIA Screening

Existing Conditions

- Donald Street is a major collector, Cummings Avenue is a collector road, and Caron Street, Snow Street and Thibault Street are local roads in the study area
- Sidewalks provided on both sides of the collector roads and an asphalt path is provided on the north side of Caron Street
- No cycling facilities are provided within the study area
- Transit routes #20 and #27 provide local service to the proposed development
- The study area intersection operations will be updated once the signal timing plan for Donald Street and Cummings Avenue have been provided by the City
- No collision issues were noted in the vicinity of the site

Development Generated Travel Demand

- The proposed development as forecasted produces 82 two-way people trips during the AM peak hour and 93 two-way people trips during the PM peak hour
- Of the forecasted people trips, 45 two-way trips will be vehicle trips during the AM peak hour and 52 two-way trips will be vehicle trips during the PM peak hour
- Of the forecasted trips, 40% are anticipated to travel west, 30% to the south, 25% to the east, and 5% to the north

Background Conditions

- No background developments were noted in the area to have an impact on the study area intersections
- The background growth along Cummings Avenue and Donald Street will be updated once the existing counts for Donald Street and Cummings Avenue have been provided by the City
- The study area intersection operations will be updated once the signal timing plan for Donald Street and Cummings Avenue have been provided by the City

Development Design

- Pedestrian connections will be made from Cummings Avenue to the main entrance and secondary entrances
- Two private approaches will provide access to the site
- Garbage pick up is located along the south side of the building and no turning movement issues were noted

Parking

- The vehicle parking will be provided on the surface lots and internal parking garage
- Bike parking will be provided internal to the buildings
- The parking provided meets the by-law minimum requirements

Boundary Street Design

- The boundary street of Cummings Avenue will not meet MMLOS targets for pedestrian and bicycle level of service due to the daily traffic volumes and lack of boulevard space for pedestrians, and operating speeds for both pedestrians and bicycles.
- Caron Street does not meet the pedestrian MMLOS target due to the undersized asphalt path on the north side of the road
- Due to the limited ability to meet the pedestrian and bicycle level of service targets, no mitigation is proposed either street

Access Intersections Design

- The north access will operate as a one-way in, and the south access will operate as a two-way access
- A stop control will be provided on site at the south access
- Both accesses will have depressed curbs and sidewalks across the access, as per City standard
- The access intersection operate well in the future horizons
- No mitigation or intersection design elements are required for the proposed development

Transportation Demand Management

- Supportive TDM measures to be included within the proposed development should include:
 - Enhanced connectivity of pedestrians to adjacent network and have visibility to on-site walkways
 - Provide on-site coordinator for trip planning for new or existing residents
 - Provide shuttle service opportunity for residents needed
 - Unbundle parking from rental costs

Neighbourhood Traffic Management

- Cummings Avenue currently exceeds the TIA thresholds for daily and peak hour traffic for a collector road
- The additional trips generated from the proposed site are not considered to have a significant impact on the roadway as these thresholds are significantly lower than a typical collector road operating volume
- No traffic management features are recommended for Cummings Avenue

Transit

- To meet forecasted transit use, less than a fifth of an additional single bus, or equivalent capacity, would be required for peak hour service on local routes
- No specific transit priority measures were considered as part of this development

Network Intersection Design

- The network intersection operations will be updated once the signal timing plan for Donald Street and Cummings Avenue have been provided by the City
- The MMILoS targets for bicycle and truck cannot be met due the mixed traffic approaches and operating speeds for bicycles and the number of receiving lanes for trucks

- The transit MMLOS analysis will be updated once the existing counts for Donald Street and Cummings Avenue have been provided by the City
- It is anticipated that the truck level of service will be greater than the MMLOS analysis shows due to the wider lanes and curb radii for turning movements
- No mitigation or intersection design elements are required at the network intersection

17 Next Steps

Following the circulation and review of this Strategy Report, any outstanding comments will be addressed within the context of the site plan submission. Following the completion of the remaining TIA Steps and sign-off has been received from City Transportation Project Manager, a signed and stamped final report will be provided to City staff.

Appendix A

TIA Screening Form and PM Certification Form

City of Ottawa 2017 TIA Guidelines
Step 1 - Screening Form

Date: 06-Jun-19
Project Number: 2019-24
Project Reference: 1090 Cummings Ave

1.1 Description of Proposed Development	
Municipal Address	1068, 1090 Cummings Avenue
Description of Location	Ward 11, PIN 042660067
Land Use Classification	R1M Zoning, currently industrial usage
Development Size	186 Retirement Units, 130 Seniors Apartments
Accesses	Two accesses (reduce existing from three)
Phase of Development	Single Phase
Buildout Year	2022
TIA Requirement	Full TIA Required

1.2 Trip Generation Trigger		
Land Use Type	Townhomes or apartments	
Development Size	316	Units
Trip Generation Trigger	Yes	

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

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



TIA Plan Reports

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

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

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

CERTIFICATION

1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
4. I am either a licensed¹ or registered² professional in good standing, whose field of expertise [check appropriate field(s)] is either transportation engineering or transportation planning .

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

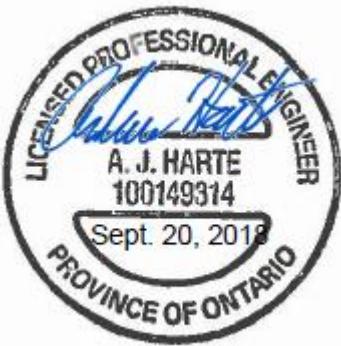
Dated at Ottawa this 20 day of September, 2018.
(City)

Name: Andrew Harte
(Please Print)

Professional Title: Professional Engineer


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

Office Contact Information (Please Print)
Address: 13 Markham Avenue
City / Postal Code: Ottawa / K2G 3Z1
Telephone / Extension: (613) 697-3797
E-Mail Address: Andrew.Harte@CGHTransportation.com



Appendix B

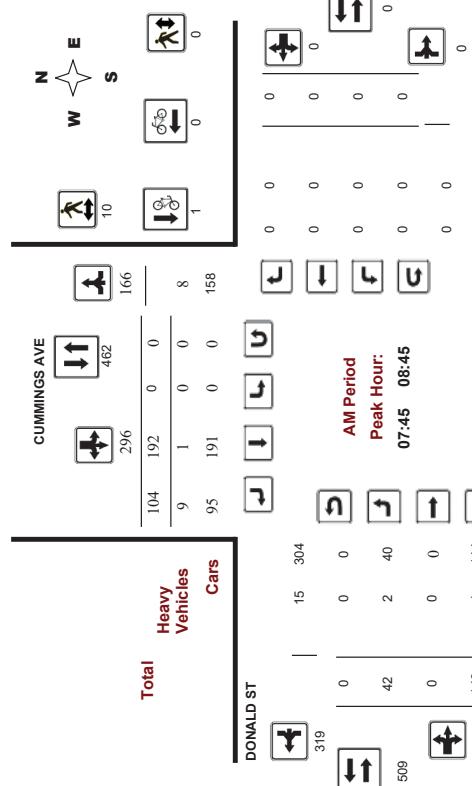
Turning Movement Counts



Transportation Services - Traffic Services
Turning Movement Count - Full Study Peak Hour Diagram
CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018
 Start Time: 07:00

WO No: 37720
 Device: Movision



Comments

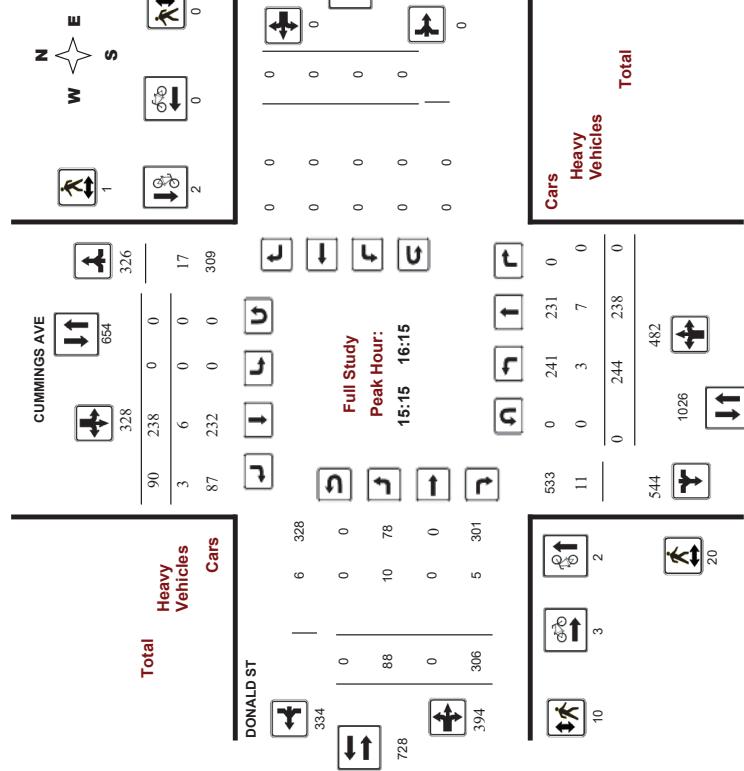
2019-Jul-05

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Transportation Services - Traffic Services
Turning Movement Count - Full Study Peak Hour Diagram
CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018
 Start Time: 07:00

WO No: 37720
 Device: Movision



Comments

2019-Jul-05

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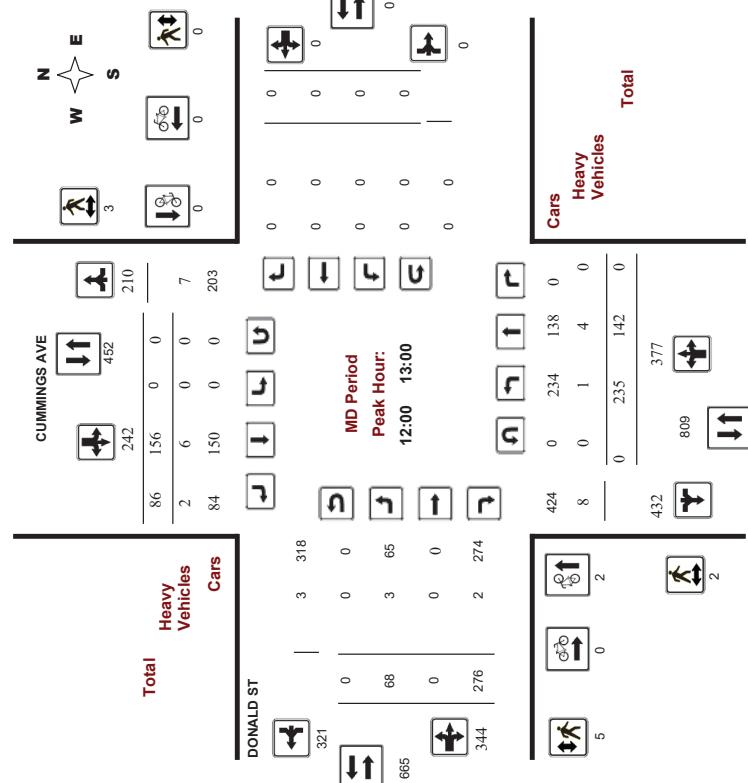
Transportation Services - Traffic Services
Turning Movement Count - Full Study Peak Hour Diagram
CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018
Start Time: 07:00

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Survey Date: Wednesday, April 11, 2018
Start Time: 07:00

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Device:



Comments

2019-Jul-05

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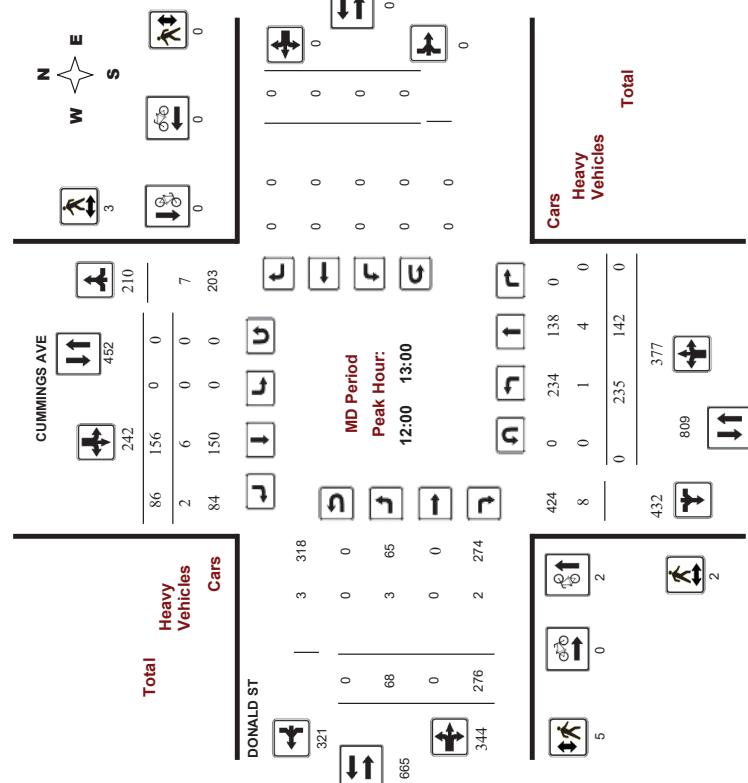
Transportation Services - Traffic Services
Turning Movement Count - Full Study Peak Hour Diagram
CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018
Start Time: 07:00

WO No:
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Survey Date: Wednesday, April 11, 2018
Start Time: 07:00

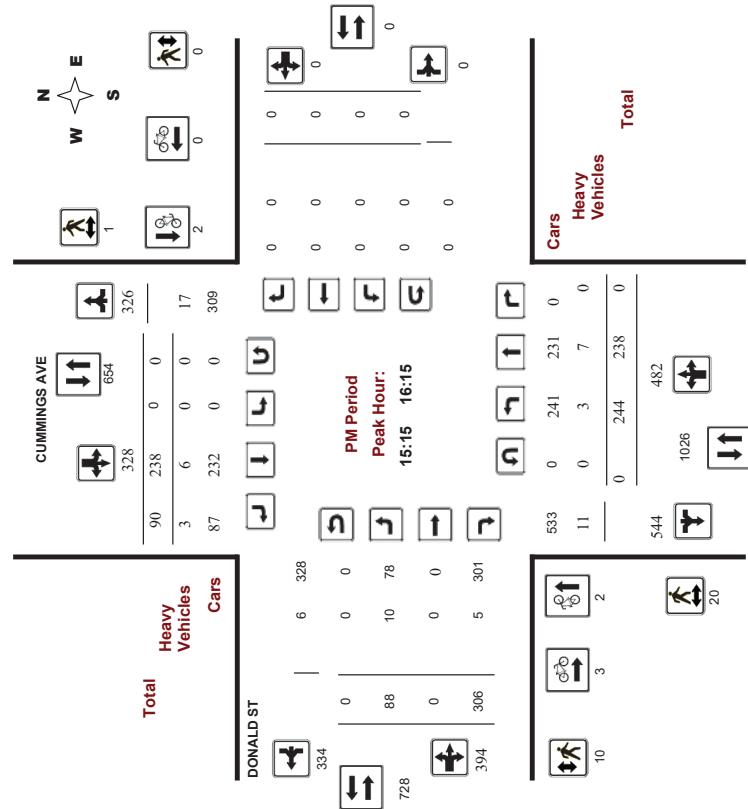
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Comments

2019-Jul-05

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Comments

2019-Jul-05

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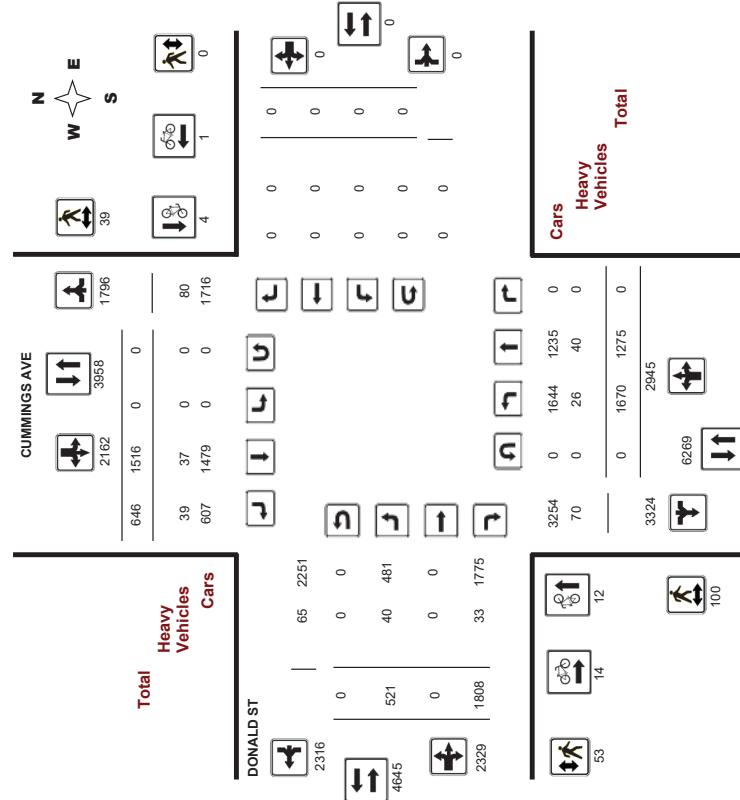
Transportation Services - Traffic Services
Turning Movement Count - Full Study Diagram

CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018

WO#: 37720

Device: Midvision



Comments

2019-Jul-05

Page 1 of 1



Transportation Services - Traffic Services

Turning Movement Count - Full Study Summary Report

CUMMINGS AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018

Work Order
37720

AADT Factor
.90

Total Observed U-Turns

Full Study

CUMMINGS AVE

Northbound

Southbound

Eastbound

Westbound

DONALD ST

Northbound

Southbound

Eastbound

Westbound

Grand Total

Northbound

Southbound

Eastbound

Westbound

Period

LT

ST

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TOT

NB

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RT

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ST

RT

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Grand Total

Northbound

Southbound

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Period

Note: These volumes are calculated by multiplying the totals by the appropriate expansion factor.

EQ 12hr 2321 1772 0 4094 0 2107 898 3005 7099 724 0 2513 3237 0 1,39

AVG 24hr 2737 2089 0 4826 0 2484 1059 3543 8369 854 0 2963 3817 0 0 0 3817 12166

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.

1.31

Comments:

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

Comments

2019-Jul-05

Page 1 of 1

Page 1 of 1

Ottawa Transportation Services - Traffic Services **W.O.** 37720
Turning Movement Count - 15 Minute Summary Report

CUMMING'S AVE @ DONALD ST

Survey Date: Wednesday, April 11, 2018 **Total Observed U-Turns**

CUMMING'S AVE												DONALD ST											
Northbound						Southbound						Eastbound						Westbound					
Time Period	LT	ST	N	RT	TOT	LT	ST	R	S	STR	TOT	LT	ST	RT	TOT	W	STR	TOT	LT	ST	RT	TOT	Grand Total
07:00-07:15	37	21	0	58	0	36	11	47	105	7	0	25	32	0	0	0	32	137					5
07:15-07:30	35	30	0	65	0	41	11	52	117	12	0	36	48	0	0	0	48	165					3
07:30-07:45	38	26	0	64	0	65	10	75	139	10	0	32	42	0	0	0	42	181					0
07:45-08:00	46	29	0	75	0	47	24	71	146	10	0	35	45	0	0	0	45	191					3
08:00-08:15	49	38	0	87	0	53	32	85	172	7	0	41	48	0	0	0	48	220					3
08:15-08:30	60	33	0	93	0	48	25	73	166	11	0	32	43	0	0	0	43	209					5
08:30-08:45	60	24	0	84	0	44	23	67	151	14	0	40	54	0	0	0	54	205					9
08:45-09:00	35	31	0	66	0	44	21	65	131	6	0	37	43	0	0	0	43	174					3
09:00-09:15	44	31	0	75	0	43	15	58	133	16	0	54	70	0	0	0	70	203					1
09:15-09:30	58	27	0	85	0	44	25	69	154	9	0	40	49	0	0	0	49	203					31
09:30-09:45	44	29	0	73	0	43	19	62	135	7	0	40	47	0	0	0	47	182					31
09:45-10:00	39	34	0	73	0	47	15	62	135	13	0	48	61	0	0	0	61	196					31
11:30-11:45	44	30	0	74	0	44	15	59	133	8	0	63	71	0	0	0	71	204					31
11:45-12:00	57	28	0	85	0	47	14	61	146	17	0	45	62	0	0	0	62	208					31
12:00-12:15	68	34	0	102	0	42	22	64	166	24	0	66	90	0	0	0	90	256					31
12:15-12:30	57	37	0	94	0	38	24	62	156	12	0	70	82	0	0	0	82	238					31
12:30-12:45	54	36	0	90	0	36	22	58	148	16	0	74	90	0	0	0	90	238					31
12:45-13:00	56	35	0	91	0	40	18	58	149	16	0	66	82	0	0	0	82	231					31
13:00-13:15	42	41	0	83	0	47	16	63	146	23	0	72	95	0	0	0	95	241					31
13:15-13:30	66	30	0	96	0	28	19	47	143	12	0	60	72	0	0	0	72	215					31
15:00-15:15	57	48	0	105	0	47	27	74	179	15	0	56	71	0	0	0	71	250					31
16:00-16:15	58	57	0	115	0	78	22	100	245	22	0	76	98	0	0	0	98	313					31
15:15-15:30	59	52	0	111	0	45	24	69	180	20	0	69	89	0	0	0	89	269					31
15:30-15:45	72	57	0	129	0	58	21	79	208	27	0	101	128	0	0	0	128	336					31
15:45-16:00	55	72	0	127	0	57	23	80	207	19	0	60	79	0	0	0	79	286					31
16:45-17:00	53	50	0	103	0	46	24	70	173	23	0	70	93	0	0	0	93	266					31
17:00-17:15	80	54	0	134	0	54	14	68	202	30	0	66	96	0	0	0	96	298					31
17:15-17:30	45	69	0	114	0	58	17	75	189	25	0	71	96	0	0	0	96	285					31
17:30-17:45	44	51	0	95	0	44	23	67	162	20	0	64	84	0	0	0	84	246					31
17:45-18:00	47	43	0	90	0	45	22	67	157	20	0	56	76	0	0	0	76	233					31
TOTAL:	1670	1275	0	2845	0	1516	646	2162	5107	521	0	1808	2229	0	0	0	2329	7436					31

Note: U-Turns are included in Totals.

2019-Jul-05

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

2019-Jul-05

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Ottawa Transportation Services - Traffic Services

Work Order
37720

Turning Movement Count - Cyclist Volume Report

Wednesday, April 11, 2018

Count Date: Wednesday, April 11, 2018

CUMMING'S AVE @ DONALD ST

Start Time: 07:00

DONALD ST

Time Period

Northbound

Southbound

Eastbound

Westbound

Time Period

Northbound

Southbound

Street Total

Eastbound

Westbound

Street Total

Street Total

Street Total

Grand Total

Comment:

</div



Transportation Services - Traffic Services Work Order
Turning Movement Count - Cyclist Volume Report 37720



Transportation Services - Traffic Services Work Order
Turning Movement Count - Pedestrian Volume Report 37720

CUMMINGS AVE @ DONALD ST						
Count Date: Wednesday, April 11, 2018						
CUMMINGS AVE						
Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	
				Street Total	Grand Total	
07:00 - 08:00	0	0	0	4	1	5
08:00 - 09:00	2	1	3	0	0	3
09:00 - 10:00	0	0	0	0	0	0
11:30 - 12:30	2	1	3	0	0	3
12:30 - 13:30	3	0	3	0	0	3
15:00 - 16:00	1	1	2	3	0	5
16:30 - 17:00	3	1	4	5	0	9
17:00 - 18:00	1	0	1	2	0	3
Total	12	4	16	14	1	31

Comment:

CUMMINGS AVE @ DONALD ST					
Count Date: Wednesday, April 11, 2018					
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)
07:00 - 07:15	1	0	1	1	0
07:15 - 07:30	4	4	8	0	0
07:30 - 07:45	2	2	4	1	0
07:45 - 08:00	4	1	5	2	0
07:00 - 08:00	11	7	18	4	4
08:00 - 08:15	5	2	7	6	0
08:15 - 08:30	1	2	3	3	0
08:30 - 08:45	3	5	8	2	0
08:45 - 09:00	12	1	13	3	0
08:00 - 09:00	21	10	31	14	0
09:00 - 09:15	7	0	7	1	0
09:15 - 09:30	1	3	4	1	0
09:30 - 09:45	3	0	3	1	0
09:45 - 10:00	1	1	2	1	0
08:00 - 10:00	12	4	16	4	0
11:30 - 11:45	2	1	3	1	0
11:45 - 12:00	2	0	2	1	0
12:00 - 12:15	0	0	0	0	0
12:15 - 12:30	0	1	1	0	0
11:30 - 12:30	4	2	6	2	0
12:30 - 12:45	1	0	1	1	0
12:45 - 13:00	1	2	3	4	0
13:00 - 13:15	2	0	2	1	0
13:15 - 13:30	0	1	1	0	0
12:30 - 13:30	4	3	7	6	0
15:00 - 15:15	1	1	2	0	0
15:15 - 15:30	2	0	2	0	0
15:30 - 15:45	5	0	5	1	0
15:45 - 16:00	11	0	11	7	0
15:00 - 16:00	19	1	20	8	0
16:00 - 16:15	2	1	3	2	0
16:15 - 16:30	0	3	3	2	0
16:30 - 16:45	6	1	7	2	0
16:45 - 17:00	6	0	6	3	0
16:00 - 17:00	14	5	19	9	0
17:00 - 17:15	6	0	6	1	0
17:15 - 17:30	1	1	2	2	0
17:30 - 17:45	2	4	6	2	0
17:45 - 18:00	6	2	8	1	0
17:00 - 18:00	15	7	22	6	0
Total	100	39	139	53	0

Comment:



Transportation Services - Traffic Services

Work Order
37720

Turning Movement Count - 15 Min U-Turn Total Report

Survey Date:	CUMMINGS AVE @ DONALD ST					
Time Period	Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total	
07:00	0	0	0	0	0	
07:15	0	0	0	0	0	
07:30	0	0	0	0	0	
07:45	0	0	0	0	0	
08:00	0	0	0	0	0	
08:15	0	0	0	0	0	
08:30	0	0	0	0	0	
08:45	0	0	0	0	0	
09:00	0	0	0	0	0	
09:15	0	0	0	0	0	
09:30	0	0	0	0	0	
09:45	0	0	0	0	0	
10:00	0	0	0	0	0	
11:30	11:45	0	0	0	0	
11:45	12:00	0	0	0	0	
12:00	12:15	0	0	0	0	
12:15	12:30	0	0	0	0	
12:30	12:45	0	0	0	0	
12:45	13:00	0	0	0	0	
13:00	13:15	0	0	0	0	
13:15	13:30	0	0	0	0	
15:00	15:15	0	0	0	0	
15:15	15:30	0	0	0	0	
15:30	15:45	0	0	0	0	
15:45	16:00	0	0	0	0	
16:00	16:15	0	0	0	0	
16:15	16:30	0	0	0	0	
16:30	16:45	0	0	0	0	
16:45	17:00	0	0	0	0	
17:00	17:15	0	0	0	0	
17:15	17:30	0	0	0	0	
17:30	17:45	0	0	0	0	
17:45	18:00	0	0	0	0	
Total	0	0	0	0	0	

Public Works and Services Department

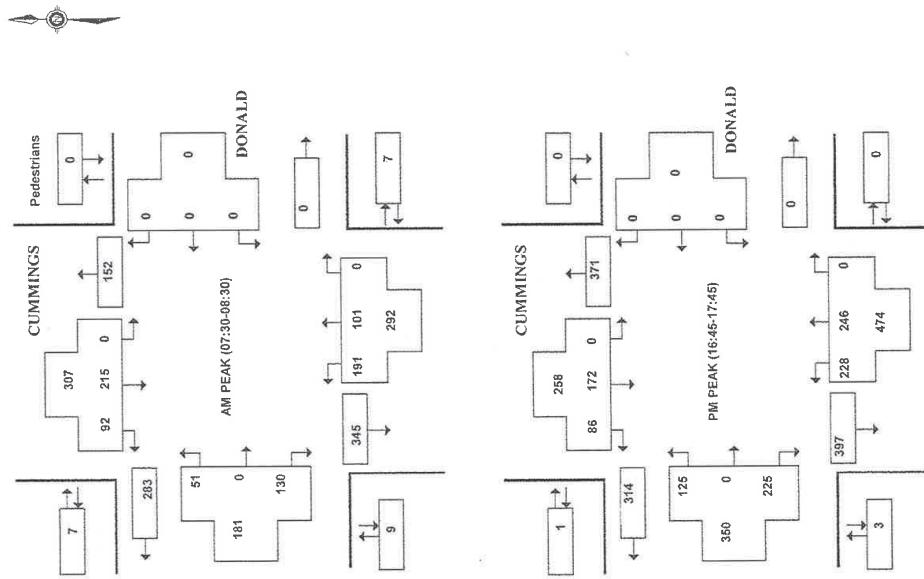
Count ID 2732

CUMMINGS AVE and DONALD ST

(ULRS Listing CUMMINGS & DONALD)

Survey Date: Tuesday 3 August 2010
Conditions: Wet
Start Time: 07:00

AADT Factor is
Tuesday in August is
9



Approved by : STP

Appendix C

Collision Data

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Classification Of Accident	Initial Impact Type	Road Surface Condition
2017-07-21	2017	21:30	CARON ST @ CUMMINGS AVE	01 - Clear	07 - Dark	02 - Stop sign	02 - Non-fatal injury	03 - Rear end	01 - Dry
2013-01-23	2013	15:24	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2013-03-07	2013	11:18	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2013-03-09	2013	13:00	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2014-05-08	2014	18:55	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	07 - SMV other	01 - Dry
2014-12-07	2014	16:22	CUMMINGS AVE @ DONALD ST	01 - Clear	05 - Dusk	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2014-11-18	2014	11:32	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2014-09-02	2014	21:20	CUMMINGS AVE @ DONALD ST	02 - Rain	07 - Dark	01 - Traffic signal	03 - P.D. only	03 - Rear end	02 - Wet
2015-11-17	2015	10:41	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	04 - Sideswipe	01 - Dry
2016-03-24	2016	11:12	CUMMINGS AVE @ DONALD ST	03 - Snow	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	03 - Loose snow
2016-05-24	2016	8:39	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2016-07-28	2016	16:20	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2017-08-08	2017	13:20	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	03 - P.D. only	03 - Rear end	01 - Dry
2017-08-07	2017	16:06	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	03 - Rear end	01 - Dry
2017-11-26	2017	21:00	CUMMINGS AVE @ DONALD ST	05 - Drifting Snow	07 - Dark	01 - Traffic signal	03 - P.D. only	02 - Angle	06 - Ice
2017-01-09	2017	19:20	CUMMINGS AVE @ DONALD ST	01 - Clear	07 - Dark	01 - Traffic signal	03 - P.D. only	05 - Turning movement	01 - Dry
2017-04-20	2017	13:05	CUMMINGS AVE @ DONALD ST	01 - Clear	01 - Daylight	01 - Traffic signal	02 - Non-fatal injury	05 - Turning movement	01 - Dry
2016-12-23	2016	9:21	CUMMINGS AVE @ SHANE ST	01 - Clear	01 - Daylight	02 - Stop sign	03 - P.D. only	02 - Angle	02 - Wet
2016-08-10	2016	22:16	CUMMINGS AVE @ STEELE PARK PRIV	01 - Clear	07 - Dark	10 - No control	02 - Non-fatal injury	05 - Turning movement	01 - Dry
2017-12-16	2017	1:29	CUMMINGS AVE btwn CUMMINGS AVE & THIBAULT ST	03 - Snow	07 - Dark	10 - No control	03 - P.D. only	6 - SMV unattended vehicl	03 - Loose snow
2014-07-08	2014	17:02	CUMMINGS AVE btwn SHANE ST & CUMMINGS AVE	01 - Clear	01 - Daylight	10 - No control	02 - Non-fatal injury	05 - Turning movement	01 - Dry
2015-01-15	2015	6:37	CUMMINGS AVE btwn SNOW ST & BURLEIGH PRIV	07 - Fog, mist, smoke, dust	07 - Dark	10 - No control	03 - P.D. only	02 - Angle	05 - Packed snow
2017-10-24	2017	0:00	CUMMINGS AVE btwn THIBAULT ST & CARON ST	02 - Rain	00 - Unknown	10 - No control	03 - P.D. only	07 - SMV other	02 - Wet
2015-10-12	2015	13:40	DONALD ST btwn BELGATE WAY & CUMMINGS AVE	01 - Clear	01 - Daylight	10 - No control	03 - P.D. only	05 - Turning movement	01 - Dry
2016-09-26	2016	0:00	DONALD ST btwn BELGATE WAY & CUMMINGS AVE	01 - Clear	00 - Unknown	10 - No control	03 - P.D. only	6 - SMV unattended vehicl	01 - Dry

Appendix D

MMLOS Analysis

Multi-Modal Level of Service - Intersections Form

Consultant Scenario Comments	CGH Transportation Inc. 1068-1090 Cummings Avenue	Project Date	2019-24 27-Jun-19

INTERSECTIONS		Donald & Cummings			
Crossing Side		NORTH	SOUTH	EAST	WEST
Pedestrian	Lanes	0 - 2	3		3
	Median	No Median - 2.4 m	No Median - 2.4 m		No Median - 2.4 m
	Conflicting Left Turns	Permissive	No left turn / Prohib.		Permissive
	Conflicting Right Turns	No right turn	Permissive or yield control		Permissive or yield control
	Right Turns on Red (RToR) ?	RTOR prohibited	RTOR allowed		RTOR allowed
	Ped Signal Leading Interval?	No	No		No
	Right Turn Channel	No Channel	No Channel		No Channel
	Corner Radius	10-15m	0-3m		10-15m
	Crosswalk Type	Std transverse markings	Std transverse markings		Std transverse markings
	PETSI Score	93	81	70	
	Ped. Exposure to Traffic LoS	A	B	-	C
	Cycle Length				
	Effective Walk Time				
	Average Pedestrian Delay				
Bicycle	Pedestrian Delay LoS	-	-	-	-
	Level of Service	A	B	-	C
		C			
	Approach From	NORTH	SOUTH	EAST	WEST
	Bicycle Lane Arrangement on Approach	Mixed Traffic	Mixed Traffic		Mixed Traffic
Transit	Right Turn Lane Configuration	≤ 50 m	≤ 50 m		≤ 50 m
	Right Turning Speed	≤ 25 km/h	≤ 25 km/h		≤ 25 km/h
	Cyclist relative to RT motorists	D	D	-	D
	Separated or Mixed Traffic	Mixed Traffic	Mixed Traffic	-	Mixed Traffic
	Left Turn Approach	No lane crossed			No lane crossed
	Operating Speed	> 50 to < 60 km/h			> 50 to < 60 km/h
	Left Turning Cyclist	C	-	-	C
	Level of Service	D	-	-	D
		D			
	Average Signal Delay				
Truck	Level of Service	-	-	-	-
		-	-	-	-
	Effective Corner Radius	10 - 15 m			10 - 15 m
	Number of Receiving Lanes on Departure from Intersection	1			1
Auto	Level of Service	E	-	-	E
		E			
	Volume to Capacity Ratio				
Level of Service		-			

Multi-Modal Level of Service - Segments Form

Consultant Scenario Comments	CGH Transportation Inc. 1068-1090 Cummings Avenue	Project Date	2019-24 27-Jun-19

SEGMENTS		Street A	Cummings	Caron	Section
			1	2	3
Pedestrian	Sidewalk Width	-	1.8 m	1.5 m	
	Boulevard Width		< 0.5 m	< 0.5 m	
	Avg Daily Curb Lane Traffic Volume		> 3000	≤ 3000	
	Operating Speed		> 50 to 60 km/h	> 30 to 50 km/h	
	On-Street Parking		no	yes	
	Exposure to Traffic PLoS		F	E	-
	Effective Sidewalk Width				
	Pedestrian Volume				
	Crowding PLoS		-	-	-
	Level of Service		-	-	-
Bicycle	Type of Cycling Facility	D	Mixed Traffic	Mixed Traffic	
	Number of Travel Lanes		≤ 2 (no centreline)	≤ 2 (no centreline)	
	Operating Speed		≥ 50 to 60 km/h	>40 to <50 km/h	
	# of Lanes & Operating Speed LoS		D	B	-
	Bike Lane (+ Parking Lane) Width				
	Bike Lane Width LoS		-	-	-
	Bike Lane Blockages		-	-	-
	Blockage LoS				
	Median Refuge Width (no median = < 1.8 m)		< 1.8 m refuge	< 1.8 m refuge	
	No. of Lanes at Unsignalized Crossing		≤ 3 lanes	≤ 3 lanes	
	Sidestreet Operating Speed		>40 to 50 km/h	≤ 40 km/h	
	Unsignalized Crossing - Lowest LoS		B	A	-
Transit	Level of Service		D	B	-
	Facility Type	D	Mixed Traffic		
	Friction or Ratio Transit:Posted Speed		Vt/Vp ≥ 0.8		
	Level of Service		D	-	-
Truck	Truck Lane Width	C	> 3.7 m	≤ 3.5 m	
	Travel Lanes per Direction		1	1	
	Level of Service		B	C	-
Auto	Level of Service	Not Applicable			

Appendix E

Synchro Intersection Worksheets – 2022 Future Total Conditions

HCM 2010 TWSC
7: Cummings & Access 1

07-05-2019

HCM 2010 TWSC
7: Cummings & Access 1

07-05-2019

Intersection	Int Delay, s/veh	0.7	Movement	EBL	EVR	NBL	NBT	SBT	SBR
Lane Configurations	5	16	18	165	308	5	4	14	14
Future Vol/veh/h	5	16	18	165	308	5	7	20	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
RT Channelized	-	None	-	None	-	None	-	None	-
Storage Length	0	-	-	-	-	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-	0	0	-
Grade, %	0	-	-	0	0	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	16	18	165	308	5	7	20	17
Major/Minor	Minor2	Major1	Major2	Major1	Major2	Major1	Major2	Major1	Major2
Conflicting Flow All	512	311	313	0	-	0	-	0	-
Stage 1	311	-	-	-	-	-	-	-	-
Stage 2	201	-	-	-	-	-	-	-	-
Critical Hwy	6,42	6,22	4,12	-	-	6,42	6,22	4,12	-
Critical Hwy Sig 1	5,42	-	-	-	-	5,42	-	-	-
Critical Hwy Sig 2	5,42	-	-	-	-	5,42	-	-	-
Follow-up Hwy	3,518	3,318	2,218	-	-	3,518	3,318	2,218	-
Pot Cap-1 Maneuver	522	729	1247	-	-	397	698	1212	-
Stage 1	743	-	-	-	-	717	-	-	-
Stage 2	833	-	-	-	-	699	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	514	729	1247	-	-	390	698	1212	-
Mov Cap-2 Maneuver	514	-	-	-	-	390	-	-	-
Stage 1	731	-	-	-	-	705	-	-	-
Stage 2	833	-	-	-	-	699	-	-	-
Approach	EB	NB	SB	EB	NB	SB	EB	NB	SB
HCM Control Delay, s	106	0.8	0	B	B	B	11.5	0.4	0
HCM LOS									

Minor Lane/Major Mvmt	NBL	NBT	EBL	NBL	NBT	EBL	NBL	NBT	SBR
Capacity (veh/h)	1247	-	663	-	-	1212	-	579	-
HCM Lane V/C Ratio	0.014	-	0.032	-	-	0.014	-	0.047	-
HCM Control Delay(s)	7.9	0	10.6	-	-	8	0	11.5	-
HCM Lane LOS	A	A	B	-	-	A	A	B	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-	0	-	0.1	-

1068-1090 Cummings Avenue %dplandid% 2022 Future Total

Synchro 10 Light Report
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1068-1090 Cummings Avenue PM Peak Hour 2022 Future Total

Synchro 10 Light Report
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Appendix F

Synchro Intersection Worksheets – 2027 Future Total Conditions

HCM 2010 TWSC
7: Cummings & Access 1

07-05-2019

HCM 2010 TWSC
7: Cummings & Access 1

07-05-2019

Intersection	Int Delay, s/veh	0.7	Movement	EBL	EBC	NBL	NBT	SBT	SBR
Lane Configurations	5	16	18	170	321	5	4	4	4
Future Vol, veh/h	5	16	18	170	321	5	-	-	-
Conflicting Peds, #/hr	0	0	0	0	0	0	-	-	-
RT Channelized	Stop	Free	Free	Free	-	-	-	-	-
Storage Length	0	-	-	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-	-	-	-
Grade, %	0	-	-	0	0	-	-	-	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	16	18	170	321	5	-	-	-
Major/Minor	Minor2	Major1	Major2	Major1	Major2	Major1	Major2	Major1	Major2
Conflicting Flow All	530	324	326	0	-	0	-	0	-
Stage 1	324	-	-	-	-	-	-	-	-
Stage 2	206	-	-	-	-	-	-	-	-
Critical Hwy	6,42	6,22	4,12	-	-	-	-	-	-
Critical Hwy Sig 1	5,42	-	-	-	-	-	-	-	-
Critical Hwy Sig 2	5,42	-	-	-	-	-	-	-	-
Follow-up Hwy	3,518	3,318	2,218	-	-	-	-	-	-
Pot Cap-1 Maneuver	510	777	1,234	-	-	-	-	-	-
Stage 1	733	-	-	-	-	-	-	-	-
Stage 2	829	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	502	717	1,234	-	-	-	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-	-	-	-
Stage 1	721	-	-	-	-	-	-	-	-
Stage 2	829	-	-	-	-	-	-	-	-
Approach	EB	NB	SB	EB	NB	SB	EB	NB	SB
HCM Control Delay, s	10.7	0.8	0	11.7	0.4	0	B	-	-
HCM LOS	B	-	-	-	-	-	-	-	-
Minor Lane/Major Mvmt	NBL	NBT	EBL	NBL	NBT	EBL	NBL	NBT	SBR
Capacity (veh/h)	1234	-	661	-	-	-	1199	-	566
HCM Lane V/C Ratio	0.015	-	0.032	-	-	-	0.014	-	0.048
HCM Control Delay (s)	8	0	10.7	-	-	-	8	0	11.7
HCM Lane LOS	A	A	B	-	-	-	A	A	B
HCM 95th %tile Q(veh)	0	-	0.1	-	-	-	0	-	0.1

1068-1090 Cummings Avenue %planid% 2027 Future Total

Synchro 10 Light Report
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1068-1090 Cummings Avenue PM Peak Hour 2027 Future Total

Synchro 10 Light Report
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Appendix G

TDM Checklist

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
BETTER ★	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 ★** Designate an internal coordinator, or contract with an external coordinator

1.2 Travel surveys

- BETTER** 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** Display local area maps with walking/cycling access routes and key destinations at major entrances (*multi-family, condominium*)

2.2 Bicycle skills training

- BETTER** Offer on-site cycling courses for residents, or subsidize off-site courses

BASIC ★	Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit <input type="checkbox"/>
BETTER	Offer at least one year of free monthly transit passes on residence purchase/move-in <input type="checkbox"/>

3. TRANSIT

3.1 Transit information

- BASIC** Display relevant transit schedules and route maps at entrances (*multi-family, condominium*)

- BETTER** Provide real-time arrival information display at entrances (*multi-family, condominium*)

3.2 Transit fare incentives

- BASIC ★** Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit

- BETTER** Offer at least one year of free monthly transit passes on residence purchase/move-in

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

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	<input checked="" type="checkbox"/>
6.2 Personalized trip planning		
BETTER *	6.2.1 Offer personalized trip planning to new residents	<input checked="" type="checkbox"/>

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

Legend		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed	<input type="checkbox"/>
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users	<input checked="" type="checkbox"/>
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance	<input checked="" type="checkbox"/>
TDM-supportive design & infrastructure measures: Residential developments		
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	<input type="checkbox"/>
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/>
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input checked="" type="checkbox"/>
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 <i>Official Plan policy 4.3.3</i>)	<input type="checkbox"/>
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 <i>Official Plan policy 4.3.12</i>)	<input checked="" type="checkbox"/>

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 <i>Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
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 <i>Official Plan policy 4.3.10</i>)	<input checked="" type="checkbox"/>
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 <i>Official Plan policy 4.3.11</i>)	<input checked="" type="checkbox"/>
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
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	<input type="checkbox"/>
1.3 Amenities for walking & cycling		<input checked="" type="checkbox"/>
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/>
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)	<input type="checkbox"/>

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 <i>Official Plan policy 4.3.6</i>)	<input type="checkbox"/>
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 <i>Zoning By-law Section 11</i>)	<input type="checkbox"/>
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 <i>Zoning By-law Section 11</i>)	<input type="checkbox"/>
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	<input checked="" type="checkbox"/>
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 <i>Zoning By-law Section 11</i>)	<input type="checkbox"/>
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	<input type="checkbox"/>
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)	<input type="checkbox"/>
3. TRANSIT		
3.1 Customer amenities		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
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	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>

TDM-supportive design & infrastructure measures:		Check if completed & add descriptions, explanations or plan/drawing references
Residential developments		
4. RIDESHARING		
4.1 Pick-up & drop-off facilities		
BASIC	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	<input type="checkbox"/>
5. CARSHARING & BIKESSHARING		
5.1 Carshare parking spaces		
BETTER	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses (see Zoning By-law Section 94)	<input type="checkbox"/>
BETTER	Provide a designated bike/share station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>
6. PARKING		
6.1 Number of parking spaces		
REQUIRED	Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/>
BASIC	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	<input type="checkbox"/>
BASIC	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)	<input type="checkbox"/>
BETTER	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)	<input type="checkbox"/>
6.2 Separate long-term & short-term parking areas		
BETTER	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)	<input checked="" type="checkbox"/>