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36 Years

Proposed Mixed Use Development

437 Donald B. Munro Drive, Ottawa

Transportation Impact Assessment

Engineering excellence. Planning precision. Inspired landscapes.

Proposed Mixed Use Development
437 Donald B. Munro Drive

Transportation Impact Assessment

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

May 2019

Novatech File: 119023
Ref: R-2019-091

NOVATECH
Engineers, Planners & Landscape Architects

May 31, 2019

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

Attention: **Ms. Amira Shehata**
Project Manager, Infrastructure Approvals

Dear Ms. Shehata:

Reference: **437 Donald B. Munro Drive**
Transportation Impact Assessment
Novatech File No. 119023

We are pleased to submit the following Transportation Impact Assessment (TIA) in support of a Site Plan Control application for the property located at 437 Donald B. Munro Drive, 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 Jennifer Luong, or the undersigned.

Yours truly,

NOVATECH

Joshua Audia, B.Sc.
E.I.T. | Transportation/Traffic

Suite 200, 240 Michael Cowpland Drive, Ottawa ON K2M 1P6 Tel: 613.254.9643 Fax: 613.254.5867 www.novatech-eng.com

TIA Plan Reports

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

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

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

CERTIFICATION

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

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

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Planning and Growth Management
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Dated at Ottawa (City) this 31 day of May, 2019.

Name: Jennifer Luong, P.Eng.
(Please Print)

Professional Title: Senior Project Manager, Transportation/Traffic

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

Office Contact Information (Please Print)	
Address:	240 Michael Cowpland Drive, Suite 200
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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) has been prepared in support of a Site Plan Control application for the property located at 437 Donald B. Munro Drive. The site is currently vacant.

The proposed development is designated as Village Core in the Carp Community Design Plan, and designated as Village in Schedule A of the City of Ottawa's Official Plan. The implemented zoning for the property is 'Village Mixed-Use' (VM), and the property is subject to the Village Residential – Enterprise Overlay.

The proposed development will feature two office spaces on the ground floor with a combined gross floor area of approximately 4,200 ft^2, and two residential units on the second floor. A total of 13 vehicle parking spaces and six bicycle parking spaces will be provided. One full-movement access to Donald B. Munro Drive is proposed at the western limit of the subject site. This access will replace an existing access at the east limit of the site.

The study area for this report includes the roadways Carp Road and Donald B. Munro Drive, and includes the unsignalized intersection of Carp Road/Donald B. Munro Drive.

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 in one phase, opening in 2020. Therefore, this TIA performs analysis for the weekday AM and PM peak periods in the buildout year 2020, and the horizon year 2025.

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

Forecasting

- The proposed development is projected to generate approximately 11 person trips during the AM peak hour and 15 person trips during the PM peak hour, including 8 vehicle trips during the AM peak hour and 11 vehicle trips during the PM peak hour.

Development Design and Parking

- The sidewalk will continue to be depressed and continuous across the proposed access, in accordance with City standards. Walkway connections from the existing sidewalk to the front and rear entrances will also be provided.

- The front entrance of the proposed development is within approximately 100m walking distance of bus stops served by OC Transpo Route 303, a shopping route for Dunrobin and Carp which only runs once per direction on Wednesdays.

- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

- On-site garbage collection will be accommodated at an enclosure west of the parking area, approximately 40m south of the street line. The fire route for this development is curbside along Donald B. Munro Drive.

- Thirteen (13) vehicle parking spaces and six bicycle parking spaces are proposed, meeting the minimum requirements outlined in the ZBL. Three of the 13 vehicle parking spaces are accessible spaces, meeting the minimum requirements outlined in the City's *Accessibility Design Standards*.

Boundary Streets

- Donald B. Munro Drive surpasses the target PLOS C on the south side (achieving a PLOS B), achieves the target BLOS D, and surpasses the target Auto LOS D (achieving a PLOS A).

- The north side of Donald B. Munro Drive can improve from a PLOS E to a PLOS B by widening the sidewalk to 1.8m. This improvement is identified for the City's consideration.

Access Design

- Section 25 (a) of the *Private Approach By-Law* identifies that, for properties with 20m to 34m of frontage, a maximum of one two-way approach or two one-way private approaches may be provided. As one two-way private approach is proposed, this meets the requirement.

- Section 25 (c) of the *Private Approach By-Law* identifies a maximum width requirement of 9m for two-way accesses, and Section 107 (1)(a) of the *Zoning By-Law* identifies a minimum width requirement of 3.0m for a single traffic lane. As the proposed access is approximately 3.7m in width at the ROW limit, both requirements are met. The single lane driveway will accommodate two-way traffic. No safety or operational concerns are anticipated due to the low volumes of vehicular traffic.

- Section 25 (o) of the *Private Approach By-Law* identifies a minimum separation requirement of 3m between an access and the neighbouring property line. Section 25 (o) also states that a relaxation of the minimum separation distance from 3m to 0.3m is permissible by the General Manager, provided there are no safety issues with doing so. A relaxation of the minimum separation distance from 3m to 0.3m is requested, as no safety issues are anticipated.

- Table 8.9.3 of the TAC *Geometric Design Guide* identifies a minimum clear throat length of 8m on collector roadways, for general office buildings of less than 5,000 m^2. The proposed development provides approximately 40m of clear throat length between the street line and the parking area, thereby meeting this requirement.

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

1.0 INTRODUCTION

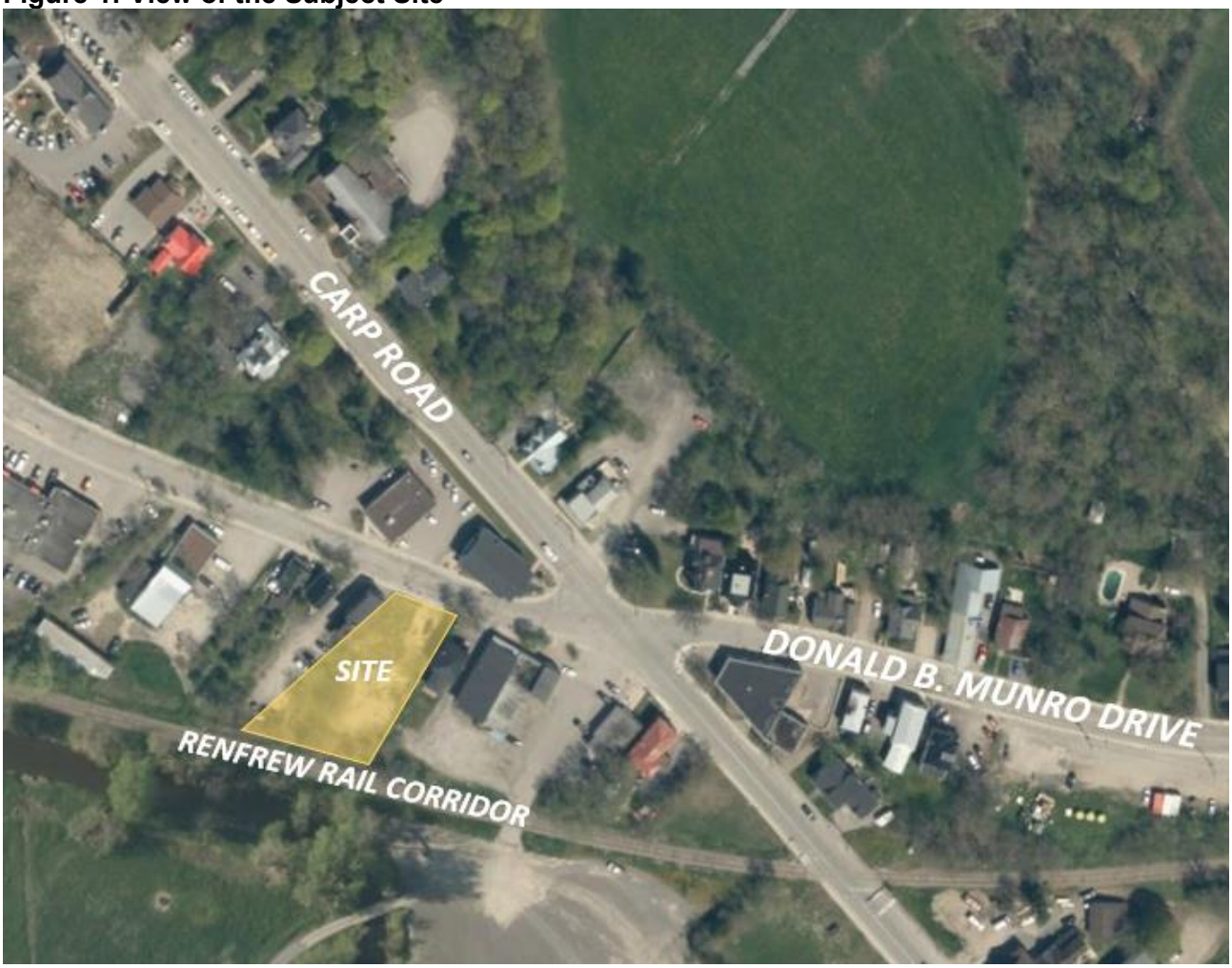
This Transportation Impact Assessment has been prepared in support of a Site Plan Control application for the property located at 437 Donald B. Munro Drive. The site is currently vacant.

The subject site is surrounded by the following:

- Commercial uses and Donald B. Munro Drive to the north;
- Residential and commercial uses, and Carp Road to the east;
- The Renfrew Rail Corridor to the south;
- Residential and commercial uses to the west.

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

Figure 1: View of the Subject Site



2.0 PROPOSED DEVELOPMENT

The proposed development is designated as Village Core in the Carp Community Design Plan, and designated as Village in Schedule A of the City of Ottawa's Official Plan. The implemented zoning for the property is 'Village Mixed-Use' (VM), and the property is subject to the Village Residential – Enterprise Overlay.

The proposed development will feature two office spaces on the ground floor with a combined gross floor area of approximately 4,200 ft^2, and two residential units on the second floor. A total of 13 vehicle parking spaces and six bicycle parking spaces will be provided. One full-movement access to Donald B. Munro Drive is proposed at the western limit of the subject site, and will replace the existing access at the east limit of the site.

Further revisions of the site plan are anticipated as the conceptual site plan shows 15 parking spaces, however the two spaces closest to the rail corridor are to be removed from the proposal. A copy of the conceptual site plan is included in **Appendix A**.

A site plan context figure, which includes details of the boundary streets such as pavement markings, sidewalks, accesses, and right-of-way locations, is included in **Figure 2**. The site plan context figure additionally reflects the removal of the two parking spaces closest to the rail corridor.

3.0 SCREENING

3.1 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 development is not anticipated to generate over 60 person trips/peak hour; further assessment is not required based on this trigger.

- Location Triggers – The development is located within a Design Priority Area; further assessment is required based on this trigger.

- Safety Triggers – No safety triggers in the TIA Screening Form were met; further assessment is not required based on this trigger.

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

CARP ROAD

DONALD B. MUNRO DRIVE

RELOCATED STREET LIGHT

DONALD B. MUNRO DRIVE

CARP ROAD

PROPOSED 2 STOREY MIXED USE BUILDING

GARBAGE ENCLOSURE

ARNPRIOR-NEPEAN RAILWAY CO.

N

M:\2019\119023\CAD\Design\Figures\119023-FIG2-SITE CONTEXT.dwg, 11x17 landscape, May 31, 2019 - 9:03am, jaudia

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CITY OF OTTAWA
437 DONALD B. MUNRO

SITE PLAN CONTEXT

SCALE 1 : 500 (0, 5m, 10m, 20m)

DATE MAY 2019 | JOB 119023 | FIGURE FIG-2

SHT11X17 (PMG - 279mmX432mm

4.0 SCOPING

4.1 Existing Conditions

4.1.1 Roadways

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

Carp Road is an arterial roadway that generally runs on a north-south alignment between Galetta Side Road and Stittsville Main Street. Within the study area, Carp Road has a two-lane undivided urban cross-section, sidewalks on both sides of the roadway, and a posted speed of 50 km/h. Carp Road is classified as a truck route, allowing full loads. Approximately 70m north of Donald B. Munro Drive, street parking is permitted on both sides of Carp Road.

Donald B. Munro Drive is a collector roadway that generally runs on an east-west alignment within the study area, running between Kinburn Side Road and March Road. East of March Road, the roadway continues as Old Carp Road before terminating at Halton Terrace. Within the study area, Donald B. Munro Drive has a two-lane undivided urban cross-section, sidewalks on both sides of the roadway, and a posted speed limit of 40 km/h. Donald B. Munro Drive is not classified as a truck route. Street parking is not permitted. The right-of-way (ROW) at the subject site is approximately 12m. The ROW protection identified in the City of Ottawa's Official Plan is 16m, however the centreline of the paved surface is 8m from the ROW on the south side. No widening appears to be required.

4.1.2 Intersections

Carp Road/Donald B. Munro Drive

- Unsignalized four-legged intersection
- All-way stop controlled
- Single lane approaches on all legs
- North/South Approaches: Carp Road
- East/West Approaches: Donald B. Munro Drive

4.1.3 Driveways

The City of Ottawa's 2017 TIA Guidelines requires a review of driveways on the boundary streets within 200m of any proposed access. On the north side of Donald B. Munro Drive, six other driveways to residential or commercial properties are near the proposed access. On the south side of Donald

B. Munro Drive, ten other driveways to residential or commercial properties are near the proposed access.

4.1.4 Pedestrian and Cycling Facilities

Concrete sidewalks are provided on both sides of Donald B. Munro Drive and on the west side of Carp Road. The sidewalks on the east side of Carp Road are concrete within proximity of the intersection with Donald B. Munro Drive, before transitioning to asphalt sidewalks.

In the City of Ottawa's primary cycling network, Carp Road is classified as a Spine Route south of Donald B. Munro Drive, and Donald B. Munro Drive is classified as a Local Route east of Carp Road. To the north and west of the Carp Road/Donald B. Munro Drive intersection, the study area roadways have no cycling route designation. The Renfrew Rail Corridor south of the subject site is classified as a Major Pathway.

4.1.5 Area Traffic Management

There are no Area Traffic Management (ATM) studies within the study area that have been completed, or are currently in progress.

4.1.6 Transit

The nearest bus stops to the subject site are as follows:

<u>Carp Road/Donald B. Munro Drive</u>

- Stop #6982 – for route 303
  (located at the northwest corner)
- Stop #6983 – for route 303
  (located at the northeast corner)

Locations of these bus stops are shown in **Figure 3**.

OC Transpo Routes 301 to 305 are shopping routes for residents of rural communities, with each route operating to different communities on a different weekday. Route 303 connects to Dunrobin and Carp on Wednesdays, departing to Carlingwood Shopping Centre at 9:05am and arriving from Carlingwood Shopping Centre at 3:25pm.

OC Transpo maps for the route outlined above is included in **Appendix C**.

4.1.7 Existing Traffic Volumes

A weekday traffic count completed by the City of Ottawa has been used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersection. The traffic count was completed on Tuesday, April 2, 2019.

The average annual daily traffic (AADT) of Donald B. Munro Drive is approximately 2,100 vehicles/ day. Traffic count data is included in **Appendix D**. Traffic volumes within the study area are shown in **Figure 4**.

Figure 3: OC Transpo Bus Stop Locations

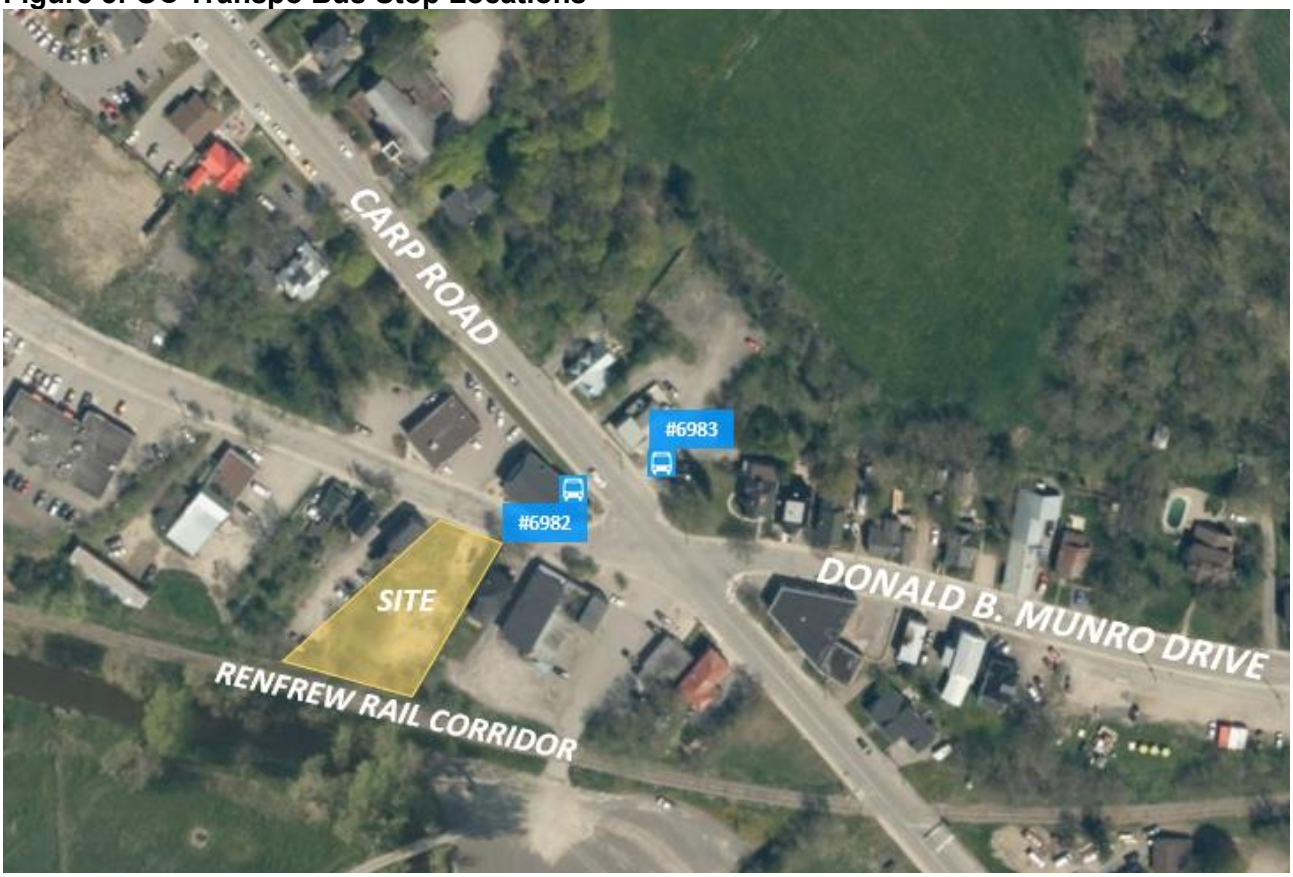
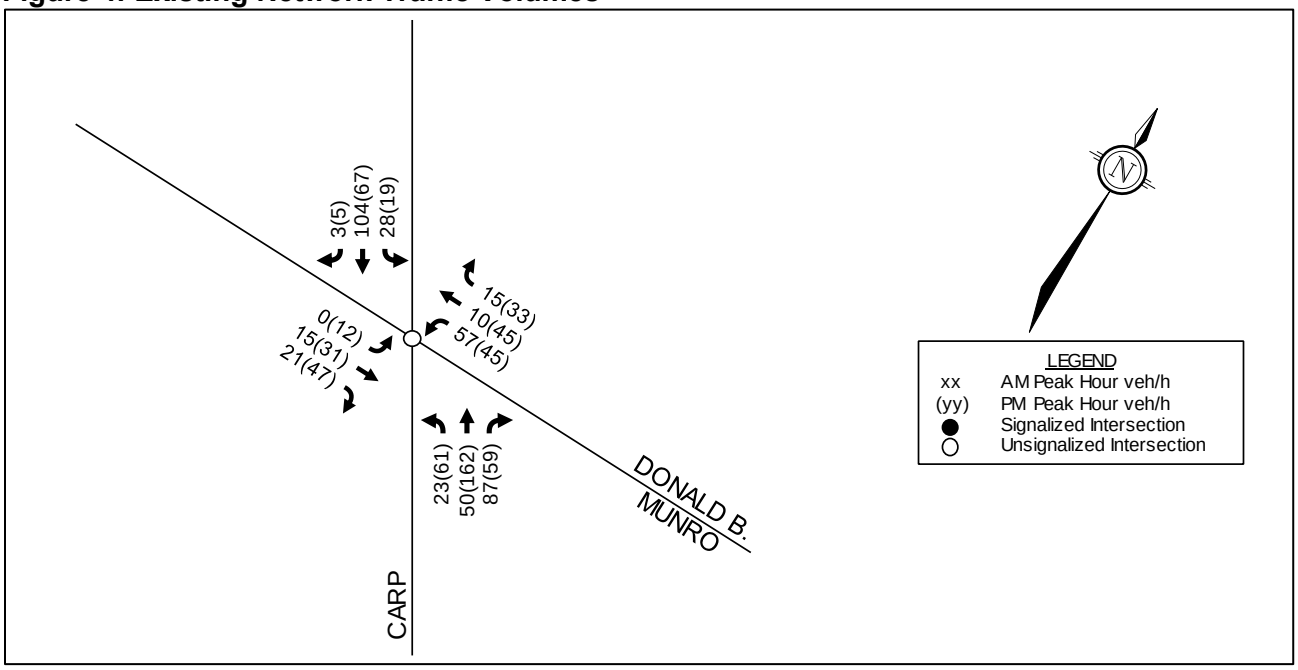


Figure 4: Existing Network Traffic Volumes



4.1.8 Collision Records

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

The collision data has been evaluated to determine if there are any identifiable collision patterns. A total of eight collisions at Carp Road/Donald B. Munro Drive were reported from January 1, 2013 to December 31, 2017. Of the eight collisions, there were two rear-end impacts, two turning movement impacts, and four angle impacts. Three of the eight collisions caused injuries, but none caused fatalities. One collision occurred in poor driving conditions.

4.2 Planned Conditions

The City of Ottawa's 2013 Transportation Master Plan (TMP) does not identify any upcoming projects within the study area in its Affordable Rapid Transit and Transit Priority (RTTP) or Affordable Road Networks. The City's 2013 Pedestrian and Cycling Plans do not identify any projects within the study area. There are no developments under construction, approved, or in the approval process within the study area.

4.3 Study Area and Time Periods

The study area for this report includes the roadways Carp Road and Donald B. Munro Drive, and includes the unsignalized intersection of Carp Road/Donald B. Munro Drive.

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 in one phase, opening in 2020. Therefore, this TIA performs analysis for the weekday AM and PM peak periods in the buildout year 2020, and the horizon year 2025.

4.4 Exemptions Review

This module reviews possible exemptions from the final Transportation Impact Assessment, as outlined in the TIA guidelines. As described in Section 3.0, the trip generation trigger was not met. Therefore, the Network Impact Component (Modules 4.5 to 4.9) of the TIA analysis is exempt from further review.

The applicable Design Review Component exemptions for this site are shown in **Table 1**.

Table 1: TIA Exemptions

Module	Element	Exemption Criteria	Exemption Status
Design Review Component			
4.1 Development Design	*4.1.2* Circulation and Access	• Only required for site plans	Not Exempt
	4.1.3 New Street Networks	• Only required for plans of subdivision	Exempt
4.2 Parking	*4.2.1* Parking Supply	• Only required for site plans	Not Exempt
	4.2.2 Spillover Parking	• Only required for site plans where parking supply is 15% below unconstrained demand	Exempt

Based on the foregoing, the following modules are included in the TIA report:

- Module 4.1: Development Design
- Module 4.2: Parking
- Module 4.3: Boundary Streets
- Module 4.4: Access Design

5.0 FORECASTING

The proposed development includes 4,200 ft^2 of office space on the ground floor, with two residential dwellings on the second floor. Trips generated by the proposed land uses have been estimated using the *ITE Trip Generation Manual, 10th Edition*. Residential trips have been estimated based on the Multifamily Housing, Low-Rise data (land use 220), and office trips have been estimated based on the Small Office Building data (land use 712). The estimated number of trips generated by the proposed development is shown in **Table 2**.

Table 2: Person Trip Generation

Land Use	ITE Code	Units/GFA	AM Peak (PPH[1])			PM Peak (PPH)		
			IN	OUT	TOT	IN	OUT	TOT
Multifamily Housing (Low-Rise)	220	2 units	0	1	1	1	1	2
Small Office Building	712	4,200 ft^2	8	2	10	4	9	13
		Total	**8**	**3**	**11**	**5**	**10**	**15**

1. PPH = Person Trips Per Hour – Calculated using an ITE Trip to Person Trip Factor of 1.28, consistent with the 2017 TIA Guidelines

From the previous table, the proposed development is projected to generate 11 person trips during the AM peak hour and 15 person trips during the PM peak hour.

The modal shares for the proposed development are anticipated to be generally consistent with the modal shares outlined in the *2011 TRANS O-D Survey Report*, specific to the Rural West region. The modal share values applied to the development-generated trips can be described as follows:

- Residential trips: From/within the Rural West district during the AM peak and to/within the Rural West district during the PM peak;
- Office trips: To/within the Rural West district during the AM peak and from/within the Rural West district during the PM peak.

As transit is only provided with a single shuttle on Wednesdays outside of the peak hours, a 0% transit share has been assigned. The residential and office modal shares are generally consistent with each other, and therefore the modal shares shown below have been applied to both uses. A full breakdown of the projected site-generated person trips by modal share is shown in **Table 3**.

Table 3: Person Trips by Modal Share

Travel Mode	Modal Share	AM Peak			PM Peak		
		IN	OUT	TOT	IN	OUT	TOT
Development Person Trips		*8*	*3*	*11*	*5*	*10*	*15*
Auto Driver	75%	6	2	8	4	7	11
Auto Passenger	20%	2	1	3	1	2	3
Transit	0%	0	0	0	0	0	0
Non-Auto	5%	0	0	0	0	1	1

From the previous table, the proposed development is projected to generate 8 vehicle trips during the AM peak hour and 11 vehicle trips during the PM peak hour.

As the development does not meet the 60 person trip trigger discussed in Section 3.0, trip distribution and trip assignment is not required. Further, as the number of trips generated by the proposed development are so low, future background growth has not been reviewed. As discussed in Section 4.2, there are no other development under construction, approved, or in the approval process within the study area.

6.0 ANALYSIS

6.1 Development Design

The sidewalk will continue to be depressed and continuous across the proposed access, in accordance with City standards. Walkway connections from the existing sidewalk to the front and rear entrances will also be provided.

A total of six exterior bicycle parking spaces will be provided by the proposed development, with three adjacent to the street at the northeast corner of the subject site, and three adjacent to the southwest corner of the building. Further review of the number of bicycle parking spaces is included in Section 6.2: Parking.

OC Transpo guidelines recommend that all developments within the vicinity of a bus route should have at least one stop within a walking distance of 400m, which translates to approximately a 5-minute walk. Stops #6982 and #6983 are both within approximately 100m walking distance from the front entrance of the proposed development. As discussed in Section 4.1.6, these stops serve OC Transpo Route 303, which is a shopping route for Dunrobin and Carp residents, and arrives at each stop once on Wednesdays.

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 F**. All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

On-site garbage collection will be accommodated at an enclosure west of the parking area, approximately 40m south of the Donald B. Munro Drive street line. The fire route for this development is curbside along Donald B. Munro Drive.

6.2 Parking

The subject site is located in Area D of Schedules 1 and 1A of the City of Ottawa's ZBL. Minimum vehicular and bicycle parking rates for the proposed development are identified in the ZBL, and summarized in **Table 4**.

Table 4: Minimum Parking Requirements Per Zoning By-Law

Land Use	Rate	Units/GFA	Required
Vehicle Parking			
Mixed-Use Dwelling	1 space per dwelling unit plus 0.2 visitor spaces per dwelling unit	2 units	3
Office	2.4 spaces per 100 m^2 GFA	390 m^2	10
		Required	**13**
		Provided	**13**
Bicycle Parking			
Mixed-Use Dwelling	0.5 spaces per dwelling unit	2 units	1
Office	1 space per 250 m^2 GFA	390 m^2	2
		Required	**3**
		Provided	**6**

Based on the previous table, both the vehicular and bicycle parking provided for the proposed development will meet the minimum requirements of the ZBL.

The City's *Accessibility Design Standards* outline minimum requirements for the number of accessible parking spaces that must be provided, based on the total number of parking spaces. For a total number of parking spaces between 13 and 25, one accessible parking space is required. Three of the 13 spaces are accessible spaces, thereby meeting the minimum requirements.

6.3 Boundary Streets

This section provides a review of the boundary street Donald B. Munro Drive, using complete streets principles. The *Multi-Modal Levels of Service* (MMLOS) Guidelines produced by IBI Group in October 2015 were used to evaluate the levels of service for each mode of transportation. Schedule A of the City of Ottawa's Official Plan designates the study area as Village. Therefore, the boundary streets review evaluates Donald B. Munro Drive using the MMLOS targets associated with the Village designation. As Donald B. Munro Drive is not a designated transit or truck route, only the pedestrian level of service, bicycle level of service, and vehicular level of service have been evaluated.

6.3.1 Pedestrian Level of Service (PLOS)

Exhibit 4 of the MMLOS Guidelines has been used to evaluate the segment PLOS of Donald B. Munro Drive. Exhibit 22 of the MMLOS Guidelines suggest a target PLOS C for all roadways within the Village area. The results of the segment PLOS analysis are summarized in **Table 5**.

Table 5: PLOS Segment Analysis

Sidewalk Width	Boulevard Width	Avg. Daily Curb Lane Traffic Volume	Presence of On-Street Parking	Operating Speed[1]	Segment PLOS
Donald B. Munro Drive (north side)					
1.5m	0m	≤ 3000 vpd	No	50 km/h	E
Donald B. Munro Drive (south side)					
1.8m	0.5m-2.0m	≤ 3000 vpd	No	50 km/h	B

1. Operating speed taken as posted speed limit plus 10 km/h

6.3.2 Bicycle Level of Service (BLOS)

Exhibit 11 of the MMLOS Guidelines has been used to evaluate the segment BLOS of Donald B. Munro Drive. Exhibit 22 of the MMLOS Guidelines suggest a target BLOS D for all roadways with no cycling route designation, within the Village area. The results of the segment BLOS analysis are summarized in **Table 6**.

Table 6: BLOS Segment Analysis

Road Class	Bike Route	Type of Bikeway	Travel Lanes	Centerline Type	Operating Speed	Segment BLOS
Donald B. Munro Drive (Carp Road to Falldown Lane)						
Collector	No Class	Mixed Traffic	2	Line Markings	50 km/h	D

6.3.3 Vehicular Level of Service (Auto LOS)

Exhibit 22 of the MMLOS Guidelines suggests a target Auto LOS D for all roadways within the Village area. The typical lane capacity along the study area roadways are based on the City's guidelines for the TRANS Long-Range Transportation Model. The lane capacity along the boundary streets have been estimated based on road classification and general characteristics (i.e. suburban with limited access, urban with on-street parking, etc.). The results of the segment Auto LOS analysis are summarized in **Table 7**.

Table 7: Auto LOS Segment Analysis

Direction	Directional Capacity	Traffic Volumes		V/C Ratio and LOS			
		AM Peak	PM Peak	AM Peak		PM Peak	
				V/C	LOS	V/C	LOS
Donald B. Munro Drive (Carp Road to Falldown Lane)							
Eastbound	600 vph	36	90	0.06	A	0.15	A
Westbound	600 vph	36	111	0.06	A	0.19	A

6.3.4 Segment MMLOS Summary

The results of the segment MMLOS analysis for Donald B. Munro Drive can be summarized as follows. Donald B. Munro Drive surpasses the target PLOS C on the south side (achieving a PLOS B), achieves the target BLOS D, and surpasses the target Auto LOS D (achieving an Auto LOS A). The PLOS on the north side of Donald B. Munro Drive can be improved from a PLOS E to a PLOS B by widening the sidewalk to 1.8m. This improvement is identified for the City's consideration. As all other relevant levels of service have been met, no other recommendations have been made in improving the multi-modal levels of service on Donald B. Munro Drive.

6.4 Access Design

A review of the City's *Private Approach By-Law*, *Zoning By-Law*, and the Transportation Association of Canada's (TAC) *Geometric Design Guide for Canadian Roadways* has been conducted to evaluate the proposed access.

Section 25 (a) of the *Private Approach By-Law* identifies that, for properties with 20m to 34m of frontage, a maximum of one two-way private approach or two one-way private approaches may be provided. As one two-way private approach is proposed, this meets the requirement.

Section 25 (c) of the *Private Approach By-Law* identifies a maximum width requirement of 9m for two-way accesses, as measured at the street line. Section 107 (1)(a) of the *Zoning By-Law* identifies a minimum width requirement of 3.0m for a single traffic lane. As the proposed access is approximately 3.7m in width as measured at the ROW limit, both requirements are met. The single lane driveway will accommodate two-way traffic. No safety or operational concerns are anticipated due to the low volumes of vehicular traffic.

Section 25 (o) of the *Private Approach By-Law* identifies a minimum separation requirement of 3m between an access and the neighbouring property line, as measured at the street line. This section also states that a relaxation of the minimum separation distance from 3m to 0.3m is permissible by the General Manager, provided the proposed approach is a safe distance from the access serving the adjacent property, adequate sight lines are provided for vehicles exiting from the subject property, and no traffic hazards are created. As these safety issues are not anticipated with regards to the proposed access, a relaxation of the minimum separation distance from 3m to 0.3m is requested.

Table 8.9.3 of the TAC *Geometric Design Guide* identifies minimum clear throat length requirements for collector and arterial roadways, based on the land uses served by a proposed access. For general office buildings with floor areas less than 5,000 m^2 on collector roadways, a minimum clear throat length of 8m is required. The proposed development provides approximately 40m of clear throat length between the street line and the parking area, thereby meeting this requirement.

7.0 CONCLUSIONS AND RECOMMENDATIONS

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

Forecasting

- The proposed development is projected to generate approximately 11 person trips during the AM peak hour and 15 person trips during the PM peak hour, including 8 vehicle trips during the AM peak hour and 11 vehicle trips during the PM peak hour.

Development Design and Parking

- The sidewalk will continue to be depressed and continuous across the proposed access, in accordance with City standards. Walkway connections from the existing sidewalk to the front and rear entrances will also be provided.

- The front entrance of the proposed development is within approximately 100m walking distance of bus stops served by OC Transpo Route 303, a shopping route for Dunrobin and Carp which only runs once per direction on Wednesdays.

- All required TDM-supportive design and infrastructure measures in the TDM checklist are met.

- On-site garbage collection will be accommodated at an enclosure west of the parking area, approximately 40m south of the street line. The fire route for this development is curbside along Donald B. Munro Drive.

- Thirteen (13) vehicle parking spaces and six bicycle parking spaces are proposed, meeting the minimum requirements outlined in the ZBL. Three of the 13 vehicle parking spaces are accessible spaces, meeting the minimum requirements outlined in the City's *Accessibility Design Standards*.

Boundary Streets

- Donald B. Munro Drive surpasses the target PLOS C on the south side (achieving a PLOS B), achieves the target BLOS D, and surpasses the target Auto LOS D (achieving a PLOS A).

- The north side of Donald B. Munro Drive can improve from a PLOS E to a PLOS B by widening the sidewalk to 1.8m. This improvement is identified for the City's consideration.

Access Design

- Section 25 (a) of the *Private Approach By-Law* identifies that, for properties with 20m to 34m of frontage, a maximum of one two-way approach or two one-way private approaches may be provided. As one two-way private approach is proposed, this meets the requirement.

- Section 25 (c) of the *Private Approach By-Law* identifies a maximum width requirement of 9m for two-way accesses, and Section 107 (1)(a) of the *Zoning By-Law* identifies a minimum width requirement of 3.0m for a single traffic lane. As the proposed access is approximately 3.7m in width at the ROW limit, both requirements are met. The single lane driveway will accommodate two-way traffic. No safety or operational concerns are anticipated due to the low volumes of vehicular traffic.

- Section 25 (o) of the *Private Approach By-Law* identifies a minimum separation requirement of 3m between an access and the neighbouring property line. Section 25 (o) also states that a relaxation of the minimum separation distance from 3m to 0.3m is permissible by the General Manager, provided there are no safety issues with doing so. A relaxation of the minimum separation distance from 3m to 0.3m is requested, as no safety issues are anticipated.

- Table 8.9.3 of the TAC *Geometric Design Guide* identifies a minimum clear throat length of 8m on collector roadways, for general office buildings of less than 5,000 m^2. The proposed development provides approximately 40m of clear throat length between the street line and the parking area, thereby meeting this requirement.

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

NOVATECH

Prepared by:

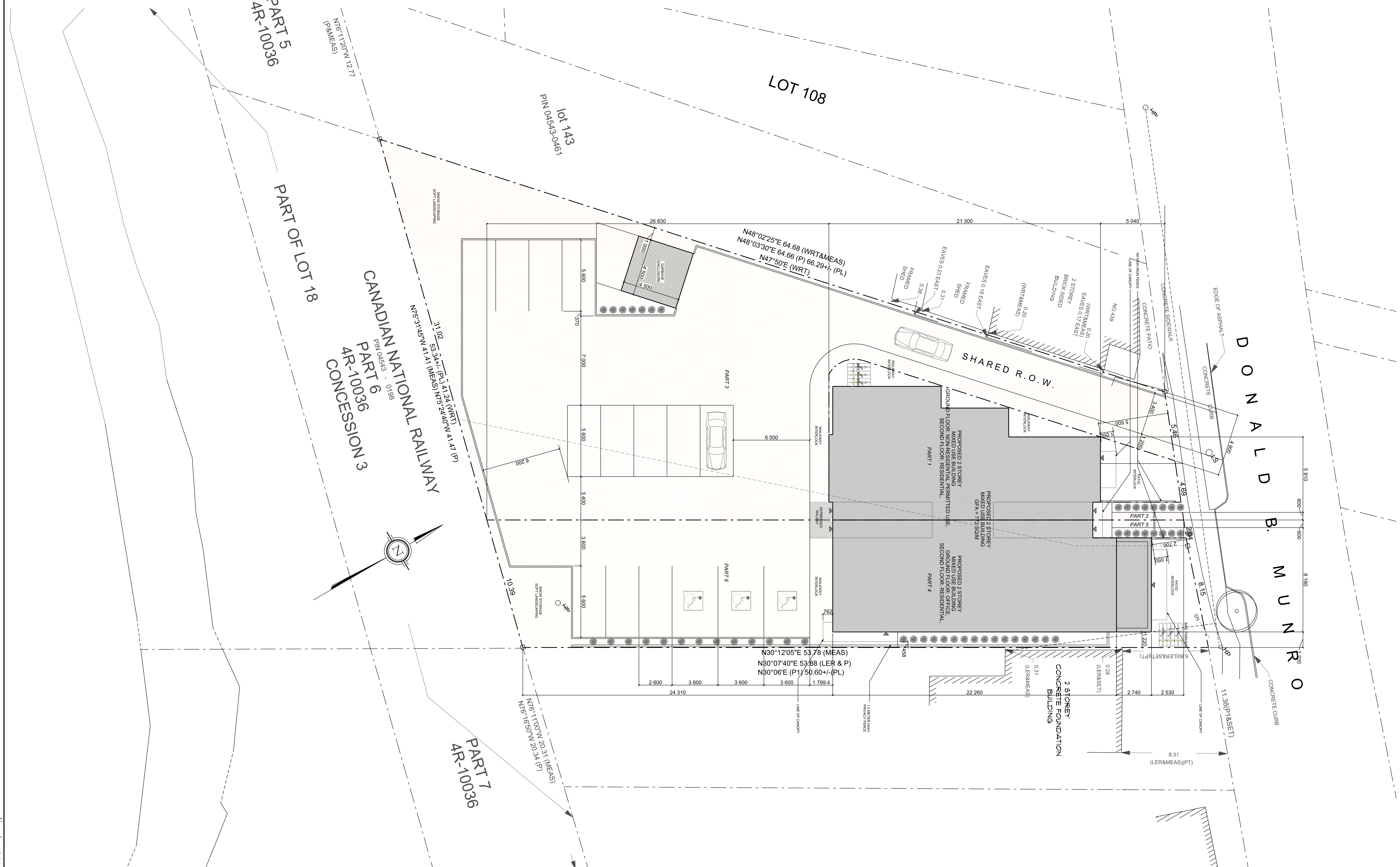
Joshua Audia, B.Sc.
E.I.T.,
Transportation/Traffic

Reviewed by:

Jennifer Luong, P.Eng.
Senior Project Manager,
Transportation/Traffic

APPENDIX A

Conceptual Site Plan



ardington+associatesdesigninc

GENERAL NOTES

THIS DRAWING IS NOT FOR CONSTRUCTION UNTIL A BUILDING PERMIT IS GRANTED

DRAWING NOTES

WEST PARCEL

	PART	AREA (SQ/M)	ROW / EASEMENT
	PART 1	234	
	PART 2	9.8	ROW FOR SHARED ACCESS
	PART 3	866	ROW FOR SHARED ACCESS + PARKING

EAST PARCEL

	PART	AREA (SQ/M)	ROW / EASEMENT
	PART 4	274.5	
	PART 5	10.1	ROW FOR SHARED ACCESS
	PART 6	257	ROW FOR SHARED ACCESS + PARKING

REVISIONS

NO.	DESCRIPTION	DATE
2	ISSUED FOR PLANNING REVIEW	2 JAN 2019
1	ISSUED FOR PLANNING REVIEW	17 DEC 2018

DEVELOPER / BUILDER

MAPLE LEAF CUSTOM HOMES

DESIGN FIRM

ARDINGTON AND ASSOCIATES DESIGN INC.
126 YORK STREET SUITE 502 | OTTAWA, ONTARIO
E: steve@ardington.ca | T: 613.882.3425 | BCIN 43329

DESIGNER

The undersigned has reviewed and takes responsibilty for design activities as described in Ontario Building Code 1.4.1.2 and has the qualifications and meets the requirements set out in the Ontario Building Code

Stephen Ardington, BCIN # 35954

PROJECT INFORMATION

437 DONALD B MUNRO
CARP ONTAROI

DRAWING INFORMATION

ARCHITECTURAL SITE PLAN
SCALE = 1:150

DRAWN BY	CHECKED BY	DRAWING NO.
S.A.	S.A.	A1

PROJECT NO.

APPENDIX B

TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	**437 Donald B. Munro Drive**
Description of Location	**The 0.17-hectare site is located on the south side of Donald B. Munro Drive, approximately 35m west of Carp Road**
Land Use Classification	**Mixed Use (ground floor office/second floor residential)**
Development Size (units)	**2 residential units**
Development Size (m^2)	**390 m^2 office (4,200 ft^2)**
Number of Accesses and Locations	**One access to Donald B. Munro Drive**
Phase of Development	**1**
Buildout Year	**2020**

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 limits 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

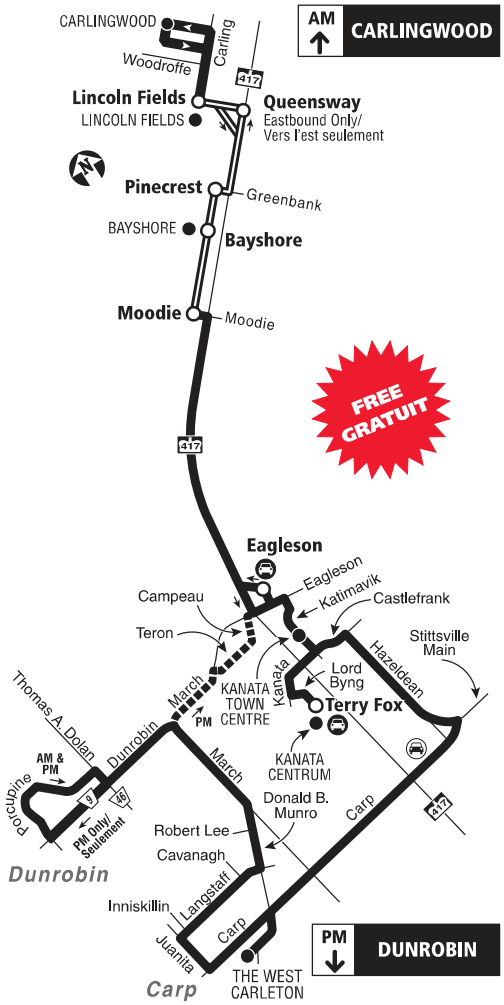
OC Transpo Route Maps

303 CARLINGWOOD / DUNROBIN, CARP

Local

Wednesday only / Mercredi seulement

Selected time periods
Périodes sélectionnées



Transitway & Station

PM Extension to Bayshore
Prolongement en PM vers Bayshore

Park & Ride / Parc-o-bus

2018.09

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 **613-741-4390**

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

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

Effective Septembre 2, 2018
En vigueur 2 septembre 2018

OC Transpo

INFO 613-741-4390
octranspo.com

APPENDIX D

Traffic Count Data

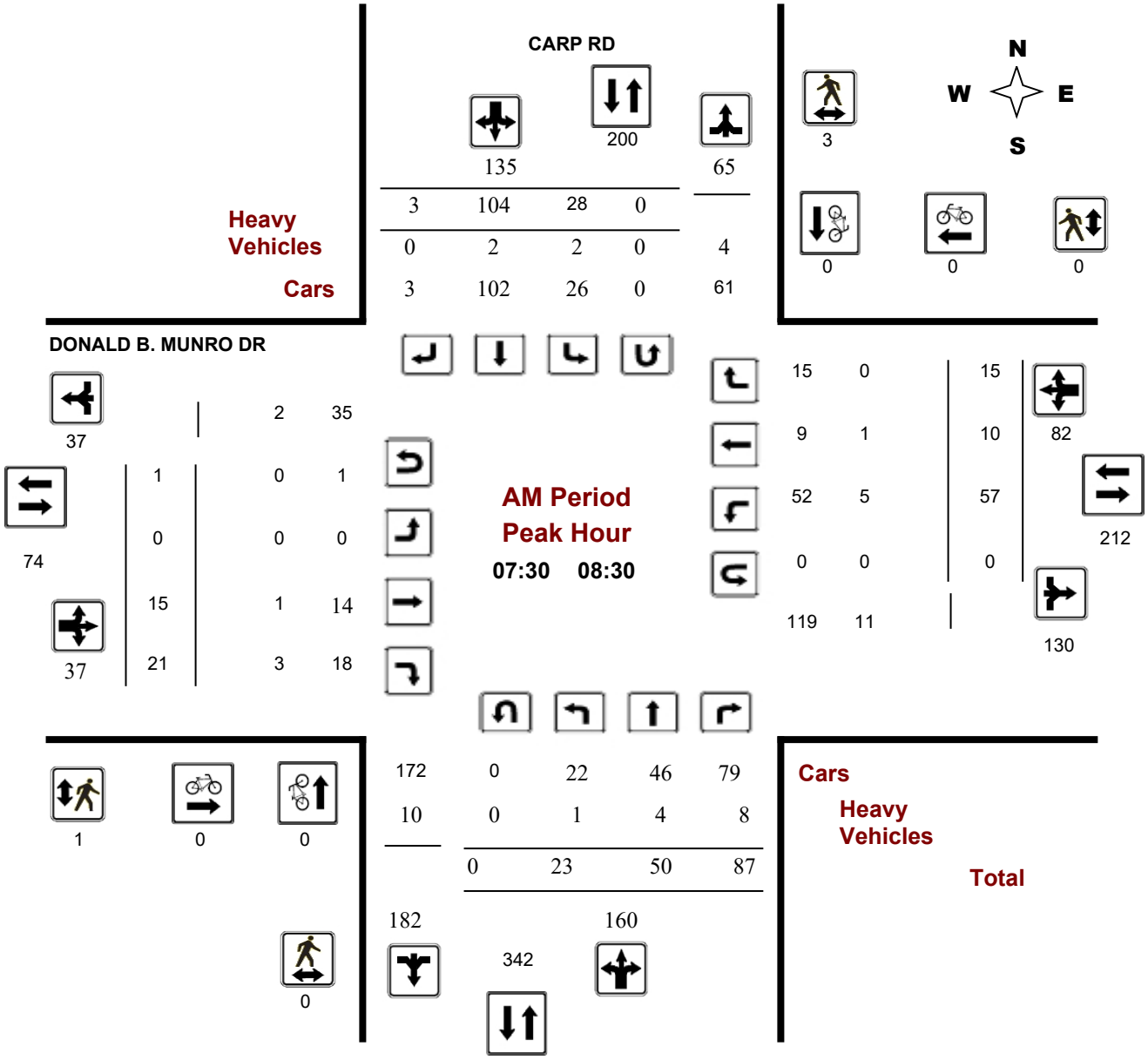
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ DONALD B. MUNRO DR

Survey Date: Tuesday, April 02, 2019 **WO No:** 38471

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



Comments

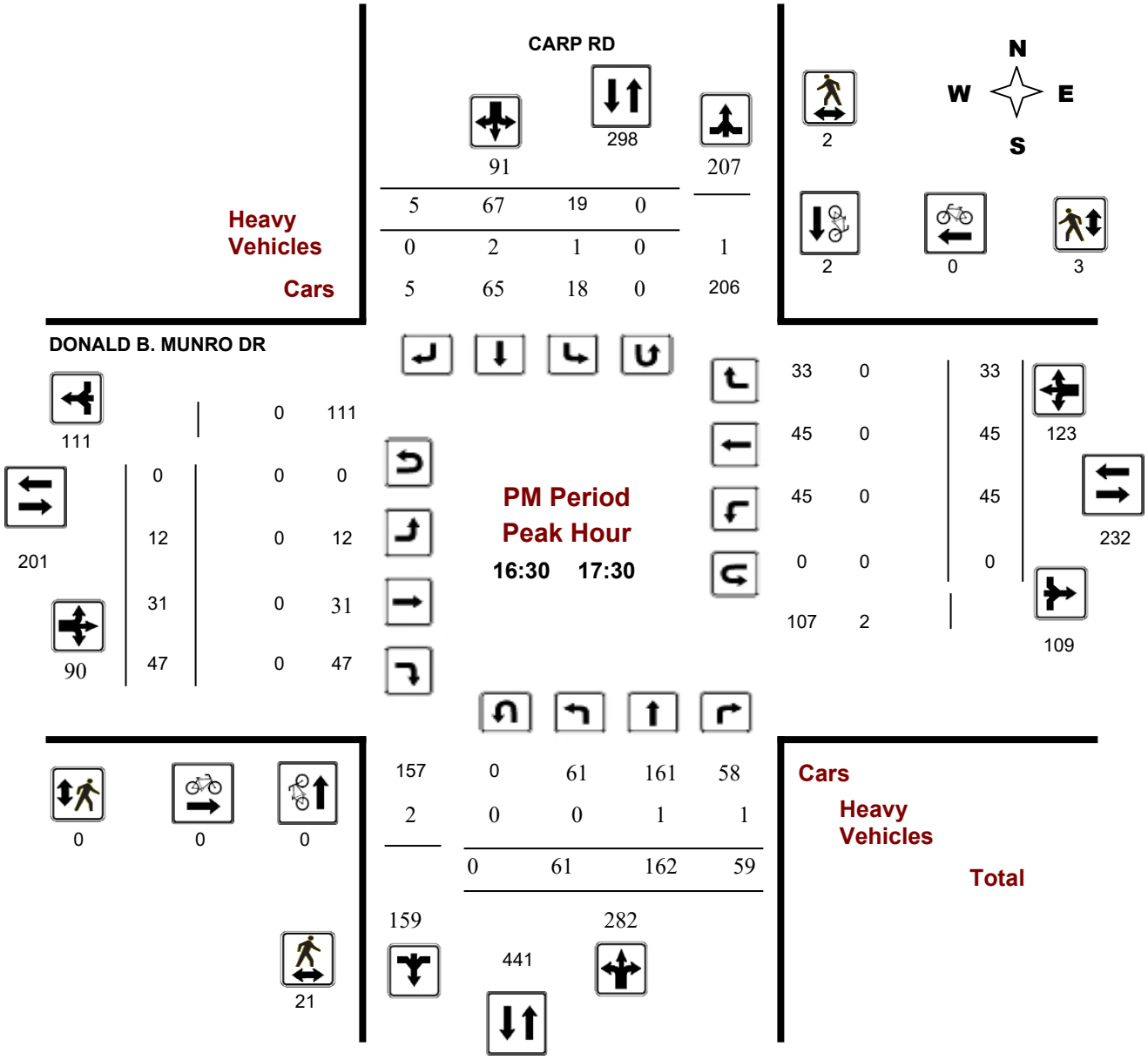
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CARP RD @ DONALD B. MUNRO DR

Survey Date: Tuesday, April 02, 2019 **WO No:** 38471

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



Comments

Transportation Services - Traffic Services

Work Order 38471

Turning Movement Count - Full Study Summary Report

CARP RD @ DONALD B. MUNRO DR

Survey Date: Tuesday, April 02, 2019

Total Observed U-Turns

Northbound: 1 Southbound: 0

Eastbound: 7 Westbound: 0

AADT Factor .90

Full Study

	CARP RD									DONALD B. MUNRO DR									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	25	46	60	**131**	25	138	3	**166**	**297**	1	10	16	**27**	41	5	7	**53**	**80**	**377**
08:00 09:00	21	55	61	**137**	27	87	2	**116**	**253**	1	23	17	**41**	56	12	22	**90**	**131**	**384**
09:00 10:00	20	45	50	**115**	15	81	11	**107**	**222**	5	16	24	**45**	29	19	17	**65**	**110**	**332**
11:30 12:30	36	58	54	**148**	15	65	10	**90**	**238**	10	23	38	**71**	49	35	19	**103**	**174**	**412**
12:30 13:30	30	63	45	**138**	23	78	9	**110**	**248**	10	36	33	**79**	37	27	37	**101**	**180**	**428**
15:00 16:00	53	134	49	**236**	16	71	6	**93**	**329**	8	29	25	**62**	68	29	23	**120**	**182**	**511**
16:00 17:00	54	149	64	**267**	17	76	5	**98**	**365**	5	41	44	**90**	59	37	33	**129**	**219**	**584**
17:00 18:00	42	119	57	**218**	18	40	3	**61**	**279**	11	27	33	**71**	42	37	39	**118**	**189**	**468**
Sub Total	281	669	440	**1390**	156	636	49	**841**	**2231**	51	205	230	**486**	381	201	197	**779**	**1265**	**3496**
U Turns				**1**				**0**	**1**				**7**				**0**	**7**	**8**
Total	281	669	440	**1391**	156	636	49	**841**	**2232**	51	205	230	**493**	381	201	197	**779**	**1272**	**3504**
EQ 12Hr	391	930	612	**1933**	217	884	68	**1169**	**3102**	71	285	320	**685**	530	279	274	**1083**	**1768**	**4870**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	352	837	550	**1740**	195	796	61	**1052**	**2792**	64	256	288	**617**	477	251	246	**975**	**1592**	**4384**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	461	1096	721	**2280**	256	1042	80	**1378**	**3658**	84	336	377	**808**	624	329	323	**1277**	**2085**	**5743**
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.

APPENDIX E

Collision Records

City Operations - Transportation Services

Collision Details Report - Public Version

From: January 1, 2013 **To:** December 31, 2017

Location: CARP RD @ DONALD B. MUNRO DR

Traffic Control: Stop sign

Total Collisions: 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2014-May-21, Wed,18:59	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Truck and trailer	Other motor vehicle	
2014-Jul-18, Fri,01:10	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2014-Oct-30, Thu,10:12	Clear	Angle	Non-fatal injury	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2015-Feb-27, Fri,16:39	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	
					East	Going ahead	Pick-up truck	Other motor vehicle	
2015-Aug-14, Fri,17:26	Clear	Turning movement	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2016-Jan-13, Wed,14:18	Clear	Angle	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	

					East	Turning right	Automobile, station wagon	Other motor vehicle
2016-Sep-03, Sat,13:36	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle
					South	Stopped	Automobile, station wagon	Other motor vehicle
2017-Mar-01, Wed,11:50	Rain	Angle	Non-fatal injury	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle
					South	Going ahead	Pick-up truck	Other motor vehicle

APPENDIX F

Transportation Demand Management 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)*	☑ - N/A, less than 50 bicycle spaces
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)*	☑ - N/A, less than 50 bicycle spaces
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)	☐